

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK
MULTILATERAL INVESTMENT FUND

SURINAME

**Introduction of Sustainable Business Models in Suriname
Rural Electrification**

(SU-M1019)

DONORS MEMORANDUM

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Abbreviations

Whenever reference is made in the document to any of the terms mentioned below, the same will be understood to mean the following:

Term	Meaning
ABS	Access to Basic Services Unit
Bank or IDB	Inter-American Development Bank.
DEV	Dienst Electrificatievoorziening
EBS	National Power Company (NV Electriciteitsbedrijf Suriname)
FOB	Fund for the Development of the Interior (Stichting Fonds Ontwikkeling Binnenland)
LAC	Latin America and the Caribbean
MIF/FOMIN	Multilateral Investment Fund
MNH	Ministry of Natural Resources (Ministerie van Natuurlijke Hulpbronnen)
MRD	Ministry of Rural Development
O&M	Operation & Maintenance
RET	Renewable Energy Technologies
PSR	Project Status Reports

INTRODUCTION OF SUSTAINABLE BUSINESS MODELS IN SURINAME RURAL ELECTRIFICATION (SU-M1019)

I. Executive Summary

Beneficiary Countries:	Suriname	
Executing Agency:	Fund for the Development of the Interior (F.O.B.)	
Target Beneficiaries:	The primary beneficiaries of this project will be at least 10,000 inhabitants from rural villages in the interior of Suriname, mainly Maroon and Amerindian groups, who will benefit from access to clean and reliable energy through the use of renewable energy technologies (RET). Additional beneficiaries include the approximately 10% of the population of Suriname that inhabit the interior of the country.	
Financing:	Modality:	Non-reimbursable
	MIF:	US\$ 1,692,889 (33.3%)
	Counterpart	US\$ 3,390,800 (67.7%)¹
	TOTAL:	US\$ 5,083,689
	COFINANCING:	US\$ 17,650,000
Objectives	The objective of this project is to increase access to clean and reliable energy in the interior of Suriname, through the efficient use of renewable energy technologies in rural and indigenous communities. The purpose of the project is to develop and test sustainable business models for rural Renewable Energy Technologies in the interior of the country.	
Execution Timetable	60 months for project execution and 64 months for disbursement.	

¹ Local counterpart provided by F.O.B. is USD240,800, and USD3,150,000 is provided through the GEF/IDB operation SU-T1056.

Special Contractual Conditions

As conditions precedent to the first disbursement of funds, F.O.B. will submit, to the Bank's satisfaction, evidence that: (i) the Executing Agency has selected and contracted a Project Coordinator in accordance with the terms and conditions previously agreed with the Bank; (ii) a plan of operations, budget and procurement plan for the first year of the project is completed and approved by the Bank; (iii) the completion of the Operating Regulations of the project designed jointly with the Bank; (iv) finalization of the agreement between F.O.B/Ministry of Rural Development and the Ministry of Natural Resources related to the operational responsibilities and the execution mechanism of the project.

Exceptions to Bank Policies:

None.

Environmental and Social Review

ESG reviewed the project abstract on May 1, 2012. Following IDB Environmental And Safeguard Compliance Policy (OP-703), the project has been classified as Category C, and an Environmental and Social Management Report (ESMR) was prepared for this project that is available in the technical files.

Coordination with other donors:

The MIF is partnering with the IDB Energy Division (INE/ENE) and the GEF on this initiative. The project is integrated into the "Development of Renewable Energy, Energy Efficiency and Electrification in Suriname" project, which involves four other operations under preparation: (i) SU-L1009, loan of US\$15,000,000 (ii) SU-T1055, grant of US\$1,000,000 (iii) SU-T1042, grant of US\$400,000, and (iv) SU-T1056, a GEF grant of US\$4,400,00. For the development of this Project, specific activities to be implemented in the interior of Suriname integrated in SU-T1056 will be complementing the activities included in MIF operation.

II. BACKGROUND AND JUSTIFICATION

A. ACCESS TO ELECTRICITY IN RURAL SURINAME

- 2.1 Suriname is the smallest and the youngest sovereign nation in South America, with an area of 163,820 km² and a population of approximately 492,000 people. It is also among the most ethnically diverse countries in the world, hosting Amerindian tribes, and descendants of African slaves and workers from Asia and the Pacific.² About 90% of the population lives in the area along the Atlantic coast. The interior of Suriname is populated predominantly by Amerindians and the Maroons, who together comprise about 20% of the population of the country.³ Of the 217 villages in the interior, most can only be reached by boat or plane.
- 2.2 The villages in the interior lack many basic services. Maroon communities are characterized by poverty, weak integration in the economy and low levels of education. Roads, energy, communications and other infrastructure are virtually absent. Much economic activity takes place in the informal sector, involving hunting and fishing, agriculture, woodcarving, logging, timber processing, construction and mining. Gold mining is a major productive activity undertaken by young men in the villages. Most women are engaged in traditional economic activities, tending small agricultural plots, and fishing and hunting for family consumption. Despite a lack of access to electricity, most of the population has access to mobile telephones and fixed phone booths.
- 2.3 Modern energy services⁴ are crucial for human well-being and for a country's economic development. In Latin America and the Caribbean, 7% of the population lacks access to electricity, or about 31 million people.⁵ In Suriname, 15 percent of the population, mainly in the rural areas, lacks electricity. At present, there is no production of natural gas or coal in Suriname,⁶ and all electricity is produced by one large hydropower plant and numerous private and public thermal generators. The responsibility for the electricity sector is assigned to the Ministry of Natural Resources (MNH, Ministerie van Natuurlijke Hulpbronnen), which determines and approves electricity tariffs. The national power company, EBS,

² Source: The CIA World Factbook (www.cia.gov)

³ The Maroons are descended from slaves who escaped from plantations and created a largely autonomous society in the interior of the country.

