



SUPPORT THE IMPLEMENTATION OF THE EBS INVESTMENT PLAN (SU-L1039; 3403/OC-SU)

Project Completion Report (PCR)

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Electronic Links

1. [Development Effectiveness Matrix \(DEM\)](#)
2. Changes to the Results Matrix – Non-Applicable. No changes along the project.
3. [Last Project Monitoring Report \(PMR\)](#)
4. [PCR Checklist](#)

Optional Electronic Links

1. [Ex post Economic Analysis](#)
2. [Final Project Evaluation](#)
3. [Minutes from Exit Workshop](#)
4. [PCR workshop presentation](#)
5. [PCR Project Pictures](#)

ABBREVIATIONS	
CBA	Cost Benefit Analysis
DMS	Distribution Management System
EA	Executing Agency
EAS	Energy Authority of Suriname
EBS	Energiebedrijven Suriname
EE	Energy Efficiency
ENIC	Electricity Nieuw Nickerie
ENS	Energy Non-Served
EMS	Energy Management System
EOP	End of Project
EPAR	Electricity Supply Paramaribo and Surroundings
ERP	Enterprise Resource Planning
ESMP	Social and Environment Management Plan Assessment
GIS	Geographic Information System
GOS	Government of Suriname
GWh	Giga Watt Hour
ICT	Information and Communication Technologies
IDB	Inter-American Development Bank
IPP	Independent Power Producers
IRR	Internal Rate of Return
kV	Kilo Volt
LAC	Latin America and the Caribbean
LED	Light Emitting Diode
MNH	Ministry of Natural Resources
MVA	Mega Volt Ampere
MW	Mega Watt
MWh	Mega Watt Hour
NFPA	National Fire Protection Association
NEC	National Electrical Code
OMS	Outage Management System
PEU	Program Executing Unit
PBP	Policy-Based Programmatic Loans
PCR	Project Completion Report
RE	Renewable Energies
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
SBP	Strategic Business Plan
SCADA	Supervisory Control and Data Acquisition
SEFS	Sustainable Energy Framework for Suriname
SEIA	Social and Environment Impact Assessment
S/S	Substation
ToC	Theory of Change

BASIC PROGRAM INFORMATION

^SU-L1039 Support for the Implementation of the EBS Investment Plan

Country Beneficiary Suriname	Loan Instrument Investment Loan	Borrower SU-SU - REPUBLIC OF SURINAME	Loan(s) 3403/OC-SU	Sector Energy	Sub-Sector Energy Sector Rehabilitation And Efficiency
Date of Board Approval Dec 17, 2014	Date of Eligibility for First Disbursement Dec 17, 2015	Date of Closure (CO) Mar 21, 2023	Loan Amount - Original 33,000,000.00	Loan Amount - Current 33,000,000.00	Pari Passu N/A
Total Project Cost 33,000,000.00	Months In Execution from Approval 99	Months In Execution from First Disbursement 87	Original Date of Final Disbursement Feb 09, 2020	Actual Date of Final Disbursement Dec 31, 2022	Cumulative Extension(Months) 34
Total Amount Disbursed 33,000,000.00	Total Percentage of Disbursement 100%				

^ Ratings of project Performance in PMRs



Has This Project Received Funds from another Project?

☐ Yes ☒ No

Has This Project Sent Funds to Another Project?

☐ Yes ☒ No

Development Effectiveness Classification

Highly Satisfactory

No	PMR Date	PMR Stage	Classification	Disbursement Percentage (As of Dec 31)
1	May 01, 2015	Second period Jan-Dec 2015	N/A	
2	Apr 14, 2017	Second period Jan-Dec 2016	Satisfactory	14%
3	Apr 19, 2018	Second period Jan-Dec 2017	Satisfactory	25%
4	Apr 22, 2019	Second period Jan-Dec 2018	Satisfactory	47%
5	Apr 14, 2020	Second period Jan-Dec 2019	Satisfactory	89%
6	Apr 30, 2021	Second period Jan-Dec 2020	Satisfactory	89%
7	Apr 25, 2022	Second period Jan-Dec 2021	Satisfactory	100%
8	Apr 27, 2023	Second period Jan-Dec 2022	Satisfactory	100%

^ Bank Staff



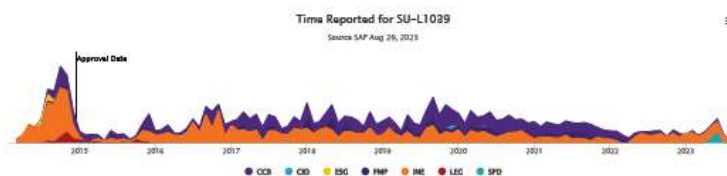
Positions	At PCR Mar 21, 2023	At Approval Dec 17, 2014
Vice-President VPS	Lopez, Benigno	Levy,Santiago
Vice-President VPC	Martinez, Richard	Rosa,Alexandre Meira
Country Manager	Alli,Tariq (CCB/CCB)	Johnson,Gerard S. (CCB/CCB)
Sector Manager	Yepez-Garcia,Rigoberto Ariel (INE/INE)	Nestor Roa (INE/INE)
Division Chief	Madrigal Martínez, Marcelino (INE/ENE)	Yepez-Garcia,Rigoberto Ariel (INE/ENE)
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Project Team Leader	Ballon Lopez,Sergio Enrique (ENE/CSU)	Echeverría Echeverría,Carlos Bladimir (ENE/CGY)
PCR Team Leader	Ballon Lopez,Sergio Enrique (ENE/CSU)	Ballon Lopez,Sergio Enrique (ENE/CSU)

^ Staff Time and Cost



Stage Project Cycle	# of Staff Weeks	USD (including Travel and Consultant Costs)
Preparation	29.2	152,704.15
Supervision	149.8	477,766.48
Total	178.9	630,470.63

^ Time



I. INTRODUCTION

A. Background

- 2.1 This document presents the Project Completion Report (PCR) of the program “Support for the Implementation of the EBS Investment Plan” (SU-L1039), financed by the Inter-American Development Bank (IDB) with a loan ([3403/OC-SU](#)) of USD 33 million to the Government of Suriname (GOS).

Diagnosis of the energy sector during the program preparation

- 2.2 The responsibility for energy policy and supervision of the sector is assigned to the Ministry of Natural Resources (MNH). Energiebedrijven Suriname (EBS) is a state-owned company under the supervision of the MNH. Since 1973, EBS operates the power system covering transmission, distribution, and commercialization of electricity.
- 2.3 As part of the EBS company’s directive to develop strategies and the identification of priorities, EBS issued its Strategic Business Plan 2011-2020 (SBP). The SBP set forth an overall corporate strategy, describing the operative environment and incorporating factors that can influence EBS’s strategic planning. The SBP identifies 6 strategic priorities: (i) reliable availability of power to meet growth; (ii) timely solutions to critical shortfalls in the generation, transmission, and distribution capacity; (iii) adequate financing to address infrastructure needs and operating cost increases; (iv) development of a financing plan and new tariff structure; (v) operational efficiency, and (vi) appropriate engagement and constructive resolution of regulatory issues.
- 2.4 The electricity system in Suriname consists of individual networks. Paramaribo and the surrounding areas are interconnected by the Electricity Supply Paramaribo and Surroundings (EPAR) grid. The EPAR system is by far the largest in Suriname. In 2013, had a peak demand of 130-MegaWatt (MW) and annual electricity consumption of 730-GigaWatt hour (GWh). EBS also operates a smaller Electricity Nieuw Nickerie (ENIC) grid in the western part of Suriname and six island grids in main towns in the coastal plains, powered by thermal generators on a 24-hour basis. About 428,000 people (79% of the total population) in Suriname received electricity from these grids. The remaining population was partially served through rural electrification services. Private mining companies are the main consumers in terms of annual consumption (Suralco 429-GWh at Paranam; and IAMGOLD (118-GWh in the Rosebel area).
- 2.5 The electricity generation in the EPAR system is based on contractual arrangements between the GOS and public and private companies. EBS owns thermal plants fueled with diesel and fuel oil and purchases electricity from Independent Power Producers (IPP). EBS received electricity from the Afobaka Hydropower Plant under the terms of an agreement between the GOS and Suralco, the bauxite and aluminum company that owns the facility.¹
- 2.6 With total electricity losses of about 9% and high collection rates, EBS’s overall operational efficiency was considered adequate when compared with other utilities in the Caribbean. Nevertheless, the utility faced challenges in keeping a reliable and sustainable electricity service, as EBS had an aging transmission and distribution infrastructure while facing a significant rise in electricity demand. The System Average Interruption Frequency Index (SAIFI) and the System Average Duration Frequency Index (SAIDI) for 2013 reflected a decaying tendency in the reliability of the network, compared with values of 2012 and 2011.

¹ In December 2019 the Afobaka Hydropower Plant was transferred to the state oil company Staatsolie, which also owns a thermal power plant locate in the oil refinery.

Furthermore, in 2014, Suriname experienced additional serious power system failures highlighting these critical network deficiencies.

- 2.7 Suriname experienced significant electricity demand growth, averaging a 6.8% increase annually from 2009 to 2014, as a direct effect of Suriname's economic development. Between 1970 and 2013 the peak power demand in EPAR sub-system rose from 22MW to 205MW and was expected to reach 500MW by 2020². With old and weak transmission and distribution infrastructure, EBS was facing difficulties to provide maintenance on time, resulting in poor and unstable service to existing customers and limiting supply to new customers³.
- 2.8 Additionally, with the expected increase in demand over the next years, the design ratings of critical infrastructure were expected to exceed its operative limits, posing a significant risk for the safe operation of EBS's power networks, while a reduction in the quality of service would also hinder efforts to readjust tariffs. EBS's transmission and distribution infrastructure faced serious risks due to the decay of vital substations (S/S) which no longer adequately handle current demand loads, limiting the safe and efficient operation of the system⁴. The nominal ratings of equipment in key S/S were being exceeded regularly, causing continuous blackouts and brownouts that were negatively impacting the power supply, causing economic losses to the customers, while affecting the consumer's confidence in EBS.
- 2.9 On the operational side, there was an urgent need to address improvements in processes related to business continuity. In this respect, the digitalization of the operation through Information and Communication Technologies (ICT) system development was a key element for the modernization of EBS business processes and data collection. EBS's operative systems were unable to provide systematic and timely information, which in turn hindered EBS's ability to develop appropriate mid- and long-term planning, affecting also adequate oversight of EBS's operations.
- 2.10 While acknowledging efforts to address the sector's institutional constraints, there was no comprehensive institutional or normative framework. Decision-making in Suriname's electricity sector relied on interventions from the MNH and EBS and tariffs were not defined on the principle of cost recovery, bringing EBS to a deficit financial situation. As a result, EBS was not able to afford investments in critical infrastructure to meet growing demand, upgrade or replace obsolete assets, and enhance the digital infrastructure needed for the planning and operation of the power system. Therefore, fundamental changes to the institutional and regulatory framework, including the structure of EBS, were required to ensure the long-term financial sustainability of the electricity sector.
- 2.11 The GOS acknowledged the need to strengthen the electricity sector through a comprehensive and coordinated approach. To this extent in 2012, the GOS sought support from the IDB to establish a Sustainable Energy Framework for Suriname (SEFS) to create conditions for the economic, social, financial, and environmental sustainability of the sector, thereby anticipating future demand growth.
- 2.12 The SEFS required that the GOS and EBS implemented adequate sector reforms including regulations and management practices to (i) reduce operation and maintenance costs; (ii) review the current tariff structure; (iii) draft a model contract for the purchase of electricity from third-party generators; (iv) assess the potential of low-carbon energy technologies;

² Demand forecast base scenario. EBS's Strategic Business Plan 2011-2020.

