



**GEF**

**REQUEST FOR CEO ENDORSEMENT/APPROVAL**

**PROJECT TYPE: MEDIUM SIZE PROJECT (MSP)**

**THE GEF TRUST FUND**

**Submission Date: 23 July 2012**

**PART I: PROJECT INFORMATION**

**GEFSEC PROJECT ID: 4283**

**GEF AGENCY PROJECT ID: P122974**

**COUNTRY(IES): Papua New Guinea (PNG)**

**PROJECT TITLE: PNG Energy Sector Development Project**

**GEF AGENCY(IES): World Bank**

**OTHER EXECUTING PARTNER(S): ENERGY DIVISION, DEPARTMENT OF PETROLEUM AND ENERGY, GOPNG**

**GEF FOCAL AREA(s): climate change**

**GEF-4 STRATEGIC PROGRAM(s): SP 3**

**NAME OF PARENT PROGRAM/UMBRELLA PROJECT: GPAS REGIONAL PROGRAM**

Expected Calendar (mm/dd/yy)	
Milestones	Dates
Work Program (for FSPs only)	
Agency Approval date	November 2012
Implementation Start	January 2013
Mid-term Evaluation (if planned)	
Project Closing Date	December 31, 2016

**A. PROJECT FRAMEWORK** (Expand table as necessary)

**Project Objective:** The proposed Project development objectives (PDO) are to (i) strengthen policy development and strategic framework for renewable energy and rural electrification; and (ii) to attract investors for sustainable development of new hydropower generation to supply the Port Moresby electricity grid.

The Global Environment Objective is to support the development of a framework, information exchange and consensus-building to launch a national effort on development of renewable energy-based mini-grids and rural electrification.

Project Components	Indicate whether Investment, TA, or STA <sup>b</sup>	Expected Outcomes	Expected Outputs	Indicative GEF Financing <sup>a</sup>		Indicative Co-Financing <sup>a*</sup>		Total (\$) c = a + b
				(\$ a)	%	(\$ b)	%	
Component 1: <i>Institutional and Policy Development for Renewable Energy and Rural Electrification.</i>	TA	Renewable Energy Policy submitted to Cabinet.  Rural Electrification Policy submitted to Cabinet.  Government, private sector and other entities with an interest in	Rural Electrification Policy; Rural Electrification Strategy, and Renewable Energy Policy completed reflecting extensive stakeholder consultation and consensus-building processes	814,000	43%	1,075,000	57%	1,889,000

		rural electrification understand the mechanisms, benefits and support available for developing renewable energy-based mini-grids as per the policies and strategy;  23.2 million CO2 equivalent avoided emissions (indirect—attributable to policy changes)	Renewable resource assessments assembled and entered into GIS-based database for renewable energy mini-grids.  Identification of at least two renewable energy-based mini-grid concessions in accordance with the Rural Electrification Strategy.					
2. Component 2: <i>Technical Assistance for Preparation and Planning for Port Moresby Hydropower Supply</i>	TA	Financial close for Naoro Brown hydropower project reached  Improved planning for hydropower resources  22 million t CO2 equivalent avoided emissions (direct, attributed to Naoro Brown project)	Developer for Naoro Brown project selected and financing at an advanced stage.  Assessment of optimal sequencing of possible future hydropower projects to supply Port Moresby completed.	0	0	6,775,000	100	6,775,000
Project Management				86,000	15%	500,000	85%	586,000
<b>Total project costs</b>				900,000	10%	8,350,000	90%	9,250,000

List the \$ by project components. The percentage is the share of GEF and Co-financing respectively of the total amount for the component.

<sup>2</sup> TA = Technical Assistance; STA = Scientific & Technical Analysis.

\*Cofinancing is IDA + GoPNG

**B. SOURCES OF CONFIRMED CO-FINANCING FOR THE PROJECT** (expand the table line items as necessary)

<i>Name of Co-financier (source)</i>	<i>Classification</i>	<i>Type</i>	<i>Project</i>	<i>%*</i>
IDA	(select)	IDA credit	7,300,000	87
GoPNG (including PNG Power)	(select)	In kind and cash	1,050,000	13
	(select)	(select)		
	(select)	(select)		
<b>Total Co-financing</b>			<b>8,350,000</b>	<b>100%</b>

\* Percentage of each co-financier's contribution at CEO endorsement to total co-financing.

The co-financing will be confirmed during negotiations of the IDA credit, planned for September 2012. Both the draft GEF Grant Agreement and the draft IDA Financing Agreement include cross-effectiveness clauses to ensure that all components of the financing are in place before the GEF or IDA funds are available.

**C. FINANCING PLAN SUMMARY FOR THE PROJECT (\$)**

	<i>Project Preparation a</i>	<i>Project b</i>	<i>Total c = a + b</i>	<i>Agency Fee</i>	<i>For comparison: GEF and Co-financing at PIF</i>
GEF financing	0	900,000	900,000	90,000	909,091
Co-financing	0	8,350,000	8,350,000		5,180,000
<b>Total</b>	<b>0</b>	<b>9,250,000</b>	<b>9,250,000</b>	<b>90,000</b>	<b>6,089,091</b>

**D. GEF RESOURCES REQUESTED BY AGENCY(IES), FOCAL AREA(S) AND COUNTRY(IES)<sup>1</sup>**

<i>GEF Agency</i>	<i>Focal Area</i>	<i>Country Name/ Global</i>	<i>(in \$)</i>		
			<i>Project (a)</i>	<i>Agency Fee ( b )<sup>2</sup></i>	<i>Total c=a+b</i>
(select)	(select)				
(select)	(select)				
<b>Total GEF Resources</b>					

<sup>1</sup> No need to provide information for this table if it is a single focal area, single country and single GEF Agency project.

<sup>2</sup> Relates to the project and any previous project preparation funding that have been provided and for which no Agency fee has been requested from Trustee.

**E. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:**

<i>Cost Items</i>	<i>Total Estimated person weeks/months</i>	<i>GEF amount (\$)</i> ##	<i>Co-financing (\$)</i>	<i>Project total (\$)</i>
Local consultants*	1670	135,000	700,000	835,000
International consultants*	1152	<b>434,000</b>	<b>5,325,000</b>	<b>5,759,000</b>
<b>Total***</b>	<b>2822</b>	<b>569,000</b>	<b>6,025,000</b>	<b>6,594,000</b>

\* Details to be provided in Annex C.

#### F. PROJECT MANAGEMENT BUDGET/COST

	<i>Estimated person weeks</i>	<i>GEF amount(\$)</i>	<i>Co-financing (\$)</i>	<i>Project total (\$)</i>
Local consultants*	65	65,000	0	65,000
International consultants*	34	21,000	500,000	171,000
<b>Total**</b>	99	86,000	500,000	236,000

\* Details to be provided in Annex C.\

**G. DOES THE PROJECT INCLUDE A “NON-GRANT” INSTRUMENT?** yes  no X

(If non-grant instruments are used, provide in Annex E an indicative calendar of expected refloes to your agency and to the GEF Trust Fund).

