DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

COLOMBIA

"CARIBBEAN SUSTAINABLE ENERGY" ENERGY EFFICIENCY PROGRAM (PEECES)

(CO-L1271)

LOAN PROPOSAL

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	Abbreviations
AC	Air conditioner
ANDI	Asociación Nacional de Empresarios de Colombia [National Business Association of Colombia]
AWP	Annual work plan
CCR	Colombia's Caribbean Region
CGR	Contraloría General de la República [Comptroller General of the Republic]
Col\$	Colombian pesos
CREG	Comisión de Regulación de Energía y Gas [Energy and Gas Regulation Commission]
DANE	Departamento Administrativo Nacional de Estadística [National Administrative Department of Statistics]
DIA	Development in the Americas
E2050	Estrategia 2050 [2050 Strategy], Colombia's long-term climate strategy to meet the Paris Agreement targets
EEM	Efficient energy management
ESA	Environmental and social assessment
ESAP	Environmental and social action plan
ESMP	Environmental and social management plan
ESMS	Environmental and social management system
ESPF	Environmental and social policy framework
ESPS	Environmental and Social Performance Standards
ESRS	Environmental and social review summary
FENOGE	Fondo de Energías No Convencionales y Gestión Eficiente de la Energía [Fund for Nonconventional Energies and Efficient Energy Management]
GBTU	Giga British thermal unit
GHG	Greenhouse gas
GWh	Gigawatt-hour
IAP	Indicative action plan
ICB	International competitive bidding
kWh	Kilowatt-hour
LAC	Latin America and the Caribbean
LED	Light emitting diode
MME	Ministry of Mines and Energy
NAMA	Nationally appropriate mitigation actions
NCRES	Nonconventional renewable energy sources
NDC	Nationally determined contribution
PCU	Program coordination unit
PEECES	"Caribbean Sustainable Energy" Energy Efficiency Program
PROURE	Programa de Uso Racional y Eficiente de la Energía [Program for the Rational and Efficient Use of Energy]
TC	Technical cooperation
TJ	Terajoules
TRM	Tasa representativa del mercado [representative market rate]
UPME	Unidad de Planeación Minero-Energética [Mining-Energy Planning Unit]

PROJECT SUMMARY

COLOMBIA

"CARIBBEAN SUSTAINABLE ENERGY" ENERGY EFFICIENCY PROGRAM (PEECES) (CO-L1271)

Financial Terms and Conditions								
Borrower: Republic of Colo	mbia		Flexible Financing Facility ^(a)					
Executing agency: Ministry	of Mines and Energy	(MME)	Amortization period:	24 years				
Loop modelity, layoutment	loon		Disbursement period:	5 years				
Loan modality: Investment	IUdii		Grace period:	6 years ^(b)				
Source:	Amount (US\$)	%	Interest rate:	SOFR-based				
IDB (Ordinary Capital):	US\$34.5 million	100%	Credit fee:	(c)				
IDB (Ordinary Capital).	US\$34.5 IIIIIIUII	100%	Inspection and supervision fee:	(c)				
Tetal	LICCOA E million	1000/	Weighted average life (WAL):	15.05 years				
Total:	US\$34.5 million	100%	Currency of approval:	United States dollar				

Project at a Glance

Project objective/description: The general objective of the program is to implement energy efficiency measures in the residential and official sectors of Colombia's Caribbean Region (CCR) that lessen greenhouse gas emissions, reduce electricity demand, and generate savings on energy subsidies for the national government with a gender and inclusion lens. The specific objectives of the program are to: (i) improve electricity use in households of lower-income strata and the CCR official sector through implementation of efficient energy management measures to reduce energy subsidies for the national government, as well as the energy consumed; and (ii) educate the CCR population about the importance of saving energy and energy efficiency through training for technicians and service users about the efficient management of electric power.

Special contractual conditions precedent to the first disbursement of the financing: The borrower, acting itself or through the executing agency, has provided evidence that the program Operating Regulations (link 8), the environmental and social management system (ESMS), and the environmental and social action plan (ESAP) have been approved and entered into force on the terms previously agreed upon with the Bank (paragraph 3.2). Additionally, see the contractual condition precedent to the first disbursement in Annex III, section II, and the special conditions precedent to the first disbursement in Annex B of the environmental and social review summary (ESRS) (link 2).

Special contractual conditions for execution: For special contractual conditions of a socioenvironmental nature, see the conditions in Annex B of the ESRS (link 2). (paragraph 3.3).

Exceptions to Bank policy: None

Exceptions to Bank policy. None.											
Strategic Alignment											
Challenges:(d)			SI 🗵	1	PI⊠	E					
Crosscutting themes:(e)	GE ⊠	GE⊠ and DI⊠			C⊠ and ES	\boxtimes	IC □				
	SDG1 □	SDG2 □	SE)G3 □	SDG4 □	SDG5 ⊠	SDG6 □	SDG7 ⊠			
Sustainable Development Goals (SDG): ^(f)	SDG8 ⊠	SDG9 ⊠	SE)G10 ⊠	SDG11 □ SDG12		SDG13 ⊠	SDG14 □			
	SDG15 □	SDG16 □	SE)G17 □							

- (a) Under the terms of the Flexible Financing Facility (document FN-655-1), the borrower has the option of requesting changes to the amortization schedule, as well as currency, interest rate, commodity, and catastrophe protection conversions. The Bank will take operational and risk management considerations into account when reviewing such requests.
- (b) Under the flexible repayment options of the Flexible Financing Facility, changes to the grace period are permitted provided that they do not entail any extension of the original weighted average life of the loan or the last payment date as documented in the loan contract.
- (c) The credit fee and inspection and supervision fee will be established periodically by the Board of Executive Directors as part of its review of the Bank's lending charges, in accordance with the relevant policies.
- (d) SI (Social Inclusion and Equality); PI (Productivity and Innovation); and EI (Economic Integration).
- (e) GE (Gender Equality) and DI (Diversity); CC (Climate Change) and ES (Environmental Sustainability); and IC (Institutional Capacity and Rule of Law).
- (f) For more information on the SDGs, click here. To consult the IDB Group SDG Project Classification Methodology, click here.

I. PROJECT DESCRIPTION AND RESULTS MONITORING

A. Background, problem addressed, and rationale

- 1.1 Macroeconomic context. Colombia progressed economically and socially in the past 20 years, advancing as an upper-middle-income economy and becoming a member of the Organisation for Economic Co-operation and Development. However, due to the severe socioeconomic impact of COVID-19, the economy contracted 7.0%1 in 2020, the worst decline in GDP in Colombia's history. Poverty rose² from 35.7% in 2019 to 42.5% in 2020, extreme poverty rose from 9.6% to 15.1%, and unemployment peaked at 21% in May 2020. However, the economic recovery and vaccination gains enabled the economy to grow 10.6%3 in 2021, reduce the unemployment rate to 13.7% (recovering more than 90% of the jobs destroyed at the pandemic onset), and launch an early fiscal recovery process. The 2021 fiscal deficit was 7.1% of GDP, and the gross debt of the Government of Colombia is estimated to have closed at 63.8%4 of GDP. Together with the economic recovery (driven principally by private consumption) and the global outlook (container crisis and Russia/Ukraine situation), annual inflation has risen to 8.53% in February 2022 (above the Banco de la República target band of 2% to 4%), a figure not seen since 2016, attributable mainly to the food component. To address this state of affairs, Banco de la República hardened its monetary policy to make it more restrictive, gradually raising the monetary policy interest rate to where it currently stands at 6.0%. The government also signed a decree⁶ reducing tariffs for agricultural inputs to 0%, to lessen the inflationary pressure on food production.
- 1.2 **Sector context.** In Colombia, Law 697 of 2001 declared the rational and efficient use of energy to be a matter of social, public, and national interest and created the Program for the Rational and Efficient Use of Energy and other nonconventional forms of energy (PROURE). The PROURE program seeks to gradually introduce programs, so that the entire energy chain is permanently in compliance with minimum levels of energy efficiency. To develop the PROURE guidelines, the Ministry of Mines and Energy (MME) developed and adopted the PROURE Indicative Action Plan (IAP) 2017-2022,7 setting a target of 9% efficiency8 for total energy consumption by 2022, and identified several potentials in the residential and official sector, specifically: (i) in the residential sector, cooling (39%), television

¹ Baseline National Accounts, <u>National Administrative Department of Statistics (DANE)</u>.