⁴ The International Energy Agency (IEA) defines modern energy access as “a household having reliable and affordable access to clean cooking facilities, a first connection to electricity and then an increasing level of electricity consumption over time to reach the regional average.” The initial threshold level of electricity consumption for rural households is assumed to be 250 kWh per year, a level sufficient to provide for the use of a floor fan, a mobile telephone and two compact florescent light bulbs for about 5 hours per day. Source: Energy for all. Financing access for the poor, and World Energy Outlook 2011. International Energy Agency.

⁵ Source: Energy for all. Financing access for the poor. Special early excerpt of the World Energy Outlook 2011. International Energy Agency. Data collected in 2009.

⁶ Source: Suriname Country Brief, June 30, 2010. US Energy Information Administration . www.eia.gov

provides the electricity service for on-grid connections in the country, and is owned by the State and monitored through the MNH. The current tariff does not allow for full cost recovery.

- 2.4 In the interior, villages generate electricity using diesel generators. An estimated 111 villages in the Interior use diesel generators that are owned and operated by the Dienst Electrificatievoorziening (DEV), a unit operating under the MNH. The project executing agency, F.O.B., operates under the Ministry of Rural Development (MRD) and develops grid extension projects and small hydro power plants. These are then passed to DEV for the operation, maintenance and management of the projects. About 93 villages receive monthly diesel fuel deliveries from DEV, which is charged with transporting this fuel from the coast. Diesel is in short supply, and therefore costly and often unavailable. About 100 villages lack complete access to electricity.
- 2.5 The lack of effective electricity delivery in Suriname is caused by: (i) a weak legal and regulatory framework, including a tariff that does not provide cost recovery for electricity provision; (ii) low institutional capacity, (iii) poor financial and economic performance, (iv) a lack of awareness and know-how regarding technical options, (v) a lack of capacity and coordination among stakeholders in the implementation of rural electrification projects, and (vi) low population density in the interior.

B. THE POTENTIAL OF RENEWABLE ENERGY TECHNOLOGIES IN RURAL ELECTRIFICATION IN SURINAME

- 2.6 The Kema Report,⁷ a comprehensive assessment of rural electrification in Suriname, details the high costs of electricity in the interior. High costs are largely due to high transportation costs and low demand. The report reveals an average price of diesel-generated electricity of US\$0.63 per kWh (US\$0.41 for fuel, US\$0.18 for transportation and US\$0.03 for O&M). For remote locations the costs may be above US\$1.00 per kWh.
- 2.7 This cost structure for diesel makes alternatives such as solar and other renewable energy such as solar, small scale hydropower and biomass economically feasible. For instance, average solar radiation in the country is 4.48 kWh/m²/day, ideal for solar water heating and solar panel photovoltaic (PV) installations. The interior of the country is also richly endowed with rivers, large streams and waterfalls, providing promising sites for small hydropower systems.
- 2.8 To date, renewable technologies remain largely unknown in Suriname. Past rural electrification initiatives using renewables have been unsuccessful due to design flaws, O&M failures and disruptions. Renewable energy systems for on grid electricity production (i.e. solar PV, wind, biomass, and small hydro) and thermal for solar water heaters are virtually non-existent. Some private hybrid systems (PV-diesel) are used to power remote antennas. Further, there is limited know-how regarding system design, resource assessment, project risks and O&M aspects in the energy sector.

⁷ Source: Kema Report 2008

- 2.9 Aware of these challenges, the Government of Suriname, with support from the IDB and the Global Environment Facility (GEF) is preparing a national energy strategy, “The Sustainable Energy Framework for Suriname”. This framework aims to improve the economic efficiency of the energy sector and its environmental sustainability. More effective tariff schemes, greater energy efficiency and the rational use of renewable energy technologies will play a key role in this strategy. The proposed project aims to pilot sustainable business models for rural electrification in the interior of Suriname by empowering local communities to maintain, operate and manage renewable energy investments.

