Document of the Inter-American Development Bank

**Cooperative Republic of Guyana**

**Energy Matrix Diversification and Institutional Strengthening of the Department of Energy (EMISDE)**

**(GY-L1066)**

**Analysis of Compliance with the Public Utilities Policy**

(PUP)

This document was elaborated by: Jaime Sologuren (ENE/CGY) Team Leader; Gerard Alleng (CSD/CCS) Co-Team Leader; Leopoldo Montanez; Javier Cuervo, Rodrigo Aragón, Augusto Bonzi, Cecilia Seminario (INE/ENE); Emily Brearley (CCB/CGY); Lenin H. Balza (INE/INE); Andrea Gaviano (VPS/ESG); Leticia Ramjag (CCB/CGY); Ivan Gaviria and Paula Louis-Grant (FMP/CGY); and Louis-Francois Chretien (LEG/SGO).

**Energy Matrix Diversification and Institutional Strengthening of the Department of Energy (EMISDE)**

**(GY-L1066)**

**Analysis of Compliance with the Public Utilities Policy**

**(GN-2716-6)**

1. **OBJECTIVES**

This document presents an analysis of the Energy Matrix Diversification and Institutional Strengthening of the Department of Energy (EMISDE) regarding the objectives, principles and conditions of the Public Utilities Policy (GN-2716-6).