² Monetary poverty and monetary extreme poverty, <u>DANE</u>.

³ GDP, DANE.

⁴ According to the fiscal close report of the Ministry of Finance and Public Credit.

Consumer price index (CPI), <u>DANE</u>.

Decree 504 of 4 April 2022, Ministry of Commerce, Industry, and Tourism.

⁷ Resolution 41286 of 2016.

Transportation sector 5.49% (424,408 terajoules (TJ)), industry 1.71% (131,859 TJ), tertiary sector 1.13% (87,289 TJ), and residential 0.73% (56,121 TJ).

- (20%), and lighting (10%) as the main consumers⁹ of energy;¹⁰ and (ii) in the official sector, lighting and air conditioning of spaces.
- 1.3 In the two sectors, the IAP proposed a series of measures to meet the indicative target for energy efficiency by 2022, including: (i) promote the replacement of incandescent bulbs with efficient ones; (ii) encourage the replacement of old refrigerators with more efficient ones; (iii) implement projects to improve the efficiency of air conditioners (AC); and (iv) develop projects that allow the nonutility generation of power using renewable sources.
- 1.4 Studies by the Mining-Energy Planning Unit (UPME) and MME show a preponderance of inefficient cooling equipment in households of lower-income strata, more specifically in strata 1, 2, and 3,11 which represent more than 85% of Colombia's population. These studies reveal that 82% of households have cooling equipment that consumes nearly 9,000 GWh/year because most are lowperformance, consuming on average between 50 and 60 kWh/month, whereas efficient equipment consumes between 30 and 35 kWh/month. The IAP 2017-2022 estimates that replacing refrigerators over ten years old can reduce electricity consumption by 1,702 GWh/year for a 19% reduction in total residential consumption in cooling. In lighting, incandescent bulbs (filament and halogen) still represent 23% of the total in use, and the document proposes replacing 20 million of these with LED bulbs at the national level. In the official sector, it identifies potential savings of 20% from replacing equipment such as AC and lighting, and 2.7% from using renewable energies. The projected savings¹² in ten years is 18 giga British thermal units (GBTU) (5.27 GWh/year) for lighting and 17 GBTU (4.98 GWh/year) for air conditioning of spaces.
- 1.5 Colombia's Caribbean Region (CCR), made up of the departments of Atlántico, Bolívar, Cesar, Córdoba, La Guajira, Magdalena, and Sucre, spans 132,288 square kilometers of the country and represents 21% of the Colombian population (nearly 9,810 million inhabitants).¹³ In 2020, the region's electricity demand reached 17,601 GWh/year, 27% of the national demand (65,287 GWh/year). The high demand for electricity is explained by the tropical climate conditions, use of inefficient lighting fixtures and electrical equipment,¹⁴ and weak culture of saving energy. Additionally, CCR contributes the largest number of users from strata 1 and 2 (85%), representing 76% of electricity consumption in the residential sector.

⁹ Energy Efficiency Indicative Action Plan (2017-2022).

¹⁰ The remaining 31% is divided among air conditioners 7%, shower 6%, ventilation 6%, ironing 2%, and other 10%.

Strata 1, 2, and 3 correspond to users with lesser resources, who are beneficiaries of residential public utility services subsidies; strata 5 and 6 correspond to users with greater economic resources, who pay a 20% surcharge. Stratum 4 pays the cost of providing the service (DANE). The Government of Colombia subsidizes electricity consumption based on the user's income stratum and municipio: up to 60% for stratum 1, up to 50% for stratum 2, and 15% for stratum 3.

¹² MME. Energy Efficiency Policy for Colombia.

¹³ 2018 Census, DANE.

The Energy Efficiency IAP 2017-2022 finds that owning inefficient equipment can be attributed to the limited incomes of these strata and to the allocation of subsistence consumption subsidies of up to 60%.

- The government's strategy. The program is aligned with the "Pact for Colombia, Pact for Equity" National Development Plan 2018-2022, which promotes the efficient management of energy resources by supporting the development of energy efficiency projects with technology replacement in lighting and household electrical appliances to improve the consumption of lower-income users. The plan identifies the energy efficiency program in the Caribbean region as the starting point for this strategy. Additionally, the program is aligned and seeks to create synergies with the Nationally Appropriate Mitigation Action (NAMA) for Domestic Refrigeration in Colombia, which works in the following areas without focusing exclusively on CCR: (i) an exchange program with the objective of replacing inefficient refrigerators with efficient refrigerators; (ii) proper environmental management of inefficient refrigerators; and (iii) training of refrigeration technicians, technical staff of e-waste companies, representatives of environmental authorities, and others.
- 1.7 The Government of Colombia, acting through the MME and the Fund for Nonconventional Energies and Efficient Energy Management (FENOGE) (paragraph 3.1), is already executing efficient energy management programs to support low-income users who have great potential in terms of energy savings, subsidy reduction, and reduction of CO₂ emissions. Currently, with the support of the IDB and the Clean Technology Fund, it is implementing the "Efficient Demand-side Management of Energy in Noninterconnected Zones. San Andrés, Providencia, and Santa Catalina Archipelago Pilot Program" (loan 3747/TC-CO)¹⁸ with the objective of reducing greenhouse gas (GHG) emissions in noninterconnected zones by optimizing demand-side management of electricity in the San Andrés, Providencia, and Santa Catalina Archipelago, to improve its energy, economic, and environmental sustainability.
- 1.8 FENOGE is also financing and implementing the Efficient Caribbean project, ¹⁹ which seeks to replace 54,619 units of refrigeration equipment in the departments of Atlántico, Bolívar, and Córdoba. This project offers an incentive of 400,000 Colombian pesos (approximately US\$100) to each eligible beneficiary, to replace old refrigerators with more efficient ones. It is expected to yield savings of between 30% and 40% in the energy consumed by refrigerators and reduce the associated GHG emissions. The Efficient Caribbean project has paid out 1,475 million Colombian pesos so far, equivalent to 3,689 refrigerators, with cumulative savings of 1,090,067.09 kWh/year and 5.85 tCO₂/year avoided, and is considered the first phase of the "Caribbean Sustainable Energy" Energy Efficiency Program (PEECES).

VIII. Pact for Quality and Efficiency of Public Services: Water and Energy to Promote Competitiveness and Well-being for All, National Development Plan 2018-2022.

¹⁸ Loan approved in September 2016 for US\$10 million.

¹⁵ Law 1955 of 2019.

¹⁷ NAMA: Household Refrigeration in Colombia.

The IDB does not finance the Efficient Caribbean project. The Bank financed structuring studies. The Efficient Caribbean project is still in execution, but its lessons learned have been incorporated into the design of the PECEES program.

