






M.I.S.E
Republic of Kiribati



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Project Title: Promoting Outer Island Development through the Integrated Energy Roadmap (POIDIER)		
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UNDP Strategic Plan Output: <i>Output 1.5.1</i> Solutions adopted to achieve universal access to clean, affordable and sustainable energy.		
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<p>Brief project description: POIDIER has the objective of enabling enhanced outer island development through the achievement of the renewable energy (RE) and energy efficiency (EE) targets of Kiribati. Efforts to date to promote RE and EE in the outer island have lacked sustainability and lacked links to enhancing economic development and livelihoods. They have also lacked enough scale to meet targets. While widely distributed to households, small solar PV lighting systems provide only limited energy access. Affordable parts for repairs are not available. Larger systems, such as solar PV mini-grids, have only addressed institutional needs, mainly boarding schools, and lack financial and technical sustainability. Costs for such systems have been far above international benchmarks. Imported EE cook stoves have been introduced but are expensive and little known. RE and EE efforts to date have not addressed: the lack of opportunity on the outer islands, leading to overcrowding on South Tarawa; lack of deeper development of the two main resources of the outer islands, coconuts and fish; and lack of development of agriculture in the outer islands to address the nation's food insecurity and chronic disease issues stemming from the majority of the nation's food stuffs being imported.</p> <p>POIDIER adopts a multi-pronged approach to address the challenges to RE and EE dissemination in the outer islands and to link such dissemination to addressing the broader challenge of outer island economic development. It addresses capacity gaps via training and outreach, facilitates adoption and</p>		

enforcement of needed policies, promotes the financing of outer island RE and EE, addresses cost and technical challenges, and brings these together via demonstrations. It puts its greatest emphasis on the productive use of RE and EE and expands the emphasis of outer island energy development from institutional systems alone to include community systems that can support revenue generating activity, particularly related to coconuts, fish, and agricultural produce. Its demo PV mini-grid systems will be the first in the outer islands to have a revenue and billing system to facilitate financial sustainability; and focus will be put on installation of high-quality systems at globally competitive costs. In addition, POIDIER will build on its baseline projects in RE and EE in support of water supply to demonstrate RE and EE systems that supply water to agriculture on the outer islands. And, it will support the development and widespread dissemination of locally made EE cook stoves at price points attractive to outer island households.

FINANCING PLAN		
GEF Trust Fund		USD 5,379,452
(1) Total Budget administered by UNDP		USD 5,379,452
PARALLEL CO-FINANCING		
Ministry of Infrastructure and Sustainable Energy (MISE), grant		USD 25,922,000
Ministry of Infrastructure and Sustainable Energy (MISE), in-kind		USD 751,300
Development Bank of Kiribati (DBK), grant		USD 150,000
UNDP, grant		USD 100,000
(2) Total co-financing		USD 26,923,300
(3) Grand-Total Project Financing (1) + (2)		USD 32,302,752
SIGNATURES		
Signature: Benjamin Tokataake Secretary		Agreed by Government Development Coordination Authority
Signature: Ms. Saitofi Mika Secretary		Agreed by Implementing Partner, MISE
Signature: Mr. Levan Bouadze Resident Representative		Agreed by UNDP
		Date/Month/Year: 29/9/20
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II. DEVELOPMENT CHALLENGE

Description of development challenge project seeks to address and relevance to national development priorities: POIDIER has the objective of enabling enhanced outer island development through the achievement of the renewable energy (RE) and energy efficiency (EE) targets of Kiribati. The nation is highly dependent on imported petroleum as its main modern energy source and is unlikely to meet its official RE and EE targets (shown below) as stated in the *Kiribati Integrated Energy Roadmap* (“the KIER”) without incremental interventions. The outer islands, the areas on which POIDIER will focus, are considered the “rural areas” of the nation. They are much less developed than the capital of South Tarawa and have very low levels of energy access. Economic opportunities are limited, resulting in low incomes and out-migration to the capital, which is over-crowded. The national government has put high priority on developing the outer islands and stimulating a reverse of current population flow trends, so that the outer islands present more economic opportunity and attract people back from the capital. The main two income sources of the outer islands, fish and coconuts, are constrained due to lack of infrastructure, especially energy. There is little value add or processing of either due to lack of power. Further, the fish catch is constrained by the minimal ability to keep it chilled and/or frozen just sufficient for the island need¹, despite very high potential demand from processing capacity in South Tarawa and from fresh fish markets globally. Agriculture on the outer islands is undeveloped, though could benefit from energy inputs to address water challenges. Relatedly, food security is a serious issue in Kiribati, with most foodstuffs being imported and with rising levels of chronic disease, such as diabetes, due to increasingly unhealthy diets associated with these imports. As part of its development plan for the outer islands, the national government has a goal of making them “the farm” of the nation.

Kiribati’s Renewable Energy and Energy Efficiency Targets

Location	% Reduction in Fossil Fuel Consumption by 2025 from 2017 levels		
	RE Applications	EE Applications	Total
South Tarawa	23	22	45
Kiritimati Island	40	20	60
Outer Islands (OI)*	40	20	60

*For public and private institutions on the outer islands, the KIER targets 100% RE by 2025 yielding a 100% reduction in fossil fuel use for those institutions as a group.

Source: *Kiribati Integrated Energy Roadmap* (2017 – 2025), IRENA, SPC, and PPA, July 2017

Comprising 33 atolls and reef islands, of which 23 are inhabited, Kiribati is dispersed over a vast area of 3.5 million km² of the Pacific Ocean. Kiribati’s 2017 population was about 116,400. The inhabited outer islands are comprised of 21 of the 23 inhabited islands and are less developed and less populated (with most having population ranges in the 1,000 to 4,000) than the two administrative centers, South Tarawa (2015 population of 56,388) and Kiritimati (2015 population of 6,456). The nation is divided into three island groups: the Gilberts in the western part of the nation (including or having nearby a total of 19 of the inhabited islands, including the capital of South Tarawa); the Phoenix Islands in the middle along a horizontal axis (with only one inhabited island, Canton, population of about 20); and the Line Islands in the east (with just three inhabited islands, the administrative center of Kiritimati and two outer islands). As an example of the vast distances between the groups and associated challenges, South Tarawa and Kiritimati (“Christmas Island”) are about 3,300 km apart and currently lack domestic air links to each

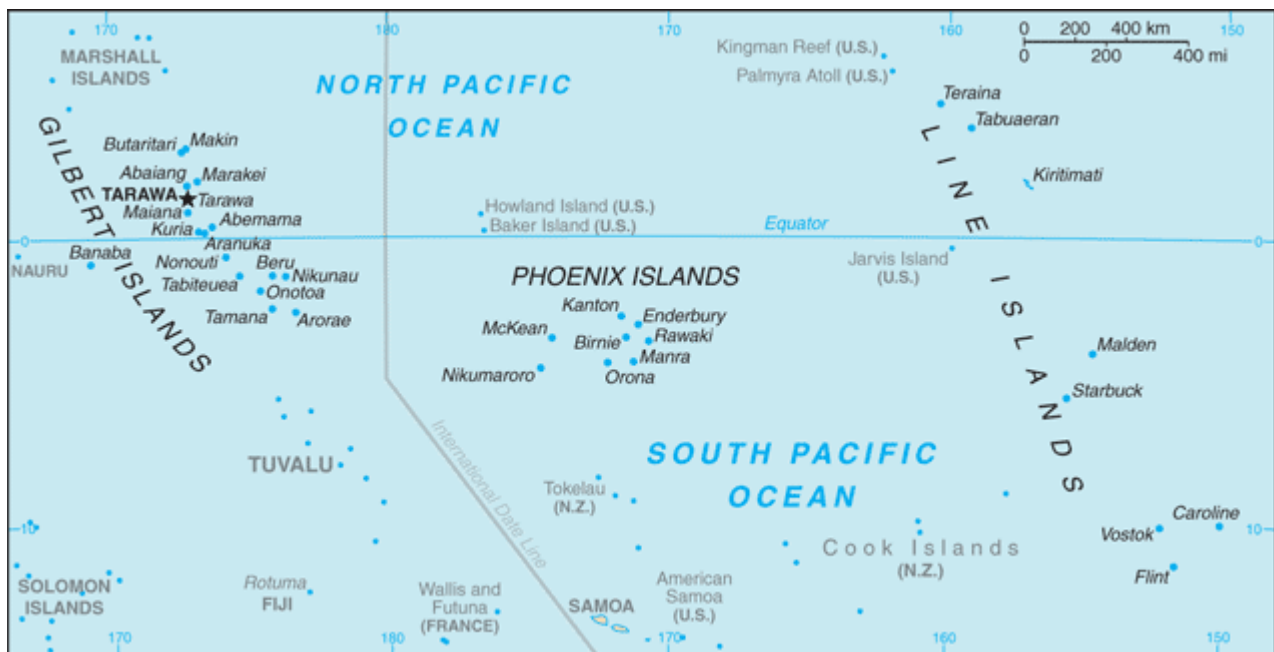
¹ All outer islands have ‘ice plants’ funded by JICA. Italy funded the 10-15kwp solar off-grid system to power the ice-plants and 5 big freezers for storing fish-catch and for local selling.

other. The names of the outer islands and their respective populations, as well as a map of Kiribati, are shown below.

List of Kiribati Outer Islands by Geographic Region and with 2015 Population

Outer Island	Population	Outer Island	Population	Outer Island	Population
<i>Northern Gilberts</i>		8. Kuria	1,046	16. Tamana	1,104
1. Makin	1,990	9. Aranuka	1,125	17. Arorae	1,011
2. Butaritari	3,224	10. Nonouti	2,743	<i>To W. of Gilberts</i>	
3. Marakei	2,799	<i>Southern Gilberts</i>		18. Banaba	268
4. Abaiang	5,568	11. N. Tabiteuea	3,955	<i>Line Islands</i>	
5. North Tarawa	6,629	12. S. Tabiteuea	1,306	19. Teeraina	1,712
<i>Central Gilberts</i>		13. Beru	2,051	20. Tabuaeran	2,315
6. Maiana	1,982	14. Nikunau	1,789	<i>Phoenix Islands</i>	
7. Abemama	3,262	15. Onotoa	1,393	21. Kanton	20

Map of Kiribati



Source: US Central Intelligence Agency, April 2013.

National energy situation: The only major sector of greenhouse gas emissions for Kiribati is energy (including transport), with slight contributions from agriculture and forestry. In 2014, imported petroleum products, used for power generation and transport and, to a lesser degree, for heating applications, such as cooking, accounted for as estimated 63% of the total primary energy consumption; traditional biomass, used for cooking and copra drying, 36%; and solar, less than 1%, but growing, with recent major installations in South Tarawa and extensive distribution of solar lighting kits in the outer islands. Per capita energy use in the outer islands is low; and energy often solely used for lighting and cooking, with solar and biomass as the main sources, respectively. According to the 2015 census, typically between 10 to 20% of households on each outer island have one or more diesel generators as well. The Public Utilities Board (PUB) is the main service provider for grid-connected electricity in South Tarawa, while

the Ministry of Line and Phoenix Islands Development (MLPID) is responsible for electricity provision on Kiritimati. The responsible party for electricity provision in the outer islands is yet to be clarified.

National priorities: The Government of Kiribati (GoK) struggles with the high and volatile costs of importing and distributing fossil fuels, particularly to the outer islands. To reduce fossil fuel imports to a minimum, the GoK is promoting the utilization of indigenous renewable energy for power and non-power applications. This policy is stated in the Kiribati National Energy Policy (KNEP), which is guided by the vision of “*available, accessible, reliable, affordable, clean and sustainable energy options for the enhancement of economic growth and improvement of livelihoods in Kiribati.*” Reducing fossil fuel imports is the major goal as stated in the GoK’s KIER and its NDC. This will be done through increased utilization of renewable energy along with further improvements in energy efficiency on both energy demand and supply sides, with the expectation that almost half of fossil fuels will be displaced by 2025.

Off-grid RE power generation in the outer islands: Several donor efforts have supported the dissemination of RE power generation systems, specifically solar PV, on the outer islands, but the level of energy access remains low. Most outer island households have been the beneficiaries of free solar lighting kit distribution in 2016 supported by Taiwan (30 W systems with three lights), with 4,236 such systems distributed. The challenge now faced is the timely maintenance and needed parts replacement in the outer islands and thus failed solar kits will have to be flown back to the capital for repair by KSEC. Previously, starting with JICA in 1992 and continued by the EU in 1994, 2004, 2008, 2009, 2010, 2011, 2012, 2013, and 2014, a total of 12,891 PV solar home systems (SHSs) of various sizes were distributed to outer island households, maneabas (meetings houses), and businesses. Yet, a relatively small proportion of the total appear to be in operation today, with field work suggesting most outer island households are now using the Taiwan solar kits as their main source. The EU and JICA Solar systems were provided to the government to demonstrate the utility concept where KSEC owns the solar systems and users on the outer islands pay monthly maintenance fee of around \$10/month. The KSEC utility model was a success and expanding with maintenance for failed solar system attended by KSEC local Island Technicians. However, the cancellation of the KSEC utility service monthly maintenance fee by Government in 2008 was downfall for these solar home systems and cancellation of the KSEC local Island Technicians who were supported through this monthly maintenance fee. KSEC also sells other solar system commodities. In recent years, the private sector, including Taotian Trading, Value City, and Triple T, has entered the business of supplying the outer islands with SHS, so that KSEC no longer has a monopoly in this area.

In addition to the solar lighting kits and SHSs, a few other past donor-funded RE initiatives on the outer islands are of note: The EU has supported the installation of PV/Battery mini-grids with at six² boarding schools, Italy funded two³ boarding schools and Luxembourg funded one⁴ boarding school in the outer islands. The EU project solar mini-grid implemented through the foreign firm namely Sunlabob from Thailand were facing faulty issues due to design drawback and components poor specifications by the firm. The way forward now on this failing solar system is to rehabilitate with a new and standard design for these 6 boarding schools.. Ownership of the systems was previously given to the schools but a new plan now is to utilize the utility model and transferring ownership to the responsible SOE due to the maintenance cost of the solar system component especially the expensive battery storage. The EU project solar system is provided free to both the school buildings and teacher homes where the Italian funded solar system is metered to staff residences and the school amenities to cover future maintenance cost.

² (i) HBHS (on Beru), (ii) St. Joseph High School in Tabwiroa (on Abaiang), (iii) Stephen Whitmee High School at Morkao (on Abaiang), , (iv) Kauma High School (on Abemama), (v) Alfred Sadd Memorial School (on Abemama), (vii) Teabike High School (on Tab North), (viii) Taborio High School (on North Tarawa), and (ix) Nonouti Secondary School (on Nonouti).

³ (i) Chevalier College (on Abemama), (ii) Saint Leo College (on Butaritari)

⁴ Manoku Christian Community Leaders (on Abemama)

JICA and South Korea supported 4 kW single phase PV systems have installed at 17 of the outer island fish centers. Initially supported by Japan many years ago, these centers, of which there is one per outer island, typically have ice making and freezer equipment and were initially powered by diesel generators. The former 4 kW single phase systems could not support the ice makers and were now being transferred to power respective Island Council amenities while Italy funded a new 3-phase 10-15 kWp solar/batter off-grid system was installed to power the ice-maker, freezers and other appliances of the Ice in all the 20 outer islands.

Energy efficiency in the outer islands: Given the limited level of energy access in the outer islands, there has not been much work in energy efficiency. Yet, important opportunities exist. The main mode of cooking on the outer islands is open hearth fire. A limited number of households have kerosene stoves, but do not use them due to the cost of fuel. Energy efficient fuel wood cook stoves are virtually unknown on the outer islands. While fuel wood and copra waste are generally abundant, collection of fuel wood takes time and storage of fuel wood to keep it dry is a challenge. There has been one SPC-supported effort to distribute imported energy efficient cook stoves in Kiribati. These were rocket stoves imported from China. One hundred such stoves (purchased for around USD 60 per stove) were provided free to an NGO, which distributed the stoves in South Tarawa at a price of about USD 90 per stove. No further progress has been made, though the idea was for the NGO to use the resulting “start-up funds” to purchase and then distribute more of the imported stoves. Japan is also working on an effort to design and build an EE cook stove in Japan that would be suitable to Kiribati. Other areas of fuel wood use on the outer island that may present opportunities for energy efficiency include copra drying and bread baking. While electricity use is limited, opportunities for efficiency, as electricity use grows, should grow as well.

Relevance to global environment and the SDGs: POIDIERS’s aim to enable Kiribati to achieve its KIER targets via the application of RE and EE technologies in the outer islands is relevant to both the global environment and the SDGs. In terms of the global environment, achievement of outer island KIER targets will have substantial benefits in reducing greenhouse gas (GHG) emissions from the business as usual scenario. New POIDIERS-supported off-grid outer island RE power generation, which will target systems of capacities capable of facilitating productive uses, will represent the alternative to diesel generators. In addition, EE cook stoves that POIDIERS will promote will reduce GHG emissions from wood burning by about 50%. An ambitious program for nation-wide dissemination of such products, if successful, will lead to substantial GHG emission reductions. Enabling achievement of the development targets of increased energy access and an increase in the deployment of RE and EE to displace fossil fuels clearly addresses SDG 7, “Ensure access to affordable, reliable, sustainable, and modern energy for all;” and it also addresses SDG13, “Take urgent action to combat climate change and its impacts.” Such work as envisioned in the project design in addition has the potential to address other SDGs including: SDG8 “Promote sustained, inclusive and sustainable economic growth, full and productive employment, and decent work for all” (via productive uses of RE and EE for income generation); and SDG3 “Ensure healthy lives and promote well-being for all at all ages” (via improved air quality achieved via EE cook stoves and RE power systems as compared to business as usual with open hearth fires and diesel generators, respectively, as well as via providing power for main rural health clinics and SKH and via providing RE/EE for agriculture, potentially improving the diet of local people).

Main root causes and barriers: Stakeholder input during the log-frame analysis (LFA) workshop and PPG mission facilitated identification of main root causes to address and associated barriers to remove. At the top level of the problem tree, the problem of “low economic growth and increased vulnerability to climate change” was identified. A key cause of this was identified as the “limited application of RE and EE for supporting outer island development in Kiribati.” The main root causes of this limited application, in turn, were identified as: (1) limited capacity of outer island residents, local government, and technical personnel in low carbon outer island development; (2) inadequate policies, institutions, plans and enforcement thereof to promote low carbon development on the outer islands; (3) lack of financial

sustainability and limited availability of financing for low carbon projects in the outer islands; and (4) lack of confidence in and evidence for the technical and cost viability of outer island low carbon projects. Barriers associated with each of these root causes are as follows:

Capacity and awareness barriers: There are a lack of capacity and awareness regarding RE and EE suitable to outer islands among local governments on outer islands (“island councils”), technical personnel, and the residents of outer islands. The island councils are unaware of suitable technologies to increase energy access and of the potential of productive uses of RE/EE to raise incomes. They also lack skills in preparing energy plans for their islands. As for technical personnel, there is a need for improved technical skill in the design, costing/ sourcing, installation, operation, and repair of RE mini-grids and other types of RE systems supporting productive uses. There is a lack of capacity on the outer islands of how to repair SHSs. And, there is a lack of skills in Kiribati for the design and local fabrication of EE cook stoves. Residents of the outer islands lack awareness of the potential of income-generating productive uses of RE at mini-grids or in agriculture and of how to lengthen the life of their SHSs by proper use and care. They are unaware of the existence and benefits of EE cook stoves. Kiribati also lacks a means for sharing and exchanging information on RE and EE on the outer islands. And, GoK lacks the means of tracking installed RE and EE on the outer islands and getting information and following up on problems in a timely fashion.

Policy, institutional, and planning barriers: Kiribati lacks energy regulations for its outer islands and lacks regulations to ensure high quality RE systems are installed on the outer islands and operated in a sustainable and equitable way. This includes a lack of standards for components of RE mini-grids, lack of regulations on ownership of such systems, and lack of procedures on how RE mini-grids will be run and on how they will collect fees and ensure financial sustainability. There is also a lack of policy to incentivize investments in RE and EE on the outer islands. On the institutional side, there is a lack of clear delineation of responsibility for energy provision in the outer islands and a lack of clear role for KSEC vis-à-vis EPU and companies competing on the market. There is further a lack of coordination between EPU and government and commercial organizations in the productive sectors to coordinate outer island energy provision with economic development initiatives. On the planning side, despite the national government’s emphasis on economic development of the outer islands, the KIER’s outer island section focuses mainly on social services and free systems providing free power. It does not address systems that support productive uses (aside from the fish center systems) and systems that are self-sustaining financially.

Financial sustainability and financing barriers: Lack of financial sustainability of RE mini-grid systems on the outer islands has been a major problem with the nine such systems established to date. Typically, funds are not available when needed for parts replacement or expansion. Further, there is a lack of interest of potential investors in investing in outer island RE and EE systems, due to lack of information on the returns such investments might provide. There is further a lack of financing for outer island people to purchase SHSs or equipment that might make productive use of RE mini-grid power. While KSEC provided an installment payment program for a limited number of EU systems that it received for free, it does not provide such a program for systems it must purchase. Yet, outer island people express an interest in opportunities to pay for such systems over time. While financing mechanisms are needed for productive uses, past programs, in providing 100% grant have resulted in a lack of incentive to ensure such systems are useful and have the potential to generate income.

Technical and financial viability barriers: There is a lack of information on the RE and EE systems, system configurations and features (such as most economic layout/ scale, voltage, and AC versus DC option), and products (both for RE/ EE systems and for productive uses) most suitable to Kiribati’s outer islands. There is also a lack of information on reasonable prices for quality products and sourcing channels. At present, for example, PV mini-grids installed in Kiribati have a cost far in excess of globally

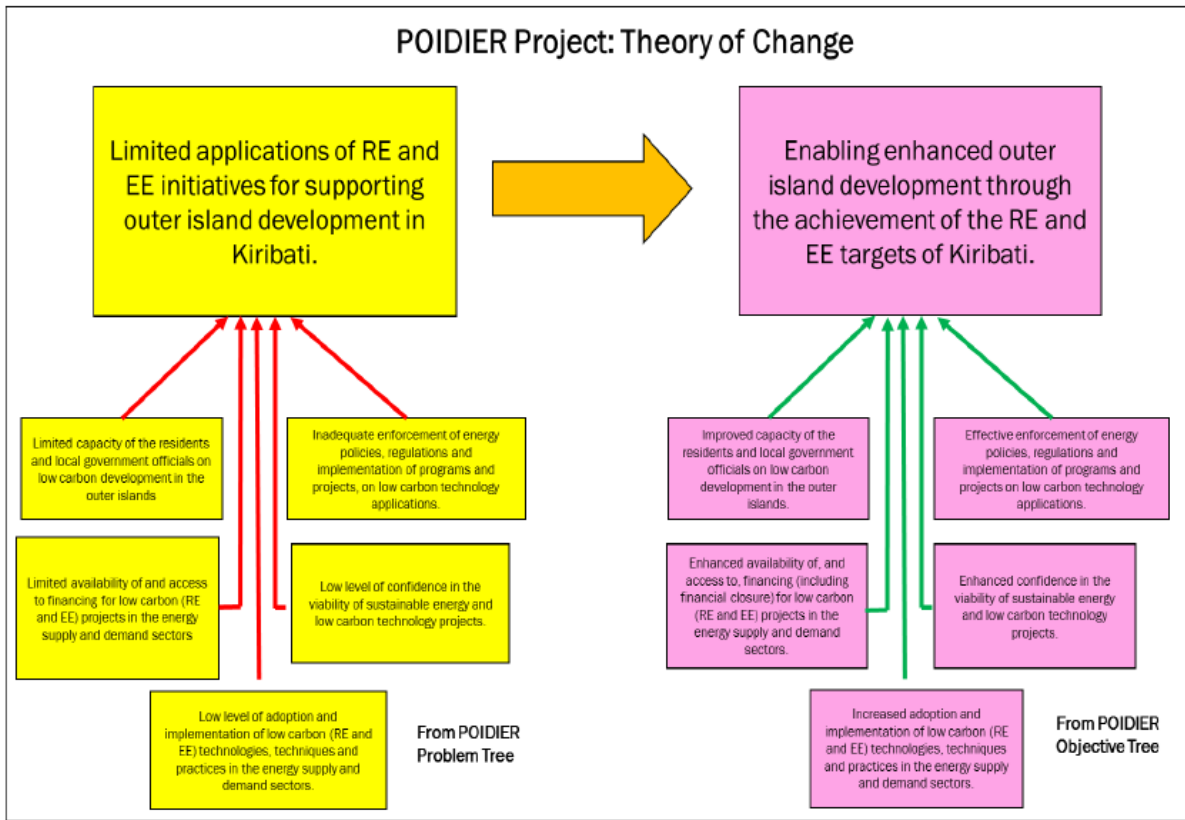
competitive pricing. This drastically reduces the potential return on investment (though all such systems to date have been donor funded) and the number or scale of systems that might be installed with a given amount of funding. While there is a strong need to leverage RE/ EE in providing water for agriculture, there is a lack of clarity on what types of systems would be acceptable ecologically as well as on which types would be economically viable. In the cook stove area, there is a lack of information on how to design and fabricate such systems in Kiribati of locally available materials. Further, for all types of RE/EE systems, there is a lack of technically and financially sustainable on-the-ground examples in operation on the outer islands that demonstrate increased energy access and productive uses of RE/EE and thus raise confidence for replication.

III. STRATEGY

In the case of continuation of the current status quo for RE and EE on the outer islands and with implementation of baseline projects only, Kiribati's targets related to RE and EE for the outer islands and its aims for increased energy access will not be met. Further, related economic development benefits will not be realized. Under the project's theory of change, the removal of the immediate causes of the core problem of "limited application of RE and EE for supporting outer island development in Kiribati" leads to increased energy access and increased deployment of RE and EE on the outer islands in a sustainable fashion such that KIER targets are met. A diagram of the project's Theory of Change (ToC) is provided in this section. On the left, it shows the linkages between the development challenge (core problem) and its immediate causes. When the root causes of the problem are addressed, removing the immediate causes, as shown on the right of the diagram in purple, results occur that lead to achievement of the project objective. POIDIER adopts a strategy in which each major barrier type is addressed in a separate project component. Since some of the barriers are inter-related, the relevant component activities are carried out in an integrated manner. For example, capacity building will address the same RE and EE technology areas that are addressed by the project demos, since the demos are a means of removing not only the technical barriers but also those related to capacity. The barrier removal approach and the development and implementation of integrated activities among the major project components have been successfully adopted in other UNDP-GEF projects in the Asia Pacific Region. The following are some of the key ways in which the barrier removal approach strategy will be carried out:

- *Capacity building:* POIDIER will implement capacity building programs for island councils, technical personnel, and outer island residents. For island councils, the annual Conference of Mayors will be leveraged. On-island training of island councils in developing whole-island energy plans will be carried out on 11 demo islands. For technical personnel, a strategy of learning-by-doing will be adopted. Both advanced technical personnel and outer island technicians will be trained in RE mini-grids and RE/EE for water for agriculture systems. An extensive program for training outer island women ("solar mamas") in SHS repair will also be carried out with the advantage that middle-aged women are among the most likely to remain in their rural areas long-term. Artisans will be trained in the fabrication of EE cook stoves. For outer island residents, a multi-pronged program combining a "road show," radio programs, brochures, and social media will be carried out to educate them on productive uses of RE (in mini-grid areas), proper use and care of SHSs, and EE cook stoves. To promote sharing of information on RE and EE in Kiribati's outer islands, an information exchange will be set up. To enable EPU to monitor outer island RE/EE systems, an online database with dashboard will be developed, along with processes for keeping it updated.
- *Policy, institutional, and planning:* POIDIER will address gaps in these areas by development of recommended policies and regulations, institutional changes, and plans; promotion of these items to the Cabinet; and piloting of these items on demo outer islands. Among the policies will be standards and procedures for outer island RE mini-grids, including procedures for carrying out competitive bidding to select concessionaires for outer island RE mini-grids and for setting prices for power on

the outer islands, all to be incorporated into a cabinet-approved *Kiribati Outer Island Energy Regulations*. Incentive policies for promoting RE and EE, such as through waiving the VAT on imports and/or providing tax holidays or tax reductions to mini-grid operators and investors, will be designed, tested, and promoted. A consultative process will be carried out to determine the best institutional restructuring plan to address the situation of KSEC vis-à-vis EPU and provide a clear separation of responsibilities and clear reporting channels. Lastly, whole energy plans will be prepared for each of the outer islands and used to update the KIER so that it includes RE/EE systems that can be directly linked to economic development and achieve financial sustainability.



- *Financial sustainability and financing:* Analysis will be carried out to show numbers-wise how financial sustainability can be achieved with revenue generating mini-grids and to show returns on investment that investors may expect in various scenarios. A grant fund will also be set up to pay for up to one-third the cost of energy efficient productive use equipment for outer island people, thus stimulating demand for mini-grid power and associated revenues for these systems.
- *Technical and cost viability:* Several assessments will be carried out to determine the most appropriate equipment for Kiribati and, when relevant, the most appropriate configurations and features for PV mini-grids, small wind, SHSs, RE/EE for water for energy systems, EE productive use equipment, EE enhancements to OTEC, and EE upgrades for SKH (via energy audit). Critical to the long-term success of RE/EE in the outer islands, extensive work will be carried out in the sourcing of quality product at best international prices for all the foregoing technology areas. Design (and, later, installation) of demo systems will be carried out mainly by local personnel (including EPU and companies) with the benefit of learning-by-doing. Monitoring of the successes of the project demos for lessons learned and design of replication systems will also be carried out to ensure that the installation of additional viable systems is stimulated.
- *On-the-ground demonstration of viable systems:* Demonstrations will be carried out in the area of financially sustainable RE mini-grids, RE/ EE and water systems, OTEC, EE cook stoves, EE building retrofits, and productive uses. The RE mini-grids will be designed to integrate with the productive uses. About 15 RE mini-grids will be installed across 11 outer islands. They will mainly be PV and battery mini-grids, though a few will also incorporate small wind. The systems will be operated by concessionaires selected by competitive bidding and will charge for power, with the requirement that a certain amount of funds is set aside for parts and repairs. Productive uses will emphasize the main economic areas of fish, coconuts, and agriculture, such as through cold storage and/or processing. The RE/EE and water systems program will include baseline RO desalination

projects powered by PV and an incremental project on two outer islands that uses RE/EE to provide water for agriculture. EE cook stoves will be sold at affordable, but market prices, expected to be around USD 30 each, with a target of 11,000 being disseminated during the lifetime of the project.

IV. RESULTS AND PARTNERSHIPS

i. Expected Results:

Project Objective: Enabling enhanced outer island development through the achievement of the renewable energy and energy efficiency targets of Kiribati

Component 1: Capacity Building for Low Carbon Outer Island Development

Outcome 1: Improved capacity of the residents, technical personnel, and local government officials on low carbon development in the outer islands

Output 1.1: Completed capacity and awareness development programs for: (1) local authorities (island council and local community leaders) on low carbon town and village development; (2) technical personnel and private sector on renewable energy and energy efficiency; and (3) local people in outer island communities on the application of selected low carbon technologies

Local Authorities

Activity 1.1.1.1: Design, organization, and conduct of low carbon development conference on North Tarawa for outer island mayors. The conference will feature RE and EE technologies, productive uses of RE, commercial operation of RE mini-grid power systems, and preparation of all-island energy plans.⁵ Learning materials will be prepared in advance of the conference.

Activity 1.1.1.2: Preparation of guidance and template that island councils can use in preparation of all-island energy plan. Review of relevant guidance provided by international organizations, brainstorming and prioritization of main content for *Kiribati Outer Island All-Island Energy Plan Guidance and Template*, and preparation of guidance and template.⁶ The template will call for a comprehensive energy plan covering all communities on the outer island and all main types of energy use.

Activity 1.1.1.3: Outreach to island councils, during site visits, regarding RE and EE technologies promoted by POIDIER. The PV mini-grid installation team will conduct outreach meetings with island council members during their installation visits to each demo island. An agenda for these outreach meetings will be prepared and the installation team briefed on the proposed content and targeted persons to meet. The outreach meetings will cover the same topics as Activities 1.1.1 and 1.1.2, but in an

⁵ The training event will be held in conjunction with KiLGA (Kiribati Local Government Association) at the annual Forum of Mayors in North Tarawa. Featured technologies and topics will include: (i) PV mini-grids - payment system and productive uses; (ii) SHSs – best price for quality systems, proper use by households, and facilitation of parts inventory and repair on outer islands; (iii) systems using energy to provide water for agriculture – technology options and health and income benefits of expanding agriculture; and (v) EE fuel wood cook stoves and ovens – models, promotion, costs, and benefits.

⁶ Materials prepared will include guidance on: (i) how to determine appropriateness of mini-grids versus SHSs for various communities; (ii) how to determine rough configuration/ scale (in both physical length and kW of power) of mini-grids; (iii) potential productive uses for mini-grids; how to ensure parts and repair services are available for SHSs; (iv) considerations for energy for water for agriculture systems; considerations for promoting EE cook stoves; and (v) other possible energy alternatives for outer islands.

interactive mode tailored to the specific island and with guidance to the island councils on preparing an all island energy plan as will be carried out under Activity 2.4.1.

Technical Personnel⁷

Activity 1.1.2.1: Conduct of training program for Kiribati technical experts on assessment, design, and installation of (i) PV-battery mini-grids, (ii) small-scale wind, and (iii) RE and EE for water for agriculture technologies. For each of these topics, training materials will be prepared, and training coordinated with the demo design work under Output 4.1.3, so that trainees can learn by doing.⁸

Activity 1.1.2.2: Conduct of training program for outer island technical personnel on: (i) PV-battery mini-grids, (ii) productive use equipment, and (iii) RE/ EE for water for agriculture systems. The training will cover operation, billing, and maintenance of the mini-grids and water systems and maintenance and repair of key productive use equipment, including freezers, ice makers, refrigerators, etc. Training program materials, a training video, and an instruction book in Kiribati language will be prepared for each of the three areas.⁹ At least 30 percent of persons trained will be women and a women's empowerment session will be provided for these trainees.

Activity 1.1.2.3: Conduct of training program for interested outer island women ("solar mammas") in the sizing, installation, and repair of SHSs. This includes preparation of course training materials, a training video, and instruction book, all in Kiribati language. Most of the training will be hands-on work with sample, systems rather than theoretical work. Women will also be trained on selection of quality systems at good price to recommend to customers (based on findings from Activity 4.1.2.2.1 sourcing work). Training will be conducted at KIT on South Tarawa.¹⁰ Training will also include sessions on women's empowerment.

⁷ Notes: All the training programs for technical personnel will emphasize learning by doing over theoretical, classroom-based work. Technical personnel will include EPU, KSEC, and private sector (Taotian, Value City, Triple T) staff, as well as outer island technicians and "solar mammas," as appropriate. Learning by doing for the private sector will also include involvement in outer island mini-grid installation, under Activity 4.2.1A.1.

⁸ The PV mini-grid training will make use of HOMER software for mini-grid design. Trainees will use free trial subscription; and one multi-user subscription will be purchased for EPU for the duration of the project. The PV mini-grid training will include emphasis on how to design mini-grids suitable to Kiribati's outer islands and targeted productive uses, as well as how to ensure safety. The small wind turbine training will include integration of small wind into mini-grid design, operation, maintenance, and repair, and wind resource assessment. In addition, the trainer will provide advice on the viability of small wind on various outer islands of Kiribati. For the RE/EE systems for water provision to agriculture, the specific technology or technologies to be covered will depend on the results of the assessment of Activity 4.1.1.2. Training for all three topics will take place on South Tarawa, but also include, as needed, conduct of surveys on outer islands (or liaison with outer islands) to determine certain design parameters. Trainees will include EPU staff, KSEC staff, and private sector staff (such as from Taotian Trading, Value City, and Triple T). The wind portion of the training only will include persons from outer islands targeted to include small wind in their demo mini-grids (likely Abaiang, Teeraina, and Tabuaeran). The water portion of the training only will include staff from MISE's Water Department.

⁹ Training will be conducted at KIT in South Tarawa and, for the mini-grids and water systems, on the respective island during installation, and will emphasize safety. For the productive use equipment training, the main types of productive use equipment to be covered and main maintenance and repair skills needed for each will be identified and included these in the training materials. For the water system training, the specific technology or technologies to be addressed will be those determined by Activity 4.1.1.2. At least two persons from each demo outer island will attend the South Tarawa training. These persons will be those designated to operate the planned demos on their islands and/or maintain productive use equipment. Trainees will be selected with consideration of who is likely to stay on their island long-term and stick with their role of operator or maintenance person long-term. The demo installation team (including EPU staff), when visiting the respective outer island, will follow up on this training to provide on-the-ground guidance to the outer island trainees in operating and maintaining the mini-grid and water system demos.

¹⁰ Women will be selected for training based on interest, level of basic skills, and potential to stay on their island and stick with role of SHS repair person long-term. The number of women selected from each outer island will depend on population, with roughly one person selected per population of 1,200, for a total of roughly 40 trainees.

Activity 1.1.2.4: Conduct of training program on fabrication of EE cook stoves for persons interested in entering this business. This will involve training on the sourcing of materials for and the fabrication of the EE cook stove models selected under Activity 4.1.1.3 to be preferable for Kiribati.¹¹ The training will emphasize learn-by-doing and consist mainly of the trainees fabricating cook stoves under supervision of the trainer. Those trainees who show strong mastery and the initiative to set up their EE cook stove business will be provided with their own tools for fabricating the cook stoves.

Activity 1.1.2.5: Conduct of survey of all trainees under Activities 1.1.2.1-4 regarding use of acquired skills and income sources. Surveyed persons will include Kiribati technical experts, outer island technical personnel, outer island women (“solar mammas”), and newly trained stove fabricators. Survey will ask whether trainees are using their newly acquired knowledge and skills and determine whether trainees are now earning a significant income and significant portion of their total income (25 percent or more) in RE and EE related areas. Results will be used to evaluate one of the Outcome 1 indicators in the Project Results Framework (PRF).¹²

Activity 1.1.2.6: Conduct of tracking of project M&E indicators. This work will be carried out at least once per year to assess the current status of the indicators in the Project Results Framework (PRF). For a few of the indicators, this work will be supported by special surveys carried out under the project (namely, Activity 1.1.2.5 and Activity 1.1.3.5). For the others, the appropriate sources for verification will be consulted. In some cases, calculations will be required to assess the indicator. This work will be carried out by the project management team and reported in the annual PIRs.

Local People in Outer Islands

Activity 1.1.3.1: Conduct of “road show” visits to villages across all POIDIER demo islands to promote successful dissemination and use of RE and EE technologies. Road show will be carried out on demo islands by installation team during same visit as mini-grid and/or energy for water for agriculture system installation. Planning of road show and presentation techniques will take place prior to island visits. Road show will: (i) demonstrate EE cook stoves; (ii) explain use and care of SHSs (in non-mini-grid villages) and availability of quality product at fair price; (iii) explain productive uses, availability of quality productive use equipment at fair price, mini-grid safety, and billing of PV mini-grids (in villages that will get new mini-grids); (iv) explain use, water efficiency measures, and billing of RE/EE for water systems (in villages that will get such systems); and (v) explain and promote grant fund under Output 3.3 that supports purchase of EE productive use equipment.¹³ The road show will include, in each village visited, a special session for women villagers to empower them to leverage benefits from POIDIER activities.

Activity 1.1.3.2: Conduct of radio shows to promote same RE and EE topics covered in “road show” of Activity 1.1.3.1. This involves preparation of content covering the five topic areas in a format suitable to a radio show, outreach to the radio broadcast organization to book multiple time slots on the radio and conduct of the radio shows in cooperation with the broadcast organization. The target of these shows will be outer island communities.¹⁴

¹¹ Fifteen trainees will be selected for their interest in taking up the business of cook stove fabrication. About two-thirds of the trainees will be from South Tarawa and the rest will be from the most populous outer islands.

¹² Survey will be carried out once at mid-term and once towards the end of the project and will include surveyed persons on South Tarawa and on the outer islands.

¹³ Installation team, including EPU staff, during their installation trips, will take time to visit each of the main village groups of the island to carry out the road show, which may take one day for the smaller islands (e.g. up to 3 site visits) and up to three days for the larger ones (e.g. up to six site visits).

¹⁴ Show times and programs during which to promote the information will be selected based on typical radio use habits of these communities.

Activity 1.1.3.3: Preparation and distribution of brochures on same RE and EE topics covered in “road show” of Activity 1.1.3.1. This involves preparation of content for four separate brochures, one on each of EE cook stoves, SHSs, PV mini-grids and productive uses, and energy for water for agriculture systems, and each including relevant information of the grant program under Output 3.3. Brochures will be printed and distributed to relevant communities for each brochure type (as noted in Activity 1.1.3.1) on demo islands prior to (or, if not possible, during) the road show.

Activity 1.1.3.4: Conduct of social media campaign to promote the same RE and EE topics covered in “road show” of Activity 1.1.3.1. This involves preparation of content covering the five topic areas in a format suitable to social media and developing a strategy for getting this information out to people on outer islands who have access to internet and use social media. EPU staff members and island council personnel will be coached on how to contribute to the vitality of the ongoing campaign.

Activity 1.1.3.5: Conduct of survey of random sample of people from demo outer islands to assess their understanding of the principles and benefits of LC development. Survey will assess their understanding of the materials in the five targeted areas promoted via Activities 1.3.1.1-4. The survey will be conducted once at mid-term and once towards the end of the project. The findings will be used to assess the relevant Outcome 1 indicator in the PRF.

Output 1.2: Established and operational information exchange network for the promotion and dissemination of knowledge on all aspects of sustainable energy and low carbon development in all island groups in the country.

*Activity 1.2.1: Development of RE and EE information base and exchange network on EPU website in Kiribati language and English.*¹⁵ This involves, design, setting up, and maintenance of information base and discussion threads. Information base will include all project reports, guides, and training materials and useful materials from other RE and EE projects in Kiribati or the region. For outer islands without internet, materials will be saved periodically on U-drives and distributed.¹⁶ Outreach will be conducted to encourage participation in discussion threads.

Output 1.3: Established and operationalized outer island RE and EE energy consumption, system deployment, and system status monitoring and reporting and database system.

*Activity 1.3.1: Development of processes and online dashboard for EPU to get timely information on and monitor outer island RE installations.*¹⁷ These will include RE mini-grids and RE/EE for water for agriculture systems, and, with more narrow focus on deployment and usage, SHSs and EE cook stoves.

¹⁵ National consultants preparing reports and other documents for the project will be asked to provide their output in both Kiribati language and English. Reports prepared by international consultants, if relevant, will be translated into Kiribati language.

¹⁶ Main categories of information base and discussion threads will be: RE mini-grids and productive uses, SHSs, energy for water for agriculture systems, and EE cook stoves and ovens. Later, this exchange network may be expanded to cover the other PICs/ SIDS.

¹⁷For outer islands without internet access, status information will be emailed or sent by other means to EPU; and an EPU staffer will enter updates into the online database. Reporting and status updates will be carried out weekly for all mini-grids, including both those newly established by POIDIER and those already installed at boarding schools. The dashboard will allow EPU to monitor the performance of third-party operators of mini-grids. It will allow EPU to become aware of any problems with mini-grids in a timely fashion, so that it can follow up with responsible organizations and ensure they manage their mini-grids responsibly. The system will provide the similar functionality for RE and EE for water for agriculture installations. The system will have an additional segment to track (via survey information) EE cook stoves and SHSs in use on each outer island and to track availability of SHS tools and spare parts on the outer islands. For the PV mini-grids, the system will also keep data on the experiences with main productive uses underway at the mini-grids.

Activity involves design of a custom-made online portal that will allow remote entry of information and an online dashboard that will allow convenient review of outer island RE and EE system status by EPU.¹⁸

Component 2. Improvement of Energy Policy, Institutional Frameworks, and Planning for Low Carbon Outer Island Development

Outcome 2: Effective enforcement of energy policies, regulations and implementation of improved institutional framework, programs, and projects on low carbon technology applications

Output 2.1: Piloted and cabinet-approved Kiribati Outer Island Energy Regulations

Activity 2.1.1: Consultative development of standards for PV-battery mini-grids, to be incorporated into Kiribati Outer Island Energy Regulations. These standards will include: (i) quality specifications for parts; (ii) specifications for mini-grid configurations, voltage, etc.; and (iii) safety measures in operation. This activity includes the design of standards, vetting with stakeholders, piloting of standards,¹⁹ and promotion (along with the rest of the *Kiribati Outer Island Energy Regulations*) to Cabinet.

Activity 2.1.2: Consultative development of regulations for ownership of and for concessionaire operation and maintenance of outer island multiple user RE/ EE systems, to be incorporated into Kiribati Outer Island Energy Regulations. Scope will include PV mini-grids and RE/EE for water systems. Regulations will clarify ownership of systems, with donor systems owned by government, and investor systems owned by investors. They will delineate procedures for soliciting bids from, selecting, and monitoring concessionaries, with EPU monitoring concessionaries, who will be required to achieve certain criteria to keep their roles. This activity includes initial consultations with government and private sector; drafting, vetting with concerned stakeholders, and finalization of regulations; piloting of regulations in the selection of concessionaires for the demo mini-grids and RE/EE for water systems; and promotion of regulations (as a part of the *Kiribati Outer Island Energy Regulations*) to the Cabinet for adoption.

Activity 2.1.3: Consultative development of regulations for charging for electricity at outer island RE mini-grids and for setting aside funds for repairs, to be incorporated into Kiribati Outer Island Energy Regulations. This includes the formulation of billing rules for outside party owned or managed systems and rules for existing systems owned by boarding schools.²⁰ It will include specific requirements for amount of funds to be set aside and procedures of setting such funds aside. This activity includes initial consultations with government and the private sector; drafting, vetting with concerned stakeholders, and finalization of regulations; piloting of regulations with mini-grid concessionaires and institutions with self-owned mini-grids; and promotion of regulations (as a part of the *Kiribati Outer Island Energy Regulations*) to the Cabinet for adoption.

Output 2.2: Piloted and approved incentive regulations for RE and EE

¹⁸ The main page for mini-grids will show operational status of all outer island mini-grids on one page, with the option of clicking on specific mini-grids for more details. Outer island technical personnel will participate in updating of information on a weekly basis. EPU will also review status at least weekly and in this way be able to follow up with responsible parties to address any problems. This custom-made system may integrate with a ready-system that remotely monitors the status of mini-grids.

¹⁹ Standards will be piloted with the PV mini-grid demos on the outer islands by ensuring that they are considered in the PV mini-grid design, procurement of parts, and operation.

²⁰ It is recommended that this system include measures to deter electricity theft and strictly penalize those that attempt to steal electricity. Payment for outer island mini-grid power will be immediately instituted at new installations upon commissioning. Existing installations may be transitioned to such a system with the addition of meters. Where social service institutions, such as schools, clinics, or hospitals are involved, the institution itself may benefit from a reduced rate for power or a limited amount of free power. Yet, it will be important to consider the monthly budget allocations previously made by these institutions for diesel fuel and transition these allocations to being set aside for battery replacement and other needs of the RE mini-grids

Activity 2.2.1: Consultative development of incentive regulations for RE and EE, especially as regards the outer islands. This activity involves initial consultation (including with tax officials at the Kiribati Ministry of Finance and Economic Development (MFED)); drafting, vetting with concerned stakeholders, and finalization of regulations; piloting incentive policies with demo procurement and operation; and promotion of regulations to Cabinet for adoption.²¹

Output 2.3: Proposed, adopted, and implemented improved institutional framework for the energy sector

Activity 2.3.1: Consultative development of institutional restructuring of KSEC vis-à-vis EPU. This involves: (i) clear definitions of respective responsibilities of EPU and KSEC and (ii) reallocation of staff with government, non-market functions from KSEC to EPU. The resulting EPU will have enhanced capability to procure, install, and monitor best cost quality outer islands mini-grids. The resulting KSEC will compete on the market without preferential treatment to supply and/ or operate outer island RE projects. The activity includes consultations with involved government institutions and other stakeholders, drafting of restructuring plan, vetting via follow-up consultations, finalization of plan, promotion to Cabinet for approval, and implementation.

Activity 2.3.2.1: Development and implementation of institutional coordination between EPU and other government and commercial organizations, with emphasis on productive use of RE/EE in the outer islands. This will involve both bilateral cooperation between EPU and other organizations, including KFL, Kiribati Coconut, MFMRD, and/ or MELAD's Department of Agriculture, and development of the multi-party *Kiribati Outer Island Energy and Productive Use Working Committee*. The Committee will be set up and hold joint meetings to keep other organizations aware of EPU's work and to share ideas for coordination between energy initiatives and other economic sectors. The overall activity will involve brainstorming of coordination ideas, development of mechanism for ongoing working group meetings, development of mechanisms for ongoing bilateral exchange between EPU and other departments, and initial implementation of mechanisms.

Activity 2.3.2.2: Development of integrated plan for cooperation between EPU and other economic sectors for providing needed energy on the outer islands for major productive use activities. A draft plan for coordination on joint projects will be discussed, drafted, vetted, and agreed upon by EPU and key departments and companies in the other economic sectors, including KFL, Kiribati Coconut, MFMRD, and/ or MELAD's Department of Agriculture.

Activity 2.3.3: Development and implementation of institutional plan to keep, on the outer islands, spare parts for SHSs in inventory and tools for SHS repairs. This will involve conduct of an analysis of the best means of ensuring that SHS spare parts and tools for repair are available on the outer islands in the quantity needed in a financially sustainable fashion. This work will draw from the sourcing work in Activity 4.1.2.2 to ensure that the plan recognizes low cost quality sourcing options and will draw from the needs assessment to be carried out under the same activity to ensure that the plan reflects the volume of spare parts and tools needed. Based on the analysis, a proposed plan will be prepared and promoted to MISE/ EPU. Plan will include options for funding inventory efforts and the human resources needed to manage these.

²¹The possible proposed policies will include: (i) waiving of the VAT on imported and domestically produced components for which use in RE and EE systems can be verified and (ii) tax reductions and/ or tax holidays for companies undertaking operation (as concessionaire or owner) of outer island RE and EE mini-grids and of outer island RE and EE systems for water provision for agriculture.

Output 2.4: Updated outer island section of KIER to reflect more specific and comprehensive plans for each outer island and to include productive use/ community mini-grid targets

Activity 2.4.1: Preparation of detailed all-island RE and EE plans for each outer island. These will potentially include, as relevant, PV mini-grids, small wind, SHSs, RE/EE systems for water for agriculture, and EE cook stoves. This activity will build on capacity development work of Activities 1.1.1, 1.1.2, and 1.1.3. The initial plans will be prepared by island councils of each of the outer islands, with outside support provided to assist them in improving and elaborating the plans as needed.

Activity 2.4.2: Incorporation of highlights of detailed RE and EE plans for each outer island (prepared under Activity 2.4.1) into the KIER and preparation of updated outer island targets for KIER. This will involve consultation with EPU regarding level of information from the individual outer island plans that may be included in the KIER, consultation with island councils for clarification (if needed), preparation of updated and more detailed outer island portion of KIER, and calculation of associated targets.

Component 3: Financial Support Mechanism Development for Low Carbon Development Initiatives in Outer Islands

Outcome 3: Enhanced availability of, and access to, financing (including financial closure) and long-term financial sustainability for low carbon (RE and EE) projects in the energy supply and demand sectors

Output 3.1: Report and financial analysis on measures and benchmarks for achieving long-term financial sustainability of RE mini-grids in the outer islands of Kiribati.

Activity 3.1.1: Conduct of study with financial analysis and proposing of recommendations on measures to achieve financial sustainability of outer island RE mini-grids. This study includes analysis and recommendations on billing/ payment systems and requirements for the setting up and implementation of funding mechanisms for parts replacement, repairs, and maintenance. The study findings will be incorporated into the regulations that will be prepared under Activity 2.1.3. This activity will involve the gathering of basic financial data on projected costs of operations, parts, and repairs and design of a simple spreadsheet model for determining the levels of electricity tariffs and set asides for future parts and repairs needed for financial sustainability. The results will be summarized in a high-level briefing and shared with EPU/ MISE, the Cabinet, the private sector, donors, and other interested parties.

Output 3.2: Completed studies and outreach with findings to potential investors on the de-risking (e.g. through anchor tenant and productive uses) and financial viability of RE mini-grid equity investments in the outer islands.

*Activity 3.2.1: Conduct of study on financial viability of RE mini-grids financed with private sector investment rather than donor grants and outreach to potential investors with findings.*²² The study will include assessment of how “anchor customers” (large, guaranteed power users) and/or promotion of productive uses can improve financial viability of mini-grid investments. Potential anchor customers will be consulted and viability of their long-term purchase of power assessed. On the community side, potential productive uses and willingness to pay for/ likelihood to purchase power will be assessed. Findings of Activity 3.1.1 will be incorporated into the analysis. A spreadsheet model, building on that of

²² Outreach will include Kiribati based companies, such as Taotian Trading, Value City, Triple T, Petty Trading, Coral Ace, Moel Trading, and King Holdings; international companies investing in mini-grids and serving as operators, such as Micro-Grid Investment Accelerator, OMC Power, and Husk Power; and donors who would like to see long-term, sustainable financial returns to their grant investments.

Activity 3.1.1, will be designed for determining the internal rate of return (IRR) that commercial investors can expect given different levels of up-front costs, tariffs, operational costs, and costs of setting aside funds for repairs and parts. The analysis will also assess the scenario in which donors fund a part, but not all up-front capital costs. Cost inputs will be best costs drawn from sourcing work carried out under Activity 4.1.2.1. In addition to general cases, financial feasibility analysis of the specific replication mini-grids identified in Activity 4.1.5.2 will be conducted. Results for the general cases and the specific cases will be summarized in a high-level briefing, which, along with the spreadsheet models, will be shared with EPU/ MISE, the Cabinet, the private sector, donors, and other interested parties.