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| **Policy objectives**  **(GN-2716-6)** | **Description** | **Comments** |
| **Objective:** The promotion of access to and the increased efficiency and quality of public utilities will require that the Bank’s actions aim to: | | |
| **Promote access to the service by the entire population** | Promote Access to the Service by the entire population, including the most disadvantaged communities and groups, in both urban and rural areas. | The power sector is Governed by the Electricity Sector Reform Act (ESRA) of 1999, which assigns the overall responsibility for administration, high level policy formulation and regulatory functions to the Office of the Prime Minister (OPM). In keeping with its mandate to promote improved electricity access to hinterland communities, the Hinterland Electrification Unit (HEU) was established within the OPM. The HEU is directly responsible for the implementation of Government of Guyana’s (GoG) Rural Electrification Strategy, which involves the identification, design and execution of electrification projects in hinterland communities. These projects are also aligned with GoG’s Low Carbon Development Strategy (LCDS).  The Unserved Areas Electrification Program (UAEP), funded by the IDB launched in 2002 and completed in November 2010 contributed to the establishment of over 40,000 new service connections to the national grid, primarily to previously unserved low- income areas. Additionally, the program contributed to improved quality of life for approximately 15,000 residents of hinterland communities through rural electrification projects utilizing solar photovoltaic (PV) systems.  As part of GoG’s Hinterland Electrification Program, an initiative to install approximately 11,000 solar PV systems in an estimated 200 hinterland communities has been recently completed by the HEU.  The hinterlands are rural townships representing about 20% of Guyana’s population but 85% of Guyana’s territory. The hinterlands are comprised mostly by indigenous populations such as the Amerindians. Three of the largest townships in Guyana are Bartica (population 15.000), Lethem (population 5.000) and Mahdia (population 4.200). Electricity generation in the hinterlands is supplied mostly by centralized community scale diesel generators using imported fuel, the services are coordinated by HECI and operated by the respective government owned utilities. Electricity supply in Lethem and Mahdia is provided by respectively by Lethem Power Company (LMPC) with six diesel units with an installed capacity of 3.825 MVA, and Mahdia Power and Light Inc. (MPL) with an installed capacity of 1.2 MW. The exception to local utilities it in Bartica where GPL operates the local system with an installed capacity of 4.4 MW.  In 2005, the GoG created the Hinterland Electrification Program (HEP) aiming at promoting socio-economic development through the supply of reliable and affordable electricity to some hinterland communities promoting the use of solar photovoltaic (PV) installations[[1]](#footnote-1). The GoG has also introduced small solar systems for social services such as in health and education facilities. More recently, the GEA, in coordination with the HECI, is developing mini-hydro and micro-solar PV grid systems, partly in collaboration with the IDB[[2]](#footnote-2). Despite these initiatives, the hinterland electrification remains a challenge to the GoG to improve energy security and affordability to these rural communities. It is against this backdrop that the Guyana’s Green State Development Strategy[[3]](#footnote-3) that is currently being finalized includes as one of its priorities the “commitment to providing energy access to all the populations, and acceleration of the development of distributed energy to hinterland communities”.  The operation will contribute to address the energy diversification policy goals by investing in solar technology in three townships, financing the installation of three PV tied minigrid‑ systems in Bartica (1.5 MW), Lethem (1 MW), and Mahdia (0.65 MW), totaling 3.15 MW. In addition, component 1 will implement a 2 Mega-Watt-hour storage capacity to meet the increasing demand. Hence, it will help to ensure that universal access is maintained.  The installation of solar PV systems will partially displace the utilization of fossil fuel generation, and therefore make significant contribution to climate change mitigation with the reduction of CO2 emissions. The PV mini-grid will also improve the reliability and extend availability of power supply for longer periods of the day during the rainy season. |
| **Deliver a reliable, quality Service** | Ensuring that the service provided to the user meets minimum quality and reliability standards that are viable and consistent with a cost-benefit or cost-efficiency analysis, in keeping with the nature of the service and the supply conditions. | The regulatory framework of the sector establishes that, through Paragraph 16 of the License to Supply Electricity for Public Purposes, granted to GPL (ESRA 1999) and the Amendment to the License of October 4, 2010, the utility is required to strive for, and maintain operating standards and performance targets in accordance with the Second Schedule of the License.  The Public Utilities Commission (PUC) is the regulatory and enforcement body charged with ensuring compliance with the established regulatory framework.  Reliability of an electricity system is an essential condition to the development of any country and is particularly relevant to those facing a growing demand. The establishment of system stability to respond to fluctuations in demand is a basic activity conducted by any Power Utility. The DBIS system requires immediate investments in new transmission infrastructure to mitigate the high operational risks of the system. Such investments will be critical to ensure reliable power flows from the main generation infrastructure to the main load centers. With electricity demand in Guyana expected to continue growing in the next decade, the reliability of the DBIS transmission infrastructure will be further stressed.  Component 2. of the loan will support investments to reinforce reliability of the transmission infrastructure of the DBIS with: (i) reinforcements of the new Sophia substation; and (ii) investments in transmission system redundancy. The former represents an important development in preparing the system for integration of future generation infrastructure, whether is natural gas or renewables, and projected load growth, while the latter will contribute to improvement in overall system reliability. Both initiatives will facilitate compliance with the international standards of N-1 criteria commonly implemented in utilities. This component will complement the current operation (GY-L1041) that aims to reduces technical and commercial losses with the rehabilitation of 830 KM of distribution network |