³ A few substations in the EPAR systems date from the 1980's, with its associated equipment presenting difficulties to find spare parts readily available for maintenance.

⁴ The short-circuit ratings were being exceeded with the increasement in the electricity generation and demand, which entailed serious risks for the personnel and equipment, and for the reliability of network.

(v) improve access to sustainable and quality energy; and (vi) increase the coverage index in Suriname, while resources were allocated to improve critical infrastructure and access to a reliable electricity supply. IDB's support included the preparation of Investment Loans and Policy-Based Programmatic Loans (PBP).

- 2.13 A PBP Program consisting of three operations (SU-L1022; [2848/OC-SU](#), SU-L1035; [3062/OC-SU](#), and SU-L1036; [3691/OC-SU](#)) supported reforms in the energy sector intending to implement an institutional and regulatory framework in the sector. The first of the three PBP operations (SU-L1022) was approved and disbursed in 2012, the second (SU-L1035) in 2013, and the last one (SU-L1036) in 2016. The scope of the envisioned reforms reflected the commitment of the GOS to structure the sector based on principles that are as consistent with best practices in the regulatory, legal, and corporate governance fields. In this regard, the PBP established a set of policy reforms as the approval of the first Electricity Act in 2016, the creation of the energy regulator, named Energy Authority of Suriname (EAS), and the increase of the electricity tariff in 2014, and 2016. The Electricity Act state that the EBS shall be unbundled in different business units.
- 2.14 In November 2013, the IDB approved the "Support to Improve Sustainability of the Electricity Sector" Investment Loan (SU-L1009; [3059/OC-SU](#)) which contributes to the SEFS by (i) helping to improve EBS's corporate performance with digital technologies; (ii) improving the reliability and cost-effectiveness of energy supply in rural areas by expanding the network and incorporating non-conventional Renewable Energies (RE); and (iii) rehabilitating critical infrastructure required for the effective operation of the electricity system.

B. Program description

- 2.15 The Program (SU-L1039) was designed to support the implementation of EBS' SBP in an integrated manner so that the utility could deliver on its commitments to upgrade vital power infrastructure and improve its corporate capabilities and, in this regard, provide reliable electricity to its clients.
- 2.16 The Program General Objective was to contribute to the sustainability of the power sector in Suriname by (i) strengthening EBS's operational procedures and corporate performance, and (ii) upgrading critical infrastructure in the National Power System. The Specific Objectives (SO) were to (i) support the strengthening of EBS's institutional and operational processes by financing improvements in ICT management; and (ii) contribute to the upgrade and retrofitting of the National Power System's critical infrastructure to improve the reliability of the EPAR system.
- 2.17 To achieve the intended results and benefits, a total budget of US\$33,000,000.00 was approved to finance the Program. This budget was fully financed by the Bank's Ordinary Capital.
- 2.18 The program had 2 components:

Component 1. Improvement of EBS's Operations (US\$12,853,000). Component I supported EBS's institutional and operational strengthening by: (i) implementing a Distribution/Outage Management System (DMS/OMS) and training activities; (ii) financing the implementation of an Enterprise Resource Planning (ERP) platform and training activities; (iii) assisting EBS during the transition to the new unbundled corporate model; and (iv) implementing a program to promote Renewable Energy (RE) and Energy Efficiency (EE).

- **Subcomponent 1.1.** The design and implementation of a DMS/OMS application supported key operational activities within the customer service department, as well as the transmission and distribution division. The DMS/OMS also ensures the integration of

existing systems such as the Customer Information System, Geographic Information System (GIS), Supervisory Control and Data Acquisition (SCADA), and Mobile Work Management Systems. The expected benefits of the DMS/OMS system included: (i) increased efficiency in the management and handling of emergency calls; (ii) increased ability to interact with customer outages; (iii) improved accuracy and timely data input for regulatory and internal reporting⁵; (iv) improved accuracy and timely reporting on outages and restoration; and (v) an enhanced customer service experience.

- **Subcomponent 1.2.** The ERP platform improved EBS's operational and management efficiency, which helped to improve operational procedures. The main benefits of the ERP were to improve or increase: (i) internal procedures; (ii) customer satisfaction; (iii) cycle-time for internal procedures; (iv) focus on profitability; (v) centralization of information; (vi) employee job satisfaction; (vii) data security; and (viii) corporate transparency.
- **Subcomponent 1.3.** Supported EBS corporate re-organization and strengthening its corporate capability in the company transition process following the EBS vision and the Electricity Act 2016.
- **Subcomponent 1.4.** An Energy Efficiency Framework to promote EE measures and awareness, executed in close coordination with MNH. The framework was intended to encourage the conservation and efficient use of energy by developing activities, including awareness-raising campaigns and energy education programs, to improve the population's understanding of the value of energy.

Component 2. Critical Infrastructure (US\$18,000,000). Component II contributed to the upgrade and retrofitting of the National Power System's critical infrastructure, with the aim of improving the reliability of the EPAR sub-system. Activities to be financed included: (i) upgrade of two existing S/S in the EPAR network (substations J and F); and (ii) construction of a new S/S in the EPAR network (substation Boma) and associated transmission lines.

- **Subcomponent 2.1.** S/S J is one of the main providers of energy to the central zone of Paramaribo. With the expansion in generation and transmission, its design ratings were being exceeded. The upgrade consisted of (i) the renovation of the existing building; (ii) the replacement of switchgear to facilitate the dispatch of power plants; (iii) the replacement of protections and accessories; and (iv) the incorporation into the SCADA system.
- **Subcomponent 2.2.** S/S F is an open-air S/S located in the Para district. The S/S needed to be upgraded to improve reliability and to facilitate the connection of future customers. The retrofit mainly included: (i) construction of the S/S building; (ii) installation of a 25MVA transformer; (iii) installation of switchgear; and (iv) integration into the SCADA system.
- **Subcomponent 2.3.** The new S/S Boma would improve the quality and reliability of the electricity supply in the Boma area and allow for the connection of new customers. The activities included: (i) construction of S/S Boma and provision of equipment, including the installation of a new 25Mega Volt Ampere (MVA) transformer; (ii) construction of a new 33kV line to connect the new S/S to the existing S/S HL; (iii) construction of a new 33Kv line to connect the new S/S to the existing S/S E; and (iv) the upgrade of the existing S/S E.

⁵ As part its regulatory oversight, EBS must provide periodic reports to the Ministry of Finances and MNH. These reports should include information on the duration and frequency of outages. The current business processes, as well as supporting systems, are unable to provide accurate data.

- 2.19 An original budget of US\$2,147,000 was allocated to administration, monitoring, evaluation, auditing (US\$700,000) and contingencies (US\$1,447,000).
- 2.20 The EBS was the Executing Agency for this Program. The responsibility of EBS included the recruitment of staff and consultants with the pertinent skills to ensure successful Program implementation. Moreover, to realize the objectives of the Program and to ensure appropriate program governance, an organizational structure was incorporated with the establishment of Program Executing Unit (PEU) and the guidance of EBS' Management Team.

II. CORE CRITERIAS

A. Relevance

- 2.21 The program development goals, reflected in the general objective and specific objectives, were aligned with the country's priorities and needs, as well as the IDB priorities and strategies. The vertical logic showed a clear link between the problem, the intervention, and the results to achieve the general and specific objectives.

a. Alignment with country development needs

- 2.22 At design, the operation was aligned with the **Suriname Development Plan 2012-2016**, in particular to the policy areas of (i) ensure a reliable electricity supply by expanding the generation capacity and transmission and distribution infrastructure, given the increasing demand for electricity supply; and (ii) provide affordable energy by regulating the energy sector through an electricity law.
- 2.23 During execution, the Program maintained alignment with the Government of Suriname's **Policy Development Plan (2017-2021)** that provided a broad outline and perspective of the development policy agenda for Suriname, along with its socio-economic transformation strategies. In this context, the Program had strong alignment and interactions with all the Pillars of the Plan: 1st Pillar: Strengthening Development Capacity; 2nd Pillar: Economic Growth and Diversification; 3rd Pillar: Social progress; and 4th Pillar: Utilization and Protection of the Environment. The alignment and interaction specifically related to the integral role that electricity plays as a prime mover towards attaining social security, improved standard of living, and ultimately a higher level of quality of life for the people of Suriname.
- 2.24 In the final stages of execution, the program kept strategic and operational alignment with **Suriname's Long-Term Development Plan (2022-2026)**. Within this Plan, emphasis is placed on ensuring that the people of Suriname will achieve a just society in which its values of Justice, Inclusiveness, Freedom, Equality, and Sustainability are practiced and realized. The program contributed to sustainability because energy security and a modern state owned utility that is efficient, transparent, and customer-oriented are key elements in the development agenda proposed by the Plan.
- 2.25 The Program contributed to the **SEFS** by helping to improve EBS' operation, and rehabilitating critical infrastructure required for the effective operation of the system. The Program is expected to reduce EBS' operating costs and improve the quality of the electricity service in the years to come.
- 2.26 The Program also functioned as a catalyst towards the achievement of EBS's overall business strategy regarding operational excellence and its strategic goals of demand accountability, conservation and demand management, organizational agility, resilience and accountability, and financial stability, as outlined in its **SBP 2011-2020** (see p. 2.3).