C. EXPERIENCE TO DATE

- 2.10 One of the best known renewable energy projects at the village level is the solar PV project in Kwamala Samutu, a remote Amerindian village. Solar PV panels supplied electricity to 140 households and community service providers, including a school, refrigeration units and a community radio communications center. However, the project failed because it lacked a business model that ensured system maintenance. A 40 kW hydro plant was built in a remote village in 1981, but that failed four years later due to a lack of maintenance and inappropriate site selection.⁸
- 2.11 The F.O.B. is responsible for development in the interior and implements local distribution grids to expand electricity access. It is currently implementing a small-scale hydropower program with technical support from the Anton de Kom University of Suriname, which will serve as a pilot facility for this project. The hydro-plant is under construction and a 150 kW turbine has been installed. F.O.B. is funding the expansion of the system through the installation of another 150 kW turbine.
- 2.12 The Ministry of Natural Resources is currently developing plans to include more rural villages in the electric grid. The planned small hydropower plants in this project can be connected to electric grids, thereby adding system redundancy and helping to stabilize weak grids.⁹

D. INITIATIVE RATIONALE

- 2.13 **Problem Statement:** In rural areas energy access is low and electricity provision is neither financially nor environmentally sustainable. Among the factors that need to be addressed to increase access to electricity in the interior of Suriname are: (i) a lack of current socio-economic information needed to inform the design and location of local power generation schemes, (ii) limited know-how of system design, resource assessment, project risks and

⁸ The Dutch Government financed most of these systems under the Verdragsgelden, the cooperation program in which the Netherlands agreed to support Suriname on its way to economic self-reliance after the country’s independence in 1975.

⁹ Source: GEF Interviews with MNH and EBS, March-April 2012.

sustainable operations and maintenance models in the energy sector; (iii) a lack of experience with business models, such as PPPs, community based operations (for hydro and solar-PV), and a (iv) lack of human resources for developing and operating Renewable Energy Technologies within the government and in local communities.

- 2.14 **Proposed Project:** This project will pilot business models designed with the participation of local communities to operate and maintain renewable energy in the interior of Suriname. The project will work in tandem with the IDB and GEF, which will construct the energy systems, including small hydro and solar PV installations. The MIF will finance the development and deployment of the operation and maintenance (O&M) business models, based on a capacity to pay and tariffs that reflect demand and supply, thereby ensuring financial sustainability.
- 2.15 Two business models will be proposed through this project for the different technologies of the energy systems to be constructed. Small hydro systems will require of skilled staff to operate and maintain the facilities, while some of the preventive maintenance tasks can be performed by local population from the communities. A Public Private Partnership will be then designed and proposed, including the creation of a body in charge of the operation and maintenance tasks requiring more specialized workforce. The model for this entity and coordination with other government bodies as MNH and EBS will be defined, while the communities will be in charge of less specialized duties. For Solar-PV systems and micro-hydros, community based models will be designed, so that all operation and maintenance can be handed over to the local communities. In both cases, the management system including tariff collection systems will be designed and agreed with the local communities and the relevant actors.
- 2.16 The project also focuses on engaging the local communities in all the project activities and in the decision-making processes. Community involvement enhances ownership of the systems and therefore, sustainability. Due to the peculiarities of the Amerindian and Maroon communities beneficiaries of this project, specific campaigns and materials will be developed for the villages. Through these activities, it is expected local communities are aware of all the project activities, benefits of electricity and agree on their future roles and responsibilities. In addition, local capacity building will be developed for participating in the construction works and as a basis for the local operation and maintenance required workforce.
- 2.17 **MIF Additionality:** The MIF will provide technical assistance for designing energy delivery business models, convene all relevant stakeholders, and share expertise in areas such as PPPs and community engagement models. The MIF will also assist in the dissemination of results and lessons learned. This support is additional because these new activities and related investments would not otherwise occur without MIF funding and expertise.
- 2.18 The base GEF/IDB operations of SU-T1056 and SU-T1042 will focus on the implementation of the pilot experiences both in Coastal areas and the interior of the country. MIF Project supports the community work required for the installation of systems in the

interior of Suriname, so that communities are engaged in all the project activities. In addition, through MIF Project the business models will be designed and put into place in the selected communities, assuring the sustainability of the whole intervention.

- 2.19 MIF Project will also serve as a vital input for the GEF-IDB operations SU-L1009 and SU-T1055, which focus on strengthening the regulatory and institutional framework to implement Renewable Energy and Energy Efficiency technologies in Suriname. The results from the pilot experiences of this project, and the business models designed for the interior of Suriname are expected to be adopted in the Sustainable Energy Framework for Suriname (SEFS) that will be designed through these operations. The baseline study will serve as a vital input for developing a plan of action for other actors to develop renewable energy systems in the interior of the country.
- 2.20 **Indigenous communities.** Most of the population in the interior of Suriname is comprised of Maroons and Amerindians. The project executing agency, F.O.B., is recognized as the preeminent entity in the country working with indigenous communities in the interior.
- 2.21 **Gender perspective:** Maroon and indigenous women perform traditional female roles, such as cleaning, organizing meals, food production and housework. In the interior, women are excluded from the maintenance and management of systems that provide water, energy and other basic services. Women are now taking jobs and starting microenterprises in food processing near gold mines where workers demand food and related services. Energy access is of prime importance for women's small businesses. In households, electricity enables women to spend time with family, and on self-improvement and other pursuits, rather than on collecting wood and other forms of fuel. This project will integrate gender considerations throughout all activities and will track gender disaggregated data within the monitoring and evaluation systems.
- 2.22 **Alignment with MIF Agendas.** This project belongs to the agenda "Basic Services for the poor." The MIF will work closely with the GEF, the IDB and the Government and local communities to provide market driven solutions that expand access to electricity for poor communities. Based on the results obtained from the pilot experience, activities will be scaled-up or replicated in villages selected as beneficiaries under the GEF/IDB program.
- 2.23 **Alignment with IDB Country Strategy.** This program is completely aligned with the IDB Country strategy for Suriname 2011-2015. It is fully coordinated with the Bank's Sustainable Energy Framework for Suriname, currently under preparation by the Government of Suriname, with the support of the IDB. The Framework will address the existing institutional, regulatory and economic barriers and establish necessary conditions for the sustainable provision of energy in Suriname. This Framework will promote the aims of this MIF project by: 1) introducing a new tariff structure that includes a regime for rural electrification, 2) expanding the generation of low carbon intensity technology, including hydro, solar PV, and electricity co-generation, and 3) increasing the use of efficient technologies.