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

Please refer to Annex A.

### **PART II: PROJECT JUSTIFICATION:**

#### **A. STATE THE ISSUE, HOW THE PROJECT SEEKS TO ADDRESS IT, AND THE EXPECTED GLOBAL ENVIRONMENTAL BENEFITS TO BE DELIVERED:**

The priorities in the Government of Papua New Guinea (GoPNG) in the energy sector are threefold, namely, increasing access to sustainable electricity supplies across the country; improving the reliability and quality of service; and creating an environment that is conducive to attracting the private sector to participate in new electricity generation and supply projects, especially focusing on PNG’s considerable untapped renewable energy potential. To address these priorities, the Government of PNG approved the Electricity Industry Policy in December 2012 and intends to put in place a Rural Electrification Policy and Renewable Energy Policy as soon as possible following careful preparation and consensus-building. To implement these, it will also develop a rural electrification strategy (where the policy papers set the goals and broad framework and the strategy seeks to achieve the explicit goals and implementation of the framework).

In order to meet the growth in demand which is rapidly exceeding supplies, it will begin to tap its hydroelectric potential, which is also key to its future low-carbon growth. The Government has established an inter-agency working group to prepare a low carbon growth strategy to support development in line with the Climate Compatible Development Strategy which is currently under preparation.

#### **Key Issues to be addressed by the Project (both GEF and IDA -financed component): Barriers to Development of Renewable Energy-based Mini-grids.**

Because of the geography, population distribution and the lack of a clear formal policy, electrification in PNG has proceeded as a series of large and small, separate grids which may gradually be expanded. In such a context, “grid-based” must necessarily include both “main grid(s)” and smaller “mini-grids”. Mini-grid supply offers better economies of scale than the provision of electricity through stand-alone PV or other household systems. Mini-grids also offer better quality and larger quantities of electricity,

making support for income-generating activities feasible. Renewable energy sources will be an important factor in the sustainability of mini-grid systems, because of the cost and unreliability of diesel supplies and PNG's plentiful hydro resources. Although the benefits are widely recognized, significant barriers remain to the widespread implementation of renewable energy or renewable-diesel hybrid mini-grids.

Major barriers to development of renewable energy to supply mini-grids are discussed below.

1. Lack of Enabling Environment. To date, PNG lacks a policy framework for the development of renewable energy and mini-grids in remote areas. Without such a framework, no clarity exists with respect to roles, responsibilities, obligations and consideration of tariffs and subsidies. Most project developers – whether private sector, government or community – will be very reluctant to invest under such circumstances.

2. No Rural Electrification Policy or Strategy and very limited information on resources and opportunities. Significantly increasing access to electricity will require more than the current *ad hoc* efforts. Currently there is no strategy for increasing access to electricity. While progress in developing the policies above will provide direction, a strategy will be needed as the basis for a coordinated effort across a range of stakeholders to increase access. A critical component of such a strategy will be the assembling of assessments for renewable energy supplies (small hydro, wind, etc.) and demand (population databases) into a GIS data-base to facilitate the easy identification of attractive opportunities. Creation of such a database will be important in developing a strategy that takes into account actual needs and opportunities. The absence of good, consistent information represents a significant barrier to existing and new participants interested in the business of supplying mini-grid based electricity. The database and strategy serve as pre-requisites for moving from individual *ad hoc* pilot projects to systematic development of renewable energy-based mini-grids in PNG.

3. Affordability. The high costs of purchasing and transporting petroleum fuels to remote areas typically leads to a gap between what households and businesses can afford to pay and the actual costs of supplying electricity. Tapping renewable energy resources, particularly where good hydropower resources are available, represents a good opportunity to reduce the cost and hence make electricity more affordable in remote areas. Supply from mini-grids is likely also to be more affordable compared with stand-alone household systems, from the point of view of lower unit cost and also the possibility of using the better-quality electricity for income generation.

4. Institutional Arrangements. In PNG a variety of institutional arrangements have been tried, including private sector, local government, PNG Power and communities themselves. Given the size and diversity of PNG, it is likely that different institutional arrangements will be appropriate in different circumstances. The likelihood of success of any of them will improve by addressing the first three barriers above.

To date the GoPNG is receiving no assistance relating to the policy, strategy and information needs described above. In line with the approach laid out under GEF-4, the GEF-financed part of the proposed project will focus on creating a market environment in which renewable energy technologies and practices can diffuse into target markets – i.e. the barrier removal approach. Target markets will be communities, small towns and villages in areas remote from the main grids where mini-grids using renewable systems are appropriate. The proposed GEF financing is an integral element of the overall WB-supported technical assistance Energy Sector Development Project and will support activities designed to remove policy, strategy, and information barriers to the development of renewable energy-based mini-grids.

#### **How the GEF MSP Project Seeks to Address the Issue**

The GoPNG has requested IDA and GEF financing for the PNG Energy Sector Development Project, and it has realized that it needs to provide a foundation for better electricity service to its citizens. Because so much of its electricity potential is hydro-based, the GoPNG realizes that effective rural electrification will require a meaningful renewable energy policy as well as a rural electrification policy and strategy. The ESDP would be a technical assistance project, and would include support for:

- Energy sector policies: As stated above, the Electricity Industry Policy was adopted in late 2011. Among its key elements are the focus on attracting the private sector to contribute to new power generation facilities; an increasing move toward cost-reflective pricing and the transference of the regulation of the sector to DPE. At present, PNG has no existing renewable energy or rural electrification policies in place. In the years from 2004 to 2008, a draft rural electrification policy was prepared, but it was never submitted to cabinet and many of its tenants are now out-dated. One reason for the failure of past governments to move ahead the development of this rural electrification policy was that until 2009, virtually all Government capacity in the energy sector was focused on the development of the natural gas (LNG) concession. Political changes in 2011 may have shifted attention away from certain elements of the previous draft. In any event, the previous draft will have to be reviewed, some parts written fresh and others heavily revised prior to submitting the newly prepared draft to a wide round of stakeholder consultations. The development and consultations necessary for the preparation and implementation of these policies will be supported by both GEF and IDA funds.
- Rural Electrification Strategy (RES) and related data gathering. The RES will be consistent with the approach outlined in the Electricity Industry Policy (EIP). The EIP describes the approach to be adopted in situations where the supply of electricity to an area is determined to be non-financially viable without some subsidy. This is likely to be the case for many remote locations where renewable energy-based mini grids will be the least cost solution. The approach set out in the EIP is that of competitive tender for minimum subsidy, to develop, own and / or operate the electricity infrastructure in the market. To move forward with this approach, a good database is required so that tenders can be properly defined and bidders can prepare informed proposals. Hence, data gathering and creation of a database are pre-requisites for implementation of the RES. The data gathering will include remote satellite mapping to obtain data for rural electrification planning at sufficient scale to identify individual households in rural areas and to identify potential sites for mini to small hydro developments. The mapping would be used a basis for further studies to determine which households could be interconnected to the PNG Power grids, mini-grids, and supplement existing data on mini and small hydropower resource and enable renewable resource data to be matched to electric load data. It would be presented in GIS format and provide an input to the nascent GIS coverage of PNG.