- 1.9 In 2018, at the Colombian government's request, the IDB approved nonreimbursable technical cooperation (TC) operation ATN/JF-16804-CO, "Support for the Caribbean Energy Efficiency Program,"20 which is now closed and 100% disbursed, to: (i) structure a large-scale program for the region; (ii) improve the rational use of energy; and (iii) mitigate climate change by increasing the use of energy efficient technologies in the residential and official sectors. Under this TC, the technical and financial proposal, execution mechanism, and environmental and social management plan (ESMP) were developed for the PEECES program. The proposed measures include: (i) replacement of lighting, cooling, and ventilation equipment in homes of strata 1 and 2 and official buildings; and (ii) nonutility generation using nonconventional renewable energy sources (NCRES) in official buildings. As a result of this work, the Government of Colombia seeks to continue the Efficient Caribbean project by expanding its scope to the seven departments of CCR (paragraph 1.5).
- 1.10 The program's strategy. The efficient energy management activities and measures in the PEECES program are aligned with Colombia's updated Nationally Determined Contribution (NDC), submitted by the Colombian government in 2020, committing to a 51% reduction of GHG emissions by 2030.21 The associated energy efficiency commitments included a national program for refrigerator replacement, refrigeration waste management, and the reduction of GHG emissions associated with energy savings from the replacement of old, inefficient AC equipment.
- 1.11 The program is aligned with Colombia's long-term climate strategy to meet the Paris Agreement targets (2050 Strategy, known as "E2050") through the promotion of sustainable housing and best practices in homes,22 as well as with the Comprehensive Climate Change Management Plan/Energy Mining Sector,²³ which identifies energy efficiency as a strategic line of activity for emissions reduction.
- 1.12 The program seeks to showcase the advantages of energy efficient equipment and efficient energy use by demonstrating their impact on consumption and, consequently, lowering the cost of electricity service. It provides support for lowincome individuals to modernize their cooling and lighting equipment, since they lack the resources to do so. According to the National Household Budget Survey, in CCR the main household expenditure clusters are: (i) housing, water, electricity, gas, and other fuels (32%); (ii) food and nonalcoholic beverages (22%); (iii) miscellaneous goods and services (11.6%); and (iv) transportation (9.6%). Furniture, household items, and ordinary home maintenance, which includes the purchase of household appliances, represent only 3.4% of spending.
- More efficient energy use will help reduce: (i) the electricity consumption of 1.13 households in the lower strata, as reflected in a projected lower electricity bill: (ii) fiscal spending on subsidies for households in the lower strata; (iii) the projected expenses of departmental governments as a result of reduced electricity

²⁰ Technical cooperation operation approved in July 2018 for US\$400,000.

²¹ Colombia Updated NDC.

²² E2050.

²³ See: Report of the Comprehensive Climate Change Management Plan/Energy Mining Sector (PIGCCme).

consumption in official buildings; and (iv) GHG emissions from the projected electricity savings and use of refrigerants in efficient cooling equipment with less global warming power. Additionally, investment for effective planning, management, and supervision is necessary for the PEECES program to be sustainable and replicable, so the implementation of consumption management systems and capacity-building for public institutions in the promotion and implementation of efficient energy management are considered essential. The program will serve to demonstrate the benefits of these measures and their applicability in other regions of Colombia, so its features and outcomes will be disseminated.

- Innovation and digitalization. According to the Bank's publication "DIA 2020: From Structures to Services," technological innovation provides opportunities for service providers to increase efficiency while providing better and more affordable services to users. For the change to be far-reaching, beyond energy savings, the program calls for the adoption of digital technologies to facilitate program management and the rational use of energy. Residential users who adopt prepaid metering systems will be given priority. Additionally, a digital app will be developed for potential residential beneficiaries to find out if they meet the conditions to access the program, enroll, and potentially manage their credit payments through the app. For program monitoring, the new cooling equipment will be metered specifically and compared with the replaced old electrical appliances. Smart metering systems will be used for public buildings. To mitigate data security and privacy risks in the new systems, the design criteria will include the application of cybersecurity software standards.²⁴
- 1.15 Gender and diversity. According to data from the latest Quality of Life Survey (2020), weighted by the expansion factor, there are approximately 1,264,575 women heads of household in the seven departments of CCR. More than 77% of CCR women heads of household live in dwellings of socioeconomic strata 1 and 2. CCR-wide, around 79% of the women heads of households who live in dwellings of these socioeconomic strata have freezers or refrigerators. On average, women heads of households from socioeconomic strata 1 and 2 in CCR rural areas have 15 percentage points less access to freezers and refrigerators than women heads of household from the same strata in urban areas. In terms of workforce participation gaps, in 2017, the labor market participation rate (percentage of the population over 15 years of age) in Colombia was 82% for men and 59% for women. According to International Labour Organization estimates, women's participation is significantly lower than men's at electricity, gas, and water companies (of the total number of employees in the sector, 77% are men, and only 23% are women). In different countries, it has been found that gender mainstreaming in the mining-energy sector is important to overcoming gender gaps and improving productivity, profitability, and innovation. One of the main recommendations is to develop cultural transformation strategies within companies, to favor women in traditionally male-dominated sectors of the economy. These can be guidelines to ensure commitment and gender-lens

Standards considered: ANSI/UL2900-1, standard for software cybersecurity in network-connectable products; ISO 27000, best practices and recommendations in information security management, covering cybersecurity aspects; and the NIST Cybersecurity Framework, a voluntary framework of standards and quidelines on best practices to manage cybersecurity risk.

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structures, knowledge generation and promotion practices, or the identification of clear targets and indicators.²⁵

- 1.16 In terms of diversity, specifically of persons with disabilities, the departmental prevalence of disability in the CCR is below the national total. The national total of persons with disabilities is 7.2%, whereas in the department of Cesar it is 7%, Sucre 5.7%, Bolívar 4.6%, Magdalena 4.5%, Córdoba 4.4%, Atlántico 4.1%, and La Guajira 3.1%. Generally nationwide, more than 71% of the population with disabilities (1,661,357 people) live in socioeconomic strata 1 and 2, and 4.3% of persons with disabilities in Colombia lack access to electricity. Overall, 64.1% of persons with disabilities in Colombia have no income, and only about 73,000 persons with disabilities engage in income-earning activities. Only 26.7% worked at least one hour on an activity that generated some income (compared to 44% for people without difficulties), and 80% of persons with disabilities who are employed work with no employment contract.²⁶
- 1.17 **Evidence of the intervention.** Programs for the mass replacement of refrigerators in homes can help reduce electricity consumption. This was one outcome of the appliance replacement program in Mexico, which began in 2009 and helped 1.5 million households replace their old refrigerator. An analysis showed a decrease on the electricity bill of 11 kWh²⁷ per month for savings of 7% on the monthly bill (Lucas W. Davis, 2012). Additionally, programs to replace incandescent lightbulbs with LED bulbs also help reduce household electricity consumption. Evidence of this is the program to replace conventional lighting with efficient technologies in Peru's 2014-2025 Energy Plan. According to an analysis of that program (Katherine M. Antonio, 2020), replacing incandescent with LED bulbs can lower the cost of electricity in homes by 2.2%.²⁸
- 1.18 The Bank's experience in the sector and country. The Bank has extensive knowledge of the sector as a result of its ongoing technical and financial support for over 20 years. Activities have included financing projects in power generation, energy efficiency, rural electrification, and institutional capacity-building in the sector. Two lending operations²⁹ and five technical cooperation operations³⁰ providing IDB support for the energy transition in Colombia are now in execution. These include structuring of the NCRES auction in October 2019, the energy transition mission, and the hydrogen roadmap.
- 1.19 Additionally, the Bank has experience on similar projects through the support currently provided to the San Andrés Archipelago under program 3747/TC-CO for US\$10 million, which seeks to reduce 26,534 tons of CO₂ as a consequence of lower electricity consumption, calculated at 40 GWh. Accomplishments thus far include:

²⁵ MME, 2020; Centre for Women in Politics and Public Leadership, 2012.

²⁶ Ministry of Health and Social Protection (2018). Persons with Disabilities Situation Room.

Lucas W. Davis et al. (2018). Cash for Coolers. National Bureau of Economic Research. Cambridge, Massachusetts, USA.

Katherine et al. (2020). Enhancing Energy Efficiency to Increase Affordability: Evidence from Residential Lighting Retrofit in Peru. IDB. Washington, D.C., USA.

²⁹ Loans 3747/TC-CO and 3610/OC-CO; 3610/OC-CO-1, and 3610/OC-CO-2.