Activity 3.2.2. Preparation of report “Derisking Renewable Energy Investment in Kiribati” based on findings from utilizing UNDP Derisking Renewable Energy Investment (DREI) tools. UNDP’s DREI methodologies, financial tools/ models, and resources will be utilized to show derisking options for (i) off-grid RE mini-grids and (ii) SHSs in Kiribati. Results will be promoted to policymakers and the commercial sector, with results for off-grid RE mini-grids incorporated into Activity 3.2.1.²³

Output 3.3: Designed, approved, and operational financial support mechanism(s) for outer island RE, EE, and productive uses, inclusive of the implementation arrangements, and procedures for the financial assistance application process.

Activity 3.3.1.1: Design of a grant fund to provide partial investment (up to one-third) for productive use equipment associated with PV mini-grids. This involves determination of the following: scope of equipment to be supported; criteria for assessing grant applications; targeted distribution of grants among different types of industries, different islands, etc.; best approach for distributing funds to grantees, whether it be all up-front, or half up-front and half based on performance, etc.; the entity to manage the funds; the evaluation method for fund performance; and measures for monitoring the entity. Equipment supported may include freezers, ice-makers, refrigerators, cold rooms, copra mini-mills, virgin coconut oil processing equipment, saw mill equipment, vacuum pack sealing machines, efficient food driers to produce products like bread fruit chips or banana chips, other food or fish processing equipment, etc.

Activity 3.3.1.2: Implementation of grant fund to provide partial investment (up to one-third) for productive use equipment associated with PV mini-grids. The selected entity will implement the grant fund designed under Activity 3.3.1.1. Monitoring of the entity as determined under Activity 3.3.1.1 will be conducted.

Activity 3.3.3: Provision of outreach and technical assistance to outer island applicants to grant fund of Activity 3.3.1.2. This activity will let potential outer island applicants know about the fund opportunity and educate them about how to apply. Some outreach will be combined with the demo outer island “road show” of Activity 1.1.3.1, radio shows of Activity 1.1.3.2, brochures of Activity 1.1.3.3, and social media campaign of Activity 1.1.3.4. For interested parties, support will be provided in identification of desirable sources of equipment at good cost, utilizing findings of sourcing work in Activity 4.1.2.4 (EE productive use equipment). Support will also include help in completing applications for financing.

Component 4. Low Carbon (RE and EE) Technologies Applications for Outer Island Development

²³ UNDP’s DREI is an innovative, quantitative framework to assist policymakers in developing countries to cost-effectively promote and scale-up private sector investment in renewable energy. The DREI framework consists of a suite of publicly-available methodologies, financial tools/models, and resources. Current renewable energy sectors covered by the DREI framework are (i) utility-scale, (ii) on-grid rooftop PV, (iii) off-grid mini-grids, and (iv) solar home systems. The link for the tools is: http://www.undp.org/content/undp/en/home/librarypage/environment-energy/low_emission_climateresilientdevelopment/derisking-renewable-energy-investment.html

Outcome 4.1: Increased adoption and implementation of low carbon (RE and EE) technologies, techniques and practices in the energy supply and demand sectors via improved technical and cost viability

Output 4.1.1: Completed technical assessment of applicable low carbon technologies that can be feasibly implemented for enhanced rural electrification and energy efficiency in Kiribati.

Activity 4.1.1.1: Conduct of needed technical assessments on key topics, to be used as general input for design of RE mini-grids for Kiribati outer islands. This will involve desk work, with some site visits to carry out each assessment, which will entail information gathering, analysis, report preparation, and a high-level summary or listing, as appropriate.

- *Determination of best types of components for PV mini-grids for Kiribati outer islands, considering both the island physical environment and lack of high level of technical expertise for repair.* The analysis will include lessons learned from past installations (such as frequent fan failure in inverters and problems with mini-grid cabling) and comparisons with what has worked in similar island environments elsewhere in the world. Recommendations for best types of components and preferred brands will be made.
- *Assessment of most rational configuration of PV mini-grids for Kiribati outer islands in terms of costs and services delivered.* This will build on findings from the PPG stage to confirm the scale of mini-grid recommended, addressing both total capacity and whether mini-grid coverage designated will be achieved (i) with large capacity as one long mini-grid, (ii) with large capacity as one central station with small grid only (productive uses for the village or villages may then come cluster at the site), or (iii) with capacity split up over multiple small mini-grids. It will include assessment of appropriate voltage levels for transmission and associated costs and preparation of guidelines for determining the best configuration based on populations and site situation.
- *Assessment of the option of small DC mini-grids versus AC mini-grids.* This will include provision of pros and cons of AC versus DC mini-grids and general recommendations and guidelines for determining the better option in different types of situations.
- *Assessment of small-scale wind as a possible addition to outer island PV mini-grids with battery storage on Abaiang, Teeraina, and Tabuearan or other outer islands.*²⁴ The analysis will look at cost effectiveness in terms of power output and potentially lowering required battery capacity. Assessment will also look at reliability and viability of carrying out repairs locally, if needed, and at whether further wind resource assessment is needed.
- *Assessment of financial viability of proposed demo mini-grids.* The assessment will look at financial sustainability and attractiveness of opportunity to concessionaires and cover: (i) availability of “anchor customers,” who are confirmed to uptake a certain portion of electricity produced, and (ii) ability and willingness to pay of other potential customers. Assessment will include analysis of pre-paid versus post-paid meters. In addition to confirming financial viability of proposed demos, this work will also serve as input to Activities 3.1.1 and 3.2.1.

Activity 4.1.1.2: Assessment of best approach and RE/EE based technology for providing water to scale up agriculture in Kiribati. This involves assessment of the options of: (i) solar pumping, (ii) solar desalination, (iii) solar distillation, (iv) recycling/ purification for recirculation of grey water, (v) hydroponics, and (vi) aquaponics.²⁵ It will consider risks of salt water incursion that the lower cost

²⁴ Wind resource assessment has already been done on Abaiang and yielded an average wind speed of 5 m/sec. Teeraina and Tabuearan are expected to have wind speeds like Christmas Island, which is indicated to have an average wind speed of around 7 m/sec.

²⁵ Activity will include visit to potential RE and EE for water for agriculture demo islands (likely Abaiang and Tab North) to assess the situation; gathering of relevant data; conducting analysis; and providing a report and summary highlighting best recommended technology for energy for agriculture demos. It will also include liaison with EPU, MISE’s Water Department, and MELAD’s Department of Agriculture to get their input and present results to them.

technology of pumping may introduce, considering existing water resources and geologic formation. It will also look at means of increasing energy efficiency of the selected method/ equipment as well as raising efficiency through watering techniques, such as drip irrigation targeting roots of plants.

Activity 4.1.1.3: Development and assessment of energy efficient fuel wood-based cook stove models that can be fabricated in Kiribati at low cost and of locally available materials. This involves conduct of a competition and/or parallel consultancies for developing energy efficient cook stove models for Kiribati. These models will be competitively tested; and those with the best combination of efficiency, cost-effectiveness, and appropriateness to the situation of Kiribati outer islands will be selected for capacity building for fabrication (Activity 1.1.2.4), outer island “road show” (Activity 1.1.3.1), and dissemination/sale (Activity 4.2.1E.1). This activity may also cover attachments or separate systems for efficient baking ovens that use fuel wood.

Activity 4.1.1.4: Conduct of assessments needed as input to the adoption of RE and EE for Southern Kiribati Hospital (SKH). Assessments include the following:

- *Cost effectiveness and institutional rationale of continued operation and upgrading of SKH.* Ministry of Health will prepare a report with recommendations and present it to the Cabinet. If report recommends continued operation and upgrading of SKH, needed upgrades and associated funding allocation will be confirmed. Resulting commitments from Ministry of Health will be prerequisite to installation of demo mini-grid at SKH under Activity 4.2.1A.1.
- *Conducting of energy audit for SKH and provision of recommendations for retrofits.* This activity includes a detailed assessment of the energy performance of SKH’s lighting and air conditioning systems. Audit implementation will serve the dual function of getting the audit done and on-the-job energy audit training for national participants. An audit report will be prepared.

Activity 4.1.1.5: Identification and assessment of options for incorporating EE features in the design of Tarawa Ocean Thermal Energy Conversion (OTEC) Project. This involves the conduct of site visit to the OTEC project site and desk research about EE options and other downstream operations, such as making use of cold deep seawater for indoor air conditioning onshore. The cost effectiveness and other benefits of each of the potential options will be assessed. The most attractive enhancements will be recommended.

Output 4.1.2: Improved sourcing of high-quality equipment at best cost for RE and EE installations

Activity 4.1.2.1: Conduct of assessments to improve the sourcing of equipment and components of RE mini-grids. This involves the conduct of the following:

- *Assessment of least cost sources of high-quality equipment, including panels, inverters, batteries, and cabling of various sizes needed.* This assessment will consider international best prices for desired equipment and look at prices for sourcing equipment in the Pacific Region for Kiribati. It will determine the preferred sources of equipment for Kiribati outer island mini-grid development via desk work and communication with potential suppliers. A list of priority suppliers with explanations of why they were chosen will be provided.
- *Assessment of option of containerized PV power station solutions.* This activity involves research on containerized options and comparison of prices and quality achievable to the cost of non-containerized approaches. It includes the evaluation of benefits of containerized approaches and the possibility of mechanisms (and their associated costs) for getting containers onshore for outer islands that lack adequate port facilities. An assessment report will be prepared with listing of containerized PV power station suppliers and their prices.
- *Outreach to potential suppliers to ensure that high quality best cost suppliers bid on requests for proposals for PV mini-grid equipment in the competitive bidding to be carried out for the project*

mini-grid demos under Activity 4.2.1A.1. This involves preparation of a report on feedback from consulted suppliers and recommended follow up to ensure they participate in bidding.

Activity 4.1.2.2: Conduct of assessments to improve the sourcing of SHSs. This involves desk work on the following:

- *Assessment of quality of components required and identification of best sourcing channels for quality SHSs at lowest price.* This involves formulation of recommended minimum specifications and listing of sourcing channels that provide desired quality of equipment at best price. The list will be made publicly available. Mentoring/ coaching on sourcing will be provided, if requested, to top providers of retail solar home systems in Kiribati, including the private companies Taotian Trading, Triple T, and Value City and, when restructured, the for-profit arm of state-owned KSEC.
- *Assessment of the SHS parts needed to be held in inventory on the outer islands to facilitate timely repair in an economically sustainable fashion.* This involves an evaluation of the needs presented by existing stock of SHSs on the outer islands, as well as by the new types of SHSs as determined in the previous assessment. The evaluation findings will be provided to EPU and island councils and feed into institutional plans for outer island spare parts inventory that are developed under Activity 2.3.3.

Activity 4.1.2.3: Identification of quality best price sourcing channels for RE/EE for water for agriculture system of the type determined in the technical analysis of 4.1.1.2. This involves determination of required specifications and sources of product on the international market; conduct of research on prices and quality to determine the best sources; direct liaison with suppliers; and encouraging preferred suppliers to bid or partner with bidders on relevant project demos.

*Activity 4.1.2.4: Identification of energy efficient and reliable models of key productive use equipment and determination of high quality, cost effective sourcing channels for each.*²⁶ The equipment will likely include: freezers, ice makers, cold houses, refrigerators, coconut processing equipment, and, possibly, fans and air conditioners (such as for hotels), etc. The activity involves: determination of equipment of interest, spare parts and materials that may need to be kept on hand to facilitate repair of productive use equipment, and whether solar DC freezers and DC refrigerators would be more economic than AC ones or vice versa; research and analysis of sources; provision of listings of priority sources with explanations of why they were prioritized; and dissemination of findings to potential outer island buyers.

Activity 4.1.2.5: Identification of high-quality best price sourcing options for air conditioners, LED lights, and other retrofits that are recommended by the SKH energy audit (Activity 4.1.1.4). This activity involves research of sources, liaison with sources, and provision of listing and explanation of recommended sources.

Activity 4.1.2.6: Identification of high-quality best price sourcing options for EE enhancements to South Tarawa OTEC project as recommended by assessment of Activity 4.1.1.5. This activity involves determination of list of equipment needed and potential sources, research of quality and prices of sources, and making of recommendations of best sources.

Output 4.1.3: Completed designs and implementation plans of demo projects on sustainable energy and low carbon technology applications in the outer islands

Activity 4.1.3.1.1: Design of demo PV mini-grids with battery storage and plans for O&M and fee collection; preparation of installation procedures and provision of remote guidance on installation. This activity involves survey work to determine configuration, design, planning, and installation guidance for

²⁶ Purchasers may apply for a partial grant under Activity 3.3.1.2 to support their purchase of such equipment.

15 PV mini-grids across 11 outer islands to be installed under Activity 4.2.1A.1.²⁷ This work will build on RE mini-grid training conducted under Activity 1.1.2.1.

Activity 4.1.3.1.2: Preparation of the Environmental and Social Management Plan (ESMP) for the 15 PV mini-grids of Activity 4.1.3.1.1. This includes limited environmental and social assessments for each site and both demo-wide and site-specific mitigation measures for addressing identified risks. It will be required that the general mitigation measures and the specific respective mitigation measures be adopted (or included in implementation plans) before the relevant demo can begin. The ESMP work of this activity will be combined with the work of Activity 4.1.3.3.2 to form the project's overall ESMP.

Activity 4.1.3.2: Development of business plans for high potential productive uses at demo RE mini-grids. Areas include coconut value chain processing (mini-copra mill, virgin coconut oil processing, coconut wood sawmill, coir/husk processing, coconut wood based charcoal if assessed to reduce net energy use), fish chilling, expansion of agriculture via water provision and cold storage, food processing, etc.²⁸ The activity involves: liaising with island councils of the demo mini-grid islands; identifying the resources and interests of each demo island; identifying the parties that may develop the productive uses; and site visits and follow up liaison (email, phone, etc.) to assist these parties in developing simple business plans with investment requirements, market channels, and projected revenues and profits. As part of this activity, special sessions will be arranged for women in each village visited to empower them to start productive use businesses and leverage the business plan technical support being provided.

Activity 4.1.3.3: Design of projects for RE and EE in support of water provision; preparation of installation procedures and provision of remote guidance on installation. This will cover the following:

- *Design of South Tarawa Solar PV RO Desalination Water Supply Project.* Activity involves site visits and surveys in South Tarawa as well as desk work.
- *Design of PV RO Desalination Water Supply Project for Vulnerable Outer Island Communities.* Activity involves site visits to and surveys on the four targeted outer island islets as well as desk work.
- *Design of demos of RE and EE in support of water supply for agriculture (with technology as determined in Activity 4.1.1.2).*²⁹ The design will include both technical aspects and business aspects. The latter will include a payment system for the water. This work will build on training carried out under Activity 1.1.2.1 for RE/EE for water for agriculture systems.
- *Preparation of ESMP for the RE and EE for water for agriculture demos.*

Activity 4.1.3.4: Design of EE enhancements for the baseline South Tarawa OTEC project as recommended by Activity 4.1.1.5: This involves survey of the proposed site and preparation of the design, including detailed written explanations of decisions made.

Activity 4.1.3.5: Preparation of review of status and feasibility study for rehabilitation of outer island PV mini-grids at boarding schools and of SHSs at outer island main health clinics. The review involves site visits, evaluation of current performance, identification of needs, and assessment of cost effectiveness of rehabilitation and EE options. The feasibility study entails preparation of rehabilitation plans, identification of equipment required, and budgeting. In the case of the boarding schools, rehabilitation

²⁷ An international expert will mentor the design team, working with team members from EPU, KSEC, and the private sector in preparing designs for the 15 mini-grids. For smaller mini-grids up to 25 kW or so, EPU already has experience independently designing mini-grids. So, for such smaller systems, the international expert may focus on best practice and improving technique. For larger systems, the international expert will need to more comprehensively lead design efforts.

²⁸ There are strong advantages to milling the copra onsite on the outer islands into coconut oil, as coconut oil has a much longer shelf life than coconuts/ copra. Further, in this way, the waste, the coconut shells, can be recycled on the outer island to be used as pig/ animal feed, compost, fuel, etc.

²⁹ Design will be led by an international consultant working with EPU, Water Department members, Department of Agriculture, and the private sector, so that they can learn by doing.

and EE enhancement plans will be submitted to GOK and partners for funding. In the case of the main health clinics, plans may call either for connecting these health clinics to newly available mini-grids or for rehabilitating their SHSs, depending on findings of the analysis.

Output 4.1.4: Published energy performance and impact assessment reports of implemented demo projects

Activity 4.1.4.1: Preparation of periodic monitoring reports on POIDIER outer island RE mini-grid demos. This involves preparation of suggested outline for information and template for data to be included in the reports, collection of needed information and data by mini-grid operators and island council staff, analysis of data and information, and report preparation.

Activity 4.1.4.2: Preparation of periodic monitoring reports on POIDIER outer island RE and EE for water provision for agriculture demos. This involves preparation of suggested outline for information and template for data to be included in the reports, collection of needed information and data by RE and EE for water for agriculture operators and island council staff, analysis of data and information, and report preparation.

Activity 4.1.4.3: Preparation of periodic monitoring reports on the adoption of EE cook stoves in the outer islands. This involves preparation of outline for requested information, template for data, and brief survey on EE cook stove use, wood savings, and satisfaction; collection of requested information and data and carrying out of survey by island council members; analysis; and report preparation.

Output 4.1.5: Completed design and implementation plans for the replication and/or scale up of demonstrated sustainable energy and low carbon energy projects.

Activity 4.1.5.1: Preparation of standard/ template technical designs and operational plans that can be used in the wide-spread replication of project mini-grid demos and of project demos of use of RE and EE for provision of water for agriculture. These designs will draw on learnings from the project demos. For each type of demo, some different scales and configurations that can represent the main sub-types of each demo will be determined and a standard design prepared for each.

Activity 4.1.5.2: Identification of priority sites and preparation of detailed design and implementation plans for replication PV mini-grids and RE and EE for water for agriculture systems. Site identification will draw from results of Activity 2.4.1 and design will build on templates of Activity 4.1.5.1. This activity will also include outreach to potential investors (both private sector and donors) to let them know of the priority sites that have been selected and the designs that have been prepared.

Outcome 4.2. Enhanced confidence in the viability of sustainable energy and low carbon technology projects

Output 4.2.1: Completed and operational sustainable energy and low carbon technology application demonstrations in pilot on-grid and off-grid communities

Output 4.2.1A: Completed Kiribati Outer Island RE Mini-Grid Program (Phase 1)

Activity 4.2.1A.1: Sub-Program for Productive Use and Revenue Generating Outer Island RE Mini-Grids: Installation and sustainable operation of new PV mini-grids, all with battery storage and a few with wind, on the outer islands of: Tab North, Abaiang, Butaritari, Nikunau, Arorae, Makin, Tamana, Nonouti, Marakei, Tabuaeran, and Teeraina. Making use of the sourcing work and the liaison with potential

bidders under Activity 4.1.2.1, international competitive bidding for procurement of mini-grid equipment will be carried out. Installation will be carried followed by mini-grid operation and collection of user payments.³⁰

Output 4.2.1B: Completed Kiribati RE and EE for Water Program (Phase 1)

Activity 4.2.1B.1: Sub-Program for PV Desalination for Water Supply on South Tarawa: Installation and operation of reverse osmosis used with solar PV power to desalinate water for South Tarawa. Installation of the desalination equipment and PV power station will be followed by operation and billing for water supplied.

Activity 4.2.1B.2: Sub-Program for PV Desalination for Selected Vulnerable Outer Island Communities: Installation and operation of reverse osmosis technology used with PV power to desalinate water on four islets off outer islands that lack enough fresh water. Installation of desalination equipment and PV power system will be followed by operation. Based on consultations, billing for water to ensure sustainability may also be carried out.

Activity 4.2.1B.3: Sub-Program for Demonstrating RE and EE for Agricultural Water Supply on Outer Islands: Installation and operation of RE and EE based water supply system for agriculture: System type will be that determined by Activity 4.1.1.2. In addition to such RE and EE based equipment, the Sub-Program will include efficiency enhancements of the water provision system, the water distribution system, and the water use itself (e.g. such as through drip irrigation targeted at the roots of plants). Making use of the sourcing work and the liaison with potential bidders of Activity 4.1.2.3, international competitive bidding for procurement of the systems will be carried out. The systems will be installed and, then, operation and billing carried out.³¹

Output 4.2.1C: Completed Kiribati Ocean Thermal Energy Program (Phase 1)

Activity 4.2.1C.1: Implementation of Ocean Thermal Energy Conversion Program. This program will involve the construction and operation of a 1 MW Ocean Thermal Energy Conversion (OTEC) plant for South Tarawa.

Output 4.2.1D: Completed Kiribati Outer Island Productive Uses of RE Program (Phase 1)

Activity 4.2.1D.1: Sub-Program for Coconut-Related Outer Island Productive Use of RE and EE: The setting up of coconut related processing facilities on the outer islands that make use of RE mini-grid provided power and EE measures. The types of processing will include copra mini-mill, virgin coconut oil processing, coconut tree wood lumber mill, and coir (husk) processing.³²

³⁰ Installation will be carried out by teams that have a mix of members drawn from EPU, KSEC, and the private sector and include the two outer island mini-grid technicians from the respective island. The team will be guided remotely in installation by the international design and installation expert of Activity 4.1.3.1.1. They will also have the support of volunteer youth workers from the respective outer islands. The two outer island mini-grid technicians will operate the mini-grid and collect user payments.

³¹ Installation will be carried out on the outer islands by teams that have a mix of members drawn from EPU, the Water Department, and the private sector and will include two outer islands RE and EE for water for agriculture system technicians from the respective island. The team will be guided remotely in installation by international design experts to be deployed under Activity 4.1.3.3. They will also have the support of volunteer youth workers from the respective outer island. The two outer island water for agriculture system technicians will then operate the system and collect user payments. Sites likely to include one on Abaiang and one on Tab North.

³² Kiribati Coconut, Ltd., as well as, potentially, private sector companies, will carry out this work on demo mini-grid islands that they have prioritized for coconut development, likely Nonouti and Tab North.

Activity 4.2.ID.2: Sub-Program for Fish-Related Outer Island Productive Use of RE and EE: The setting up of equipment related to the fish industry that makes use of RE mini-grid provided power and other RE or EE options. Under this sub-program, the purchase, installation, and operation will be undertaken for the following: ice-makers and specialized cooling containers to chill and preserve fish before transport to Kiribati Fish Limited (KFL) on Tarawa; freezers to freeze fish and other food stuffs; relevant equipment for and start-up and/or expansion of fish processing activities on the outer islands.³³

Activity 4.2.ID.3: Sub-Program for Agriculture-Related Outer Island Productive Use of RE and EE: The setting up of equipment related to agricultural products that makes use of RE mini-grid provided power and other RE or EE options. Under this sub-program, purchase, installation, and operation of the following will be undertaken: Cold storage rooms and refrigerators for agricultural produce and relevant equipment for processing of agricultural produce. The latter may include equipment for fruit or root crop chip making and packaging on Butaritari (e.g. banana chips) and Abaiang (e.g. breadfruit chips), grinding and packaging root crop staples, etc.³⁴

Output 4.2.1E: Completed Outer Island EE Cook Stove Program

Activity 4.2.1E.1: Sale and use of EE fuel-wood based cook stoves on the outer islands. This will follow on: (i) efforts under Activity 4.1.1.3 to develop suitable models for Kiribati that can be made in Kiribati; (ii) training of local artisans in the fabrication of such EE cook stoves under Activity 1.1.2.4; and (iii) the road show under Activity 1.1.3.1 (and related work under Activities 1.1.3.2, 1.1.3.3, and 1.1.3.4) to promote purchase and use of such stoves in the outer islands. EE cook stove artisan-entrepreneurs will work to increase the sale of EE cook stoves on the outer islands, supported by EPU and Island Councils. Local people who purchase the stoves will operate them.

Output 4.2.1F: Completed SKH EE Upgrade Program

Activity 4.2.1F: EE retrofitting of SKH. Based on the findings of the energy audit (Activity 4.1.1.4) and the sourcing work of Activity 4.1.2.5, relevant equipment will be procured and installed.

³³ Purchase, installation, and operation of equipment will be carried out by entrepreneurs, island councils, and/or cooperatives on demo outer islands, potentially with support of one of the funds under Output 3.3.

³⁴ Purchase, installation, and operation of equipment will be carried out by entrepreneurs, island councils, and/or cooperatives, potentially with support of one of the funds under Output 3.3.

ii. Partnerships:

Project Partner	Relevant Work and Planned or Ongoing Initiatives (donor)	How Project Will Work with Partner and/or How Partner's Results will be Critical for Achievement of POIDIER Results
1. Energy Planning Unit (EPU)/ Ministry of Infrastructure and Sustainable Energy (MISE) and Water Department/ MISE	(i) PV mini-grids in Line Islands (EU); (ii) South Tarawa RO PV Desalination (ADB/WB/GCF); (iii) Vulnerable Islets RO PV Desalination (Italy); (iv) Ocean Thermal Energy Conversion – “OTEC” (S. Korea)	-EPU/MISE is POIDIER Implementing Partner -EPU permanent staff will work closely with full-time project staff across all components of POIDIER. EPU team members will be directly involved in POIDIER demo design and installation (building on (i) and EPU's previous mini-grid experience) as well as policy formulation. -PMU will be based in EPU offices -POIDIER RE/EE for water for agriculture demo will coordinate with both EPU and Dep. of Water and build on learnings of (ii) and (iii) -POIDIER will build on (iv)'s successful installation by providing design for EE enhancements to OTEC
2. Ministry of Environment, Lands, and Agricultural Development (MELAD) – Dept. of Agriculture and Dept. of Lands	(i) Kiribati Outer Island Food and Water Project (KOIFAWP) – Phase 2	-Kiribati's GEF Operational and Political Focal Points are based in MELAD and, as such, will coordinate ministries for POIDIER participation -POIDIER's RE/EE for water for agriculture and its agriculture related productive use activities (e.g. cold houses, food processing, food packaging, etc.) will build on (i)'s efforts and Dept. of Agriculture's efforts generally to promote food crop growing on selected outer islands -POIDIER will coordinate with Dept. of Lands as needed for advice on siting mini-grid systems on state lands and on dealing with land issues related to roadside power lines
3. Ministry of Fisheries and Marine Resource Development (MFMRD)	Work to promote fishing industry on outer islands; upkeep and improvement of fish centers (one per outer island)	-POIDIER will work with MFMRD to bring fish related productive uses to outer islands that excel in fish industry development, especially smaller stand-outs, such as Arorae, Makin, and Tamana. As relevant, POIDIER RE mini-grids may provide additional power capacity to nearby fish centers. They may also support chilling, processing, and sealing equipment.
4. Kiribati Fish Limited (KFL)	Ongoing distribution of fresh fish to global markets; and (i) Expansion of fish processing capacity on S. Tarawa, (ii) Set up of fish processing facility on Christmas Island	-KFL's distribution of fresh fish to global markets and its increased processing capacity mean that it could absorb a large supply of fresh fish from the outer islands if only such a supply were available. POIDIER will work to leverage this demand via productive uses that will keep outer island fish catch chilled prior to transport to KFL on S. Tarawa.
5. Kiribati Coconut	Plans for coconut-related processing on outer islands	-POIDIER will work to integrate mini-grid siting with Kiribati Coconut planned outer island processing siting near coconut sheds/ wharfs, as part of long-term agreement for power off-take
6. Development Bank of Kiribati (DBK)	Management of micro-credit/ Rural Support Loans supporting income-generating activities	-POIDIER work in the design, implementation, and promotion/ support work for POIDIER outer island productive use grant fund will benefit from Rural Support Loan experience of DBK and cooperation with DBK.
7. Ministry of Line and Phoenix Island Development (MLPID)	Promoting development in the outer Line Islands	-Planned establishment of POIDIER PV mini-grids in Tabuaeran and Teeraina, the two inhabited outer Line Islands, will depend on support and coordination of MLPID, which is responsible for the provision of utilities in the Line and Phoenix Islands. MLPID

		coordination and input will also be important in promoting productive uses at these mini-grids.
8. Kiribati Solar Energy Company (KSEC)	(i) rural renewable energy work on outer islands under Least Cost Energy Plan Implementation (New Zealand)	-POIDIER institutional work will provide recommended restructuring of KSEC vis-à-vis EPU, separating government and business/ market functions. -POIDIER RE mini-grid work on the outer islands will be coordinated with (i) -Along with private sector companies, KSEC is likely to bid on concessionaire opportunities to operate POIDIER financed outer island RE mini-grids KSEC will also assist EPU/MISE in project management in the technical requirements of project management such as in the development of terms of reference for technical inputs to the project and in the review of outputs of technical activities of the project.
9. Ministry of Health (MOH)	Overseeing nation's hospital and healthcare system	-POIDIER will provide PV mini-grid system to Kiribati Southern Hospital (SKH), a regional hospital on Tab North, pending MOH confirmation that it will bring surgeons to the hospital and upgrade equipment. -POIDIER will also provide energy audit for SKH, to be followed up with EE equipment purchase/ installation by MOH.
10. Ministry of Finance and Economic Development (MFED)	Overseeing nation's public finance and taxation systems	-POIDIER will liaise with MFED in the project's promotion of economic incentive policies to promote RE and EE. These may include VAT-free imports of relevant equipment and tax holidays for investors and/or concessionaries operating RE mini-grids on the outer islands Under the MFED is the Kiribati Fiduciary Services Unit (KFSU), which is the central unit for providing fiduciary support to all World Bank-financed projects. The KFSU will assist EPU/MISE in the management of all finance- and procurement-related services required in the implementation of the POIDIER Project
11. Ministry of Internal Affairs (MIA): Rural Development Division and Local Government Division	Overseeing rural development on all islands except Phoenix and Line Islands; (i) Outer Island Priority Projects	-POIDIER will work with MIA in the project's capacity building for and outreach to island councils and in the development (by island councils) of all-island energy plans for each outer island -POIDIER will work with MIA in promoting productive uses at POIDIER RE mini-grids and aim to create productive use related synergies with the next round of Outer Island Priority projects
12. Ministry of Commerce, Industry, and Cooperatives (MCIC): Cooperative Promotion Division	Promoting cooperatives on outer islands, visiting 10 outer islands per year	-POIDIER will work to coordinate outer island resident outreach work with MCIC's cooperative outreach work on ten outer islands annually
13. Office of the President (OB)	(i) UNDP-GEF Climate Change Adaptation Project	POIDIER will aim to integrate with and build on agriculture aspects of (i) via POIDIER's RE/EE for water for agriculture work and its work in productive uses of RE power that may support agriculture (e.g. cold room, processing, etc.)

iii. Risks and Assumptions:

The risks that might prevent the project objectives from being achieved are listed below, along with associated mitigation actions. Assumptions are simply the reverse of the listed risks. For example, the

assumption associated with “inadequate local capacity...” is “adequate local capacity...” Thus, assumptions are not listed, but implied in the respective risk statements.

Risk	Mitigation Actions
1. Inadequate local capacity leads to lack of national experts to fill national roles, lack of personnel to operate demos, and lack of effective project management, resulting in delay in the implementation, and even non-implementation of some project activities	<p>Preventive: Project will engage project team of 4 full-time staff, at least 2 of which will be actively engaged in national expert roles most of the time, thus addressing the challenge of recruiting qualified national consultants for part-time roles in Kiribati. This substantial project team of 4 will facilitate strong project management. Project will provide training to a select group of persons from the outer islands so that they can serve as operators for the RE mini-grids. GOK will have the option of requesting UNDP Pacific Office support.</p> <p>Alleviative: If local capacity remains inadequate, the UNDP PO will manage and expedite the procurement of external personnel who will work on the affected project activities. If need be, the affected activities may have to be modified to allow expeditious implementation and completion.</p>
2. Delayed actions by EPU/MISE to improve the current processes/ systems and significantly reduce the overall risk of working with UNDP, resulting in the delay in project start-up and a change in implementation modality.	<p>Overall, the risk assessment of the EPU/MISE’s programme, financial and operations management policies, procedures, systems and internal controls about cash transfers is found to be of significant risk to UNDP. For each subject area, the risk assessment findings are as follows: (1) implementing partner – moderate; (2) programme management – high; (3) organizational structure and staffing – significant; (4) accounting policies and procedures – significant; (5) fixed assets and inventory – high; (6) financial reporting and monitoring – significant; and (7) procurement – high.</p> <p>Preventive: EPU/MISE agrees that its processes and systems are improved, per the findings of micro-HACT assessment and made operational before undertaking any substantive project activities.</p> <p>Alleviative: The project will be implemented by EPU/MISE with the support of KFSU and KSEC until EPU/MISE improves the current processes and systems resulting in significantly reduced risks.</p>
3. Outer island communities may not support the project implementation promptly and sufficiently, such that volunteer labor does not materialize, systems are vandalized, or there is a lack of interest in use of the power and cook stoves made available	<p>Preventive: Project includes strong outreach via road show and other modes for outreach to outer island communities, as well as outreach to island councils to ensure their support. Liaison by capable project team of 4 persons will further ensure support. Integration of productive use income generation opportunities will increase community interest in systems.</p> <p>Alleviative: If the project partners in the outer islands become remiss in their obligations and commitments to the project implementation, follow-up discussions between MISE/EPU, relevant island council leaders, and GoK agencies will be carried out to determine and resolve any issue.</p>
4. The committed level of co-financing for specific activities of the project is not enough or may not become fully available in time.	<p>Preventive: During project implementation, the project team will closely monitor and ensure the timely availability of co-financing from project partners and co-financers. The project team shall secure government assurance of co-funding prior to project launching and periodically brief the government on the important mission and unique features of the project, which tie it to the broader mandate of economic development of the outer islands.</p> <p>Alleviative: In case this problem will occur, the reallocation of budget will be done to support the implementation of affected activities. This may entail the delivery of alternative outputs that are still contributing 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>
5. Relevant GoK agencies fail to approve and enforce formulated policies and regulations	<p>Preventive: Advocacy to gain adequate support from the Cabinet on the adoption of the formulated policies and regulations will be carried out as a part of project activities and by the implementing partners, with the assistance of UNDP if necessary.</p> <p>Alleviative: In case this happens, MISE/EPU will facilitate discussions with</p>

	project stakeholders and relevant government authorities through the project steering committee (PSC) to come up with decisions on expediting the approval, or reformulation, of the recommended policies/regulations.
6. The outcomes and benefits of GEF investment on the activities implemented will not be fully sustained.	Preventive: The project directly addresses financial sustainability of outer island RE mini-grids by introducing billing systems and requirements to set aside funds for parts and repairs. Capacity building, involvement of the private sector, policy initiatives, design of replication projects, and outreach to potential financiers are included in POIDIER design to ensure that local capabilities are developed for the long-term and that there is a basis in place to expand upon project results. Alleviative: In case, despite the measures, sustainability of project outcomes and benefits is seen to be in jeopardy, MISE/EPU, the project team, and the project steering committee will meet to come up with alternative measures to ensure sustainability.
7. Adverse climate-related events may hamper the implementation of hardware-related activities.	Preventive: Assessments for the ESMP will include recommended measures for addressing adverse events via site selection, design (e.g. detachable panels), and operational procedures (e.g. detaching panels in case of major event). Following proper engineering and construction design and construction that ensure not only structural integrity but also climate resilience will be adequately applied in the design and implementation of major EE/RE activities that will involve procurement, design/engineering, installation and operation of EE & RE technology system installations ³⁵ . Alleviative: In case this happens, pre-cautionary and safety procedures will be put in place to at least minimize impacts of gale force winds, which often happen during typhoons in the Northern Pacific.
8. Change in national government administration may influence government support for project	Preventive: Project demonstration approach to show technical and cost viability, as well as income generation benefits of RE/EE, will be periodically promoted to government. Island council leaders, MISE/EPU, MLPID, MELAD, MIA, and other government agencies involved in the project will monitor political dynamics and will try to resolve any misunderstanding. If need be, UNDP executive management intervention may be called upon to assist. Alleviative: PSC meetings and special meetings with MISE/EPU and MELAD will be conducted in case this is happening, mainly to discuss courses of action to take to sustain the national government's and island councils' support to the project and carry out such plans accordingly.
9. Regular access to outer islands is limited and transportation costs are often prohibitive	Preventive: POIDIER integrates outer island activities so that multiple targets may be achieved in one visit by one team. For example, a RE mini-grid installation team of 3 persons, during its installation visit, will also take time to conduct a roadshow to villages across the island (promoting, among other things, EE cook stoves) and work with the island council on its all-island energy plan. To further reduce costs, project will carry out joint outer island missions with other donor projects and other government initiatives, if possible. Alleviative: If this becomes a constraint, outer island trips will be limited to critical/essential ones. More extensive use of information technology and social media for project progress updates and monitoring will be resorted to.
10. Low oil prices will reduce interest in RE-based power generation	Preventive: The project's awareness raising activities will 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 by highlighting the multiple benefits of such systems. Alleviative: In case oil prices further weaken, the project will emphasize the need to take advantage of the energy, environment, and economic benefits of RE, and the country's obligation towards the realization of its climate change mitigation

³⁵ 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 region.

	targets in the KIER and its NDC to ensure that the interest of the government in low carbon development is sustained
11. PV system parts will be abandoned after their useful lifetime.	Preventive: Environmental and social assessment for the demos will assess how to deal with disposal/ recycling once a product's useful lifetime ends. Alleviative: In case, despite the environmental and social assessment, PV system parts are abandoned, MELAD, MISE, and relevant Island Councils will liaise and cooperate to develop and enforce measures to address the pollution.
12. Project will reinforce ongoing problems in Kiribati outer islands of lack of opportunity for women and other marginalized groups.	Preventive: Project will require that certain targets are met in terms of the participation of women and marginalized groups in decision-making and will also require that at least half of funds for productive uses are allocated to initiatives mainly involving women. Alleviative: In case women are not benefiting equally from the project, a gender committee will be set up to advise the Project Board on incorporating additional measures and additional indicators to ensure the project provides substantial benefits to women.
13. Demos will be established on lands of indigenous people against their will.	Preventive: Project will pursue installations on state-owned land, as discussed with MELAD's Dept. of Lands. Project will carry out FPIC (Free Prior and Informed Consent) processes to ensure that proper consultation and agreement of indigenous people occurs before any demos are established. Further, project, working with EPU, will institute a process for reporting grievances. Alleviative: EPU will work with the relevant Island Councils to follow up promptly on any grievances reported to ensure that demos are not installed on the lands of indigenous people against their will and that the borders of state land utilized (such as roadside land) are explained clearly to all involved.
14. Unsuccessful productive use initiatives will result in lack of expected income generation.	Preventive: Project will develop coordination between EPU and departments and companies in the productive sectors to identify promising productive uses in various locations. Project will have specific activities to assist outer island people in determining best productive uses. Business advising will ensure that products have a good potential market and that business plans are viable. Alleviative: In case this happens, some of the business advising TA to be provided by the project to outer island peoples for starting up productive use initiatives can be shifted to addressing the problems with unsuccessful productive use businesses after launch.
15. Lack of capacity of EPU-MISE in promotion will result in lack of knowledge across the country about fair prices and preferred sourcing channels for RE systems, successes with the RE demos, and the availability and benefits of EE cook stoves.	Preventive: Project allocates specific funds for awareness raising to mitigate this risk. For fair prices and preferred sourcing channels for SHSs and for the availability and benefits of EE cook stoves, outreach to outer island residents includes a road show on each of the 11 demo outer islands, radio shows, brochures, and social media. For mini-grids, knowledge products associated with the success of the demos and preferred sourcing channels will be promoted via project's information exchange network. Briefings with financial analysis of mini-grid investments will be distributed via outreach to potential investors. EPU direct involvement in the foregoing project outreach work will serve as an opportunity in learning-by-doing, through which the organization will build important promotional skills that it can then continue after project close. Alleviative: In case lack of knowledge persists, despite the preventive plan, the KSFU will manage and expedite the procurement of an international communications expert to engage in awareness promotion and knowledge building. If need be, the affected activities may have to be modified to allow for this change in approach.

iv. Stakeholder Engagement Plan:

Key project stakeholders and strategies for engaging them are given below. Please also see project partners in the sub-section above. Each project partner is also considered an important stakeholder of the project, but to avoid repetition, is not listed again here.

- **Outer island villagers and indigenous people:** The project will put special emphasis on engagement of outer island villagers, many of whom are indigenous peoples. It will do this through its awareness raising campaign and its outreach to these people to support them in generating income from productive uses of RE. In addition, the project will conduct limited environmental and social impact assessments at each of the 17 incremental demo sites as part of its ESMP, including in-depth consultation with local people and FPIC for indigenous peoples.
- **Women:** The project will put special emphasis on engaging women in productive uses of RE and in becoming trained as “solar mamas” in the installation and repair of SHSs.
- **Other marginalized groups in the villages:** The project will ensure such groups are involved in community decision making meetings and are prioritized for opportunities with project productive use funds and, if viable, opportunities for operator roles.
- **Island Councils:** POIDIER will engage island council personnel in capacity building and support them in preparing all-island energy plans for their respective islands.
- **Private sector technical and equipment companies:** Such firms will be invited to be involved in the project both as learners in technical training programs and design/ installation work and as bidders for concessionaire opportunities to operate installed mini-grids at a profit.
- **Private sector equity investors:** Project will reach out to private sector entities that are potential equity investors in RE and EE projects, providing them with information on the potential payback and financial sustainability of such investments, as well as on specific replication projects.
- **Local business persons on the islands and in villages:** The project will reach out to such persons about pursuing businesses in the area of productive use of RE and EE and help them apply for grants, if relevant.
- **Engineers / high level technical persons:** The project will invite such person to participate in its high-level trainings and learning-by-doing design/ installation of project demos.
- **Outer island technical personnel:** The project will identify two such persons from each of the 11 demo outer islands to be trained for maintenance and operation of the project demos.
- **Artisans/ potential artisans:** The project will train 15 such persons in the fabrication of EE cook stoves. Those that master required skills and show strong interest in taking up this trade will be provided by the project with the necessary tools and equipment for EE cook stove fabrication.
- **Local NGOs:** The project will invite various NGOs to the project inception workshop and from there determine their interest in participation in various project activities.
- **Other Countries:** Learnings of POIDIER will be shared with other countries in the Pacific via the project’s information exchange network.

v. Gender Equality and Empowering Women:

Main elements of POIDIER’s Gender Action Plan are as follows:

- The project will give special emphasis to productive uses of RE and EE that benefit women.
 - The project has decided to make the links between RE/ EE and agriculture a key focus area, even though agriculture, unlike coconuts and fishing, is not that developed in Kiribati’s outer islands. This is because agriculture is an area primarily being developed by women; and new initiatives in agriculture thus represent potential increased income for women.
 - The project’s focus on EE cook stoves will disproportionately benefit women, as women are more involved in fuel wood collection than men and more involved in cooking. Reduced fuel wood consumption will reduce the time that women spend collecting fuel wood. Further, reduced smoke from EE cook stoves, as compared to open hearth fire, will have health benefits for women and children who spend a lot of time by the fire.

- Through its Solar Mama Capacity Building Program, POIDIER will train outer island women to source, install, and repair solar home systems. About 40 outer island women will be trained. Solar Mama programs in other countries have shown that middle-aged women are a good training investment, as they tend to stay in their rural areas, rather than leave for the “big city,” as many young men do.
- Four project activities will include gender empowerment related sub-activities: (1) Activity 1.1.2.2, which is technical training for outer island personnel that will be operating the RE mini-grid demos and RE for water for agriculture demos, will have at least 30 percent women trainees. A women’s empowerment session will be included for these trainees. This approach will ensure that women play a significant role in operating the demonstrations that are installed. (2) The Solar Mama training of Activity 1.1.2.3 will also include women’s empowerment sessions. (3) Activity 1.1.3.1, which will be an outer island road show to promote RE and EE, will include a special women’s session in each village visited to empower women to leverage POIDIER activities to their benefit. (4) Activity 4.1.3.2, which is technical assistance in business planning for productive uses of RE, will include special women’s empowerment sessions that will explain to women how they can leverage the business planning assistance of the project.
- Certain project indicators are disaggregated by gender to ensure that women benefit. For example, the project targets that 50 percent of those outer island persons leading businesses that benefit from project grants for productive use of RE are women.
- A priority will be put on ensuring that women benefit from contract opportunities associated with project implementation, such that 30 percent of total person-days in individual consulting contracts are carried out by women.

vi. South-South and Triangular Cooperation (SSTrC):

Kiribati shares characteristics with some other Pacific Island nations when it comes to promoting RE and EE. These include: (1) the challenges of sourcing and the very high costs, relative to international best prices, for quality RE and EE equipment; (2) dispersed population on small islands; (3) lack of financial sustainability of installed RE systems to date; and (4) limited technical capacity for maintaining systems. Thus, POIDIER will support the sharing of experience gained and materials developed with other Pacific Island nations via its information exchange network (Output 1.2). UNDP Pacific Office (UNDP PO) will spearhead liaison work to ensure relevant parties in the region know about POIDIER and this network.

vii. Sustainability and Scaling Up:

The project adopts the following features to ensure sustainability:

- Carrying out of activities that build on relevant national systems to have long-term impact on policy, institutional framework, and planning. The project will develop: (i) key policies to promote RE and EE, (ii) an improved institutional framework for the energy sector, and (iii) an improved and expanded outer island section of the nation’s energy plan (KIER).
- Development of custom-made software that will give EPU a “dashboard” to review the status of outer island energy systems. With this dashboard, EPU will better be able to fulfill its duty to monitor and regulate organizations responsible for upkeep of such systems.
- Designation of mainly co-financed national personnel from EPU and companies (e.g. KSEC, Taotian Trading, Value City, and Triple T) to design and install RE systems (with guidance from an international expert, as needed)
- Training of national technical personnel in design and installation of RE and EE systems and of local operators in system operation and maintenance

- Development and demonstration of a new billing and concessionaire system for operating and maintaining RE mini-grids, along with promotion of productive uses to enhance revenues of such systems. Revenues can be used, in part, for costs associated with operations, maintenance, and parts.
- Achievement of national ownership by high level of consultation on key matters, such as energy sector institutional framework and concessionaire/ billing model for outer island RE mini-grids

The project adopts the following features to promote scaling up:

- Demonstration of technical and cost viability and financial sustainability of RE and EE systems that raises confidence
- Development of all-island energy plans focusing on RE and EE systems, with one such plan developed for each of the 20 outer islands
- Provision of briefings and spreadsheet models showing potential financial returns to up-front investment and long-term financial sustainability of systems
- Design of projects that replicate the project demos (“replication projects”)

V. PROJECT MANAGEMENT

i. Cost Efficiency and Effectiveness:

Aspects of the project's strategy that will promote cost efficiency are as follows:

- Sourcing work that will ensure high quality systems at international best prices and substantially reduce the very high costs that have to date been characteristic of RE systems installed in Kiribati
- Stimulation of replication of project demos via the proof concept and proof of costing provided by the demos and via project activities to design replication projects and reach out to investors
- Establishment of the first RE mini-grids in Kiribati's outer islands that bill for power and thus have the potential to use revenues for follow-up parts and maintenance, addressing the ongoing sustainability problems of such systems in Kiribati
- Leveraging of co-financing, including primary reliance on co-financed technical personnel to design and, along with outer island volunteers, install the project demos, with guidance as needed provided by a project-supported international expert

Aspects of the project's strategy that will promote effectiveness are as follows:

- Adoption of proven, multi-pronged barrier removal approach, with initiatives in each barrier removal category (capacity, policy, financing, technical and cost viability, and demonstration) synergizing with those in other categories
- Combination of RE and EE initiatives with outer island economic development, enhancing attractiveness of energy efforts to stakeholders and driving revenue generation to support those efforts
- Kiribati-specific design that considers key outer island resources, such as fish, coconuts, and agricultural potential, and emphasizes self-reliance, such as through a locally made EE cook stove model and local capabilities in design, installation, operation, and maintenance of RE and EE systems

ii. Project Management:

A Project Management Unit (PMU) will be established jointly by UNDP and MISE. The PMU will consist of four full-time personnel hired by and paid for by the project, as well as various EPU permanent staff making part-time contributions to the project as needed. The PMU's four full-time personnel will be: (1) the Project Manager, (2) the Project Demo and Technical Officer, (3) the Implementation and Monitoring Officer, and (4) The Finance and Administration Officer. In addition to their project management functions, the first three listed officers will take on substantial responsibility in implementation of various project activities as national experts. Their recruitment will thus take relevant capabilities into consideration. This approach is taken given the challenge of identifying suitable short-term experts in Kiribati and the strong need for national expertise to support the project with extended inputs over its four-year lifetime. The Project Demo and Technical Officer will take the lead in providing such services for Outcomes 4.1 and 4.2, while the Implementation and Monitoring Officer will take the lead in providing such services for Outcomes 1, 2, and 3. The PMU will work with various other personnel and experts and, in particular, with the following three teams: (1) Outer Island Technical Personnel, (2) Experts for Off-Grid RE Systems, and (3) Experts and Artisans for EE Cook Stoves. The PMU team will be located within the EPU-MISE office in Betio, South Tarawa, and benefit from shared resources in that office, such as IT support, telecom infrastructure, office furniture, meetings rooms, and vehicles. Via its location within the EPU-MISE office, the project will have logistic advantages in coordinating with several other projects in the sustainable energy and water fields that are also based in MISE's office.

iii. Agreement on Intellectual Property Rights and Use of Logo on the Project's Deliverables and Disclosure of Information:

To accord proper acknowledgement to the GEF for providing grant funding, the GEF logo will appear together with the UNDP logo on all promotional materials, other written materials like publications developed by the project, and project hardware. Any citation on publications regarding projects funded by the GEF will also accord proper acknowledgement to the GEF. Information will be disclosed in accordance with relevant policies notably the UNDP Disclosure Policy³⁶ and the GEF policy on public involvement³⁷.

³⁶ See http://www.undp.org/content/undp/en/home/operations/transparency/information_disclosurepolicy/

³⁷ See https://www.thegef.org/gef/policies_guidelines

VI. PROJECT RESULTS FRAMEWORK

This project will contribute to the following Sustainable Development Goal (s): SDG7 - Ensure access to affordable, reliable, sustainable and modern energy for all						
This project will contribute to the following country outcome included in the UNDAF/Country Programme Document: <i>UN Pacific Strategy 2018-2022</i> : Outcome 1 – Climate Change, Disaster Resilience and Environmental Protection; <i>UNDP Sub-Regional Programme Document 2018-2022</i> : Outcome 1 – By year 2022, people and ecosystems in the Pacific are more resilient to the impacts of climate change, climate variability and disasters; and environmental protection is strengthened.						
This project will be linked to the following output of the UNDP Strategic Plan: <i>Output 1.5.1</i> Solutions adopted to achieve universal access to clean, affordable and sustainable energy.						
Strategy	Objectively Verifiable Indicators	Baseline	Mid-term Target	End of Project Target	Means of Verification	Critical Assumptions
Project Goal: Reduced annual growth rate of GHG emissions in the energy sector of the country.	Cumulative tons of incremental GHG emission reductions from business as usual (tons CO ₂) ³⁸	0	9,618	58,049	EPU Outer Island Energy Monitoring Database; Project M&E Reports; demo monitoring reports (will use 1.513 tons CO ₂ per ton wood saved, 0.3 liters diesel per kWh, and 2.68 kg CO ₂ per liter diesel)	Continuous commitment, support & active participation of the national government in sustainable energy & low carbon development efforts in the energy and energy end-use sectors.
Project Objective: Enabling enhanced outer island development through the achievement of the renewable energy and energy efficiency targets of Kiribati	Incremental number of outer island households with increased level of energy access by at least 50% more kWh/day electricity or improved cooking conditions ³⁹	0	8,183 (with at least 20% woman-headed households)	12,274 (with at least 20% women headed households)	EPU Outer Island Energy Monitoring Database; demo monitoring reports (will compute average kWh available per day per HH in each mini-grid and compare to previous average available via HH systems)	Realization of committed co-financing from the national government in the implementation of project activities and monitoring systems
	Cumulative fossil fuel savings due to SE and LC technology projects implemented as influenced by the project interventions, toe ⁴⁰	0	1,924	11,667	EPU Outer Island Energy Monitoring Database; demo monitoring reports; project report on % fuel wood savings of tested stoves (will use wood LHV of 15.4 MJ/kg, and baseline level of 2,600 kg fuel wood/year/family)	
Outcome 1: Improved capacity of the residents, technical personnel, and local government officials on low carbon development in the outer islands	Number of individuals in Kiribati that become gainfully engaged in RE and EE technology-related activities and businesses. ⁴¹	0	20 (with at least 50% being women)	60 (with at least 50% being women)	Project report of survey of Activity 1.1.2.5; demo monitoring reports	Individuals have the needed capacity to utilize available information to carry out installation, maintenance, repair operation, design, and/or fabrication of systems
	Percent of island population in demo outer islands that understand	0	20%	80%	Project report of survey of Activity 1.1.3.5; demo monitoring reports	Outer island people amenable to spend time learning about

³⁸ Direct greenhouse gas emission reductions that are attributable to the incremental activities of the project. Methods used in developing these targets include corrections for incomplete combustion (black carbon).

³⁹ This is as compared to pre-project situation and, for electricity, includes access of household businesses to energy; and, for cooking, includes the adoption and use of EE cook stoves

⁴⁰ This will include diesel fuel use avoided by RE mini-grids and fuel wood saved via adoption of EE cook stoves. For wood, the LHV (Lower Heating Value, also called the Net Calorific Value, NCV) of 15.4 MJ/kg wood is used. This value was derived at https://www.engineeringtoolbox.com/fuels-higher-calorific-values-d_169.html.