GEF support would be targeted at the above activities. In addition, the WB has been requested to provide technical assistance to PNG Power in the following areas (for which GEF will NOT be used):

*Technical Assistance for Preparation and Planning for Port Moresby Hydropower Supply* will be implemented by PNG Power Ltd. with two sub-components. The first focuses on activities required to prepare the Naoro Brown hydropower project (80MW) to supply the Port Moresby grid. The concept proposed for development of the Naoro Brown project is a private sector-led approach. This is in line with the Electricity Industry Policy that was approved in December 2011, and reflects the fact that PNG Power does not have the resources to develop this as a public sector project. The second sub-component focuses on activities to improve PNG Power's planning with respect to hydropower.

The GEF co-financed component of the overall project will address the issue of barriers to development of renewable energy-based mini-grids through support for activities to overcome the key barriers identified above, namely lack of enabling environment and very limited availability of information on opportunities and development mechanisms. The following activities would be supported with GEF (and for some activities, combined with IDA) financing.

- Renewable and rural electrification Advisor
- Development of the Renewable Energy Policy
- Development of the Rural Electrification Policy
- Development of the Rural Electrification Strategy (including data-gathering and GIS mapping and assessment of cost structures of various technology and institutional models)
- Assistant Manager for the Project Management Unit
- Procurement specialist
- Training

The *Renewable Energy Policy* is expected to follow, to a greater or lesser extent, the following outline:

- Introduction including: the need for a renewable energy policy, the overall context in terms of the electrical energy demand, the consultative process
- Renewable energy resources and applications including: What is Renewable Energy? The Renewable Energy Resource Base (Biomass, Hydropower, Geothermal, Solar, Wind, Other Renewable Energy Technologies), Grid integration issues, and Barriers to Renewable Energy Development
- The policy vision, including goal, key principles, objectives, strategies and main targets
- Policy actions including with respect to (for example): Overall power generation program, linkages with rural electrification access policy and strategy, linkages with energy efficiency program, low carbon development strategy, assessment of climate change impact on hydro and other renewable energy options, impact of proposed actions.
- Institutional framework including consideration of national, regional, district and local authorities, Department of Petroleum and Energy, Department of Treasury, Department of National Planning and Monitoring, PNG Power and other government, non-government, community and private stakeholders.
- Financial implications including short- and medium-term policy priority actions
- Monitoring and Evaluation
- Annexes on, for example: feed in tariffs, auctions, or other mechanisms needed to overcome barriers to renewable energy, and major renewable energy opportunities in PNG.

It is anticipated that the *Rural Electrification Policy* will cover the following outline:

- Introduction including: the need for a rural electrification policy, the overall context in terms of the electrical energy demand, the consultative process.
- Over-arching policy environment as defined in the Electricity Industry Policy and the Community Service Obligation policy.
- The policy vision, including goal, key principles, objectives, strategies and main targets
- Policy Options considering:
  - On-grid and off-grid considerations
  - Technology options

- Productive, institutional and social service applications
- Business models for on-grid and off-grid service
- Role of the private sector, PNG Power, local authorities, communities
- Social safeguards and environmental considerations
- Regulating off-grid service
- Policy actions including with respect to (for example): Overall power generation program; linkages with renewable energy policy, energy efficiency program, low carbon development strategy.
- Institutional framework including consideration of national, regional, district and local authorities, Department of Petroleum and Energy, Department of Treasury, Department of National Planning and Monitoring, PNG Power and other government, non-government, community and private stakeholders.
- Financial implications including short- and medium-term policy priority actions
- Results chain, impacts and monitoring and evaluation

The main reasons for the 4-year timeframe are:

1. In PNG, a very high importance is placed on consultation and consensus-building. PNG has a large number of active stakeholders and even within Government, it is frequently the case that time and effort are required to reach a consensus on policy issues. Two recent efforts at policy development have demonstrated the need for sufficient attention to consensus-building. First, a draft rural electrification policy was prepared several years ago but never gained sufficient support to be submitted to Cabinet<sup>1</sup>. Second, the critical Electricity Industry Policy was in final draft form for over 2 years before cabinet approval. Submission of a policy to Cabinet can be achieved only after very thorough consultations and after building a consensus among a wide group of stakeholders both within and outside Government. In particular, the rural electrification policy will require consultations in districts around PNG, which takes time and funding, particularly given the infrastructure and security challenges sometimes associated with travel in PNG. Therefore, the preparation, consultations and consensus-building around these two policies is anticipated to require 18 -24 months, including time for selection of consultant support.
2. Work on the rural electrification strategy will begin once the preparation of the rural electrification policy is quite advanced, as the two documents will need to be sequentially developed. The strategy work includes a number of discrete tasks including:
  - an assessment of the different cost structures and levels of service provision characteristic of the range of resources and supply models that might be appropriate across PNG, as an input to the tariff-setting process;
  - development of a process for screening social and environmental aspects of rural electrification projects;
  - a significant effort in gathering and generating data that will be used to map out the potential resources and target areas which would be appropriate for a range of different rural electrification delivery models (public, private, community etc.). This would involve

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<sup>1</sup> Since the draft of the Rural Electrification policy was prepared several years ago, a number of developments have occurred. Most importantly, the Electricity Industry Policy has been approved which, among other things, lays out the broad framework for public and private roles in the rural electrification. Work has also been on-going to define a Community Service Obligation Policy which will have an impact on the approach to rural electrification. Hence it is anticipated that substantial work would be needed to revise the draft rural electrification policy.



- preparation of Geographic Information System (GIS) database with overlays of population, infrastructure (e.g. roads, energy infrastructure, telecoms) and water resources. Information on water resources / small-scale hydropower sites may be gathered from satellite imagery and / or high level aerial photography.
- Synthesizing the above into a national strategy and undertaking wide-spread consultations and consensus-building.

It is anticipated that this effort would take 20-24 months, including selection of the consultant.

## **Global Environmental Benefits**

The global environmental benefits will result from the implementation of a low carbon growth rural electrification strategy, supported by appropriate policies, and the Naoro Brown hydropower project. While it is not possible to quantify the exact impact in terms of avoided carbon emissions, assuming that the policy and strategy development contribute to an increase in access to renewable sources of electricity reaching 50% of villages above 100 households and 25% of villages between 50 and 100 households and that connection rates within villages are at least 20%, then the indirect GHG emission reductions as a result of the policy and strategy development would be about 1,000,000 t of CO<sub>2</sub>eq. The project also supports the preparation through selection of a private developer for the Naoro Brown hydropower project, which would displace diesel generation to avoid emissions estimated at 22,000,000 t of CO<sub>2</sub> equivalent over the Naoro Brown hydropower project's lifetime.