II. Objectives and Description

A. PROJECT GOAL AND PURPOSE

- 3.1 The project goal is to expand sustainable energy access in the interior of Suriname through renewable energy technologies for rural and indigenous communities. The purpose is to develop and test viable business models in the interior of the country.
- 3.2 To achieve this objective, the project will include the following four components: (i) a baseline study and assessment of energy demand, (ii) technology transfer and demonstration pilots, (iii) market development and capacity building, and (iv) a component to maximize the dissemination of knowledge and lessons learned in the project. A description of each component is provided in the following sections.

B. DESCRIPTION OF COMPONENTS

Component 1: Baseline Study and Energy Demand Forecast Assessment (MIF Contribution: USD130,000; Counterpart: USD13,200)

- 3.3 In this component, social and economic data and energy demand forecasts will be updated in order to assess the opportunities for renewable energy and energy efficiency investments in the country.
- 3.4 Most data on village populations and energy usage in the interior of Suriname is incomplete or old. In this component a baseline study will collect updated data at the village level in the interior of the country. The results will inform policy development, project planning and future investments by the Government or donors.
- 3.5 The baseline study will be the central activity for the first 12 months of the project. It will be comprised of a desk study and field visits to the interior. Baseline data will be collected at the household level in villages, informing the economic, social and rural development indicators that will be used to monitor the results of the project. Baseline indicators will include village demographics, including poverty metrics, disaggregated gender data, data on wages and income, access to health and school services, electricity access, services offered, fees paid households, uses of electricity, etc.
- 3.6 The results of this component will be a baseline study to be used for energy demand forecasts in the interior and as an input to assess the opportunities for renewable energy investments in the interior.

Component 2: Development of Market Intelligence and Capacity Building (MIF Contribution: USD392,000; Counterpart: 13,200USD)

- 3.7 This component focuses on developing all the studies and materials to design the two business models to be tested in the villages of the interior for management and operation of

the renewable energy systems, and also the methodology to engage the communities in all the project stages until the systems constructed are operated in a sustainable manner.

- 3.8 It includes the collection of data and market intelligence to determine (i) the availability of management expertise and relevant resources available in Suriname, (ii) the mapping of formal and informal service providers in the public and private sectors, and (iii) the identification of potential management and O&M models for the interior of Suriname, including financial models, payment mechanisms, cost recovery analysis, and the creation of an operational manual.
- 3.9 A workshop will then be held with public authorities, representatives of local communities and other stakeholders to present the results of the market analyses above, and to discuss proposed models and operational plans. In addition, this component will build capacity at the national level, including the training of trainers from on the implementation of the business models.
- 3.10 An awareness strategy will also be designed under this component, with communication materials developed for villages and adapted to the context of the Maroons and Amerindian communities in the interior of Suriname. Games, visual and audio aids will be designed and produced for its use in the community consultations. This awareness campaigns will be implemented in the selected pilot villages before the construction of systems start.
- 3.11 Outputs from this component are: (i) 1 Community based and 1 PPP business model for O&M and management, (ii) At least 20 people trained and certified to implement business models, (iii) development of 2 O&M and management tool kits for PPPs and community based models, including financial, technical and management guidelines, and (iv) an effective communications campaign that engages communities in all phases of the project cycle.

Component 3: Implementation of the selected business models in pilot communities of the Interior of Suriname (MIF Contribution: USD696,000; Counterpart: 3,322,400USD)

- 3.12 The objective of this component is to pilot business models for operation and maintenance (O&M) and renewable energy technologies in selected villages.
- 3.13 Through the SU-T1055 grant operation, as a co-financing operation of this project, an implementation strategy will be prepared and proposals for enhancing the legal and technical regulatory framework will be implemented. As part of these activities, targets will be set to electrification in the interior of the country, and amendments to existing regulation will be established, among them the following covering: (i) promotion of private investment in renewable energy technologies; (ii) tariff systems for renewable energy based electricity and specific incentives to promote electrification in the interior.
- 3.14 In base to these established targets and regulatory enhancements, and with the results of the baseline study and energy demand forecast, an action plan will be agreed including the

selected villages for the pilots and the potential technology systems for each of them. An investment plan developed from the baseline energy study will be developed for renewable energy technologies in the interior. The most suitable technologies will be selected for appropriate sites in villages. Feasibility and engineering studies will be carried out for each of the pilots. The process will include pre-feasibility studies, consultations with user groups, and criteria to judge socio-economic impact, cost-effectiveness, project risks, visibility and replication potential.