⁴¹ This includes, but is not limited to, involvement in the operating, maintaining, repairing, designing, and/or installing off-grid rural RE power systems (RE mini-grids and/or SHSs) and in fabricating EE cook stoves as one of their main sources of income (accounting for at least one quarter of income).

	principles and benefits of LC development ⁴²					RE and EE
	No. of local private sector firms that can capably provide technical, engineering, maintenance, and billing services for SE and LC technology application projects	0	3	8	EPU Outer Island Monitoring Database; Project M&E reports; demo monitoring reports; information shared by private sector firms on their projects	Relevant entities will be fully cooperating in the sharing of data and information on their SE & LC technology application projects
Outcome 2: Effective enforcement of energy policies, regulations and implementation of improved institutional framework, programs, and projects on low carbon technology applications	Number of adopted and enforced policies and regulations that facilitate increased LC technology applications ⁴³	0	4	13	Government policy and regulatory documents (re adoption); Project M&E reports (re enforcement)	Full and continuous commitment and support of the national government in the implementation of RE and EE related energy regulations and policies
	Number of government departments and/or companies that develop and implement bilateral agreements with EPU on well-coordinated low carbon technology programs/projects for power and non-power applications	0	2	4	EPU documents; minutes of <i>Kiribati Outer Island Energy and Productive Use Working Committee</i> meetings; Project M&E reports	Departments and companies relevant to productive use or other aspects of RE/EE can allocate funds to outer island initiatives
	Number of outer islands that officially adopt and begin to implement whole-island RE and EE plans	0	10	20	EPU documents; island council approved documents; island council documents submitted to MIA; Project M&E reports	OI councils have needed human capacity and time to grasp needed concepts and skills for preparing whole island RE and EE plans
Outcome 3: Enhanced availability of, and access to, financing (including financial closure) and long-term financial sustainability for low carbon (RE and EE) projects in the energy supply and demand sectors	No. of financing schemes/mechanisms adopted by financial institutions for supporting climate resilient and low carbon development initiatives in the country	0	1	1	Records of institutions administering RE and EE specific financing mechanisms; Project M&E reports	Financial institutions have the capability and safeguards in place to conduct financing business in the outer islands
	Number of outer island businesses that receive grants made from RE/ EE specific financing mechanism for productive use equipment	0	20 (of which at least 50% are women-led businesses)	60 (of which at least 50% are women-led businesses)	Records of institutions administering RE and EE specific financing mechanism; Project M&E reports; demo monitoring reports	OI people, once electricity is available, will be interested in pursuing productive uses
	Number of concessionaire-operated OI RE mini-grids successfully collecting revenues from all users (for at least 85% of power used)	0	7	15	EPU Outer Island Energy Monitoring Database; OI RE mini-grid concessionaire reporting to GOK; Project M&E reports; demo monitoring reports	Private sector companies and KSEC attracted to OI RE mini-grid concessionaire opportunities
Outcome 4.1: Increased adoption	Percentage increase from pre-project levels in capacity of RE mini-grids	0	100%	100%	Project M&E reports; project procurement records; demo	Preferred suppliers with good quality and good prices willing

⁴² This will be determined by a survey that randomly samples knowledge levels on demo islands. The survey will emphasize knowledge on RE mini-grids (in areas with RE mini-grids or soon to get mini-grids), SHSs (in areas without RE mini-grids), RE/EE for water for agriculture (in areas with such systems or soon to get them), and EE cook stoves.

⁴³ One point for each of: (i) RE mini-grid parts specifications standards, (ii) RE mini-grid configuration and voltage standards, (iii) RE mini-grid safety requirements, (iv) regulations on ownership of OI RE mini-grids, (v) regulations on selection of OI RE mini-grid concessionaires, (vi) regulations on monitoring of OI RE mini-grid concessionaires, (vii) rules for charging for power on OIs, (viii) rules requiring school-owned OI RE mini-grids to set aside funds for parts/ repairs, (ix) rules requiring third party owned OI RE mini-grids to set aside funds for parts/ repairs, (x) policy waiving of VAT for RE and EE imports, (xi) policy for preferential tax treatment for OI RE mini-grid operators, (xii) regulation with clear specification of respective roles of EPU and KSEC, (xiii) regulation for reallocation of staff between EPU and KSEC corresponding to government function (EPU) or market function (KSEC).

and implementation of low carbon (RE and EE) technologies, techniques and practices in the energy supply and demand sectors via improved technical and cost viability	that are installed with a given amount of donor funds ⁴⁴				monitoring reports. (Baseline to be OI RE mini-grids installed in 2018 or early 2019.)	to do work needed to participate in international competitive bidding
	Reduction in unsustainable fuel wood use consistently achieved by new models of EE cook stoves fabricated in Kiribati as compared to open hearth fire (%)	0	50%	60%	Project M&E reports; demo monitoring reports	Local persons are interested in getting involved in EE cook stove fabrication
	Number of OI replication projects for priority sites for which both detailed design and financial analysis have been conducted	0	5	30	Project M&E reports	National human resources have capability to grasp needed concepts, and have the time and interest to carry out detailed design and financial analysis
Outcome 4.2: Enhanced confidence in the viability of sustainable energy and low carbon technology projects	Cumulative kWh produced by commercially-operated OI RE mini-grids ⁴⁵	0	576,700	3,460,200	EPU Outer Island Energy Monitoring Database; concessionaire reporting to EPU; Project M&E reports; demo monitoring reports	Preferred suppliers with good quality and good prices willing to make the effort needed to participate in competitive bidding
	Cumulative volume of water used in agricultural activities produced by RE-based water production and supply systems, kL	0	0	109,325	EPU Outer Island Energy Monitoring Database; Project M&E reports; demo monitoring reports	Demand of agriculture for water rises to projected targets of RE and EE for water for agriculture demos

⁴⁴ This will be achieved via reduction, from pre-project levels, in per kW equipment costs of OI RE mini-grids assuming equivalent storage ratios (kWh storage: kW of panels). A reduction of 50% in costs will result in an increase of 100% in capacity that is installed with a given amount of donor funds. In addition to equipment, costs will include travel costs to outer islands and costs of international experts involved but will not include national labor costs for design and installation, which are traditionally provided via in-kind support.

⁴⁵ “Commercially-operated” in this case refers to RE mini-grids that are charging for power.

VII. MONITORING AND EVALUATION (M&E) PLAN

The project results as outlined in the project results framework will be monitored annually and evaluated periodically during project implementation to ensure the project effectively achieves these results.

Project-level monitoring and evaluation will be undertaken in compliance with UNDP requirements as outlined in the [UNDP POPP](#) and [UNDP Evaluation Policy](#). The UNDP Pacific Office will work with the relevant project stakeholders to ensure UNDP M&E requirements are met in a timely fashion and to high quality standards. Additional mandatory GEF-specific M&E requirements (as outlined below) will be undertaken in accordance with the [GEF M&E policy](#) and other relevant GEF policies⁴⁶.

In addition to these mandatory UNDP and GEF M&E requirements, other M&E activities deemed necessary to support project-level adaptive management will be agreed during the Project Inception Workshop and will be detailed in the Inception Report. This will include the exact role of project target groups and other stakeholders in project M&E activities including the GEF Operational Focal Point and national/regional institutes assigned to undertake project monitoring. The GEF Operational Focal Point will strive to ensure consistency in the approach taken to the GEF-specific M&E requirements (notably the GEF Tracking Tools) across all GEF-financed projects in the country. This could be achieved for example by using one national institute to complete the GEF Core Indicators for all GEF-financed projects in the country, including projects supported by other GEF Agencies.⁴⁷

M&E Oversight and Monitoring Responsibilities:

Project Manager: The Project Manager is responsible for day-to-day project management and regular monitoring of project results and risks, including social and environmental risks. The Project Manager will ensure that all project staff maintain a high level of transparency, responsibility, and accountability in M&E and reporting of project results. The Project Manager will inform the Project Board, the UNDP Country Office and the UNDP-GEF RTA of any delays or difficulties as they arise during implementation so that appropriate support and corrective measures can be adopted.

The Project Manager will develop annual work plans based on the multi-year work plan included in Annex 1, including annual output targets to support the efficient implementation of the project. The Project Manager will ensure that the standard UNDP and GEF M&E requirements are fulfilled to the highest quality. This includes, but is not limited to, ensuring the results framework indicators are monitored annually in time for evidence-based reporting in the GEF PIR, and that the monitoring of risks and the various plans/strategies developed to support project implementation (e.g. ESMP, gender action plan, stakeholder engagement plan etc.) occur on a regular basis.

Project Board: The Project Board will take corrective action as needed to ensure the project achieves the desired results. The Project Board will hold project reviews to assess the performance of the project and appraise the Annual Work Plan for the following year. In the project's final year, the Project Board will hold an end-of-project review to capture lessons learned and discuss opportunities for scaling up and to highlight project results and lessons learned with relevant audiences. This final review meeting will also discuss the findings outlined in the project terminal evaluation report and the management response.

Project Implementing Partner: The Implementing Partner is responsible for providing all required information and data necessary for timely, comprehensive, and evidence-based project reporting,

⁴⁶ See https://www.thegef.org/gef/policies_guidelines

⁴⁷ See https://www.thegef.org/gef/gef_agencies

including results and financial data, as necessary. The Implementing Partner will strive to ensure project-level M&E is undertaken by national institutes and is aligned with national systems so that the data used and generated by the project supports national systems.

UNDP Pacific Office: The UNDP Pacific Office will support the Project Manager as needed, including through annual supervision missions. The annual supervision missions will take place according to the schedule outlined in the annual work plan. Supervision mission reports will be circulated to the project team and Project Board within one month of the mission. The UNDP Pacific Office will initiate and organize key GEF M&E activities including the annual GEF PIR, the independent mid-term review and the independent terminal evaluation. The UNDP Pacific Office will also ensure that the standard UNDP and GEF M&E requirements are fulfilled to the highest quality.

The UNDP Pacific Office is responsible for complying with all UNDP project-level M&E requirements as outlined in the [UNDP POPP](#). This includes ensuring the UNDP Quality Assurance Assessment during implementation is undertaken annually; that annual targets at the output level are developed and monitored and reported using UNDP corporate systems; the regular updating of the ATLAS risk log; and, the updating of the UNDP gender marker on an annual basis based on gender mainstreaming progress reported in the GEF PIR and the UNDP ROAR. Any quality concerns flagged during these M&E activities (e.g. annual GEF PIR quality assessment ratings) must be addressed by the UNDP Pacific Office and the Project Manager.

The UNDP Pacific Office will retain all M&E records for this project for up to seven years after project financial closure to support ex-post evaluations undertaken by the UNDP Independent Evaluation Office (IEO) and/or the GEF Independent Evaluation Office (IEO).

UNDP-GEF Unit: Additional M&E and implementation quality assurance and troubleshooting support will be provided by the UNDP-GEF Regional Technical Advisor and the UNDP-GEF Directorate as needed.

Additional GEF Monitoring and Reporting Requirements:

Inception Workshop and Report: A project inception workshop will be held within two months after the project document has been signed by all relevant parties to, amongst others:

- a) Re-orient project stakeholders to the project strategy and discuss any changes in the overall context that influence project strategy and implementation;
- b) Discuss the roles and responsibilities of the project team, including reporting and communication lines and conflict resolution mechanisms;
- c) Review the results framework and finalize the indicators, means of verification and monitoring plan;
- d) Discuss reporting, monitoring and evaluation roles and responsibilities and finalize the M&E budget; identify national/regional institutes to be involved in project-level M&E; discuss the role of the GEF OFP in M&E;
- e) Update and review responsibilities for monitoring the various project plans and strategies, including the risk log; SESP, Environmental and Social Management Plan and other safeguard requirements; project grievance mechanisms; the gender strategy; the knowledge management strategy, and other relevant strategies;
- f) Review financial reporting procedures and mandatory requirements, and agree on the arrangements for the annual audit; and
- g) Plan and schedule Project Board meetings and finalize the first-year annual work plan.

The Project Manager will prepare the inception report no later than one month after the inception workshop. The inception report will be cleared by the UNDP Pacific Office and the UNDP-GEF Regional Technical Adviser and will be approved by the Project Board.

GEF Project Implementation Report (PIR): The Project Manager, the UNDP Pacific Office, and the UNDP-GEF Regional Technical Advisor will provide objective input to the annual GEF PIR covering the reporting period July (previous year) to June (current year) for each year of project implementation. The Project Manager will ensure that the indicators included in the project results framework are monitored annually in advance of the PIR submission deadline so that progress can be reported in the PIR. Any environmental and social risks and related management plans will be monitored regularly, and progress will be reported in the PIR.

The PIR submitted to the GEF will be shared with the Project Board. The UNDP Pacific Office will coordinate the input of the GEF Operational Focal Point and other stakeholders to the PIR as appropriate. The quality rating of the previous year's PIR will be used to inform the preparation of the subsequent PIR.

Lessons learned and knowledge generation: Results from the project will be disseminated within and beyond the project intervention area through existing information sharing networks and forums. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to the project. The project will identify, analyze and share lessons learned that might be beneficial to the design and implementation of similar projects and disseminate these lessons widely. There will be continuous information exchange between this project and other projects of similar focus in the same country, region and globally.

GEF Core Indicators: The following GEF Core Indicators will be used to monitor global environmental benefits:

The baseline/CEO Endorsement Request GEF Core Indicators – submitted as Annex 2 to this project document – will be updated by the Project Manager/Team (not the evaluation consultants hired to undertake the MTR or the TE) and shared with the mid-term review consultants and terminal evaluation consultants before the required review/evaluation missions take place. The updated GEF Core Indicators will be submitted to the GEF along with the completed Mid-term Review report and Terminal Evaluation report.

Independent Mid-term Review (MTR): An independent mid-term review process will begin after the second PIR has been submitted to the GEF, and the MTR report will be submitted to the GEF in the same year as the 3rd PIR. The MTR findings and responses outlined in the management response will be incorporated as recommendations for enhanced implementation during the final half of the project's duration. The terms of reference, the review process, and the MTR report will follow the standard templates and guidance prepared by the UNDP IEO for GEF-financed projects available on the [UNDP Evaluation Resource Center \(ERC\)](#). As noted in this guidance, the evaluation will be "independent, impartial and rigorous." The consultants that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing, or advising on the project to be evaluated. The GEF Operational Focal Point and other stakeholders will be involved and consulted during the mid-term review process. Additional quality assurance support is available from the UNDP-GEF Directorate. The final MTR report will be available in English and will be cleared by the UNDP Country Office and the UNDP-GEF Regional Technical Adviser and approved by the Project Board.

Terminal Evaluation (TE): An independent terminal evaluation (TE) will take place upon completion of all major project outputs and activities. The terminal evaluation process will begin three months before

operational closure of the project, allowing the evaluation mission to proceed while the project team is still in place, yet ensuring the project is close enough to completion for the evaluation team to reach conclusions on key aspects, such as project sustainability. The Project Manager will remain on contract until the TE report and management response have been finalized. The terms of reference, the evaluation process, and the final TE report will follow the standard templates and guidance prepared by the UNDP IEO for GEF-financed projects available on the [UNDP Evaluation Resource Center](#). As noted in this guidance, the evaluation will be “independent, impartial and rigorous.” The consultants that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing, or advising on the project to be evaluated. The GEF Operational Focal Point and other stakeholders will be involved and consulted during the terminal evaluation process. Additional quality assurance support is available from the UNDP-GEF Directorate. The final TE report will be cleared by the UNDP Country Office and the UNDP-GEF Regional Technical Adviser and will be approved by the Project Board. The TE report will be publicly available in English on the UNDP ERC.

The UNDP Pacific Office will include the planned project terminal evaluation in the UNDP Pacific Office evaluation plan and will upload the final terminal evaluation report in English and the corresponding management response to the UNDP Evaluation Resource Centre (ERC). Once uploaded to the ERC, the UNDP IEO will undertake a quality assessment and validate the findings and ratings in the TE report and rate the quality of the TE report. The UNDP IEO assessment report will be sent to the GEF IEO along with the project terminal evaluation report.

Final Report: The project’s terminal PIR along with the terminal evaluation (TE) report and corresponding management response will serve as the final project report package. The final project report package shall be discussed with the Project Board during an end-of-project review meeting to discuss lesson learned and opportunities for scaling up.

Agreement on intellectual property rights and use of logo on the project’s deliverables and disclosure of information: To accord proper acknowledgement to the GEF for providing grant funding, the GEF logo will appear together with the UNDP logo on all promotional materials, other written materials like publications developed by the project, and project hardware. Any citation on publications regarding projects funded by the GEF will also accord proper acknowledgement to the GEF. Information will be disclosed in accordance with relevant policies notably the UNDP Disclosure Policy⁴⁸ and the GEF policy on public involvement⁴⁹.

Mandatory GEF M&E Requirements and M&E Budget:

GEF M&E Requirements	Primary Responsibility	Indicative Costs Charged to Project Budget ⁵⁰ (US\$)		Co-Financing	Time Frame
		GEF Grant	Budget Code		
Inception Workshop	UNDP Country Office	1,300 ⁵¹	71300, 74200, 74500, 75700	10,000	Within two months of project document signature
Inception Report	Project Manager	None		5,000	Within two weeks

⁴⁸ See http://www.undp.org/content/undp/en/home/operations/transparency/information_disclosurepolicy/

⁴⁹ See https://www.thegef.org/gef/policies_guidelines

⁵⁰ Excluding project team staff time and UNDP staff time and travel expenses.

⁵¹ See Part X (TBWP) Budget Notes 23 (71300), 28 (74200), 29 (74500), and 31 (75700)

GEF M&E Requirements	Primary Responsibility	Indicative Costs Charged to Project Budget ⁵⁰ (US\$)		Co-Financing	Time Frame
		GEF Grant	Budget Code		
					of inception workshop
Standard UNDP monitoring and reporting requirements as outlined in the UNDP POPP	UNDP Country Office	None		None	Quarterly, annually
Risk management	Project Manager Country Office	0		0	Quarterly, annually
Monitoring of indicators in project results framework	Project Manager	16,000 @ 4,000/year ⁵²	71300	16,000	Annually before PIR
Two special surveys to support monitoring of certain indicators	Survey consultants	0		0	Before MTR and before TE
GEF Project Implementation Report (PIR)	Project Manager and UNDP Country Office and UNDP-GEF team	0		4,000	Annually
Lessons learned and knowledge generation	Project Manager	42,550 ⁵³	71300 71200 71600	80,000	Annually
Monitoring of environmental and social risks, and corresponding management plans as relevant	Project Manager UNDP Country Office	22,150 ⁵⁴	71200 71300 71600	45,000	On-going
Stakeholder Engagement Plan	Project Manager UNDP Country Office	43,380 ⁵⁵	71200 71300 71600	40,000	On-going
Gender Action Plan	Project Manager UNDP Country Office UNDP GEF team	0		20,000	On-going
Addressing environmental and social grievances	Project Manager UNDP Country Office	0		20,000	On-going
Project Board meetings	Project Board UNDP Country Office Project Manager	0		8,000	At minimum annually
Supervision missions	UNDP Country Office	0 ⁵⁶		4,000	Annually
Oversight missions	UNDP-GEF team	0 ⁵⁶		4,000	Troubleshooting

⁵² See Part X (TBWP) Budget Note 2; Activity 1.1.2.6 (p.13)

⁵³ Includes information exchange on RE and EE in Kiribati Outer Islands and periodic project demo monitoring reports, emphasizing both achievements and lessons learned. See Part X (TBWP) Budget Notes 2 & 18 (71300), Budget Note 17 (71200), and Budget Notes 19 & 20 (71600)

⁵⁴ Includes preparation of Environmental and Social Management Plan (ESMP) for project demos. See Part X (TBWP) Budget Notes 17 (71200), 18 (71300) and 19 (71600)

⁵⁵ Includes USD 17,130 for outreach to Island Councils and USD 26,250 for outreach to residents of outer islands. See Part X (TBWP) Budget Notes 2, 13 & 18 (71300); Budget Notes 3 & 14 (71600); Budget Note 17 (71200).

⁵⁶ The costs of UNDP Pacific Office and UNDP-GEF Unit's participation and time are charged to the GEF Agency Fee.

GEF M&E Requirements	Primary Responsibility	Indicative Costs Charged to Project Budget ⁵⁰ (US\$)		Co-Financing	Time Frame
		GEF Grant	Budget Code		
					as needed
GEF Secretariat learning missions/site visits	UNDP Country Office and Project Manager and UNDP-GEF team	0		0	To be determined.
Mid-term GEF Core Indicators to be updated by Expert	Project Manager	3,000 ⁵⁷	72100	0	Before mid-term review mission takes place.
Independent Mid-term Review (MTR) and management response	UNDP Country Office and Project team and UNDP-GEF team	25,650 ⁵⁸	71200 71300 71600	10,000	Between 2 nd and 3 rd PIR.
Terminal GEF Core Indicators to be updated by Expert	Project Manager	3,000 ⁵⁷	72100	0	Before terminal evaluation mission takes place
Independent Terminal Evaluation (TE) included in UNDP evaluation plan, and management response	UNDP Country Office and Project team and UNDP-GEF team	25,650 ⁵⁸	71200 71300 71600	10,000	At least three months before operational closure
Translation of MTR and TE reports into English	UNDP Country Office	0 (Reports will be in English)		0	As required. GEF will only accept reports in English.
TOTAL indicative COST		182,680		276,000	---

VIII. GOVERNANCE AND MANAGEMENT ARRANGEMENTS

Roles and Responsibilities of the Project's Governance Mechanism:

The project will be implemented following UNDP's national implementation modality, according to the Standard Basic Assistance Agreement between UNDP and the Government of Kiribati, and the Pacific Sub-Regional Programme.

The **Implementing Partner** for this project is the Ministry of Infrastructure and Sustainable Energy. The Implementing Partner is responsible and accountable for managing this project, including the monitoring and evaluation of project interventions, achieving project outcomes, and for the effective use of the project resources.

Annex 9 shows the report on the results of the HACT micro-assessment of EPU/MISE that was completed in August 2018. Overall, the risk assessment of the EPU/MISE's programme, financial and operations management policies, procedures, systems and internal controls about cash transfers, is found to be of **significant risk** to UNDP. For each subject area, the risk assessment findings are as follows: (1) implementing partner – moderate; (2) programme management – high; (3) organizational structure and

⁵⁷ See Part X (TBWP) Budget Note 26 (72100)

⁵⁸ See Part X (TBWP) Budget Notes 22 (71200), 23 (71300) and 25 (71600)

staffing – significant; (4) accounting policies and procedures – significant; (5) fixed assets and inventory – high; (6) financial reporting and monitoring – significant; and, (7) procurement – high.

The current processes and procedures of require improvement and timely actions by EPU/MISE so that the overall risk is significantly reduced.

According to the UNDP programming guideline, a micro-HACT assessment with a **significant risk rating** indicates an underdeveloped financial management system or control framework with a significant likelihood of negative impact on the Partner's ability to execute the programme in accordance with the work plan. For Partners rated as **significant risk**, Direct Cash Transfers are not viable. Direct Payments or Reimbursement may be used only in selected specifically assessed areas where the Partner's internal controls were deemed adequate in the micro assessment. All other activities must be either through engaging a Responsible Party, such as a government entity or NGO, as a Responsible Party in implementing project activities. If the estimated cash transfers to the Responsible Party are above \$300,000 per programme cycle, a micro assessment and assurance activities on the Responsible Party will be required.

For this reason, it was discussed and recommend by the Local Project Appraisal Committee (LPAC) on 22nd November 2019, that the implementing partner MISE will be supported by two parties as follows:

- Kiribati Fiduciary Services Unit (KFSU) (<http://www.mfed.gov.ki/our-work/kiribati-fiduciary-services-unit>) for finance and procurement services; and,
- Kiribati Solar Energy Company (KSEC) (<http://prdrse4all.spc.int/content/kiribati-solar-energy-company-ksec-0>) for technical advice and services.

The Implementing Partner, MISE, with the support from KFSU and KSEC is responsible for: (a) Approving and signing the multiyear work plan; (b) Approving and signing the combined delivery report at the end of the year; and, (c) Signing the financial report or the funding authorization and certificate of expenditures. These documents will be co-signed by MISE, KFSU, and KSEC.

The project organization structure (Project Board) is shown in Fig. 1.

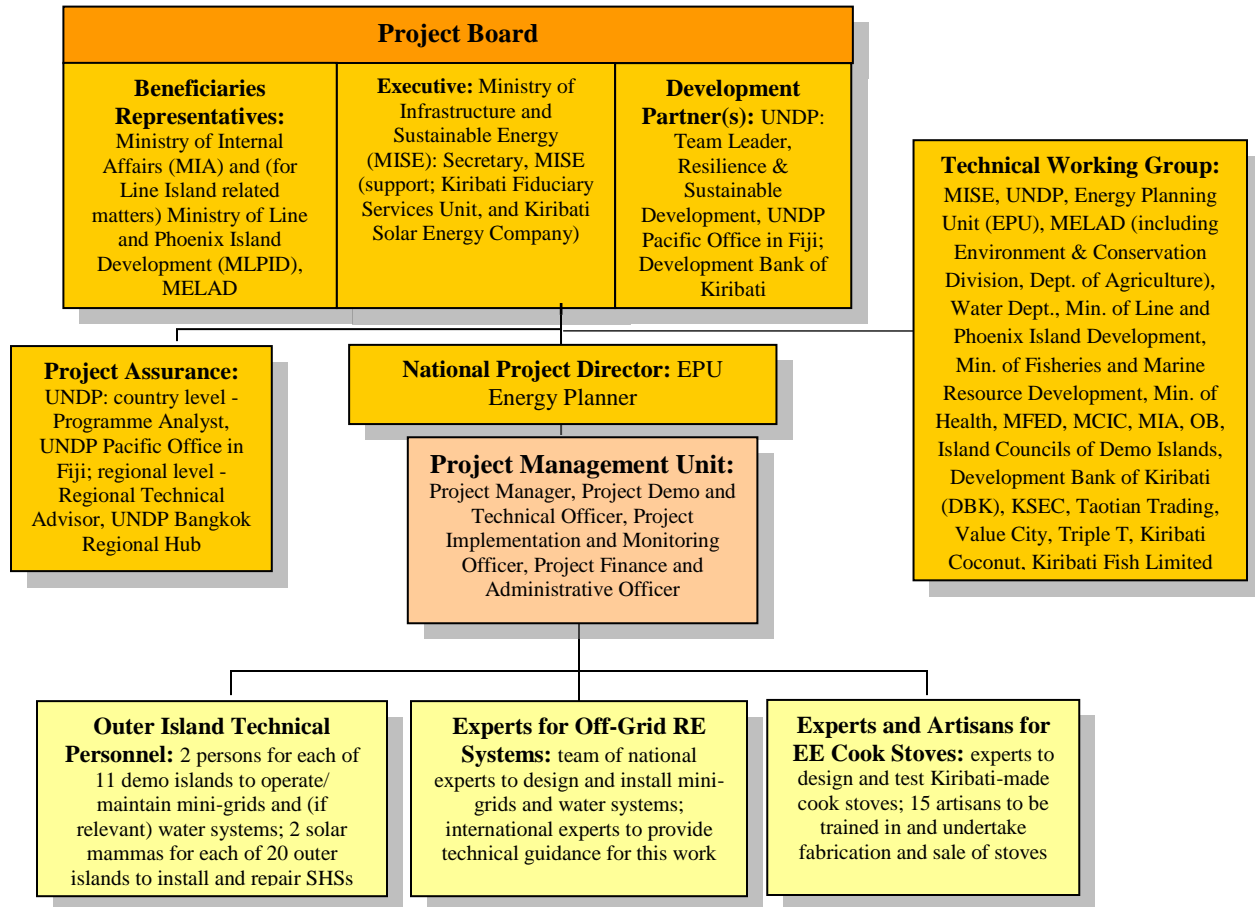
Project Board: The Project Board (also called Project Steering Committee) is responsible for making by consensus, management decisions when guidance is required by the Project Manager, including recommendations for UNDP/Implementing Partner approval of project plans and revisions, and addressing any project level grievances. In order to ensure UNDP's ultimate accountability, Project Board decisions should be made in accordance with standards that shall ensure management for development results, best value money, fairness, integrity, transparency and effective international competition. In case a consensus cannot be reached within the Board, final decision shall rest with the UNDP Team Leader.

In case consensus cannot be reached within the Board, the UNDP Resident Representative (or their designate) will mediate to find consensus and, if this cannot be found, will take the final decision to ensure project implementation is not unduly delayed.

Specific responsibilities of the Project Board include:

- Provide overall guidance and direction to the project, ensuring it remains within any specified constraints;
- Address project issues as raised by the project manager;

- Provide guidance on new project risks, and agree on possible mitigation and management actions to address specific risks;
- Agree on project manager's tolerances as required, within the parameters set by UNDP-GEF, and provide direction and advice for exceptional situations when the project manager's tolerances are exceeded;
- Advise on major and minor amendments to the project within the parameters set by UNDP-GEF;
- Ensure coordination between various donor and government-funded projects and programmes;
- Ensure coordination with various government agencies and their participation in project activities;
- Track and monitor co-financing for this project;
- Review the project progress, assess performance, and appraise the Annual Work Plan for the following year;
- Appraise the annual project implementation report, including the quality assessment rating report;
- Ensure commitment of human resources to support project implementation, arbitrating any issues within the project;
- Review combined delivery reports prior to certification by the implementing partner;
- Provide direction and recommendations to ensure that the agreed deliverables are produced satisfactorily according to plans;
- Address project-level grievances;
- Approve the project Inception Report, Mid-term Review and Terminal Evaluation reports and corresponding management responses;
- Review the final project report package during an end-of-project review meeting to discuss lesson learned and opportunities for scaling up.
- Ensure highest levels of transparency and take all measures to avoid any real or perceived conflicts of interest.

Fig. 1: Project Organization Structure

The composition of the Project Board includes the following roles:

- Project Executive: Is an individual who represents ownership of the project and chairs the Project Board. The Executive is normally the national counterpart for nationally implemented projects. The Project Executive is the Secretary, Ministry of Infrastructure and Sustainable Energy (MISE).

The Executive is ultimately responsible for the project, supported by the Beneficiary Representatives and the Development Partners. The Executive's role is to ensure that the project is focused throughout its life cycle on achieving its objectives and delivering outputs that will contribute to higher level outcomes. The Executive must ensure that the project gives value for money, ensuring cost-conscious approach to the project, balancing the demands of Beneficiary Representatives and Development Partners.

Specific Responsibilities:)as part of the above responsibilities for the Project Board(

- Ensure that there is a coherent project organization structure and logical set of plans.
- Set tolerances in the AWP and other plans as required for the Project Manager.
- Monitor and control the progress of the project at a strategic level.
- Ensure that risks are being tracked and mitigated as effectively as possible.
- Brief relevant stakeholders about project progress.

- Organize and chair Project Board meetings.
- b. Beneficiary Representative(s): Individuals or groups representing the interests of those who will ultimately benefit from the project. Their primary function within the board is to ensure the realization of project results from the perspective of project beneficiaries. Often civil society representative(s) can fulfil this role. The Beneficiary representative(s) is/are: Ministry of Internal Affairs (MIA) and, when the Line and Phoenix Islands are involved, a representative of the Ministry of Line and Phoenix Island Development (MILPD).

The Beneficiary Representatives are responsible for validating the needs and for monitoring that the solution will meet those needs within the constraints of the project. The Beneficiary Representative role is to monitor progress against targets and quality criteria. This role may require more than one person to cover all the beneficiary interests. For the sake of effectiveness, the role should not be split between too many people.

Specific Responsibilities)as part of the above responsibilities for the Project Board(

- Prioritize and contribute beneficiaries' opinions on Project Board decisions on whether to implement recommendations on proposed changes.
 - Specification of the Beneficiary's needs is accurate, complete and unambiguous.
 - Implementation of activities at all stages is monitored to ensure that they will meet the beneficiary's needs and are progressing towards that target.
 - Impact of potential changes is evaluated from the beneficiary point of view.
 - Risks to the beneficiaries are frequently monitored.
- c. Development Partner(s): Individuals or groups representing the interests of the parties concerned that provide funding and/or technical expertise to the project. The Development Partner(s) include the Development Bank of Kiribati, and UNDP Pacific Office.

The Development Partners' primary function within the Board is to provide guidance regarding the technical feasibility of the project.

Specific Responsibilities)as part of the above responsibilities for the Project Board(

- Make sure that progress towards the outputs remains consistent from the Development Partners perspective.
 - Promote and maintain focus on the expected project output(s) from the point of view of project development management.
 - Ensure that the technical and financial resources required for the project are made available.
 - Contribute technical and financial opinions on Project Board decisions on whether to implement recommendations on proposed changes.
 - Arbitrate on, and ensure resolution of, any technical and financial priority or resource conflicts.
- d. Project Assurance: UNDP performs the quality assurance role and supports the Project Board and Project Management Unit by carrying out objective and independent project oversight and monitoring functions. This role ensures appropriate project management milestones are managed and completed. The Project Board cannot delegate any of its quality assurance responsibilities to the Project Manager. UNDP provides a three – tier oversight services involving the UNDP Country Offices and UNDP at regional and headquarters levels. At the country level, project assurance for POIDIER is led by the Programme Analyst, UNDP Pacific Office in Fiji; and at the regional level it is led by the

Regional Technical Advisor, UNDP Bangkok Regional Hub. Project assurance is totally independent of the Project Management function.

The Technical Working Group (TWG): The TWG will be comprised of representatives from MISE, UNDP, the Energy Planning Unit (EPU), MELAD (including Department of Agriculture), Water Department, Ministry of Line and Phoenix Island Development (MLPID), Ministry of Fisheries and Marine Resource Development (MFMRD), Ministry of Health (MoH), Ministry of Finance and Economic Development (MFED), Ministry of Commerce Industry and Cooperatives (MCIC), Ministry of Internal Affairs (MIA), Office of the President (OB), Island Councils of each of the 11 Demo Islands, Development Bank of Kiribati (DBK), Kiribati Solar Energy Company (KSEC), Taotian Trading, Value City, Triple T, Kiribati Coconut, and Kiribati Fish Limited. The TWG will meet at least twice annually to discuss technical matters related to project activities and provide advice to the Project Board and the Project Management Unit.

The **National Project Director (NPD)**, will be the Energy Planner of EPU. The NPD will be responsible for weekly oversight of the Project Management Unit (PMU), including strategic oversight and guidance to project implementation in close collaboration with UNDP. The NPD will not be paid from the project funds but will represent a government in-kind contribution to the project. The NPD may sign and approve the project financial reports and the financial requests for advances, or any contracts issued under NIM component of the project. The NPD may delegate this financial responsibility to the Project Manager. The NPD will be responsible for provision of technical and institutional coordination of the project with other government departments.

Project Manager: The Project Manager has the authority to run the project on a day-to-day basis on behalf of the Project Board within the constraints laid down by the Board. The Project Manager is responsible for day-to-day management and decision-making for the project. The Project Manager's prime responsibility is to ensure that the project produces the results specified in the project document, to the required standard of quality and within the specified constraints of time and cost. The Implementing Partner appoints the Project Manager, who should be different from the Implementing Partner's representative on the Project Board.

Specific responsibilities include:

- Provide direction and guidance to project team(s)/ responsible party(ies);
- Liaise with the Project Board to assure the overall direction and integrity of the project;
- Identify and obtain any support and advice required for the management, planning and control of the project;
- Responsible for project administration;
- Plan the activities of the project and monitor progress against the project results framework and the approved annual work plan;
- Mobilize personnel, goods and services, training and micro-capital grants to initiative activities, including drafting terms of reference and work specifications, and overseeing all contractors' work;
- Monitor events as determined in the project monitoring schedule plan/timetable, and update the plan as required;
- Manage requests for the provision of financial resources by UNDP, through advance of funds, direct payments or reimbursement using the fund authorization and certificate of expenditures;
- Monitor financial resources and accounting to ensure the accuracy and reliability of financial reports;
- Be responsible for preparing and submitting financial reports to UNDP on a quarterly basis;

- Manage and monitor the project risks initially identified and submit new risks to the project board for consideration and decision on possible actions if required; update the status of these risks by maintaining the project risks log;
- Capture lessons learned during project implementation;
- Prepare the annual work plan for the following year; and update the Atlas Project Management module if external access is made available.
- Prepare the GEF PIR and submit the final report to the Project Board;
- Based on the GEF PIR and the Project Board review, prepare the AWP for the following year.
- Ensure the mid-term review process is undertaken as per the UNDP guidance, and submit the final MTR report to the Project Board;
- Identify follow-on actions and submit them for consideration to the Project Board; and,
- Ensure the terminal evaluation process is undertaken as per the UNDP guidance, and submit the final TE report to the Project Board.

Other Members of Project Management Team: In addition to the Project Manager, the Project Management Unit will include the following personnel:

(1) Project Demo and Technical Officer: Under the overall supervision and guidance of the Project Manager, the Project Demo and Technical Officer will have responsibility for carrying out, as a national expert, project activities (about three-quarters time) and performing some project management duties (about one-quarter time). The Project D&T Officer may carry out activities in all project components but will put his or her greatest focus on implementation of the Project Demos (Outcome 4.2) and technical and sourcing/ costing work (Outcome 4.1). As such, the Project D&T Officer will be involved in organizing teams and carrying out Island Council liaison to achieve design and installation of the project demos. The position will be full time for the full duration of the project – four years. A preliminary TOR is included in Annex 4.

(2) Project Implementation and Monitoring Officer: Under the overall supervision and guidance of the Project Manager, the Implementation and M&E Officer will have the responsibility for carrying out certain project activities (about three-quarters time) and for project monitoring and evaluation and other project management duties (about one-quarter time). The Implementation and M&E Officer will work closely with the Demo and Technical Officer across all project components to carry out project activities, though will cover in more detail Components 1, 2, and 3. The position will be full time for the full duration of the project – four years. A preliminary TOR is included in Annex 4.

(3) Project Finance and Administrative Officer: Under the direction of the Project Manager, the Finance and Administrative Officer will be a responsible for handling all the project's finance and administrative needs, including administrative aspects of procurement. The Finance and Administrative Officer will have a background or experience in accounting, finance, and/or administration. The position will be full time for the full duration of the project – four years. A preliminary TOR is included in Annex 4.

Governance Role for Project Target Groups:

The project will involve a range of target groups in decision making, both at the national level and at the local level. The Project Board has very broad composition, including relevant government ministries, departments, and companies, as well as private sector companies and local government, namely demo island councils. Involvement of various project target groups in implementation will enable their feedback to be considered in project decision-making, as well as shape the course of certain aspects of the project demos. For example, surveys of outer island residents and of technical personnel will provide feedback on

whether the capacity building work of the project is achieving its intended results. Island Councils will prepare whole island energy plans that will, in turn, feed into the updating of the outer island portion of the nation's KIER. Institutional work will involve the setting up of a cross-ministerial, cross-sector *Kiribati Outer Island Energy and Productive Use Working Committee* that will allow non-energy organizations to provide input on how to integrate energy development with other economic activity. Regarding the project demos, local outer island people will make decisions on what type of productive uses to pursue and will have the opportunity to apply for grants to support them in these efforts. They will also decide whether to purchase energy efficient cook stoves introduced to them as a part of the project's "road show."

Project extensions: The UNDP Resident Representative and the UNDP-GEF Executive Coordinator must approve all project extension requests. Note that all extensions incur costs and the GEF project budget cannot be increased. A single extension may be granted on an exceptional basis and only if the following conditions are met: one extension only for a project for a maximum of six months; the project management costs during the extension period must remain within the originally approved amount, and any increase in PMC costs will be covered by non-GEF resources; the UNDP Country Office oversight costs in excess of the CO's Agency fee specified in the DOA during the extension period must be covered by non-GEF resources.

IX. FINANCIAL PLANNING AND MANAGEMENT

The total cost of the project is USD 32,302,752. This is financed through a GEF grant of USD 5,379,452 and USD 26,923,300 in parallel co-financing. UNDP, as the GEF Implementing Agency, is responsible for the execution of the GEF resources and the cash co-financing transferred to UNDP bank account only.

Parallel co-financing: The actual realization of project co-financing will be monitored during the mid-term review and terminal evaluation process and will be reported to the GEF. The planned parallel co-financing will be used as follows:

Co-financing source	Co-financing type	Co-financing amount	Planned Activities/Outputs	Risks	Risk Mitigation Measures
MISE	Cash	25,922,000	PV plant construction to support RO desalination in S. Tarawa and in 4 vulnerable islet communities; installation of Ocean Thermal Energy Conversion ("OTEC") Plant; installation of rural renewable energy equipment on outer islands	-Delays in progress of baseline activities leads to delays in release of funds	-Setting up of PMU within MISE will provide added capacity and liaison resources to ensure baseline activities are well-coordinated and proceed in a timely fashion
MISE	In-kind	751,300	(Human resources for) Design and installation of PV mini-grids and RE/EE for water for agriculture demos; outreach to outer island people and island councils; policy and planning work; office space and related contributions, such as furniture, telecom,	-Government diverts funds and resources to other uses	-Demos and "seeing is believing" phenomenon will maintain enthusiasm of government for POIDIER -New approach to achieve financial sustainability of demo RE systems will attract strong interest of government

			use of vehicles		-Links of demo RE systems to outer island economic development will attract strong interest of government
DBK	Cash	150,000	Rural Support Loan Program will provide loans to entrepreneurs and households on outer islands to generate increased incomes; loans may be used in conjunction with POIDIER grants for the purchase of equipment that will make productive use of renewable energy from POIDER mini-grids	-Lack of capabilities is barrier to loans being disbursed	-POIDIER incremental activities will support outer island people in designing business plans and applying for grants that may be pursued in conjunction with Rural Support Loans
UNDP	Grant	100,000	Project management	-Slow rollout of funds	-Ensuring project roll-out is timely and GEF funds are spent in a timely fashion will ensure UNDP funds are also made available in a timely fashion

Budget Revision and Tolerance: As per UNDP requirements outlined in the UNDP POPP, the project board will agree on a budget tolerance level for each plan under the overall annual work plan allowing the project manager to expend up to the tolerance level beyond the approved project budget amount for the year without requiring a revision from the Project Board. Should the following deviations occur, the Project Manager and UNDP Country Office will seek the approval of the UNDP-GEF team to ensure accurate reporting to the GEF: a) Budget re-allocations among components in the project with amounts involving 10% of the total project grant or more; b) Introduction of new budget items/or components that exceed 5% of original GEF allocation.

Any over expenditure incurred beyond the available GEF grant amount will be absorbed by non-GEF resources (e.g. UNDP TRAC or cash co-financing).

Audit: The project will be audited as per UNDP Financial Regulations and Rules and applicable audit policies on NIM implemented projects.⁵⁹

Project Closure: Project closure will be conducted as per UNDP requirements outlined in the UNDP POPP.⁶⁰ All costs incurred to close the project must be included in the project closure budget and reported as final project commitments presented to the Project Board during the final project review. The only costs a project may incur following the final project review are those included in the project closure budget.

⁵⁹ See guidance here: <https://info.undp.org/global/popp/frm/pages/financial-management-and-execution-modalities.aspx>

⁶⁰ See <https://info.undp.org/global/popp/ppm/Pages/Closing-a-Project.aspx>

Operational completion: The project will be operationally completed when the last UNDP-financed inputs have been provided and the related activities have been completed. This includes the final clearance of the Terminal Evaluation Report (that will be available in English) and the corresponding management response, and the end-of-project review Project Board meeting. **Operational closure must happen with 3 months after posting the TE report to the UNDP ERC.** The Implementing Partner through a Project Board decision will notify the UNDP Country Office when operational closure has been completed. At this time, the relevant parties will have already agreed and confirmed in writing on the arrangements for the disposal of any equipment that is still the property of UNDP

Transfer or disposal of assets: In consultation with the NIM Implementing Partner and other parties of the project, the UNDP programme manager and UNDP Resident Representative is responsible for deciding on the transfer or other disposal of assets. Transfer or disposal of assets is recommended to be reviewed and endorsed by the project board following UNDP rules and regulations. Assets may be transferred to the government for project activities managed by a national institution at any time during the life of a project. In all cases of transfer, a transfer document must be prepared and kept on file⁶¹.

Financial completion (closure): The project will be financially closed when the following conditions have been met: a) the project is operationally completed or has been cancelled; b) the Implementing Partner has reported all financial transactions to UNDP; c) UNDP has closed the accounts for the project; d) UNDP and the Implementing Partner have certified a final Combined Delivery Report (which serves as final budget revision).

The project will be financially completed **within 6 months of operational closure or after the date of cancellation.** Between operational and financial closure, the implementing partner will identify and settle all financial obligations and prepare a final expenditure report. The UNDP Country Office will send the final signed closure documents including confirmation of final cumulative expenditure and unspent balance to the BPPS/GEF Unit for confirmation before the project will be financially closed in Atlas by the UNDP Country Office.

Refund to GEF: Should a refund of unspent funds to the GEF be necessary, this will be managed directly by the UNDP-GEF Unit in New York.

⁶¹ See

https://popp.undp.org/_layouts/15/WopiFrame.aspx?sourcedoc=/UNDP_POPP_DOCUMENT_LIBRARY/Public/PM_Project%20Management_Closing.docx&action=default.

X. TOTAL BUDGET AND WORK PLAN

Total Budget and Work Plan			
Atlas Proposal or Award ID:	00103226	Atlas Primary Output Project ID:	00105289
Atlas Proposal or Award Title:	Promoting Outer Island Development through the Integrated Energy Roadmap (POIDIER)		
Atlas Business Unit	FJI10		
Atlas Primary Output Project Title	Promoting Outer Island Development through the Integrated Energy Roadmap (POIDIER)		
UNDP-GEF PIMS No.	6159		
Implementing Partner	MISE		

GEF Component/Atlas Activity	Responsible Party (Atlas Implementing Agent)	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Total (USD)	Note
OUTCOME 1: Improved capacity of the residents, technical personnel, and local government officials on low carbon development in the outer islands	EPU- MISE	62000	GEF	71200	International Consultants	49,875	3,325	13,300	0	66,500	1
				71300	Local Consultants	21,500	21,500	21,500	21,500	86,000	2
				71600	Travel	31,680	31,680	7,920	7,920	79,200	3
				72200	Equipment and Furniture	8,000	0	0	0	8,000	4
				74200	Audio Visual & Print Prod Costs	343	343	342	342	1,370	5
				75700	Training, Workshop and Conference	11,441	11,441	2,860	2,861	28,603	6
				75700	Training, Workshop and Conference	3,000	2,000	0	0	5,000	7
				Total Outcome 1						125,839	70,289
OUTCOME 2: Effective enforcement of energy policies, regulations and implementation of improved institutional framework, programs, and projects on low carbon technology applications	EPU- MISE	62000	GEF	71200	International Consultants	30,800	23,100	15,400	7,700	77,000	8
				71300	Local Consultants	10,750	21,500	10,750	0	43,000	9
				71600	Travel	4,830	4,830	4,830	1,610	16,100	10
				74200	Audio Visual & Print Prod Costs	39	39	39	38	155	11
				Total Outcome 2						46,419	49,469

OUTCOME 3: Enhanced availability of, and access to, financing (including financial closure) and long-term financial sustainability for low carbon (RE and EE) projects in the energy supply and demand sector	EPU- MISE	62000	GEF	71200	International Consultants	45,570	19,530	0	0	65,100	12
				71300	Local Consultants	14,300	8,580	2,860	2,860	28,600	13
				71600	Travel	3,780	1,890	1,890	1,890	9,450	14
				72200	Equipment and Furniture	0	90,000	90,000	120,000	300,000	15
				74200	Audio Visual & Print Prod Costs	75	75	50	50	250	16
				Total Outcome 3		63,725	120,075	94,800	124,800	403,400	
OUTCOME 4.1: Increased adoption and implementation of low carbon (RE and EE) technologies, techniques and practices in the energy supply and demand sectors via improved technical and cost viability	EPU- MISE	62000	GEF	71200	International Consultants	166,250	99,750	49,875	16,625	332,500	17
				71300	Local Consultants	46,640	34,980	23,320	11,660	116,600	18
				71600	Travel	17,958	17,958	11,972	11,972	59,860	19
				Total Outcome 4.1		230,848	152,688	85,167	40,257	508,960	
OUTCOME 4.2: Enhanced confidence in the viability of sustainable energy and low carbon technology projects	EPU- MISE	62000	GEF	71600	Travel	12,744	57,348	57,348	0	127,440	20
				72200	Equipment and Furniture	367,256	1,652,652	1,652,652	0	3,672,560	21
				Total Outcome 4.2		380,000	1,710,000	1,710,000	0	3,800,000	
PROJECT MANAGEMENT	PMO & UNDP	62000	GEF	71200	International Consultants	0	17500	0	17,500	35,000	22
				71300	Local Consultants	616	3,850		3,850	8,316	23
				71400	Contractual Services-Individual	41,662	41,662	41,662	41,662	166,648	24
				71600	Travel	0	4,300	0	4,280	8,580	25
				72100	Contractual Services-Companies	0	3,000	0	3,000	6,000	26
				74100	Professional services	4,000	4,000	4,000	4,000	16,000	27
				74200	Audio Visual & Print Prod Costs	134	0	0	0	134	28
				74500	Miscellaneous	236	0	0	0	236	29
				71400	Contractual Services - Individual	3,750	3,750	3,750	3,750	15,000	30

				75700	Training, Workshop and Conference	250	0	0	0	250	31
Total Management						50,648	78,062	49,412	78,042	256,164	
PROJECT TOTAL						897,479	2,180,583	2,016,320	285,070	5,379,452	

Summary of Funds:

Sources of Funds	Amount Year 1	Amount Year 2	Amount Year 3	Amount Year 4	Total
GEF	897,479	2,180,583	2,016,320	285,070	5,379,452
UNDP	25,000	25,000	25,000	25,000	100,000
EPU-MISE	8,517,370	8,409,570	6,410,560	3,335,800	26,673,300
DBK	15,000	30,000	60,000	45,000	150,000
TOTAL	9,454,849	10,645,153	8,511,880	3,690,870	32,302,752

Budget Notes:

No.	Description of Expenses
	<i>Outcome 1</i>
1	International consultants: USD 66,500 in total for 95 days at USD 700 per day, including: training program for Kiribati technical experts on assessment, design, and installation of (i) PV-battery mini-grids, (ii) small-scale wind, and (iii) RE and EE for water for agriculture technologies (40 days); input on content for training program for outer island technical personal (10 days); training program on EE cook stove fabrication (25 days); and design of processes and online dashboard for monitoring outer island energy systems (20 days).
2	National consultants: USD 86,000 in total for 430 days at USD 200 per day, including: low carbon conference for outer island mayors (20 days); guidance and template for all-island energy plans (20 days); outreach to island councils on low carbon development and all-island energy plans (25 days); training of outer island technical personnel (40 days); training of outer island “solar mamas” (40 days); two surveys of trainees (30 days); tracking of M&E indicators (80 days); outer island road show (40 days); radio shows targeting outer island residents (20 days); brochures for outer island residents (15 days); social media campaign targeting outer island residents (30 days); two surveys of outer island residents (20 days); design and implementation of information base and exchange network (30 days); design of processes and online dashboard for monitoring outer island energy systems (20 days).
3	Travel: USD 79,200 in total, spread across eight of the outcome’s 16 activities. Benchmarks are USD 1,800 for roundtrip international airfare, USD 250 for roundtrip domestic airfare, per diems of USD 100 and USD 50 for South Tarawa and USD 50 for outer islands, and USD 15 allocation for dormitory style accommodation for certain training programs. There are four international roundtrip airfares (USD 7,200) along with 77 days of the USD 100 level of per diem (USD 7,700) for: training of technical personnel (2 int’l roundtrips and 38 days per diem), EE cook stove fabrication training (1 int’l roundtrip and 26 days per diem), and the outer island energy monitoring system (1 int’l roundtrip and 13 days per diem). There are 91 domestic round-trip air flights (USD 22,750), 190 days of per diem at the USD 50 level (9,500), and 2,070 days of allocation for dormitory style accommodation (USD 31,050) for: conference of island mayors (10 domestic roundtrips and 60 days per diem); outreach to island council (22 days per diem, transport covered under demo installation); training for technical experts (6 domestic roundtrips and 48 days per diem); training of outer island technical personnel (30 domestic roundtrips and 900 days dormitory accommodation); training of solar mamas (40 domestic roundtrips and 1,040 days dormitory accommodation); training of EE cook stove artisans (5 domestic roundtrips and 130 day dormitory accommodation); outer island road show (60 days per diem, transport covered under demo installation). In addition, USD 1,000 is allocated to ground transport (motorcycle rental) on the outer islands for the road show.