## **B. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH NATIONAL AND/OR REGIONAL PRIORITIES/PLANS:**

The GoPNG has recently developed three documents setting out the national long and medium term vision and strategic direction. The Vision 2050 highlights a diversification from minerals wealth towards broader growth, employment and improved service delivery. The Development Strategic Plan (DSP) 2010-2030 provides more guidance on national priorities, and the Medium Term Development Plan 2011-2015 articulates specific actions and deliverables, and the strategies through which they are to be implemented. Development of a strategic approach in the energy sector and a target of increasing access to electricity from the current level of less than 10% to 70% by 2030, and specific 5-year goals with regards increased use of hydro and improved energy sector management capacity, are of particular relevance for the proposed project. The GoPNG is in the process of developing a strategy toward climate compatible development, including a focus on low carbon growth development paths. The Interim Action Plan for Climate Compatible Development (document for public consultation, August 2010) prioritizes readiness activities for a future Reduction in Emissions from Deforestation and Forest Degradation (REDD) while looking for economic growth opportunities that minimize future emissions.

### Electricity Industry Policy (EIP)

After an extensive period of consultations, the Electricity Industry Policy was approved in December 2011 by the National Executive Council (NEC). The Policy addresses three strategic objectives of the Government:

- Improving *access* in the provision of electricity services;
- Improving *reliability* of electricity supply; and
- Ensuring that power is *affordable* for consumers.

Key elements of the policy include attracting the private sector to new power generation, improving government management of the sector under the guidance of an Electricity Management Committee (EMC), moving away from uniform tariffs towards cost-reflective pricing, and transferring the technical regulation of the sector to DPE.

The proposed project would support the development, consultations and submission to Cabinet of the Renewable Energy Policy, Rural Electrification Policy and Rural Electrification Strategy. The Policies would be consistent with the EIP and would elaborate specific objectives and frameworks in these two areas which are essentially sub-sets of the overall electricity industry. The policies and strategies will be guided by the overall development vision, strategic direction and plans set out in the GoPNG long and medium term development plans.

To some extent the process of developing a strategy toward climate compatible development has lacked strong input from the energy sector. It is expected that the consultation-based approach to policy and strategy development to be promoted under this project will serve to strengthen the interaction between the agencies responsible for the climate compatible development approach and those with responsibilities in the energy sector.

The proposed project which supports policy and strategy in renewable energy and rural electrification is completely consistent and in support of the national priorities.

**C. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH GEF STRATEGIES AND STRATEGIC PROGRAMS:**

The proposed project is fully consistent with the GEF climate change mitigation strategic priorities which include promoting the adoption of renewable energy through removing barriers and reducing implementation costs. The Climate Change Focal Area Strategy and Strategic Programming for GEF-4 emphasize support for creating conducive policy environments to leverage in sustainable investments in preference to subsidizing individual investments. Specifically, the strategy focuses on creating a market environment in which technologies and practices can diffuse into target markets.

The overarching goal for GEF-4 is to achieve a decrease in GHG emissions through market transformation. It is explicitly recognized that this is a long-term process, usually with the need for follow on investments beyond the GEF support. Incorporating the GEF funding (which supports integrating grid-based renewable energy into overall sector planning and reducing barriers to market development) into the larger project which includes support for public-private partnerships in implementing the energy sector plans, means that resources will be available to implement renewable energy and energy efficiency investments as the market transformation occurs. A cornerstone of the approach is that, because renewable energy will be part of the normal sector planning process, the full range of resources to support energy sector development will be available for renewable investments. This is in contrast to an approach where renewable energy and energy efficiency are targeted separately and as a result attract funding from a more limited pool of resources specifically earmarked for environmental or climate change mitigations activities.

**D. JUSTIFY THE TYPE OF FINANCING SUPPORT PROVIDED WITH THE GEF RESOURCES.**

Grant support from GEF resource is appropriately used in this project as a catalyst to attract and direct investment of larger quantities of resources towards renewable energy development. A number of pilot projects aimed at renewable energy-based mini-grid supply have been or will soon be implemented. Several opportunities for financing of such projects are available, including from the private sector. A number of different institutional players are interested and ready to participate in implementation. The elements that are missing include policy framework, a national strategy and database of information needed to identify and develop opportunities for viable renewable energy-based mini-grid projects. The enabling actions by themselves do not generate a return, but have the potential to leverage significant resources if undertaken properly.

**E. OUTLINE THE COORDINATION WITH OTHER RELATED INITIATIVES:**

The activities proposed for GEF-financing are an integral part of the overall WB-supported PNG Energy Development Project. ADB is supporting a project to switch the supply of electricity in selected small towns from diesel-based to mini-hydro supplying isolated grids. Experience from this project will also be important in the development of the national rural electrification strategy which will incorporate renewable energy-based mini-grid development. In the past, JICA has provided assistance in assessing opportunities for mini-hydro opportunities and has recently undertaken a review of the electricity sector. The WB will work closely with both ADB and JICA to ensure that all available information is utilized for the development of the rural electrification database and that on-going support is well coordinated.

**F. DISCUSS THE VALUE-ADDED OF GEF INVOLVEMENT IN THE PROJECT DEMONSTRATED THROUGH INCREMENTAL REASONING :**

In this case, the likelihood is high that without GEF support, neither the policy development nor the renewable energy investment being prepared for private sector funding under this project would move ahead. As the GoPNG has no official rural electrification strategy, it is forced to rely on ad hoc electrification approaches. As most of the remote or stand-alone mini-grid options would not be cost-effectively designed and built without a clear renewable energy policy framework in place, GEF and IDA support are needed to push these activities—even the Naoro Brown project—into implementation.

Baseline: In the absence of the project, little remote electrification would take place. However, it can be assumed that some further electricity generation would take place. This would most likely be generated by small, diesel gen-sets. The estimated CO<sub>2</sub> emissions per kWh is 0.8 kg CO<sub>2</sub>eq/kWh. The Naoro Brown project is estimated to generate 28,000 GWh over its 50 year lifespan, meaning that the generation of an equivalent quantity of electricity via diesel would result in 22.4 million t CO<sub>2</sub>eq.

Project Case: In the project case, the Naoro Brown project will be built through a private sector-led public-private partnership based upon the support from the Electricity Sector Development Project (ESDP) funded by GEF and IDA. Therefore, the direct emission reductions attributable to this project is 22.4 million tonnes CO<sub>2</sub>eq. In addition, the policy support provided through the project will result in indirect emission reductions which are very difficult to estimate given the large number of assumptions that need to be developed to do so. For example, if the project results in 50% of the new electricity generation over the next 15 years, under baseline growth assumptions, this could represent as much as an indirect emission reduction of 22 million t CO<sub>2</sub>eq. For the renewable mini-grid electrification, if it is assumed that 25% of the new access to the grid is provided by renewable energy and all of it displaces diesel, the indirect emission reductions would be estimated to be 1.2 m t CO<sub>2</sub> equivalent over the 15 years.

In summary, the direct emission reductions of this project are estimated at 22 m tonnes CO<sub>2</sub>eq and the indirect emission reductions, if entirely attributed to the GEF project, would account for another 23 m tonnes of CO<sub>2</sub> avoided. Over the entire life-span of the project, it is uncertain how much of these reductions would likely occur in the absence of the project given the nature of the dynamic baseline situation posed by PNG's development.