- 2.27 The Program also contributed to implementing the **EBS Energy Efficiency Strategic Program (2014-2016)**, as sub-component 1.4 included financing to implement key activities of the strategy.

b. Strategic Alignment

- 2.28 At the commencement of implementation, the Program was consistent with the **IDB's Country Strategy 2011-2015 (GN-2637-3) with Suriname**, through the Country Strategy (CS) strategic objective to create a financially sustainable energy sector to facilitate the adequate supply of energy and improve access to electricity, as well as several of the CS priority areas, such as: (i) revamping the current regulatory framework by creating an independent energy authority, revising regulations, and introducing a new tariff structure that includes a regime for rural electrification; (ii) modernizing and expanding the generation (introducing lower carbon intensity technology, including hydro, solar photovoltaic, and co-generation); and (iii) increasing the use of efficient technologies.
- 2.29 As the execution of the Program progressed, new IDB CS were approved to which the Program maintained alignment. The **Country Strategy 2016-2020 (GN-2873)** placed attention on supporting the GoS' macroeconomic stabilization plan and the elimination of constraints to economic growth while contributing to poverty reduction in an organized manner. This CS was also complemented by a longer-term view on the modernization of the public and private sectors and includes cross-cutting themes in the areas of gender, institutional capacity, and climate change adaptation and mitigation. The program continued to be in alignment with the CS strategic area of private sector development, including the objective of increased agricultural productivity through increased number of rural population with electricity, as well as in alignment with the thematic areas of modernization of the public sector, institutional capacity and more efficient use of the electric network to make more efficient use of energy resources (climate change mitigation).
- 2.30 The program maintained consistency with **IDB's Country Strategy 2021– 2025 (GN-3065)** that aims to support a sustainable recovery by restoring macroeconomic stability, improving the delivery of social services, and strengthening the private sector. The Program supports two strategic areas of the strategy: (i) promoting private sector competitiveness; and (ii) improving social protection and basic services, inclusive of the supply of electricity to the people of Suriname. The project also has linkages with the cross-cutting issues related to gender equality, diversity, and inclusion; climate change resilience; and institutional capacity. Moreover, the project supports the CS strategic objective to reduce inequalities in access to utilities, in this case electricity service.
- 2.31 The Program was aligned with **IDB's Framework of a New Institutional Strategy** under its sector priorities and preferential support to less developed Latin American and Caribbean countries. The Program would contribute to the following lending target areas: (i) supporting development in small and vulnerable countries; and (ii) assisting borrowers in dealing with climate change, sustainable energy, and environmental sustainability.
- 2.32 The Program was aligned with the **Update to the Institutional Strategy 2010-2020 (AB-3008)**, which outlined the vision of the IDB to increase productivity and sustainably reduce inequality to transform Latin America and the Caribbean (LAC) into a more inclusive and prosperous society. In partnering with the Region to achieve this vision, the Bank reaffirms its commitment to fulfilling the objectives of the IDB's Ninth General Increase in Resources (IDB-9) of reducing poverty and increasing sustainable growth, while addressing the special needs of small and vulnerable countries and fostering development through the

private sector. Given the region's heterogeneity, tackling its three main development challenges requires a proactive, flexible response from the IDB to accommodate client countries' different development needs and help them reach their specific development objectives. As such, the Program supported the achievement of this vision.

- 2.33 The Program proved alignment with the **IDB Group Corporate Results Framework 2020-2023** (GN-2727-12), which seeks to reduce poverty and inequality and achieve sustainable growth in LAC. The framework prioritizes three development challenges (Gender equality and diversity, Climate change and environmental sustainability, and Institutional capacity and the rule of law, emphasizing transparency) and three cross-cutting issues (Social inclusion and equality, Productivity, and innovation, and Economic integration). The alignment is achieved by facilitating the strengthening of EBS's institutional and operational processes and the upgrade and retrofitting of the National Power System's critical infrastructure, to improve the reliability of the Electricity Supply in Paramaribo and surroundings areas.
- 2.34 The Program was consistent with the **IDB Strategy for Sustainable Infrastructure for Competitiveness and Inclusive Growth** (GN-2710-5). From a global and development perspective, infrastructure has been viewed as a key pillar of development, and its suitable provision and proper administration have the potential to stimulate economic growth and competitiveness. Additionally, infrastructure has been deemed to be essential for improving the quality of life and inclusion in modern societies. As a result of this position, the IDB Infrastructure Strategy has been developed to reinforce the continued commitment to its mission to reduce poverty and inequality by promoting access to innovative infrastructure services that are environmentally, socially, and fiscally sustainable. In this vein, the Program through its various components has been able to demonstrate the IDB's commitment to supporting infrastructure development through its loan support arrangements.
- 2.35 The Program was aligned with the **IDB Climate Change Sector Framework Document** (GN-2835-8). The Climate Change Sector Framework Document has been the guiding document that has oriented the Bank's work on climate change. It serves as a guide for incorporating the concepts of climate-resilient and low-carbon development into the design and implementation of analytical work and operations supporting the LAC region's needs, including those of the private sector. The framework recognizes that LAC countries are highly vulnerable to the effects of climate change, physical damage as well as losses that are concentrated among the most vulnerable populations. To this end, the Program through its design has been able to include aspects of Climate Change and environmental sustainability by improving the operational efficiency of EBS, as well as by promoting EE and RE in the country, thus contributing to the reduction of Suriname's carbon emissions.
- 2.36 The Program was aligned with the **Energy Sector Framework Document (GN-2830-8)**, which focuses on the provision of basic efficient and sustainable services and the development of infrastructure that contributes to economic growth through universal access to energy services, innovative financing mechanisms, and promotion of private sector involvement. Under this strategy, infrastructure is the means to provide quality services that foster sustainability and inclusive growth in the countries, reduce income gaps, and contribute to the mitigation of climate change. Therefore, infrastructure needs to be planned, built, and maintained within an environmentally, economically, and socially sustainable framework, with better governance, greater efficiency, and more multisector interventions. In this regard, the Program has found itself to be aligned with the framework as it will improve the efficiency, quality of supply, and governance of the energy sector.

c. Relevance of the design

- 2.37 The design of the Program responded to the fact that EBS was well behind its efforts in making capital investments in critical infrastructure that would address the nationwide growing demand. The program considered the need to upgrade or replace obsolete assets; to strengthen its systems and procedures for planning, operations, and management of the transmission and distribution systems, and for integration of technical and commercial operations.
- 2.38 The Components of the Program and its associated activities were aligned and relevant to the challenges related to the electricity sector in Suriname, in particular the strong growth in energy demand; the inadequate financial sustainability of the electricity service supplied; and the limited technical, institutional and financial capacity to service the grid areas. Furthermore, the Program design included improvements to EBS' operations through the implementation of ITC systems and the upgrade of EBS' critical infrastructure, thus, improving the sustainability of the electricity supply.
- 2.39 The Program's impact, outcome narratives, and linked indicators were appropriately expressed and attainable. The initial time frame for the delivery of outputs and the completion of planned activities was suitable. However, the project experienced some delays during the execution, mainly caused by the COVID-19 restrictions (air space closure and total lockdowns). As a result, some key deadlines and milestones were not completed as originally scheduled and the Program had to be extended for 34 months.
- 2.40 The time horizon for the realization of the impact and expected outcomes were realistic. Furthermore, the theory of change (ToC) for the Program was applicable, coherent, and well developed. Realistic targets were established over the life of the Program, and credible baseline data was readily accessible.
- 2.41 The Program design tackled the most critical aspects for the diagnosis and the strategic priorities included in the program specific objectives and the general objective of development:
- 2.42 Specific Objective 1: Support the strengthening of EBS's institutional and operational processes by financing improvements in information technology management.**
- Sub-component 1.1 supported the implementation of the OMS (output 1.1), a platform that supports key operational activities in EBS and contributes to improving the reliability of the power system. A fundamental aspect of this sub-component was to ensure the effective and efficient integration of the OMS with the other systems implemented or under implementation (GIS, SCADA, and ERP), to provide EBS with an integrated digital platform for their operations.
 - Sub-component 1.2 consisted of the implementation of an ERP system (output 1.2) to manage daily business activities such as accounting, procurement, customer service, and supply chain from a centralized digital platform, directly contributing to the improvement of EBS' operational and management efficiency and operational procedures. For both systems, the Program included several training activities for the staff of the operations department.
 - Sub-component 1.3 included several studies and strategies aimed to strengthen the EBS institutional, operational, and financial capacity (output 1.4), including (i) Legal and Organizational Restructuring, (ii) Upgrading of the procurement department, (iii) Design and Implementation of Governance, Risk, and Compliance (GRC) Framework, (iv) Financial Restructuring, (v) Human Resource Support for

Organizational redesign, (vi) Support Leadership Development; and (vii) Transition New Organizational Model.

- This specific objective and activities financed in Component 1 were linked to the Program's Outcome #1 (Strengthening EBS's operational procedures and corporate performance).

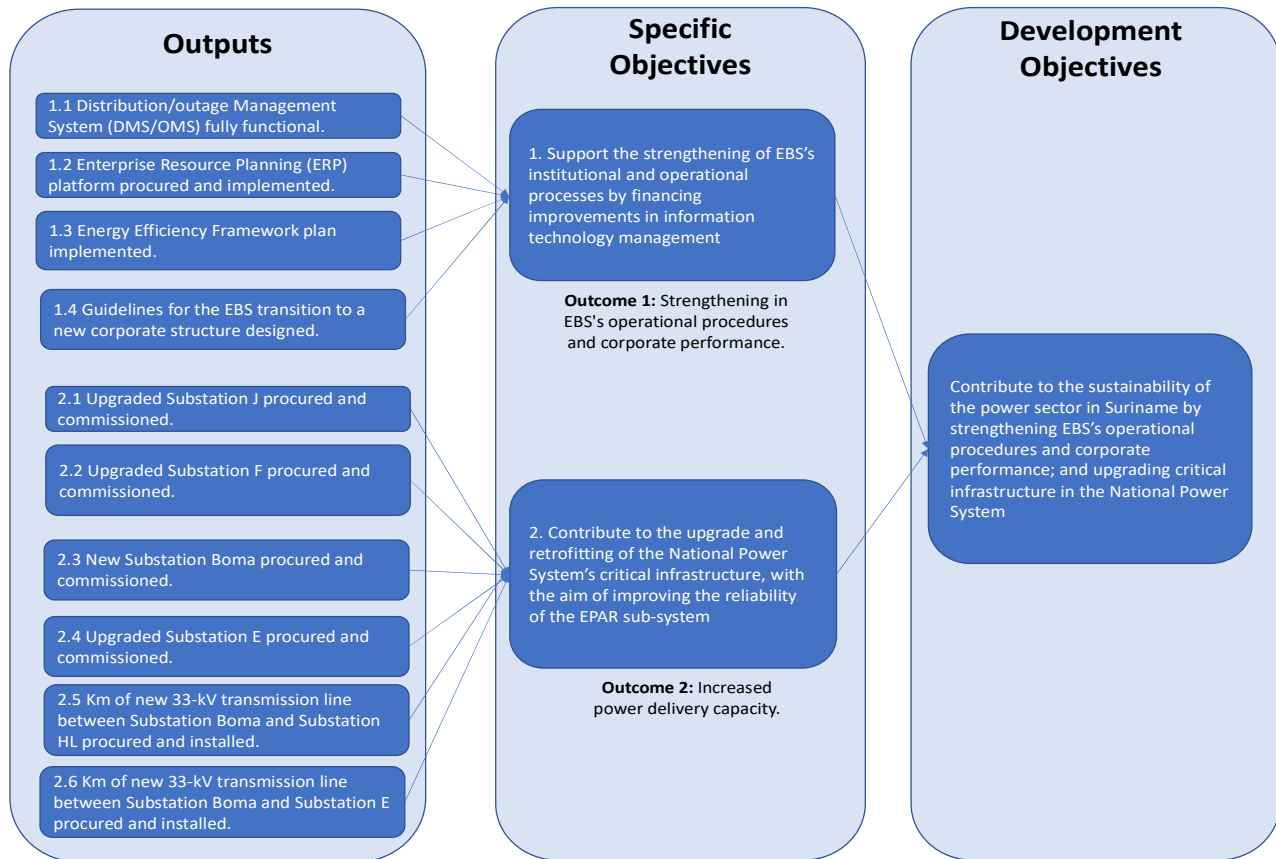
2.43 Specific Objective 2: Contribute to the upgrade and retrofitting of the National Power System's critical infrastructure, with the aim of improving the reliability of the EPAR sub-system.