- 3.15 After these studies are completed, a portfolio of Solar-PV and small hydro electrification projects will be implemented in selected villages using the most appropriate business and operational models. Procurement, installation and transfer of renewable energy technologies will be financed under the IDB/GEF operation. Infrastructure will be built to withstand the floods that commonly occur in the interior of the country. MIF will finance corresponding community work to engage the communities and the required activities to involve them participating in the construction of systems and the agreement of the business models to be put into place; capacity building and technical assistance to develop and put into place the sustainable business models for O&M, including the selection of local artisans and training for performing the tasks that will be handed over to the community. The target is to install at least 150 kW of Solar-PV and 1.5 MW of small hydro power systems. This capacity will provide electricity services to at least 10,000 people.
- 3.16 A first pilot area has been selected for the development of a small-scale hydropower program, in Dritabiki in the Sipaliwini District. F.O.B. has received technical support for this pilot from the Anton de Kom University of Suriname. Currently, one turbine of 150 kW has been installed to supply the area, with a total population of 2,000 Maroon people. With IDB and GEF collaboration the capacity of the system will be increased by another 150 kW and grids will be placed in local communities.
- 3.17 For this pilot, a business model for a public private partnership (PPP) will be tested and will serve as a pilot for a sustainable PPP model for operation, maintenance and management of small hydro power facilities. In this model, people from local communities will be trained in daily system maintenance and a smaller, specialized cadre will operate the facilities.
- 3.18 For other pilot interventions using micro hydro power systems and Solar-PV, it is expected that community-based models will be most appropriate for operation, maintenance and management, as these systems require less advanced skills.
- 3.19 In coordination with MNH, F.O.B. will first implement communication and awareness campaigns in the selected communities. Community consultations will forge consensus for a partnership agreement and for the training needed to implement the proposed business model. Agreements with the villages will specify service and performance standards, tariff systems, land agreements, management and O&M models, the allocation of risks and responsibilities, procurement methods in accordance with bank policies and conflict resolution. Formal agreements will be signed with the communities in which all relevant aspects are clearly defined.

- 3.20 The activities will be implemented in coordination with GEF/IDB. Firstly, F.O.B. will visit the selected villages and implement awareness campaigns through different media to assure the community is informed of the project, the benefits of electricity and the roles and responsibilities that they and other actors will have in all the project cycle. After the community is completely aware and agree with the project, GEF/IDB will start construction of the systems with the support of the selected local artisans previously trained by F.O.B. While construction goes on, F.O.B. will also work with the communities to agree on the partnerships and sign formal agreements for the selected business model for future management and operation and maintenance, including tariff collection system. The main goal is that when the construction of systems finalized, the village has in place the needed skills and structure so that the business model selected (PPP or community-based) is in place when the systems are finalized.
- 3.21 The expected outputs from this component are: (i) a National Plan for renewable energy technology investments developed and agreed among MNH, MRD, GEF, IDB and MIF, (ii) increased awareness of at least 10,000 people of both the project and the benefits of electricity, (iv) operational solar PV systems generating at least 150 kW within efficient business models, and (v) small hydro power systems generating at least 1.5 MW and operating within efficient business models.

Component 4: Knowledge management and dissemination of lessons learned (MIF Contribution: USD190,000; Counterpart: USD13,200)

- 3.22 One of the main results from this project will be the lessons learned from the pilot activities and their dissemination in Suriname and elsewhere. Activities will include public awareness and education campaigns and seminars to engage stakeholders, including public authorities, private sector entrepreneurs and local communities. This component will support regional seminars, workshops and promotional activities to inform potential investors of the opportunities offered by renewable energy in Suriname's energy sector.
- 3.23 Results from the pilot demonstrations will be documented and disseminated nationally and internationally. An evaluation of the pilots will be carried out in the middle of the project to obtain lessons learned and to improve the business models tested. Results from these pilot project evaluations will be disseminated and shared with principal stakeholders to inform continual improvements in the business models selected. These are expected to be endorsed by associated Suriname public policies.
- 3.24 Two knowledge products will be developed in this project. The first will be guidelines on the implementation of business models for renewable energy in rural communities. A second knowledge product will be a "fact-sheet" to be provided to potential private and public investors. This fact-sheet will contain market and cost information related to the energy sector and RETs in Suriname, with the objective of attracting investors in renewables to the country. Materials will be shared with counterparts in Guyana to support the Bank and MIF's intention to replicate this model in Guyana. Knowledge and learning products, such as guidelines, workshops, the fact-sheet, and other learning materials are intended to raise donors and investor interest in the provision of electricity through RETs in rural areas.

- 3.25 A final workshop will be held with principal stakeholders in the country to present results, knowledge products, and disseminate lessons learned of the project.

IV Cost, Financing and Sustainability

- 4.1 **Summary cost table.** The project's estimated total cost is US\$5,083,689, with US\$1,692,889 in non-reimbursable funds coming from MIF, and US\$3,150,000 counterpart funds¹⁰ in cash and in kind, amounting to 67% of the subtotal cost of the project.
- 4.2 The project is part of a wider intervention implemented jointly by IDB Energy Division (ENE) and the Global Environment Facility (GEF). This project complements the following operations: (i) SU-L009, USD15,000,000, Soft loan; (ii) SU-T1055, USD1,000,000, Grant; (iii) SU-T1042, USD400,000, Grant; (iv) SU-T1056, USD4,400,000, Grant. The Government of Suriname is contributing in kind resources to these operations of up to USD3,300,000. Total duration of the base project is of six years, while MIF operation will last 5 (five) years. A table with the budget for the base project is included identifying the sources of co-financing for each of the components (see Annex III).
- 4.3 Summary Cost Table including MIF contribution and counterpart.