**G. INDICATE RISKS, INCLUDING CLIMATE CHANGE RISKS, THAT MIGHT PREVENT THE PROJECT OBJECTIVE(S) FROM BEING ACHIEVED AND OUTLINE RISK MANAGEMENT MEASURES:**

One risk is that GoPNG prioritizes non-grant resources directly toward immediate investment based on the desire to have concrete outputs resulting from loans incurred. A major part of mitigating this risk to

be able to quickly provide grant resources to address the critical policy, strategy and data requirements needed to support more effective, sustainable and low carbon growth development in the energy sector. Currently no other grant resources are available to fund the activities proposed for GEF-financing in this project. The risks of climate change on future renewable energy investments will be considered in the policy and strategy development.

A second risk to the success of the project would be a limited commitment on the part of Government to follow through on the policy development, consultation and submission to Cabinet being supported by GEF and IDA under this project. Although the previous draft rural electrification strategy was never adopted, the Government recognizes that in order to achieve the ambitious goals for the energy sector set out in the medium term development plan and other strategic planning documents, a focused effort on key energy sector policies is essential. The GoPNG has demonstrated its willingness to pursue aggressively both policies by ensuring that this project is given a high priority under its IDA allocation. The financing for the policy activities is co-financed by an IDA credit. The Government's willingness to use scarce IDA resources to finance policy development is a strong indication of the Government commitment. In short, there is always a commitment risk in a project such as this one, but the evidence to date is that the GoPNG is committed to the project and that this risk is small.

*Capacity Risk.* Capacity constraints at both the sector and project levels pose a risk of delays in implementation and decision-making. The strategy of providing WB and GEF support under a technical assistance project rather than waiting for an investment opportunity is essentially in recognition of the value-added of up-front capacity strengthening in order to develop the environment and undertake preparation activities needed for new investment. Risk mitigation measures include continuing capacity building activities during preparation of the Project, in addition to the support proposed to be provided under the Project. Strengthened institutional capacity in the energy sector is also a major element in the sustainability of the Project. Capacity building efforts have started, and are following a two-track approach: (i) Sector wide capacity building as part of the overall energy sector dialog underpinning the proposed Project, and (ii) Project-specific capacity building focused on strengthening capacity of the implementing agencies to implement the proposed Project.

*Sector wide capacity strengthening.* This is targeted at the broader set of energy sector stakeholders with the objective of increasing awareness of experience and lessons from elsewhere that can be factored into development of PNG's energy sector. Examples of sector wide capacity strengthening that have taken place or are planned are discussed below. Further opportunities will be identified as Project implementation gets underway and in coordination with DNPM, DPE and Development Partners.

- *Workshop on Sharing The Benefits Of New Hydropower In PNG: Environmental, Social and Financing Aspects of Medium and Large Hydropower.* A two-day Workshop on "Sharing the Benefits of New Hydropower in PNG" in September 2010 in Port Moresby was jointly hosted by the Department of National Planning and Monitoring and Department of Petroleum and Energy. Government departments, international and domestic private sector, civil society representatives and other stakeholders in PNG participated. The workshop was supported and attended by development partners. Speakers included government officials from PNG and representatives of countries with active private hydropower development, namely Nepal and Laos, as well as private sector developers, commercial lenders and governments' advisors. Discussion included options for financing and bidding modalities, perspectives of host governments, developers and lenders, as well as financing products available from commercial sources and donor/official institutions. DNPM has indicated that they plan to work with Development Partners to hold workshops on various topics in the energy sector on an annual basis.

- Facilitation of a visit to Lao PDR, to encourage information exchange and first-hand interaction with a range of key stakeholders (e.g. Government, private sector, NGOs etc) took place in October 2011.
- Support from a PPIAF grant to assist GoPNG in formulating elements of a broad strategy for hydropower development in PNG.
- Meetings with NGOs and think-tanks to provide an update on progress of the proposed Project, and more generally discuss the Project in the context of stakeholders' broader energy sector objectives and goals.

*Project-specific capacity strengthening.* This targets primarily the implementing agencies, but would extend to key counterparts within Government – e.g. Department of Environment and Conservation (DEC), Electricity Management Committee - in technical areas as needed. WB missions will supplement the capacity building through in-depth discussions and, especially for procurement and financial management, focused Project-specific training sessions during missions. Support would be provided in technical areas, procurement, financial management and project management.

- *Technical areas.* Technical specialists will be hired under the Project to provide the necessary technical expertise. The terms of reference for the technical assistance would specifically include provision for on-the-job training and knowledge transfer to the relevant Government agencies and PPL. To the extent feasible, where international consultant expertise is required, international consultants will be encouraged to partner with local experts both to gain the benefit of local knowledge as well as to build capacity of local experts through close interaction with specialists from elsewhere.
- *Project management.* Support is included to strengthen project management. However the PMU managers are agency staff (not consultants) so that on-the-job learning will be retained within the agencies.
- *Fiduciary.* Procurement and Financial Management capacity building will include training for the relevant PMU staff, largely through training sessions provided by the WB. Several training events were organized during project preparation and agency staff participated. PMU staff will be encouraged to attend similar training sessions throughout Project implementation.
- *Training.* Funds are allocated for dedicated training activities for both DPE and PPL. The specific training requirements will be discussed as implementation proceeds and agreed on a 6-monthly basis.

For a more detailed assessment of the risks for the Energy Sector Development Project as a whole, please refer to Annex 4 of the Project Appraisal Document.

## **H. EXPLAIN HOW COST-EFFECTIVENESS IS REFLECTED IN THE PROJECT DESIGN:**

As noted in the guidance provided in the paper “Cost Effectiveness Analysis in GEF Projects” from the June 2005 GEF Council meeting, interventions under the Climate Change Focal Area which focus on barrier removal cannot generally be meaningfully measured using quantitative estimates. Instead, the cost effectiveness is demonstrated by comparing alternative approaches to achieve the agreed barrier removal goal and identifying the approaches which will most efficiently achieve the objective. GEF-supported activities will be an integral part of development of a renewable energy-based access expansion approach for PNG. In addition to assessment of the technologies and investments, the opportunities, risks and risk mitigation measures associated with different models of financing and implementing mini-grid-based

renewable energy will be also be considered. The resulting strategy will by definition be the most cost-effective approach to integrating renewable energy into efforts to expand access to electricity in PNG.

The proposed Project would provide technical assistance and capacity strengthening aimed at strengthening the enabling environment in the electricity sector and attracting investment. The proposed Project would not by itself have quantifiable economic and financial benefits as it is a TA project. However, the Project would set the stage for investment in rural electrification and the TA provided would include assessment of financial and economic aspects of various models.