- The Program financed the upgrade of S/S J (output 2.1) and S/S F (output 2.2), both critical and outdated, S/S of the EPAR systems. The investments in S/S J and F were expected to improve the quality and reliability of the supply and reduce overloads in Paramaribo and Para districts, respectively.
- The Program also financed the upgrade of S/S E (output 2.4) and its integration through a 33kV transmission line (output 2.6) to the new S/S Boma (output 2.3). These investments were expected to improve the quality of the supply in the Wanica district and meet the expected growing demand in the area while allowing the connection of new customers to the grid. The S/S Boma was also integrated into the S/S HL through a 33kV transmission line (output 2.5).
- All these S/S have been integrated into the new SCADA and would be operated from the central control room, resulting in better control and more efficient operation of the S/S and power system.
- Finally, EBS used part of the remaining funds from the Program to upgrade the S/S I (unexpected output).
- This specific objective and activities financed in Component II are linked to the Program's Outcome #2 (Increase the power delivery capacity).

2.44 Both specific objectives and components directly contributed to the Program's Development Objective and its impact indicator: "A more reliable energy supply system" as measured by a decrease in the System Average Interruption Duration Index (SAIDI).

2.45 The chain of results had a high degree of practicality, adequacy, and clarity among the planned activities, outputs, outcomes, and impact. There was clear connectivity, correlation, and coherence within the chain of results proving the ToC has been relevant. Also concerning the ToC, the vertical and horizontal logic demonstrated a relatively high degree of practicality and relevance. At the highest level, the project's ToC has established that if there is an increased level of power delivery capacity by the EBS and its operational procedures and corporate performance are strengthened, then, a more reliable energy supply system can be realized, thus reducing the SAIDI for the EPAR system.

Figure 1. Vertical Logic: Support the Sustainability of the Electricity Sector



- 2.46 **Changes during execution.** There were no changes to the general objective and the two specific objectives during the entire execution. During the execution, no modifications of either operational and administrative nature, nor to the values of indicators in the results matrix.

d. Relevance Qualification

- 2.47 According to the criteria defined in the PCR May 2020 Guidelines, the classification of the relevance criterion for the program would be **Excellent (E) – rating 4**. The overall objective and specific objectives of the project and the vertical logic of the design were aligned with the development needs and priorities of the country from approval to closure. The vertical logic of the intervention was correctly described and demonstrated the relevance of the operation. It shows a clear link between the causal chain of the intervention, the general and specific development objectives of the operation, and the needs and development context of the country. The analysis assessed how the products and results obtained align with the IDB Country Strategy at approval and closing.

Table 1 – Result Matrix

Indicators	At Approval			At eligibility + 60 days			At Program Completion			Comments
	Unit of measure	Baseline (2013)	EOP (Planned)	Unit of measure	Baseline (2013)	EOP (Planned)	Unit of measure	Baseline (2013)	EOP (Actual)	
Specific Objective 1: Strengthening in EBS's operational procedures and corporate performance.										
1.1 EBS's business units trained on the operation, maintenance and updating of the new DMS/OMS and ERP	Business Units	0	3	Business Units	0	3	Business Units	0	3	Several training sessions for OMS, DMS, and ERP training were conducted. Certificates and attendance lists were provided by EBS
Specific Objective 2: Increased power delivery capacity.										
2.1 Substation F transformation capacity	MVA	7	25	MVA	7	25	MVA	7	25	
2.2. Substation Boma transformation capacity	MVA	0	25	MVA	0	25	MVA	0	25	

B. Effectiveness

a. Statement of program development objectives

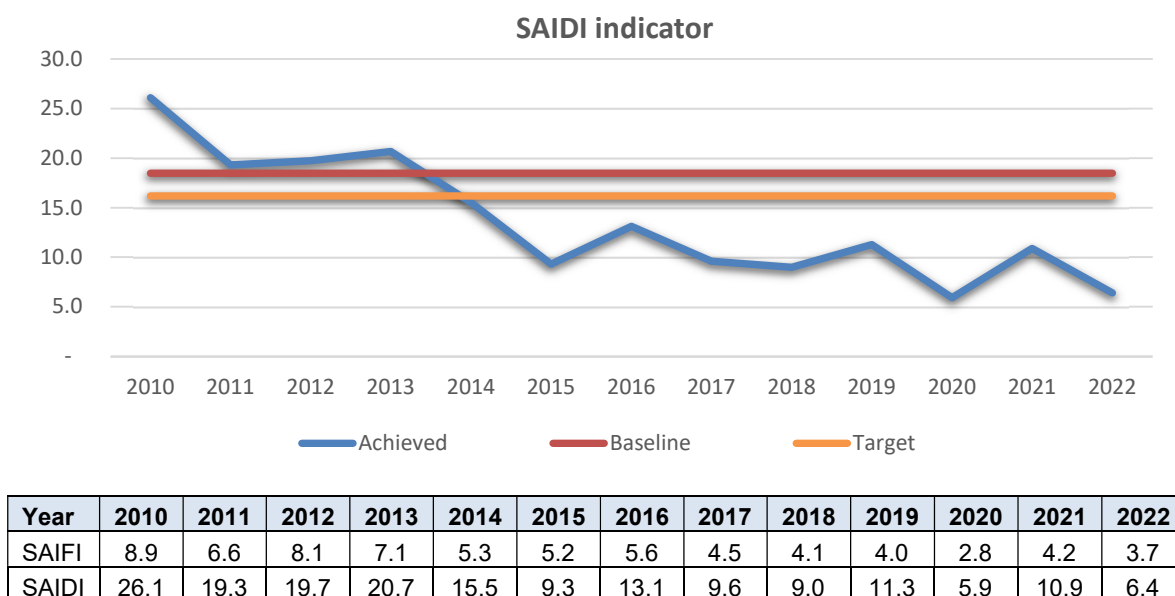
- 2.48 The program general objective was to contribute to the sustainability of the power sector in Suriname by strengthening EBS's operational procedures and corporate performance, and upgrading critical infrastructure in the National Power System.
- 2.49 The specific objectives of the Program were to:
- Support the strengthening of EBS's institutional and operational processes by financing improvements in information technology management.
 - Contribute to the upgrade and retrofitting of the National Power System's critical infrastructure, with the aim of improving the reliability of the EPAR sub-system.

b. Results achieved

General Objective

- 2.50 The impact development premise of the program was to achieve a more reliable energy supply system.
- 2.51 The program impact indicator is the SAIDI for the EPAR system, which is a commonly used indicator to measure the reliability of the grid. Based on data provided by the EBS operations department, figure 2 shows that the SAIDI decreased from 26.1 hours/client/year in 2010 to 6.4 hours/client/year in 2022, obtaining for the past years lower SAIDI values than the objective established during the Program preparation, which was 16.2 hours/client/year.

Figure 2 – SAIDI and SAIFI indicators for EPAR system.⁶ Source: EBS



⁶ Fluctuations in SAIDI can be attributed to factors external from project scope, such as failures in main power plants or transmission network.

2.52 The results and impacts achieved with the program are summarized in Table 3.

Table 3 – Achieved Result Matrix

Table 3.a – Impact indicators

Impact/Indicator	Unit of Measure	Baseline value	Baseline year	Targets and Actual achievement		% Achieved	Means of Verification
Impact 1: A more reliable energy supply system.							
1.1 System Average Interruption Duration Index (SAIDI) for the EPAR system	hours/client	18.5	2013	P	16.2	100%	EPAR operator (EBS) data and reports
				P(a)	16.2		
				A	6.4		

Table 3.b. – Outcome indicators

Outcome Indicator	Unit of Measure	Baseline value	Baseline year	Targets and Actual achievement		% Achieved	Means of Verification
Outcome 1: Strengthening in EBS's operational procedures and corporate performance							
1.1 EBS' business units trained on the DMS/OMS and ERP	Business Units	0	2013	P	3	100%	EBS technical reports; Inspection visits
				P(a)	3		
				A	3		
Outcome 2: Increased power delivery capacity							
2.1 Substation F capacity (Unit: MVA)	MVA	7	2013	P	25	100%	EPAR operator (EBS) data and reports
				P(a)	25		
				A	25		
2.2 Substation Boma capacity (Unit: MVA)	MVA	0	2013	P	25	100%	EPAR operator (EBS) data and reports
				P(a)	25		
				A	25		

Table 3.c – Output indicators

Output	Unit of Measure	Baseline value	Baseline year	Targets and Actual achievement		% Achieved	Means of Verification
1.1 Distribution/outage Management System (DMS/OMS) fully functional	System	0	2013	P	1	100%	System's procurement documents provided by EBS; Inspection visits
				P(a)	1		
				A	1		
1.2 Enterprise Resource Planning (ERP) platform procured and implemented	Platform	0	2013	P	1	100%	System's procurement documents provided by EBS; Inspection visits
				P(a)	1		
				A	1		
1.3 Energy Efficiency Framework plan implemented.	Plan	0	2013	P	1	100%	Project reports, EBS statements, contracts, inspection visits
				P(a)	1		
				A	1		
1.4 Guidelines for the EBS transition to a new	Guidelines	0	2013	P	1	100%	Project reports, EBS statements,
				P(a)	1		
				A	1		

corporate structure designed							contracts, inspection visits
2.1 Upgraded Substation J procured and commissioned.	Substation	0	2013	P	1	100%	Progress reports and project final reports prepared by EBS
				P(a)	1		
				A	1		
2.2 Upgraded Substation F procured and commissioned.	Substation	0	2013	P	1	100%	Progress reports and project final reports prepared by EBS
				P(a)	1		
				A	1		
2.3 New Substation Boma procured and commissioned.	Substation	0	2013	P	1	100%	Progress reports and project final reports prepared by EBS
				P(a)	1		
				A	1		
2.4 Upgraded Substation E procured and commissioned.	Substation	0	2013	P	1	100%	Progress reports and project final reports prepared by EBS
				P(a)	1		
				A	1		
2.5 Km of new 33-kV transmission line between Substation Boma and Substation HL procured and installed.	km	0	2013	P	11	100%	Progress reports and project final reports prepared by EBS
				P(a)	11		
				A	11		
2.6 Km of new 33-kV transmission line between Substation Boma and Substation E procured and installed.	km	0	2013	P	15	100%	Progress reports and project final reports prepared by EBS
				P(a)	15		
				A	15		

Specific Objective 1: Support the strengthening of EBS's institutional and operational processes by financing improvements in information technology management.