4	Equipment: USD 8,000 in total, all for tools for those EE cook stove artisans that master skills and show strong commitment to entering the EE cook stove fabrication business (estimated ten artisans at USD 800 per tool set).
5	Printing: USD 1,370 in total spread across seven activities including: at USD 1 per copy – mayor’s conference (30 copies-> USD 30); at USD 0.50 per copy – guidelines and templates for outer island all-island energy plans (40 items->USD 20); at USD 0.25 per copy; 5,280 copies (USD 1,320) of which there are 80 copies for each of technical expert training, outer island technician training, and solar mama training, 40 copies for EE cook stoves artisan training, and 5,000 copies for outer island resident brochures.
6	Training and workshop: USD 28,603 in total spread across 5 training activities for food and 2 survey activities for telecom. Activities with food expenses include: outer island mayor’s conference (USD 1,500 for food), technical experts training (USD 6,000 for food), outer island technical personnel training (USD 8,000 for food), solar mama training (USD 9,103 for food), and EE cook stove artisan training (USD 3,000 for food). Activities with telecom expenses include: two surveys of trainees (USD 500 for telecom) and two surveys of outer island residents (USD 500 for telecom).
7	Rental costs: USD 5,000 in total spread across 5 activities for venue rental, including, at USD 200 per day for 2.5 days (USD 500), rental for outer island mayors conference; and, at USD 45 per day for 100 days (USD 4,500 subtotal), the following: 30 days rental for technical expert training, 30 days rental for outer island technical personnel training, 20 days rental for solar mama training, and 20 days rental for EE cook stove artisan training.
	<i>Outcome 2</i>
8	International consultants: USD 77,000 in total for 110 days at USD 700 per day spread across 6 activities, including: PV mini-grid standards (20 days); regulations for ownership and concessionaires of RE mini-grids (19 days); regulations for charging for electricity on the outer islands (18 days); institutional plan on outer islands for spare parts (18 days); outer island all-island energy plans (30 days); and updating of Outer Island section of the KIER (5 days).
9	Local consultants: USD 43,000 in total for 215 days at USD 200 per day spread across 10 activities including: PV mini-grid standards (20 days); regulations for ownership and concessionaires of RE mini-grids (20 days); regulations for charging for electricity on the outer islands (20 days); incentive regulations (30 days); institutional restructuring of KSEC vis-à-vis EPU (30 days), institutional coordination between EPU and productive departments and companies (20 days); institutional cooperation plan for EPU and productive departments and organizations (20 days); institutional plan on outer islands for spare parts (20 days); outer island all-island energy plans (30 days); and updating of Outer Island section of the KIER (5 days).
10	Travel: USD 16,100 in total spread across 5 activities. Benchmarks are USD 1,800 for roundtrip international airfare, USD 100 per day for per diems. There are 5 international airfares (USD 9,000) and 71 days of per diem (USD 7,100) for: PV mini-grid standards (1 int’l round trip and 13 days per diem); regulations for ownership and concessionaires of RE mini-grids (1 int’l round trip and 13 days per diem); regulations for charging for electricity on the outer islands (1 int’l round trip and 12 days per diem); institutional plan on outer islands for spare parts (1 int’l round trip and 13 days per diem); outer island all-island energy plans and (1 int’l round trip and 20 days per diem).
11	Printing: USD 155 in total spread across ten activities with a total of 620 copies at USD 0.25 per copy, including: PV mini-grid standards (40 copies); regulations for ownership and concessionaires of RE mini-grids (40 copies); regulations for charging for electricity on the outer islands (40 copies); incentive regulations (40 copies); institutional restructuring of KSEC vis-à-vis EPU (40 copies), institutional coordination between EPU and productive departments and companies (40 copies); institutional cooperation plan for EPU and productive departments and organizations (40 copies); institutional plan on outer islands for spare parts (40 copies); outer island all-island energy plans (200 copies); and updating of Outer Island section of the KIER (100 copies).
	<i>Outcome 3</i>
12	International consultants: USD 65,100 in total for 93 days at USD 700 per day spread across 5 activities, including: financial analysis on outer island RE mini-grid sustainability (24 days); financial analysis on viability of private sector investment in outer island RE mini-grids (24 days); study on de-risking outer island RE investment in Kiribati (15 days); and design of grant fund (30 days).
13	Local consultants: USD 28,600 in total for 143 days at USD 200 per day spread across 6 activities, including: financial analysis on outer island RE mini-grid sustainability (24 days); financial analysis on viability of private sector investment in outer island RE mini-grids (20 days); study on de-risking outer island RE investment in Kiribati (15 days); design of grant fund (34 days); and outreach and technical assistance to outer island applicants to grant fund (50 days).
14	Travel: USD 9,450 in total. Benchmarks are USD 1,800 for international roundtrip airfare, USD 250 for domestic roundtrip airfare, USD 100 per day for per diems in South Tarawa, and USD 50 for per diems on outer islands. There are 2 int’l roundtrip airfares (USD 3,600) and 26 days South Tarawa per diem (USD 2,600), including that for travel of international consultant to conduct financial analysis of RE mini-grid sustainability, financial analysis of private sector investment in RE mini-grids, and de-risking study (1 int’l airfare and 13 days per diem across 3 activities) and that for travel of international consultant to conduct design of grant fund (1 int’l airfare and 13

	days per diem). There are 40 days of outer island per diem (USD 2,000) and 5 domestic roundtrip airfares (USD 1,250) for local consultant to conduct outreach and technical assistance to outer island persons applying for grant funds (some travel for these activities may also be supported under demo installation).
15	Equipment: USD 300,000 in total, all of which is to go towards grant fund and thus grants for outer island productive use equipment. Grant will cover up to one-third of purchase price of equipment.
16	Printing: USD 250 in total spread across six activities including 150 copies at USD 1 per copy (USD 150) and 400 copies at USD 0.25 per copy (USD 100). The USD 1 per copy items include: financial analysis on outer island RE mini-grid sustainability (30 copies); financial analysis on viability of private sector investment in outer island RE mini-grids (30 copies); study on de-risking outer island RE investment in Kiribati (30 copies); design of grant fund (60 copies). The USD 0.25 per copy printing is all for outreach and technical assistance to outer island applicants to grant fund (400 copies).
	<i>Outcome 4.1</i>
17	International consultants: USD 332,500 in total for 475 days at USD 700 per day spread across 29 activities, including: best mini-grid components (20 days), most rational mini-grid configurations (20 days), DC versus AC mini-grids (15 days), small-scale wind for mini-grids (20 days), financial viability of mini-grids (10 days), best technology for RE/EE for water for agriculture (40 days), technology/ design for EE cook stoves to be made in Kiribati (20 days), energy audit of SKH (10 days), best type of EE enhancement for OTEC (20 days), sourcing of RE mini-grid parts (30 days), containerization of mini-grids as sourcing option (5 days), outreach to potential suppliers of RE mini-grid parts (5 days), sourcing of SHSs (20 days), determination of SHS parts inventory needed for outer islands (10 days), sourcing of RE/EE for water for agriculture equipment (15 days), sourcing of EE productive use equipment (20 days), sourcing of EE equipment for SKH (10 days), sourcing of equipment for OTEC EE enhancement (15 days), design of demo RE mini-grids (50 days), ESMP for RE mini-grids (5 days) , business plans for productive uses (20 days), design of RE/EE for water for agriculture systems (20 days), ESMP for RE/EE for water for agriculture systems (10 days) , design of OTEC EE enhancements (25 days), plans and feasibility study for rehabilitation of outer island boarding school mini-grids and health clinic SHSs (10 days), monitoring of RE mini-grid demos (10 days) , monitoring of RE/EE for water for agriculture demos (5 days) , monitoring of EE cook stove dissemination results (5 days) , and template for replication of RE mini-grid and RE/EE for water for agriculture demos (10 days).
18	Local consultants: USD 116,600 in total for 583 days at USD 200 per day spread across 20 activities, including: best mini-grid components (20 days), most rational mini-grid configurations (20 days), small-scale wind for mini-grids (20 days), financial viability of mini-grids (20 days), best technology for RE/EE for water for agriculture (28 days), technology/ design for EE cook stoves to be made in Kiribati (20 days), outreach to potential suppliers of RE mini-grid parts (10 days), determination of SHS parts inventory needed for outer islands (20 days), sourcing of EE productive use equipment (20 days), design of demo RE mini-grids (155 days), ESMP for RE mini-grids (30 days) , business plans for productive uses (30 days), design of RE/EE for water for agriculture systems (20 days), ESMP for RE/EE for water for agriculture systems (10 days) , plans and feasibility study for rehabilitation of outer island boarding school mini-grids and health clinic SHSs (30 days), monitoring of RE mini-grid demos (40 days) , monitoring of RE/EE for water for agriculture demos (20 days) , monitoring of EE cook stove dissemination results (20 days) , template for replication of RE mini-grid and RE/EE for water for agriculture demos (20 days), and site identification for and design of projects to replicate demos (30 days).
19	Travel: USD 59,860 in total. Benchmarks are USD 1,800 for international roundtrip airfare (of which there are 9, totaling USD 16,200); USD 250 for domestic roundtrip airfare (of which there are 73, totaling USD 18,250); level A per diems of USD 100 per day (of which there are 59, totaling USD 5,900) in South Tarawa; level B per diems of USD 50 per day on South Tarawa and the outer islands (of which there are 329, totaling USD 16,450); and USD 20 per day for motorcycle rental on the outer islands (of which there are 153 days, totaling USD 3,060). These expenses are spread across 17 activities as follows: best mini-grid components (1 int'l roundtrip, 12 level A per diems), most rational mini-grid configurations (6 domestic roundtrips, 24 level B per diems), small-scale wind for mini-grids (1 int'l roundtrip, 6 domestic roundtrips, 12 level B per diems), financial viability of mini-grids (5 level A per diems), best technology for RE/EE for water for agriculture (1 int'l roundtrip, 4 domestic roundtrips, 2 level A per diems, 54 level B per diems), technology/ design for EE cook stoves to be made in Kiribati (1 int'l airfare, 20 level A per diems), energy audit of SKH (1 int'l roundtrip, 3 domestic roundtrips, 2 level A per diems, 15 level B per diems), best type of EE enhancement for OTEC (1 int'l round trip, 6 level A per diems), determination of SHS parts inventory needed for outer islands (4 domestic roundtrips, 12 level B per diems), design of demo RE mini-grids (1 int'l roundtrip, 22 domestic roundtrips, 12 level A per diems, 66 level B per diems, 33 motorcycle rental days), ESMP for RE mini-grids (30 level B per diems, 30 motorcycle rental days) , business plans for productive uses (1 int'l roundtrip, 4 domestic roundtrips, 40 level B per diems, 30 motorcycles rental days), ESMP for RE/EE for water for agriculture systems (5 domestic roundtrips, 6 level B per diems) , plans and feasibility study for rehabilitation of outer island boarding school mini-grids and health clinic SHSs (1 int'l roundtrip, 4 domestic roundtrips, 30 level B per diems, 20 motorcycle rental days), monitoring of RE mini-grid demos (11 domestic roundtrips, 20 level B per diems, 20 motorcycle rental days) , monitoring of RE/EE for water for agriculture demos (2 domestic roundtrips, 10 level B per diems, 10 motorcycles rental days) , and monitoring of EE cook stove dissemination results (2 domestic roundtrips, 10 level B per diems, 10 motorcycles rental days) . [Note: In many cases, an activity will be able to take care of a portion of

	travel by synergies with another activity, such as in the case of int'l airfare of a consultant who carries out more than one activity during a trip.]
	<i>Outcome 4.2</i>
20	Travel: USD 127,440 in total. Benchmarks are USD 250 for domestic roundtrip airfare (of which there are 84, totaling USD 21,000); outer island per diems of USD 50 per day on (of which there are 1,876, totaling USD 93,800); and USD 20 per day for motorcycle rental on the outer islands (of which there are 632 days, totaling USD 12,640). These expenses are spread across three activities as follows: demo mini-grid installation (48 domestic roundtrips, 1,344 per diems, and 416 motorcycle rental days); installation of RE/EE for water for agriculture demos (16 domestic roundtrips, 432 per diems, and 216 motorcycle rental days); and sale/ dissemination of EE cook stoves (20 domestic roundtrips and 100 per diems).
21	Equipment: USD 3,672,560 in total, with breakdown as follows: 3,072,560 for RE mini-grid equipment with battery storage (across as estimated 790 kW, or 3,889/ kW); and USD 600,000 for equipment for RE and EE for water for agriculture systems.
	<i>Project Management</i>
22	International consultants: USD 35,000 in total for 50 days at USD 700 per day. This includes 25 days for the Mid-Term Review (MTR) and 25 days for the Terminal Evaluation (TE).
23	National consultants: USD 8,316 in total for about 54 days at USD 154 per day. This includes: 25 days for MTR, 25 days for TE, and 4 days for inception workshop.
24	Contractual services – Individual: USD 166,648 for salaries for project management, procurement, administrative, and finance personnel of project management unit.
25	Travel: USD 8,600 in total, split equally between MTR travel and TE travel, with each including: 1 international roundtrip airfare (USD 1,800 each for total of USD 3,600 for both MTR and TE), 6 domestic roundtrip airfares (USD 250 each for a total of USD 3,000), 2 days South Tarawa per diem (USD 100 each for total of USD 400), 16 days outer island per diem (USD 50 each for total of USD 1,600).
26	Contractual services - Company: USD 6,000 in total for assessment of core indicators by local institute, once at mid-term and once at end of project (at USD 3,000 each time)
27	Professional services: USD 16,000 in total for annual audits (at USD 4,000 per audit)
28	Printing: USD 134 in total for inception workshop documents, and inception phase work document printing needs.
29	Miscellaneous: sundries and food for the inception workshop.
30	Project Support Costs for KSFU and KSEC – USD 15,000 in total for support services to MISE for financial services, HR, procurement, travel arrangement and administration services.
31	Workshop: USD 250 in total for rental of inception workshop meeting room at USD 250 per day for one day.

XI. LEGAL CONTEXT

This project document shall be the instrument referred to as such in Article 1 of the Standard Basic Assistance Agreement between the Government of Kiribati and UNDP, signed on May 5, 1987. All references in the SBAA to “Executing Agency” shall be deemed to refer to “Implementing Partner.”

This project will be implemented by the Ministry of Infrastructure and Sustainable Energy (“Implementing Partner”) in accordance with its financial regulations, rules, practices and procedures only to the extent that they do not contravene the principles of the Financial Regulations and Rules of UNDP. Where the financial governance of an Implementing Partner does not provide the required guidance to ensure best value for money, fairness, integrity, transparency, and effective international competition, the financial governance of UNDP shall apply.

The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations or UNDP concerning the legal status of any country, territory, city or area or its authorities, or concerning the delimitation of its frontiers or boundaries.

XII. RISK MANAGEMENT

1. Consistent with the Article III of the SBAA [*or the Supplemental Provisions to the Project Document*], the responsibility for the safety and security of the Implementing Partner and its personnel and property, and of UNDP’s property in the Implementing Partner’s custody, rests with the Implementing Partner. To this end, the Implementing Partner shall:
 - a) put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;
 - b) assume all risks and liabilities related to the Implementing Partner’s security, and the full implementation of the security plan.
2. UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of the Implementing Partner’s obligations under this Project Document.
3. The Implementing Partner agrees to undertake all reasonable efforts to ensure that no UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via http://www.un.org/sc/committees/1267/aq_sanctions_list.shtml.
4. The Implementing Partner acknowledges and agrees that UNDP will not tolerate sexual harassment and sexual exploitation and abuse of anyone by the Implementing Partner, and each of its responsible parties, their respective sub-recipients and other entities involved in Project implementation, either as contractors or subcontractors and their personnel, and any individuals performing services for them under the Project Document.

(a) In the implementation of the activities under this Project Document, the Implementing Partner, and each of its sub-parties referred to above, shall comply with the standards of conduct set forth in the Secretary General's Bulletin ST/SGB/2003/13 of 9 October 2003, concerning "Special measures for protection from sexual exploitation and sexual abuse" ("SEA").

(b) Moreover, and without limitation to the application of other regulations, rules, policies and procedures bearing upon the performance of the activities under this Project Document, in the implementation of activities, the Implementing Partner, and each of its sub-parties referred to above, shall not engage in any form of sexual harassment ("SH"). SH is defined as any unwelcome conduct of a sexual nature that might reasonably be expected or be perceived to cause offense or humiliation, when such conduct interferes with work, is made a condition of employment or creates an intimidating, hostile or offensive work environment.

5. a) In the performance of the activities under this Project Document, the Implementing Partner shall (with respect to its own activities), and shall require from its sub-parties referred to in paragraph 4 (with respect to their activities) that they, have minimum standards and procedures in place, or a plan to develop and/or improve such standards and procedures in order to be able to take effective preventive and investigative action. These should include: policies on sexual harassment and sexual exploitation and abuse; policies on whistleblowing/protection against retaliation; and complaints, disciplinary and investigative mechanisms. In line with this, the Implementing Partner will and will require that such sub-parties will take all appropriate measures to:
 - i. Prevent its employees, agents or any other persons engaged to perform any services under this Project Document, from engaging in SH or SEA;
 - ii. Offer employees and associated personnel training on prevention and response to SH and SEA, where the Implementing Partner and its sub-parties referred to in paragraph 4 have not put in place its own training regarding the prevention of SH and SEA, the Implementing Partner and its sub-parties may use the training material available at UNDP;
 - iii. Report and monitor allegations of SH and SEA of which the Implementing Partner and its sub-parties referred to in paragraph 4 have been informed or have otherwise become aware, and status thereof;
 - iv. Refer victims/survivors of SH and SEA to safe and confidential victim assistance; and
 - v. Promptly and confidentially record and investigate any allegations credible enough to warrant an investigation of SH or SEA. The Implementing Partner shall advise UNDP of any such allegations received and investigations being conducted by itself or any of its sub-parties referred to in paragraph 4 with respect to their activities under the Project Document, and shall keep UNDP informed during the investigation by it or any of such sub-parties, to the extent that such notification (i) does not jeopardize the conduct of the investigation, including but not limited to the safety or security of persons, and/or (ii) is not in contravention of any laws applicable to it. Following the investigation, the Implementing Partner shall advise UNDP of any actions taken by it or any of the other entities further to the investigation.
- b) The Implementing Partner shall establish that it has complied with the foregoing, to the satisfaction of UNDP, when requested by UNDP or any party acting on its behalf to provide such

confirmation. Failure of the Implementing Partner, and each of its sub-parties referred to in paragraph 4, to comply of the foregoing, as determined by UNDP, shall be considered grounds for suspension or termination of the Project.

6. Social and environmental sustainability will be enhanced through application of the UNDP Social and Environmental Standards (<http://www.undp.org/ses>) and related Accountability Mechanism (<http://www.undp.org/secu-srm>).
7. The Implementing Partner shall: (a) conduct project and programme-related activities in a manner consistent with the UNDP Social and Environmental Standards, (b) implement any management or mitigation plan prepared for the project or programme to comply with such standards, and (c) engage in a constructive and timely manner to address any concerns and complaints raised through the Accountability Mechanism. UNDP will seek to ensure that communities and other project stakeholders are informed of and have access to the Accountability Mechanism.
8. All signatories to the Project Document shall cooperate in good faith with any exercise to evaluate any programme or project-related commitments or compliance with the UNDP Social and Environmental Standards. This includes providing access to project sites, relevant personnel, information, and documentation.
9. The Implementing Partner will take appropriate steps to prevent misuse of funds, fraud or corruption, by its officials, consultants, responsible parties, subcontractors and sub-recipients in implementing the project or using UNDP funds. The Implementing Partner will ensure that its financial management, anti-corruption and anti-fraud policies are in place and enforced for all funding received from or through UNDP.
10. The requirements of the following documents, then in force at the time of signature of the Project Document, apply to the Implementing Partner: (a) UNDP Policy on Fraud and other Corrupt Practices and (b) UNDP Office of Audit and Investigations Investigation Guidelines. The Implementing Partner agrees to the requirements of the above documents, which are an integral part of this Project Document and are available online at www.undp.org.
11. In the event that an investigation is required, UNDP has the obligation to conduct investigations relating to any aspect of UNDP projects and programmes in accordance with UNDP's regulations, rules, policies and procedures. The Implementing Partner shall provide its full cooperation, including making available personnel, relevant documentation, and granting access to the Implementing Partner's (and its consultants', responsible parties', subcontractors' and sub-recipients') premises, for such purposes at reasonable times and on reasonable conditions as may be required for the purpose of an investigation. Should there be a limitation in meeting this obligation, UNDP shall consult with the Implementing Partner to find a solution.
12. The signatories to this Project Document will promptly inform one another in case of any incidence of inappropriate use of funds, or credible allegation of fraud or corruption with due confidentiality.

Where the Implementing Partner becomes aware that a UNDP project or activity, in whole or in part, is the focus of investigation for alleged fraud/corruption, the Implementing Partner will inform the UNDP Resident Representative/Head of Office, who will promptly inform UNDP's Office of Audit and Investigations (OAI). The Implementing Partner shall provide regular updates to the head of UNDP in the country and OAI of the status of, and actions relating to, such investigation.

13. UNDP shall be entitled to a refund from the Implementing Partner of any funds provided that have been used inappropriately, including through fraud or corruption, or otherwise paid other than in accordance with the terms and conditions of the Project Document. Such amount may be deducted by UNDP from any payment due to the Implementing Partner under this or any other agreement. Recovery of such amount by UNDP shall not diminish or curtail the Implementing Partner's obligations under this Project Document.

Where such funds have not been refunded to UNDP, the Implementing Partner agrees that donors to UNDP (including the Government) whose funding is the source, in whole or in part, of the funds for the activities under this Project Document, may seek recourse to the Implementing Partner for the recovery of any funds determined by UNDP to have been used inappropriately, including through fraud or corruption, or otherwise paid other than in accordance with the terms and conditions of the Project Document.

Note: The term "Project Document" as used in this clause shall be deemed to include any relevant subsidiary agreement further to the Project Document, including those with responsible parties, subcontractors and sub-recipients.

14. Each contract issued by the Implementing Partner in connection with this Project Document shall include a provision representing that no fees, gratuities, rebates, gifts, commissions or other payments, other than those shown in the proposal, have been given, received, or promised in connection with the selection process or in contract execution, and that the recipient of funds from the Implementing Partner shall cooperate with any and all investigations and post-payment audits.
15. Should UNDP refer to the relevant national authorities for appropriate legal action any alleged wrongdoing relating to the project, the Government will ensure that the relevant national authorities shall actively investigate the same and take appropriate legal action against all individuals found to have participated in the wrongdoing, recover and return any recovered funds to UNDP.
16. The Implementing Partner shall ensure that all of its obligations set forth under this section entitled "Risk Management" are passed on to each responsible party, subcontractor and sub-recipient and that all the clauses under this section entitled "Risk Management Standard Clauses" are included, *mutatis mutandis*, in all sub-contracts or sub-agreements entered into further to this Project Document.

XIII. ANNEXES

- Annex 1: Multi-Year Work Plan
- Annex 2: GEF Core Indicators
- Annex 3: Overview of Technical Consultancies
- Annex 4: Terms of Reference of Project Board and Key Project Staff
- Annex 5: UNDP Social and Environmental Screening Procedure (SESP)
- Annex 6: Stakeholder Engagement Plan
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- Annex 8: UNDP Risk Log
- Annex 9: Results of Project Implementing Partner HACT Micro Assessment
- Annex 10. UNDP Project Quality Assurance Report
- Annex 11. POIDIER Project Demonstration Activities
- Annex 12. GHG Emission Reductions
- Annex 13. List of Organizations and People Consulted during Project Development
- Annex 14. Co-Financing Letters

Annex 1: Multi-Year Work Plan

Activity	Year 1				Year 2				Year 3				Year 4			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Output 1.1: Completed capacity and awareness development programs for: (1) local authorities (island council and local community leaders) on low carbon town and village development; (2) technical personnel and private sector on renewable energy and energy efficiency; and (3) local people in outer island communities on the application of selected low carbon technologies. <i>Indicator: No. of training courses conducted. Responsible party: PMU.</i>																
1.1.1.1: Design, organization, and conduct of low carbon development conference on North Tarawa for outer island mayors																
1.1.1.2: Preparation of guidance and template that island councils can use in preparation of all-island energy plan																
1.1.1.3: Outreach to island councils, during site visits, regarding RE and EE technologies promoted by POIDIER																
1.1.2.1: Conduct of training program for Kiribati technical experts on assessment, design, and installation of (i) PV-battery mini-grids, (ii) small-scale wind, and (iii) RE and EE for water for agriculture technologies																
1.1.2.2: Conduct of training program for outer island technical personnel on: (i) PV-battery mini-grids, (ii) productive use equipment, and (iii) RE/ EE for water for agriculture systems																
1.1.2.3: Conduct of training program for interested outer island women (“solar mammas”) in the sizing, installation, and repair of SHS																
1.1.2.4: Conduct of training program on fabrication of EE cook stoves for persons interested in entering this business																
1.1.2.5: Conduct of survey of all trainees under Activities 1.1.2.1-4 regarding use of acquired skills and income sources																
1.1.2.6: Conduct of tracking of project M&E indicators																
1.1.3.1: Conduct of “road show” visits to villages across all POIDIER demo islands to promote successful dissemination and use of RE and EE technologies																
1.1.3.2: Conduct of radio shows to promote same RE and EE topics covered in “road show” of Activity 1.1.3.1																
1.1.3.3: Preparation and distribution of brochures on same RE and EE topics covered in “road show” of Activity 1.1.3.1																
1.1.3.4: Conduct of social media campaign to promote the same RE and EE topics covered in “road show” of Activity 1.1.3.1																
1.1.3.5: Conduct of survey of random sample of people from demo outer islands to assess their understanding of the principles and benefits of LC development																
Output 1.2: Established and operational information exchange network for the promotion and dissemination of knowledge on all aspects of sustainable energy and low carbon development in all island groups in the country. <i>Indicator: No. of different entries in information exchange’s discussion boards. Responsible party: PMU.</i>																
1.2.1: Development of RE and EE information base and exchange network on EPU website in Kiribati language and English																
Output 1.3: Established and operationalized outer island RE and EE energy consumption, system deployment, and system status monitoring and reporting and database system. <i>Indicator: No. of different outer island mini-grid systems for which status is being updated in monitoring and reporting system at least two times per month. Responsible party: PMU.</i>																
1.3.1: Development of processes and online dashboard for EPU to get timely information on and																

monitor outer island RE installations																
Output 2.1: Piloted and cabinet-approved Kiribati Outer Island Energy Regulations. <i>Indicator: No. of new regulations adopted into Kiribati Outer Island Energy Regulations. Responsible Party: EPU and PMU.</i>																
2.1.1: Consultative development of standards for PV-battery mini-grids, to be incorporated into Kiribati Outer Island Energy Regulations ⁶²																
2.1.2: Consultative development of regulations for ownership of and for concessionaire operation and maintenance of outer island multiple user RE/ EE systems, to be incorporated into Kiribati Outer Island Energy Regulations ⁶³																
2.1.3: Consultative development of regulations for charging for electricity at outer island RE mini-grids and for setting aside funds for repairs, to be incorporated into Kiribati Outer Island Energy Regulations ⁶⁴																
Output 2.2: Piloted and approved incentive regulations for RE and EE. <i>Indicator: No. of incentive regulations adopted. Responsible Party: EPU and PMU.</i>																
2.2.1: Consultative development of incentive regulations for RE and EE, especially as regards the outer islands ⁶⁵																
Output 2.3: Proposed, adopted, and implemented improved institutional framework for the energy sector. <i>Indicator: Status of adoption of KSEC restructuring vis-à-vis EPU (scored as follows: draft plan agreed upon=1; adopted by Cabinet=2; implemented=3). Responsible party: EPU and PMU.</i>																
2.3.1: Consultative development of institutional restructuring of KSEC vis-à-vis EPU ⁶⁶																
2.3.2.1: Development and implementation of institutional coordination between EPU and other government and commercial organizations, with emphasis on productive use of RE/EE in the outer islands ⁶⁷																
2.3.2.2: Development of integrated plan for cooperation between EPU and other economic sectors for providing needed energy on the outer islands for major productive use activities																
2.3.3: Development and implementation of institutional plan to keep, on the outer islands, spare parts for SHSs in inventory and tools for SHS repairs ⁶⁸																
Output 2.4: Updated outer island section of KIER to reflect more specific and comprehensive plans for each outer island and to include productive use/ community mini-grid targets. <i>Indicator: No. of new, specific outer island RE/EE projects associated with productive uses and sustainable financial management. Responsible party: EPU and PMU.</i>																
2.4.1: Preparation of detailed all-island RE and EE plans for each outer island																
2.4.2: Incorporation of highlights of detailed RE and EE plans for each outer island (prepared under Activity 2.4.1) into the KIER and preparation of updated outer island targets for KIER																

⁶² Timeline in green is period used to formulate and reach consensus upon standards. Period in gray includes piloting of standards with project demos and then adoption and long-term enforcement of standards.

⁶³ Timeline in green is period used to formulate and reach consensus upon ownership and concessionaire regulations. Period in grey includes piloting of regulations with selection of concessionaires of project RE mini-grid demos, etc. and then adoption and long-term enforcement/ implementation.

⁶⁴ Timeline in green is period used to formulate and reach consensus upon regulations for charging for power on outer islands. Period in grey includes piloting of regulations in charging for power of outer island RE mini-grid demos and then adoption and long-term enforcement/ implementation.

⁶⁵ Timelines in green are periods spent formulating and coming to consensus on policy. (First period is for VAT free importation of RE and EE equipment and second period are for preferential tax treatment for investors and operators of RE mini-grids.) Timelines in grey are periods during which policies are piloted, adopted, and enforced for the long-term.

⁶⁶ Timeline in green is period spent formulating and coming to consensus on new institutional plan. Timeline in grey is period piloting policy, achieving approval, and enforcing for the long-term.

⁶⁷ Timeline in green represents planning and start-up of institutional cooperation. Timeline in grey represents follow-up with long-term implementation of the cooperation.

⁶⁸ Timeline in green represents analysis and development of plan. Timeline in grey represents piloting, adoption, and long-term implementation.

Output 3.1: Report and financial analysis on measures and benchmarks for achieving long-term financial sustainability of RE mini-grids in the outer islands of Kiribati. <i>Indicator: No. of parties with whom high level briefing on financial analysis and financial sustainability of outer island RE mini-grids is shared in face-to-face meeting. Responsible party: PMU.</i>																				
3.1.1: Conduct of study with financial analysis and proposing of recommendations on measures to achieve financial sustainability of outer island RE mini-grids																				
Output 3.2: Completed studies and outreach with findings to potential investors on the de-risking (e.g. through anchor tenant and productive uses) and financial viability of RE mini-grid equity investments in the outer islands. <i>Indicator: No. of parties with whom high level briefing on de-risking and financial returns of outer island RE mini-grids is shared in face-to-face meeting. Responsible party: PMU.</i>																				
3.2.1: Conduct of study on financial viability of RE mini-grids financed with private sector investment rather than donor grants and outreach to potential investors with findings																				
3.2.2: Preparation of report “Derisking Renewable Energy Investment in Kiribati” based on findings from utilizing UNDP Derisking Renewable Energy Investment (DREI) tools																				
Output 3.3: Designed, approved, and operational financial support mechanism(s) for outer island RE, EE, and productive uses, inclusive of the implementation arrangements, and procedures for the financial assistance application process. <i>Indicator: Amount distributed from RE/EE productive use grant fund (USD). Responsible party: PMU and grant fund administrator.</i>																				
3.3.1.1: Design of a grant fund to provide partial investment (up to one-third) for productive use equipment associated with PV mini-grids																				
3.3.1.2: Implementation of grant fund to provide partial investment (up to one-third) for productive use equipment associated with PV mini-grids																				
3.3.3: Provision of outreach and technical assistance to outer island applicants to grant fund of Activity 3.3.1.2																				
Output 4.1.1: Completed technical assessment of applicable low carbon technologies that can be feasibly implemented for enhanced rural electrification and energy efficiency in Kiribati. <i>Indicator: No. of technical assessments related to RE and EE technologies completed. Responsible party: PMU.</i>																				
4.1.1.1.1: Determination of best types of components for PV mini-grids for Kiribati outer islands, considering both the island physical environment and lack of high level of technical expertise for repair																				
4.1.1.1.2: Assessment of most rational configuration of PV mini-grids for Kiribati outer islands in terms of costs and services delivered																				
4.1.1.1.3: Assessment of the option of small DC mini-grids versus AC mini-grids																				
4.1.1.1.4: Assessment of small-scale wind as a possible addition to outer island PV mini-grids with battery storage on Abaiang, Teeraina, and Tabuearan or other outer islands																				
4.1.1.1.5: Assessment of financial viability of proposed demo mini-grids																				
4.1.1.2: Assessment of best approach and RE/EE based technology for providing water to scale up agriculture in Kiribati																				
4.1.1.3: Development and assessment of energy efficient fuel wood-based cook stove models that can be fabricated in Kiribati at low cost and of locally available materials																				
4.1.1.4.1: Assessment by GOK of cost effectiveness and institutional rationale of continued operation and upgrading of SKH																				
4.1.1.4.2: Conducting of energy audit for SKH and provision of recommendations for retrofits																				
4.1.1.5: Identification and assessment of options for incorporating EE features in the design of Tarawa Ocean Thermal Energy Conversion (OTEC) Project																				
Output 4.1.2: Improved sourcing of high-quality equipment at best cost for RE and EE installations. <i>Indicator: No. of new sourcing channels for RE and EE equipment for Kiribati identified and shared publicly. Responsible party: PMU.</i>																				
4.1.2.1.1: Assessment of least cost sources of high-quality equipment, including panels, inverters, batteries, and cabling of various sizes needed.																				

4.1.2.1.2: Assessment of option of containerized PV power station solutions																			
4.1.2.1.3: Outreach to potential suppliers to ensure that high quality best cost suppliers bid on requests for proposals for PV mini-grid equipment in the competitive bidding to be carried out for the project mini-grid demos under Activity 4.2.1A.1																			
4.1.2.2.1: Determination of quality of components required and identification of best sourcing channels for quality SHSs at lowest price																			
4.1.2.2.2: Determination of the SHS parts needed to be held in inventory on the outer islands to facilitate timely repair in an economically sustainable fashion																			
4.1.2.3: Identification of quality best price sourcing channels for RE/EE for water for agriculture system of the type determined in the technical analysis of 4.1.1.2																			
4.1.2.4: Identification of energy efficient and reliable models of key productive use equipment and determination of high quality, cost effective sourcing channels for each																			
4.1.2.5: Identification of high-quality best price sourcing options for air conditioners, LED lights, and other retrofits that are recommended by the SKH energy audit.																			
4.1.2.6: Identification of high-quality best price sourcing options for EE enhancements to South Tarawa OTEC project as recommended by assessment of Activity 4.1.1.5																			
Output 4.1.3: Completed designs and implementation plans of demo projects on sustainable energy and low carbon technology applications in the outer islands. <i>Indicator: No. of designs, business plans, and feasibility studies completed. Responsible party: PMU.</i>																			
4.1.3.1.1: Design of demo PV mini-grids with battery storage and plans for O&M and fee collection; preparation of installation procedures and provision of remote guidance on installation																			
4.1.3.1.2: Preparation of the Environmental and Social Management Plan (ESMP) for the 15 PV mini-grids of Activity 4.1.3.1.1																			
4.1.3.2: Development of business plans for high potential productive uses at demo RE mini-grids																			
4.1.3.3.1: Design of South Tarawa Solar PV RO Desalination Water Supply Project																			
4.1.3.3.2: Design of PV RO Desalination Water Supply Project for Vulnerable Outer Island Communities																			
4.1.3.3.3.1: Design of demos of RE and EE in support of water supply for agriculture (with technology as determined in Activity 4.1.1.2)																			
4.1.3.3.3.2: Preparation of ESMP for the RE and EE for water for agriculture demos																			
4.1.3.4: Design of EE enhancements for the baseline South Tarawa OTEC project as recommended by Activity 4.1.1.5																			
4.1.3.5: Preparation of review of status and feasibility study for rehabilitation of outer island PV mini-grids at boarding schools and of SHSs at outer island main health clinics																			
Output 4.1.4: Published energy performance and impact assessment reports of implemented demo project. <i>Indicator: No. of installations covered in monitoring reports. Responsible party: PMU.</i>																			
4.1.4.1: Preparation of periodic monitoring reports on POIDIER outer island RE mini-grid demos																			
4.1.4.2: Preparation of periodic monitoring reports on POIDIER outer island RE and EE for water provision for agriculture demos																			
4.1.4.3: Preparation of periodic monitoring reports on the adoption of EE cook stoves in the outer islands																			
Output 4.1.5: Completed design and implementation plans for the replication and/or scale up of demonstrated sustainable energy and low carbon energy projects. <i>Indicator: No. of sites for which detailed design and implementation plans for RE/EE replication projects are prepared. Responsible party: PMU.</i>																			
4.1.5.1: Preparation of standard/ template technical designs and operational plans that can be used in the wide-spread replication of project mini-grid demos and of project demos of use of RE and																			



Annex 2. GEF Core Indicators

GEF Core Indicators at CEO ER

Core Indicator 6: Greenhouse gas emissions mitigated (metric tons of carbon dioxide equivalent)

GHG emission type	Metric tons CO ₂ -eq (expected at PIF)	Metric tons CO ₂ -eq (expected at CEO ER)	Metric tons CO ₂ -eq (expected at MTR)	Metric tons CO ₂ -eq (expected at TE)
Lifetime direct project GHG emissions mitigated	See Note 1	298,451		
Lifetime indirect GHG emissions mitigated	See Note 1	895,355 (BU Approach)		

NOTE 1: Total of 480,240 tons of direct and indirect estimated at time of PIF for the electricity sector. Total of 1,441,000 tons of direct and indirect CERs estimated at time of PIF for electricity and transport sectors combined. EE in use of fuel wood for cooking was not included as the time of the PIF. Total of direct and indirect ERs at time of CEO ER is 1,193,807 tons CO₂ using bottom-up approach (BUA). This does not include transport but does include electricity and cook stoves.

6.1. Carbon sequestered or emissions avoided in the AFOLU sector

GHG emission type	Metric tons CO ₂ -eq (expected at PIF)	Metric tons CO ₂ -eq (expected at CEO ER)	Metric tons CO ₂ -eq (expected at MTR)	Metric tons CO ₂ -eq (expected at TE)
Lifetime direct project GHG emissions mitigated	N/A	N/A		
Lifetime indirect GHG emissions mitigated	N/A	N/A		
Anticipated start year of accounting	N/A	N/A		
Duration of accounting	N/A	N/A		

6.2. Emissions avoided Outside AFOLU sector

GHG emission type	Metric tons CO ₂ -eq (expected at PIF) *	Metric tons CO ₂ -eq (expected at CEO ER)	Metric tons CO ₂ -eq (expected at MTR)	Metric tons CO ₂ -eq (expected at TE)
Lifetime direct project GHG emissions mitigated	See Note 1	298,451		
Lifetime indirect GHG emissions mitigated	See Note 1	895,355 (BU Approach)		
Anticipated start year of accounting		2021 (Note 2)		
Duration of accounting		4 years (Note 2)		

NOTE 2: The start of accounting is after the first year of project implementation. The duration of accounting during the project implementation period is 4 years, i.e., until end-of-project (EOP). Thereafter, MISE will continue the accounting work until 2033, as part of its regular activities.

6.3 Energy saved (megajoules)

Type of Intervention*	MJ (expected at PIF)	MJ (expected at CEO ER)	MJ (achieved at MTR)	MJ (achieved at TE)
EE cook stoves (fuel wood)	NA	440,440,000 (Note 3)		
PV mini-grids (avoids DFO use)	NA	37,370,160 (Note 4)		

NOTE 3: This is direct by EOP. For wood, the LHV (Lower Heating Value or Net Calorific Value, NCV) of 15.4 MJ/kg wood is used.

NOTE 4: This is direct by EOP. For diesel fuel oil, the LHV of 36.0 MJ/liter diesel fuel oil is used.

6.4 Increase in installed renewable energy capacity per technology (megawatts)

Type of Renewable Energy	MW (expected at PIF)	MW (expected at CEO ER)	MW (achieved at MTR)	MW (achieved at TE)
Solar Photovoltaic	NA	0.9148 (Note 5)		

Core Indicator 11: Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment

	Total number (expected at PIF)	Total number (expected at CEO ER)	Total number (achieved at MTR)	Total number (achieved at TE)
Women		12,274 (Note 5)		
Men		12,274 (Note 5)		
Total		24,548 (Note 5)		

NOTE 5: Direct by end-of-project.

Annex 3: Overview of Technical Consultancies

Consultant	Time Input	Tasks, Inputs and Outputs
For Project Management		
Local / National Contracting		
Project Manager Rate: \$600/week	100 weeks over 4 years	The Project Manager will oversee the PMU and be responsible for day to day implementation of the project. The Project Manager will be involved full-time with the project. Part of this work (about one-half) will be project management; and the other part will be national expert roles spread across the various project outcomes. Annex 4 includes the preliminary TOR for the Project Manager's role. Summaries of national expert roles, some of which will be taken up by the Project Manager as will be determined at inception, are given below by outcome.
Project Technical and Demo Officer Rate: \$450/ week	50 weeks over 4 years	The Project Technical and Demo Officer, under the direction of the Project Manager, will be involved full-time with the project. Part of this work (about one-quarter) will be project management, while the other part will be national expert roles spread across the various project outcomes. Annex 4 includes the preliminary TOR for the Project Technical and Demo Officer's role. Summaries of national expert roles, some of which will be taken up by the Project Technical and Demo Officer as will be determined at inception, are given below by outcome.
Project Implementation and M&E Officer Rate: \$375/week	52 weeks over 4 years	The Project Implementation and M&E Officer, under the direction of the Project Manager, will be involved full-time with the project. Part of this work (about one-quarter) will be project management, while the other part will be national expert roles spread across the various project outcomes. Annex 4 includes the preliminary TOR for the Project Implementation and M&E Officer. Summaries of national expert roles, some of which will be taken up by the Project Implementation and M&E Officer as will be determined at inception, are given below by outcome.
Project Finance and Administrative Officer Rate: \$350/ week	208 weeks over 4 years	The Project Finance and Administrative Officer, under the direction of the Project Manager, will be involved full-time with the project. All this officer's role will be project management in function. Annex 4 includes the preliminary TOR for the Project Finance and Administrative Officer.
For Technical Assistance		
Outcome 1		
Local / National Contracting		
National Capacity Building Expert Rate: \$1,000/week	60 weeks / over 4 years	Under close supervision of the Project Manager (PM), the National Capacity Building Expert will support efforts in capacity building for outer island councils and outer island residents, as well as conducting standard project M&E and special surveys to support M&E . Specific tasks to contribute to achievement of Outcome 1 will be: <ul style="list-style-type: none"> • Design and coordinate RE and EE conference for outer island mayors • Prepare template and guidance for all-island energy plans for outer islands • Conduct ongoing outreach to island councils of outer islands on RE and EE • Plan, coordinate, and participate in road show to build awareness of residents of demo outer island on RE and EE • Plan, reach out to radio station regarding, coordinate, and carry out radios show to raise awareness of outer island residents on RE and EE • Design, draft, and facilitate preparation of brochures on RE and EE for outer island residents

Consultant	Time Input	Tasks, Inputs and Outputs
		<ul style="list-style-type: none"> Design and carry out social media strategy to promote RE and EE to outer island residents Carry out two special surveys each at midterm and end of project to measure certain project indicators Conduct annual assessment of values of all project indicators
National Technical Training Expert Rate: \$1,000/week	16 weeks over 1.5 years	Working with the Project Manager, the International RE Mini-Grid Expert, and the International RE/EE for Water for Agriculture Expert, the National Technical Training Expert will prepare written and video training materials and curriculum and train outer island technical personnel and “solar mamas.” Specific tasks to contribute to the achievement of Outcome 1 will be: <ul style="list-style-type: none"> Preparation of written and video training materials for outer island technical personnel on RE mini-grids and RE/EE for Water for Agriculture installations and conduct of training courses on the same Preparation of written and video training materials in the sourcing, installation, and repair of solar home systems (SHSs) for solar mamas and conduct of a training course on the same
National RE/EE IT Expert Rate: \$1,000/week	10 weeks over 2 years	In close coordination with the EPU and the International RE/EE IT Expert, the National RE/EE IT Expert will support the project’s information exchange and its monitoring/reporting database. Specific tasks associated with Outcome 1 are: <ul style="list-style-type: none"> Liaising with EPU to understand needs for information exchange, designing information exchange, uploading documents to information exchange, and monitoring and encouraging initial discussion boards on information exchange Liaising with EPU to understand needs for online monitoring and reporting dashboard and database on outer island RE and EE, design of system, and adjustments of system to fit EPU needs
International / Regional and Global Contracting		
International RE Mini-Grid Training Expert Rate: \$ 3,500/week	7.6 weeks over 1.5 years	In close coordination with the National Technical Training Expert, the International RE Mini-Grid Training Expert will provide training to Kiribati technical experts and support training to outer island technical personnel. This international expert will likely be involved in work towards other outcomes as well, such as RE mini-grid design work. Outcome 1 work will include the following: <ul style="list-style-type: none"> Design and deliver training course to Kiribati technical experts on off-grid RE mini-grids suitable to Kiribati’s outer islands Design and deliver training course to Kiribati technical experts on small wind as a constituent of RE mini-grids Provide materials and content support for a training course for outer island technical personnel in the operation and maintenance of outer island RE mini-grids
International RE/EE for Water for Agriculture Training Expert Rate: \$3,500/week	2.4 weeks over 1 year	In close coordination with the National Training Expert, the International RE/EE for Water for Agriculture Training Expert will provide training to Kiribati technical experts and support training to outer island technical personnel. This international expert will likely be involved in work towards other outcomes as well, such as RE/WW for water for agriculture demo design work. Outcome 1 work will include the following: <ul style="list-style-type: none"> Design and deliver training course to Kiribati technical experts on RE/EE for water for agriculture Provide materials and content support for a training course for outer island technical personnel in the operation and maintenance of RE/EE for water for agriculture installations
International EE Cook Stove Training Expert Rate: \$3,500/ week	5 weeks over 1 year	The International EE Cook Stove Training Expert will provide training to artisans to teach them how to fabricate EE cook stoves in Kiribati with local materials. This international expert will likely be involved in work towards other outcomes as well, such as the design or assessment of potential domestically produced EE cook stove models for Kiribati. Outcome 1 work will include the following: <ul style="list-style-type: none"> Design and deliver hands on training course to aspiring EE cook stove artisans in Kiribati

Consultant	Time Input	Tasks, Inputs and Outputs
		<ul style="list-style-type: none"> Assist project in determining those trainees most likely to continue work with required skills, so that they can be provided with tools
International RE/EE IT Expert Rate: \$3,500/ week	4 weeks over 1 year	<p>In close coordination with EPU and the National RE/EE IT Expert, the International RE/EE IT Expert will provide the online outer island energy information database and dashboard for EPU. Tasks will include:</p> <ul style="list-style-type: none"> Consult with EPU on the needs and outer island situation Design processes for the reporting, monitoring, and database system Building online reporting, monitoring, and database system and dashboard Test of system with EPU and adjustments to finalize system
Outcome 2		
Local / National Contracting		
National RE Mini-Grid Standards Expert Rate: \$1,000/ week	4 weeks over 9 months	<p>In close coordination with EPU and the International RE Mini-Grid Standards Expert, the National RE Mini-Grid Standards Expert will design standards for Kiribati outer island RE mini-grids and support their launch. Tasks will include:</p> <ul style="list-style-type: none"> Provide needed inputs for design of standards and support design process Vet draft standards with stakeholders and revise Promote standards to Cabinet Work with EPU in piloting of standards in the implementation of project RE mini-grid demos
National RE Mini-Grid Policy Expert Rate: \$1,000/ week	14 weeks over 1 year	<p>In close coordination with EPU and the International RE Mini-Grid Policy Expert, the National RE Mini-Grid Policy Expert will design policies related to the business aspects of outer island RE mini-grids. Tasks will include:</p> <ul style="list-style-type: none"> Provide needed inputs and support for design of regulations for ownership and concessionaire operation of outer island RE mini-grids Provide needed inputs and support for design of regulations for the charging for electricity by outer island RE mini-grids Design incentive regulations for investment and concessionaire management of RE mini-grids Conduct relevant consultations and draft policy vetting with stakeholders Promote draft policies to Cabinet Work with EPU in piloting business related outer-island RE mini-grid policies
National RE/EE Institutional Expert Rate: \$1,000/ week	18 weeks over 3 years	<p>In close coordination with EPU and other relevant government institutions, the National RE/EE Institutional Expert will carry out consultations, drafting, and promotion of institutional frameworks to promote RE/EE in the outer islands. Tasks will include:</p> <ul style="list-style-type: none"> Consult stakeholders and draft restructuring plan for KSEC vis-à-vis EPU; vet with stakeholders and revise; promote to Cabinet for adoption Plan and coordinate meetings to promote institutional coordination on outer island energy and productive uses; draft relevant MOUs for such coordination; promote to relevant institutions for adoption Consult stakeholders and draft plan for institutional coordination on outer island energy and productive uses; vet with stakeholders and revise; promote to relevant institutions for adoption Provide input for analysis of outer island SHS spare parts needs and prepare plan for keeping inventory of such parts as well as needed tools on each outer island (in cooperation with International SHS Parts and Repairs Institutional Expert)
National All-Island RE/EE Plan Expert	7 weeks over 2 years	<p>In close coordination with EPU and the International All-Island RE/EE Plan Expert, work with the Island Councils of the outer islands to improve and finalize their All-Island RE/EE Plans and then incorporate highlights into the KIER. Tasks will include:</p>

Consultant	Time Input	Tasks, Inputs and Outputs
Rate: \$1,000 / week		<ul style="list-style-type: none"> Coordinate with outer islands to ensure completion of draft plans and collect the drafts Review draft plans and coordinate with outer islands regarding queries Provide recommendations for improvement and elaboration of Outer Island All-Island RE/EE Plans Assist in finalization of Outer Island All-Island RE/EE Plans Prioritize potential RE/EE projects across all outer islands Provide proposed updated version of outer island section of the KIER incorporating projects from the all-island RE/EE plans
International / Regional and Global Contracting		
International RE Mini-Grid Standards Expert Rate: \$3,500/ week	4 weeks over 9 months	In close coordination with EPU and the National RE Mini-Grid Standards Expert, the International RE Mini-Grid Standards Expert will design standards for Kiribati outer island RE mini-grids. Tasks will include: <ul style="list-style-type: none"> Design quality specifications for parts Design specifications for mini-grid configuration, voltage, etc. Design safety standards for mini-grids Vet draft standards with stakeholders and revise
International RE Mini-Grid Policy Expert Rate: \$3,500/ week	7.4 weeks over 1 year	In close coordination with EPU and the National RE Mini-Grid Policy Expert, the International RE Mini-Grid Policy Expert will design policies related to the business aspects of outer island RE mini-grids. Tasks will include: <ul style="list-style-type: none"> Design regulations for ownership and concessionaire operation of outer island RE mini-grids Design regulations for the charging for electricity by outer island RE mini-grids operators
International SHS Parts and Repairs Institutional Expert Rate: \$3,500/ week	3.6 weeks over 1 year	In close coordination with EPU and the National RE/EE Institutional Expert, the International SHS Parts and Repairs Institutional Expert will prepare an outer island SHS parts and repair tools inventory plan. Tasks will include: <ul style="list-style-type: none"> Assess needs for SHS parts and tools on outer islands Determine recommended sources for parts (coordinating with sourcing work of Outcome 4.1) Develop plan for parts and tools inventory to be kept on each outer island Develop institutional mechanism through which plan can be implemented
International All-Island RE/EE Plan Expert Rate: \$3,500/ week	7 weeks over 2 years	In close coordination with EPU and the National All-Island RE/EE Plan Expert, work with the Island Councils of the outer islands to improve and finalize their All-Island RE/EE Plans and then incorporate highlights into the KIER. Tasks will include: <ul style="list-style-type: none"> Review draft Outer Island All-Island RE/EE Plans Provide recommendations for improvement and elaboration of Outer Island All-Island RE/EE Plans Assist in finalization of Outer Island All-Island RE/EE Plans Prioritize potential RE/EE projects across all outer islands Provide proposed updated version of outer island section of the KIER incorporating projects from the all-island RE/EE plans
Outcome 3		
Local / National Contracting		
National Financial Analysis of RE Expert	12.6 weeks over 2 years	In close coordination with the International Financial Analysis of RE Expert, the National Financial Analysis of RE Expert will conduct relevant financial analysis of RE investments and systems and prepare materials to promote findings. Tasks will include: <ul style="list-style-type: none"> Gather relevant inputs and contribute to analysis of and recommendations for how outer island RE mini-grids can achieve

Consultant	Time Input	Tasks, Inputs and Outputs
Rate: \$1,000/ week		financial sustainability; provide input on high-level briefing and, in coordination with EPU, lead outreach efforts <ul style="list-style-type: none"> • Gather relevant inputs and contribute to analysis of financial returns of commercial equity investment in outer island re mini-grids; provide input on high level briefing and lead outreach to potential domestic private sector investors • Gather relevant inputs and contribute to utilization of UNDP De-risking Renewable Energy Investment (DREI) tools to assess potential de-risking modes for investment in outer island RE mini-grids and SHSs; support preparation of de-risking report.
National RE and EE Financing Mechanism Expert Rate: \$1,000/ week	6 weeks over 1 year	In close coordination with the International RE and EE Financing Mechanism Expert, the National RE and EE Financing Mechanism Expert will contribute to the design of a grant mechanism to support RE and EE, especially in the outer islands. Tasks will include: <ul style="list-style-type: none"> • Provide needed inputs and participate in the design a grant fund to support outer island productive use of RE equipment; as part of this work, determine: scope of equipment to be supported; criteria for assessing grant applications; targeted distribution of grants among different types of industries, different islands, etc.; best approach for distributing funds to grantees, whether it be all up-front, or half up-front and half based on performance, etc.; the entity to manage the funds; the evaluation method for fund performance; and measures for monitoring the entity
National RE and EE Grant Outreach Specialist Rate: \$1,000/ week	10 weeks over 3 years	In close coordination with the Productive Use Grant Fund Management Entity, the National RE and EE Grant Outreach Specialist will provide outreach and assistance to outer island people in accessing the RE/EE grant fund. Tasks will include: <ul style="list-style-type: none"> • Promote opportunity to access grant fund to outer island people • Support interested outer island people in identifying the type of equipment they wish to purchase with the help of grant funds and the best source for purchasing that equipment • Assist outer island people in applying to the grant fund
International / Regional and Global Contracting		
International Financial Analysis of RE Expert Rate: \$3,500/ week	12.6 weeks over 2 years	In close coordination with the National Financial Analysis of RE Expert, the International Financial Analysis of RE Expert will conduct relevant financial analysis of RE investments and systems and prepare materials to promote findings. Tasks will include: <ul style="list-style-type: none"> • Conduct analysis and prepare recommendations of how outer island RE mini-grids can achieve financial sustainability; prepare high level briefing and support outreach efforts • Conduct analysis of financial returns of commercial equity investment in outer island RE mini-grids; prepare high level briefing and lead outreach to potential international private sector investors • Utilize UNDP De-risking Renewable Energy Investment (DREI) tools to assess potential de-risking modes for investment in outer island RE mini-grids and SHSs; prepare de-risking report
International RE and EE Financing Mechanism Expert Rate: \$3,500/ week	6 weeks over 1 year	In close coordination with the National RE and EE Financing Mechanism Expert, the International RE and EE Financing Mechanism Expert will support design of a grant mechanism to support RE and EE, especially in the outer islands. Tasks will include: <ul style="list-style-type: none"> • Design a grant fund to support outer island productive use of RE equipment; as part of this work, determine: scope of equipment to be supported; criteria for assessing grant applications; targeted distribution of grants among different types of industries, different islands, etc.; best approach for distributing funds to grantees, whether it be all up-front, or half up-front and half based on performance, etc.; the entity to manage the funds; the evaluation method for fund performance; and measures for monitoring the entity