Technical cooperation operations ATN/PI-17372-CO, ATN/OC-18768-CO, ATN/OC-18799-CO, ATN/OC-17365-CO, and ATN/SX-19191-CO.

- (i) photovoltaic solar systems installed at nine official institutions with a capacity of 61.4 kilowatts-peak (kWp); (ii) energy audits and partial replacement of equipment, providing AC, energy-saving lightbulbs, cooling equipment, and presence sensors for offices at 14 official institutions; and (iii) subsidies reduced as of 2021 (March) by US\$2,276,144 through the replacement of 90,000 inefficient lightbulbs and approximately 4,000 refrigerators and AC units. This project will also give the executing agency experience with this type of program, including knowledge of previous phases of preparation, as well as implementation. The Bank has experience with energy efficiency projects in other countries. In Mexico, the Energy Efficiency Project in Federal Government Office Buildings (loan 4513/OC-ME) for US\$30 million sought to achieve energy and economic savings, contributing to reduced GHG emissions and demonstrating the project's viability, so that implementation could be rolled out to other buildings such as hospitals and schools of the federal public administration and state and municipal government buildings. Execution of these projects has made it possible to identify the benefits that programs of this kind for sector sustainability and users (lower emissions and consumption, contribution to the sector's fiscal sustainability).
- 1.20 Lessons learned applicable to the program. The following main lessons were learned from loan 3747/TC-CO: (i) work closely with local community leaders, to gain the trust of potential beneficiaries; (ii) make door-to-door visits for lightbulb and appliance replacement strategies, do not wait for users to come to service points; (iii) employ a digital communication strategy aligned with local customs, to promote the features and objectives of the program and elicit interest among potential beneficiaries; (iv) provide ongoing training on the advantages and application of energy efficiency measures; (v) start with free activities (replacing lightbulbs) to build confidence and gain entry to homes, promoting activities to replace refrigerators; and (vi) hire and/or work hand-in-hand with technical operators, to help identify beneficiaries and implement the program. Additionally, loan GRT/ER-16412-JA highlights the activities that must be completed beforehand in official buildings, such as: (i) review the internal fixtures; and (ii) get agreements signed before work is done in the buildings. The support of a consultant with experience in energy efficiency contracting is also recommended for contracting activities and preparation of technical specifications for bidding processes. These lessons learned were taken into account when developing indicators and will be implemented as part of the program.
- 1.21 **The Bank's country strategy.** The program is aligned with the IDB Group Country Strategy with Colombia 2019-2022 (document GN-2972), through its strategic objective to spur innovation and development in business with crosscutting themes of climate change. The operation is included in the Update to Annex III of the Operational Program Report 2022 (document GN-3087-2).

B. Objective, components, and cost

1.22 **Program objectives and components.** The specific objectives of the program are to: (i) improve electricity use in households of lower-income strata and the official sector of Colombia's Caribbean Region (CCR) through implementation of efficient energy management measures to reduce energy subsidies for the national government, as well as the energy consumed; and (ii) educate the CCR population about the importance of saving energy and energy efficiency through training for

technicians and service users about the efficient management of electric power. Achieving these objectives will contribute to the general objective of implementing energy efficiency measures in the CCR residential and official sectors that lessen greenhouse gas emissions, reduce electricity demand, and generate savings on energy subsidies for the national government with a gender and inclusion lens. The program will have the following components:

- 1.23 Component I. Efficient management of energy demand in the residential and official sectors (US\$29,720,000). Three types of activities will be financed: (i) replacement of inefficient cooling equipment (refrigerators, freezers, and AC) with energy efficient equipment that is technologically advanced in the use of refrigerants associated with GHG and ozone-depleting substance emissions, and improved thermal comfort of dwellings, through an incentive of a percentage of the cost of the equipment for users in lower-income strata, with a specific target for beneficiaries who are women heads of household; (ii) replacement of inefficient lightbulbs at zero cost for low-income households. Priority will be given to households that voluntarily transfer to prepaid metering systems and/or have had work done on their internal fixtures by FENOGE; and (iii) efficient energy management measures and installation of photovoltaic solutions for official sector buildings (schools, health centers, hospitals, town halls, etc.) by installing solar panels at zero cost to the beneficiaries for nonutility consumption and efficient energy management interventions such as the replacement of inefficient lightbulbs with LED bulbs, and refrigeration and AC equipment at official agencies of the seven departments. Priority will be given to official institutions that have energy audits. This component will also finance implementation of the environmental and social management plan for proper final disposal of the replaced equipment and other tasks.31 The component will be executed through incumbent network operators in the CCR departments or through operators selected under the Bank's policies and regulations. The operators will be responsible for: (i) promoting the program among the beneficiaries; (ii) helping households and official entities apply for incentives; and (iii) partnering with the cooling and lighting equipment vendors offering replacement alternatives, delivering and installing the equipment in the beneficiary dwellings and/or public buildings, and properly disposing of the old equipment (link 8).
- 1.24 Possible other activities to reduce energy subsidies may be assessed while conducting this component of the program.
- 1.25 Component II. Communication and social management plan: promoting the participation of women and persons with disabilities (US\$1,610,000). This component will finance: (i) design and implementation of the program communication and promotion strategy using digital platforms and physical user service points that will be affordable and inclusive, to ensure that persons with disabilities and women benefit from the activities; and (ii) promotional activities that include training on saving and using energy efficiently for end users, focusing on women, training courses on efficient energy management for all operators in the

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The disposal of lightbulbs may be through Lúmina, a group of lightbulb producers, importers, and sellers committed to the sustainable conservation of natural resources, working to implement a system of selective collection and environmental management of lightbulb waste. The system was approved by Resolution 028 of 2013.

electric power service chain (open to persons with disabilities), and promotion of measures to prevent and mitigate the risk of gender-based violence. Activities include promoting the hiring of women in the proportion achieved in similar projects conducted previously in the country. In addition, the inclusion of persons with disabilities in the jobs created as part of program execution will be supported through training and the promotion of inclusive hiring.

- 1.26 **Program administration/management and contingencies (US\$3,170,000).** Financing will be provided for the contracting of professional staff of the program coordination unit (PCU)³² at FENOGE, through which the executing agency executes the program, as well as for operations and logistics expenditures such as per diems, ground travel, and airfare costs for program monitoring visits since the program will span seven departments (Bolívar, Cesar, Córdoba, La Guajira, Atlántico, Magdalena, and Sucre). The cost estimates were based on the experience of the Efficient Caribbean project executed by FENOGE (paragraph 1.9) in three CCR departments, which serves as the first stage of the program. Financing will also be provided for the audits, midterm and final evaluations, and contingencies.³³
- 1.27 **Key results indicators.** The Results Matrix presents the impact and outcome indicators associated with the program objectives. One impact of the efficient energy management measures to be implemented will be a contribution to climate change mitigation through avoidance of approximately 57,260 tons of CO₂ over five years, due to achieving the outcomes in reduced electricity consumption in the CCR residential and official sectors. The proposed indicators for these outcomes are: (i) energy saved annually resulting from the efficient energy management measures implemented; and (ii) decrease in subsidies associated with electricity consumption.
- 1.28 **Benefits.** Program implementation will yield at a technological level: (i) energy efficiency gains for cooling equipment, which will improve food preservation conditions, and for lighting, which will increase comfort in the dwellings of lower income strata, as well as for lighting and air conditioning equipment in CCR official buildings, which will result in lower maintenance costs for the equipment; and (ii) the promotion of smart metering in electricity service by prioritizing households that use prepaid metering systems. This, along with projects for nonutility power generation at official institutions using solar panels will help lower consumption of electric power from the grid and diversify the CCR energy matrix, reducing GHG emissions. At a financial level, the program will generate savings from the projection of consumption on electricity bills for low-income households and benefited public buildings, which will be reflected in lower projected fiscal costs of the subsidy for electricity consumption in the region. Lastly, the program will strengthen the management of efficient energy management projects at public

The PCU will include at least the general coordinator, one technical specialist, one procurement specialist, one financial specialist, one monitoring and supervision specialist, and one environmental and social specialist. The executing agency or FENOGE may contract additional staff for the PCU, which will be responsible for the loan proceeds in accordance with program needs.