| **Deliver a service efficiently** | Deliver a service efficiently in terms of supply, while seeking to deliver the service at the least possible cost. | Component 2 will support investments to reinforce reliability of the transmission infrastructure of the DBIS with: (i) reinforcements of the new Sophia substation; and (ii) investments in transmission system redundancy. The former represents an important development in preparing the system for integration of future generation infrastructure, whether is natural gas or renewables, and projected load growth, while the latter will contribute to improvement in overall system reliability to deliver the services efficiently and in a cost-effective manner. |
| **Create suitable incentives for service demand** | Create suitable incentives for service demand, so users make use of the services in a manner consistent with their economic, financial, and environmental sustainability | In accordance with Chapter 7 of Guyana’s National Development Strategy (Energy), paragraph 7.III.2 the specific objectives of the sector include ensuring that energy is used in an environmentally sound and sustainable manner and in addition, encouraging, through public awareness programs and incentives, energy conservation practices.  The off-grid solutions using solar technologies will contribute to the sustainable economic development of the townships. In Lethem, the component will contribute to reliable electricity supply to the expanding needs of power supply in the township, attending the large population of indigenous people. Lethem is located on the border between Brazil and Guiana with its economic activity based largely on commerce between the two countries. Many warehouses and retail businesses recently developed will also benefit by more reliable and affordable electricity services. In Bartica, the new power supply will contribute to the “Green Bartica Plan” that involves a holistic approach to sustainable economic growth in the township, and climate resilience. Bartica’s main economic activities stem from the extractive industries such as mining and logging, as well as commerce. Finally, in Mahdia, component 1. will support the commercial activities in the areas of gold and diamond mining with a recent population boom in the community. In total, approximately more than 24,000 residents, largely comprised of indigenous Amerindians, will have access to more reliable and affordable energy in the targeted townships. |
| **Objective:** The scope of the sustainability of the public utilities will be promoted based on three pillars: | | |
| **Financial sustainability** | Ensuring that there are sufficient revenues from provision of the service to the user, with the community contributions and direct contributions from the government, to cover the efficient costs of service delivery. | The economic evaluation of GY-L1066 shows the viability of the investments due that the economic indicators under a Cost-Benefit analysis are positive.  The benefits of the program are based mostly on: (i) cost savings of the solar generation in the hinterlands compared to use of light-fuel oil (LFO); (ii) reliability improvements in DBIS with the transmission reinforcements; (iii) reduction of electricity transmission losses in DBIS; and (iv) additional electricity consumption associated to voltage normalization with the new reactive compensation. The evaluation included also a sensitivity analyses with changes in the main parameters, considering a 20% adverse variation in seven main variables. The sensitivities yielded similar results and led to similar conclusions regarding the economic robustness of the Program. |
| **Environmental sustainability**: | Helping ensure that the selection, execution, operation, and maintenance of the service delivery projects comply with the Bank’s environmental safeguards and contribute to the development of resilient infrastructure, considering viable alternatives to mitigate climate change. | The program was categorized as category B, with local impacts of short duration, and effective measures to mitigate such impacts are already in progress.  An Environmental and Social Impact Assessment was prepared for the overall expansion of the T/L, disclosed on Bank’s website (June 2018), and consulted (November??? 2018) during project preparation, thus fulfilling requirements of directives B.5 (Environmental Assessment Requirements) and B.6 (Consultations) of OP-703. |
| **Social sustainability**: | Helping increase access to the service and providing mechanisms to consult with the community on pertinent aspects of service delivery. | The operation in execution is monitored by the IDB and did not show non-compliances with IDB Environmental and Social Safeguards Policies to date.  Consultation with the communities on pertinent aspects of service delivery will take place for every project were carried out according to IDB social policies and standards.  The Environmental and Social Management Report (ESMR) will have a dedicated strategy to manage environmental and social risks. The Bank will ensure that proper consultation with the community on pertinent aspects of service delivery takes place for every project. |