Consultant	Time Input	Tasks, Inputs and Outputs
<ul style="list-style-type: none"> • Provide advice to entities managing the grant fund 		
Outcome 4.1		
Local / National Contracting		
National RE Mini-Grid Expert Rate: \$1,000/ week	72 weeks over 4 years	In close coordination with EPU and the International RE Mini-Grid Expert, the National RE Mini-Grid Expert will undertake several tasks related to determining the best type of RE mini-grid for Kiribati's outer islands, design of such mini-grids, and installation. Tasks will include: <ul style="list-style-type: none"> • Determine best types of components for Kiribati outer island RE mini-grids • Assess best configuration for Kiribati outer island RE mini-grids • Assess small-scale wind as potential addition to selected Kiribati outer island RE mini-grids • Assess financial viability of proposed RE mini-grids • Work with EPU team to design the 15 RE mini-grid demos, including plans for O&M and fee collection; work with team to install mini-grids • Work with EPU team to gather information, conduct analysis, and prepare ESMP (Environmental and Social Managements Plans) for the 15 RE mini-grid demos • Review status of and prepare feasibility study for rehabilitation of outer island PV mini-grids at boarding schools and of SHSs at outer island main health clinics • Work with EPU team to prepare standard/ template technical designs and operational plans that can be used in the wide-spread replication of project mini-grid demos • Identify priority sites and prepare detailed design and implementation plans for replication of PV mini-grid demos based on standard template
National RE Mini-Grid and SHS Sourcing Expert Rate: \$1,000/ week	10 weeks over 1.25 years	In close coordination with the EPU and the International RE Mini-Grid and SHS Sourcing Expert, the National RE Mini-Grid and SHS Sourcing Expert will conduct outreach to preferred suppliers of RE mini-grid parts, determine inventory of SHS parts needed for the outer islands, and support sourcing of productive use equipment. Tasks will include: <ul style="list-style-type: none"> • Conduct outreach to preferred suppliers of RE mini-grid components to ensure they bid on project mini-grid demos; prepare report on feedback and recommendations for follow up to ensure that they bid • Carry out evaluation of needs and determine SHS parts to be held in inventory on outer islands to ensure timely repair; promote plan to GOK • Identify energy efficient and reliable models of key productive use equipment; determine high quality, cost effective sourcing channels for each
National RE/EE for Water for Agriculture Expert Rate: \$1,000/ week	14 weeks over 4 years	In close coordination with EPU, Department of Water, Department of Agriculture, and the International RE/EE for Water for Agriculture Expert, the National RE/EE for Water for Agriculture Expert will provide needed inputs to achieve the RE/EE for Water for Agriculture demos and their replications. Tasks will include: <ul style="list-style-type: none"> • Determine best approach and best RE/EE based technology for providing water to scale up agriculture in Kiribati • Design RE/EE for water for agriculture demos (using technology selected) • Work with EPU, Dept. of Water, and Dept. of Agriculture to gather information, conduct analysis, and prepare ESMP (Environmental and Social Managements Plans) for the RE/EE for water for agriculture demos • Prepare standard/ template technical designs and operational plans that can be used in the wide-spread replication of project

Consultant	Time Input	Tasks, Inputs and Outputs
		RE/EE for water for agriculture demos <ul style="list-style-type: none"> • Identify priority sites and prepare detailed design and implementation plans for replication of PV mini-grid demos based on standard template prepared
National EE Cook Stove Expert Rate: \$1,000/ week	4 weeks over 0.75 years	In close cooperation with the International EE Cook Stove Expert, the National EE Cook Stove Expert will work to select the best model of EE cook stove to be domestically fabricated and distributed in Kiribati <ul style="list-style-type: none"> • Assess various models of EE cook stove proposed and introduce international models to consider; select most promising models • Make recommendations for improvement of best models • Conduct testing of best models to determine reduction in fuel wood consumption as compared to open hearth fire
National Productive Use Business Plan Expert Rate: \$1,000/ week	6 weeks over 2.5 years	In close cooperation with EPU and the International Productive Use Business Plan Expert, the National Productive Use Business Plan Expert will assist local outer island residents and organizations in developing business plans for high potential productive uses at demo RE mini-grids, with emphasis on the coconut value chain, fish related applications, and agriculture related applications. Tasks will include: <ul style="list-style-type: none"> • Liaise with island councils of the demo mini-grid islands • Identify resources and interests of each demo island • Identify parties that may develop the productive uses • Conduct site visits and follow up liaison (email, phone, etc.) to assist these parties in developing simple business plans with investment requirements, market channels, and projected revenues and profits
National RE and EE Demo Monitoring Expert Rate: \$1,000/ week	16 weeks over 3 years	In close cooperation with EPU and the International RE and EE Demo Monitoring Expert, the National RE and EE Demo Monitoring Expert will conduct site visits, gather needed information, and prepare periodic monitoring reports for the project demos. Tasks will include: <ul style="list-style-type: none"> • Prepare periodic monitoring reports of project demo RE mini-grids, including site visits to collect needed information, analysis of data and information collected, and report drafting • Prepare periodic monitoring reports of the project demo RE/EE for water for agriculture systems including same steps as in item above • Prepare periodic monitoring reports on project EE cook stove demos, including site visits to collect needed information; brief survey on EE cook stove use, wood savings, and satisfaction; analysis of information and data collected; and report drafting
International / Regional and Global Contracting		
International RE Mini-Grid Expert Rate: \$3,500/ week	31.4 weeks over 3.5 years	In close coordination with EPU and the National RE Mini-Grid Expert, the International RE Mini-Grid Expert will undertake several tasks related to determining the best type of RE mini-grid for Kiribati's outer islands, design of such mini-grids, and provision of remote guidance for installation. Tasks will include: <ul style="list-style-type: none"> • Determine best types of components for Kiribati outer island RE mini-grids • Assess best configuration for Kiribati outer island RE mini-grids • Assess option of small DC mini-grids versus AC mini-grids for Kiribati outer islands • Assess small-scale wind as potential addition to selected Kiribati outer island RE mini-grids • Assess financial viability of proposed RE mini-grids • Oversee and provide guidance on design of 15 RE mini-grids by national team, including plans for O&M and fee collection;

Consultant	Time Input	Tasks, Inputs and Outputs
		<p>prepare installation procedures; and provide remote guidance on installation of RE mini-grids</p> <ul style="list-style-type: none"> • Provide outline and guidance on preparation of ESMP (Environmental and Social Managements Plans) for the 15 RE mini-grid demos • Provide guidance and inputs for field work and preparation of a status and feasibility study for rehabilitation of outer island PV mini-grids at boarding schools and of SHSs at outer island main health clinics • Prepare standard/ template technical designs and operational plans that can be used in the wide-spread replication of project mini-grid demos
<p>International RE Mini-Grid and SHS Sourcing Expert</p> <p>Rate: \$3,500/ week</p>	<p>18 weeks over 2 years</p>	<p>In close coordination with the EPU and the National RE Mini-Grid and SHS Sourcing Expert, the International RE Mini-Grid and SHS Sourcing Expert will determine the best channels for Kiribati to source quality RE mini-grid components and SHSs at best costs. Tasks will include:</p> <ul style="list-style-type: none"> • Assess and identify least cost sources for quality RE mini-grid equipment for Kiribati • Assess option of containerized PV power station option for Kiribati • Conduct outreach to preferred suppliers of RE mini-grid components to ensure they bid on project mini-grid demos; prepare report on their feedback and recommendations for follow up to ensure that they bid • Assess and identify least cost channels for quality SHSs for Kiribati; provide guidance/ mentoring to domestic suppliers in sourcing • Determine SHS parts to be held in inventory on outer islands to ensure timely repair • Identify energy efficient and reliable models of key productive use equipment; determine high quality, cost effective sourcing channels for each
<p>International RE/EE for Water for Agriculture Expert</p> <p>Rate: \$3,500/ week</p>	<p>24.6 weeks over 3.5 years</p>	<p>In close coordination with EPU, Department of Water, Department of Agriculture, and the National RE/EE for Water for Agriculture Expert, the International RE/EE for Water for Agriculture Expert will provide needed inputs to achieve the RE/EE for Water for Agriculture demos and their replications. Tasks will include:</p> <ul style="list-style-type: none"> • Determine best approach and best RE/EE based technology for providing water to scale up agriculture in Kiribati • Identify quality, best price sourcing channels for RE/EE for water for agriculture system with technology selected • Design RE/EE for water for agriculture demos (using technology selected) • Provide outline and guidance on preparation of ESMP (Environmental and Social Managements Plans) for the RE/EE for water for agriculture demos • Prepare standard/ template technical designs and operational plans that can be used in the wide-spread replication of project RE/EE for water for agriculture demos
<p>International EE Cook Stove Expert</p> <p>Rate: \$3,500/ week</p>	<p>4 weeks over 0.75 years</p>	<p>In close cooperation with the National EE Cook Stove Expert, the International EE Cook Stove Expert will work to select the best model of EE cook stove to be domestically fabricated and distributed in Kiribati. Tasks will include:</p> <ul style="list-style-type: none"> • Assess various models proposed and introduce international models to consider; select most promising models • Make recommendations for improvement of best models • Conduct testing of best models to determine reduction in fuel wood consumption as compared to open hearth fire
<p>International OTEC Enhancement Expert</p>	<p>12 weeks over 1 year</p>	<p>In close cooperation with EPU, the International OTEC Enhancement Expert will determine best EE enhancement and provide design and sourcing support for the enhancement. Tasks will include:</p> <ul style="list-style-type: none"> • Identify and assess options for incorporating EE features in the design of Tarawa Ocean Thermal Energy Conversion

Consultant	Time Input	Tasks, Inputs and Outputs
Rate: \$3,500/ week		(OTEC) Project; recommend most advantageous enhancements <ul style="list-style-type: none"> • Identify high quality, best-price sourcing options for EE enhancements recommended • Design EE enhancements for the baseline South Tarawa OTEC project of type recommended
International Energy Audit and EE Equipment Sourcing Expert Rate: \$3,500/ week	4 weeks over 0.5 years	In close cooperation with EPU and Ministry of Health, the International Energy Audit and EE Equipment Sourcing Expert will support the EE upgrading of Southern Kiribati Hospital (SKH) on Tab North. Tasks will include: <ul style="list-style-type: none"> • Conduct energy audit for SKH; provide recommendations for retrofits • Identify high quality, best price sourcing options for air conditioners, LED lights, and other retrofits that are recommended by the SKH energy audit
International Productive Use Business Plan Expert Rate: \$3,500/ week	4 weeks over 2.5 years	In close cooperation with EPU and the National Productive Use Business Plan Expert, the International Productive Use Business Plan Expert will assist local outer island residents and organizations in developing business plans for high potential productive uses at demo RE mini-grids, with emphasis on the coconut value chain, fish related applications, and agriculture related applications. Tasks will include: <ul style="list-style-type: none"> • Liaise with island councils of the demo mini-grid islands regarding potential productive use projects and businesses • Identify resources and interests of each demo island • Identify parties that may develop the productive uses • Conduct site visits and follow up liaison (email, phone, etc.) to assist these parties in developing simple business plans with investment requirements, market channels, and projected revenues and profits
International RE and EE Demo Monitoring Expert Rate: \$3,500/ week	4 weeks over 4 years	In close cooperation with EPU and the National RE and EE Demo Monitoring Expert, the International RE and EE Demo Monitoring Expert will provide inputs for the preparation of periodic monitoring reports on the project demos. Tasks will include: <ul style="list-style-type: none"> • Provide inputs for monitoring reports of project demo RE mini-grids, including suggested outline for information and template for data to be included in the reports, suggestions for analysis of data and information collected, and inputs on report preparation • Provide inputs for monitoring reports of the project demo RE/EE for water for agriculture systems including same steps as in item above • Provide inputs for monitoring reports on project EE cook stove demos, including suggested outline for requested information, template for data, and brief survey on EE cook stove use, wood savings, and satisfaction; support in analysis of information and data collected; and inputs on report preparation

Annex 4: Terms of Reference for Project Board and Key Project Staff

The sections below contain preliminary terms of reference (TORs) for the Project Board, the National Project Director, and each of the PMU staff. The TORs are provided in brief form and should be enhanced once recruiting is under way.

Terms of Reference for the Project Board

The Project Board (PB) will serve as the project's decision-making body. It will meet according to necessity, at least twice each year, to review project progress, approve project work plans and approve major project deliverables. The PB is responsible for providing the strategic guidance and oversight to project implementation to ensure that it meets the requirements of the approved Project Document and achieves the stated outcomes. The PB's role will include:

- Provide strategic guidance to project implementation.
- Ensure coordination between various donor funded and government funded projects and programmes.
- Ensure coordination with various government agencies and their participation in project activities.
- Approve annual project work plans and budgets, at the proposal of the Project Manager.
- Approve any major changes in project plans or programmes.
- Oversee monitoring, evaluation and reporting in line with GEF requirements.
- Ensure commitment of human resources to support project implementation, arbitrating any issues within the project.
- Negotiate solutions between the project and any parties beyond the scope of the project.
- Ensure that UNDP Social and Environmental Safeguards Policy is applied throughout project implementation; and, address related grievances as necessary.

These terms of reference will be finalized during the Project Inception Workshop.

Terms of Reference for Key Project Staff

1. National Project Director

Background

The National Project Director (NPD) is the Energy Planner of EPU, who will be accountable to MISE and UNDP for the achievement of objectives and results in the assigned Project. The NPD will be part of the Project Board and answer to it. The NPD will be financed through national government funds (co-financing) and his or her appointment will be made by the Secretary of MISE, in consultation with the UNDP PO. The NPD's role with the Project will be part-time.

Duties and Responsibilities

- Serve as a member of the Project Board.
- Supervise compliance with objectives, activities, results, and all fundamental aspects of project execution as specified in the project document.
- Supervise compliance of project implementation with MISE policies, procedures and ensure consistency with national plans and strategies.
- Facilitate coordination with other organizations and institutions that will conduct related activities.
- Participate in project evaluation, testing, and monitoring missions.
- Coordinate with national governmental representatives on legal and financial aspects of project activities.

- Coordinate and supervise government staff inputs to project implementation.
- Coordinate, oversee, and report on government co-financing inputs to project implementation.
- Play an active role in policy, institutional mechanisms, and planning formulation under the project's second component.
- Ensure that relevant government personnel are assigned for co-financed design and installation of the project demos.

2. Project Manager

Background

The Project Manager (PM) will be locally recruited following UNDP procedure, with input to the selection process from the Project partners. The position will be appointed by the project implementing agencies and funded entirely from the Project. The PM will be responsible for the overall management of the Project, including the mobilization of all project inputs, supervision over project staff, consultants, and sub-contractors. The PM will report to the NPD in close consultation with the assigned UNDP Programme Manager in the UNDP Pacific Office and the UNDP Regional Technical Advisor in the Asia-Pacific Regional Office for all the Project's substantive and administrative issues. From the strategic point of view of the Project, the PM will report on a periodic basis to the Project Board, based on the NPD's instruction. Generally, the PM will support the NPD who will be responsible for meeting government obligations under the Project, under the NIM execution modality. The PM will perform a liaison role with the government, UNDP and other UN agencies, CSOs and project partners, and maintain close collaboration with other donor agencies with related activities. The PM will work closely with the project team and outer island technical personnel. The position will be full time for the full duration of the project – four years.

Duties and Responsibilities

- Plan the activities of the project and monitor progress against the approved work-plan.
- Supervise and coordinate the production of project outputs, as per the project document in a timely and high-quality fashion.
- Coordinate all project inputs and ensure that they adhere to UNDP procedures for nationally executed projects.
- Supervise and coordinate the work of all project staff, consultants, and sub-contractors ensuring timing and quality of outputs.
- Coordinate the recruitment and selection of project personnel, consultants and sub-contractors, including drafting terms of reference and work specifications and overseeing all contractors' work.
- Manage requests for the provision of financial resources by UNDP, through advance of funds, direct payments, or reimbursement using the UNDP provided format.
- Prepare, revise and submit project work and financial plans, as required by Project Board and UNDP.
- Monitor financial resources and accounting to ensure accuracy and reliability of financial reports, submitted on a quarterly basis.
- Manage and monitor the project risks initially identified and submit new risks to the Project Board for consideration and decision on possible actions if required; update the status of these risks by maintaining the Project Risks Log.
- Liaise with UNDP, Project Board, relevant government agencies, and all project partners, including donor organization's and CSOs for effective coordination of all project activities.
- Facilitate administrative support to subcontractors and training activities supported by the Project.
- Oversee and ensure timely submission of the Inception Report, Project Implementation Report, technical reports, quarterly financial reports, and other reports as may be required by UNDP, GEF and other oversight agencies.

- Disseminate project reports and respond to queries from concerned stakeholders.
- Report progress of project to the steering committees and ensure the fulfilment of PB directives.
- Oversee the exchange and sharing of experiences and lessons learned with relevant parties nationally and internationally.
- Assist RE and EE trainees with development of essential skills through training workshops and on-the-job training thereby increasing their institutional capabilities.
- Encourage staff, partners and consultants such that strategic, intentional and demonstrable efforts are made to actively include women in the project, including activity design and planning, budgeting, staff and consultant hiring, subcontracting, purchasing, formal community governance and advocacy, outreach to social organizations, training, participation in meetings, and access to program benefits.
- Provide technical input for design and implementation of the project demos.
- Provide content support for various awareness building and outreach initiatives of the project.
- Provide content support for policy, institutional, and planning aspects of the project.

Required skills and expertise

- A university degree in a subject related to energy and/or economic development.
- At least 10 years of experience in renewable energy and energy efficiency.
- At least 5 years of demonstrable project/programme management experience.
- At least 5 years of experience working with ministries and national and local institutions that are concerned with renewable energy, energy efficiency, economic development, and, especially outer island development.

Competencies

- Strong leadership, managerial and coordination skills, with a demonstrated ability to effectively coordinate the implementation of large multi-stakeholder projects, including financial and technical aspects.
- Ability to effectively manage technical and administrative teams, work with a wide range of stakeholders across various sectors and at all levels, to develop durable partnerships with collaborating agencies.
- Ability to administer budgets, train and work effectively with counterpart staff at all levels and with all groups involved in the project.
- Ability to coordinate and supervise multiple teams in their implementation of technical activities in partnership with a variety of subnational stakeholder groups, including community and government.
- Strong drafting, presentation and reporting skills.
- Strong communication skills, especially in timely and accurate responses to emails.
- Strong computer skills, in particular mastery of all applications of the MS Office package and internet search.
- Strong knowledge about the political and socio-economic context related to Kiribati outer island development and the Kiribati energy sector.
- Excellent command of English and Kiribati language.
- Highly ethical as demonstrated by track record.

3. Project Demo and Technical Officer

Background

Under the overall supervision and guidance of the Project Manager, the Project Demo and Technical Officer will have responsibility for carrying out, as a national expert, project activities and performing some project management duties. The Project D&T Officer may carry out activities in all project components but will put his or her greatest focus on implementation of the Project Demos (Outcome 4.2)

and technical and sourcing/ costing work (Outcome 4.1). As such, the Project D&T Officer will be involved in organizing teams and carrying out Island Council liaison to achieve design and installation of the project demos. The position will be full time for the full duration of the project – four years.

Responsibilities

- Organize teams to implement the project demos.
- Participate in design and installation of the project demos.
- Coordinate technical inputs (under Outcome 4.1) to the project demos.
- Liaise with Island Councils regarding project demos and their all-island energy plans.
- Assist in training of outer island technical personnel and Solar Mamas.
- Participation in project work in other areas, such as policy, planning, institutional framework, and financing.
- Support the PM in coming up with the annual work plan.
- Coordinate procurement of equipment for project demos.
- Coordinate selection process for project RE mini-grid concessionaires.

Qualifications

- A university degree in a subject related to energy and/or power sector.
- At least 5 years of experience in renewable energy and energy efficiency.
- At least 3 years of demonstrable project/programme management experience.
- At least 3 years of experience working with ministries and national and local institutions that are concerned with renewable energy, energy efficiency, economic development, and, especially, outer island development.
- Fluent in English and Kiribati language.
- Highly ethical as demonstrated by track record.
- Attention to detail and track record in responding quickly to emails and other communications.

4. Project Implementation and Monitoring and Evaluation Officer

Background

Under the overall supervision and guidance of the Project Manager, the Implementation and M&E Officer will have the responsibility for carrying out certain project activities and for project monitoring and evaluation. The Implementation and M&E Officer will work closely with the Demo and Technical Officer across all project components to carry out project activities, though will cover in more detail Components 1,2, and 3. The position will be full time for the full duration of the project – four years.

Responsibilities

- Arrange project training and awareness building activities.
- Support PM in developing content for outreach materials.
- Support PM in preparing annual work plans.
- Prepare briefing documents, as needed, for high level government officials.
- Provide coordination for various government and private sector parties to offer input on policy, institutional arrangements, and planning.
- Provide inputs as needed for the project's financing component.
- Coordinate meetings between EPU-MISE and other government departments and ministries.
- Participate in project demo implementation as needed.
- Monitor project progress and participate in the production of progress reports ensuring that they meet the necessary reporting requirements and standards.

- Ensure project's M&E meets the requirements of the Government, the UNDP Pacific Office, and UNDP-GEF; develop project-specific M&E tools as necessary.
- Oversee and ensure the implementation of the project's M&E plan, including periodic appraisal of the Project's Results Framework with reference to actual and potential project progress and results.
- Oversee/develop/coordinate the implementation of the project's Stakeholder Engagement Plan.
- Ensure that the Project's Gender Action plan is proactively implemented.
- Oversee and guide the design of surveys/ assessments commissioned for monitoring and evaluating project results.
- Facilitate mid-term and terminal evaluations of the project, including management responses.
- Facilitate annual reviews of the project and produce analytical reports from these annual reviews, including learning and other knowledge management products.
- Support project site M&E and learning missions.
- Carry out updating of the project information exchange network. Monitor discussion boards, stimulating conversation and supervising for good behavior.

Qualifications

- A university degree, preferably in the field of energy and/or economic development.
- At least five years of relevant work experience preferably in a project management setting involving multi-lateral/ international funding agency. Previous experience with UN project will be a definite asset.
- Significant experience in collating, analyzing, and writing up results for reporting purposes.
- Very good knowledge of results-based management and project cycle management, particularly with regards to M&E approach and methods. Formal training in RBM/ PCM will be a definite asset.
- Knowledge and working experience of the application of gender mainstreaming in international projects.
- Understanding of policies and plans related to outer island energy development.
- Understanding of financing mechanisms and financial analysis of investments will be a strong asset.
- Very good inter-personal skills.
- Proficiency in computer application and information technology.
- Excellent language skills in English (writing, speaking and reading) and in Kiribati Language.
- Experience in organizing training and conferences.
- Experience in preparing briefing documents for high-level officials.
- High level of integrity as evidenced by track record.

5. Project Finance and Administrative Officer

Background

The Finance and Administration Officer will be a responsible for handling all the project's finance and administrative needs, including administrative aspects of procurement. The Finance and Administrative Officer will have a background or experience in accounting, finance, and/or administration. Knowledge of the energy and power sectors and/or economic development in the outer islands will be a plus. The position will be full time for the full duration of the project – four years.

Responsibilities

- Develop and implement project accounting and reporting procedures.
- Conduct bank reconciliation.
- Prepare documentation for procurement.
- Post calls for consultants and sub-contractors and manage incoming applications.
- Develop record keeping for procurement processes.

- Arrange for payments to be made by the project.
- Coordinate with various partners.
- Carry out liaison work and set up meetings.
- Support implementation of the financing component of the project.
- Keep records of project funds and expenditures, and ensure all project-related financial documentation is well maintained and readily available when required by the PM.
- Review project expenditures and ensure that project funds are used in compliance with the Project Document and GoK financial rules and procedures.
- Provide necessary financial information as and when required for project management decisions.
- Provide necessary financial information during project audits.
- Review annual budgets and project expenditure reports and notify the PM if there are any discrepancies or issues.
- Consolidate financial progress reports submitted by the responsible parties for implementation of project activities.
- Liaise and follow up with the responsible parties for implementation of project activities in matters related to project funds and financial progress reports.

Qualifications

- Bachelor's degree in accounting, finance, administration, or business.
- At least three years of relevant work experience preferably in a project management setting involving multi-lateral/ international funding agency. Previous experience with UN project will be a definite asset
- Strong skills in written and oral communication, in both English and Kiribati language.
- Knowledge of and enthusiasm for RE and EE and outer island economic development preferred.
- Experience in supporting implementation of development projects preferred.
- Good skills with Microsoft Office, including Word, Excel, and PowerPoint.
- High level of integrity as evidenced by track record.

Annex 5: UNDP Social and Environmental Screening Procedure

December 11, 2018, ProDoc Stage

Project Information

<i>Project Information</i>	
1. Project Title	Promoting Outer Island Development through the Integrated Energy Roadmap (POIDIER)
2. Project Number	UNDP-GEF PIMS ID number: 6159; GEF ID number: 9905
3. Location (Global/Region/Country)	Kiribati

Part A. Integrating Overarching Principles to Strengthen Social and Environmental Sustainability

QUESTION 1: How Does the Project Integrate the Overarching Principles in order to Strengthen Social and Environmental Sustainability?

Briefly describe in the space below how the Project mainstreams the human-rights based approach

The project is mainly on climate change mitigation, in general, and particularly sustainable energy. Because it is mainly focused on the outer islands/ rural areas of Kiribati, where indigenous people live, the project takes care to adopt a strong human-rights based approach in its design. First, the project emphasizes provision of off-grid renewable energy-based power and energy efficient cook stoves to improve peoples' lives both through the conveniences these bring regarding daily needs for lighting, etc. and through the potential income generating opportunities these facilitate. As for the latter, the project puts strong emphasis on creating income generating activities (via "productive use of renewable energy and energy efficiency") for indigenous peoples. Further, for indigenous peoples, the project will implement FPIC ("Free, Prior and Informed Consent,"), in line with Standard 6 of UNDP Environmental and Social Standards. During the PPG, the project development team (PDT) conducted extensive consultations with local people regarding potential renewable energy (RE) and energy efficiency (EE) related activities in their villages to determine their willingness to participate and their preferences. During full project implementation, this highly consultative approach will be continued. All demos making use of tribal or individual land will move forward only with full consent of the land-owning groups or individuals, with the application of FPIC as required by SES Standard 6. In addition, strong efforts will be made to ensure that marginalized and disadvantaged groups within communities are participating in group decision making and are targeted to benefit from income generating activities promoted by the project. Finally, the project also, working with the Energy Planning Unit (EPU), Ministry of Infrastructure and Sustainable Energy (MISE), will establish a grievance redress mechanism for individuals affected by the project's activities. Beyond these special efforts regarding the project demos, the implementation of all project activities will be in line with the principles of the human-rights based approach. The implementing partner and other involved partners acknowledge human rights practices under international law and the application of human rights-related standards in the design and implementation of the project. The project is designed to enhance the availability, accessibility, and quality of benefits and services for all relevant target groups, including those that are potentially marginalized individuals and groups.

Briefly describe in the space below how the Project is likely to improve gender equality and women's empowerment

The proposed UNDP-GEF project will promote gender equality and women's empowerment on multiple levels, from the village, community level to the urban national government official and professional level, and even, to some extent, to the international level. Most importantly, at the local level, the project will strive to enhance the position of women. In community consultations and decision-making sessions, it will be required that at least half of those providing input and making decisions are women. Further, as the project will be promoting a significant amount and range of income-generating productive use activities, the project will ensure that at least half of funds allocated for such activities go to initiatives mainly benefiting women. Already during the PPG phase, specific productive use activities benefiting women have been identified, particularly agriculture-related ones. At the next level of the project, which includes several training/

capacity building efforts, the project will ensure that women are well-represented among trainees. In particular, the project specifically calls for a “Solar Mama” solar home system (SHS) procurement, installation, and repair training program that will train 40 middle-aged women from the outer islands. Experience in other countries has shown that not only does this approach (of ensuring women are well-represented among trainees) empower women, but it also leads to greater sustainability of results, as women (especially women that already have children) are less likely to out-migrate for work, so that their skills can be used on a long-term basis. Other trainings and workshops provided by the project will strive to ensure that at least 40% of participants are women. Lastly, in its recruitments of consultants and sub-contractors, both national and international, the project will proactively seek to include women and achieve at least a 30% ratio of women in total consultant person-days.

Briefly describe in the space below how the Project mainstreams environmental sustainability

The proposed project is focused on technologies that will bring both global and local environmental benefits. The RE and EE technologies, on which the project focuses, have strong GHG emission reduction potential, thus benefiting the global environment. As for the local environment, the RE power generation technologies, with no emissions from operation, represent a much cleaner alternative for the local environment than do diesel gen sets. EE cook stoves can substantially reduce the amount of fuel wood used in cooking (one of Kiribati’s main energy uses) and at the same time improve indoor air quality, which benefits women and children who spend the most time near open hearth cooking fires. Thus, the EE cook stoves provide environmental benefits both to Kiribati’s ecosystems and to its people (health-wise). The project in addressing policy/ institutions/ planning, capacity, financing, and technical and cost aspects, aims to mainstream RE and EE in Kiribati, promoting extensive replication of the project demos, and thus contributing strongly to the mainstreaming of environmental sustainability in the nation. At the same time, the project will address environmental risks associated with low carbon technologies. For the project demos, limited, site-specific environmental and social impact assessments (ESIAs) will be undertaken for all 15 of the project’s PV mini-grid demos and its 2 or more RE/EE for water for agriculture demos, with specific attention to the disposal of battery wastes and panel wastes. These assessments will all be aggregated together and integrated to develop the project’s Environmental and Social Management Plan (ESMP), which will be prepared during project implementation. Implementation of specific demos will not begin until the management measures as detailed in the ESMP are approved and put in place (e.g. incorporated into demo implementation plans).

Part B. Identifying and Managing Social and Environmental Risks

<p>QUESTION 2: What are the Potential Social and Environmental Risks? <i>Note: Describe briefly potential social and environmental risks identified in Attachment 1 – Risk Screening Checklist (based on any “Yes” responses). If no risks have been identified in Attachment 1 then note “No Risks Identified” and skip to Question 4 and Select “Low Risk”. Questions 5 and 6 not required for Low Risk Projects.</i></p>	<p>QUESTION 3: What is the level of significance of the potential social and environmental risks? <i>Note: Respond to Questions 4 and 5 below before proceeding to Question 6</i></p>	<p>QUESTION 6: What social and environmental assessment and management measures have been conducted and/or are required to address potential risks (for Risks with Moderate and High Significance)?</p>
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Risk Description	Impact and Probability (1-5)	Significance (Low, Moderate, High)	Comments	Description of assessment and management measures as reflected in the Project design. If ESIA or SESA is required note that the assessment should consider all potential impacts and risks.
<p>Risk 1: The PV mini-grid and RE/EE for water for agriculture systems may involve use of land for which indigenous peoples have rights.</p> <p><i>SES Principle 1 Human Rights, q1; SES Standard 6 Indigenous Peoples, q6.1, q6.2, q6.3, q6.4</i></p>	I=3 P=5	Moderate	Most of the project demos will have their main powerhouse located on state-owned land, but mini-grid distribution or water piping may need to pass over indigenous land or roadside land that is state-owned but being used by indigenous people. While extensive preliminary consultations have been carried out with these groups, full FPIC processes have not yet been implemented.	Project design calls for extensive consultation with local people. For each of the project demos and all other project activities that involve these communities, FPIC processes will be carried out and documented (per UNDP Standard 6) as part of the limited, site-specific environmental and social impact assessments (ESIA). An overall project ESMP will be developed based on those assessments. No relevant project activities will begin until the ESMP has been approved and its management measures are put in place.
<p>Risk 2: The project could reinforce ongoing problems in Kiribati of lack of opportunity or lesser opportunity for women, if necessary and appropriate actions are not taken.</p> <p><i>SES Principle 2 Gender Equity and Women's Empowerment, q2</i></p>	I= 3 P=2	Moderate	The project will present opportunities for individuals and groups, including opportunities for support in productive use of renewable energy, opportunities to attend workshops and training, and opportunities to be hired as a consultant or contractor to the project. Thus, if care is not taken, existing discrimination in Kiribati towards women could be continuing to come to play through the project.	Through the application of its Gender Action Plan, which was developed based on a Gender Analysis, the project will take special measures to ensure that any discrimination against women met with in the project is countered and that, beyond this, the project makes special efforts to enhance the role of women. Thus, there will be special efforts to involve women in productive use of RE efforts (so they get at least 50% of the benefits of project funding for these), to involve women with strong representation at training (including a special training program for women as "Solar Mamas" and requiring that women represent 40 percent of trainees at other type of trainings), and to ensure a significant proportion of project consultants are women (accounting for at least 30% of consultant person-days).

<p>Risk 3: PV and RE/EE for water for agriculture projects may be sited on areas of habitat that could be adversely affected.</p> <p><i>SES Standard 1 Biodiversity Conservation and Sustainable Natural Resource Management, q1.1, q1.3</i></p>	<p>I=2 P=3</p>	<p>Moderate</p>	<p>While the demo powerhouses will be sited in areas of state land that have already been cleared, the distribution networks may have some impact on the natural environment and habitats</p>	<p>Project partners have committed their physical environment to develop the project's PV mini-grid and RE/EE for water for agriculture demos and will demarcate areas for setting up these systems. During project implementation, limited environmental and social impact assessments will be conducted for each of the project's RE demos and be completed prior to any physical work beginning on establishment of the demos. Any required mitigation measures will be clearly articulated in these assessments and will be aggregated into a broader ESMP of the project, prepared during implementation, that will also have general mitigation measures (cutting across multiple demos) that will be required.</p>
<p>Risk 4: Construction, operational, and disposal safety risks exist to communities and workers associated with the project's PV mini-grids and RE/EE for water for agriculture demos. Further, risks to artisans may occur in their fabrication of EE cook stoves. As for risks to the community, the transmission of electric power by the RE mini-grid demos present risks to the community.</p> <p><i>SES Standard 3 Community Health, Safety, and Working Conditions, q3.1, q3.2, q3.7</i></p>	<p>I=2 P=4</p>	<p>Moderate</p>	<p>The potential for electrocution is a serious risk that must be addressed in project design.</p>	<p>The project ESMP and its constituent, limited, site-specific environmental and social assessments for each of the project demos will address these safety risks and determine mitigation/management measures to be adopted. The project will provide training to outer island Re mini-grid operators prior to installation so that they can master the necessary safety skills. Relevant safety training will further be provided to communities and thus will minimize or avoid any community health risks and safety issues about construction work, installed systems, or discarded batteries.</p>

<p>Risk 5: Construction of PV mini-grids and RE/EE for water for power demos will generate wastes. Further, PV panels and batteries will require disposal at end of life. EE cook stoves, which may have a life of just 3 to 4 years will also generate waste materials.</p> <p><i>SES Standard 7 Pollution Prevention and Resource Efficiency, q7.1, q7.2; SES Standard 3 Community Health, Safety, and Working Conditions, q3.1, q3.2, q3.7</i></p>	<p>I=3 P=5</p>	<p>Moderate</p>	<p>Lithium and/or lead-acid batteries for the PV installations, when they are disposed of, will be key potentially dangerous products to be introduced.</p>	<p>Project will ensure proper disposal of wastes from construction of RE demos and of waste of batteries, PV panels, and EE cook stoves at end of life. Disposal plans will be one of the requirements of the limited site-specific environmental and social impact assessment (ESIAs) that will be conducted for each of the demos and be constituents of the project's ESMP.</p>
<p>Risk 6: Storms and/or incursion of ocean water related to low elevation of Kiribati outer islands will destroy installed PV mini-grids and RE/EE for water for agriculture systems of the project.</p> <p><i>SES Standard 2 Climate Change Mitigation and Adaptation, q.2.2; SES Standard 3 Community Health, Safety, and Working Conditions, q3.5</i></p>	<p>I = 4 P = 1</p>	<p>Moderate</p>	<p>While natural disaster risk is considered less than in some other parts of the Pacific, destruction of homes from storms has occurred in recent years. Average elevation of Kiribati's outer islands is around 2 meters above sea level.</p>	<p>This risk will be assessed during the ESIAs and captured in the management measures of the ESMP as determined appropriate. Requirements for project's off-grid RE power demo design work will explicitly include incorporation of natural disaster risk mitigation measures and siting measures to hedge against ocean water incursion.</p>
<p>Risk 7: Income-generating activities (freezers for fishermen, cook stove construction, coconut value chain processing, RE/ EE for water for agriculture, etc.) could be done in an unsustainable manner if appropriate measures are not taken.</p> <p><i>SES Standard 1 Biodiversity Conservation and Sustainable Natural Resource Management, q1.11</i></p>	<p>I = 4 P = 1</p>	<p>Moderate</p>	<p>While the project's focus is RE/EE, because it has an emphasis on productive uses and income generation, there are a wide range of productive activities using power that may be undertaken and thus bring on risks that are secondary to the original provision of electricity.</p>	<p>This risk will be assessed during the ESIAs and captured in the management measures of the ESMP as determined appropriate.</p>

<p>Risk 8: RE/EE for water for agriculture systems could lead to an increase of water borne disease, particularly if they lead to an increase in open, standing water.</p> <p><i>SES Standard 3 Community Health, Safety, and Working Conditions, q3.6</i></p>	<p>I=3 P=1</p>	<p>Low</p>	<p>The type of technology and type of storage for the water will determine the risk.</p>	<p>This risk will be assessed during the ESIA's and captured in the management measures of the ESMP as determined appropriate.</p>
<p>Risk 9: Increased ability to store fish due to RE provision of power for freezing and ice making could lead to increased fish catch, which might be unsustainable</p> <p><i>SES Standard 1 Biodiversity Conservation and Sustainable Natural Resource Management, q1.7</i></p>	<p>I=3 P=1</p>	<p>Low</p>	<p>Current levels of fishing in the outer islands are far below maximum potential sustainable levels.</p>	
<p>QUESTION 4: What is the overall Project risk categorization?</p>				
<p>Select one (see SESP for guidance)</p>		<p>Comments</p>		
<p><i>Low Risk</i></p>	<p><input type="checkbox"/></p>			
<p><i>Moderate Risk</i></p>	<p>√</p>	<p>The project's moderate risks span the areas of human rights, gender, and environmental sustainability. They will be further assessed through ESIA's during the implementation of the project, before relevant activities begin.</p>		
<p><i>High Risk</i></p>	<p><input type="checkbox"/></p>			
<p>QUESTION 5: Based on the identified risks and risk categorization, what requirements of the SES are relevant?</p>				
<p>Check all that apply</p>		<p>Comments</p>		
<p><i>Principle 1: Human Rights</i></p>	<p>√</p>	<p>Moderate risk related to impact by the project demos on land owned or used by indigenous people, to be fully assessed during the ESIA's, with management measures in the resulting ESMP.</p>		
<p><i>Principle 2: Gender Equality and Women's Empowerment</i></p>	<p>√</p>	<p>Moderate risk that project will reinforce gender inequity, particularly through distribution of project benefits, such as funding for productive uses, to be addressed through the implementation of the Gender Strategy.</p>		

	1. Biodiversity Conservation and Natural Resource Management	√	Moderate risk that construction, operation, and disposal related to project demos will negatively affect the natural environment, to be fully assessed during the ESIA's, with management measures in the resulting ESMP.
	2. Climate Change Mitigation and Adaptation	√	Moderate risk that natural disaster or ocean incursion can negatively impact the project demos, to be fully assessed during the ESIA's, with management measures in the resulting ESMP.
	3. Community Health, Safety and Working Conditions	√	Moderate risk that project demos, including their construction, operation, and disposal, may negatively impact the health and safety of workers and communities, to be fully assessed during the ESIA's, with management measures in the resulting ESMP.
	4. Cultural Heritage	<input type="checkbox"/>	
	5. Displacement and Resettlement	<input type="checkbox"/>	
	6. Indigenous Peoples	√	Moderate risk that lands owned or used by indigenous people will be impacted by the project demos, to be fully assessed during the ESIA's, with management measures in the resulting ESMP. FPIC will be consistently applied in all relevant project activities.
	7. Pollution Prevention and Resource Efficiency	√	Moderate risk that the project demos will result in environmental pollution, to be fully assessed during the ESIA's, with management measures in the resulting ESMP.

Final Sign Off

<i>Signature</i>	<i>Date</i>	<i>Description</i>
QA Assessor		UNDP staff member responsible for the Project, typically a UNDP Programme Officer. Final signature confirms they have "checked" to ensure that the SESP is adequately conducted.
QA Approver		UNDP senior manager, typically the UNDP Deputy Country Director (DCD), Country Director (CD), Deputy Resident Representative (DRR), or Resident Representative (RR). The QA Approver cannot also be the QA Assessor. Final signature confirms they have "cleared" the SESP prior to submittal to the PAC.
PAC Chair		UNDP chair of the PAC. In some cases, PAC Chair may also be the QA Approver. Final signature confirms that the SESP was considered as part of the project appraisal and considered in recommendations of the PAC.

SESP Attachment 1. Social and Environmental Risk Screening Checklist

Checklist Potential Social and Environmental Risks		
Principles 1: Human Rights		Answer (Yes/No)
1.	Could the Project lead to adverse impacts on enjoyment of the human rights (civil, political, economic, social or cultural) of the affected population and particularly of marginalized groups?	Yes
2.	Is there a likelihood that the Project would have inequitable or discriminatory adverse impacts on affected populations, particularly people living in poverty or marginalized or excluded individuals or groups? ⁶⁹	No
3.	Could the Project potentially restrict availability, quality of and access to resources or basic services, to marginalized individuals or groups?	No
4.	Is there a likelihood that the Project would exclude any potentially affected stakeholders, marginalized groups, from fully participating in decisions that may affect them?	No
5.	Is there a risk that duty-bearers do not have the capacity to meet their obligations in the Project?	No
6.	Is there a risk that rights-holders do not have the capacity to claim their rights?	No
7.	Have local communities or individuals, given the opportunity, raised human rights concerns regarding the Project during the stakeholder engagement process?	No
8.	Is there a risk that the Project would exacerbate conflicts among and/or the risk of violence to project-affected communities and individuals?	No
Principle 2: Gender Equality and Women's Empowerment		
1.	Is there a likelihood that the proposed Project would have adverse impacts on gender equality and/or the situation of women and girls?	No
2.	Would the Project potentially reproduce discriminations against women based on gender, especially regarding participation in design and implementation or access to opportunities and benefits?	Yes
3.	Have women's groups/leaders raised gender equality concerns regarding the Project during the stakeholder engagement process and has this been included in the overall Project proposal and in the risk assessment?	No
4.	Would the Project potentially limit women's ability to use, develop and protect natural resources, considering different roles and positions of women and men in accessing environmental goods and services? <i>For example, activities that could lead to natural resources degradation or depletion in communities who depend on these resources for their livelihoods and well being</i>	No
Principle 3: Environmental Sustainability: Screening questions regarding environmental risks are encompassed by the specific Standard-related questions below		
Standard 1: Biodiversity Conservation and Sustainable Natural Resource Management		
1.1	Would the Project potentially cause adverse impacts to habitats (e.g. modified, natural, and critical habitats) and/or ecosystems and ecosystem services? <i>For example, through habitat loss, conversion or degradation, fragmentation, hydrological changes</i>	Yes
1.2	Are any Project activities proposed within or adjacent to critical habitats and/or environmentally sensitive areas, including legally protected areas (e.g. nature reserve, national park), areas proposed for protection, or recognized as such by authoritative sources and/or indigenous peoples or local communities?	No
1.3	Does the Project involve changes to the use of lands and resources that may have adverse impacts on habitats, ecosystems, and/or livelihoods? (Note: if restrictions and/or limitations of access to lands would apply, refer to Standard 5)	Yes
1.4	Would Project activities pose risks to endangered species?	No
1.5	Would the Project pose a risk of introducing invasive alien species?	No
1.6	Does the Project involve harvesting of natural forests, plantation development, or reforestation?	No
1.7	Does the Project involve the production and/or harvesting of fish populations or other aquatic species?	Yes

⁶⁹ Prohibited grounds of discrimination include race, ethnicity, gender, age, language, disability, sexual orientation, religion, political or other opinion, national or social or geographical origin, property, birth or other status including as an indigenous person or as a member of a minority. References to "women and men" or similar is understood to include women and men, boys and girls, and other groups discriminated against based on their gender identities, such as transgender people and transsexuals.

1.8	Does the Project involve significant extraction, diversion or containment of surface or ground water? <i>For example, construction of dams, reservoirs, river basin developments, groundwater extraction</i>	No
1.9	Does the Project involve utilization of genetic resources? (e.g. collection and/or harvesting, commercial development)	No
1.10	Would the Project generate potential adverse transboundary or global environmental concerns?	No
1.11	Would the Project result in secondary or consequential development activities which could lead to adverse social and environmental effects, or would it generate cumulative impacts with other known existing or planned activities in the area? <i>For example, a new road through forested lands will generate direct environmental and social impacts (e.g. felling of trees, earthworks, potential relocation of inhabitants). The new road may also facilitate encroachment on lands by illegal settlers or generate unplanned commercial development along the route, potentially in sensitive areas. These are indirect, secondary, or induced impacts that need to be considered. Also, if similar developments in the same forested area are planned, then cumulative impacts of multiple activities (even if not part of the same Project) need to be considered.</i>	Yes
Standard 2: Climate Change Mitigation and Adaptation		
2.1	Will the proposed Project result in significant ⁷⁰ greenhouse gas emissions or may exacerbate climate change?	No
2.2	Would the potential outcomes of the Project be sensitive or vulnerable to potential impacts of climate change?	Yes
2.3	Is the proposed Project likely to directly or indirectly increase social and environmental vulnerability to climate change now or in the future (also known as maladaptive practices)? <i>For example, changes to land use planning may encourage further development of floodplains, potentially increasing the population's vulnerability to climate change, specifically flooding</i>	No
Standard 3: Community Health, Safety and Working Conditions		
3.1	Would elements of Project construction, operation, or decommissioning pose potential safety risks to local communities?	Yes
3.2	Would the Project pose potential risks to community health and safety due to the transport, storage, and use and/or disposal of hazardous or dangerous materials (e.g. explosives, fuel and other chemicals during construction and operation)?	Yes
3.3	Does the Project involve large-scale infrastructure development (e.g. dams, roads, buildings)?	No
3.4	Would failure of structural elements of the Project pose risks to communities? (e.g. collapse of buildings or infrastructure)	No
3.5	Would the proposed Project be susceptible to or lead to increased vulnerability to earthquakes, subsidence, landslides, erosion, flooding or extreme climatic conditions?	No
3.6	Would the Project result in potential increased health risks (e.g. from water-borne or other vector-borne diseases or communicable infections such as HIV/AIDS)?	Yes
3.7	Does the Project pose potential risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during Project construction, operation, or decommissioning?	Yes
3.8	Does the Project involve support for employment or livelihoods that may fail to comply with national and international labor standards (i.e. principles and standards of ILO fundamental conventions)?	No
3.9	Does the Project engage security personnel that may pose a potential risk to health and safety of communities and/or individuals (e.g. due to a lack of adequate training or accountability)?	No
Standard 4: Cultural Heritage		
4.1	Will the proposed Project result in interventions that would potentially adversely impact sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture (e.g. knowledge, innovations, practices)? (Note: Projects intended to protect, and conserve Cultural Heritage may also have inadvertent adverse impacts)	No
4.2	Does the Project propose utilizing tangible and/or intangible forms of cultural heritage for commercial or other purposes?	No
Standard 5: Displacement and Resettlement		
5.1	Would the Project potentially involve temporary or permanent and full or partial physical displacement?	No

⁷⁰ Regarding CO₂, 'significant emissions' corresponds generally to more than 25,000 tons per year (from both direct and indirect sources).

5.2	Would the Project possibly result in economic displacement (e.g. loss of assets or access to resources due to land acquisition or access restrictions – even in the absence of physical relocation)?	No
5.3	Is there a risk that the Project would lead to forced evictions? ⁷¹	No
5.4	Would the proposed Project possibly affect land tenure arrangements and/or community-based property rights/customary rights to land, territories and/or resources?	No
Standard 6: Indigenous Peoples		
6.1	Are indigenous peoples present in the Project area (including Project area of influence)?	Yes
6.2	Is it likely that the Project or portions of the Project will be located on lands and territories claimed by indigenous peoples?	Yes
6.3	Would the proposed Project potentially affect the human rights, lands, natural resources, territories, and traditional livelihoods of indigenous peoples (regardless of whether indigenous peoples possess the legal titles to such areas, whether the Project is located within or outside of the lands and territories inhabited by the affected peoples, or whether the indigenous peoples are recognized as indigenous peoples by the country in question)? <i>If the answer to the screening question 6.3 is “yes” the potential risk impacts are considered potentially severe and/or critical and the Project would be categorized as either Moderate or High Risk.</i>	Yes
6.4	Has there been an absence of culturally appropriate consultations carried out with the objective of achieving FPIC on matters that may affect the rights and interests, lands, resources, territories and traditional livelihoods of the indigenous peoples concerned?	Yes ⁷²
6.5	Does the proposed Project involve the utilization and/or commercial development of natural resources on lands and territories claimed by indigenous peoples?	No
6.6	Is there a potential for forced eviction or the whole or partial physical or economic displacement of indigenous peoples, including through access restrictions to lands, territories, and resources?	No
6.7	Would the Project adversely affect the development priorities of indigenous peoples as defined by them?	No
6.8	Would the Project potentially affect the physical and cultural survival of indigenous peoples?	No
6.9	Would the Project potentially affect the Cultural Heritage of indigenous peoples, including through the commercialization or use of their traditional knowledge and practices?	No
Standard 7: Pollution Prevention and Resource Efficiency		
7.1	Would the Project potentially result in the release of pollutants to the environment due to routine or non-routine circumstances with the potential for adverse local, regional, and/or transboundary impacts?	Yes
7.2	Would the proposed Project potentially result in the generation of waste (both hazardous and non-hazardous)?	Yes
7.3	Will the proposed Project potentially involve the manufacture, trade, release, and/or use of hazardous chemicals and/or materials? Does the Project propose use of chemicals or materials subject to international bans or phase-outs? <i>For example, DDT, PCBs and other chemicals listed in international conventions such as the Stockholm Conventions on Persistent Organic Pollutants or the Montreal Protocol</i>	No
7.4	Will the proposed Project involve the application of pesticides that may have a negative effect on the environment or human health?	No
7.5	Does the Project include activities that require significant consumption of raw materials, energy, and/or water?	No

⁷¹ Forced evictions include acts and/or omissions involving the coerced or involuntary displacement of individuals, groups, or communities from homes and/or lands and common property resources that were occupied or depended upon, thus eliminating the ability of an individual, group, or community to reside or work in a particular dwelling, residence, or location without the provision of, and access to, appropriate forms of legal or other protections.

⁷² Extensive initial consultations have been carried out with communities in which the project demos will be developed. During project implementation, full FPIC process will be carried out per UNDP Environmental and Social Standard 7.

Annex 6: Stakeholder Engagement Plan

The various elements of the project's stakeholder engagement plan are woven throughout the project's components and activities, which are presented in the main text of this document (in Section IV-i). This annex consolidates these various elements of the stakeholder engagement plan in one place, so that the reader can get a comprehensive picture of how the project will engage and communicate with various types of stakeholders. It builds on Section IV-ii of the main text of this document, which presents the project's partners and relevant projects of other donors, and Section IV-iv, which discusses stakeholder engagement.

Exhibit 6-1 below shows the stakeholder engagement plan by target stakeholder group or organization. In the first column, it lists stakeholders, briefly describes their role, and lists their relevant projects. In the second column, it explains the plan for engaging the stakeholders in the project.