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³³ Contingencies will cover changes in the representative market rate (TRM) affecting the value of replacement equipment and solar panels, increased popular demand for equipment, and changes in current environmental and technical regulations affecting program execution.

institutions and offer new job and training opportunities for women and persons with disabilities in the region.³⁴

1.29 Beneficiaries. The direct beneficiaries will be the users of CCR electricity service in the residential sector, classified as lower-strata households, and the official sector. Residential users will benefit from measures to increase efficient energy management and reduce projected energy consumption and therefore household spending on electricity service. The official sector will benefit from: (i) reduced spending on energy services for official buildings to be targeted with measures for energy efficiency and nonutility generation using NCRES; (ii) reduced spending on energy consumption subsidies for lower-strata households in CCR; and (iii) strengthening of the entities in charge of program execution through training in the design and execution of efficient energy management projects. In addition, women in the region will benefit from energy efficiency training and new job opportunities in efficient energy management projects. The expected direct beneficiaries will be 220,000 residential users from the replacement of lightbulbs and cooling equipment, and 664 official buildings from energy efficiency measures and the installation of photovoltaic solar solutions.

C. Strategic alignment

1.30 The program is consistent with the Update to the Institutional Strategy (document AB-3190-2) and aligned with the development challenges of: (i) social inclusion, through its focus on lower-income residential users (paragraph 1.29); and (ii) productivity and innovation, through measures for energy savings and increased nonutility generation using photovoltaic energy. Digital technologies will also be incorporated, to facilitate the management of program activities such as cellphone apps that allow potential beneficiaries to check if they can access the program, enroll, etc. (paragraph 1.14). The program is also aligned with the crosscutting areas of: (i) gender and diversity, through promotion of the participation of women and persons with disabilities in the jobs created by the program, as well as prioritization of beneficiaries such as women heads of household or households with persons with disabilities, aligning the program with the Gender and Diversity Sector Framework Document (document GN-2800-8) (paragraph 1.15); (ii) environmental and social sustainability, through development of an environmental sustainability, communication, and social management plan that includes technical training for users on saving and using energy efficiently, and the obligation to properly dispose of replaced equipment (paragraph 1.35); and (iii) climate change, through the financing of measures for efficient energy management and nonutility generation using NCRES that reduce electricity consumption and associated GHG emissions (paragraph 1.23). For the above activities, 100% of the IDB resources are invested in climate finance, according to the joint methodology of the multilateral development banks, contributing to the IDB's climate finance goal (30% of the volume of annual approvals). The program aligned with the Corporate Results Framework 2020-2023 (document GN-2727-12) through the indicator of "emissions avoided" as a result of displacement of polluting generation.

³⁴ The programs for persons with disabilities include training in energy efficiency services.

- 1.31 The program is aligned with the IDB Infrastructure Strategy: Sustainable Infrastructure for Competitiveness and Inclusive Growth (document GN-2710-5) through its promotion of environmental sustainability via efficient energy management measures, modernizing infrastructure to sustainably meet the energy demand of the population. The operation is also consistent with the Climate Change Sector Framework Document (document GN-2835-8) and Energy Sector Framework Document (document GN-2830-8) through its support for sector sustainability and security via investments to help reduce energy expenditure. The program is aligned with the Gender and Diversity Sector Framework Document (document GN-2800-10) through its inclusion of specific actions to promote the participation of women and persons with disabilities in the sector workforce. Additionally, the program contributes to the country's commitment to take action for gender equality; decent work and economic growth; industry, innovation, and infrastructure; reduced inequalities; climate change; and ensuring affordable, safe, and sustainable energy under Sustainable Development Goals numbers 5, 8, 9, 10, 13, and 7.
- 1.32 Consistency with IDB policies. The program is consistent with the objectives set in the Public Utilities Policy (document GN-2716-6) (link 5) through its contribution to the objective of generating adequate demand incentives to improve efficient energy management and use of renewable energies. This operation complies with the objectives, principles, and economic viability and financial sustainability conditions set in the policy. Additionally, it satisfies the financial sustainability and economic evaluation conditions, consistent with the draft regulations governing FENOGE, which establish that projects to be financed with fund resources must comply with cost-benefit evaluations comparing the project cost with the economic savings or earnings produced. The economic analysis of the investment (paragraph 2.6) reflects that these conditions have been met, showing that replacement with more efficient equipment will achieve a reduction in energy consumption, GHG emissions, and government subsidies for electricity generation. The program calls for benefits to be allocated in a transparent, direct, and targeted way, favoring the lower-income strata. The decrease in the amount of the current subsidies for lower-income strata will come from the reduction in electricity consumption, not changes in the electricity rate structure established by the Energy and Gas Regulation Commission (CREG) and the concession contract.

D. Viability analysis

1.33 **Technical viability.** Efficient energy management programs based on replacing inefficient lighting, refrigeration, and air conditioning equipment with new and more efficient equipment have been deployed widely in Latin America and the Caribbean as measures for the efficient use of energy. The Government of Colombia and the IDB have experience in the design and implementation of this type of energy efficiency programs, including the "Efficient Demand-side Management of Energy in Noninterconnected Zones. San Andrés, Providencia, and Santa Catalina Archipelago Pilot Program" (loan 3747/TC-CO) (paragraph 1.6). The lessons learned from that program have been incorporated into this program's design, to minimize risks in preparation and implementation (paragraph 1.19). The program's technical evaluation began with technical cooperation operation ATN/JF-16804-CO, "Support for the Caribbean Energy Efficiency Program" (paragraph 1.9) which helped identify the replacement of lighting and cooling equipment and the

improvement of thermal conditions in lower-strata households and official buildings, and nonutility generation using NCRES in official buildings, as viable efficient energy management measures for CCR. A technical feasibility analysis was done during program preparation, to determine the market potential for the identified measures.

- 1.34 **Socioeconomic viability.** A cost-benefit analysis was done for the investments to be developed under the Efficient Demand Management Mechanism. Expected benefits from savings on subsidies and reduced GHG emissions were identified and quantified. Using a social discount rate of 12%, the analysis found that the proposed activities meet the economic viability requirements. A sensitivity analysis was done with the objective of validating the distribution of program beneficiaries by sector and technology implemented, as well as the conditions of the economic model supporting the program, yielding an internal rate of return of 43.2% and a net present value of US\$55 million at the end of the five years of the program. The analysis found that the benefits achieved are an average 20,333 tons of CO₂ per year (a cumulative 57,260 tons of CO₂ during the program), and that the results obtained in savings on subsidies provide the Government of Colombia with a 10.5-year simple return on investment of US\$34.5 million, with cumulative savings on subsidies of US\$11.5 million over the five years of the program.
- 1.35 Socioenvironmental viability. The program will contribute to the sector's environmental sustainability through the reduction of GHG emissions as a result of: (i) replacement of cooling and lighting equipment with more efficient models in terms of energy consumption; and (ii) nonutility generation of electricity through solar panels on public buildings. The program also includes environmental awareness activities and training on efficient energy management measures, which will help reduce energy consumption and ensure the long-run sustainability of the implemented measures.
- 1.36 **Institutional and financial viability.** An institutional capacity analysis of FENOGE was completed as part of program preparation. The analysis shows that FENOGE has a satisfactory level of institutional development, associated with low risk. The analysis notes that, although FENOGE has experience in executing programs with multilateral development banks, certain strengthening measures will be necessary as specified in the program Operating Regulations. The program administration and management component includes the necessary budget for these recommendations as part of the program activities.