In the GoPNG planning documents and the Electricity Industry Policy (EIP), increasing access to affordable reliable electricity supply is highlighted as a priority to achieve broad-based economic development and improved standard of living. The rural electrification strategy will consider the full range of options for increasing access, including grid extension, mini-grid and off-grid approaches, and the roles of public sector, private sector and NGO and community organizations. One aspect of the strategy would likely include efforts to attract private sector through a competitive process based on the lowest level of subsidy required. Important elements to be included in the rural electrification strategy include (i) a reasonable definition of the projects / opportunities to be offered and (ii) an assessment of the different cost structures and levels of service provision characteristic of the range of resources and supply models that might be appropriate across PNG, as an input to the tariff-setting process; (iii) a process for screening social and environmental aspects of rural electrification projects.

### **PART III: INSTITUTIONAL COORDINATION AND SUPPORT**

**A. INSTITUTIONAL ARRANGEMENT:** The GEF-financed part of the Energy Sector Development Project will be implemented by the Energy Division of the Department of Petroleum and Energy. The Energy Division has a small staff and in the past has remained relatively low-profile in the Department, as the major focus in the past few years of DPE - and to some extent the GoPNG - has been the LNG project. Now that the key LNG Project agreements are in place, GoPNG and DPE are re-focusing on the energy sector. With the Electricity Industry Policy now approved, significant strengthening of the Energy Division is planned.

A joint intra-governmental and development partner consultation chaired by DNPM has been launched. Meetings will take place twice a year. DNPM has stated that it intends the energy sector to be an example for other sectors in terms of intra-governmental communication and development partner coordination. As a result of the progress in coordination within the energy sector, the scope and objectives of the proposed WB/GEF project have been broadly discussed and endorsed by all key GoPNG stakeholders. The formalization of this mechanism is expected to be an important factor in the sustainability of the project's objectives.

**B. PROJECT IMPLEMENTATION ARRANGEMENT:** A DPE PMU has been set up, headed by a senior staff member in the Energy Division. None of the current staff at the Energy Division have been involved in WB-supported projects. Capacity for undertaking WB procurement and financial management will need to be developed further during implementation of the proposed project. The proposed project (GEF and IDA financing) directly supports strengthening implementation capacity through financing of:

- Assistant PMU Manager, who would be a full-time local consultant to handle the day-to-day aspects of project implementation including contract management;

- Renewable and Rural Energy Advisor, who would be part time and would provide the technical expertise for definition of the Terms of Reference for the major consultancies, assist in technical evaluation of bids, assist in guiding consultants and reviewing draft reports.
- Training as needed in procurement, financial management and technical areas.

For further details, please refer to the PNG Energy Sector Development Project Appraisal Document.

Coordination with other related initiatives in the country. The current WB-GoPNG Country Assistance Strategy for the period FY08-FY11 was approved in November 2007. A CAS progress report was approved in March 2010. The Country Assistance Strategy included a new energy sector project. The CAS progress defines this as Energy Sector TA and Strategy. The proposed Project is fully aligned with the current CAS, and was chosen by GoPNG as the focal point for a coordinated multi-donor energy sector approach which includes joint missions and harmonized programming. Government has already signaled its intention to request a continued high priority on strategic renewable energy sector work in the next WBG CAS, which will cover 2012-2016. The development of the Project has been coordinated with IFC.

A key step in coordination of PNG energy sector initiatives is the recent launch of a joint intra-governmental and development partner consultation chaired by Department of National Planning and Monitoring (DNPM) that will take place twice a year. DNPM has stated that it intends the energy sector to be an example for other sectors in terms of intra-governmental communication and development partner coordination. As a result of the progress in coordination within the energy sector, the scope and objectives of the proposed WB and GEF-supported Project have been broadly discussed and endorsed by all key GoPNG stakeholders.

ADB is supporting a ‘Small Towns Electrification Project’ focusing on supporting the conversion of diesel based systems for up to six existing town grids to hydro-based supply. There are no other development partners currently supporting renewable or rural electrification in PNG.

**PART IV: EXPLAIN THE ALIGNMENT OF PROJECT DESIGN WITH THE ORIGINAL PIF:**

The project design is well-aligned with the original PIF.

**PART V: AGENCY(IES) CERTIFICATION**

This request has been prepared in accordance with GEF policies and procedures and meets the GEF criteria for CEO Endorsement.

Agency Coordinator, Agency name	Signature	Date (Month, day, year)	Project Contact Person	Telephone	Email Address
Karin Shepardson, Program Manager, ENVIA, World Bank		July 23, 2012	Jiang Ru	202 473-8677	jru@worldbank.org

**Annex 1: Results Framework and Monitoring**

**PNG: Energy Sector Development Project  
Results Framework**

...s (PDO) are (i) to Strengthen policy development and strategic framework for renewable energy and rural electrification; and (ii) to attract investors for sustainable ... to supply the Port Moresby electricity grid.

...tive is to support the development of a framework, information exchange and consensus-building to launch a national effort on development of renewable energy-

	Baseline	Cumulative Target Values**					Frequency	Data Source/ Methodology	Responsibility for Data Collection	Description (indicator definition etc.)
		YR 1	YR 2	YR3	YR 4					
...d	Significant gaps in rural and renewable energy policy and strategy framework.	Consultants in place for key studies	Active consultations on draft policies across government entities and non-gov't partners; environmental and social implications assessed.	Policies submitted to Cabinet.  Consultations begin on Rural Electrification strategy	Rural electrification strategy completed		As needed	On-going supervision	DPE PMU	Status of documents (drafts for review etc)
...g	No financing	NB Developer selection process underway; Information and Consultation Strategy adopted.	NB Developer selected; ESIA, design and costing underway. Information and Consultation Strategy being implemented	Sources of financing identified.  Consultations as per agreed plan.	Financiers' due diligence completed.		As needed	On-going supervision	PNG Power PMU	Deliverables as per the Transaction Advisor's contract; reports from consultation process.
...d as	Out-dated studies with insufficient	Study (three-basin inventory) launched to	Based on three-basin inventory, and update on	Launch feasibility study with social and	Feasibility study completed.		As needed	On-going supervision	PNG Power PMU	Deliverables as per the consultants' contract.



			good planning.	determine sequence of future hydropower to supply POM	determination of next hydropower project to supply POM grid	next hydropower project for POM.						
<b>Global Environmental indicator</b>		Emission of tonnes of CO2 equivalent avoided	Zero				Component 1 results in policy and strategy to achieve least 23,200,000 t avoided CO2 equivalent.  Component 2 results in developer commitment to \$22 million t avoided CO2 equivalent over project lifetime					
<b>INTERMEDIATE RESULTS</b>												
<b>Intermediate Result (Component One): Institutional and Policy Development for Renewable Energy and Rural Electrification</b>												
<i>Intermediate Result indicator one:</i> Elements of Rural electrification strategy prepared		Strategy completed	No strategy	TOR discussed and finalized with input from advisor. Inventory of available, relevant GIS data and resources	Analysis of alternative models of community and rural electrification projects including cost structure undertaken.	GIS Stocktaking and Development of a Stage 1 "Potential Rural Electrification Projects" Database; Environmental and Social Screening	Rural electrification strategy completed		As needed	On-going supervision	DPE PMU	Status of documents (drafts for review etc)