- 2.53 The Component I contributed to the improvement of EBS' institutional and operational processes by implementing the OMS and ERP systems, their integration with other ICT systems previously implemented, as well as consultancies to support the restructuring and strengthening of EBS.
- 2.54 EBS teams received several training sessions as part of the OMS and ERP contracts, thus achieving the specific development objective indicator of three EBS's business units trained on the operation, maintenance and updating of the new DMS/OMS and ERP. Specifically, the following training activities and sessions were provided to EBS units (10 training tracks with participation of 109 EBS employees):
- OMS training:
 - EBS Network Manager Overview (10 attendees)
 - OMS Operator (15 attendees)
 - Power System Explorer Configuration (8 attendees)
 - OMS Configuration (8 attendees)
 - DMS training:
 - DMS User Interface (13 attendees)
 - DMS System Administration (8 attendees)
 - ERP training:

- ERP Construction Management by assemblies (4 sessions with an average of 10 attendees)
 - ERP Construction Management by cost categories (5 sessions with an average of 10 attendees)
 - ERP Maintenance Management (7 sessions with an average of 12 attendees)
 - ERP Service Order Costing (4 sessions with an average of 15 attendees)
- 2.55 The program was successful in bettering the management, operations, and administration systems and infrastructure of EBS. In this regard, the program led EBS to progress toward becoming a more modern, efficient, and transparent utility with a revived strategic focus on improving operational capacity and efficiency and investment framework.
- 2.56 The OMS implementation, including its integration with other systems (GIS, SCADA, Energy Management System (EMS), and ERP), was completed in 2020 and is fully functional. The OMS is used to manage the planned and unplanned distribution network outages and restoration process, helping the operator process trouble input, analyze outage causes, predict probable outages, efficiently dispatch field crews to reduce restoration time, provide information to the customer service representatives in the call center and record all the information of power outages from a centralized and digital platform. The OMS is composed of three main applications:
- **Trouble Call Management:** used to manage incoming trouble calls and consolidates outage information so the operator can inform customers about outage and restoration status.
 - **Outage Engine:** aimed to support outages and restoration activities including emergency switching, trouble crew management, and outage reporting. It infers probable outages in the form of alarms and graphical indicators based on the analysis of incoming trouble calls and real-time information provided by SCADA.
 - **Mobile Workforce Management:** used to track field crews and their associated work including crew types, assigned personnel, vehicle types, equipment, and task times.
- The OMS department is currently working from a room located next to the central SCADA control room, managing the outages in the transmission network more effectively. The OMS has contributed significantly to reducing the frequency and duration of power outages (from 2022 to 2010 the SAIFI and SAIDI indexes have been reduced by 58% and 75% respectively), thus improving the grid reliability and customer service, as well as providing accurate information to improve EBS' grid modeling and planning capabilities.
- 2.57 The implementation of the ERP platform and its applications was completed in 2021 and is currently used to manage EBS' business activities. The applications included in the ERP implementation are:
- **Customer Information System:** including functions such as account management, credit and collections, service orders, meter inventory, usage, billing, service address management, rates, billing, and financial based activities.
 - **Financial Information System:** including functions such as general ledger, budget management, reporting, treasury management, accounts payable, inventory management, purchasing, fixed asset, project accounting, human resources, payroll, and benefits management.

- **Work Management System:** including functions such as asset maintenance, work initiation, work planning, work approval, work scheduling, work execution, work closing, and work reports.

The ERP implementation had several milestones which all were achieved: (i) Installation of peripherals (hardware, backup tools, database management tools, client machines); (ii) Deployment of ERP platform and infrastructure upgrade; (iii) System running in test mode and (iv) Final ERP system implementation, including auxiliary services (Change Management and Quality Assurance). The ERP was also integrated with other ICT platforms, such as the SCADA, EMS, OMS, and GIS. The ERP has improved EBS' operational capacity and customer service, allowing managing from a centralized and digital platform the customer and staff information, contracts with vendors, and financial information, among others.

2.58 The sub-component 1.3 financed several consultancies which have contributed to strengthening EBS, as well as supported the restructuring of EBS following the new corporate vision within the legal and institutional framework reforms adopted in Suriname's energy sector, including the Electricity Act. The main consultancies were:

- **Legal and organizational restructuring of the EBS:** to design and coordinate the restructuring process according to the Electricity Law, including the development of a new organizational chart and a new financial administration system.
- **Upgrading the procurement department:** including capacity building services aimed at strengthening the procurement department; developing standardized procurement and contracting guidelines for procurement of goods, services, and works; supervision of specific procurement and contracting processes; as well as supporting the internal organizational changes required to integrate the new procurement guidelines.
- **Support the Restructuring of the financial processes:** coordinate the financial restructuring of EBS according to the new corporate structure, including the development of a new chart of account; consolidate the financial related processes and procedures with the new structure and ERP; development of financial administration.
- **Transition to a new Organizational Model:** including the development of a Corporate Strategy for the period 2022-2030, which defines the EBS vision, strategy, and structure for the coming years, and supports the implementation of a transition framework.

2.59 Component 1.4 focused on undertaking activities that would promote EE and RE in Suriname leading to the implementation of the energy efficiency framework for EBS. The activities included:

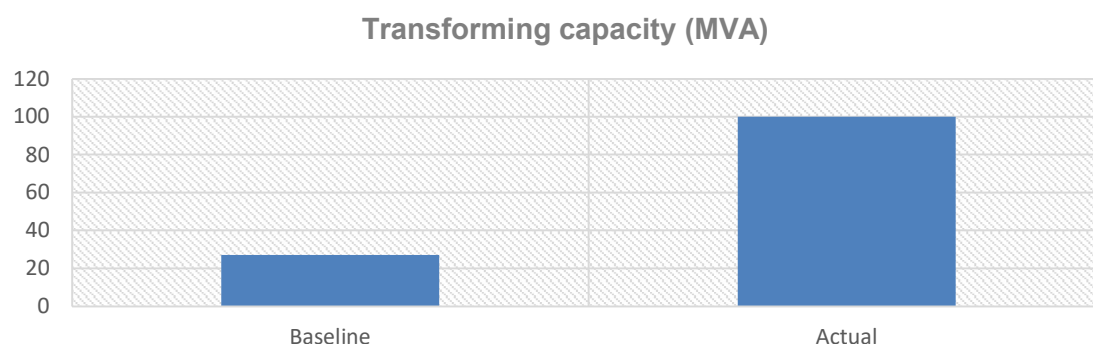
- The implementation of 485 Light Emitting Diode (LED) for streetlights, and LED lighting in EBS facilities.
- Implementation of Energy Management Systems (EMS) in 5 buildings.
- The organization of an energy fair to promote EE and RE in Suriname, with the participation of the private sector.
- The organization of two workshops about ICT in the utility sector and Smart Grids.

- Educational events to promote EE and RE in 2 secondary schools (including an educational game) and a visit to the Atjoni/Pokigron solar mini-grid for the Polytechnic College Suriname students.
- Development of EE handbooks for schools.

Specific Objective 2: Contribute to the upgrade and retrofitting of the National Power System's critical infrastructure, with the aim of improving the reliability of the EPAR

- 2.60 Component II financed the rehabilitation and upgrade of the critical infrastructure of EBS, including retrofitting three existing S/S (J, F, and E) and the construction of a new S/S (Boma) in the EPAR system, improving the power delivery capacity and the quality of the electricity supply Paramaribo, Para, and Wanica districts.
- 2.61 The upgrade of S/S J improved the reliability of supply in the Paramaribo area. The program financed the replacement of the existing switchgear and control panels, the installation of a larger power transformer (from 10MVA to 25MVA), the integration of the S/S to the central SCADA, the replacement of cables with old insulation, the change of the pneumatic control system with a digital control system, the construction of a new S/S building and the installation of air conditioning units to ensure adequate temperature conditions for the equipment. The civil construction works started in December 2017, the main equipment was supplied in August 2019, the electric works started in November 2019 and the S/S was commissioned and put into operation in December 2021.
- 2.62 The upgrade of S/S F, located in the district of Para (close to Paranam), improved the reliability of the supply to meet the increasing electricity demand in the area, mainly driven by new households being constructed. The project increased the power transformer capacity (from 7MVA to 25MVA), replaced switchgear and control panels, integrated the S/S to the central SCADA, changed the electric lines configuration to facilitate maintenance, changed reclosers by circuit breakers (with a higher short circuit capacity) and constructed a new S/S building. The civil works started on February 2018, the main equipment was in November 2019, electric works started on December 2019 and the S/S was commissioned and put into operation in September 2021.
- 2.63 The construction of the new S/S Boma improved the reliability to meet the increasing demand in the Wanica district (Boma area). The S/S Boma was equipped with a 25MVA power transformer and was also integrated into the central SCADA. The S/S Boma was connected to two existing S/S's (E and HL) through a 33 kV buried transmission line of 15 km and 11 km respectively. The S/S E was also upgraded and equipped with a larger power transformer (from 10MVA to 25MVA), new switchgear and control panels, and a new building. The SS Boma and the transmission lines were completed and commissioned in December 2021, while S/S E was commissioned in December 2022.
- 2.64 These investments contributed to meet the increasing electricity demand in the service areas of the S/S, which was expected to grow an average of 7.5% per year.