DESCRIPTION	MIF (US\$)	Counterpart (US\$)	Total (US\$)
Component I. Baseline Study and energy demand assessment	130,000	13,200	143,200
Component II. Market Development and Capacity Building	392,000	13,200	405,200
Component III. Implementation of the selected business models in pilot communities of the Interior of Suriname	696,000	3,322,400	4,018,400
Component IV. Knowledge management and dissemination of lessons learned	190,000	13,200	203,200
Project Administration	77,200	28,800	106,000
Baseline, Monitoring and Evaluation	32,000	0	32,000
Ex post reviews	25,000	0	25,000
Contingencies	46,266	0	46,266
SUBTOTAL	1,588,466	3,390,800	4,979,266

¹⁰ Local counterpart provided by F.O.B. is USD240,800, and USD3,150,000 is provided through the GEF/IDB operation SU-T1056

	31,9%	68%	
Agenda Account	25,000	0	25,000
Impact Evaluation Account (5%)	79,423	0	79,423
GRAND TOTAL	1,692,889	3,390,800	5,083,689

- 4.4 **Sustainability.** This project establishes a management and O&M system for small hydropower and Solar-PV systems in rural Suriname, using community-based participation processes in all phases of infrastructure implementation. With successful implementation of business models, financial and technical sustainability are expected in this project. The business models will combine decentralized management, community participation and involvement of the electricity national company and government entities.

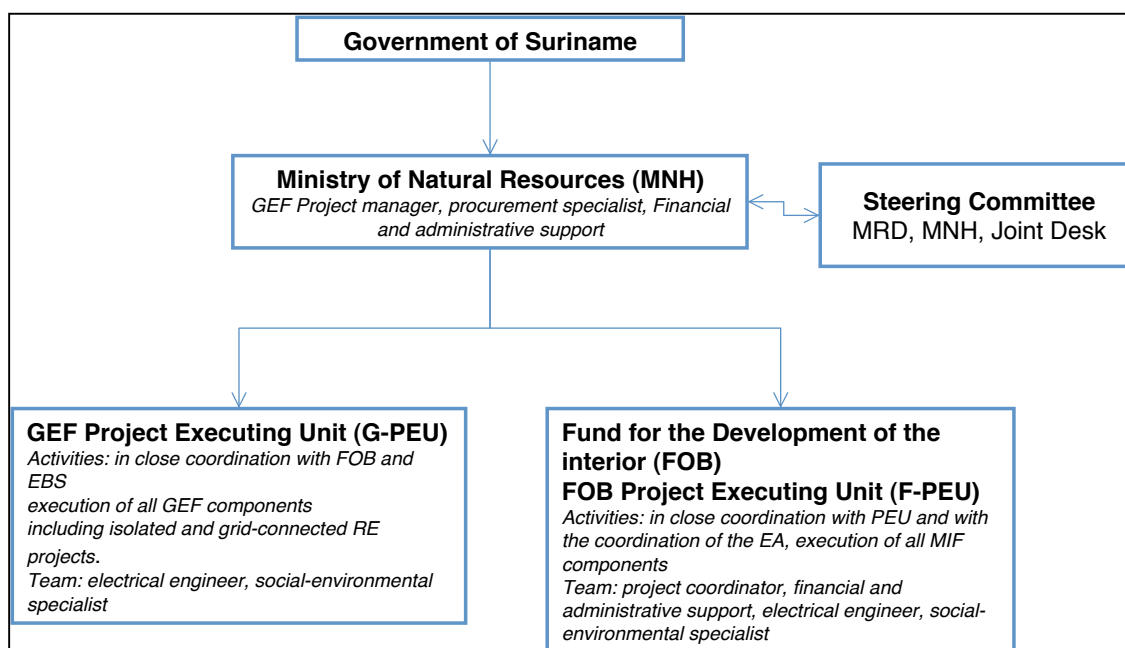
V. Executing Agency and Mechanism

A. Executing Agency

- 5.1 The Executing Agency will be F.O.B., the Fund for the Development of the Interior. In Suriname, the Ministry of Natural Resources, MNH, is responsible for the development and execution of the country's energy policy. But because the interior of the country is not connected to the national grid and many villages cannot be reached by road, these areas are identified as rural and their development belongs to the domain of the Ministry of Rural Development. The F.O.B. is a public foundation operating under the Ministry of Rural Development whose goal is to improve the socio-economic conditions of the people living in the interior.
- 5.2 The Board of the F.O.B. consists of seven persons: four government representatives, one representative of the indigenous communities, one representative of the Maroons and an NGO representative. All interests of the heterogeneous population are represented. The bureau consists of a director, a community development expert, three regional coordinators (indigenous, Eastern Maroons, Maroon Mid/West), a financial manager, a technical manager, an office manager, a financial assistant and a logistics assistant. Counting on these resources, the F.O.B. has implemented a total of 8 basic services projects in the country, in sectors such as water or energy.
- 5.3 The organization is its knowledge and capacity in working with Suriname's rural areas and in particular with Maroon communities. F.O.B. lacks technical expertise in the development of management models and experience in working with IDB/MIF projects. Thus, support and close guidance will be needed from MIF and the Ministry of Rural Development.