1. **PRINCIPLES**

The Policy is based on the following principles that will guide the design and supervision of the Bank’s Operations.

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| **Policy principles**  **(GN-2716-6)** | **Description** | **Comments** |
| **Supporting the countries to address basic access needs** | The expansion of access to public utilities at affordable prices is necessary in the region, especially in less developed countries and rural areas in all countries. Access to public utilities is essential to contribute to poverty reduction and promote inclusive development. The Bank will support the development of sustainable systems that use the combination of cost-efficiency and the most appropriate technology solutions, given the characteristics of the demand and the public utility, to address the access needs of the population, both urban and rural. | The program through Component 2 will finance investments to improve reliability of the transmission infrastructure of the DBIS in the Kingston – Sophia transmission section with: (i) reinforcements of the new Sophia substation; and (ii) investments in transmission system redundancy.  The investment represents an important development to improve system reliability and to prepare the grid for integrating future generation infrastructure, whether is natural gas or renewables |
| **Promoting integrity, transparency, and accountability.** | Bank-financed operations will drive basic institutional arrangements, so the region’s countries adopt measures that promote integrity and increase transparency in the delivery of public utilities services, in order to improve accountability and strengthen the observance of users’ rights. To this end, the Bank will make greater efforts to have its operations contribute to the development of good governance systems among public and private stakeholders. Moreover, this Policy recognizes that the weakness of public statistical data and the scarcity of private statistical data are factors that often hinder adequate responses to basic questions on infrastructure investment needs, service provider performance, and rate structure and evolution. Therefore, the Bank will promote targeted transparency, considering users’ information needs, the most effective way in which information should be made available, and the best channels for its distribution. | Guyana has never been an oil producer. The oil discovery has massive implications for Guyana’s economic development. It represents a tectonic shift in Guyana’s development trajectory. While the main direct effect of the oil sector on the domestic economy will be through fiscal revenue, if well managed, it can certainly boost the overall standard of living of the people of Guyana.  This program will contribute to promote integrity, transparency, and accountability with the execution of Component 3 that will finance activities to strengthen the newly created Department of Energy, namely: (i) high level training and coaching of government staff: the work will strengthen the GoG’s ability to manage the oil and gas sector effectively and efficiently including direct actions in capacity development and best-practice organizational structure for the staff[[4]](#footnote-4) of the Department of Energy under the Office of the Presidency; and (ii) design of a new oil and gas legislative and regulatory frameworks that are urgently needed in Guyana considering that the country has no experience in the upstream activities. The design of this framework will consider international references and benchmarks and lessons learned from developing countries that have initiated activities with no prior experience in the sector, especially regarding contract management. Therefore, this component will support the GoG improve the competitiveness and productivity of the nascent oil and gas sector in Guyana. |
| **Analyzing the characteristics and impacts of subsidies**. | The operation and financing of the services addressed by this Policy should efficiently recover service delivery costs through rates charged to users. However, this Policy acknowledges that, occasionally, financial sustainability can be achieved by supplementing the revenues earned through rates charged to users for the service with contributions from the community and direct government contributions. Where subsidies are granted, the Bank will promote both their transparent allocation and use, subject to frequent, effective accountability mechanisms. Such mechanisms will include: (i) identification and analysis of sources and beneficiaries of the subsidies; (ii) analysis of the distributive incidence of the subsidies; and (iii) quantification of the subsidy relative to macroeconomic indicators (for example, gross domestic product, total public sector expenditures) used by the Bank or by the level of government granting the subsidies to report on their fiscal sustainability. In cases where rate subsidies are granted, the Bank will promote their targeting toward the most vulnerable and lowest-income groups. In addition, to the extent possible, the Bank will help countries replace rate subsidies for public utilities with income transfer mechanisms that are more direct and targeted toward the lowest-income population segments. | Not applicable. |