Figure 3 – Total transforming capacity in the S/S financed with the program



c. Analysis of results attribution

- 2.65 The results are fully attributed to the Program as the impact indicators are directly attributed to the projects financed by the program.

d. Unanticipated outcomes

- 2.66 **Future deployment of RE:** The Program contributed to consolidating the digitalization strategy for the EBS, which started with the implementation of centralized EMS, SCADA and GIS platforms (financed with SU-L1009/[3059/OC-SU](#)). The transition to a digital utility was fundamental to the future development of RE in Suriname, in particular variable sources such as solar and wind energy. That is, that although not a specific objective of the program, the digitalization allows the monitoring and controlling in real-time all the RE plants and balance the power system demand and generation, guaranteeing that the development of RE does not negatively affect the quality of the service. On this basis, the IDB is for example supporting the deployment of wind and solar energy in Suriname, financing activities such as the elaboration of a wind atlas for the coastal area, the feasibility study for a solar floating plant, or the design and implementation of solar mini-grids.
- 2.67 **An additional increase of the transformation capacity:** Originally, the program did not include the procurement of a new power transformer for S/S J and S/S E, however, as the procurement process to purchase the transformers resulted in a lower price than originally estimated during contract negotiations with the supplier, it was decided to include an additional power transformer for both S/S, resulting in an even larger transforming capacity (from 10 to 25 MVA in each S/S) in the service area of both S/S and the EPAR system.
- 2.68 **Increase electricity access:** The upgrade of critical infrastructure also contributed to an increase in the service area in the districts of Wanica (S/S Boma and E) and Para (S/S F), which allowed to increase the number of customers and electricity supplied in these areas. Based on EBS information, after the commissioning of the new infrastructure, a total of 307 new customers were connected to the service area of S/S F (since September 2021), and 584 new customers were connected to S/S Boma (since December 2021).
- 2.69 **An additional increase in grid reliability:** All the activities of component 2 were completed using a lower budget than originally estimated, thus resulting in a remaining budget that was allocated to finance 2 additional projects: (i) the implementation of a line differential protection for a 33kV transmission line (connecting S/S R to S/S K) to increase protection functionality of the EPAR transmission system and (ii) the renewal of the 12kV tower at S/S

I to improve its reliability. These projects contributed to further improving the reliability of the power system.

e. Qualification of effectiveness

- 2.70 According to the criteria defined in the PCR May 2020 Guidelines, the effectiveness criterion classification for this program would be **Excellent (E) – rating 4**. The specific objectives of the project were fully achieved and are attributable to the program. Results were achieved and are attributable to the program.

C. Efficiency

a. Ex-ante evaluation

- 2.71 An ex-ante evaluation of the program, using Cost Benefit Analysis (CBA), was carried out in 2014 for the following projects: (i) Sub-component I.1: the OMS and (ii) Component II: Critical infrastructure.
- 2.72 For the OMS project, the economic benefits considered were the reduction in power outages, reducing the unserved energy which is economically valued. The investment was estimated to be marginally viable, with an Internal Economic rate of Return (ERR) of 12% in the base case, however, several benefits were not quantified in terms of customer service, such as the capability of EBS to respond to customers queries regarding outages, which allows the latter to better plan activities around electricity outages.
- 2.73 The upgrading of S/S can have different purposes: it can improve reliability by modernizing the switchgear, or it can provide a greater transformation capacity, thus channeling more energy to the load. The CBA was done separately for (i) upgrading of S/S J, (ii) upgrading of S/S F, and (iii) construction of the new S/S Boma (that included the investment to upgrade S/S E). The economic benefit considered was the additional load that can be serviced through each upgrade. The three S/S were justified with ERR of 29% for S/S J, 13% for S/S F, and 12% for S/S Boma.
- 2.74 An ex-ante evaluation was not done for the ERP, EBS transition, and the RE&EE promotion projects, as it is not possible to calculate the economic benefits directly attributed to these projects.

b. Ex-post evaluation

- 2.75 An ex-post economic analysis, using CBA was done for the same projects subject to the ex-ante evaluation: (i) Sub-component I.1: OMS implementation; and (ii) Component II: Critical infrastructure, separately for each sub-component.
- 2.76 The main benefit of the OMS project is the reduction of the number and duration of power outages in the EPAR system, which reduces the Energy Non-Served (ENS) related to non-programmed interruptions. The analysis estimates that the OMS project will reduce the ENS in the EPAR system by 25%. In the reference case scenario, the project analysis shows an ERR of 16.8%. A sensitivity analysis for different impacts of the OMS and cost for ENS was elaborated.

- 2.77 The upgrade of critical infrastructure (Component II) has increased the transformer capacity in each S/S, allowing them to meet the growing electricity demand in their service areas and thus reducing the ENS due to insufficient supply capacity. The ERR for S/S J was 24.8%, for S/S F was 15.5%, and for the S/S Boma (including the upgrade of S/S E) was 74.9%. A sensitivity analysis for different demand growth scenarios and cost for ENS was elaborated.
- 2.78 The upgrade of the S/S also contributes to improving the grid reliability and reducing power outages in the area; however, this benefit is not considered in the analysis as it is already accounted for in the CBA for the OMS project. Additionally, the new S/S Boma and the new transmission lines are expected to reduce transmission and distribution losses, as they provide a shorter route to supply electricity to the area, reducing overloads in the grid. However, this benefit was not considered in the CBA as it is considered marginal and the analysis would require grid modeling.
- 2.79 The economic evaluation was not done for the following projects: (i) ERP, EBS transition, and the RE & EE promotion projects, as it is not possible to calculate the economic benefits directly attributed to these projects. However, the costs of these projects have been accounted for in the CBA for the whole program.
- 2.80 The complete SU-L1039 program has a positive economic return with an ERR of 39.3% with the new S/S Boma being the project with a larger impact on the CBA. The sensitivity analysis shows that in a scenario of low electricity demand growth and low cost of ENS, the project has a negative economic return.
- 2.81 The [OEL#1](#) includes the “Ex-post” Economic Analysis.

c. Efficiency qualification

- 2.82 According to the criteria defined in the PCR May 2020 Guidelines, the efficiency criterion classification for this program would be **Excellent (E) – rating 4**, as the ERR exceeds the discount rate of 12% used in the ex-post evaluation.

Table 4 – Physical and Financial progress

										Component Revised Cost 14,622,477.16
1 Component 1 – Improvement of EBS' Operations.										
Output Definition		2016	2017	2018	2019	2020	2021	2022	Cost	
1.1 Outage Management System (OMS) fully functional.	P			1,340,000.00						1,340,000.00
	P(a)		67,900.00	127,300.00	1,439,772.80	412,657.00	567,531.40	295,753.00		2,387,984.59
	A	0.00	67,900.00	180,342.80	1,141,429.52	330,125.60	372,433.67	136,719.00		2,228,950.59
1.2 Enterprise Resource Planning (ERP) platform procured and implemented.	P	1,731,428.57	5,905,857.14	1,125,714.29						8,763,000.00
	P(a)	1,731,428.57	4,830,108.22	3,313,019.46	1,639,089.36	626,322.00	730,953.11	170,575.32		10,643,757.87
	A	1,453,780.00	3,002,970.54	3,305,398.15	1,271,869.29	822,388.09	616,776.48	73,083.34		10,546,265.89
1.3 Energy Efficiency Framework plan implemented.	P			2,000,000.00						2,000,000.00
	P(a)		435,000.00	748,000.00	505,869.00	75,596.39	17,797.00			599,225.25
	A	0.00	0.00	526,719.00	25,513.75	29,195.50	17,797.00			599,225.25
1.4 Guidelines for the EBS transition to a new corporate structure designed.	P			750,000.00						750,000.00
	P(a)		312,500.00	98,050.00	568,008.00	394,577.00	244,838.00	148,480.30		991,509.45
	A	92,968.51	92,974.76	18,937.37	318,603.00	228,173.00	91,372.51	137,058.74		980,087.89
										Component Revised Cost 16,944,344.11
2 Component 2 – Critical Infrastructure.										
Output Definition		2016	2017	2018	2019	2020	2021	2022	Cost	
2.1 Upgraded Substation J procured and commissioned.	P		4,000,000.00							4,000,000.00
	P(a)		1,665,350.00	2,489,500.00	2,555,138.00	870,059.00	1,117,449.63	614,591.00		4,911,040.10
	A	0.00	0.00	587,841.00	2,309,910.78	849,275.75	549,421.57	428,923.65		4,725,372.75
2.2 Upgraded Substation F procured and commissioned.	P		2,772,000.00	1,228,000.00						4,000,000.00
	P(a)		1,050,500.00	1,844,889.00	1,506,678.50	181,903.00	418,489.00	22,592.00		2,436,803.05
	A	0.00	61,832.00	616,809.30	904,150.00	308,856.68	522,563.07	10,200.00		2,424,411.05
2.3 New Substation Boma procured and commissioned.	P		756,070.00	1,294,840.00	1,390,590.00					3,441,500.00
	P(a)		615,500.00	1,990,000.00	1,160,590.00	832,826.00	673,201.00	489,398.00		2,684,343.84
	A	0.00	140,335.01	247,008.31	897,682.00	683,870.33	226,050.19	260,773.69		2,455,719.53
2.4 Upgraded Substation E procured and commissioned.	P		756,680.00	1,061,120.00	973,700.00					2,791,500.00
	P(a)		875,225.00	1,061,120.00	984,376.20	445,657.00	1,026,905.00	758,034.00		2,094,044.93
	A	0.00	990.00	151,059.21	364,809.00	391,176.85	427,975.87	122,168.52		1,458,179.45
2.5 Km of new 33-kV transmission line between Substation Boma and Substation HL procured	P				1,696,000.00					1,696,000.00
	P(a)				2,101,961.00	186,864.00	900,795.07			2,548,978.26
	A	0.00	0.00		1,274,455.56	373,727.63	868,935.77			2,517,118.96
2.6 Km of new 33-kV transmission line between Substation Boma and Substation E procured	P				2,071,000.00					2,071,000.00
	P(a)				2,866,229.00	186,864.00	944,565.79			2,269,133.93
	A	0.00	0.00		1,274,455.56	50,112.58	741,657.04			2,066,225.18

Other Costs		2016	2017	2018	2019	2020	2021	2022	Cost
Administration, monitoring, evaluation, auditing	P	25,000.	200,000.	200,000.	200,000.	75,000.			700,000.
	P (a)	25,000.	24,875.	134,360.	142,600.	131,450.	59,775.	71,855.	599,852.39
	A	0.00	29,840.	96,100.	179,100.	201,445.67	21,511.72	276,182.5	804,179.89
Contingencies	P	0.00	434,100.	578,800.	434,100.				1,447,000.
	P (a)	0.00	434,100.	578,800.	434,100.	0.00	0.00	76,443.49	76,443.49
	A	0.00	0.00	0.00	0.00				0.00

Total		2016	2017	2018	2019	2020	2021	2022	Cost
Total Cost	P	1,756,428.57	14,824,707.14	9,578,474.29	6,765,390.	75,000.			33,000,000.
	P (a)	1,756,428.57	10,311,058.22	12,385,038.46	15,904,411.86	4,344,775.39	6,702,300.	2,647,722.11	32,243,117.15
	A	1,546,748.51	3,396,842.31	5,730,215.14	9,961,978.46	4,268,347.68	4,456,494.89	3,639,373.01	33,000,000.