B. Executing Mechanism

- 5.4 This project is linked with the operations of IDB/GEF referred to in paragraph 4.2. The IDB/GEF operations will be implemented through the Ministry of Natural Resources (MNH). Due to the deep experience of F.O.B. with indigenous communities, the MIF will partner with F.O.B. to implement the activities under this project, including all necessary in communities.
- 5.5 **Project Execution Unit.** A project execution unit will be created in F.O.B., which will operate under the Project Implementation Unit in the MNH for the related GEF/IDB operations. Ongoing coordination among the entities will be critical as activities roll out in parallel with one another. The Government of Suriname has agreed to the structure shown below.



- 5.6 **Disbursement by results.** Project disbursements will be contingent upon verification of achievement of milestones, which will be agreed upon between the Executing Agency and the MIF. Achievement of milestones does not exempt the Executing Agency from its responsibility of reaching the logical framework's indicators and project's objectives.
- 5.7 According to the Performance and Risk-based Project Management approach, disbursement amounts will be based on the project's liquidity needs, for a maximum period of 6 months. These needs must be agreed upon between the MIF and the Executing Agency and will reflect the activities and costs scheduled in the annual planning exercise. The first disbursement will be issued upon achievement of Milestone 0 (conditions prior) and subsequent disbursements will be issued as long as two conditions have been met: i) MIF has verified that milestones have been achieved, as agreed to in the annual plan; and, ii) that the Executing Agency has justified 80% of all cumulative advances. The modality and periodicity can be modified by MIF in based to the results of

previous revisions and posterior institutional assessments performed during the implementation of the project.

- 5.8 **Procurement and Contracting.** For the procurement of goods and contracting of consulting services, the Executing Agency will apply IDB policies (GN-2349-9 and GN-2350-9). Given that the Diagnostic of Executing Agency's Needs (DNA) generated a low level of need/risk classification, the team has indicated that according to the Appendix 4 of the referred IDB policies, the Executing Agency will use its own procurement policies when compatible with those of the Bank. In addition, the review of procurement and contracting processes for the project will be conducted ex post and on an annual basis (<http://mif.iadb.org/projects/prjrisummary.aspx?proj=SU-M1019>). Before project contracting and procurement begins, the Executing Agency must submit the project Procurement Plan for the MIF's approval, which will require updating annually and when there is a proposal for change in the methods and/or the good or service to procure. The modality of reviews can be changed in based to the performed reviews and the institutional assessments performed during project implementation.

VI. Monitoring, Evaluation, and Knowledge Return (KSC)

A. Monitoring and Evaluation

- 6.1 MIF staff in the IDB Country Office of Suriname will be responsible for the monitoring and supervision of the project, including processing disbursements. They will be assisted by the project design team. The Supervision Team and the Executing Agency will develop an Annual Operating Plan for each calendar year of project execution. This will outline targeted results for the year derived from the project's logical framework, and a schedule of planned activities, including expected dates for achievement of the agreed milestones, and projected procurement and disbursements linked to the achievement of these milestones. The Annual Operating Plan for each calendar year will be agreed with the IDB ENE, GEF, MNH, MRD and MIF and Executing Agency.
- 6.2 **Project Status Reports:** The Executing Agency will be responsible for presenting Project Status Reports (PSRs) to the MIF within 30 days after the end of each semester, or more frequently and on such dates as the MIF shall determine, by providing at least sixty (60) days advance notice to the Executing Agency. The PSR will contain information on Project execution, achievement of milestones, and completion of Project objectives as stated in the logical framework and other operative planning instruments. The PSR will also describe Project issues encountered during execution and outline possible solutions. Within ninety (90) days after the end of the execution term, the Executing Agency will submit a final Project Status Report to the MIF, which will highlight results achieved, project sustainability, and lessons learned.
- 6.3 **Financial Supervision:** The Executing Agency will establish and maintain adequate accounts of its finances, internal controls, and project files systems, according to the financial management policy of the IDB/MIF. Given that the Diagnostic of Executing Agency Needs (DNA) generated a low level of need/risk classification in financial

management capacity, the reviews of supporting documentation for disbursements will be conducted ex-post with an annual frequency (<http://mif.iadb.org/projects/prjrissummary.aspx?proj=SU-M1019>). The IDB/MIF will contract independent auditors to carry-out the ex post reviews of the procurement processes as well as the supporting documentation for disbursements. The scope of these ex post reviews will include the analysis of the Financial Reports that the Executing Agency may need to prepare as part of its financial management. The associated costs will be financed with the MIF contribution, according to IDB procedures. During project implementation, the frequency of the ex post reviews of procurement and disbursements and the need for additional financial reports can be modified by the MIF based on the results presented in the ex post review reports conducted by external auditor.