| **Separating institutional roles to improve sector governance.** | Experience shows that the most effective organization for the sectors to achieve this Policy’s objective is the separation of the roles of policy-maker, regulator, and service provider. In this context, the sector authority retains responsibility for policy-making and planning, the public agencies determine and oversee compliance with the regulatory system, and public or private entities are assigned responsibility for providing the service. This Policy recognizes, nonetheless, that the institutional organization cannot follow a single model, but must be adapted to the specific features of each sector and country. In several of the region’s countries, responsibility for policy-making, regulation, and delivery of public utilities is based at the local (provincial or municipal) level. In these cases, where it is not necessarily optimal to separate the roles of policy-making and regulation, the Bank will promote homogeneous regulation, with adequate minimum quality parameters, rate-setting principles supervision and control mechanisms. It will also help develop institutional mechanisms that strengthen appropriate management in the framework of local legislation. | The institutional framework in Guyana separates roles and responsibilities of sector agencies. The overall responsibility for administration and high level policy formulation is assigned to the OPM, while the PUC has a regulatory and enforcement role.  The GEA advises the OPM on the development and implementation of the national energy policy. It was established in 1997, under the purview of the Ministry of Public Infrastructure (MoPI) and is responsible for fostering harmonization, increased monitoring and enforcement of regulations. Currently GEA is developing a national energy policy and provides all policy support to the Ministry. GEA is also in charge of the development of the projects for the provision of sustainable energy in the interior and main townships in coordination with the Hinterland Electrification Company Inc. (HECI).  GPL is the principal entity licensed to supply electricity for public purposes in Guyana. It is the state-owned vertically integrated utility whose operations comprise generation, transmission and distribution. More than 80% of the country’s population is in their operating areas.  The laws governing the sector are (i.) The ESRA 1999, (ii) The PUC Act 1999 (PUCA) and (iii) The Guyana Energy agency Act 1997 (GEAA).  The program will promote the strengthening of the GoG management capabilities and the implementation of international best practices by supporting the creation of a fully functional Department of Energy with the required capacity to manage the oil and gas sector. Responsibility of the oil and gas sector has been transitioned from the Ministry of Natural Resources (MNR) to the recently created the Department of Energy (DE). The Department of Energy operates under the Ministry of the Presidency and it oversees the upstream activities of oil and gas. The detailed scope of work and mandate of the DE is currently under development and foresee that the activities previously under the MNR are now being planned to be transferred to the DE.  Investments of Components 1 and 2 will improve the quality and reliability of electricity service to customers in keeping with the standards enforced by the PUC. |
| **Establishing the most appropriate sector structure given the characteristics of the Service and the objective of the Policy.** | Experience in reform processes and management changes in Latin America and the Caribbean shows that good or bad performance by public utilities providers is not necessarily explained by the type of ownership (public or private), or by the sector’s structure (monopoly or competitive). For that reason and considering the heterogeneity of markets and services in the region, this Policy does not promote a single sector industrial organization for the delivery of public utilities, and emphasizes that regardless of the management model used, there must be good governance practices and a clear, predictable, stable regulatory framework that encourages efficiency and investment. | The power sector in Guyana is governed by the Electricity Sector Reform Act (ESRA) of 1999, which assigns the overall responsibility for the sector to the Office of the Prime Minister (OPM). Other key stakeholder institutions within the electricity and energy sector are: (i) Guyana Power and Light, Inc. (GPL); (ii) the Public Utilities Commission (PUC); the Guyana Energy Agency (GEA); and (iii) the Government Electrical Inspectorate (GEI).  The overall administration, high-level policymaking and regulatory functions of the electricity sector is assigned to the Ministry of Public Infrastructure (MoPI). The MoPI is the ministry with direct responsibility for the electricity sector, and as part of that mandate it also participates in the oversight of the operations of the state-owned utility GPL and other smaller public electricity operations in the hinterland under HECI. The MoPI also undertakes renewable energy projects related to improved energy access in hinterland areas through its Hinterland Electrification Company Inc. (HECI) with support from the GEA. The MoPI also has the oversight of Public Utilities Commission (PUC) and the Government Electrical Inspectorate (GEI).  GPL is a state-owned utility which is also the principal public supplier of electricity in Guyana. Its license encompasses all three counties of Demerara, Berbice and Essequibo and its operations comprise generation, transmission and distribution. With an installed nominal generating capacity of 148-MegaWatt (MW) and approximately 666-GigaWatt-hour (GWh) of electricity delivered annually, GPL supplies electricity to roughly 176,000 customers, mainly in the coastal zone.  The mandate of the GEA is outlined in the Guyana Energy Agency Act 1997, Guyana Energy Agency (Amendment) Act 2004, Guyana Energy Agency (Amendment) Act 2005 and the Petroleum and Petroleum Products Regulations 2004. The GEA is responsible for energy policy development and the promotion of efficient management of energy while also promoting the development and utilization of alternative energy sources.  In addition to supporting the OPM with the energy policy development the agency also provides the OPM with technical support for the implementation of hinterland electrification projects. Its mandate also extends to carrying out energy related research and to monitoring the performance of the local energy sector.  