D. Sustainability

a. General sustainability aspects

- 2.83 When the program was being prepared, the electricity sector in Suriname was in the midst of challenges associated with the progressive growth in energy demand; an aged and overloaded transmission infrastructure; inadequate operational efficiency and fragile financial sustainability of the electricity service; and lack of financial capacity from EBS to invest in the power system. As the program came to its completion, the sustainability of the power sector has greatly improved thanks to the delivery of the program outputs and achievement of its goals, noting that significant challenges still remain. This achievement was realized because of the strengthening of EBS' operational procedures and corporate performance and the upgrade of some critical infrastructure brought by the program.
- 2.84 The sustainability of the program achievement depends on EBS ability to move beyond the execution phase and continue to deliver on key program outcomes, impacts, and development goals upon the end of program funding. To examine the sustainability of the program, the elements of institutional, financial, and social sustainability are analyzed. Additionally, the risks to the Program's sustainability are discussed.
- 2.85 **Institutional Sustainability.** Based on its organizational structure and technical capacity, the EBS is well positioned to ensure that there is adequate management, operation, and maintenance of the new digital platforms (OMS and ERP). The Program financed several training activities to ensure that EBS has the adequate capacity to operate and maintain the systems. The OMS is currently being operated by the EBS Operation Departments and a maintenance agreement has been entered into with the OMS vendor to support addressing any operational problem. In the case of the ERP system, the system has been absorbed by the Information Technology Department where application support, database maintenance, data security, and systems administration are being conducted as a regular and continuous task. Furthermore, a contract has been signed with the ERP vendor to offer system maintenance services, inclusive of regular upgrades and technical support as needed.
- 2.86 The transition to a new corporate structure and the new Corporate Strategy Framework financed by the Program was formulated and is managed by the Executive Management Team in EBS. A roadmap was developed with periodic evaluation of its relevance, effectiveness, and usefulness.
- 2.87 The S/S and transmission infrastructure financed with the program have been handed over to the EBS department of Operations Transmission System ensuring continuous operation and maintenance for the long term. Maintenance plans for the S/S were developed by EBS (this was a Special Contract Clause of the SU-L1009/[3059/OC-SU](#) Loan Agreement) and are currently being utilized also in other facilities (spillover effect). Regarding the security of the S/S, closed-circuit television monitoring systems were installed to be managed by the security department of the EBS. In some instances, such as S/S Boma and S/S E, there is also physical security (guards) in place.
- 2.1 Finally, the staff of EBS received formal and informal training to strengthen the technical and management capacity of some EBS departments (such as procurement, financial, operations, and engineering). EBS has the adequate capacity to operate and maintain all the infrastructure financed with the Program.
- 2.2 **Financial Sustainability.** The new IT systems (OMS and ERP) and infrastructure represent costs related to operation, maintenance, licenses, security, or staff, which were incorporated to the EBS' general operating expenditures. The program improved the level of reliability and operational efficiency of the power system, thus increasing revenues, improving

customer service satisfaction, reducing commercial losses and cost of supply, and allowing better planning for future investments. These accomplishments are expected to improve the financial situation of EBS, facilitating a sustainable Operation and Maintenance of assets and future investments to improve the power system.

- 2.3 **Social Sustainability.** The Program has addressed the dimension of social sustainability, as the provision of reliable and affordable electricity is a basic service to ensure the well-being, social protection, and economic development of society. Additionally, the program does not have any significant adverse social impacts at a mid- or long-term period.
- 2.4 **Risks of Achieving Sustainability.** There following aspects should be considered to ensure the long-term sustainability of the program:
- The ERP and OMS systems in the long term will need to be adapted to the innovations and state of the art of ICT systems, considering the development of innovative digital technologies in the energy sector.
 - The SU-L1039 has contributed to strengthening the energy regulatory sector, by supporting the EBS restructuring. However, the country should adopt additional regulations to guarantee the long-term financial and operational sustainability of the energy sector, including electric market regulations and tariff regulations.

b. Environmental and social safeguards

- 2.5 **Social and Environment Impact Assessment (SEIA).** Component I does not have any potential adverse social or environmental impact; therefore, a SEIA was not required. For Component II, the EBS appropriately assessed the socio-environmental impacts of the foreseen construction works (upgrade S/S J, F, and E, new S/S Boma, and new transmission lines). No significant environmental and social impacts were identified, as the works were in urban areas or within new urban developments with minor affectations on the local population and habitat. During the construction phase, it was expected an increase in nuisances in the surrounding communities, however, this was not significant. During the operation stage, the most significant environmental risks and impacts were related to the disposal and maintenance of equipment, in particular, the removal and disposal of hazardous waste, such as polychlorinated biphenyls traditionally found in electric transformers dating back to the 1970s and typically used as fire retardants. On the other side, it was expected that the program would produce a net positive social impact on the quality of life and welfare of beneficiaries through the overall improvement in the reliability of the service. Following the IDB's criteria, the Program was classified as a category "B".
- 2.6 **Social and Environment Management Plan Assessment (ESMP).** The Program's ESMP included guidelines and recommendations for monitoring, managing, and reporting social and environmental risks during the design, implementation, operation, and decommissioning phase. The ESMP also defined the roles of the different EBS personnel, involving project engineers, the Health, Safety, Environmental and Quality department, and the Chief Executive Office. The PEU included an Environmental, Social and Governance specialist from EBS who managed communication and addressed the concerns of the potentially affected people. No major issues were detected during project implementation as the ESMP proved a valuable tool.
- 2.7 **Environment, Health, Safety (EHS) and Waste Management.** EBS recognized and accepted its responsibility for ensuring that the company's activities do not endanger the health and safety of employees, sub-contractors, and others including the general public. As a result, EBS' general EHS and Waste Management Policy for contractors were utilized.

Additionally, no major aspects of health and public safety were identified for the program and the electrical power infrastructure installations complied with international safety standards and best practices used by EBS in the EPAR area.

- 2.8 **Waste Management Plan for S/S Works:** A waste management plan, applicable only to the construction and operation activities of S/S, was developed and published in July 2014. The waste management plan included the roles and responsibilities and waste management procedures, as well as a description of waste types that could be derived from the civil and electric works. Some of the most hazardous wastes, such as the oil from power transformers, were recycled and reused in situ. The plan was compliant with the Hazardous Material Directive.
- 2.9 In Suriname, power sector regulations, standards, guidelines, and design criteria mainly follow the United States guidelines, ANSI (American National Standards Institute) and the National Electrical Code (NEC), which includes National Fire Protection Association (NFPA) 70, a United States standard for the safe installation of electrical wiring and equipment. It is part of the National Fire Codes series published by the NFPA. The use of NEC is commonly mandated by state or local law in the U.S., as well as in many jurisdictions outside of the United States. NEC codifies the requirements for safe electrical installations into a single, standardized source. In Suriname, EBS is responsible for ensuring compliance with these minimum standards. EBS applies the NEC codes and IFC regulations concerning the removal and disposal of toxic wastes, although no laws currently exist to enforce these standards.
- 2.10 Suriname has ratified the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, and the Stockholm Convention on Persistent Organic Pollutants. Both conventions are intended to minimize the amount and toxicity of wastes generated, to ensure their environmentally sound management as closely as possible to the source of generation, and to assist less developed countries in the environmentally sound management of the hazardous and other wastes they generate.
- 2.11 **Corporate Social Responsibility and Sustainability:** The EBS has been aware of changing international trends in the energy sector and the lessons learned from resulting reforms, and the need for transparency and meaningful engagement among public and private stakeholders. As a result of these dynamics, EBS has introduced the concept and practice of Corporate Social Responsibility into this operation, to allow for engagement, dialogue, collaboration, and participation among the Program's direct stakeholders (relevant Governmental Institutions, Ministries, the Private Sector, and local population). The program has also financed several activities to increase local awareness and capacity for developing EE and RE projects.

c. Qualification of sustainability

- 2.12 Based on the criteria established in the PCR Guidelines from May 2020, the sustainability level of the Program can be rated as **Excellent (E) – rating 4**. This rating is attributed to the evidence reviewed regarding the strong institutional arrangements, the EBS's technical and management capacity, and that EBS has a designated budget for the operation and maintenance of the investments.

E. Overall Rating

- 2.13 The PCR overall rating, using the weights of relevance 20%, effectiveness 40%, efficiency 20%, and sustainability 20%, is $4 \times 0.2 + 4 \times 0.4 + 4 \times 0.2 + 4 \times 0.2 = 4$. In addition, there was no

unsatisfactory rating for any of the criteria, all being no less than satisfactory. The PCR Overall Rating is therefore **Excellent (E)**.

III. NON-CORE CRITERIA

A. Bank performance

- 3.1 The Bank's performance during project preparation was fundamental to ensure that the design and implementation arrangements for the Program execution were adequate. The Bank's knowledge and experience in the Surinamese energy sector ensured that the Program was designed to address some of the main energy challenges while being aligned with the national energy plans and strategies. The Bank ensured the timely preparation and quality of the technical, economic, environmental, and social studies, as well as other operational documents such as the planning documents, result matrix, risk assessment and management plan, Monitoring and Evaluation plan, and Operation Manual. The PEU and the execution arrangements were established considering the lessons learned from the loan SU-L1009/[3059/OC-SU](#) (also executed by EBS), ensuring adequate project execution readiness.
- 3.2 The Bank has been recognized as being responsive to the dynamics of the Program and support in areas where the Bank's policies, procedures, and processes required clarity and explanation. The Bank assigned a team composed of an energy specialist as team leader, an operations analyst, a procurement specialist, a financial specialist, and an environmental specialist. The EBS has noted that implementation issues brought to the Bank were addressed in a timely, collaborative, and professional manner. The Bank also made capacity building opportunities available to the staff of EBS. These capacity building opportunities included Project Management Professional Training, Project leadership sessions, and fiduciary management working sessions. In many cases, the Team Leaders, Chief of Operations, Operations Analysts, and Fiduciary Specialists guided the PEU on matters relating to Program planning, procurement management, financial management, monitoring, and reporting.
- 3.3 Bank performance is qualified as **Excellent**.

B. Borrower performance

- 3.4 EBS through its PEU, ensured the quality of preparation of the project and has been able to deliver on the scope, development focus, and results of the project despite delays experienced during the early stage of implementation, the COVID-19 pandemic impacts and the challenges of low performance observed on some contractors.
- 3.5 **Program Management and Governance.** The Program organizational structure consisted of the Management of EBS and the PEU. The PEU was composed of a Program Manager, Component Leads, and Project Managers, as well as a financial, procurement, environmental, and social specialist.
- 3.6 The PEU's commitment to achieving project results was noted as high although there were challenges with balancing operational work and project commitments. The various Project Managers assigned to the subcomponents of the project were recognized by colleagues as key factors for the successful completion of the project. Additionally, through the collaboration and synergies among the PEU, the Program was able to demonstrate a high degree of implementation efficiency, thus achieving a high degree of work efficiency and spending efficiency.