II. FINANCING STRUCTURE AND MAIN RISKS

A. Financing instruments

2.1 **Financial modality and structure.** The program is structured under the specific investment loan modality for up to US\$34.5 million, to be disbursed over a five-year period, according to the disbursement schedule in Table 2, as detailed in the multiyear execution plan. According to Operations Processing Manual, section PR-201, "Loans for Specific Projects," this program will finance specific projects within an energy efficiency sector program, the technical, economic, and financial feasibility of which have been estimated.

2.2 **Cost and financing.** The cost of the project is US\$34.5 million, which will be financed from the Bank's Ordinary Capital resources. The project costs are presented in Table 1.

Table 1: Estimated program costs (US\$ million)

Components	IDB	%
Component I. Efficient management of energy demand in the residential and official sectors	29.72	86.14
Replacement of inefficient cooling equipment and lightbulbs and improved thermal comfort of dwellings in lower-income strata	19.27	55.85
Efficient energy management measures and installation of photovoltaic solutions for buildings in the official sector	8.50	24.64
Environmental and social management plan	1.95	5.65
Component II. Communication and social management plan: promoting the participation of women and persons with disabilities	1.61	4.67
Program communication and promotion strategy	1.32	3.83
Energy efficiency training plans	0.24	0.70
Promotional activities for participation of women and persons with disabilities	0.05	0.14
Program administration/management and contingencies	3.17	9.19
Program coordination unit	2.56	7.42
Evaluation and audit	0.31	0.90
Contingencies	0.30	0.87
Total	34.50	100

2.3 **Disbursement schedule.** The five-year disbursement period (see Table 2) was determined principally by: (i) the average time taken to implement the activities proposed in the program; and (ii) the annual budget ceiling of the Ministry of Mines and Energy (MME).

Table 2: Disbursement schedule (US\$ million)

Source of financing	Year 1	Year 2	Year 3	Year 4	Year 5	Total
IDB	2,030,000	8,390,000	11,210,000	10,750,000	2,120,000	34,500,000
%	5.90	24.30	32.50	31.20	6.10	100

B. Environmental and social safeguard risks

- 2.4 This program is classified as category "B" under the Bank's Environmental and Social Policy Framework (ESPF) based on the evaluations during the due diligence process, because the activities to be conducted will generate negative environmental and social impacts that are moderate, localized, and short-term.
- 2.5 The environmental and social risk classification has been identified as moderate, based on the fact that no major infrastructure or civil works will be built, the

- executing agency has extensive experience in implementing Bank socioenvironmental policies in similar operations, and tools have been integrated to prevent barriers in access to finance for vulnerable communities.
- 2.6 The main socioenvironmental risk lies in disposal of the equipment and lightbulbs to be replaced, prevention of the risk of forced labor in the solar panel supply chain, and prevention of barriers that keep vulnerable communities from accessing supplemental financing for the purchase of refrigerators, freezers, and air conditioners. Since this is a specific investment loan, an environmental and social assessment (ESA) and environmental and social management plan (ESMP) have been prepared, along with a specific environmental and social policy framework for the operation. The measures for prevention of the risk of forced labor in the principal solar panel supply chain are aligned with the IDB Group Measures to Address Risk of Forced Labor in the Supply Chain for Silicon-based Solar Modules. Revised version (document GN-3062-1).
- 2.7 The relevant mitigation measures will be included as a key component of the standard bidding documents for procurement and/or installation of solar panels, reflecting the ESMP for the operation and the current ESPF, which are designed to evaluate and identify measures for the prevention, mitigation, and ongoing monitoring of working conditions and risks and their impact on workers hired directly by the contractor, subcontractors, and primary suppliers of polysilicon solar panels.
- 2.8 To meet the requirements set in the ESPF and in the 10 Environmental and Social Performance Standards (ESPS), the borrower must comply with the agreed environmental and social action plan (ESAP).
- 2.9 The public consultation process began with a virtual event that took place on 20 April 2022, led by the team of the Fund for Nonconventional Energies and Efficient Energy Management (FENOGE). Interest groups participated, according to the mapping of actors prepared by FENOGE. The main concerns related to whether gender issues would be fully realized, given the cultural context and beliefs of the region, features of the replacement equipment, and financing of the lightbulb replacement. The final versions of the ESA and the ESMP, as well as the public consultation report, were published on the Bank's website, in accordance with the environmental and social review summary (ESRS) (link 2) and the ESPF.

C. Fiduciary risk

2.10 The fiduciary risk of the operation is assessed as medium-high, given the variability in the representative market rate (TRM), which could potentially result in a loss due to a sizable exchange rate differential for the project. This variability will be monitored quarterly, so that relevant mitigation measures can be established in agreement with the executing agency.

D. Other key risks and issues

2.11 During the program preparation stage, the following were identified as medium-high risk: (i) volatility of the TRM, affecting the prices of equipment; to mitigate this risk, an analysis of the rate will be done at the start of execution, to identify a plan

for mitigating this effect; (ii) a political risk posed by the 2022 presidential elections, potentially leading to changes in the scope of the program that delay its launch; to mitigate this risk, the program was included in the planning of the MME, the Ministry of Finance and Public Credit, and the National Planning Department, and will be broadly disseminated and promoted with the incoming administration; moreover, Colombia's long-term vision for the energy transition and commitment to the Paris Agreement is widely accepted; and (iii) the risk of low user demand due to lack of knowledge of the program; to mitigate this risk, a communication and social management plan will be designed to promote the program. Some moderate risks identified in the implementation stage are presented in the Risk Matrix.

III. EXECUTION MECHANISM AND ARRANGEMENTS FOR MONITORING AND EVALUATING RESULTS

A. Execution mechanism

- 3.1 Borrower, executing agency. The borrower will be the Republic of Colombia. The Ministry of Mines and Energy (MME) will be the program executing agency, responsible for technical and administrative management of the program. The MME will channel the loan proceeds through the Fund for Nonconventional Energies and Efficient Energy Management (FENOGE) for execution via a commercial trust that receives program disbursements for administrative, budgetary, and financial/accounting management, including bidding processes and contract management, environmental and social supervision, planning, reporting, programming, monitoring, and auditing of the program. FENOGE will assume these responsibilities through the trust entity exercising legal and oral representation of the Autonomous Trust to which the loan proceeds will accrue. The program coordination unit (PCU) will be devoted exclusively to the program. FENOGE, established under Law 1715 of 2014, is responsible for promoting, executing, and financing plans, programs, and projects for nonconventional sources of energy, mainly those of a renewable nature, and efficient energy management. The MME has experience executing energy efficiency projects financed by the Bank, such as operation 3747/TC-CO, so it can capitalize on the lessons learned. The execution mechanism will be described in detail in the program Operating Regulations (link 8).
- 3.2 Special contractual conditions precedent to the first disbursement: The borrower, acting itself or through the executing agency, has provided evidence that the program Operating Regulations have been approved and entered into force on the terms previously agreed upon with the Bank. This condition is critical for the program to have rules of operation and to establish the guidelines and procedures to be followed by the executing agency. The program Operating Regulations (link 8) will describe the procedures for executing the program components, the roles, responsibilities, and coordination arrangements of the agencies involved in the operation, and the financial management, procurement, and contracting mechanisms. Any change to the Operating Regulations will require the Bank's no objection. Conditions to be included in the Operating Regulations are: (i) the PCU has been created as the unit through which

the executing agency executes the program, and will have legal and administrative technical/operational independence; (ii) the necessary core staff has been assembled and will operate under the executing agency's responsibility to execute the program; and (iii) any material change to the environmental and social management system (ESMS) or any environmental and social plan must be in writing and approved by the Bank in a manner consistent with the Bank's Environmental and Social Performance Standards (ESPS).