						methodology for rural electrification projects; Consultations on draft strategy underway.						
<i>Intermediate Result indicator two:</i> Strategic Environmental and Social Assessment (SESA) completed		SESA completed	No SESA in place	Draft SESA under preparation; mapping of roles and responsibilities completed.	Implications of draft rural and renewable energy policies analyzed; Plan to address institutional challenges proposed.	SESA completed			As needed	On-going supervision	DPE PMU	Status of documents (drafts for review etc)
<i>Intermediate Result indicator three:</i> Improved GoPNG institutional capacity in the energy sector to support future investment in rural and renewable energy.		Staff at DPE and other GoPNG Departments with skills to take the lead in subsequent implementation of policies and strategy.	Lack of in-house capacity and experience in target areas.	All TOR for technical specialist support include provision of on-the-job training; DPE assigns at least one staff person to work closely with each technical consultant; PMU staff attend training in FM and consultant selection.	On-the-job training takes place on all applicable TA consultancies. DPE staff effectively present draft policy documents at consultation and consensus-building events.	On-the-job training takes place on all applicable TA consultancies. DPE staff effectively present draft rural electrification strategy documents at consultation and consensus-building events.						
<b>Intermediate Result (Component Two): Technical Assistance for Preparation and Planning for Port Moresby Hydropower Supply</b>												
<i>Intermediate Result indicator One:</i> NB consultation process progresses in a way that results in decisions that responds to the interests and concerns of both	<input type="checkbox"/>	Clear process defined and in use for continuing, meaningful consultations with people	Ad hoc consultations ; lack of understanding of land ownership in potentially-affected	PPL continues information sharing in potentially-affected villages; land-owner identification	Institutional arrangements that ensure that agreements are honored by both the NB project and the involved communities;	Developer refines and continues implementation of the ICS.	Arrangements are in place for monitoring the implementation of agreements on entitlements and benefits and maintaining					

women and men in the NB project area, and advances the objectives of the NB project.		to be affected by the development of the NB project.	areas.	in progress; Information and Consultation Strategy (ICS) as per the ESMF developed in consultative manner.	Institutional arrangements for handling of complaints and grievances that are accepted by the involved communities and that provide for timely resolution;		records on the management and resolution of complaints					
<i>Intermediate Result indicator two:</i> Developer for Naoro Brown selected following transparent process.		Developer in place	No Developer	Transaction Advisors in place; Intra-government Oversight Committee activated; strategy for Developer selection agreed; pre-qualification launched.	Transparent process for developer selection agreed; Intra-government Oversight Committee meeting as required; all social and environmental requirements (as per ESMF) included in bidding documents issued to potential developers.	Developer mobilized			As needed	On-going supervision	PNG Power PMU	Deliverables as per the Transaction Advisor's contract.
<i>Intermediate Result indicator three:</i> Improved institutional capacity at PPL related to preparation and planning for hydropower development.		PPL has tools and capacity for future hydropower development planning.  PPL staff can take the lead effectively manage engagement with private sector;	PPL lacks planning tools for future hydropower development  PPL lacks experience with approach to involving private sector in development of hydropower	3-basin inventory consultants selected  Selection and management of specialist consultants required for preparation of the NB project is on time and effective.	3-basin inventory completed; next hydropower project selected.  PPL staff interact effectively with Oversight committee in setting out options and decisions required.  Good management of Transaction Advisors	Feasibility study underway.  PPL staff interact effectively with Oversight committee.	Feasibility study completed		As needed	On-going supervision	PPL PMU	Status of studies (drafts for review etc)

					produces on-time progress in the project.							

**\*Please indicate whether the indicator is a Core Sector Indicator (see further <http://coreindicators>)**

**\*\*Target values should be entered for the years data will be available, not necessarily annually.**

**ANNEX B: RESPONSES TO PROJECT REVIEWS** (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF)

**8. Is the global environmental benefit measurable?**

Comment: Measurable targets that are based on the current supply and the foreseen needs to be provided.

Response: As stated in the **CLIMATE CHANGE FOCAL AREA STRATEGY AND STRATEGIC PROGRAMMING FOR GEF-4, Strategic Program 3: Promoting Market Approaches for Renewable Energy** “This strategic program will promote market approaches for the supply of and demand for renewable electricity in grid-based systems. The expected outcome will be the growth in markets for renewable heat power in participating program countries. Indicators of success will be the tons of CO<sub>2</sub>e avoided, *the adoption of on-grid renewable policies*, and the quantity of electricity generated from renewable sources. During the GEF-4 period, the emphasis will be upon *developing policies* and regulatory frameworks that provide limited incremental support to strategically important investments. In order to maximize GHG impacts, priority will be given to projects with a large replication potential.

The same document recognizes that “because market transformation is a complex, long-term process, even successful projects will almost never completely transform a market, but will instead contribute positively to the transformation process. *Given GEF’s role as an innovative catalyst, many of the global benefits of GEF support are expected to be indirect in nature.* “

In line with this guidance, the proposed project focuses on addressing the barriers to begin (not complete) the process of market transformation. The focus is on policy for renewable energy and rural electrification, and strategy for rural electrification, all of which are necessary steps to begin the market transformation for grid-based (including both main and mini-grid) renewable energy. The benefits will be indirect in nature but intended to catalyse significant investment in grid-connected renewable energy. As described above, there are a number of attempts at pilots and demonstration projects. Using the very limited GEF resources to cover incremental costs of one or two more one-off investments would not catalyze a change in the market. Transforming the market will take some time and needs to start with getting the basic framework in place. By itself this project will contribute positively to the market transformation by assisting to create the overall policy environment and strategic framework in which the market transformation will occur.

Measurable targets will be submission of the Renewable Energy Policy and Rural Electrification Policy to Cabinet and preparation of a strategy to operationalize the rural electrification policy which is expected to emphasize renewable energy supply to mini-grids as explained above. Estimated direct and indirect emission reductions are included above.

**9. Is the project design sound, its framework consistent & sufficiently clear (in particular for the outputs)?**

Comment: The duration of the project should be decreased, since 5 years is a very long period to deliver just policy outputs. Also, the specific activities with concrete and applicable outputs should be described.

Response: Duration has been reduced to 4 years. It is possible that the implementation could be completed more quickly, but given the need for thorough consultations and buy-in from a range of government and non-government actors, the timeframe of 4 years is expected to be realistic. As an aside, there are a number of examples of RE policies in the Pacific Islands, which were completed quickly without meaningful consultation and consensus-building and very little ownership or impact has resulted. The model proposed for developing policy and strategy in PNG is different. It will take longer, but this extra focus on consultation is expected to yield broad understanding and support for subsequent implementation.

Specific activities are included in Annex C. Outputs are presented in Annex A.

**10. Is the project consistent with the recipient country’s national priorities and policies?**

Comment: Since there are quite a lot of possibly overlapping strategy papers that are produced by PNG, the exact limits of application of each policy, as well as their complementarities, should be described.

Response: Clarifications regarding the proposed Electricity Industry Policy and the climate compatible development process have been added in Part II B.