6-1. Stakeholder Engagement Plan: Stakeholder Descriptions and Means of Engagement for Each

Stakeholder Group or Organization	Means of Engagement
<p>Ministry of Infrastructure and Sustainable Energy (MISE) - Energy Planning Unit (EPU) and Water Department: The Ministry is responsible for infrastructure, with EPU focusing on energy provision and the Water Department focusing on water provision. Current relevant projects include: (i) PV mini-grids in Line Islands (EU); (ii) South Tarawa RO PV Desalination (ADB/WB/GCF); (iii) Vulnerable Islets RO PV Desalination (Italy); (iv) Ocean Thermal Energy Conversion – “OTEC” (S. Korea)</p>	<p>-EPU/MISE will be centrally engaged as the POIDIER Implementing Partner. It will also provide the National Project Director (NPD) and lead the Project Board.</p> <p>-EPU permanent staff will be intimately engaged in a range of key project activities, working closely with full-time project staff across all components of POIDIER. EPU team members will be directly involved in POIDIER's: RE mini-grid demo design and installation (building on EPU's previous mini-grid experience); formulation of policies, institutional frameworks, and plans; and technical training.</p> <p>-POIDIER's PMU will be based in EPU offices.</p> <p>-POIDIER RE/EE for water for agriculture demo will coordinate with both EPU and Dep. of Water for technology selection, design, and installation.</p> <p>-POIDIER will build on OTEC's successful installation and work with EPU to provide design for EE enhancements to OTEC.</p>
<p>Kiribati Solar Energy Company (KSEC): state-owned company responsible for distribution of donor funded SHSs, sometimes with charges and sometimes for free, in the outer islands. Also sells SHSs procured without donor support. Upcoming projects include: (i) rural renewable energy work on outer islands under Least Cost Energy Plan Implementation (New Zealand), (ii) household pico-solar system distribution for South Tarawa (Taiwan)</p>	<p>-POIDIER institutional work will provide recommended restructuring of KSEC vis-à-vis EPU, separating government and business/ market functions, and work in close consultation with EPU, KSEC, and other government entities to determine recommended structure.</p> <p>-POIDIER RE mini-grid work on the outer islands will be coordinated with KSEC's work under (i).</p> <p>-Along with private sector companies, KSEC will be encouraged to bid on concessionaire opportunities to operate POIDIER-financed outer island RE mini-grids and may become the operator of several of these.</p>
<p>National Government Ministries, Departments, and State-Owned Companies in Productive Sectors</p>	<p>-POIDIER's institutional work will aim to set up bilateral cooperation between each of these organizations and EPU-MISE with MOUs and with a comprehensive plan for productive use activities in the outer islands. The project will also set up a multi-party working group on</p>

<p>Complementary to Energy: A. <i>Ministry of Lands and Agricultural Development (MELAD - Department of Agriculture)</i> – among other responsibilities, promotes agricultural development in the outer islands. Relevant ongoing project is (i) Kiribati Outer Island Food and Water Project (KOIFAWP) – Phase 2. <i>B. Ministry of and Fisheries and Marine Resource Development (MFMRD)</i> - responsible for promoting the nation’s fishing industry; handles upkeep and improvement of fish centers (one per outer island). <i>C. Kiribati Fish Limited (KFL)</i> - state-owned company with foreign partners; carries out fish processing and distribution of fresh fish to global markets. Current projects include (i) expansion of fish processing capacity on S. Tarawa, (ii) set up of fish processing facility on Christmas Island. <i>D. Kiribati Coconut</i> - state-owned coconut processor; has plans for coconut-related processing on outer islands</p>	<p>productive use in the outer islands, so work of these organizations can be coordinated with EPU-MISE work in outer island energy provision. -POIDIER will aim to work with and/or synergize with each of these organizations via POIDIER demo and productive use work, with specific areas of coordination, by organization, as follows:</p> <ul style="list-style-type: none"> • MELAD: POIDIER’s RE/EE for water for agriculture and its agriculture related productive use activities (e.g. cold houses, food processing, food packaging, etc.) will coordinate closely with MELAD and build on (i)’s efforts and Dept. of Agriculture’s efforts generally to promote food crop growing on selected outer islands. • MFMRD: POIDIER will work with MFMRD to bring fish related productive uses to outer islands that excel in fish industry development, especially smaller stand-out islands, such as Arorae, Makin, and Tamana. As relevant, POIDIER RE mini-grids may provide additional power capacity to nearby fish centers. They may also support chilling, processing, and sealing equipment. • KFL: KFL’s distribution of fresh fish to global markets and its increased processing capacity mean that it could absorb a large supply of fresh fish from the outer islands if only such a supply were available. POIDIER will work to leverage this demand via productive uses that will keep outer island fish catch chilled prior to transport to KFL on S. Tarawa. POIDIER will continue to communicate with KFL to understand its needs and how POIDIER productive use work can leverage the market opportunity presented by KFL’s demand for fresh fish. • Kiribati Coconut: POIDIER will coordinate with this company to integrate mini-grid siting with planned outer island processing siting near coconut sheds/ wharfs, as part of long-term agreements for power off-take.
<p>Other Government Ministries and Departments of Relevance: <i>A. Ministry of Line and Phoenix Island Development (MLPID)</i>- responsible for promoting development of Line and Phoenix Island Groups, including provision of all utility services in region. <i>B. Department of Lands, MELAD:</i> responsible for land registration/ records. <i>C. Ministry of Finance and Economic Development (MFED):</i> oversees nation’s public finance and taxation system. <i>D. Ministry of Internal Affairs (MIA: Dept. of Rural Development, Dept. of Local Governments)</i> – oversees rural development on all outer islands except Line and Phoenix Islands. Projects include: (i) Outer Island Priority Projects (Taiwan). <i>E. Ministry of Commerce, Industry, and</i></p>	<p>-POIDIER will engage all these listed ministries and departments in various activities and/or consultations to ensure the success of activities. Specific engagement for each organization is as follows:</p> <ul style="list-style-type: none"> • MLPID: POIDIER will engage MLPID in coordinating the establishment of the POIDIER PV mini-grids on Tabuaeran and Teeraina, the two inhabited outer Line Islands. MLPID will also provide important coordination for promoting productive uses at these mini-grids. • MELAD: POIDIER will coordinate with Dept. of Lands, as needed, for advice on siting mini-grid systems on state lands and on dealing with land issues related to roadside power lines. With its role vis-à-vis housing GEF focal points, MELAD will also be engaged to coordinate ministries for POIDIER participation. • MFED: POIDIER will consult MFED on the project’s development of economic incentive policies to promote RE and EE. These may include VAT-free imports of relevant equipment and tax holidays for investors and/or concessionaries operating RE mini-grids on the outer islands. • MIA: POIDIER will work with MIA in the project’s capacity building for and outreach to island councils and in the development (by island councils) of all-island energy plans for each outer island. POIDIER will also work with MIA in promoting productive uses at POIDIER RE mini-grids and aim to

<p><i>Cooperatives (MCIC, Dept. of Cooperatives)</i> – range of responsibilities including business policy and promotion of cooperatives, for which it visits 10 outer islands per year. <i>F. Ministry of Health (MOH)</i> – oversees nation’s healthcare and hospital systems. <i>G. Office of President (OB)</i> – among other responsibilities, leads climate change adaptation projects, including: (ii) UNDP-GEF Climate Change Adaptation Project</p>	<p>create productive use related synergies with MIA’s next round of Outer Island Priority projects.</p> <ul style="list-style-type: none"> • MCIC: POIDIER will work to coordinate outer island resident outreach work with MCIC’s cooperative outreach work on ten outer islands annually. • MOH: POIDIER will work with MOH to ensure prioritization and upgrading of Southern Kiribati Hospital (SKH) as a regional center. Pending confirmation of upgrading, POIDIER will provide PV mini-grid system and energy audit for SKH, to be followed up with EE equipment purchase/ installation by MOH. • OB: POIDIER will aim to integrate with and build on agriculture aspects of (ii) via POIDIER’s RE/EE for water for agriculture work and its work in productive uses of RE power that may support agriculture (e.g. cold room, processing, etc.).
<p>Development Bank of Kiribati (DBK): Provides loans to promote economic development. Current programs include: (i) Rural Support Loans (micro-credit)</p>	<p>-POIDIER will seek synergies with DBK based on DBK’s experience with (i) Rural Support Loans to inform the design and implementation of POIDIER’s productive use grant fund and some grant recipients will likely supplement their grants with DBK loans to purchase productive use equipment. DBK will also be engaged as manager of the POIDIER grant fund, for which POIDIER will provide technical assistance support in fund design, fund promotion, and support to applicants.</p>
<p>Private Sector Equity Investors: Private sector companies and individuals that may have the financial resources to invest equity in replication of the project mini-grid and water demos</p>	<p>-As part of work towards its targeted financing outcome, POIDIER will reach out to private sector entities that are potential equity investors in RE and EE projects, providing them with project-generated financial analyses and briefings on the potential payback and financial sustainability of such investments and on specific replication project investment opportunities.</p>
<p>Business Persons in Outer Island Villages: Persons already involved in business or interested in starting a business</p>	<p>The project will reach out to such persons about pursuing businesses in the area of productive use of RE and EE and help them apply for grants, if relevant.</p>
<p>Private Sector Technical and Equipment Companies: Companies selling RE and EE equipment, such as SHSs and/or involved in installation work</p>	<p>Such firms will be invited to be involved in the project both as learners (in technical training programs and in demo design/ installation work) and as bidders for concessionaire opportunities to operate installed mini-grids at a profit. They will also be provided with sourcing information developed via the project and mentoring on sourcing, if desired.</p>
<p>Engineers/ High Level Technical Persons: Persons working for government and the private sector or as contractors and that have a high level of technical skills</p>	<p>The project will invite such persons to participate in its high-level trainings and learning-by-doing design/ installation of project demos.</p>
<p>Outer Island Technical Personnel: Persons already involved in outer island technical work or identified as future operators of the project demos</p>	<p>The project will identify two such persons from each of the 11 demo outer islands to be trained for maintenance and operation of the project demos.</p>
<p>Artisans/ Potential Artisans: Persons interested in getting involved in the EE cook stove fabrication and sales business</p>	<p>The project will train 15 such persons in the fabrication of EE cook stoves. Those that master required skills and show strong interest in taking up this trade will be provided by the project with the necessary tools and equipment for EE cook stove fabrication.</p>

Outer Island Villagers and Indigenous Peoples: All persons living as residents on the outer islands	The project will put special emphasis on engagement of outer island villagers, many of whom are indigenous peoples. It will do this through its awareness raising campaign and its outreach to these people to support them in generating income from productive uses of RE. In addition, the project will conduct limited environmental and social impact assessments at each of the 17 incremental demo sites as part of its ESMP, including in-depth consultation with local people and FPIC for indigenous peoples.
Women: Women living on Kiribati's outer islands, in South Tarawa, or in other countries	The project will put special emphasis on engaging outer island women in productive uses of RE, with a specific proportion of grants targeted at women, and in becoming trained as "solar mamas" in the installation and repair of SHSs, though it's solar mama training program. The project will also promote the involvement of women in its high-level technical training and as consultants to the project.
Other Marginalized Groups in Villages: This may involve the poorest families and/or persons with disabilities.	The project will ensure such groups are involved in community decision making meetings and are prioritized for opportunities with project productive use funds and, if viable, opportunities for operator roles.
Island Councils: Local government organizations on the outer islands.	POIDIER will engage island council personnel in its local government capacity building program and support them in preparing all-island energy plans for their respective islands.
Local NGOs	The project will invite various NGOs to the project inception workshop and from there determine their interest in participation in various project activities.
Other Countries: Pacific Island Nations (PICs).	Learnings of POIDIER will be shared with other countries in the Pacific via the project's information exchange network.

Exhibit 6-2 shows targets associated with the stakeholder engagement plan for selected stakeholder groups.

Exhibit 6-2. Targets Associated with Stakeholder Engagement Plan

Stakeholder Group	Indicator	Target
EPU-MISE	<ul style="list-style-type: none"> Number of sets of new standards, regulations, and institutional policies issued by EPU-MISE for approval by higher authority Number of EPU team members directly and substantially (as key implementer) involved in POIDIER outer island demo work and/or road show Number of outer islands for which updated plans are included in the KIER 	13 ⁷³ >=10 20
National Government Departments in the Productive Sectors	<ul style="list-style-type: none"> Number of meetings between EPU and various departments in the productive sectors regarding cooperation on productive use Number of MOUs between EPU and a productive use ministry/ department or state-owned company 	>=15 4

⁷³ One point for each of: (i) RE mini-grid parts specifications standards, (ii) RE mini-grid configuration and voltage standards, (iii) RE mini-grid safety requirements, (iv) regulations on ownership of OI RE mini-grids, (v) regulations on selection of OI RE mini-grid concessionaires, (vi) regulations on monitoring of OI RE mini-grid concessionaires, (vii) rules for charging for power on OIs, (viii) rules requiring school-owned OI RE mini-grids to set aside funds for parts/ repairs, (ix) rules requiring third party owned OI RE mini-grids to set aside funds for parts/ repairs, (x) policy waiving of VAT for RE and EE imports, (xi) policy for preferential tax treatment for OI RE mini-grid operators, (xii) regulation with clear specification of respective roles of EPU and KSEC, (xiii) regulation for reallocation of staff between EPU and KSEC corresponding to government function (EPU) or market function (KSEC).

	<ul style="list-style-type: none"> Number of joint projects included in institutional coordination plan 	>=20
DBK	<ul style="list-style-type: none"> Proportion of grant funds disbursed by end of project 	100%
Private sector technical and equipment companies	<ul style="list-style-type: none"> Number of such companies actively making use of sourcing and costing information provided by the project Number of such companies that become concessionaires for project's RE mini-grids 	>=4 >=2
Private sector equity investors	<ul style="list-style-type: none"> Number of private sector equity investors approached by the project for briefing on financial sustainability and financial returns of RE mini-grid projects, as well as on specific replication projects 	10
Local business persons on out islands	<ul style="list-style-type: none"> Number of new productive use initiatives utilizing project's RE power generation at project demo sites 	75
Engineers / high level technical persons	<ul style="list-style-type: none"> Number of such persons completing high level technical training by the project 	8
Artisans/ potential artisans	<ul style="list-style-type: none"> Number of EE cook stove artisan trainees that continue after training to fabricate and then sell EE cook stoves 	10
Outer island technical personnel: operators	<ul style="list-style-type: none"> Number of potential operators trained 	25
Outer island villagers and indigenous people	<ul style="list-style-type: none"> Number of demo sites for which FPIC is completed and incorporated into project ESMP 	17
Women	<ul style="list-style-type: none"> Share of productive use funds that go to initiatives in which mainly women are involved Number of women receiving solar mama training and going on to utilize skills to support SHS selection, installation, and repair on the outer islands as an important source of their income 	>=50% 30
Island councils	<ul style="list-style-type: none"> Number of outer island councils that prepare all-island energy plans meeting recommended guidelines 	20

In addition to engaging key stakeholder groups directly as outlined in Exhibit 6-1 and measured by the indicators in Exhibit 6-2, the project will also emphasize strong communications with a broader range of stakeholders. Key elements of the project's communication strategy are outlined in Exhibit 6-3. The first column lists and describes the key elements of the communication strategy. That is, the mode of communications and content of the communications are summarized. The second column indicates the target groups for each element of the communications plan. The third and last column provides comments and indicators/ targets as relevant.

Exhibit 6-3. Project Communication Strategy

Key Element of Communication Strategy	Relevant Groups for Dissemination	Indicators/ Targets and Comments
1. Policy and planning related documentation including: <i>Kiribati Outer Island Energy Regulations - standards for RE mini-grids; Kiribati Outer Island Energy Regulations - regulations for ownership and operation of RE mini-grids; incentive regulations for RE/ EE equipment importation; incentive regulations for investment in</i>	-various government departments -decision-makers on regulations/ members of Cabinet	direct dissemination (e.g. email or hard copy) to 100 persons (<i>others may access information via the RE and EE Information Base and Exchange Network website, as described below</i>)

and operation of RE mini-grids; institutional framework plan for restructuring of KSEC; plan for institutional coordination on productive uses; update and expansion of outer island section of the KIER		
2. Project training guides and videos (MP4s/ 5s) for each of: (i) SHS selection, installation, and repair; (ii) PV mini-grid operation; (iii) RE/ EE for water for agriculture system operation; (iv) productive uses of RE	-solar mamas -outer island demo operators -outer island villagers interested in pursuing productive uses	Direct dissemination (e.g. email or hard copy/ u-drive) of one or more of these to 400 persons ⁷⁴ (<i>others may access information via the low-carbon information exchange website, as described below</i>)
3. Project awareness-raising promotion program for outer island residents via road show, social media, radio, and brochures	<i>General public, especially outer island residents</i>	Various methods of promotion reach total of 25,000 people
4. Project demo monitoring reports for each of: (i) 15 RE mini-grids across 11 demo islands, (ii) 2 RE/ EE for water for agriculture systems, (iii) EE cook stoves across all demo islands	-various national level government officials and outer island council officials -decision-makers on regulations/ policy, including Cabinet members and members of Parliament -commercial and private sector -donors -technical professionals -experts/ academics	direct dissemination (e.g. email or hard copy) to 300 persons
5. Project <i>RE and EE Information Base and Exchange Network</i>	-government officials -commercial and private sector -general public -donors -other Pacific Island Nations	Online access to all project materials and other low-carbon information as related to Kiribati achieves 5,000 distinct hits
6. Project <i>Outer Island RE and EE System Monitoring and Report Database</i>	-government officials -commercial and private sector -donors	Online access to database achieves 1,000 distinct hits

⁷⁴ Most items distributed will be those related to productive use of RE.

Annex 7: Gender Analysis and Action Plan

Gender Analysis

Inputs for the POIDIER Gender Analysis include a review of relevant data and analyses on gender in Kiribati, gathering of stakeholder input during the PPG mission, and observations during the PPG mission. Findings suggest that, while women are key contributors to the development and economic life of the nation, there are still substantial gaps in leadership roles and concerning trends in the treatment of women. Despite progress, women in Kiribati are still often treated as being of lesser importance than men in economic and social spheres and suffer an alarming amount of violence at the hands of men.

On the positive side, women are widely represented in government and managerial roles, including high positions, though not top positions, and are well-represented among the nation's top scholarship students. For example, of the 15 or so ministries in Kiribati, roughly half have secretaries that are women. Roughly 37 percent of roles classified as managerial in government are held by women.⁷⁵ The majority of island council clerks (24 out of 32) are women.⁷⁶ Academically, women do well. Stakeholders told the mission that most Kiribati students receiving scholarships to study at the college level in Australia are women. These results are thought to be linked with the higher performance and dependability of women in the work place and in schools as compared to men. As an indicator of current educational attainment, youth (ages 15-24) literacy rate in English is 91 percent for women and 83 percent for men.⁷⁷

Yet, the numbers also show that women are underrepresented at top levels and in the work place generally. None of the 15 or so national ministries has a minister that is a woman. The representation of women in Parliament is just 6.5 percent. (Three out of 46 Members of Parliament are currently women.) Women's labor force participation rate is 60 percent as compared to 73 percent for men.⁷⁸

Some of the most concerning data involves the human rights of women and girls. The most widely quoted data is somewhat dated, from a study conducted in 2008, but still considered of great importance. This study is believed to have raised awareness on issues previously not well understood and resulted in some positive change via GOK moving forward with formulating initiatives to address the negative findings.⁷⁹ The 2008 study is the *Kiribati Family Health and Support Study* (KFHSS). Key findings from the study are summarized in the quote below:

“The study revealed an alarming prevalence of gender-based violence in Kiribati: 68% of women aged 15–49 who had ever been in a relationship had experienced some form of violence (emotional, physical and/or sexual), from an intimate partner; 90% had experienced controlling behavior from a male partner; and 10% had faced violence from a non-partner. Survivors were more likely to report poorer health outcomes, including emotional stress, and were three times more likely to have attempted suicide.”⁸⁰

The project PPG work found that, on the outer islands, men and women take on different roles in their division of labor. In this regard, it is useful to look at the two main sources of outer island livelihoods – fish and coconuts. Men are the main ones involved in fishing and going out in boats to catch fish. Labor in the coconut industry is more mixed, with both genders participating in the cutting and drying, but men

⁷⁵ *Kiribati 2017 Gender Statistics Abstract*, National Statistics Office, Jan. 2018.

⁷⁶ Ibid.

⁷⁷ Ibid.

⁷⁸ Ibid. Labor force participation includes those with paid and unpaid work and those currently without work but considered part of the labor force.

⁷⁹ *Measuring and Responding to Violence against Women in Kiribati: Action on gender inequality as a social determinant of health*, World Health Organization Western Pacific Region, 2013.

⁸⁰ Ibid.

being most involved in the harvesting. Further, outer island men are more likely than women to out-migrate to work. They may get positions working on international vessels. Though there are some traditional crops, such as giant swamp taro, agriculture is relatively nascent in Kiribati's outer islands. The GOK is promoting agriculture; and women are the main ones involved. Women also get involved in several entrepreneurial ventures such as sewing shirts, weaving mats, rolling tobacco, or preparing thatch for the roofs and ceilings of traditional Kiribati village huts. Women bear most of the cooking burden for rural households. This means they spend significant time collecting fuel wood and significant time over the open-hearth fire, which is the main mode of cooking in rural Kiribati. The smoke from the fire has negative health impacts on women and may also have a negative health impact on the children that they may be caring for and keeping with them close to the fire.

POIDIER Gender Action Plan

POIDIER's Gender Action Plan includes a group of measures woven into the project activities and implementation procedures that will serve to ensure benefits of the project flow in significant proportion to women and that the project thereby also serves to bolster and improve the position of women in Kiribati.

In terms of benefiting and empowering outer island women, the project will give special emphasis to raising women's incomes and bringing new income-generating opportunities to them. This will be achieved through the project's work in productive uses of RE and EE and in its Solar Mama Capacity Building Program. In the area of productive uses, the project will give special emphasis to productive uses that predominantly benefit women. As such, the project has decided to make the links between RE/ EE and agriculture a key focus area, even though agriculture, unlike coconuts and fishing, is not that developed in Kiribati's outer islands. This is because agriculture is an area primarily being developed by women; and new initiatives in agriculture thus represent potential increased income for women.

Through its Solar Mama Capacity Building Program, POIDIER will train outer island women to source, install, and repair solar home systems. About 40 outer island women will be trained, with the number from each island roughly correlating with its population. Solar Mama programs in other countries, such as PNG, have shown that middle-aged women are a good training investment, as they tend to stay in their rural areas, rather than leave for the "big city," as many young men (typical targets for this type of capacity building) do.

The project's focus on EE cook stoves will disproportionately benefit women, as women are more involved in fuel wood collection than men and more involved in cooking. Reduced fuel wood consumption will reduce the time that women spend collecting fuel wood and give them more time to focus on income-generating activities. Further, reduced smoke from EE cook stoves, as compared to open hearth fire, will have health benefits for women and children who spend a lot of time by the fire.

Four project activities will include gender empowerment related sub-activities: (1) Activity 1.1.2.2, which is technical training for outer island personnel that will be operating the RE mini-grid demos and RE for water for agriculture demos, will have at least 30 percent women trainees. A women's empowerment session will be included for these trainees. This approach will ensure that women play a significant role in operating the demonstrations that are installed. (2) The Solar Mama training of Activity 1.1.2.3 will also include women's empowerment sessions. (3) Activity 1.1.3.1, which will be an outer island road show to promote RE and EE, will include a special women's session in each village visited to empower women to leverage POIDIER activities to their benefit. (4) Activity 4.1.3.2, which is technical assistance in business planning for productive uses of RE, will include special women's empowerment sessions that will explain to women how they can leverage the business planning assistance of the project.

In order to monitor benefits to women and ensure that the project's Gender Action Plan is on track, certain project indicators are disaggregated by gender. For example, to ensure that women benefit, the project targets that 50 percent of those outer island persons leading businesses that benefit from project grants for productive use of RE are women. In its objective indicator for rural beneficiary households overall ("incremental number of outer island households with increased level of energy access by at least 50 percent more kWh/day electricity or improved cooking conditions"), the gender disaggregation indicates that at least 20 percent of these households should be those led by women. This fits roughly with the national average for women-led households of 23 percent.⁸¹

The project will also aim to ensure that professional women benefit from project training opportunities and from contract opportunities associated with project implementation. For training of high-level technical personnel on design and installation of PV systems, a target that at least 40 percent of trainees are women will be instituted. For project contract opportunities, it will be targeted that at least 30 percent of total person-days of POIDIER individual consulting contracts are carried out by women.

⁸¹ Op. Cit., National Statistics Office, Jan. 2018.

Annex 8: UNDP Risk Log

OFFLINE RISK LOG

Project Title: Promoting Outer Island Development through the Integrated Energy Roadmap (POIDIER)	Project ID: 00114283	Date: January 2019
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#	Description	Date identified	Type	Probability & Impact	Countermeasures / Management Response	Owner	Submitted, updated by	Last Update	Status
1	Inadequate local capacity leads to lack of national experts to fill national roles, lack of personnel to operate demos, and lack of effective project management, resulting in delay in the implementation, and even non-implementation of some project activities	September 2017	Organizational	The project's demos and other activities will not be implemented due to lack of national experts and lack of technical skills on the outer islands. P = 3, I = 3, significance = moderate	<u>Preventive:</u> Project will engage project team of 4 full-time staff, at least 2 of which will be actively engaged in national expert roles most of the time, thus addressing the challenge of recruiting qualified national consultants for part-time roles in Kiribati. This substantial project team of 4 will facilitate strong project management. Project will provide training to a select group of persons from the outer islands so that they can serve as operators for the RE mini-grids. GOK will have the option of requesting UNDP Pacific Office support. <u>Alleviative:</u> If local capacity remains inadequate, the UNDP PO will manage and expedite the procurement of external personnel who will work on the affected project activities. If need be, the affected activities may have to be modified to allow expeditious implementation and completion.	PMU, EPU/MISE	Project Dev't Team	January 2019	Reducing (due to incorporation into project design of preventive plan for full-time project team to cover both project management and major national expert functions)
2	Delayed actions by EPU/MISE to improve the current processes/systems and significantly	August 2018	Organizational	Project results are inadequate due to lack of effective use of funds.	Overall, the risk assessment of the EPU/MISE's <u>programme, financial and operations management policies, procedures, systems and internal controls about cash transfers</u> is found to be of significant risk to UNDP. For each	PMU, EPU/MISE	Project Dev't Team	January 2019	Increasing

	reduce the overall risk of working with UNDP, resulting in the delay in project start-up and a change in implementation modality.			Annual budget and procurement decisions do not meet standards and raise red flags. P = 4, I = 4, significance = high	subject area, the risk assessment findings are as follows: (1) implementing partner – moderate; (2) programme management – high; (3) organizational structure and staffing – significant; (4) accounting policies and procedures – significant; (5) fixed assets and inventory – high; (6) financial reporting and monitoring – significant; and (7) procurement – high. <u>Preventive:</u> EPU/MISE agrees that its processes and systems are improved, per the findings of micro-HACT assessment and made operational before undertaking any substantive project activities. <u>Alleviative:</u> The project will be implemented by EPU/MISE with support from KFSU and KSEC until EPU/MISE improves the current processes and systems resulting in significantly reduced risks.				
3	Outer island communities may not support the project implementation promptly and sufficiently, such that volunteer labor does not materialize, systems are vandalized, or there is a lack of interest in use of the power and cook stoves made available	September 2017	Operational	Costs of installation of demo systems increases and sustainability decreases; EE cook stove dissemination targets are not met. P = 1, I = 3, significance = low	<u>Preventive:</u> Project includes strong outreach via road show and other modes for outreach to outer island communities, as well as outreach to island councils to ensure their support. Liaison by capable project team of 4 persons will further ensure support. Integration of productive use income generation opportunities will increase community interest in systems. <u>Alleviative:</u> If the project partners in the outer islands become remiss in their obligations and commitments to the project implementation, follow-up discussions between MISE/EPU, relevant island council leaders, and GoK agencies will be carried out to determine and resolve any issue.	PMU, EPU/MISE	Project Dev't Team	January 2019	Reducing (due to incorporation of strong outreach into project design)
4	The committed level of co-financing for	September 2017	Financial	Baseline demos are not achieved	<u>Preventive:</u> During project implementation, the project team will closely monitor and ensure the timely	PMU, EPU/MISE	Project Dev't Team	January 2019	Reducing (due to current work

	specific activities of the project is not enough or may not become fully available in time.			and GEF allocations for incremental demos need to be increased so that less total capacity is installed than was targeted. P = 3, I = 3, significance = moderate	availability of co-financing from project partners and co-financers. The project team shall secure government assurance of co-funding prior to project launching and periodically brief the government on the important mission and unique features of the project, which tie it to the broader mandate of economic development of the outer islands. <u>Alleviative:</u> In case this problem will occur, the reallocation of budget will be done to support the implementation of affected activities. This may entail the delivery of alternative outputs that are still contributing 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.				<i>in obtaining government assurance of co-financing</i>
5	Relevant GoK agencies fail to approve and enforce formulated policies and regulations	<i>September 2017</i>	<i>Regulatory</i>	Policies proposed by project are not adopted and enforced, thus reducing potential for replication of project demos P = 2, I = 2, significance = low	<u>Preventive:</u> Advocacy to gain adequate support from the Cabinet on the adoption of the formulated policies and regulations will be carried out as a part of project activities and by the implementing partners, with the assistance of UNDP if necessary. <u>Alleviative:</u> In case this happens, MISE/EPU will facilitate discussions with project stakeholders and relevant government authorities through the project steering committee (PSC) to come up with decisions on expediting the approval, or reformulation, of the recommended policies/regulations.	<i>PMU, EPU/MISE</i>	<i>Project Dev't Team</i>	<i>January 2019</i>	<i>Reducing (due to incorporation of policy-related advocacy work in project design)</i>
6	The outcomes and benefits of GEF investment on the activities implemented will	<i>September 2017</i>	<i>Strategic</i>	Project demos will be left inoperable and in	<u>Preventive:</u> The project directly addresses financial sustainability of outer island RE mini-grids by introducing billing systems and requirements to set aside funds for parts and repairs. Capacity building,	<i>PMU, EPU/MISE</i>	<i>Project Dev't Team</i>	<i>January 2019</i>	<i>Reducing (due to incorporation of financial sustainability</i>

	not be fully sustained.			disrepair and project will not achieve one of its central priorities of overcoming historical lack of sustainability of mini-grid power systems in Kiribati. P = 2, I = 4, significance = moderate	involvement of the private sector, policy initiatives, design of replication projects, and outreach to potential financiers are included in POIDIER design to ensure that local capabilities are developed for the long-term and that there is a basis in place to expand upon project results. <u>Alleviative:</u> In case, despite the measures, sustainability of project outcomes and benefits is seen to be in jeopardy, MISE/EPU, the project team, and the project steering committee will meet to come up with alternative measures to ensure sustainability.				<i>mechanisms into plans for demo RE systems, as well as inclusion of technical capacity building in project design)</i>
7	Adverse climate-related events may hamper the implementation of hardware-related activities.	<i>September 2017</i>	<i>Environmental</i>	Project will fail to achieve critical aim of demonstrating long-term sustainability of off-grid RE power systems in Kiribati. P = 1, I = 3, significance = low	<u>Preventive:</u> Assessments for the ESMP will include recommended measures for addressing adverse events via site selection, design (e.g. detachable panels), and operational procedures (e.g. detaching panels in case of major event). Following proper engineering and construction design and construction that ensure not only structural integrity but also climate resilience will be adequately applied in the design and implementation of major EE/RE activities that will involve procurement, design/engineering, installation and operation of EE & RE technology system installations ⁸² . <u>Alleviative:</u> In case this happens, precautionary and safety procedures will be put in place to at least minimize impacts of gale force winds, which often happen during typhoons in the Northern Pacific.	<i>PMU, EPU/MISE</i>	<i>Project Dev't Team</i>	<i>January 2019</i>	<i>Reducing (due to incorporation into project design of ESMP that will address potential adverse events)</i>

⁸² 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 region.

8	Change in national government administration may influence government support for project	September 2017	Political	Lack of government support for the project results in reduced co-financing and in lack of adoption and enforcement of policies proposed by the project P = 1, I = 3, significance = low	<u>Preventive:</u> Project demonstration approach to show technical and cost viability, as well as income generation benefits of RE/EE, will be periodically promoted to government. Island council leaders, MISE/EPU, MLPID, MELAD, MIA, and other government agencies involved in the project will monitor political dynamics and will try to resolve any misunderstanding. If need be, UNDP executive management intervention may be called upon to assist. <u>Alleviative:</u> PSC meetings and special meetings with MISE/EPU and MELAD will be conducted in case this is happening, mainly to discuss courses of action to take to sustain the national government's and island councils' support to the project and carry out such plans accordingly.	PMU, EPU/MISE	Project Dev't Team	January 2019	Reducing (due to incorporation of project demo approach and promotion efforts into project design)
9	Regular access to outer islands is limited and transportation costs are often prohibitive	September 2017	Operational	Project cannot complete its outer island activities in comprehensive way due to lack of transportation and high transport costs P = 3, I = 3, significance = moderate	<u>Preventive:</u> POIDIER integrates outer island activities so that multiple targets may be achieved in one visit by one team. For example, a RE mini-grid installation team of 3 persons, during its installation visit, will also take time to conduct a roadshow to villages across the island (promoting, among other things, EE cook stoves) and work with the island council on its all-island energy plan. To further reduce costs, project will carry out joint outer island missions with other donor projects and other government initiatives, if possible. <u>Alleviative:</u> If this becomes a constraint, outer island trips will be limited to critical/essential ones. More extensive use of information technology and social media for project progress updates and monitoring will be resorted to.	PMU, EPU/MISE	Project Dev't Team	January 2019	Reducing (due to incorporation of strategy for synergizing multiple outer island activities so that they are carried out on the same trips to each involved outer island.)

10	Low oil prices will reduce interest in RE-based power generation	September 2017	Political/ Financial	Low oil prices lead to increased deployment of diesel generators to achieve outer island energy access. P = 1, I = 2, significance = low	<u>Preventive:</u> The project's awareness raising activities will 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 by highlighting the multiple benefits of such systems. <u>Alleviative:</u> In case oil prices further weaken, the project will emphasize the need to take advantage of the energy, environment, and economic benefits of RE, and the country's obligation towards the realization of its climate change mitigation targets in the KIER and its NDC to ensure that the interest of the government in low carbon development is sustained.	PMU, EPU/MISE	Project Dev't Team	January 2019	Reducing (due to incorporation in project design of "multiple benefits" approach of promoting RE based power generation)
11	PV system parts will be abandoned after their useful lifetime.	January 2019	Environmental	Toxic wastes from lithium ion and lead acid batteries and PV panels will get into water systems and affect aquatic life. P = 5, I = 3, significance = moderate	<u>Preventive:</u> Environmental and social assessment for the demos will assess how to deal with disposal/ recycling once a product's useful lifetime ends. <u>Alleviative:</u> In case, despite the environmental and social assessment, PV system parts are abandoned, MELAD, MISE, and relevant Island Councils will liaise and cooperate to develop and enforce measures to address the pollution.	PMU, EPU/MISE	Project Dev't Team	January 2019	Reducing (due to incorporation of ESIA into project design)
12	Project will reinforce ongoing problems in Kiribati outer islands of lack of opportunity for women and other marginalized	January 2019	Social	Project opportunities and benefits will flow mainly to men and to households	<u>Preventive:</u> Project will require that certain targets are met in terms of the participation of women and marginalized groups in decision-making and will also require that at least half of funds for productive uses are allocated to initiatives mainly involving women. <u>Alleviative:</u> In case women are not	PMU, EPU/MISE	Project Dev't Team	January 2019	Reducing (due to incorporation of proactive gender strategy in project

	groups.			that are relatively well off, this falling short of UN priority to empower the marginalized P = 2, I = 3, significance = moderate	benefiting equally from the project, a gender committee will be set up to advise the Project Board on incorporating additional measures and additional indicators to ensure the project provides substantial benefits to women.				<i>design, as well as attention to marginalized groups in planned ESIA)</i>
13	Demos will be established on lands of indigenous people against their will.	<i>January 2019</i>	<i>Social</i>	Project demos are likely to be destroyed/vandalized due to indigenous people having been deprived of their rights. P = 1, I = 3, significance = low	<u>Preventive:</u> Project will pursue installations on state-owned land, as discussed with MELAD's Dept. of Lands. Project will carry out FPIC (Free Prior and Informed Consent) processes to ensure that proper consultation and agreement of indigenous people occurs before any demos are established. Further, project, working with EPU, will institute a process for reporting grievances. <u>Alleviative:</u> EPU will work with the relevant Island Councils to follow up promptly on any grievances reported to ensure that demos are not installed on the lands of indigenous people against their will and that the borders of state land utilized (such as roadside land) are explained clearly to all involved.	<i>PMU, EPU/MISE</i>	<i>Project Dev't Team</i>	<i>January 2019</i>	<i>Reducing (due to incorporation of FPIC via ESIA and of grievance process in project design, as well as plans to focus on state-owned land in demo siting)</i>
14	Unsuccessful productive use initiatives will result in lack of expected of income generation.	<i>January 2019</i>	<i>Financial</i>	Without strong income generation from productive uses, project's intended "business model" for	<u>Preventive:</u> Project will develop coordination between EPU and departments and companies in the productive sectors to identify promising productive uses in various locations. Project will have specific activities to assist outer island people in determining best productive uses. Business advising will ensure that products have a good potential market and that business plans are viable.	<i>PMU, EPU/MISE</i>	<i>Project Dev't Team</i>	<i>January 2019</i>	<i>Reducing (due to incorporation in project design of TA work to identify promising productive uses and to</i>

				RE power generation will fail. That is, productive uses will not generate strong revenues for the RE power systems that can in turn be used to ensure their sustainability through funds set aside for maintenance and repairs. P = 3, I = 3, significance = moderate	<u>Alleviative:</u> In case this happens, some of the business advising TA to be provided by the project to outer island peoples for starting up productive use initiatives can be shifted to addressing the problems with unsuccessful productive use businesses after launch.				<i>advise outer island people on their productive use ventures)</i>
15	Lack of capacity of EPU-MISE in promotion will result in lack of knowledge across the country about fair prices and preferred sourcing channels for RE systems, successes with the RE demos, and the availability and benefits of EE cook stoves.	<i>January 2019</i>	<i>Organizational</i>	Without strong marketing and promotion on costing of systems and success of demos, “demand pull” for such systems will remain limited so that	<u>Preventive:</u> Project allocates specific funds for awareness raising to mitigate this risk. For fair prices and preferred sourcing channels for SHSs and for the availability and benefits of EE cook stoves, outreach to outer island residents includes a road show on each of the 11 demo outer islands, radio shows, brochures, and social media. For mini-grids, knowledge products associated with the success of the demos and preferred sourcing channels will be promoted via project’s information exchange network. Briefings with financial analysis of mini-grid investments will be distributed via outreach to potential investors. EPU direct involvement in the	<i>PMU, EPU/MISE</i>	<i>Project Dev’t Team</i>	<i>January 2019</i>	<i>Reducing (due to incorporation of awareness raising, briefings, and knowledge products in project design)</i>

				<p>replication will be weak. P = 2, I = 2, significance = low</p>	<p>foregoing project outreach work will serve as an opportunity in learning-by-doing, through which the organization will build important promotional skills that it can then continue after project close. <u>Alleviative:</u> In case lack of knowledge persists, despite the preventive plan, the UNDP PO will manage and expedite the procurement of an international communications expert to engage in awareness promotion and knowledge building. If need be, the affected activities may have to be modified to allow for this change in approach.</p>				
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Annex 9: Results of Project Implementing Partner HACT Micro Assessment

Background

The micro assessment is part of the requirements under the Harmonized Approach to Cash Transfers (HACT) Framework. The HACT framework represents a common operational framework for UN agencies' transfer of cash to government and non-governmental implementing partners. The micro-assessment assesses the implementing partner's control framework. It results in a risk rating (low, moderate, significant or high). The overall risk rating is used by the UN agencies, along with other available information (e.g. history of engagement with the agency and previous assurance results), to determine the type and frequency of assurance activities as per each agency's guideline and can be taken into consideration when selecting the appropriate cash transfer modality for an implementing partner.

Scope

The micro-assessment for the POIDIER Project provides an overall assessment of the EPU/MISE programme, financial and operations management policies, procedures, systems and internal controls. It includes:

- A review of the EPU/MISE's legal status, governance structures and financial viability, programme management, organizational structure and staffing, accounting policies and procedures, fixed assets and inventory, financial reporting and monitoring, and procurement; and
- A focus on compliance with policies, procedures, regulations and institutional arrangements that are issued both by the Government and the EPU/MISE.

It considers results of any previous audits and micro assessments conducted of the EPU/MISE.

Methodology

The HACT micro-assessment was conducted by an independent audit firm (Ernst & Young). Through discussion with management, observation and walk-through tests of transactions, the assessment is made on the DE/DRD's related internal control system with emphasis on:

- The effectiveness of the systems in providing the DE/DRD's management with accurate and timely information for management of funds and assets in accordance with work plans and agreements with the United Nations agencies; and
- The general effectiveness of the internal control system in protecting the assets and resources of the DE/DRD.

The results of the micro-assessment are discussed with applicable UNDP personnel and the DE/DRD prior to finalization of the report. The assessment uses a consultative approach and includes interviews with key personnel.

Preliminary findings for EPU/MISE

The HACT micro-assessment of EPU/MISE was completed in August 2018. Overall, the risk assessment of the EPU/MISE's programme, financial and operations management policies, procedures, systems and internal controls about cash transfers is found to be of **significant risk** to UNDP. For each subject area, the risk assessment findings are as follows: (1) implementing partner – moderate; (2) programme management – high; (3) organizational structure and staffing – significant; (4) accounting policies and procedures – significant; (5) fixed assets and inventory – high; (6) financial reporting and monitoring – significant; and (7) procurement – high.

The current processes and procedures require improvement and timely actions by EPU/MISE so that the overall risk is significantly reduced.

Annex 10. UNDP Project Quality Assurance Report

PROJECT QA ASSESSMENT: DESIGN AND APPRAISAL

OVERALL PROJECT

EXEMPLARY (5) ●●●●●	HIGHLY SATISFACTORY (4) ●●●●○	SATISFACTORY (3) ●●●○○	NEEDS IMPROVEMENT (2) ●●○○○	INADEQUATE (1) ●○○○○
At least four criteria are rated Exemplary, and all criteria are rated High or Exemplary.	All criteria are rated Satisfactory or higher, and at least four criteria are rated High or Exemplary.	At least six criteria are rated Satisfactory or higher, and only one may be rated Needs Improvement. The SES criterion must be rated Satisfactory or above.	At least three criteria are rated Satisfactory or higher, and only four criteria may be rated Needs Improvement.	One or more criteria are rated Inadequate, or five or more criteria are rated Needs Improvement.

DECISION

- **APPROVE** – the project is of enough quality to continue as planned. Any management actions must be addressed in a timely manner.
- **APPROVE WITH QUALIFICATIONS** – the project has issues that must be addressed before the project document can be approved. Any management actions must be addressed in a timely manner.
- **DISAPPROVE** – the project has significant issues that should prevent the project from being approved as drafted.

RATING CRITERIA

STRATEGIC

1. Does the project's Theory of Change specify how it will contribute to higher level change? (Select the option from 1-3 that best reflects the project):

3 | 2

1

Evidence
Ref. notes and Section II and III of project document.

- **3:** The project has a theory of change with explicit assumptions and clear change pathway describing how the project will contribute to outcome level change as specified in the programme/CPD, backed by credible evidence of what works effectively in this context. The project document clearly describes why the project's strategy is the best approach now.
- **2:** The project has a theory of change. It has an explicit change pathway that explains how the project intends to contribute to outcome-level change and why the project strategy is the best approach now but is backed by limited evidence.
- **1:** The project does not have a theory of change, but the project document may describe in generic terms how the project will contribute to development results, without specifying the key assumptions. It does not make an explicit link to the programme/CPD's theory of change.

*Note: Management Action or strong management justification must be given for a score of 1

Notes:

POIDIER has the objective of enabling enhanced outer island development through the achievement of the renewable energy (RE) and energy efficiency (EE) targets of Kiribati. The nation is highly dependent on imported petroleum as its main modern energy source and is unlikely to meet its official RE and EE targets as stated in the *Kiribati Integrated Energy Roadmap* ("the KIER") without incremental interventions. The outer islands, the areas on which POIDIER will focus, are considered the "rural areas" of the nation. They are much less developed than the capital of South Tarawa and have very low levels of energy access. Economic opportunities are limited, resulting in low incomes and out-migration to the capital, which is over-crowded. The national government has put high priority on developing the outer islands and stimulating a reverse of current population flow trends, so that the outer islands present more economic opportunity and attract people back from the capital. The main two income sources of the outer islands, fish and coconuts, are constrained due to lack of infrastructure, especially energy. There is little value add or processing of either due to lack of power. Further, the fish catch is constrained by the lack of ability to keep it chilled and/or frozen, despite very high potential demand from processing capacity in South Tarawa and from fresh fish markets globally. Agriculture on the outer islands is undeveloped, though could benefit from energy inputs to address water challenges. Relatedly, food security is a serious issue in Kiribati, with most foodstuffs being imported and with rising levels of chronic disease, such as diabetes, due to increasingly unhealthy diets associated with these imports. As part of its development plan for the outer islands, the national

<p>government has a goal of making them “the farm” of the nation.</p> <p>Under the project’s theory of change (Section III of project document, pages 9-11), the removal of the immediate causes of the core problem of “limited application of renewable energy (RE) and energy efficiency (EE) for supporting outer island development in Kiribati” leads to increased energy access and increased deployment of RE and EE on the outer islands in a sustainable fashion such that KIER targets are met. A diagram of the project’s Theory of Change (ToC) is provided in this section. It shows the linkages between the development challenge (core problem) and its immediate causes. When the root causes of the problem are addressed, removing the immediate causes, results occur that lead to achievement of the project objective. POIDIER adopts a strategy in which each major barrier type is addressed in a separate project component. Since some of the barriers are inter-related, the relevant component activities are carried out in an integrated manner. For example, capacity building will address the same RE and EE technology areas that are addressed by the project demos, since the demos are a means of removing not only the technical barriers but also those related to capacity. The barrier removal approach and the development and implementation of integrated activities among the major project components have been successfully adopted in other UNDP-GEF projects in the Asia Pacific Region.</p>		
<p>2. Is the project aligned with the thematic focus of the UNDP Strategic Plan? (select the option from 1-3 that best reflects the project):</p> <ul style="list-style-type: none"> • 3: The project responds to one of the three areas of development work⁸³ as specified in the Strategic Plan; it addresses at least one of the proposed new and emerging areas⁸⁴; an issues-based analysis has been incorporated into the project design; and the project’s RRF includes all the relevant SP output indicators. (<i>all must be true to select this option</i>) • 2: The project responds to one of the three areas of development work¹ as specified in the Strategic Plan. The project’s RRF includes at least one SP output indicator, if relevant. (<i>both must be true to select this option</i>) • 1: While the project may respond to one of the three areas of development work¹ as specified in the Strategic Plan, it is based on a sectoral approach without addressing the complexity of the development issue. None of the relevant SP indicators are included in the RRF. This answer is also selected if the project does not respond to any of the three areas of development work in the Strategic Plan. <p>Notes: The project responds to one of the three areas of development work on “Sustainable Development Pathways”. The project objective indicators are supporting the UNDP IRRF indicator “2.5.1.1 Strengthened Capacity Energy Transformation”.</p>	3	2
	1	
	Evidence Ref. notes	
RELEVANT		
<p>3. Does the project have strategies to effectively identify, engage and ensure the meaningful participation of targeted groups/geographic areas with a priority focus on the excluded and marginalized? (select the option from 1-3 that best reflects this project):</p> <ul style="list-style-type: none"> • 3: The target groups/geographic areas are appropriately specified, prioritizing the excluded and/or marginalized. Beneficiaries will be identified through a rigorous process based on evidence (if applicable.) The project has an explicit strategy to identify, engage and ensure the meaningful participation of specified target groups/geographic areas throughout the project, including through monitoring and decision-making (such as representation on the project board) (<i>all must be true to select this option</i>) • 2: The target groups/geographic areas are appropriately specified, prioritizing the excluded and/or marginalized. The project document states how beneficiaries will be identified, engaged and how meaningful participation will be ensured throughout the project. (<i>both must be true to select this option</i>) • 1: The target groups/geographic areas are not specified, or do not prioritize excluded and/or marginalized populations. The project does not have a written strategy to identify or engage or ensure the meaningful participation of the target groups/geographic areas throughout the project. <p>*Note: Management Action must be taken for a score of 1 or select not applicable.</p> <p>Notes: Annex 12 of the project document provides summaries of plans for the baseline and incremental project demonstration activities by technology type. The plans for incremental demo activities were worked out during extensive mission/ field trips in August 2018. Reports prepared based on these missions/ field trips are KIRIBATI PPG Mission – Abemama Outer</p>	3	2
	1	
	Select (all) targeted groups: (drop-down)	
	Evidence Ref. notes	

⁸³ 1. Sustainable development pathways; 2. Inclusive and effective democratic governance; 3. Resilience building

⁸⁴ sustainable production technologies, access to modern energy services and energy efficiency, natural resources management, extractive industries, urbanization, citizen security, social protection, and risk management for resilience

<p>Island Visit 1 (August 7-8, 2018), Abaiang Field Trip (August 12-15, 2018), Tabiteuea North Field Trip (August 22-27, 2018), and South Tarawa Interviews (August 3-27, 2018).</p> <p>The following incremental demonstration activities are specifically targeted and prioritize the excluded and/or marginalized. There is overlap between the beneficiary groups for each type of incremental demonstration activity. Correcting for overlap, in total an estimated 12,274 distinct households will benefit directly from POIDIER incremental demonstrations, representing a population of about 61,370 (including children), about half male and half female:</p> <p><u>(1) Kiribati Outer Island RE Mini-Grid Program (Phase 1)</u> - entails procurement, installation, and sustainable operation of new PV mini-grids with battery storage, a few of which will also incorporate small wind power turbines. A total of 15 demonstration mini grids are planned across 11 selected islands that will benefit a total of 12,740 population comprising 6,370 male and 6,370 females.</p> <p><u>(2) Kiribati RE and EE for Water Program (Phase 1)</u> - Sub-Program for Demonstrating RE/ EE for Agricultural Water Supply on Outer Islands on at least two islands (Abaiang and Tabiteuea North. The demonstrations will include development of a payment system for the water so that funds collected can be set aside to pay the operator and pay for repairs and parts needed in the future. The demonstrations will benefit a total of 6,000 population comprising 3,000 male and 3,000 females.</p> <p><u>(3) Kiribati Outer Island Productive Uses of RE and EE Program (Phase 1)</u> - Sub-Program for Coconut-Related Productive Use of RE and EE (likely on islands Nonouti and Tab North), Sub-Program for Fish-Related Productive Use of RE and EE (likely on islands Arorae, Makin, Tamana, Nounouti, and North Tarawa), and Sub-Program for Agriculture-Related Productive Use of RE and EE (likely on islands Makin, Butaritari, Abaiang, and Tab North). The demonstrations will benefit a total of 3,184 population comprising 1,592 males and 1,592 females, which will be a subset of the population benefiting for the Kiribati Outer Island RE Mini-Grid Program (Phase 1).</p> <p><u>(4) Outer Island EE Cook Stove Program</u> - POIDIER will support either competitions or parallel consultancies to develop competing models of such stoves, train interested entrepreneurs in the fabrication of such stoves and provide the highest potential artisans with the tools needed to develop their business in this area and promote the EE cook stoves on the outer islands. Based on experience in similar countries, domestically made stoves should be significantly cheaper than imported ones, perhaps USD 30 per stove instead of USD 90. Thus, their sale will not require subsidy support, so that purchase of the stoves will be carried out by individual households at market prices. POIDIER will support the achievement of national target where 11,000 energy efficient cookstoves are made available to individual households.</p>									
<p>4. Have knowledge, good practices, and past lessons learned of UNDP and others informed the project design? (select the option from 1-3 that best reflects this project):</p> <ul style="list-style-type: none"> • 3: Knowledge and lessons learned (gained e.g. through peer assist sessions) backed by credible evidence from evaluation, corporate policies/strategies, and monitoring have been explicitly used, with appropriate referencing, to develop the project's theory of change and justify the approach used by the project over alternatives. • 2: The project design mentions knowledge and lessons learned backed by evidence/sources, which inform the project's theory of change but have not been used/are not enough to justify the approach selected over alternatives. • 1: There is only scant, or no mention of knowledge and lessons learned informing the project design. Any references that are made are not backed by evidence. <p>*Note: Management Action or strong management justification must be given for a score of 1</p> <p>Notes:</p> <p><i>National energy situation:</i> The only major sector of greenhouse gas emissions for Kiribati is energy (including transport), with slight contributions from agriculture and forestry. In 2014, imported petroleum products, used for power generation and transport and, to a lesser degree, for heating applications, such as cooking, accounted for as estimated 63% of the total primary energy consumption; traditional biomass, used for cooking and copra drying, 36%; and solar, less than 1%, but growing, with recent major installations in South Tarawa and extensive distribution of solar lighting kits in the outer islands. Per capita energy use in the outer islands is low; and energy often solely used for lighting and cooking, with solar and biomass as the main sources, respectively. According to the 2015 census, typically between 10 to 20% of households on each outer island have one or more diesel generators as well. The Public Utilities Board (PUB) is the main service provider for grid-connected electricity in South Tarawa, while the Ministry of Line and Phoenix Islands Development (MLPID) is responsible for electricity provision on Kiritimati. The responsible party for electricity provision in the outer islands is yet to be clarified.</p> <p><i>National priorities:</i> The Government of Kiribati (GoK) struggles with the high and volatile costs of importing and distributing fossil fuels, particularly to the outer islands. To reduce fossil fuel imports to a minimum, the GoK is promoting</p>	<table border="1"> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">2</td> </tr> <tr> <td colspan="2" style="text-align: center;">1</td> </tr> <tr> <td colspan="2">Evidence</td> </tr> <tr> <td colspan="2">Ref. Section II project document, per notes.</td> </tr> </table>	3	2	1		Evidence		Ref. Section II project document, per notes.	
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<p>the utilization of indigenous renewable energy for power and non-power applications. This policy is stated in the Kiribati National Energy Policy (KNEP), which is guided by the vision of “available, accessible, reliable, affordable, clean and sustainable energy options for the enhancement of economic growth and improvement of livelihoods in Kiribati.” Reducing fossil fuel imports is the major goal as stated in the GoK’s KIER and its NDC. This will be done through increased utilization of renewable energy along with further improvements in energy efficiency on both energy demand and supply sides, with the expectation that almost half of fossil fuels will be displaced by 2025.</p> <p><i>Off-grid RE power generation in the outer islands:</i> Several donor efforts have supported the dissemination of RE power generation systems, specifically solar PV, on the outer islands, but the level of energy access remains low. Most outer island households have been the beneficiaries of free solar lighting kit distribution in 2016 supported by Taiwan (30 W systems with three lights), with 4,236 such systems distributed. The challenge now faced is that many of these systems need parts replacement, but parts are either unavailable or unaffordable. Previously, starting with JICA in 1992 and continued by the EU in 1994, 2004, 2008, 2009, 2010, 2011, 2012, 2013, and 2014, a total of 12,891 PV solar home systems (SHSs) of various sizes were distributed to outer island households, maneabas (meetings houses), and businesses. Yet, a relatively small proportion of the total appear to be in operation today, with field work suggesting most outer island households are now using the Taiwan solar kits as their main power source. The EU (and JICA) systems were provided to the government for free by donors, but recipient households at times have been charged an ongoing monthly fee (eventually cancelled by the government) in some of the earlier tranches of systems distributed by KSEC; and, more recently, recipients have been required to make monthly installment payments to KSEC to pay for the full stated price of the system over time. KSEC also sells systems not supplied by donors but requires full payment up-front. As with the Taiwan lighting kits, these systems face challenges regarding parts and repairs. In recent years, the private sector, including Taotian Trading, Value City, and Triple T, has entered the business of supplying the outer islands with SHS, so that KSEC no longer has a monopoly in this area.</p> <p>In addition to the solar lighting kits and SHSs, a few other past donor-funded RE initiatives on the outer islands are of note: The EU has supported the installation of PV mini-grids with battery storage at nine boarding schools on outer islands. Site visits suggest many of these mini-grids are not working well and not getting needed parts and repairs in a timely fashion. Ownership of the systems was given to the schools. Power is provided free to both the school buildings and teacher homes; and rapid expansion of demand beyond capacity has been a problem. Donor-supported 4 kW single phase PV systems have also been installed at many of the outer island fish centers. Initially supported by Japan many years ago, these centers, of which there is one per outer island, typically have ice making and freezer equipment and were initially powered by diesel generators. The 4 kW single phase systems could not support the ice makers and are now being upgraded with support from Italy to 10 kW triple-phase systems. As with the school systems, these systems are provided for free to the fish centers; and there is no charge for power used, though fish centers may charge users for ice and/or freezer space.</p> <p><i>Energy efficiency in the outer islands:</i> Given the limited level of energy access in the outer islands, there has not been much work in energy efficiency. Yet, important opportunities exist. The main mode of cooking on the outer islands is open hearth fire. A limited number of households have kerosene stoves, but do not use them due to the cost of fuel. Energy efficient fuel wood cook stoves are virtually unknown on the outer islands. While fuel wood and copra waste are generally abundant, collection of fuel wood takes time and storage of fuel wood to keep it dry is a challenge. There has been one SPC-supported effort to distribute imported energy efficient cook stoves in Kiribati. These were rocket stoves imported from China. One hundred such stoves (purchased for around USD 60 per stove) were provided free to an NGO, which distributed the stoves in South Tarawa at a price of about USD 90 per stove. No further progress has been made, though the idea was for the NGO to use the resulting “start-up funds” to purchase and then distribute more of the imported stoves. Japan is also working on an effort to design and build an EE cook stove in Japan that would be suitable to Kiribati. Other areas of fuel wood use on the outer island that may present opportunities for energy efficiency include copra drying and bread baking. While electricity use is limited, opportunities for efficiency, as electricity use grows, should grow as well. One notable case at present is that Southern Kiribati Hospital (SKH) on Tab-North. SKH currently uses an oversized diesel generator and thus encourages households to leave lights and appliances on when the generator is on.</p>							
<p>5. Does the project use gender analysis in the project design and does the project respond to this gender analysis with concrete measures to address gender inequities and empower women? (select the option from 1-3 that best reflects this project):</p> <ul style="list-style-type: none"> 3: A <u>participatory</u> gender analysis on the project has been conducted. This analysis reflects on the different needs, roles and access to/control over resources of women and men, and it is fully integrated into the project document. The project establishes concrete priorities to address gender inequalities in its strategy. The results framework includes outputs and activities that specifically respond to this gender analysis, with indicators that measure and monitor results contributing to gender equality. <i>(all must be true to select this option)</i> 	<table border="1"> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">2</td> </tr> <tr> <td colspan="2" style="text-align: center;">1</td> </tr> <tr> <td colspan="2"> Evidence Ref. Section IV – Gender Equality & Empowering Women, and Annex 7 of </td> </tr> </table>	3	2	1		Evidence Ref. Section IV – Gender Equality & Empowering Women, and Annex 7 of	
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Evidence Ref. Section IV – Gender Equality & Empowering Women, and Annex 7 of							