- 3.7 The Executing Agency (EA) appropriately performed the specific responsibilities relating to the preparation, implementation, and reporting of the Program, with appropriate management and coordinating setups. Additionally, the evaluation noted that the Board of Directors of EBS made appropriate interventions to guide the Program at the strategic level and provided guidance and orientation regarding Program priorities.
- 3.8 **Financial Management.** The evaluation has highlighted that the EA has applied proper financial management activities and controls under the IDB's policies and procedures. Financial Auditing of the Program was appropriately performed as outlined in Article 8.04 of the General Conditions of the Loan Contract, and audit issues identified by the Independent Auditor were addressed on a timely basis. Additionally, financial disbursements were made following the agreed financial plans, and in harmony with Article 4.03 of the General Conditions of the Loan Contract. Moreover, no issues of financial improprieties were recorded and no material audit issues were identified by the independent auditor. In terms of financial management and internal controls, the QuickBooks Accounting Software was appropriately utilized and was able to be robust enough to allow for financial reporting compliance. Additionally, financial documents were maintained following IDB's financial management policies and procedures (GN-2811-1).
- 3.9 **Procurement management.** Procurement of goods, works and services were carried out consistent with the procedures stipulated in the procurement policies and procedures for the Bank. The EA initially utilized the Procurement of Works and Goods (GN-2349-9) and for the Selection of Contracting of Consultants (GN-2350-9) policies as stipulated in Section 4.01 of Special Conditions in the Loan Contract. However, there was a change to use of the updates policies GN-2349-15 and GN-2350-15 during execution. The PEU prepared and updated procurement plans when required, and appropriate approvals by the Bank were sought in alignment with Article 7.01 of the Loan Contract's General Conditions. There were no instances of mis-procurement recorded. The procurement staff assigned by the EA demonstrated a good understanding of procurement policies and procedures and functioned with a high level of professionalism.
- 3.10 The procurement process for goods, works and services required a significant amount of time for the elaboration of technical specifications and bidding documents, proposal evaluation, contract negotiations, and contract award. Some delays were experienced for procurement due to the high workload of some key EBS staff. In several instances, there was a need to redo the development of various project documents or the tender process due to a lack of responsive bids.
- 3.11 **Records Management.** The evaluation highlighted that accounting and administrative controls and records were satisfactorily maintained using both an electronic and non-electronic filing system. This electronic filing system utilized a Shared folder mechanism that was developed by the PEU. Additionally, hard copies of all Program files were kept in a filing cabinet at a central administrative location for safety purposes. In summary, the EBS records management system was adequate and acceptable to the Bank.
- 3.12 **Program Communication.** The PEU did not develop a formal communication management plan for the project. However, the Project Manager undertook regular communication activities with project staff, service providers, EBS' executive managers, and the Bank.
- 3.13 **Monitoring, Control, and Evaluation.** The PEU did not constitute a formal and dedicated Monitoring and Evaluation Specialist. However, a Monitoring and Evaluation (M&E) Plan based on the project's results framework was developed, deployed, and managed by the Project Managers. Correspondingly, the Semi-Annual Reports (SAR) were developed with a relatively good degree of detail to ascertain project progress, and periodic meetings to

review project status with the Bank took place. Additionally, the PEU periodically updated the planning documents (Annual Operation Plan, Financial Plan, and Procurement Plan); documented bidding and contract administration processes; submitted audit reports; and monitored the result matrix. The PEU also ensured that the mid-term and final project evaluations were commissioned as agreed to in the Loan Contract and Operations Manual.

- 3.14 In summary, the Program's Management Approach has been rated as **Excellent (E)**. The Program's management and governance structure was robust and incorporated the essential policy, strategic and operational oversight, and championing to keep the Program as a priority for EBS and the Government of Suriname. The PEU applied the required policies, procedures, and protocols as defined within the Loan Contract, and the Program's operational guidelines. The PEU's management and leadership capacity was appropriate to the size, scope, and complexity of the Program. Additionally, the PEU staff conducted its financial, procurement, general administration, and specific technical responsibilities in a professional manner that contributed to the successful delivery of the Program's results.

IV. Findings and Recommendations

Findings	Recommendations
Dimension 1: Technical-sectorial	
1. The Program included the implementation of several digital innovative ICT systems (OMS and ERP) for the operation of the power system. Due to the fast-technological progress of ICT platforms and the lack of specialized capacity within the EBS, it is challenging to determine if the quotations for some consultancies, services, licenses, and maintenance contracts related to ICT systems are within the market price.	Having an ICT system expert working under a retainer consultant agreement and that can provide on-demand specialized technical support could be useful. Also, it is recommended to do a preliminary market analysis and strengthen the EA personnel capacity in ICT projects.
2. The country lacks a long-term expansion plan to determine future investments and projects. The technical specifications of some components from the S/S had to be changed during project execution, to ensure compatibility with other ongoing capital investments and projects in the network.	Taking into consideration the governments long-term expansion and investment plans for the network and for upgrading critical infrastructure is important to minimize project delays due to non-univocal technical insights and requirements among stakeholders.
3. The EBS has in place safety measures for visiting S/S, however, some aspects were detected to improve the security of these visits.	Providing assistance to the electric utility to elaborate and enforce a more stringent safety protocol for S/S and other critical infrastructure visits, including capacity building activities would improve the security in the implementation.
Dimension 2: Organizational and Managerial dimensions	
4. The global COVID-19 pandemic situation caused project implementation delays to the construction works, delivery of goods, commissioning, and testing. In this regard, the nature of the project required EBS and contractors to be on-site undertaking the work activities. Although this was a significant	There is a need to ensure that robust project contingency plans are developed to address public health risks such as COVID-19 and other potential pandemics.

Findings	Recommendations
challenge, the PEU, and contractors adapted to the operating environment and utilized virtual technology for remote work, to conduct project meetings, and for systems testing and commissioning.	Use of virtual technologies, as far as feasible, for remote work, inspection, testing, and commissioning is advisable.
5. The PEU members had a high workload in IDB operations ⁷ and, in some instances, PEU members had to be involved in other capital projects or the EBS operational work. This resulted in priority conflicts and challenges to maintaining the availability of resources for the execution of the project. It has been challenging to maintain realistic schedules when planning activities, considering the several simultaneous projects in execution.	The PEU members should be exclusively assigned to the project. Consideration should be given to the recruitment of additional human resources on an as-needed basis for Programs that require dedicated resources. Additionally, to make effective use of the assigned human resources, a Human Resource Management Plan should be developed before the commencement of Programs, reviewed regularly, and updated as needed.
6. The project includes the procurement of a large amount of software, hardware and equipment, related components, and electrical supplies, which have to be stored in the EBS warehouse before being installed in the final destination.	There is a need to ensure that all goods and products procured are appropriately stored and not placed in a position of disarray. The electric utility should consider the implementation of an inventory management system that would enable maintaining a centralized record of every asset and item. This inventory management system should also be used to provide a single source of veracity for the location of every item, vendor, and supplier information, specifications, and the total number of items currently in stock. It should also avoid mixing the assets from the other programs being managed.
7. The period of the COVID-19 pandemic notwithstanding, a loss of motivation from the PEU was noticed during some phases of project implementation.	It is important to make time for team building activities, conduct regular team briefing sessions, conduct progress meetings, and have informal discussions that can lead to knowledge transfer and team cohesion. Moreover, to ensure that human resources assigned to the Program are motivated to perform work-related activities, a reward and recognition scheme should be developed and instituted.
Dimension 3: Public Processes / Actors	
8. Program outputs, outcomes, and impacts were not properly communicated to the general public and other interested stakeholders.	It is necessary to ensure the development and deployment of a country-wide specific communication management plan for the project, which should focus on strategies to address the alignment between the development of critical

⁷ SU-L1039/[3403/OC-SU](#) was approved in December 2014 with first eligibility in December 2015, and finalized in 2022. Over the period 2012 to 2022, the IDB had a robust engagement in the energy sector, with EBS as EA in 3 investment loans (SU-L1009/[3059/OC-SU](#), SU-L1039/[3403/OC-SU](#), SU-L1055/[4931/OC-SU](#)) and as a major stakeholder engaged in the fulfillment of triggers for three policy-based operations (SU-L1022, SU-L1035, SU-L1036).

Findings	Recommendations
	infrastructure and its contribution to EE and socio-economic development. Communication strategies to assist in information dissemination should include the utilization of social media (Facebook and LinkedIn), traditional print and television media, and direct methods to assist with in-country public awareness.
Dimension 4: Fiduciary dimensions	
9. The lack of experience from the PEU in the complex procurement processes (for example the OMS implementation) and updates in the IDB financial policies, procedures, and rules generated some delays and issues, as some of the reports submitted for Non-Objection (tender documents, evaluation reports, financial justifications...) had to be revised by the PEU.	Training in the IDB procurement and financial policies, procedures, and rules should be conducted with the PEU at an early stage of the Program. The technical staff should also undertake training interventions in the application areas of project management and other soft skills. These training interventions can ensure that staff capacity is built to effectively address emerging issues.
10. The EA shares the General and Specific contract conditions with bidders as part of the bidding documents, however, bidders tend to omit the contract clauses when preparing their proposals, thereby resulting in potential issues and longer periods during contract negotiations.	The Executing Agency should emphasize to bidders to examine contract clauses and address any potential issue in an early stage to avoid delays during contract negotiations and signing.
11. In National Competitive Bidding processes local contractors often do not choose to accept the advance payment due to the Bank Guarantee requirements. This results in a discrepancy between actual spending as compared with the forecasted financial planning.	The EA should investigate each process and advise where advance payments are likely to be utilized to prepare the financial plan and disbursement projections accordingly.
12. For most of the infrastructure projects to upgrade or build new S/S, EBS separated contracts for the supply of goods and the execution of the works (civil and electrical). These created additional workload for the PEU, incompatibility of some equipment, and delays due to interdependence among the contract's implementation.	A total Turnkey solution approach should be considered for some infrastructure projects as can lead to a reduction of operation, logistical, compatibility, and systems integration risks. Moreover, the use of a Turnkey solution can allow for the reduced use of resources, thus reducing the threat of staff fatigue and expediting the project execution.
13. Proper contract supervision is crucial to ensure that contractors have delivered on and adhered to their contractual obligations; EBS has achieved value for money; goods and services have been delivered following quality standards and; defects on infrastructure works are addressed within the agreed defects liability period.	A contractor's performance evaluation mechanism should be developed and consistently administered. In doing so, EA's should ensure that the evaluation addresses questions that relate to the provision of effective on-site supervision; job site maintenance and adequate management of delivered materials and supplies; effective cooperation with personnel; the use of responsible representatives available for instruction and decision making; adherence to the technical specifications; provision of adequate and

Findings	Recommendations
	timely progress schedule updates; safety and environmental standards; and final punch list items.
14. As a result of the volatility of the economic environment and devaluation of the local currency (SRD), local contractors have been negatively impacted due to bidding in SRD currency, and to mitigate this risk, the price offered was higher than planned.	For National Competitive Bidding processes, a more stable financial currency or price adjustment mechanisms shall be considered, in particular those contracts in which the scope includes the import of goods or services from abroad.
Dimension 5: Risk Management	
15. The risk assessment matrix and risk management matrix have not been updated regularly. Risks were addressed and mitigated without a structured methodology.	A risk assessment and management workshop at the beginning of the project should be conducted, with the participation of all the PEU members. The project manager should be responsible to ensure that the risks matrix is monitored and updated and that proper risk strategies are adopted.