**11. Is the project consistent and properly coordinated with other related initiatives in the country or in the region?**

Comment: The coordination scheme should be fully described.

Response: Details added in Part III: Implementation Arrangements

**13. Has the cost-effectiveness sufficiently been demonstrated in project design?**

Comment: All the actions that the project will support in order to secure the sustainability of the policies that will be developed.

Response: Added in Part II H. The proposed Project would provide technical assistance and capacity strengthening aimed at strengthening the enabling environment in the electricity sector and attracting investment. The proposed Project would not by itself have quantifiable economic and financial benefits as it is a TA project. However, the Project would set the stage for investment in rural electrification and the TA provided would include assessment of financial and economic aspects of various models.

In the GoPNG planning documents and the proposed Electricity Industry Policy (EIP), increasing access to affordable reliable electricity supply is highlighted as a priority to achieve broad-based economic development and improved standard of living. The rural electrification strategy will consider the full range of options for increasing access, including grid extension, mini-grid and off-grid approaches, and the roles of public sector, private sector and NGO and community organizations. One aspect of the strategy – as proposed in the draft EIP – would likely include efforts to attract private sector through a competitive process based on the lowest level of subsidy required. Important elements to be included in the rural electrification strategy include (i) a reasonable definition of the projects / opportunities to be offered and (ii) an assessment of the different cost structures and levels of service provision characteristic of the range of resources and supply models that might be appropriate across PNG, as an input to the tariff-setting process; (iii) a process for screening social and environmental aspects of rural electrification projects.

**15. Does the project take into account potential major risks, including the consequences of climate change and includes sufficient risk mitigation**

Comment: The resources to secure its sustainability should be presented and measures for its mitigation should be described.

Response: additional information in the risk section has been provided. Key risk is related to capacity. Increased capacity in the energy sector is also a major factor in the sustainability of the Project. Details of the capacity strengthening on-going and planned is included in the Risk section above.

**ANNEX C: CONSULTANTS TO BE HIRED FOR THE PROJECT USING GEF RESOURCES**

<i>Position Titles</i>	<i>\$/ person week*</i>	<i>Estimated person weeks**</i>	<i>Tasks to be performed</i>
<b>For Project Management</b>			
Local			
Assistant PMU manager (co-financed with IDA)	500	130	Assist in procurement / selection of consultants; assist in managing contracts; facilitate consultations; assist in monitoring and reporting (2.5 - 3 years)
International			
Part time procurement specialist	3,000	7	Assist in selecting consultants and building procurement capacity at DPE

Justification for Travel, if any: assistant PMU manager may accompany the consultants on domestic trips to participate in consultations.			
<b>For Technical Assistance</b>			
<b>Local</b>			
Renewable Energy Policy, Rural Electrification Policy, Rural Electrification Strategy (firm) – co-financed with IDA	1,000	110	<p>Interface with team developing climate compatible development strategy; review PNG policy, legal, regulatory instruments that have a bearing on RE; develop and manage consultation strategy; support DPE in consensus-building within GoPNG; assist in process requirements for GoPNG policy.</p> <p>Assess earlier draft policy and assess reasons for lack of progress; review PNG policy, legal, regulatory instruments that have a bearing on RE; develop and manage consultation strategy; support DPE in consensus-building within GoPNG; assist in process requirements for GoPNG policy.</p> <p>Gather and assess documentation and experience with rural electrification in PNG including site visits; gather and prepare Geographic Information System (GIS) database overlays of population, infrastructure (e.g. roads, energy infrastructure, telecoms) and water resources; Analysis of alternative models of community and rural electrification projects including cost structure, as an input to the ICCC process of developing tariffs for electricity supply in areas outside the PNG Power exclusive supply areas; develop Environmental and Social Screening methodology for rural electrification projects; complete identification of two opportunities for renewable-energy supplied mini-grids; design and implement consultation strategy.</p>
GIS stock-taking (individual)	2,500	10	Investigate and report on available sources, scope, format and quality of existing GIS data for PNG
<b>International</b>			
Rural and Renewable Energy Advisor (individual)	3,500	24	Assist DPE in preparing ToR for consultancies on renewable energy policy, rural electrification policy and strategy; assist in technical review for consultant selection; review all bid documents, draft reports, draft policies and strategies and provide expert input to DPE.

Renewable Energy Policy, Rural Electrification Policy, Rural Electrification Strategy (firm) – co-financed with IDA	5,000	70	<p>Interface with team developing climate compatible development strategy; review PNG policy, legal, regulatory instruments that have a bearing on RE; develop and manage consultation strategy; support DPE in consensus-building within GoPNG; assist in process requirements for GoPNG policy.</p> <p>Assess earlier draft policy and assess reasons for lack of progress; review PNG policy, legal, regulatory instruments that have a bearing on RE; develop and manage consultation strategy; support DPE in consensus-building within GoPNG; assist in process requirements for GoPNG policy.</p> <p>Gather and assess documentation and experience with rural electrification in PNG including site visits; gather and prepare Geographic Information System (GIS) database overlays of population, infrastructure (e.g. roads, energy infrastructure, telecoms) and water resources; Analysis of alternative models of community and rural electrification projects including cost structure, as an input to the ICCC process of developing tariffs for electricity supply in areas outside the PNG Power exclusive supply areas; develop Environmental and Social Screening methodology for rural electrification projects; complete identification of two opportunities for renewable-energy supplied mini-grids; design and implement consultation strategy.</p>
Justification for Travel, if any: travel will be from consultants' home location to PNG and within PNG for consultations as required.			

\* Provide dollar rate per person week. \*\* Total person weeks needed to carry out the tasks.

**ANNEX D: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS**

**A. EXPLAIN IF THE PPG OBJECTIVE HAS BEEN ACHIEVED THROUGH THE PPG ACTIVITIES UNDERTAKEN.**

**B. DESCRIBE FINDINGS THAT MIGHT AFFECT THE PROJECT DESIGN OR ANY CONCERNS ON PROJECT IMPLEMENTATION, IF ANY:**

**C. PROVIDE DETAILED FUNDING AMOUNT OF THE PPG ACTIVITIES AND THEIR IMPLEMENTATION STATUS IN THE TABLE BELOW:**

<i>Project Preparation Activities Approved</i>	<i>Implementation Status</i>	<i>GEF Amount (\$)</i>				<i>Co-financing (\$)</i>
		<i>Amount Approved</i>	<i>Amount Spent To date</i>	<i>Amount Committed</i>	<i>Uncommitted Amount*</i>	



	(Select)					
	(Select)					
	(Select)					
	(Select)					
	(Select)					
	(Select)					
	(Select)					
	(Select)					
<b>Total</b>						

\* Any uncommitted amounts should be returned to the GEF Trust Fund. This is not a physical transfer of money, but achieved through reporting and netting out from disbursement request to Trustee. Please indicate expected date of refund transaction to Trustee.

**ANNEX E: CALENDAR OF EXPECTED REFLOWS**

Provide a calendar of expected reflows to the GEF Trust Fund or to your Agency (and/or revolving fund that will be set up)

Not applicable.