<ul style="list-style-type: none"> • 2: A gender analysis on the project has been conducted. This analysis reflects on the different needs, roles and access to/control over resources of women and men. Gender concerns are integrated in the development challenge and strategy sections of the project document. The results framework includes outputs and activities that specifically respond to this gender analysis, with indicators that measure and monitor results contributing to gender equality. <i>(all must be true to select this option)</i> • 1: The project design may or may not mention information and/or data on the differential impact of the project’s development situation on gender relations, women and men, but the constraints have not been clearly identified and interventions have not been considered. <p>*Note: Management Action or strong management justification must be given for a score of 1</p> <p>Notes: The proposed UNDP-GEF project will promote gender equality and women’s empowerment on multiple levels, from the village, community level to the urban national government official and professional level, and even, to some extent, to the international level. Most importantly, at the local level, the project will strive to enhance the position of women. In community consultations and decision-making sessions, it will be required that at least half of those providing input and making decisions are women. Further, as the project will be promoting a significant amount and range of income-generating productive use activities, the project will ensure that at least half of funds allocated for such activities go to initiatives mainly benefiting women. Already during the PPG phase, specific productive use activities benefiting women have been identified, particularly agriculture-related ones. At the next level of the project, which includes several training/ capacity building efforts, the project will ensure that women are well-represented among trainees. In particular, the project specifically calls for a “Solar Mama” solar home system (SHS) procurement, installation, and repair training program that will train 40 middle-aged women from the outer islands. Experience in other countries has shown that not only does this approach (of ensuring women are well-represented among trainees) empower women, but it also leads to greater sustainability of results, as women (especially women that already have children) are less likely to out-migrate for work, so that their skills can be used on a long-term basis. Other trainings and workshops provided by the project will strive to ensure that at least 40% of participants are women. Lastly, in its recruitments of consultants and sub-contractors, both national and international, the project will proactively seek to include women and achieve at least a 30% ratio of women in total consultant person-days.</p> <p>Mid-term and end-of project targets of the POIDIER objective and selected outcomes are included in the project results framework to ensure that the POIDIER Gender Action Plan is implemented.</p> <p>Activities with special gender empowerment aspects includes the following: (1) Activity 1.1.2.2, which is technical training for outer island personnel that will be operating the RE mini-grid demos and RE for water for agriculture demos, will have at least 30 percent women trainees; and a women’s empowerment session will be included for these trainees. This approach will ensure that women play a significant role in operating the demonstrations that are installed. (2) Activity 1.1.2.3 will train 40 women as “solar mammas” in the selection, installation, and repair of solar home systems. The training will also include women’s empowerment sessions. (3) Activity 1.1.3.1, which will be an outer island road show to promote RE and EE, will include a special women’s session in each village visited to empower women to leverage POIDIER activities to their benefit. (4) Activity 4.1.3.2, which is technical assistance in business planning for productive uses of RE, will include special women’s empowerment sessions that will explain to women how they can leverage the business planning assistance of the project.</p>	project document.								
<p>6. Does UNDP have a clear advantage to engage in the role envisioned by the project vis-à-vis national partners, other development partners, and other actors? (select from options 1-3 that best reflects this project):</p> <ul style="list-style-type: none"> • 3: An analysis has been conducted on the role of other partners in the area where the project intends to work, and credible evidence supports the proposed engagement of UNDP and partners through the project. It is clear how results achieved by relevant partners will contribute to outcome level change complementing the project’s intended results. If relevant, options for south-south and triangular cooperation have been considered, as appropriate. <i>(all must be true to select this option)</i> • 2: Some analysis has been conducted on the role of other partners where the project intends to work, and relatively limited evidence supports the proposed engagement of and division of labor between UNDP and partners through the project. Options for south-south and triangular cooperation may not have been fully developed during project design, even if relevant opportunities have been identified. • 1: No clear analysis has been conducted on the role of other partners in the area that the project intends to work, and relatively limited evidence supports the proposed engagement of UNDP and partners through the project. There is risk that the project overlaps and/or does not coordinate with partners’ interventions in this area. Options for south-south and triangular cooperation have not been considered, despite its potential relevance. 	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 50%;">3</td> <td style="width: 50%;">2</td> </tr> <tr> <td colspan="2">1</td> </tr> <tr> <td colspan="2">Evidence</td> </tr> <tr> <td colspan="2">Ref. Section IV – Stakeholder & Engagement Plan of project document.</td> </tr> </table>	3	2	1		Evidence		Ref. Section IV – Stakeholder & Engagement Plan of project document.	
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<p>*Note: Management Action or strong management justification must be given for a score of 1</p> <p>Notes:</p> <p>UNDP comparative advantage: The project design leverages UNDP’s comparative advantage in bringing different donors and government departments together to address KNEP targets. Further, the project leverages UNDP’s strengths in the policy and planning arena, capacity building, institutional work, and integrating demonstrations with the foregoing areas. The Stakeholder Engagement & Communications Plan, as part of the mapping exercise that was undertaken during PPG, identified and listed the following:</p> <ul style="list-style-type: none"> • Outer island villagers and indigenous people: The project will put special emphasis on engagement of outer island villagers, many of whom are indigenous peoples. It will do this through its awareness raising campaign and its outreach to these people to support them in generating income from productive uses of RE. In addition, the project will conduct limited environmental and social impact assessments at each of the 17 incremental demo sites as part of its ESMP, including in-depth consultation with local people and FPIC for indigenous peoples. • Women: The project will put special emphasis on engaging women in productive uses of RE and in becoming trained as “solar mamas” in the installation and repair of SHSs. • Other marginalized groups in the villages: The project will ensure such groups are involved in community decision making meetings and are prioritized for opportunities with project productive use funds and, if viable, opportunities for operator roles. • Island Councils: POIDIER will engage island council personnel in capacity building and support them in preparing all-island energy plans for their respective islands. • Private sector technical and equipment companies: Such firms will be invited to be involved in the project both as learners in technical training programs and design/ installation work and as bidders for concessionaire opportunities to operate installed mini-grids at a profit. • Private sector equity investors: Project will reach out to private sector entities that are potential equity investors in RE and EE projects, providing them with information on the potential payback and financial sustainability of such investments, as well as on specific replication projects. • Local business persons on the islands and in villages: The project will reach out to such persons about pursuing businesses in the area of productive use of RE and EE and help them apply for grants and loans, if relevant. • Engineers / high level technical persons: The project will invite such person to participate in its high-level trainings and learning-by-doing design/ installation of project demos. • Outer island technical personnel: The project will identify two such persons from each of the 11 demo outer islands to be trained for maintenance and operation of the project demos. • Artisans/ potential artisans: The project will train 15 such persons in the fabrication of EE cook stoves. Those that master required skills and show strong interest in taking up this trade will be provided by the project with the necessary tools and equipment for EE cook stove fabrication. • Local NGOs: The project will invite various NGOs to the project inception workshop and from there determine their interest in participation in various project activities. • Other Countries: Learnings of POIDIER will be shared with other countries in the Pacific via the project’s information exchange network. 							
<p>SOCIAL & ENVIRONMENTAL STANDARDS</p>							
<p>7. Does the project seek to further the realization of human rights using a human rights-based approach? (select from options 1-3 that best reflects this project):</p> <ul style="list-style-type: none"> • 3: Credible evidence that the project aims to further the realization of human rights, upholding the relevant international and national laws and standards in the area of the project. Any potential adverse impacts on enjoyment of human rights were rigorously identified and assessed as relevant, with appropriate mitigation and management measures incorporated into project design and budget. (<i>all must be true to select this option</i>) • 2: Some evidence that the project aims to further the realization of human rights. Potential adverse impacts on enjoyment of human rights were identified and assessed as relevant, and appropriate mitigation and management measures incorporated into the project design and budget. • 1: No evidence that the project aims to further the realization of human rights. Limited or no evidence that potential adverse impacts on enjoyment of human rights were considered. <p>*Note: Management action or strong management justification must be given for a score of 1</p> <p>Notes:</p> <p>The project is mainly on climate change mitigation, in general, and particularly sustainable energy. Because it is mainly</p>	<table border="1"> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">2</td> </tr> <tr> <td colspan="2" style="text-align: center;">1</td> </tr> <tr> <td colspan="2"> <p>Evidence Ref. Annex 12 of project document, and notes.</p> </td> </tr> </table>	3	2	1		<p>Evidence Ref. Annex 12 of project document, and notes.</p>	
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<p>Evidence Ref. Annex 12 of project document, and notes.</p>							

<p>focused on the outer islands/ rural areas of Kiribati, where indigenous people live, the project takes care to adopt a strong human-rights based approach in its design. First, the project emphasizes provision of off-grid renewable energy-based power and energy efficient cook stoves to improve peoples' lives both through the conveniences these bring regarding daily needs for lighting, etc. and through the potential income generating opportunities these facilitate. As for the latter, the project puts strong emphasis on creating income generating activities (via "productive use of renewable energy and energy efficiency") for indigenous peoples. Further, for indigenous peoples, the project will implement FPIC ("Free, Prior and Informed Consent,"), in line with Standard 6 of UNDP Environmental and Social Standards.</p> <p>During the PPG, the project development team (PDT) conducted extensive consultations with local people regarding potential renewable energy (RE) and energy efficiency (EE) related activities in their villages to determine their willingness to participate and their preferences. During full project implementation, this highly consultative approach will be continued. All demos making use of tribal or individual land will move forward only with full consent of the land-owning groups or individuals, with the application of FPIC as required by SES Standard 6. In addition, strong efforts will be made to ensure that marginalized and disadvantaged groups within communities are participating in group decision making and are targeted to benefit from income generating activities promoted by the project. Finally, the project also, working with the Energy Planning Unit (EPU), Ministry of Infrastructure and Sustainable Energy (MISE), will establish a grievance redress mechanism for individuals affected by the project's activities. Beyond these special efforts regarding the project demos, the implementation of all project activities will be in line with the principles of the human-rights based approach. The implementing partner and other involved partners acknowledge human rights practices under international law and the application of human rights-related standards in the design and implementation of the project. The project is designed to enhance the availability, accessibility, and quality of benefits and services for all relevant target groups, including those that are potentially marginalized individuals and groups.</p>		
<p>8. Did the project consider potential environmental opportunities and adverse impacts, applying a precautionary approach? (select from options 1-3 that best reflects this project):</p> <ul style="list-style-type: none"> • 3: Credible evidence that opportunities to enhance environmental sustainability and integrate poverty-environment linkages were fully considered as relevant and integrated in project strategy and design. Credible evidence that potential adverse environmental impacts have been identified and rigorously assessed with appropriate management and mitigation measures incorporated into project design and budget. (<i>all must be true to select this option</i>). • 2: No evidence that opportunities to strengthen environmental sustainability and poverty-environment linkages were considered. Credible evidence that potential adverse environmental impacts have been identified and assessed, if relevant, and appropriate management and mitigation measures incorporated into project design and budget. • 1: No evidence that opportunities to strengthen environmental sustainability and poverty-environment linkages were considered. Limited or no evidence that potential adverse environmental impacts were adequately considered. <p>*Note: Management action or strong management justification must be given for a score of 1</p> <p>Notes: The proposed project is focused on technologies that will bring both global and local environmental benefits. The RE and EE technologies, on which the project focuses, have strong <u>GHG emission reduction potential</u>, thus benefiting the global environment. As for the local environment, the RE power generation technologies, with no emissions from operation, represent a much cleaner alternative for the local environment than do diesel gen sets. EE cook stoves can substantially reduce the amount of fuel wood used in cooking (one of Kiribati's main energy uses) and at the same time improve indoor air quality, which benefits women and children who spend the most time near open hearth cooking fires. Thus, the EE cook stoves provide environmental benefits both to Kiribati's ecosystems and to its people (health-wise). The project in addressing policy/ institutions/ planning, capacity, financing, and technical and cost aspects, aims to <u>mainstream RE and EE in Kiribati, promoting extensive replication of the project demos, and thus contributing strongly to the mainstreaming of environmental sustainability in the nation</u>. At the same time, the project will address environmental risks associated with low carbon technologies.</p>	3	2
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	<p>Evidence Ref. Section II of project document.</p>	
<p>9. Has the Social and Environmental Screening Procedure (SESP) been conducted to identify potential social and environmental impacts and risks? The SESP is not required for projects in which UNDP is Administrative Agent only and/or projects comprised solely of reports, coordination of events, trainings, workshops, meetings, conferences and/or communication materials and information dissemination. [if yes, upload the completed checklist. If SESP is not required, provide the reason for the exemption in the evidence section.]</p>	Yes	No
	<p>Ref. Annex 5 of project document.</p>	

<p>Notes:</p> <p>From the screening procedure that was undertaken during PPG, the potential overall social and environmental risks were assigned a 'moderate' rating. As stated in question 8 above, for the project demos, limited, <u>site-specific environmental and social impact assessments (ESIAs) will be undertaken for all 15 of the project's PV mini-grid demos and its 2 or more RE/EE for water for agriculture demos</u>, with specific attention to the disposal of battery wastes and panel wastes. These assessments will all be aggregated together and integrated to develop the project's Environmental and Social Management Plan (ESMP), which will be prepared during project implementation. Implementation of specific demos will <u>not begin until the management measures as detailed in the ESMP are approved and put in place</u> (e.g. incorporated into demo implementation plans).</p>		
MANAGEMENT & MONITORING		
<p>10. Does the project have a strong results framework? (select from options 1-3 that best reflects this project):</p> <ul style="list-style-type: none"> • 3: The project's selection of outputs and activities are at an appropriate level and relate in a clear way to the project's theory of change. Outputs are accompanied by SMART, results-oriented indicators that measure all the key expected changes identified in the theory of change, each with credible data sources, and populated baselines and targets, including gender sensitive, sex-disaggregated indicators where appropriate. (<i>all must be true to select this option</i>) • 2: The project's selection of outputs and activities are at an appropriate level but may not cover all aspects of the project's theory of change. Outputs are accompanied by SMART, results-oriented indicators, but baselines, targets and data sources may not yet be fully specified. Some use of gender sensitive, sex-disaggregated indicators, as appropriate. (<i>all must be true to select this option</i>) • 1: The results framework does not meet all the conditions specified in selection "2" above. This includes: the project's selection of outputs and activities are not at an appropriate level and do not relate in a clear way to the project's theory of change; outputs are not accompanied by SMART, results-oriented indicators that measure the expected change, and have not been populated with baselines and targets; data sources are not specified, and/or no gender sensitive, sex-disaggregation of indicators. <p>*Note: Management Action or strong management justification must be given for a score of 1</p> <p>Notes:</p> <p>The project document contains an elaborated project results framework as per the standard UNDP-GEF format, along with outcomes and corresponding indicators, baselines and targets. The POIDIER <u>outcomes</u> are accompanied by SMART, results-oriented indicators that measure all the key expected changes identified in the theory of change, each with credible data sources, and populated baselines and targets, including gender sensitive, sex-disaggregated indicators where appropriate.</p>	3	2
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	Evidence	
	Ref. Section VI of project document.	
<p>11. Is there a comprehensive and costed M&E plan in place with specified data collection sources and methods to support evidence-based management, monitoring and evaluation of the project?</p> <p>Notes: Refer to Section VII of project document. The project document contains a costed M&E plan and a Monitoring Plan as per the standard UNDP-GEF format.</p>	Yes (3)	No (1)
<p>12. Is the project's governance mechanism clearly defined in the project document, including planned composition of the project board? (select from options 1-3 that best reflects this project):</p> <ul style="list-style-type: none"> • 3: The project's governance mechanism is fully defined in the project composition. Individuals have been specified for each position in the governance mechanism (especially all members of the project board.) Project Board members have agreed on their roles and responsibilities as specified in the terms of reference. The ToR of the project board has been attached to the project document. (<i>all must be true to select this option</i>). • 2: The project's governance mechanism is defined in the project document; specific institutions are noted as holding key governance roles, but individuals may not have been specified yet. The ProDoc lists the most important responsibilities of the project board, project director/manager and quality assurance roles. (<i>all must be true to select this option</i>) • 1: The project's governance mechanism is loosely defined in the project document, only mentioning key roles that will need to be filled later. No information on the responsibilities of key positions in the governance mechanism is provided. <p>*Note: Management Action or strong management justification must be given for a score of 1</p>	3	2
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	Evidence	
	Ref. Section VIII of project document.	

<p>Notes:</p> <p>The project document contains a well-defined governance mechanism that clearly outlines the roles and responsibilities of entities involved.</p>		
<p>13. Have the project risks been identified with clear plans stated to manage and mitigate each risk? (select from options 1-3 that best reflects this project):</p> <ul style="list-style-type: none"> • 3: Project risks related to the achievement of results are fully described in the project risk log, based on comprehensive analysis drawing on the theory of change, Social and Environmental Standards and screening, situation analysis, capacity assessments and other analysis. Clear and complete plan in place to manage and mitigate each risk. <i>(both must be true to select this option)</i> • 2: Project risks related to the achievement of results identified in the initial project risk log with mitigation measures identified for each risk. • 1: Some risks may be identified in the initial project risk log, but no evidence of analysis and no clear risk mitigation measures identified. This option is also selected if risks are not clearly identified and no initial risk log is included with the project document. <p>*Note: Management Action must be taken for a score of 1</p> <p>Notes:</p> <p>The project document contains a risk log, as part of the annexes. The identified risks are related to the achievement of results and are fully described based on comprehensive analysis conducted during the PPG.</p>	3	2
	1	
	<p>Evidence</p> <p>Ref. Section XII and Annex 8 of project document.</p>	
EFFICIENT		
<p>14. Have specific measures for ensuring cost-efficient use of resources been explicitly mentioned as part of the project design? This can include: i) using the theory of change analysis to explore different options of achieving the maximum results with the resources available; ii) using a portfolio management approach to improve cost effectiveness through synergies with other interventions; iii) through joint operations (e.g., monitoring or procurement) with other partners.</p> <p>Notes:</p> <p>The project document outlines certain aspects of the project’s strategy that will promote cost efficiency as follows:</p> <ul style="list-style-type: none"> • Stimulation of replication of the project demos: The project will invest in RE and EE demos, which will be critical in providing proof of concept and proof of costing, so that others will be willing to replicate them, thus leveraging in project funds far beyond the project demos. The project will further provide technical assistance (TA) support in multiple areas to stimulate replication of the project demos. These areas include awareness raising that encourages local people to submit proposals of suitable sites, site identification work by government departments, preparation of a <i>Kiribati Outer Island All-Island Energy Plan Guidance and Template</i>, and preparation of guidance and template, and liaison work for local project proponents, and private/ commercial finance sector entities to facilitate replication of the project demos. • Work in sourcing and costing of RE equipment and design/ installation services: The project will carry out technical assistance in sourcing and costing with an aim of identifying good quality equipment for the least cost. This will increase the cost efficiency of the project demos, as well as the overall cost efficiency of the project. • Savings in the long-run as compared to diesel generation: Over the long run, with the sourcing and best cost pricing work, RE will provide greater cost efficiency for local communities than would the alternative of diesel generators. 	Yes (3)	No (1)
<p>15. Are explicit plans in place to ensure the project links up with other relevant on-going projects and initiatives, whether led by UNDP, national or other partners, to achieve more efficient results (including, for example, through sharing resources or coordinating delivery?)</p> <p>Notes:</p> <p>The project will seek to engage other donors (both multi-lateral and bi-lateral) and relevant donor projects and programs via involving them in the inception workshop. Further the most relevant initiatives of donors make up the baseline of POIDIER. These include the PV desalination, OTEC, coconut, solar fridge/freezer, EE cookstove, and the Southern Kiribati Hospital EE initiatives. Donors will be kept abreast of project activities, as relevant.</p>	Yes (3)	No (1)
<p>16. Is the budget justified and supported with valid estimates?</p>	3	2
	1	

<ul style="list-style-type: none"> • 3: The project’s budget is at the activity level with funding sources and is specified for the duration of the project period in a multi-year budget. Costs are supported with valid estimates using benchmarks from similar projects or activities. Cost implications from inflation and foreign exchange exposure have been estimated and incorporated in the budget. • 2: The project’s budget is at the activity level with funding sources, when possible, and is specified for the duration of the project in a multi-year budget. Costs are supported with valid estimates based on prevailing rates. • 1: The project’s budget is not specified at the activity level, and/or may not be captured in a multi-year budget. <p>Notes: The project document contains a total budget and work plan with clearly identified funding sources for each outcome (equivalent to ATLAS activity). Costs are supported with valid estimates using benchmarks from similar projects or activities. As indicated in budget note 24, the project management budget includes USD 166,648 towards project management staff salaries.</p>	Evidence
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<p>17. Is the Country Office fully recovering the costs involved with project implementation?</p> <ul style="list-style-type: none"> • 3: The budget fully covers all project costs that are attributable to the project, including programme management and development effectiveness services related to strategic country programme planning, quality assurance, pipeline development, policy advocacy services, finance, procurement, human resources, administration, issuance of contracts, security, travel, assets, general services, information and communications based on full costing in accordance with prevailing UNDP policies (i.e., UPL, LPL.) • 2: The budget covers significant project costs that are attributable to the project based on prevailing UNDP policies (i.e., UPL, LPL) as relevant. • 1: The budget does not adequately cover project costs that are attributable to the project, and UNDP is cross-subsidizing the project. <p>*Note: Management Action must be given for a score of 1. The budget must be revised to fully reflect the costs of implementation before the project commences.</p> <p>Notes: The budget fully covers all project costs that are attributable to the project.</p>	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 50%;">3</td> <td style="width: 50%;">2</td> </tr> <tr> <td colspan="2">1</td> </tr> <tr> <td colspan="2"> Evidence Ref. Annex 10 of project document. </td> </tr> </table>	3	2	1		Evidence Ref. Annex 10 of project document.	
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EFFECTIVE

<p>18. Is the chosen implementation modality most appropriate? (select from options 1-3 that best reflects this project):</p> <ul style="list-style-type: none"> • 3: The required implementing partner assessments (capacity assessment, HACT micro assessment) have been conducted, and there is evidence that options for implementation modalities have been thoroughly considered. There is a strong justification for choosing the selected modality, based on the development context. <i>(both must be true to select this option)</i> • 2: The required implementing partner assessments (capacity assessment, HACT micro assessment) have been conducted and the implementation modality chosen is consistent with the results of the assessments. • 1: The required assessments have not been conducted, but there may be evidence that options for implementation modalities have been considered. <p>*Note: Management Action or strong management justification must be given for a score of 1</p> <p>Notes: Overall, the risk assessment of the EPU/MISE’s programme, financial and operations management policies, procedures, systems and internal controls about cash transfers is found to be of <u>significant risk to UNDP</u>. For each subject area, the risk assessment findings are as follows: (1) implementing partner – moderate; (2) programme management – high; (3) organizational structure and staffing – significant; (4) accounting policies and procedures – significant; (5) fixed assets and inventory – high; (6) financial reporting and monitoring – significant; and (7) procurement – high.</p> <p>Section VIII of the project document states through POIDIER will be implemented national implementation modality (NIM). In view of the overall risk assessments, the risk associated with using NIM is that there will be delayed actions by EPU/MISE to improve the current processes/ systems and significantly reduce the overall risk of working with UNDP, resulting in the delay in project start-up and a change in implementation modality. The mitigation actions are:</p> <ul style="list-style-type: none"> (i) <u>Preventive:</u> EPU/MISE agrees that its processes and systems are improved, per the findings of micro-HACT assessment and made operational before undertaking any substantive project activities. (ii) <u>Alleviative:</u> The project will be implemented EPU/MISE under UNDP’s National Implementation Modality (NIM) with the assistance of KSCE and KFSU until EPU/MISE improves the current processes and systems resulting 	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 50%;">3</td> <td style="width: 50%;">2</td> </tr> <tr> <td colspan="2">1</td> </tr> <tr> <td colspan="2"> Evidence Ref. Section IV (iii), VIII of project document. </td> </tr> </table>	3	2	1		Evidence Ref. Section IV (iii), VIII of project document.	
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Evidence Ref. Section IV (iii), VIII of project document.							



in significantly reduced risks.		
<p>19. Have targeted groups, prioritizing marginalized and excluded populations that will be affected by the project, been engaged in the design of the project in a way that addresses any underlying causes of exclusion and discrimination?</p> <ul style="list-style-type: none"> • <u>3</u>: Credible evidence that all targeted groups, prioritizing marginalized and excluded populations that will be involved in or affected by the project, have been actively engaged in the design of the project. Their views, rights and any constraints have been analyzed and incorporated into the root cause analysis of the theory of change which seeks to address any underlying causes of exclusion and discrimination and the selection of project interventions. • <u>2</u>: Some evidence that key targeted groups, prioritizing marginalized and excluded populations that will be involved in the project, have been engaged in the design of the project. Some evidence that their views, rights and any constraints have been analyzed and incorporated into the root cause analysis of the theory of change and the selection of project interventions. • <u>1</u>: No evidence of engagement with marginalized and excluded populations that will be involved in the project during project design. No evidence that the views, rights and constraints of populations have been incorporated into the project. <p>Notes: As previously stated, the target groups (i.e. local villagers and indigenous people, women, and other marginalized groups in the villages) were consulted and engaged during the PPG, hence, feature strongly in the overall stakeholder engagement plan (Annex 6) of the project. The project design approach was inclusive with special emphasis on the needs of communities and remote populations (including the disadvantaged families, etc.) in the rural areas. Social and economic activities that require energy as a basic input were considered e.g. for education, health services, housing development, livelihood, domestic household requirements, and other basic human needs.</p>	3	2
	1	
	<p>Evidence Ref. Annex 6 of project document, and notes.</p>	
<p>20. Does the project conduct regular monitoring activities, have explicit plans for evaluation, and include other lesson learning (e.g. through After-Action Reviews or Lessons Learned Workshops), timed to inform course corrections if needed during project implementation?</p> <p>Notes: The project team will conduct annual monitoring of the indicators in the Project Results Framework. The project will also have a mid-term review and terminal evaluation, as well as mid-term and end-of-project updates of the CCM tracking tool. There will be special activities to carry out more in-depth monitoring and reporting on the project demos. The project's low carbon information exchange will provide access to project documents and project learnings via its website.</p>	Yes (3)	No (1)
<p>21. The gender marker for all project outputs are scored at GEN2 or GEN3, indicating that gender has been fully mainstreamed into all project outputs at a minimum.</p> <p>*Note: Management Action or strong management justification must be given for a score of "no"</p> <p>Notes: A GEN1 has been assigned to POIDIER as it has some contribution to gender equality i.e. the proposed UNDP-GEF project will promote gender equality and women's empowerment on multiple levels, from the village, community level to the urban national government official and professional level, and even, to some extent, to the international level. Most importantly, at the local level, the project will strive to enhance the position of women. In community consultations and decision-making sessions, it will be required that at least half of those providing input and making decisions are women. Further, as the project will be promoting a significant amount and range of income-generating productive use activities, the project will ensure that at least half of funds allocated for such activities go to initiatives mainly benefiting women. Already during the PPG phase, specific productive use activities benefiting women have been identified, particularly agriculture-related ones. At the next level of the project, which includes several training/ capacity building efforts, the project will ensure that women are well-represented among trainees. In particular, the project specifically calls for a "Solar Mama" solar home system (SHS) procurement, installation, and repair training program that will train 40 middle-aged women from the outer islands. Experience in other countries has shown that not only does this approach (of ensuring women are well-represented among trainees) empower women, but it also leads to greater sustainability of results, as women (especially women that already have children) are less likely to out-migrate for work, so that their skills can be used on a long-term basis. Other trainings and workshops provided by the project will strive to ensure that at least 40% of participants are women. Lastly, in its recruitments of consultants and sub-contractors, both national and international, the project will proactively seek to include women and achieve at least a 30% ratio of women in total consultant person-days.</p>	Yes (3)	No (1)
	<p>Evidence Ref. Section IV – Gender Equality & Empowering Women, and Annex 7 of project document.</p>	

<p>Mid-term and end-of project targets of the POIDIER objective and selected outcomes are included in the project results framework to ensure that the POIDIER Gender Action Plan is implemented.</p> <p>Activities with special gender empowerment aspects includes the following: (1) Activity 1.1.2.2, which is technical training for outer island personnel that will be operating the RE mini-grid demos and RE for water for agriculture demos, will have at least 30 percent women trainees; and a women’s empowerment session will be included for these trainees. This approach will ensure that women play a significant role in operating the demonstrations that are installed. (2) Activity 1.1.2.3 will train 40 women as “solar mamas” in the selection, installation, and repair of solar home systems. The training will also include women’s empowerment sessions. (3) Activity 1.1.3.1, which will be an outer island road show to promote RE and EE, will include a special women’s session in each village visited to empower women to leverage POIDIER activities to their benefit. (4) Activity 4.1.3.2, which is technical assistance in business planning for productive uses of RE, will include special women’s empowerment sessions that will explain to women how they can leverage the business planning assistance of the project</p>											
<p>22. Is there a realistic multi-year work plan and budget to ensure outputs are delivered on time and within allotted resources? (select from options 1-3 that best reflects this project):</p> <ul style="list-style-type: none"> • 3: The project has a realistic work plan & budget covering the duration of the project <i>at the activity</i> level to ensure outputs are delivered on time and within the allotted resources. • 2: The project has a work plan & budget covering the duration of the project at the output level. • 1: The project does not yet have a work plan & budget covering the duration of the project. <p>Notes: The project document contains a realistic multi-year workplan that is set at activity level while the budget is set at the outcome level.</p>	<table border="1"> <tr> <td>3</td> <td>2</td> </tr> <tr> <td colspan="2">1</td> </tr> <tr> <td colspan="2">Evidence</td> </tr> </table>	3	2	1		Evidence					
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SUSTAINABILITY & NATIONAL OWNERSHIP											
<p>23. Have national partners led, or proactively engaged in, the design of the project? (select from options 1-3 that best reflects this project):</p> <ul style="list-style-type: none"> • 3: National partners have full ownership of the project and led the process of the development of the project jointly with UNDP. • 2: The project has been developed by UNDP in close consultation with national partners. • 1: The project has been developed by UNDP with limited or no engagement with national partners. <p>Notes: National partners were consulted during all formulation missions throughout the PPG. Although representatives from the implementing partner were consistently engaged, the process was still led by UNDP via the UNDP-consultants.</p>	<table border="1"> <tr> <td>3</td> <td>2</td> </tr> <tr> <td colspan="2">1</td> </tr> <tr> <td colspan="2">Evidence</td> </tr> <tr> <td colspan="2">Ref. PPG Mission Reports, and notes.</td> </tr> </table>	3	2	1		Evidence		Ref. PPG Mission Reports, and notes.			
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Ref. PPG Mission Reports, and notes.											
<p>24. Are key institutions and systems identified, and is there a strategy for strengthening specific/ comprehensive capacities based on capacity assessments conducted? (select from options 0-4 that best reflects this project):</p> <ul style="list-style-type: none"> • 3: The project has a comprehensive strategy for strengthening specific capacities of national institutions based on a systematic and detailed capacity assessment that has been completed. This strategy includes an approach to regularly monitor national capacities using clear indicators and rigorous methods of data collection and adjust the strategy to strengthen national capacities accordingly. • 2.5: A capacity assessment has been completed. The project document has identified activities that will be undertaken to strengthen capacity of national institutions, but these activities are not part of a comprehensive strategy to monitor and strengthen national capacities. • 2: A capacity assessment is planned after the start of the project. There are plans to develop a strategy to strengthen specific capacities of national institutions based on the results of the capacity assessment. • 1.5: There is mention in the project document of capacities of national institutions to be strengthened through the project, but no capacity assessments or specific strategy development are planned. • 1: Capacity assessments have not been carried out and are not foreseen. There is no strategy for strengthening specific capacities of national institutions. <p>Notes: Through Component 1 of POIDIER (i.e. Capacity Building for Low Carbon Outer Island Development), the project will implement <u>capacity building programs for island councils, technical personnel, and outer island residents</u>. For island</p>	<table border="1"> <tr> <td>3</td> <td>2.5</td> </tr> <tr> <td>2</td> <td>1.5</td> </tr> <tr> <td colspan="2">1</td> </tr> <tr> <td colspan="2">Evidence</td> </tr> <tr> <td colspan="2">Ref. Section III, IV of project document, and notes.</td> </tr> </table>	3	2.5	2	1.5	1		Evidence		Ref. Section III, IV of project document, and notes.	
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Ref. Section III, IV of project document, and notes.											

<p>councils, the annual Conference of Mayors will be leveraged. On-island training of island councils in developing whole-island energy plans will be carried out on 11 demo islands. For technical personnel, a strategy of learning-by-doing will be adopted. Both advanced technical personnel and outer island technicians will be trained in RE mini-grids and RE/EE for water for agriculture systems. An extensive program for training outer island women (“solar mamas”) in SHS repair will also be carried out with the advantage that middle-aged women are among the most likely to remain in their rural areas long-term. Artisans will be trained in the fabrication of EE cook stoves. For outer island residents, a multi-pronged program combining a “road show,” radio programs, brochures, and social media will be carried out to educate them on productive uses of RE (in mini-grid areas), proper use and care of SHSs, and EE cook stoves. To promote sharing of information on RE and EE in Kiribati’s outer islands, an information exchange will be set up. To enable EPU to monitor outer island RE/EE systems, an online database with dashboard will be developed, along with processes for keeping it updated.</p>		
<p>25. Is there a clear strategy embedded in the project specifying how the project will use national systems (i.e., procurement, monitoring, evaluations, etc.,) to the extent possible?</p> <p>Notes: As stated in Question 18, the following mitigation actions will reduce the risks of using national systems for procurement, monitoring, evaluations, etc.:</p> <ul style="list-style-type: none"> • <u>Preventive:</u> EPU/MISE agrees that its processes and systems are improved, per the findings of micro-HACT assessment and made operational before undertaking any substantive project activities. • <u>Alleviative:</u> The project will be implemented by EPU/MISE under UNDP’s National Implementation Modality (NIM) with the assistance of KSCE and KFSU until EPU/MISE improves the current processes and systems resulting in significantly reduced risks. 	Yes (3)	No (1)
<p>26. Is there a clear transition arrangement/ phase-out plan developed with key stakeholders in order to sustain or scale up results (including resource mobilization strategy)?</p>	Yes (3)	No (1)

Annex 11. POIDIER Project Demonstration Activities

This annex presents highlights of the demos that will be implemented under the POIDIER project. These demos are presented in the following sections, organized by demo program and sub-program, which roughly correlate with technology type and/ or application type. To give an overview, a summary list of POIDIER demo programs and sub-programs is shown in Exhibit A12-1. In this table, “B” indicates the program or sub-program has baseline activities (which are co-financed), while “I” indicates it has incremental activities (which use GEF funding).

Exhibit A11-1. Summary of POIDIER Demonstration Activities

Program or Sub-Program	B	I
1. Kiribati Outer Island RE Mini-Grid Program (Phase 1)		√
2. Kiribati RE and EE for Water Program (Phase 1)	√	√
2a. Sub-Program for PV Desalination for Water Supply on South Tarawa	√	
2b. Sub-Program for PV Desalination for Selected Vulnerable Outer Island Communities	√	
2c. Sub-Program for Demonstrating RE/ EE for Agricultural Water Supply on Outer Islands		√
3. Kiribati Ocean Thermal Energy Program (Phase 1)	√	√
4. Kiribati Outer Island Productive Uses of RE and EE Program (Phase 1)	√	√
4a. Sub-Program for Coconut-Related Productive Use of RE and EE	√	√
4b. Sub-Program for Fish-Related Productive Use of RE and EE	√	√
4c. Sub-Program for Agriculture-Related Productive Use of RE and EE	√	√
5. Outer Island EE Cook Stove Program	√	√
6. Southern Kiribati Hospital (SKH) EE Upgrade Program	√	√

1. Kiribati Outer Island RE Mini-Grid Program (Phase 1)

Description:

The Kiribati Outer Island RE Mini-Grid Program (Output 4.2.1A) entails procurement, installation, and sustainable operation of new PV mini-grids with battery storage, a few of which will also incorporate small wind power turbines. The mini-grids will emphasize: (i) productive uses of RE power for income generation of local people; (ii) financially and technically sustainable management of systems, achieved via well-trained operations personnel and revenues from electricity fee collection; and (iii) application of RE technology systems of high technical quality achieved at globally competitive low costs, reflecting the latest advancements in PV system component and battery cost reduction. The RE mini-grids installed under this program will be the first outer island mini-grid systems in Kiribati that will charge users for use of power. The demos aim to achieve substantially lower capital costs per kW PV panel and per kWh battery storage than previous systems. They also aim to achieve a higher level of reliability, addressing lessons learned, such as problems with inverter fans in Kiribati’s hot and humid climate, and inadequate (too thin) distribution cabling. Revenues generated from electricity billing will be used to pay for operations, maintenance, and spare parts, such as battery replacement.

The procurement, installation, and operations work for these mini-grids will build on technical assistance (TA) activities. The design of the mini-grids (Output 4.1.3) will be delivered via in-kind work of local government and private sector experts, learning by doing under the guidance of an international expert. The training on RE mini-grids (Output 1.1) and support to improve procurement (Output 4.1.2) will be useful in the design of, procurement for, and installation of the mini-grids. Organizations to manage the outer island mini-grids will be selected based on concessionaire-related activities under Component 2 and the completed outreach to potential concessionaires (Output 3.1). The work of the concessionaires will be

monitored by EPU for the lifetime of the systems with procedures (Output 2.1) developed under Component 2. Productive uses of the systems via procurement, installation, and operation of appropriate equipment are part of the “Productive Use Demos” (Output 4.2.1D). Activities to deliver Output 4.1.2 will support the sourcing of this equipment. The grant funds (Outputs 3.3) will target support of purchase of productive use equipment associated with the demo mini-grids and the completed outreach (Output 3.3) will support the promotion of the funding scheme to outer island people, assist them in developing business ideas, and assist them in applying for the grants.

The mini-grids under this program will include business, community, and public sector users. In addition to supporting productive uses, which will be the focus, the mini-grids will address a good number of social service/ government organizations as targeted in the KIER. These include Kiribati Southern Hospital (KSH), a few outer island main clinics, a few junior secondary schools on the outer islands, several church centers on the outer islands, and several island councils.

For each identified site, a cost analysis considering the density of households and willingness to pay for electricity will be conducted to determine whether the mini-grid cabling will cover (i) the full extent of village homes, or (ii) just a small area with a few key users and a newly established community productive use center, to which entrepreneurs will bring their productive use activities. If the cost of a single mini-grid covering multiple villages as designated in some cases is not economic, productive use stations will be set up separately in the center of each village or, if economic, separate village mini-grids covering full villages, but not multiple villages may be set up. Volunteer labor for the islands will support a large portion of installation labor needs. Persons from the respective outer island will also be involved in the long-term operation and management of the systems.

Eleven of Kiribati’s 20 outer islands have been selected for demonstration mini-grids under this program. Selection was made as follows: Based on mission discussions and analysis, the design team identified six criteria that, along with their noted sub-categories, make specific outer islands attractive for mini-grid demonstration under POIDIER. The team aimed to select demo islands that, as a group, cover the full range of the criteria and their sub-categories. The outer island selection criteria and their sub-categories are given in Exhibit A12-2 below. Top ranked (e.g. top 3 to 5) and high mid-ranking outer islands in each category (criterion) or sub-category were determined. Based on these rankings, three groups were defined to determine the selected islands, as shown in Exhibit A12-3.

Exhibit A11-2. Outer Island Selection Criteria for POIDIER Mini-Grid Demonstrations

Criterion	Sub-category of Criterion	Explanation of Rationale for Criterion
(1) Potential future growth center of the country	(i) largest in population (ii) largest in size (iii) transport hub for Dash airplane	(a) potential volume growth in economic output (b) ability to accommodate more of nation’s population and reduce population pressure on South Tarawa
(2) Relatively small, but with significant population	---	(a) higher cost effectiveness of mini-grids due to higher population density (b) diversification of island type - adding small, populous islands to mix of large, populous ones
(3) Line Island	---	(a) diversification (b) equity
(4) Islands that have good potential for productive uses of renewable energy and energy efficiency	high potential for: (i) agriculture (growing and possibly processing food crops); (ii) coconut value chain processing (mini copra mill, virgin coconut oil production, coconut tree-based saw mill, coir/ coconut husk	(a) productive uses increase revenues of mini-grids and thus promote their financial sustainability (b) productive uses raise local incomes

	processing); or (iii) fish industry (chilling fish, especially to sell to KFL, freezing of fish, and processing of fish, such as smoking/ packaging)	
(5) Proximity to South Tarawa	---	(a) strong potential, when coupled with significant land area, to accommodate more of the nation's population and reduce pressure on South Tarawa and (b) potential to take advantage of South Tarawa market
(6) Lack of past mini-grid activity	---	(a) diversification (b) equity

Exhibit A11-3. Priority Groups and Selected Islands

Priority Groups based on Selection Criteria	Selected Islands Based on Qualification for Priority Group
1. islands with 3-4 top rankings (unless they have had 3 or more mini-grids projects before)	Tab North, Abaiang, Teeraina, Tabuaeran, Butaritari, Makin
2. small islands with significant population that are among top three ranked by MFMRD for fish sector (but that were not selected in the first group)	Arorae and Tamana
3. remaining islands with 3-4 positive rankings (top or high mid-ranking) that are Kiribati Coconut priority or among closest islands to South Tarawa	Nikunau, Marakei, Nonouti

Exhibit A12-4 summarizes the 15 mini-grid demos across the 11 selected islands.

Exhibit A11-4. POIDIER PV Battery Mini-Grids

Island and Installed Capacity (kW)	Village(s) (population) and Institutions Covered	Investment Cost (USD)	Annual Energy Savings & GHG Emission Reductions⁸⁵	Productive Uses	Notes
1a. Tab North 140 kW	south to north: (i) SKH (50 kW), residences (15 kW); (ii) Utiroa (809), island council, main clinic (45 kW); (iii) Eita (500, not including secondary school) (25 kW plus 5 kW in excess demand from state high school). Mini-grid will be 5 km long.	385,000 - 581,000	91,980 L 246.5 t	chilling of fish, freezing of various foodstuffs, cold room for storage of agricultural produce; if logistics appropriate, power for water for agriculture technology (part of Output 4.2.1B)	Related activities at SKH: (1) Ministry of Health (MOH) will provide new and updated equipment, long-term medical personnel. ⁸⁶ (2) Energy audit (Output 4.1.1), and, funded by MOH, LED lighting upgrades, and selection/ installation of EE air conditioners (Output 4.2.1F). (3) GOK to move personnel from other ministries to SKH site to set up regional offices in the Southern Gilberts.
1b. Tab North 45 kW	(i) Tekaman (244); (ii) Tanaeang (640)	123,750 - 186,750	29,565 L 79.2 t	Same productive uses as above	Tekaman, considered a model village and having greater density of homes, will be the priority, should a smaller system be developed instead
1c. Tab North 35 kW	(i) Terikiai (271); (ii) Buota (409); (iii) Junior Secondary School (JSS); (iv) wharf area	96,250 - 145,250	22,995 L 61.6 t	fish center (additional power), coconut processing near the wharf (Kiribati Coconut), etc.	Tab North has plans to develop its wharf; fish center freezers are in high demand
2a. Abaiang 85 kW	from south to north: (i) Koniwa (326); (ii) Aonobuaka Village (473); (iii) JSS; (iv) Borotium (375); (v) Tebungnako (459)	233,750 - 352,750	55,845 L	fish: chilling and freezing; agriculture: cold storage, food processing, if logistics appropriate, power for water for agriculture technology (part of	Mini-grid may include small wind turbine if assessment indicates cost advantage. ⁸⁷ Abaiang is proactive in newly initiated agriculture efforts and crops grow relatively well there.

⁸⁵ Energy savings in terms of liters diesel fuel consumption reduction, and GHG emission reductions in terms of tons CO₂.

⁸⁶ Related improvements by the MOH at SKH will be a prerequisite to the demo mini-grid. These will include: Provision of surgeon and OB-GYN, bringing back parts of anesthesia equipment taken away, fixing of sterilizer equipment, bringing back other equipment taken away, provision of lab equipment for comprehensive metabolic panel, provision of cardiac monitors for heart patients, environmental controls (to address septic tank dumping contents on beach and x-ray chemicals being dumped directly into SKH grounds), provision of CGC machine to measure contractions of maternity patients, provision of working air conditioners to replace broken ones, relaunching of satellite internet service, and repair of intercom. The need for local capacity to look after equipment and make sure it is maintained will also be addressed.

⁸⁷ Past wind study on Abaiang shows average speed of 5 meters per second at 34 meters elevation.

				Output 4.2.1B)	
2b. Abaiang 40 kW	(i) part of Tebero (252); Taburao (268), island council, main clinic; (ii) Ewena (216)	110,000 – 166,000	26,280 L 70.4 t	Same productive uses as in above cell and local hotels in Tebero. Planned food processing includes snack chips made from root crops	Same comments as in above cell.
3a. Butaritari 40 kW	(i) Taubukinmeang (235); (ii) Temanokunuea (396), island council, main health clinic, JSS	110,000 – 166,000	26,280 L 70.4 t	Various, especially agriculture: cold storage, food processing, etc.	Due to plentiful rainfall, Butaritari does well in agriculture
3b. Butaritari 30 kW	(i) Ukiangang (579)	82,500 – 124,500	19,710 L 52.8 t	Same comments as in above cell.	Same comments as in above cell.
4. Nikunau 50 kW	(i) Rungata Village (847), island council, main health clinic, JSS	137,500 - 207,500	32,850 L 88.1 t	Various, especially coconut value chain processing	Nikunau has coconut sheds near main village of Rungata and strong coconut production, so opportune to coordinate with Kiribati Coconut in providing power for its proposed processing
5. Arorae 40 kW	(i) Rorete Village (655), island council, main clinic, JSS, expansion of fish center capacity (from current 10 kW to 20 kW)	110,000 – 166,000	26,280 L 70.4 t	Expansion of chilling, freezing capacity of fish center and of Arorae's successful fish smoking and packaging efforts	MFMRD recommends Arorae due to success of its fish center
6. Makin 75 kW	(i) Makin Village (1,535), island council, main health clinic, expansion of fish center capacity	206,250 – 311,250	49,275 L 132.1	Expansion of fish center; special attention to agriculture: cold storage, food processing, packaging	Due to plentiful rainfall, Makin does well in agriculture
7. Tamana 30 kW	(i) Bakaka (475), island council, main health clinic, JSS	82,500 – 124,500	19,710 L 52.8 t	Especially fish-related	Tamana has strong fish sector
8. Nonouti 40 kW	(i) Taboiaki (693)	110,000 – 166,000	26,280 L 70.4 t	coconut processing, fish feed machines for milk fish, etc.	Nonouti has high coconut production; MFMRD is promoting milk fish on Nonouti given high demand of milk fish for bait in Kiribati and is providing milkfish feed machines, which turn coconut waste and fish waste into feed
9. Marakei 50 kW	(i) Rawannawi (1,033), island council, main health clinic	137,500 - 207,500	32,850 L 88.1 t	especially fish-related and agriculture related (addressing crops such as papaya, taro, and cassava)	---

10a. Tabuaeran 30 kW	(i) Paelau Village (257), island council, and main health clinic; (ii) secondary school	82,500 – 124,500	19,710 L 52.8 t	chilling and freezing of fish (expansion of existing capacity), freezer for butchery, coconut processing, seaweed processing and packaging, cold storage for crops, food processing and packaging, and hotels/ tourism	Mini-grid may include small wind turbine if assessment indicates cost advantage. ⁸⁸
10b. Tabuaeran 30 kW	(i) Tereitaki (505)	82,500 – 124,500	19,710 L 52.8 t	Same productive uses as above cell	Same comments as above cell.
11. Teeraina 30 kW	(i) Tangkore (413), main health clinic	82,500 – 124,500	19,710 L 52.8 t	chilling and freezing of fish, coconut processing such as mini-copra mill, freezer for butchery, potentially pumping water from central lake or pumping recycled water for agriculture, cold storage for crops, food processing, water purification and bottling, and processing and freezing of eels from lake	Same comments as above cell.
Total: 790 kW	---	2.17 – 3.28 M	519,030L 1,391.2 t	---	---

⁸⁸ Tabuaeran and Teeraina are believed to have similar wind speeds to Christmas Island, which has a measured wind speed of 7 m/ sec. Further work on variability of wind speed throughout the day is needed.

Investment Costs:

A critical aspect of the outer island RE mini-grid program will be demonstration of systems of high technical quality achieved at globally competitive low cost. PPG findings suggest that equipment costs of RE mini-grids recently installed and planned for institutions in Kiribati are much higher than international best benchmarks and therefore have the potential to be reduced. Substantial reduction of costs through improved sourcing will have the dual benefits that: (a) more mini-grids / mini-grid capacity can be installed with a given amount of donor funds and (b) equity investors may become interested in investing in such mini-grids if reduced investment costs can raise returns to an attractive level. In this section, an estimated ceiling on per kW cost of the RE mini-grids will be made by considering both (a) international benchmarking studies/ comparisons and (b) current best prices for quality components. More detailed pricing will become available once the activities to deliver Output 4.1.2 are carried out.

International benchmarking studies and other international comparisons Because international benchmarking studies look at past projects and RE mini-grid costs continue to go down, the lower end of per kW costs among the cases used in these studies may be considered informative. In this regard, the following findings are of interest:

- A World Bank study presented in Dec. 2017 looked at 24 PV mini-grid projects with battery storage carried out in Myanmar and Bangladesh between 2014 and 2017. The three with the lowest capital costs (including design and logistics, but not installation) were all under USD 4,000 per kW, with the lowest in costs under USD 2,000 per kW. Another set of 16 projects in Africa and Asia had the lowest two having costs under USD 3,000 per kW.⁸⁹
- An IRENA study on solar costs in Africa found that PV mini-grid with battery storage costs in Africa back in 2015 at the low end were under USD 2,500 per kW, including installation.⁹⁰
- Government of India has recently, in June 2018, issued official benchmark costs for power house system (including PV and battery, etc., but not mini-grid costs) of under USD 1,350 per kW when 6 hours of battery back-up is included, and capacity is over 10 kW.⁹¹
- For comparison, by Q2 2017, US fix tilt utility-scale PV (grid connected, not including battery) had dropped to under USD 1,000 per kW, including design, engineering, permitting, direct labor, supply chain, and overhead margin. By Q1 2017, PV panel costs for such systems had dropped to less than USD 0.50 per watt or less than USD 500 per kW.⁹²

Current best prices, estimates for component costs, and overall costing estimates: While extensive sourcing research will be carried out during POIDIER implementation, some preliminary findings and estimates on best prices for quality main components that provide insights into target total per kW costs of the PV-battery mini-grid systems are:

- Trina Solar or Yingli panels may have prices of less than USD 0.50 per Watt or less than USD 500 per kW when bought in quantity (Alibaba).
- Solar brand name off-grid three phase inverter prices range from USD 340 to 500 per kW (Schneider on low end, Maxum on high end, as advertised online for purchase in US). A 2015 supplier quote for a PV mini-grid in Kiribati included needed number of SMA Sunny Island Inverter Chargers and an SMA Sunny Tripower, for, in total, average price per kW of USD 661. Based on expected price

⁸⁹ *Benchmarking Study of PV Mini-Grid Investment Costs: Preliminary Results, Conference Edition*, World Bank, December 2017.