The Public Utilities Commission was established through the Public Utilities Commission Act No. 26 of 1990 which was subsequently amended and at present is operating under Act No. 10 of 1999, the Commission presently consists of a Chairman, who is a full time official, and three other Commissioners, who are appointed and serve on a part-time basis. The general functions of the Commission are regulatory, investigatory, enforcement and such others as stipulated in the Act. It also has the power to initiate and conduct investigations into the operations and standards of service of any public utility under its purview. The Public Utilities Commission is not involved in policy matters but may be called upon to act in an advisory capacity to the Minister responsible for utilities on such matters concerning the utilities as are referred to it by the relevant Ministers.  For Component 3, the recent established Department of Energy is a great effort to bring structure, discipline to Guyana’s electricity sector. Responsibility of the oil and gas sector has been transitioned from the Ministry of Natural Resources (MNR) to the recently created the Department of Energy (DE). The Department of Energy operates under the Ministry of the Presidency and it oversees the upstream activities of oil and gas. The detailed scope of work and mandate of the DE is currently under development and foresee that the activities previously under the MNR are now being planned to be transferred to the Department of Energy. |
| **The role of economic regulation in creating incentives for efficient, investment, and protection of users’ rights.** | The adoption of an effective regulatory system tailored to the specific conditions of each sector in each country is a key factor for achieving the Policy’s objectives. A regulatory system should help reduce the capital cost of service providers, encourage investment, set service quality standards, and allow service providers to obtain sufficient revenues to be financially sustainable. The selection of the most appropriate institutional instrument for the specific conditions of the country and the service is of the utmost importance for the effectiveness and sustainability of the regulatory process. This instrument may take various forms, from regulation by contract to more complex methods that require the creation of a multisector regulatory body or even a specific one for each service. The probability that economic regulation will contribute to achieving the Policy’s objectives increases with the degree of independence, autonomy, and transparency of the regulatory institutions and processes.  The promotion of users’ rights should be a core objective of the service regulation process. Thus, regulation should ensure that the efficiency gains achieved over time by the service providers are passed on to the users through rate reductions or improvements in service quality. For this to happen, it is essential to prevent the abuse of dominant market power by the provider and strictly apply the standards for quality of service. Regardless of the sector structure and institutional regulation model selected by each country, the Bank will provide assistance in developing information systems that show policy-makers and users the structure and cost and rate levels at all stages of service production. | Part IV 25 (1) of the PUC Act (Service and Facilities) stipulates that public utilities are required to provide an efficient service of an adequate quality and standard. The rights of the customer to such service are also established under 25 (2). These requirements are clearly aligned with the Bank’s Policy.  Components 1 and 2 of the program are intended to improve the quality and reliability of electricity service to customers in keeping with the standards enforced by the PUC. |
| **Creating the proper conditions so private participation in public utilities service delivery is a viable option.** | This Policy recognizes that competition has the potential to increase productive efficiency and quality of service. In markets where production technology does not exhibit characteristics specific to natural monopolies, market competition can be generated by allowing several companies to offer services simultaneously. When the markets are natural monopolies, competition for market can produce the same results as competition in the market, as long as the process of selection and regulation of the company providing the service is open and effective. The Policy also recognizes that private participation (in any of its manifestations, including management contracts, concessions, or mixed-ownership enterprises) is a key tool for closing gaps in the quantity and quality of utilities in the region. Attracting private participation to the services covered under this Policy and maximizing its impact on efficiency gains in service management depends on the existence of a macroeconomic context that favors investment and credit, a clear, stable institutional and regulatory framework, and economic conditions that reduce capital cost and allow for reasonable returns on investment. In those cases where the countries consider that competition and implementation of public-private partnerships are suitable mechanisms for promoting the expansion of the supply and enhancing the quality and efficiency of public utilities services, the Bank will provide assistance in strengthening the institutional and legal framework and in developing rules and mechanisms that encourage the participation of enterprises under equal conditions. | Paragraph 7.IV.1 of The National Development Strategy alludes to fiscal incentives, to encourage investment in the energy sector, particularly in locations away from the coast.  Power Purchase Agreements with private renewable energy generators form part of GoG’s policy to address GPL projected generation short falls given the growth in electricity demand. |