- 6.4 **Evaluations.** The project will undergo three evaluations: one mid-term, one final and an impact evaluation. The first component of the project includes a baseline study at the start of the project. This baseline will be the basis for developing a monitoring and evaluation system that will include socio-economic indicators at the beneficiary level, the indicators established in the project's Logical Framework, as well as other relevant indicators to be tracked by the project. The mid-term evaluation will be carried out midway through the execution period, or at 50% of disbursements, whichever happens first. These evaluations will be process-oriented, ensuring that the project performs as planned, and providing recommendations for adjustments to the project plan, if necessary. The mid-term evaluation will primarily be a process evaluation and will assess, among others: (i) project progress and overall performance; (ii) the degree to which programmed activities were carried out and targets met, and progress with regards to the logical framework indicators; (iii) appropriate use of MIF funds; (iv) specific recommendations needed to improve compliance with the project's targets. The final evaluation, to be carried out at the end of execution or 95% of disbursements, whichever happens first, will focus to a greater extent on measurable results of the project, and any lessons learned or opportunities generated that might inform any future projects.
- 6.5 In addition, an impact evaluation will be carried out 3 years after project completion. The evaluation will be performed by the Development Effectivity Unit (MIF/DEU) of the MIF, in coordination with the Division of Energy of the IDB (IDB/INE/ENE). Through this evaluation, the socio-economic benefits and effects of accessing electricity in the communities of the interior of Suriname will be assessed. Specifically, it will be measure among other things: (i) increase in income of micro-enterprises and small business in the communities where RETs are installed; (ii) CO2 equivalent emissions reduction.

B. Knowledge and Strategic Communications (KSC) Strategy

- 6.2 **Audiences:** The relevant audiences for this project are primarily the Government of Suriname and local authorities, and the IDB group and GEF that aim to scale this approach at the country level and potentially apply it to other countries. Public and private service providers are also important actors for the delivery of electricity in rural isolated areas.
- 6.3 **Knowledge return:** This project aims at designing, testing and systematizing business models for RETs in rural areas with community participation. Results and lessons learned

from the demonstrative pilots will be taken into account for policy design and for other similar interventions in other countries.

- 6.4 **How learning will be captured, measured, used to reach target audiences, and applied to future projects:** Learning will be captured and measured through: (i) evaluations of the project, (ii) definition and monitoring of performance metrics for each of the business models, (iii) development guidelines on each of the business models and methodology to put them into place, which will involve focus groups with clients and potentially other media documentation, (v) fact-sheet of potential energy investment opportunities in rural Suriname, (vi) peer-to-peer exchanges among project partners; and (vii) regional workshop at the end of the project.

VII. Program Benefits and Risks

A. Program Benefits and Development Impact

- 7.1 Successful execution of the project is expected to produce the following benefits:
- (i) At least 10,000 low income people in the interior of Suriname, primarily belonging to Maroons and Amerindian groups, will have sustainable and reliable access to energy through RETs.
 - (ii) Solar PV systems and small hydro facilities are providing at least 1.7 MW in villages of the interior of the country, and are fully operational at the end of the project.
 - (iii) At least 80% of the installed systems are operated, maintained and managed in an economically sustainable way and with cost-recovery methods in place.
 - (iv) Two business models adopted by the Government of Suriname and reflected in the policies supporting O&M and the management of RETs in rural areas.
 - (v) At least 20% of those in training of trainers being women.
 - (vi) At least a 20% increase in the income of micro-enterprises and small businesses in the communities where RETs are installed.
 - (vii) At least 110,800 tons CO₂-equivalent emissions reduced (total GHG reduction for rural electrification demonstrative projects).
- a. **Target Beneficiaries.** Direct beneficiaries of the project include: 1) at least 10,000 people from villages in the interior of Suriname, mainly belonging to the Maroons and Amerindian groups.

B. Risks

- 7.2 The identified risks for the project are:
- a) A lack of political commitment for the development and implementation of RETs. This project forms part of a base project in collaboration with IDB and GEF. The

Government of Suriname, supported by the IDB, is pursuing the development of a Sustainable Energy Framework for Suriname.

- b) A lack of local technical capacity for the O&M activities necessary to operate the RETs technologies and for project implementation. The installed systems will require daily O&M activities, which will mainly be done by people from the communities. The project includes technical training to selected local population, and a supervision system so that local technicians can rely on support from experts. In addition, selected community members will be contracted for the installation activities so that during this process so that they may acquire knowledge of the installed systems.
- c) A lack of interest in the population for the new electricity facilities, and a lack of community participation and reluctance to pay for the services offered. Currently, the communities are receiving electricity from a diesel generator and although the service is only offered 4 to 5 hours a day, the fees the communities pay are very low as most of the cost of the fuel is subsidized by the Government of Suriname. When defining the management models, financial sustainability of the facilities will be a key aspect so that cost-recovery systems are put into place. It is expected there will be some increase in the necessary fees. This risk is mitigated through many of the components included in this project: involving the community in all the project cycle increases the sense of ownership of the systems installed, project awareness campaigns to increase the understanding of the need to pay, and availability of reliable electricity.
- d) A lack of necessary support to the new management entities created from the local and national authorities and lack of regulatory framework so that the management entities are entirely recognized in the country. This project forms part of a base project and it's expected that results will serve as input for policy development.

VIII. Environmental and Social Aspects

- 8.1 Based on the IDB Environment and Safeguards Compliance Policy, the relevant CESI classification for this Project is Category 'C'. The Committee on Environmental and Social Impact (CESI) reviewed the operation on May 1, 2012, and gave its clearance without further review or action needed.