⁹⁰ *Solar PV in Africa: Costs and Markets*, IRENA, Sept. 2016.

⁹¹ *Office Memorandum: Benchmark costs for Off-grid Solar PV Systems and Grid Connected Rooftop Solar Power Plants for the Year 2018-19 -reg, No. 318/38/2018-GCRT*, Government of India, Ministry of New & Renewable Energy, June 15, 2018

⁹² *Solar Market Insight Report 2018 Q2*, US Solar Energy Industries Association (SEIA), 2018.

reductions and recent pricing results for other brands, an estimate of USD 500 per kW is used for inverter/ controller.

- Battery expenses will vary substantially depending on whether lithium ion or lead acid batteries are selected. Lithium ion batteries are more expensive but may have ten-year warranty and last even longer. Lead acid batteries are substantially cheaper, may require more maintenance, and have warranties typically a maximum of five years. These are heavier and thus may have more costly shipping.
 - Best prices for 10-year warrantied lithium ion battery packs targeted at solar system applications are USD 300 per kWh (as indicated on Alibaba), or most famous brands for USD 350 per kWh and more (as advertised online for sale in US, such as Tesla, LG, etc.). Assuming 6 kWh of lithium ion battery storage is installed for each kW of solar panels installed, this would be, per kW solar panels, a battery cost of USD 1,800 or USD 2,100 or more per for famous brands.
 - Best prices for 5-year warrantied lead acid batteries targeted at solar system applications are USD 50 per kWh and, assuming 8 kWh of lead acid battery storage is installed for each kW of solar panels installed, this would be USD 400 per kW.
- Balance of power system: According to one supplier providing a quote to Kiribati in 2015, these other expenses include PV array wiring accessories, AC distribution of battery inverter, communications and load shedding, and ground mount solar frame. The total of these other expenses came to USD 655 per kW in the 2015 quote. With improved sourcing and cost reduction, it is estimated that these costs will be reduced to a level of USD 500 per kW.
- Distribution system/ mini-grid: These are roughly estimated to be USD 500 per kW equipment costs only, as labor is expected to be volunteer and/or other in-kind contributions.
- Shipping fee for the 2015 (Australia-based) supplier came to about 3.4 percent of equipment costs, where lead acid batteries (which will be substantially heavier and bulkier than lithium ion batteries) were used. Since port of origin is not clear at this point and there are other uncertainties, we use a shipping cost of about 5.6 percent of equipment costs and apply it to the lithium ion battery case (as worked out below) to get shipping costs of about USD 200 per kW.

Based on the above, the total cost per kW for the two cases are estimated as:

- For systems using lithium ion batteries and using the low-end quote for lithium ion products with 10-year warranty (USD 1,800 per kW), the total equipment costs are USD 3,800 per kW panels installed. Assuming 5.6 percent shipping costs, total costs to get equipment in country are USD 4,000 per kW.
- For systems using lead acid batteries (using battery costs of USD 400 per kW), the total equipment cost estimate drops to USD 2,400 per kW. Using the same shipping costs as above, total costs to get equipment in country are USD 2,600 per kW.

Economics: Assuming costs and revenues scale with system capacity, a cash flow analysis was conducted on a per kW basis for two cases of the PV-battery mini-grids, (a) lithium ion battery case and (b) lead acid battery case. A summary of parameters used is given below.

Exhibit A11-5. Parameters used in Kiribati RE Mini-Grid Financial Analysis

Item	In USD, unless otherwise designated
Inflation	2.5%
Discount Rate	10%
Capital costs (cash) – system with lithium ion* batteries	4,150
Capital costs (cash) – system with lead acid* batteries	2,750
Battery replacement costs and timing – lithium ion	Year 11: \$1,800
Battery replacement costs and timing – lead acid	Year 6: \$400, Year 11: \$400, Year 16: \$400
Inverter replacement costs and timing	Year 11: \$500

Capacity factor of power used and billed	0.25
--	------

*In addition to equipment and shipping costs outlined above, other cash costs are travel of installation team (estimated at USD 100 per kW) and guidance of international expert on PV mini-grid design (estimated USD 50 per kW). Most of the design work will be carried out as in-kind contributions by local experts, who will also lead installation. In installation, they will be supported by in-kind volunteer work of local island inhabitants.

Exhibit A12-7 shows the excel spread sheet used to compute IRR and NPV. Results are given below. Because the capital costs of the project are grant and in-kind contributions, which do not need to be repaid, actual price per power can be lower.

- For PV system with lithium ion batteries, an IRR of 12.0% (and positive NPV) is achieved when the price of power is USD 0.32 per kWh
- For PV system with lead acid batteries, an IRR of 12.0% (and positive NPV) is achieved when the price of power is USD 0.24 per kWh

Benefits: The POIDIER outer island RE mini-grids have the following key advantages: (1) potential to increase the incomes/ livelihoods of outer island people through opportunities for productive use of RE; (2) improved access to electricity for daily life needs, including lighting for students at night; (3) cost savings over time as compared to diesel power generation; (4) reduction in local air pollution as compared to diesel power generation; and (5) reduction in GHG emissions as compared to business as usual (diesel power generation). Total benefitting population is 12,739 (including children), about half male half female. Beneficiary households are about 2,548. Exhibit A12-6 shows the direct GHG ER calculations (1) per 1 kW capacity, (2) for a typical 40 kW system, and (3) for the total planned RE mini-grid installations under POIDIER of 790 kW.

Exhibit A11-6. POIDIER outer island RE mini-grid GHG ERs

System size	Capacity factor	kWh/year	Liters diesel per kWh	Liters diesel per year	Emissions factor (kg CO ₂ /liter diesel)	Kg CO ₂ reduced per year	System lifetime (years)	Tons CO ₂ reduced/lifetime
1 kW (unit)	0.25	2,190	0.3	657	2.68	1,761	20	35.22
40 kW (typical)	0.25	87,600	0.3	26,280	2.68	70,430	20	1,409
790 kW (all)	0.25	1,730,100	0.3	519,030	2.68	1,391,000	20	27,824

Exhibit A11-7. Financial Analysis of POIDIER PV Mini-grids with Battery Storage (per kW)

FINANCIAL ANALYSIS: POIDIER KIRIBATI PV-BATTERY MINI-GRIDS																					
YEAR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		1+inflation:		1.025		DF:		0.909090909													
per kW - system with lithium ion battery, with 10 yr warranty (and 6 kWh per kW panel installed)																					
Investment	-4150.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-2300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Revenue	0.00	700.80	718.32	736.28	754.68	773.55	792.89	812.71	833.03	853.86	875.20	897.08	919.51	942.50	966.06	990.21	1014.97	1040.34	1066.35	1093.01	1120.33
COSTS (Labor)	0.00	-150.00	-153.75	-157.59	-161.53	-165.57	-169.71	-173.95	-178.30	-182.76	-187.33	-192.01	-196.81	-201.73	-206.78	-211.95	-217.24	-222.68	-228.24	-233.95	-239.80
Net CF	-4150.00	550.80	564.57	578.68	593.15	607.98	623.18	638.76	654.73	671.10	687.87	-1594.93	722.70	740.76	759.28	778.27	797.72	817.67	838.11	859.06	880.54
DCF	-4150.00	500.73	466.59	434.77	405.13	377.51	351.77	327.78	305.44	284.61	265.21	-589.01	230.27	214.57	199.94	186.31	173.61	161.77	150.74	140.46	130.89
		DCF years 1-20:			NPV:			IRR:			NPV is positive (and IRR is greater than discount rate) - means investment is a good one!										
per kW - lead acid battery for solar, with 5 yr warranty (and 8 kWh per kW panel installed)																					
Investment	-2750	0.00	0.00	0.00	0.00	0.00	-400.00	0.00	0.00	0.00	0.00	-900.00	0.00	0.00	0.00	0.00	-400.00	0.00	0.00	0.00	0.00
Revenue	0	525.60	538.74	552.21	566.01	580.16	594.67	609.53	624.77	640.39	656.40	672.81	689.63	706.87	724.55	742.66	761.23	780.26	799.76	819.76	840.25
COSTS (Labor)	0	-150.00	-153.75	-157.59	-161.53	-165.57	-169.71	-173.95	-178.30	-182.76	-187.33	-192.01	-196.81	-201.73	-206.78	-211.95	-217.24	-222.68	-228.24	-233.95	-239.80
Net CF	-2750	375.60	384.99	394.61	404.48	414.59	424.96	435.58	446.47	457.63	469.07	-419.20	492.82	505.14	517.77	530.71	543.98	557.58	571.52	585.81	600.45
DCF	-2750	341.45	318.17	296.48	276.27	257.43	14.09	223.52	208.28	194.08	180.85	-146.93	157.03	146.32	136.34	127.05	118.33	110.31	102.79	95.78	89.25
		DCF years 1-20:			NPV:			IRR:			NPV is positive (and IRR is greater than discount rate) - means investment is a good one!										
Basic cost assumptions -cash costs - USD per kW																					
Item	Lithium Ion Battery System		Lead Acid Battery System		Lithium Ion Battery				Computing per kW revenues				Price of power in USD/ kWh								
Panels	500		500						kW				Capacity Factor kWh per day								
Batteries	1800		400						1				0.25								
Inverter	500		500		Lead Acid Battery				Computing per kW revenues				Price of power in USD/kWh								
BoS	500		500						kW				Capacity Factor kWh per day								
Mini-grid	500		500						1				0.25								
Shipping	200		200						6				700.8								
Equip-subtotal	4000		2600						6				525.6								
Travel-installation team	100		100																		
Design guidance - Int'l c	50		50																		
Grand total	4150		2750																		
Note: Local labor for installation is assumed to be volunteer from island;																					
Kiribati experts design work and installation management is assumed to be in kind co-financed contribution, with oversight of design and installation (remote) by international consultant considered a cash cost																					
Replacement equipment per year																					
	year 6	year 11	year 16																		
Lithium Ion System																					
Battery	0	1800	0																		
Inverter	0	500	0																		
Total	0	2300	0																		
Lead Acid System																					
Battery	400	400	400																		
Inverter	0	500	0																		
Total	400	900	400																		



2. Kiribati RE and EE for Water Program

The POIDIER Kiribati RE and EE for Water Program is focused on using RE and EE to provide water in Kiribati, both for daily use and for agriculture. There are three sub-programs under this program, which are each introduced, in turn, below.

2a. Sub-Program for PV Desalination for Water Supply on South Tarawa: This entails the installation of a large-scale desalination system and 2.5 MW PV power system to power the desalination on South Tarawa. The desalination system will have a capacity of 4,000 liters per day and desalinate seawater by reverse osmosis technology. It will provide water for daily needs to the population of South Tarawa. Benefits of the project include enough household use water for South Tarawa and reduction of local emissions, as compared to the business as usual case when diesel generators are used to power the desalination.

2b. Sub-Program for PV Desalination for Selected Vulnerable Outer Island Communities: This entails the installation of four small-scale PV powered desalination systems, one on each of four different outer island islets in vulnerable communities lacking reliable access to fresh water. The desalination technology will be reverse osmosis of seawater. The scale of PV at each site will be 10 kW, for a total for 40 kW. Benefits of the project include enough household use water for four outer island islet vulnerable communities that currently struggle with access to fresh water and reduction of local emissions, as compared to the business as usual case when diesel generators are used to power the desalination.

2c. Sub-Program for Demonstrating RE/ EE for Agricultural Water Supply on Outer Islands: This is an incremental sub-program, to be supported with GEF funds. This is to demonstrate the cost-effective use of RE and EE to provide water for agriculture in Kiribati's outer islands⁹³. It is for demonstrating the application of RE and EE for agricultural water supply on a least two islands, Abaiang and Tab North⁹⁴. To ensure financial sustainability, the demos will include development of a payment system for the water so that funds collected can be set aside to pay the operator and pay for repairs and parts needed in the future.

Benefits: While the RE/EE for Water for Agriculture Demo is agreed by all to present challenges in identifying a cost effective and environmentally sustainable technology for providing water for agriculture in Kiribati's outer islands, the potential for impact of a successful demo is quite high. With a large domestic supply of vegetables and fruits and increased share of these in the local diets, the rapid rise of chronic diseases, such as diabetes, could be stopped and reversed, leading to higher quality of life and greater life expectancy. Substantial production of vegetables and fruits in Kiribati could reduce the current accounts deficit due to the large proportion of food in the national diet that is currently imported. And, substantial production of vegetables and fruits domestically could also increase the incomes of outer island people who grow these crops. Use of RE and EE approaches to provide water for agriculture will reduce GHG emissions from the business as usual case in which diesel fuel is used. It is estimated this demonstration will benefit about 1,200 households or 6,000 people (including children), about half male and half female.

⁹³ Kiribati faces serious challenges related to its high proportion of food that is imported, lack of vegetables and fruits in the diet, and rapidly escalating rates of chronic disease associated with poor diet, such as diabetes. While there is cultivation of traditional crops, particularly coconut and breadfruit, agriculture touching on a broader range of nutritious crops is just getting started on the outer islands. The government, however, has the aspiration to make the outer islands the "farm" of Kiribati and thus is strongly in favor of developing a means to deal with limited water availability for agriculture.

⁹⁴ Abaiang is the closest outer island to South Tarawa (which, due to its large population, has a strong demand for food products), has a relatively large population for an outer island (second only to North Tarawa among the outer islands), and has some good success with agricultural initiatives to date. Tab North, being in the Southern Gilberts where there is less rain, has a more challenging environment for agriculture, but good water supply could address this issue. Tab North is designated the administrative center of the Southern Gilberts, is a hub for air travel to other of the Southern Gilbert outer islands, has a relatively large population for an outer island, and has a relatively large land area.

3. Kiribati Ocean Thermal Energy Conversion Program

The Kiribati Ocean Thermal Energy Conversion (OTEC) Program has baseline funding for a power plant system installation and GEF support to prepare a design for incremental EE enhancements to the system. The basic system uses the difference between cooler water deep in the ocean and warmer shallow seawater to run a heat engine and generate electricity. The scale of the system will be 1 MW. The incremental enhancements, for which a design will be prepared, may include use of the cool water brought up from the ocean depths to provide building cooling. Specifically, incremental GEF supported technical assistance activities to enhance the baseline demo will include: (1) Activity 4.1.1.5, which will assess the options for EE enhancement of the OTEC plant and its byproducts; (2) Activity 4.1.2.6, which will carry out sourcing to identify best priced quality equipment for the best identified options under Activities 4.1.1.5; and (3) Activity 4.1.3.4, which will involve the detailed design for the priority EE enhancement identified under Activity 4.1.1.5. The full investment cost of the OTEC Program is USD 28 million. As this technology is in its early, research stages, the baseline demo is not expected to have a positive net present value (NPV)/ not expected to be profitable. Yet, subsequent EE enhancements as facilitated by POIDIER assessment, sourcing, and design work will improve the economics of the OTEC Program. That is, potential downstream processes to make use of the deep-sea water byproduct of the technology, as designed under POIDIER, will enhance the economics. The OTEC demo offers several benefits: The baseline demo increases the electricity supply to South Tarawa. The incremental design will support the eventual development of other services, such as building cooling. Further, the provision of electricity and other services can reduce diesel consumption from business as usual. This will reduce diesel imports and reduce local air pollution

4. Kiribati Outer Island Productive Uses of RE and EE Program

The Kiribati Outer Island Productive Uses of RE and EE Program focuses on the use of RE and EE for purposes that generate income, particularly for local people living in the outer islands of Kiribati. Most of the related activities will be integrated with the Kiribati Outer Island RE Mini-Grid Program in that the productive uses will make use of the power from the mini-grids that are installed under the Mini-Grid Program. In this way, the two programs will have positive synergies. At the same that the mini-grids facilitate the productive uses, the increased use of the mini-grid electricity will increase revenues of the mini-grids and thus enhance their financial sustainability. The benefiting population will be mostly a subset of the population benefitting from the Kiribati Outer Island RE mini-grid program. It is expected that at least one quarter of these households, or 637 households (population of 3,185), will benefit from the Productive Use Program, though the ideal target will be that all households benefitting from mini-grid power, or 2,548 households (population of 12,740), will also benefit from the Productive Use Program. While productive uses in a range of areas, such as sewing and entertainment, will be encouraged, there will be three main sub-programs focusing on three main areas of development for Kiribati's outer islands: coconuts, fish, and agriculture.

4a. Sub-Program for Coconut-Related Productive Use of RE and EE: This sub-program will entail the setting up of coconut related processing facilities on the outer islands that make use of RE mini-grid provided power and EE measures. The types of processing will include copra mini-mill, virgin coconut oil processing, coconut tree wood lumber mill, and coir (husk) processing. Kiribati Coconut, Ltd., as well as, potentially, private sector companies, will carry out this work on demo mini-grid islands that they have prioritized for coconut development, likely Nonouti and Tab North. Kiribati Coconut has already stated its intention to develop processing facilities on the outer islands and to locate these near to the coconut sheds next to the main wharf of each outer island. As such, the most attractive situations for integration of the POIDIER RE mini-grids and coconut value-chain processing may be those found in Nonouti and Tab North, where a significant population that might also use power from the mini-grid for

other purposes, is located near the wharf and coconut sheds. Funding for the processing equipment and operations will come from the coconut-related companies, while GEF support will provide the PV mini-grids to power the processing. The companies, in turn, will be key customers that purchase power from the mini-grids. In addition to financial sustainability of associated RE mini-grids, benefits of this sub-program will be job creation and income enhancement on the outer islands, reduction of spoilage and freight costs (copra oil has a longer shelf life than the raw coconut meat that is now exported from the outer islands to South Tarawa for processing), and increased revenues for the companies involved. Local air quality improvement and reduction of GHG emissions will also be associated with this sub-program but will be formally counted in association with the RE Mini-Grid Program.

4b. Sub-Program for Fish-Related Productive Use of RE and EE: This sub-program will entail the use of RE provided power and EE approaches to facilitate increased income generation associated with the fishing sector. This involves setting up fish industry related equipment that makes use of RE power and operated following appropriate EE measures. Some of this equipment will be financed with baseline funding and be associated with the PV systems that have been set up at the outer island fish centers. Other equipment may be financed partially by co-financing and partially by an incremental (GEF supported) grant program and may be used in association with the project's incremental RE mini-grids. Such equipment will include ice-makers and specialized cooling containers to chill fish before transport to Kiribati Fish Limited (KFL) on Tarawa. KFL is anxious to procure more fresh fish from the outer islands but faces challenges in receiving the chilled fish within the timely fashion they require (i.e. within five days of catch) that may be addressed by such productive uses. KFL is in the process of expanding its processing capacity on South Tarawa and setting up processing on Christmas Island and thus has the capacity to absorb a much higher fish catch than it can procure from the outer islands at the present. Other equipment that may be supported by a combination of co-financing and incremental grants are freezers to freeze fish and other food stuffs and relevant equipment for the start-up and/or expansion of fish processing activities on the outer islands. Both will be carried out by entrepreneurs, island councils, and/or cooperatives on demo outer islands. Islands to be involved will be determined during implementation, but are most likely to include Arorae, Makin, and Tamana. A fully co-financed activity related to productive use will be the purchase, installation, and operation of milk fish feed machines, so that the outer islands can address the large market for milk fish as fishing bait in Kiribati (to be carried out by MFMRD on North Tarawa and Nonouti). Overall, this fish-related productive use sub-program, like the foregoing coconut-related one, will enhance the financial sustainability of the demo RE mini-grids by increasing their revenues. In addition, the sub-program will benefit the income of outer island people, as they will have the potential to increase their fish catch with proper cooling, ice-making, and freezing equipment, especially given the high market demand of KFL. Local air quality conservation and reduction of GHG emissions, both as compared to business as usual, will also be associated with this sub-program but will be formally counted in association with the RE Mini-Grid Program.

4c. Sub-Program for Agriculture-Related Productive Use of RE and EE: This sub-program will entail the use of RE for energy supply and EE technologies to generate income through agriculture-related activities. In particular, the sub-program, both through baseline co-financing and incremental grants, will support the purchase of equipment related to agricultural products that make use of electricity from POIDIER's RE mini-grid demos. The project will leverage Government of Kiribati work to stimulate and expand agriculture via training and seed provision for household vegetable gardens on targeted outer islands (to be carried out by Department of Agriculture, MELAD). It will include the demos of RE and EE for provision of water for agriculture. (This is the same as Sub-Program of Activity 4.2.1B.3.) Other aspects of this Agriculture-Related Sub-Program, which will have baseline co-financing and potentially incremental grant support, will be the purchase of equipment and establishment/ installation of cold storage rooms and refrigerators for agricultural produce and the purchase of relevant equipment and agricultural processing activities that make use of newly available RE mini-grid power. The latter may include fruit or root crop chip making and packaging on Butaritari (e.g. banana chips) and Abaiang (e.g.

breadfruit chips), grinding and packaging of root crop staples, etc. The cold storage/ refrigeration and the processing will be carried out on demo outer islands by entrepreneurs, island councils, and/or cooperatives. Benefits will be increased health through increased availability of vegetables and fruits, increased food security by a greater proportion of the nation's food being provided domestically, increased financial sustainability of mini-grids via increased revenues, and increased livelihoods of local people, particularly women, who tend to be the majority of those most involved in agricultural initiatives. Local air quality conservation and reduction of GHG emissions, as compared to business as usual, will also be associated with this sub-program but will be formally counted in association with the RE Mini-Grid Program. The islands to participate will be determined during implementation, but will likely include Makin, Butaritari, Abaiang, and Tab North.

5. Outer Island EE Cook Stove Program

The Outer Island EE Cook Stove Program will entail the development, local fabrication, and sale of EE fuel wood cook stoves. These EE cook stoves will be designed specifically to be made and used in Kiribati. Incremental technical assistance of Activity 4.1.1.3 will support either competitions or parallel consultancies to develop competing models of such stoves. EE tests and other assessments will determine which stove or stoves are most suitable for success in Kiribati. Capacity building under Output 1.2 will train interested entrepreneurs in the fabrication of such stoves and provide the highest potential artisans with the tools needed to develop their business in this area. The outer island road show and awareness raising activities to deliver Output 1.1 will promote the EE cook stoves on the outer islands. Based on experience in similar countries, domestically made stoves should be significantly cheaper than imported ones, perhaps USD 30 per stove instead of USD 90. Thus, their sale will not require subsidy support, so that purchase of the stoves will be carried out by individual households at market prices. Thus, very little incremental investment in this program will be required and will be used only on the technical assistance and tools. Further, the sale of stoves is expected to bring profits to the fabricators, enhancing their livelihoods. Other benefits of the cook stoves will be decreased smoke from the stoves and related health benefits for women and children, less time spent collecting fuel wood, less storage space needed for fuel wood to keep it dry, less deforestation, and reduction in GHG emissions from fuel wood burning. GHG emission reduction benefits are shown in Exhibit A12-8.

Exhibit A11-8. POIDIER Outer Island EE Cook Stove GHG ERS

Annual household fuel wood use for cooking (kg)	Efficiency savings factor (as compared to open hearth fire)	Annual household fuel wood saved with EE stove (kg)	Number of cook stoves targeted*	Annual fuel wood savings across all families (tons)	GHG emissions factor for wood (ton CO2 per ton wood)	GHG ERS per year (tons)	Lifetime of cook stoves (years)	GHG ERS over lifetime of stoves (tons CO2)
2,600	0.5	1,300	11,000	14,300	1.513	21,636	3	64,908

*While the program will emphasize the outer islands in its roadshow and promotion, it is expected that demand for the cook stoves will be high and an "easy sell" in South Tarawa, where fuel wood is scarcer, and more people have jobs and are short of time to collect fuel wood. Thus, target numbers include substantial sales of EE cook stoves both in the outer island and on South Tarawa.

In terms of economics, EE cook stove fabrication has the potential to be profitable for the artisans that participate. As a comparison, in Vanuatu, an artisan has developed a rocket stove model made of local materials. Sale price of this locally made rocket stove in Port Vila is about USD 28, while materials cost USD 5. A good artisan can make 5 stoves per day. Thus, before selling and transport expenses, the net

income per stove will be USD 23, or potentially up to USD 115 per day for a skilled artisan, who makes five stoves per day. This amount leaves ample room for selling and transport costs.

6. Southern Kiribati Hospital (SKH) EE Upgrade Program

This demo will entail the EE retrofitting of SKH based on the results of the energy audit that will be conducted in the hospital. The energy audit will be an incremental activity, while the EE retrofits will be supported by baseline co-financing from the Ministry of Health. The focus of these retrofits will be the application of EE lighting and air conditioning. The retrofits will be selected to be economically attractive with payback periods in the range of three years or less. The benefits of the program will include lower power costs for SKH/ Ministry of Health. Local air quality conservation, as compared to business as usual, will also be achieved. While POIDIER's RE mini-grid program will include a mini-grid at SKH, increased efficiency at SKH will mean that there will be more clean power available for other applications, so a net benefit of reduction in diesel use as compared to business as usual, on top of that which would have been achieved by the mini-grid alone, will be achieved by the EE retrofits at SKH.

Annex 12. GHG Emission Reductions

This annex provides the methodology for and results of calculating the incremental GHG emission reductions (“GHG ERs” or, simply, “ERs”) expected to result from the POIDIER Project. ER estimates required for GEF projects are divided into four categories: direct GHG emissions reductions (“DERs”), direct post-project emission reductions (“DPP ERs”), indirect GHG ERs – bottom-up approach, and indirect GHG ERs – top-down approach. The indirect ERs are also known as “consequential ERs” or “CERs.” Each of these four categories is covered in turn below, though estimates for baseline direct GHG ERs are given first and then added to incremental direct GHG ERs to show total direct GHG ERs in the alternative scenario. The annex closes with an aggregation of key results in a summary table. All GHG ER calculations incorporate a correction for the impact of “black carbon,” the result of incomplete combustion of fuels. This correction has two components: It reduces the total GHG ERs from complete combustion, but, at the same time, adds an additional GHG ER effect for the incompletely combusted products. The net result is that the correction increases the GHG ERs as compared to estimates based on complete combustion.

1. Baseline direct GHG emission reductions: The baseline direct GHG emission reductions are those due to the co-financed demos that would have occurred in the absence of POIDIER. While it is likely that certain POIDIER activities will enhance/ increase the total GHG emission reductions that some of these baseline demos generate, for the sake of simplicity and for the sake of providing a conservative estimate of incremental DERs, all ERs from the baseline demos are for now assumed to be “baseline direct ERs.” Baseline GHG ERs associated with the baseline demos are shown in Exhibit A13-1.

Exhibit A12-1. Direct GHG ERs for Baseline RE-based Power Generation Demos*

Technology/ Demo	Total Capacity, kW	RE-based Power Generation, kWh/ year	Liters diesel per year avoided	GHG ERs per year (kg CO ₂)	Lifetime of system (years)	GHG ERs over lifetime (tons CO ₂)
South Tarawa Solar PV RO Desalination Water Supply	2,500	3,942,000	1,182,600	3,296,159	20	65,923
Outer Island Solar PV RO Desalination Water Supply	40	63,072	18,921.6	52,739	20	1,055
OTEC	1,000	7,008,000	2,102,400	5,859,837	35	205,094
Least Cost Energy Plan	200	438,000	131,400	366,240	20	7,325
Total	---	1,1451,072	3,435,322	9,574,974	---	279,397

*Overall capacity factor of 0.18 used for South Tarawa Solar PV RO Desalination Water Supply Project and for Outer Island Solar PV RO Desalination Water Supply Project, which will not utilize energy storage. Overall capacity factor of 0.80 is used for OTEC and of 0.25 used for Least Cost Energy Plan, which is expected to implement solar PV mini-grids based on learnings from POIDIER. Hours per year are 8,760. Diesel used per kWh assumed to be 0.3 liters. Kilograms of CO₂ per liter diesel is 2.68. With a fuel combustion of 0.3 liters per kWh in diesel generators, the proportion of diesel fuel completely combusted fuel is estimated to be 98.5%. The net black carbon correction factor increases the GHG ERs as compared to the theoretical complete combustion case by 4.0%.

2. Direct GHG emission reductions: Alternative scenario direct GHG ERs are ERs resulting directly from investment type activities of the project (both those with GEF financing and those with co-financing), such as the demonstrations. Total direct emission reductions (DERs) for the alternative scenario are the sum of the baseline DERs calculated above and the incremental DERs calculated in this sub-section. The net DERs (DERs attributable to POIDIER) are computed according to the following

equation and are thus equivalent, in the case of POIDIER, to the DERs from the incremental project demos.

$$\text{Direct ER} = [\text{Direct ER}]_{\text{ALTERNATIVE}} - [\text{Direct ER}]_{\text{BASELINE}}$$

Direct GHG ERs due to incremental project demos: The incremental DERs are those that occur beyond the business-as-usual baseline estimates for the lifetime of the incremental equipment installed. For ease of evaluation in the project results framework (which requires results at the time of project close), incremental DERs that occur during project lifetime are also computed. For POIDIER, the incremental project demos (as covered in Annex 12) are the source of direct ERs.

The incremental project demos include:

- 15 PV mini-grids with battery storage, with total PV capacity of 790 kW
- 2 RE for water for agriculture systems, preliminarily assumed to be PV powered and have a total PV capacity of 124.8 kW
- energy efficient cook stoves adopted by 11,000 households

Exhibit A12-2. Direct GHG ERs for Incremental PV Mini-Grid Demos and the RE for Water for Agriculture Demos*

Technology	Total Capacity, kW	RE-based Power Generation, kWh/ year	Liters diesel per year avoided	GHG ERs per year (kg CO ₂)	Lifetime of system (years)	GHG ERs over lifetime (tons)
PV Mini-Grid Demos	790	1,730,100	519,030	1,446,647	20	28,933.0
RE for Water for Agriculture	125	273,312	81,994	228,534	20	4,570.7
Total	914.8	2,003,412	601,024	1,675,181	---	33,503.6

*Capacity factor of 0.25 used for both types of demo. Parameters of 8,760 hours per year, 0.3 liters diesel per kWh, and 2.68 kg CO₂ per liter diesel are used. With a fuel combustion of 0.3 liters per kWh in diesel generators, the proportion of diesel fuel completely combusted fuel is estimated to be 98.5%. The net black carbon correction factor increases the GHG ERs as compared to the theoretical complete combustion case by 4.0%.

Exhibit A13-2 shows the annual and lifetime DER calculations for the PV mini-grid demos and the RE for water for agriculture systems, while Exhibit A13-3 provides the parameters and estimates for the DERs of the incremental cook stove demos annually and for the three-year lifetime assumed for the cook stoves.

Exhibit A12-3. Direct Incremental GHG ERs for EE Cook Stove Demos

Annual household fuel wood use for cooking	Efficiency savings factor	Annual household fuel wood saved with EE stove	Number of cook stoves	Annual fuel wood savings across all families	GHG emissions factor for wood (ton CO ₂ per ton wood)	GHG ERs per year	GHG ERs over 3-year lifetime of stoves
2,600 kg	0.5	1,300 kg	11,000	14,300 tons	1.513	27,406.2 tons	82,218.6 tons

The proportion of wood completely combusted is estimated to be 90.0%. The net black carbon correction factor increases the GHG ERs as compared to the theoretical complete combustion case by 26.7%.

Finally, to compute total direct incremental GHG ERs we add the incremental ERs from the PV mini-grid and RE for water for agriculture demos to those of the cook stove demos. The needed sub-totals for lifetime incremental DERs have already been computed above. In addition, to compute direct incremental GHG ERs during the project's four-year lifetime for the Project Results Framework (PRF), there is a need to estimate the roll-out pace of the various demos and then compute aggregate GHGs annually. It is assumed that the first phase of implementation is completed at the end of year 1 of the project, so that a full year of GHG ERs for that equipment is achieved by the end of year 2, etc. Exhibit A13-4 shows the planned roll-out on a proportion basis. For the PV mini-grids and RE for water for agriculture systems, the amount indicated is the proportion of the total targeted kW that has rolled out at the indicated time. For the cook stoves, it is a simple proportion of the total EE cook stoves targeted that are rolled out at the indicated time. Exhibit A13-5 shows the total incremental lifetime DERs and, based on the rollout schedule in Exhibit A13-4, the incremental DERs achieved by mid-project and by end of project.

Exhibit A12-4. Timetable of Completion for Incremental Demos
(units: proportion of total targeted kW or stoves rolled out at specific time)

Technology	Proportion installed by end of year 1/ beginning of year 2	Proportion installed by end of year 2/ beginning of year 3	Proportion installed by end of year 3/ beginning of year 4
PV mini-grids	1/3	1/3	1/3
RE for water for agriculture systems	0	1/2	1/2
EE cook stoves	1/3	1/3	1/3

Exhibit A12-5. Total Direct Incremental GHG ERs during Lifetime of Equipment and During Project (in tons CO₂)

Technology	Mid-project (end of year 2)	End of project (end of year 4)	Lifetime
PV mini-grids	482.2	2,893.3	28,933.0
RE for water for agriculture	0.0	342.8	4,570.7
EE cook stoves	9,135.4	54,812.4	82,218.6
Total	9,617.6	58,048.5	115,722.2

Total alternative scenario direct GHG ERs: Total direct GHG ERs in the alternative scenario are calculated as the sum of baseline direct GHG ERs and incremental direct GHG ERs, as shown in Exhibit A13-6.

Exhibit A12-6. Total Alternative Scenario Direct GHG ERs (in tons of CO₂, lifetime)

Demo Sub-Program	Baseline Direct GHG ERs (A)	Incremental Direct GHG ERs (B)	Total Alternative Scenario Direct GHG ERs (C=A+B)
1. PV Mini-Grid Demos	7,324.8	28,932.9	36,257.7
2. RE/ EE for Water Demos	66,977.9	4,570.7	71,548.7
3. OTEC	205,094.3	0.0	205,094.3

4. EE Cook Stove Demos	0.0	82,218.6	82,218.6
Total	279,397.0	115,722.2	395,119.3

Net direct GHG ERs: Calculation of net direct GHG ERs, which may also be called incremental DERs or DERs attributable to POIDIER, is shown in Exhibit A13-7. In the case of POIDIER, DERs attributable to the project are one in the same as DERs due to the incremental demos.

Exhibit A12-7. Direct GHG ERs Attributable to POIDIER (in tons of CO₂, lifetime)

Demo Sub-Program	Alternative Direct GHG ERs (C)	Baseline Direct GHG ERs (A)	Direct GHG ERs Attributable to POIDIER (B=C-A)
1. PV Mini-Grid Demos	36,257.7	7,324.8	28,932.9
2. RE/ EE for Water Demos	71,548.7	66,977.9	4,570.7
3. OTEC	205,094.3	205,094.3	0.0
4. EE Cook Stove Demos	82,218.6	0.0	82,218.6
Total	395,119.3	279,397.0	115,722.2

2. Direct Post Project GHG Emission Reductions (“DPPERs”): DPPERs are defined as those GHG ERs that result from the direct support of project activities, but for which equipment is installed after project close. In the case of POIDIER, in addition to support for the project demos, which will result in DERs, project activities will result in plans for replicating the project demos and in the obtaining of financing for these plans. Actual installation of these “replications” is expected to occur after project close. Project activities supporting the replication of the incremental off-grid PV mini-grids are estimated to have three times “replication effect,” such that 790 kW x 3, or 2,370 kW is installed, with a lifetime of 20 years. Similarly, activities supporting replication of the incremental RE/EE for water for agriculture system is expected to have three times “replication effect,” such that 124.8 kW x 3, or 374.4 kW, is installed. As for the EE cook stoves, replication supported by project activities is expected to have a one-time replication effect, so that 11,000 additional stoves are deployed as a direct result of project activities, such as EE cook stove promotion through road show and other means. Thus, DPPERs for the project are computed as shown in Exhibit A13-8 and total 161,552.3 tons CO₂.

Exhibit A12-8. POIDIER DPPERs

Item Replicated	Lifetime GHG ERs of Demos (tons CO ₂) attributable to POIDIER	No. of Post-POIDIER Projects Receiving Direct Support from POIDIER	DPPERs (tons CO ₂)
RE Mini-grids	28,933.0	Three times the same set of demos	86,798.8
EE/RE for Water for Agriculture Systems	4,570.7	Three times the same set of demos	13,712.0
EE cook stoves	82,218.6	Same set of EE cook stoves demos	82,218.6
Total	115,722.2	---	182,729.4

3. Consequential GHG Emission Reductions: Consequential ERs (CERs) are those resulting from indirect replications that are stimulated by the project, by its incremental demos, and by its directly

supported replications. Replications generating CERs are those that do not receive any direct support from the project, either as TA or investment, and thus may be called “indirect replications.” So, unlike those replications associated with DPPERs, these indirect replications are those that have not received direct project support, such as in the planning and design of the installations. There are two approaches for calculating the CERs, the “bottom-up approach” and the “top-down approach.” In both cases, the ten years after project close is considered the “influence period”.

Bottom-up Approach

The bottom-up approach uses a simple replication factor (RF) deemed feasible by the project team to estimate the amount of systems installed during the ten years influence period and thus the CERs – the GHG ERs that occur over such equipment’s lifetime. In the case of POIDIER, an indirect replication factor of three is used for each of the PV mini-grid demos, the RE/EE for water for agriculture systems, and the EE cook stoves demos. In the case of the PV mini-grids and the RE/EE for water for agriculture systems, this results in substantial expansion of efforts. In the case of the EE cook stoves, this may result in some expansion but also accounts for replacement of the original cook stoves, which are anticipated to already have a high level of penetration but have only a three-year lifetime. Calculation of Bottom-up CERs (“BUCERs”) is shown in Exhibit A13-9.

Exhibit A12-9. POIDIER Bottom-Up CERs (“BUCERs”)

Item Replicated	Sum of DERs and DPPERs (tons CO2)	Replication Factor	BUCERs (tons CO2)
PV Mini-Grid Demos and Project-supported Replications	115,731.8	3.0	347,195.4
RE/EE for Water for Agriculture System Demos and Project-supported Replications	18,282.7	3.0	54,848.1
EE Cook Stoves Demos and Project-support Replications	164,437.2	3.0	493,311.5
Total	298,451.6		895,354.9

Top-down Approach: Top-down consequential ERs are those estimated based on a macro approach that begins with the overall market or overall emission reductions in the country and then breaks this down into the share for which the project may be deemed responsible. The period of influence for which top-down emission reductions are calculated is the ten years following project close. Kiribati’s INDC prepared in 2016 indicates unconditional, non-ocean related, GHG ERs of 10,090 tons CO2 per year between 2020 and 2030. It further indicates conditional (depending on development support) GHG ERs of 35,880 tons CO2 per year by 2025, and 38,420 tons CO2 per year as compared to BAU by 2030. Using interpolation, we estimate the annual increment of the conditional ERs between 2016 and 2025 and between 2025 and 2030 and use the 2025-2030 increment to also estimate the ERs between 2030 and 2033. We assume that the unconditional reduction remains constant.

Exhibit A13-9 shows the two amounts annually for the ten years after project close and the total ERs as compared to BAU. We assume a 50 percent causality factor, the share of ERs attributable to indirect influence of POIDIER. This reflects the very strong impact that the EE cook stoves are expected to have on emission reductions nationwide and the high suitability (and thus high potential replicability) of RE to off-grid situations of the outer islands, both combined with the critical role that POIDIER will play in the ramp up of each.

Exhibit A12-10. Top-Down ERs as Compared to Business as Usual (BAU) based on INDC (units: tons CO₂, unless indicated as percent)

Item	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	Total
Conditional ERs	31,893	35,880	36,388	36,896	37,404	37,912	38,420	38,928	39,436	39,944	373,101
Unconditional ERs	10,090	10,090	10,090	10,090	10,090	10,090	10,090	10,090	10,090	10,090	100,900
Total ERs	41,983	45,970	46,478	46,986	47,494	48,002	48,510	49,018	49,526	50,034	474,001
Causality	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
TD-CERs	20,992	22,985	23,239	23,493	23,747	24,001	24,255	24,509	24,763	25,017	237,001
Total top-down CERs for the ten years post project: 237,001 tons CO ₂											

5. Summary: The total lifetime GHG ERs of different types attributable to POIDIER (DERs, DPP ERs, BU-CERs, TD-CERs) are given in Exhibit A13-11, as well as the grand total ERs (combining DERs, DPP ERs and either BU-CERs or TD-CERs). The DERs achieved by mid-term and EOP are also given, and these are the targets used in the Project Results Framework (PRF) for the GHG ER related indicator.

Exhibit A12-11. Summary of GHG ERs of Different Types Attributable to POIDIER (units: tons of CO₂)

Lifetime GHG ERs					
DERs	DPP ERs	BU-CERs	TD-CERs	Total using BU	Total using TD
115,722	182,729	895,355	237,001	1,193,807	535,452
GHG ERs during POIDIER Implementation					
ERs by mid-project: 9,618			ERs by end of project: 58,049		

Annex 13. List of Organizations and Persons Consulted during Project Design

I. National Government

1. Ministry of Infrastructure and Sustainable Energy (MISE): Mr. Lindsey Davison, Director
2. Energy Planning Unit (EPU), MISE: Ms. Mwaati Oten, Head and Energy Planner
3. Energy Planning Unit (EPU), MISE: Mr. Kireua Bureimoa, Head and Energy Planner
4. Energy Planning Unit (EPU), MISE: Ms. Tika Tanentoa, Energy Technician
5. Energy Planning Unit (EPU), MISE: Mr. Ubaitoi Teurakai, Energy Technician
6. Energy Planning Unit (EPU), MISE: Mr. Buriti, Urban Energy Planner
7. Energy Planning Unit (EPU), MISE: Mr. Thomas Teb'ateki Taoaba, Rural Energy Planner
8. Water Department, MISE: Mr. Areke Trareti, Director
9. Ministry of Environment, Lands, and Agricultural Development (MELAD): Ms. Taare Aukitino, Secretary
10. Department of Agriculture, MELAD: Ms. Kiraai Kairo, Director, and Ms. Tearoo Otinea, Deputy Director
11. Department of Agriculture, MELAD: Ms. Rakentai Kainea, Livestock Officer
12. Department of Lands, MELAD: Director
13. Rural Development Division and Local Government Division, Ministry of Internal Affairs
14. Ministry of Line and Phoenix Island Development (MLPID): Mr. Natario Kiati, Secretary
15. Cooperative Promotion Division, Ministry of Commerce, Industry, and Cooperatives (MCIC): Ms. Timwaon Evii, Cooperative Promotion Officer
16. Business Regulation Division, MCIC
17. Office of the President (OB): Mr. Choi Yeeting
18. Coastal Fisheries Division, Ministry of Fish and Marine Resources Development (MFMRD): Mr. Karibanang Tamuera, Principle Fisheries Officer
19. Ministry of Health (MOH): Deputy Secretary and Director of Hospital Services

II. Donors, NGOs, and Donor or NGO Projects

1. IFAD Kiribati Outer Island Food and Water Project (KOIFWP): Ms. Danietta Apisai, Project Coordinator
2. Asian Development Bank (ADB)/ World Bank: Ms. Akka M. Rimon, World Bank/ ADB Liaison Officer
3. World Bank Grid Connected Solar PV Project: Mr. Tiaon Aukitino, Project Manager/Engineer
4. NGO that had distributed EE cook stoves as part of SPC project: Head of NGO
5. New Zealand High Commission: Nigel, Maria, and Ross
6. Global Green Growth Initiative (GGGI): Ms. Norma Maria Rivera, Program Officer, Kiribati, Green Growth Planning and Implementation Division (by Skype)
7. Ministry of Economy, Israel: Mr. Zafirir Asaf, Director, Emerging Markets and Financial Institutions Department, Foreign Trade Administration (by phone)
8. Mashav: Mr. Adam Leven, Deputy Head of Policy and International Relations

III. State-Owned Companies

1. Kiribati Solar Energy Company (KSEC): Mr. Tavita Airam, CEO
2. Kiribati Solar Energy Company (KSEC): Mr. Kaete Binoka, Manufacturing Manager
3. Kiribati Solar Energy Company (KSEC): Mr. Tokitebwa Tawita, Utility Manager
4. Development Bank of Kiribati (DBK): Mr. Teuarai Eneata, Business Development Manager
5. Kiribati Coconut Development, Ltd: Mr. Paul Tekanene, CEO, and Mr. Enari Arioka, Director of Operations
6. Kiribati Fish Limited, Ltd: Mr. Umendra Prasad, Chief Operating Officer (COO)

IV. Private Sector Companies

1. Value City, Mr. Bureita Taniera, General Manager
2. ANZ Bank
3. Taotian Trading: Mr. Charlie Kwong, CEO

V. Other Experts

1. Ms. Guigone Camus, anthropologist based in Tahiti with ongoing specialized research on Tab North (interviewed in Tab North)
2. Ms. Shirley Ben-Dak Valtzer, Expert on Energy for Water, based in Israel (by phone)

VI. Stakeholders based in Abemama

Main Village

1. Island Council: Mayor and Clerk
2. KSEC: Mr. Taaia, Fee Collector/ Technician based on Abemama:
3. Fish Center: Manager
4. Abemama Virgin Coconut Oil Production Facility, Kiribati Coconut: Manager
5. Kiribati United Church in Main Village: Minister

Other Locations or Persons Based in Other Locations

6. Villager (woman) interested in using power to make money
7. Catholic Church: Father Simon, Head of Catholic Church in Abemama
8. Group of villagers near Junior Secondary School (JSS)
9. Primary School adjacent to JSS: Principal Mimitake
10. Kauma High School: Computer Science/ Math Teacher

VII. Stakeholders based in Abaiang

Main Village

1. Island Council: Mayor and Clerk
2. Agriculture Officer, Island Council: Mr. Kaboua John, also an entrepreneur running a hotel with his wife
3. Fisheries Officer, Island Council
4. Sailor working for major domestic shipping company
5. Main Abaiang Clinic: Medical Officer
6. Sunrise Primary School: Ms. Bwena Taatake, Principal
7. Women's Center: Women's Officer and Caretaker of Women's Center
8. Government Employee Household: Man of the House

Other Locations

9. Morikao Stephen Whitmee High School: Ms. Eriraoi Tabutoa, Principal, and school technician
10. Koinawa Village Household: Lady of the House
11. Abaiang JSS: Mrs. Raatita Tekabu, Principal
12. St. Joseph High School (located at Tabwiroa): Sister Maria Teretia, Principal
13. Abaiang Fish Center: Mr. Ian Namakin, Project Manager, MFMRD, and local person responsible for watching over fish center (lives nearby)
14. Household involved in Mat Making and Gardening, Tebunginako: Woman of the House
15. Household Assisting Catholic Catechist, Tebunginako: Senior Woman of Household

VIII. Stakeholders based in Tabiteuea North

Main Village

1. Island Council: Mayor
2. Island Council: Clerk
3. Agricultural Officer, Island Council
4. Water Technician, Island Council
5. KSEC: Fee Collector and Technician for Tab North

6. Main Health Center: Medical Officer
Southern Kiribati Hospital (SKH)
7. Internist: Dr. T. Temboa
8. Anesthesiologist
9. Education Coordinator (lives in housing at SKH)

Other Locations

10. Public High School at Eita: Principal
11. Fish Center: Ms. Boka, Ice Plant Manager
12. Household in Tanaeang: Man of House
13. JSS: Principal
14. First Visited Household in Tekaman Village (center of village): Man of House
15. Second Visited Household in Tekaman Villgae (near solar pump installation): Lady of House
16. Household in Tekabrwbwi Village: Lady of House

Annex 14 Co-Financing Letters



GOVERNMENT OF KIRIBATI
MINISTRY OF INFRASTRUCTURE & SUSTAINABLE ENERGY
BOTAKI IBUKIN MWAKURIAN KATEITEI AO KATEIMATOAN KORAKORA
P. O. Box 498, BETIO, TARAWA

Phone Numbers: *Extension (686) 26143, Fax Number: (686) 26172*

File Nos:

Date: 25th January 2019

Mr. Bakhodir Burkhanov,
 Country Director, UNDP Pacific Office in Fiji
 and Head of Pacific Regional Programmes and Policy, UNDP
 Level 8, Kadavu House
 414 Victoria Parade
 Suva, Fiji

Re: Co-financing Commitment from Ministry of Infrastructure and Sustainable Energy (MISE), Kiribati, for the POIDIER Project

Dear Mr. Burkhanov:

This letter is to confirm co-financing support from the Ministry of Infrastructure and Sustainable Energy (MISE), Kiribati, for the *Promoting Outer Island Development through the Integrated Energy Roadmap* (POIDIER) Project, which will be implemented from 2019 to 2023. POIDIER will work to remove barriers to facilitate adoption of renewable energy and energy efficiency in Kiribati's outer islands in ways that will substantially enhance development of those islands. As such, the project's stated objective is "enabling enhanced outer island development through the achievement of the renewable energy and energy efficiency targets of Kiribati." POIDIER implementation is expected to lead to substantially increased energy access in Kiribati's outer islands, along a low carbon path that will also substantially increase livelihood opportunities.

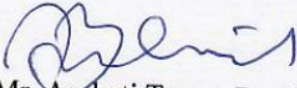
In this regard, we would like to confirm the Ministry's co-financing support of POIDIER activities equivalent to USD 26,673,300 over the four-year duration of the project. The summary of this support is given below:

Type of Co-Financing	Amount (USD)
Grant/ Cash	25,922,000
In-Kind	751,300
Total	26,673,300

The financing to sustain project activities beyond the lifetime of the project at the national level will be absorbed by the Government through MISE to ensure sustainability and continuity of activities.

We look forward to collaborating with UNDP and we avail this opportunity to assure you of our full support and commitment.

Yours Sincerely,



Mr. Arobati Teewe Brechtefeld
Deputy Secretary, MISE

Cc: Ms. Saitofi Mika, Secretary MISE
Mr. Lindsey John Davison, Director MISE



DEVELOPMENT BANK OF KIRIBATI

P.O.Box 33, Bariki Tarawa, Republic of Kiribati
Phone: (686) 21665, 21345 E-mail: devbank@dbk.com.ki
website: <http://www.dbk.com.ki/>

22 February 2019

Mr. BakhodirBurkhanov,
Country Director, UNDP Pacific Office in Fiji
and Head of Pacific Regional Programmes and Policy, UNDP
Level 8, Kadavu House
414 Victoria Parade
Suva, Fiji

Re: Co-financing Commitment from Development Bank of Kiribati (DBK) for the
POIDIER Project

Dear Mr. Burkhanov:

This letter is to confirm co-financing support from the Development Bank of Kiribati (DBK), Kiribati, for the *Promoting Outer Island Development through the Integrated Energy Roadmap* (POIDIER) Project, which will be implemented from 2019 to 2023.

POIDIER will work to remove barriers to facilitate adoption of renewable energy and energy efficiency in Kiribati's outer islands in ways that will substantially enhance development of those islands. This includes the removal of barriers in the financing area, which are of special interest to DBK. POIDIER implementation is expected to lead to substantially increased energy access in Kiribati's outer islands, along a low carbon path that will also substantially increase livelihood opportunities.

In this regard, we would like to confirm DBK's cash co-financing support of POIDIER activities equivalent to USD 150,000 over the four-year duration of the project for loans to outer islands and rural areas.

We look forward to collaborating with UNDP and we avail this opportunity to assure you of our full support and commitment.

Yours Sincerely,

Naata Tekeaa
Chief Executive Officer (CEO)

United Nations Development Programme



Empowered lives.
Resilient nations.

14 February 2019

Letter No.: 100/19
Ref. No: PRO/300/Kiribati

Dear Mr. Kurukulasuriya,

Pradeep

Subject: Confirmation of Co-financing for the Kiribati Full Size Project

This is to indicate our commitment to collaborating with the implementation of the full-size project entitled "Promoting Outer Island Development through the Integrated Energy Roadmap (POIDIER) Project" for the period 2019 to 2023.

We are pleased to confirm our commitment to provide co-financing in the amount of US\$100,000 towards the realization of objectives of the project over the four-year timeframe. This amount will be in the form of cash support from the UNDP *Enhancing Inclusive Sustainable Economic Development through Coconut Sector Development in Kiribati Project* with funding from the India, Brazil, South Africa (IBSA) partnership. The project will support the development of the Coconut Sector Strategy and finalize the roadmap to engage smallholder coconut farmers through a multi-stakeholder platform. The focus will be to harness value-adding opportunities and develop one pipeline investment project aimed at increasing income through the production of diversified coconut products. The project will directly impact four outcomes of POIDIER i.e. Outcomes 2, 3, 4.1 and 4.2 with specific linkages to six POIDIER activities (i.e. activity 2.3.2.1, 2.3.2.2, 3.3.1.1, 4.1.2.4, 4.1.3.2, and 4.2.1D.1).

We look forward to working with the GEF, and UNDP colleagues in addressing this important portfolio.

Yours sincerely,



Bakhodir Burkhanov
UNDP Resident Representative a.i

Pradeep Kurukulasuriya
Executive Coordinator & Director
Global Environmental Finance
Bureau for Policy and Programme Support (BPPS)/
Global Policy Network
United Nations Development Programme

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