- 3.3 **Special contractual conditions for execution.** For special contractual conditions of a socioenvironmental nature, see the conditions in Annex B of the ESRS (link 2).
- 3.4 Program Operating Regulations. Program execution will be governed by the provisions of the program Operating Regulations, which will be consistent with current FENOGE regulations. During execution, the Operating Regulations (link 8) may be amended with the Bank's no objection in writing. The Operating Regulations will include all procedures to be used during program execution and will contain the mechanism for technical coordination between the MME, FENOGE, and the program's technical operators. The Operating Regulations will include, inter alia: (i) the procedure for appointment of the program director; (ii) the core team who will work under the executing agency's responsibility for program execution; (iii) the PCU organization chart; (iv) the requirement that a request submitted to the Bank in writing for any material change to the ESMS or any environmental and social plan, which will be subject to approval by the Bank consistent with the Bank's ESPS; (v) details of the admission procedures and criteria for execution of the program components; (vi) roles, responsibilities, and mechanisms for coordination of the entities involved; (vii) financial management, procurement, and contracting arrangements; (viii) the mechanism for technical coordination between MME, FENOGE, and the program technical operators (ix) rules and procedures for the selection and contracting of works, goods, and services, including those related to the technical operator; (x) rules and procedures for administrative and financial management; (xi) institutional and operational roles and responsibilities of the entities involved; (xii) type of users benefited by the respective program activities; and (xiii) the executing agency's commitment to enter into a commercial trust agreement for the administration of FENOGE resources during the disbursement period of the loan proceeds. Additionally, to ensure that the program has the specific personnel to achieve the planned development objectives, the members of the PCU must have been contracted or appointed, as the case may be: program general coordinator, financial specialist, monitoring and supervision specialist, technical specialist, two procurement specialists, and environmental and social specialist, on the terms previously agreed upon with the Bank. These measures are necessary because approval of the Operating Regulations (link 8) contributes to the executing agency's internal organization for successful implementation of the program.
- 3.5 **Procurement of works, goods, and consulting services.** The procurement of goods, works, and services and the selection of consultants financed by the Bank will follow the Policies for the Procurement of Goods and Works Financed by the Inter-American Development Bank (document GN-2349-16) and the Policies for the Selection and Contracting of Consultants Financed by the Inter-American Development (document GN-2350-16), respectively. The procurement plan (link 1) lists the program procurements. Direct contracting of the electricity utilities

of the seven Caribbean departments, under integrated supervision (financial, administrative, technical, legal, and environmental), is planned for the changing of lightbulbs and replacement of cooling equipment under Component I, on the grounds of continuity of services and standardization of goods pursuant to paragraphs 3.7(a) and (b) of policy document GN-2349-15. For similar considerations, the executing agency may engage in direct contracting of Fiduciaria La Previsora S.A. for the financial administration of FENOGE.

- 3.6 **Financial management.** The program will have a financial management system for keeping records of program transactions, according to the classification by investment components and distribution of resources identified in Table 1, "Estimated program costs." The executing agency, acting through FENOGE, will use the accounting information produced by the commercial trust to prepare the program financial reports. Program budgetary management will be conducted in accordance with the corresponding country policies, supported by the SIIF Nación II system. Country policies will be supplemented by application of the Financial Management Guidelines for IDB-financed Projects (document GN-2811-1).
- 3.7 Audit. External oversight will be provided by an eligible audit firm. During the loan disbursement period, the MME will deliver the program's annual audited financial statements to the Bank within 120 days after the close of the fiscal year. Additionally, a final audited financial statements report will be delivered to the Bank within 120 days after the end of the original disbursement period. Determination of the scope and other related factors will be governed by the terms of reference agreed upon with the Bank. The audit costs will be financed with program resources. The audit firm will be engaged by the MME, following the procedures in the Audited Financial Reports and External Audit Management Handbook for IDB-financed projects.

B. Arrangements for monitoring and evaluating results

- 3.8 **Monitoring and evaluation.** The program has a monitoring and evaluation plan (link 3) The monitoring and evaluation arrangements include: (i) the procurement plan; (ii) the multiyear execution plan; (iii) annual work plans (AWPs), these first three can be identified in the project execution plan; (link 3); (iv) annual verification of targets met as established in Annex II; and (v) six-monthly reports, which will contain: (a) activities completed during the period, progress on their execution, problems that arose, and how to solve them; and (b) evaluation of the Results Matrix, procurement plan, AWP, and risk analysis. The report will include an evaluation of execution during the period and planning for the next six-month period. The planning and execution annex (link 7) will be used for monthly monitoring of the operation. It lists the activities to be executed month by month, identifies deviations in a timely manner, and can be used to assess the operation's performance from eligibility to maturity.
- 3.9 The MME, acting through the PCU, will prepare reports on progress and results achieved for program activities, coordinating with and supported by the technical operator and the FENOGE trust. Using the loan proceeds, the MME, acting through the PCU, will engage consultants for the following evaluations: (i) midterm evaluation, to be delivered to the Bank three months after reaching at least 50% disbursement, or after 30 months since the loan contract entered into force

(whichever occurs first). The objective of this evaluation is to review progress achieved; areas of coordination and execution to spotlight; degree of compliance with contractual obligations and recommendations for meeting the proposed targets and achieving sustainability of the investments, which will provide guidance for the MME and FENOGE on any strategic and operational adjustments necessary to reach the objectives; and (ii) final evaluation of the program, to begin six months prior to the last disbursement.

- 3.10 An ex post economic evaluation of the cost-benefit analysis type, to be conducted by the Bank, similar to the ex ante evaluation, will seek to determine if the socioeconomic benefits were sufficient to recover the investment, given the costs incurred.
- 3.11 **Monitoring.** The MME, acting through the PCU, will monitor and oversee all management processes, including at least: (i) monitoring and reporting of execution progress; (ii) monitoring and reporting of program performance and annual physical and financial targets met; (iii) monitoring of the procurement plan (link 6); (iv) monitoring of risk management; (v) monitoring of traceability of outputs and outcomes; (vi) preparation of six-monthly progress reports; (vii) project completion report; and (viii) documentation of good practices and lessons learned with a view toward program completion. The Bank will meet once a year with the executing agency to discuss, among other things: (i) progress on activities identified in the AWP (link 6); (ii) level of compliance with the indicators for each component; (iii) the AWP for the next year; and (iv) the procurement plan for the next 18 months and possible changes to the budget allocations per component.
- Evaluation. The Results Matrix, monitoring and evaluation plan (link 3) and other 3.12 tools will be used for the program evaluation. The program plans to conduct the following evaluations: (i) a midterm evaluation, to be delivered to the Bank three months after reaching at least 50% disbursement, or after 30 months since the loan contract entered into force (whichever occurs first), which will review progress of the programmed activities up to that time, the midterm outputs generated, and any deviations that may have occurred and their causes, and will propose corrective measures to be taken; (ii) a final evaluation, as input for the project completion report (PCR), to be delivered no later than 30 days after the final justification of disbursements from the Bank, which will include reports on outcomes and progress in: (a) physical/financial execution; (b) Results Matrix targets met (versus the baseline); (c) the audits and improvement plans implemented; (d) sustainability of project investments (including human capital management and costs); (e) a summary of the principal lessons learned; and (iii) an ex post economic evaluation, to be delivered at the same time as the final evaluation, which will include an expost cost-benefit analysis following the economic analysis methodology.