| **Strengthening the management of infrastructure used for public utilities service delivery** | Increasing the supply of infrastructure is not always the most efficient solution in response to growing demand for public utilities. Diagnostics often encourage building more infrastructure over promoting optimal use and management of existing assets, in order to increase the supply and quality of public utilities services, thus avoiding sub-optimal investments. The most pertinent spheres of action for optimizing infrastructure management are: (i) encouraging efficiency in business management; (ii) developing and implementing appropriate, stable asset maintenance policies; and (iii) optimizing the use of the infrastructure through incentives for demand. Policies to drive demand through the setting of standards or the establishment of price incentives (including congestion charges and peak and off-peak rates) have the potential to change consumption patterns while increasing the availability of infrastructure services. Optimization of infrastructure use through price mechanisms not only allows cost savings but can also contribute to environmental sustainability by creating incentives to conserve, and therefore reduce emissions and adverse impacts on ecosystems. When establishing price incentives and changing rates, it is highly advisable to rigorously analyze their distributive incidence among the various types of users, in order to report on possible impacts on social inclusion. | Not applicable. |
| **Promoting innovation to foster efficiency, access, and environmental sustainability** | Technological advances make it increasingly possible to design targeted solutions to meet the demand for infrastructure services. Photovoltaic power generation, micro-hydroelectric generators, and waste separation plants for recycling are examples where technology fulfills the dual role of increasing the supply of services and contributing to environmental sustainability through the development of a lower-emissions offering. The adoption of the latest technologies can also help reduce service delivery costs, for example, through technical and nontechnical loss detection in water and power distribution. Moreover, technological innovations such as smart meters, have the potential to reduce utilities consumption during periods of high demand. This Policy highlights the role of technology for increasing access with cost-effective solutions, reducing maintenance costs, and managing consumption, while avoiding unnecessary investments in increased capacity. The Policy recognizes that the Bank will help disseminate information on the adoption, financing, and systems for management of the most appropriate technology solutions for each particular combination of public utility and demand characteristics. . | Component 1 of the program contributes to the energy diversification policy goals of the GoG by financing the investment in solar technology in three townships, financing the installation of three PV tied mini-grid systems in Bartica (1.5 MW), Lethem (1 MW), and Mahdia (0.65 MW), totaling 3.15 MW. In addition, the component will finance the implementation of a storage capacity to manage intermittence of these sources. Considering that characteristics and needs of each township are different, the new generation plants will have tailored generation system solution to meet their current and future demands. The installation of solar PV systems will partially displace the use of fossil fuel for electricity generation, and therefore make significant contribution to climate change mitigation with the reduction of CO2 emissions. The PV mini-grid will also improve the reliability and extend availability of power supply for longer periods of the day during the rainy season.  Component 2 contributes to improve reliability of the transmission infrastructure of the DBIS in the Kingston – Sophia transmission section with: (i) reinforcements of the new Sophia substation; and (ii) investments in transmission system redundancy.  The first solution consists of the installation of a reactive compensation system at the New Sophia substation. The system will increase the power transfer capability by enhancing voltage stability and maintaining a smooth voltage profile under different network conditions.  The second solution incorporates the international standards of N-1 criteria commonly implemented in utilities. This will allow the system to operate and reduce outages due to eliminating the need of emergency maintenance and rather have schedule maintenance plans.  These investments represent an important development to improve system reliability and to prepare the grid for integrating future generation infrastructure, whether is natural gas or renewables.  Component 3 contributes to foster innovation by carrying out activities aimed to strengthening the newly created Department of Energy: (i) high level training and coaching of government staff: the work will strengthen the GoG’s ability to manage the oil and gas sector effectively and efficiently including direct actions in capacity development and best-practice organizational structure for the staff[[5]](#footnote-5) of the Department of Energy under the Office of the Presidency; and (ii) design of a new oil and gas legislative and regulatory frameworks that are urgently needed in Guyana considering that the country has no experience in the upstream activities. The design of this framework will consider international references and benchmarks and lessons learned from developing countries that have initiated activities with no prior experience in the sector, especially regarding contract management. Therefore, this component will support the GoG improve the competitiveness and productivity of the nascent oil and gas sector in Guyana. |

1. **CONDITIONS**

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| **Policy conditions**  **(GN-2716-6)** | **Description** | **Comments** |
| **Financial sustainability** | For each operation, it will be verified that the relevant service will generate or receive sufficient funds to meet its financial commitments and cover the operating and maintenance costs of the systems related to the operation.  When a Bank operation involves contributions of budgetary funds to subsidize the provision of a public utility service, it will be verified that:   1. the budgetary allocation of such contributions is transparent; and 2. its purpose corresponds with one of the following objectives: i. Expansion of capacity to provide greater access; ii. Increase in the quality of the existing services; iii. Improvement in process administration and adoption of technology for the services to contribute to climate change mitigation or to the management of natural disaster risks.   When the budgetary funds represent rate subsidies, it will be confirmed that progress is made on the design and implementation of the subsidy targeting instruments that grant priority to the most vulnerable and lowest-income groups. | All the projects to be funded by the program are financially sustainable, since the program will be operated through public financial institution that will require that sub-projects are financially viable, which in turn also rely on a set of regulations on tariffs that ensure investments’ returns.  No specific subsidies to the beneficiaries of the program will be provided, and the tariff to be applied shall be those already in place by the regulatory framework.  The selection of the portfolio of projects to be financed by this operation went through a rigorous analysis of the economic-financial and technical viability to determine their sustainability, and a sensitivity analysis of their economic returns to changes in main parameters. |
| **Economic evaluation** | Public utilities projects will be economically viable in accordance with the cost-benefit and cost-effectiveness evaluation methodologies used and accepted by the Bank. | The Program has a cost-benefit economic evaluation, following the bank’s procedures that shows that it is viable, from an economic point of view. A sensitivity analysis was done assuming: (i) 20% variation in the additional investment costs; and (ii) a delay of 10 years in the use of the reinforced underground infrastructure to allocate new transmission capacity, and hence benefits associated to it. A sensitivity analysis was done considering a stochastic performance for the most relevant variables in investment costs, and sources of benefits, considering, until 20% in additional requirements of CapEx over the initial US$5.5 million added. |

1. Guyana REDD+ Investment Fund (GRIF) financed the Hinterland Electrification Program (HEP) 2011‑2014 where the government launches international processes to acquire the panels and installs the panels, sometimes supported (hiring) by local companies. From 2011 to 2014 11,000 65-watt photovoltaic solar home systems were installed under the HEP. By January 2015, 200 communities had benefited from the HEP. In addition, the government financed 6000 home systems in 2015. [↑](#footnote-ref-1)
2. GRT/FM-13897-GY supports a run of the river mini-hydro power plant where technical studies are ongoing (about 150 Kilo-Watt-KW). A geo-technical study is ongoing to rehabilitate another 800 KW mini‑hydro power plant and designs are developed for four solar PV mini-grids. [↑](#footnote-ref-2)
3. Framework of the Guyana Green State Development Strategy and Financing Mechanisms (2017). TO CONFIRM [↑](#footnote-ref-3)
4. The training, coaching and hiring of the staff for the sector will be done with a gender lens in mind, and gender balance in the assignment of the responsibilities will be recommended. [↑](#footnote-ref-4)
5. The training, coaching and hiring of the staff for the sector will be done with a gender lens in mind, and gender balance in the assignment of the responsibilities will be recommended. [↑](#footnote-ref-5)