Development Effectiveness Matrix										
Summary CO-L1271										
I. Corporate and Country Priorities										
Section 1. IDB Group Strategic Priorities and CRF Indicators										
1. The Strategic Alignment tab in convergence shows alignment on IDB Group Strategic Pri	orities. The Results Matrix tab lists flagged CRF indicators									
2. The Strategic Alignment tab in convergence shows information on alignment to Country	Development Objectives									
II. Development Outcomes - Evaluability	Evaluable									
3. Evidence-based Assessment & Solution	7.3									
3.1 Program Diagnosis	1.9									
3.2 Proposed Interventions or Solutions	1.9									
3.3 Results Matrix Quality	3.5									
4. Ex ante Economic Analysis	10.0									
4.1 Program has an ERR/NPV, or key outcomes identified for CEA	1.5									
4.2 Identified and Quantified Benefits and Costs	3.0									
4.3 Reasonable Assumptions	2.5									
4.4 Sensitivity Analysis	2.0									
4.5 Consistency with results matrix	1.0									
5. Monitoring and Evaluation	9.5									
5.1 Monitoring Mechanisms	4.0									
5.2 Evaluation Plan	5.5									
III. Risks & Mitigation Monitoring Matrix										
6. Overall risks rate = magnitude of risks*likelihood	Medium Low									
The Environmental and Social Data tab in convergence shows the environmental and social	al risk classification of the project									
IV. IDB's Role - Additionality										
Annex III Fiduciary Arrangements describes project reliance on the use of country systems	s (VPC/FMP Criteria)									
7. Additional (to project preparation) technical assistance was provided to the public										
sector entity prior to approval to increase the likelihood of success of the project										

Evaluability Assessment Note:

The general objective of this loan is the implementation of measures to improve the efficient use of energy in the residential and official sectors of the Caribbean Region in order to reduce Greenhouse Gas (GHG) emissions, reduce the demand for electricity, and generate savings in energy subsidies granted by the National Government, with a gender and inclusion approach. To this end, two specific objectives are contemplated: (i) improve the use of electrical energy in low-income households and in the official sector of the Caribbean Region, through the implementation of efficient energy management measures that reduce subsidies granted by the National Government and as well as energy consumption; and (ii) educate the population of the Caribbean Region about the importance of energy saving and the efficient use of energy through trainings on efficient management of electrical energy for technicians and users of the service.

The program diagnosis appropriately assesses the situation of the energy sector in the country which in general backs up the proposed interventions. In this regard, quantitative evidence is provided regarding the main challenges of the sector in its energy transition process as well their respective causes. Neither the POD nor its annexes present empirical evidence about the effectiveness of this type of interventions based on rigorous impact evaluations.

In general, the results matrix reflects the vertical logic described in the POD, covering the inputs, outcomes, and results. Most indicators in the results matrix meet the SMART criteria and include the sources and means of verification that will be used to measure them.

The monitoring and evaluation plan is adequate. The main evaluation questions are adequate, and a schedule is contemplated with the activities and timeline to gather the necessary data. Finally, the program will evaluate the results achieved using the before-after comparison without attribution.

RESULTS MATRIX

Project objective:

The specific objectives of the program are to: (i) improve electricity use in households of lower-income strata and the official sector of Colombia's Caribbean Region (CCR) through implementation of efficient energy management measures to reduce energy subsidies for the national government, as well as the energy consumed; and (ii) educate the CCR population about the importance of saving energy and energy efficiency through training for technicians and service users about the efficient management of electric power. Achieving these objectives will contribute to the general objective of implementing energy efficiency measures in the CCR residential and official sectors that lessen greenhouse gas emissions, reduce electricity demand, and generate savings on energy subsidies for the national government with a gender and inclusion lens.

GENERAL DEVELOPMENT OBJECTIVE

Indicators	Unit of measure	Baseline value	Baseline year	Expected year achieved	Year 5 cumulative target	Means of verification	Comments				
General development objective: Support the implementation of energy efficiency measures in the CCR residential and official sectors that lessen greenhouse gas emissions, reduce electricity demand, and generate savings on energy subsidies for the national government with a gender and inclusion lens.											
CO ₂ equivalent emissions avoided for users benefited by the program.	TonCO₂eq	0	2022	2027	57,260	Six-monthly progress report to IDB, including results for cumulative tons of CO ₂ equivalent (tonCO ₂ eq) emissions avoided. Project completion report. Report of contract to measure savings with case studies, from year 3 of program implementation onward.	See monitoring and evaluation plan.				

SPECIFIC DEVELOPMENT OBJECTIVES

Indicators	Unit of measure	Baseline value	Baseline year	Year 1	Year 2	Year 3	Year 4	Year 5	End of project	Means of verification	Comments
Specific development objective 1: Improve electricity use in households of lower-income strata and the official sector of Colombia's Caribbean Region (CCR) through mplementation of efficient energy management measures to reduce energy subsidies for the national government, as well as the energy consumed.											
Cumulative savings of electric power resulting from energy efficiency measures implemented by users benefited by the program.	GWh	0	2022	0	6.16	31.25	64.55	180.10	282.08	Six-monthly progress report to IDB, including results for estimated cumulative energy savings. Project completion report.	See monitoring and evaluation plan.
Decrease in subsidies associated with energy efficiency measures implemented by users benefited by the program.	Col\$ million	0	2022	0	1,309	7,887	20,248	47,911	77,355	Report of contract to measure savings with case studies, from year 3 of program implementation onward.	See monitoring and evaluation plan.
Specific development users about the effici	_				bout the i	mportance	e of saving	energy a	nd energy	efficiency through training for tech	nicians and service
Number of people trained on saving and using energy efficiently.	Number	0	2022	0	100	400	700	800	2,000	Six-monthly progress report to IDB. Project completion report.	See monitoring and
Women employed as part of program implementation.	%	0	2022	0	0	0	0	28	28	Monthly supervision progress report.	evaluation plan.

OUTPUTS

Indicators	Unit of measure	Baseline value	Baseline year	Year 1 2023	Year 2 2024	Year 3 2025	Year 4 2026	Year 5 2027	End of project	Means of verification	Comments
Component I. Efficient management of energy demand in the residential and official sectors.											
Residential users benefited by energy efficiency measures in the residential and official sectors.											
Output 1. Users benefited by replacement of lightbulbs in residential strata.	Number of users	0	2022	50,000	90,000	10,000	0	0	150,000		
Output 2. Users benefited by replacement of inefficient cooling equipment and improvement of thermal comfort conditions of dwellings.	Number of users	0	2022	1,000	17,500	24,500	24,500	2,500	70,000	Six-monthly progress report to IDB. Monthly supervision progress report. Project completion report.	See monitoring and evaluation plan.
Output 3. Women heads of household benefited by energy efficiency measures in the residential sector.	%	0	2022	0	0	0	0	30	30		
Official users benefited	by efficient e	nergy mana	gement me	asures.							
Output 4. Official sector buildings benefited by efficient energy management measures.	Number of buildings	0	2022	0	60	240	250	0	550	Six-monthly progress report to IDB. Monthly supervision progress report. Project completion report.	
Official users benefited	by nonconve	ntional rene	wable ener	gy source	s (NCRES)						
Output 5. Official sector buildings benefited by NCRES solutions without storage.	Number of buildings	0	2022	0	28	39	39	8	114	Six-monthly progress report to IDB. Monthly supervision progress report. Project completion report.	

Indicators	Unit of measure	Baseline value	Baseline year	Year 1 2023	Year 2 2024	Year 3 2025	Year 4 2026	Year 5 2027	End of project	Means of verification	Comments
Implementation of environment	mplementation of environmental sustainability plan.										
Output 6. Environmental sustainability, communication, and social management plan implemented.	Plan	0	2022	-	1	1	1	1	1	Six-monthly progress report to IDB. Monthly supervision progress report.	This is a recurring indicator.
Component II. Commun	ication and s	ocial manag	ement plan).							
Output 7. Communication and program promotion strategies implemented.	Strategy	0	2022	-	1	1	1	1	1	Six-monthly progress report to IDB.	This is a requiring
Output 8. Plan for training of all operators in the electricity service chain on energy efficiency implemented.	Plan	0	2022	-	-	1	1	1	1	Monthly supervision progress report.	This is a recurring indicator.
Promotion of participation	on of women	and person	s with disa	bilities as	part of pro	gram imple	ementation	-			
Output 9. Activities to promote participation of persons with disabilities as part of program implementation implemented.	Number of activities	0	2022	1	1	-	-	-	2	Six-monthly progress report to IDB.	
Output 10. Activities to promote participation of women in the workforce of program technical operators implemented.	Number of Activities	0	2022	1	1	-	-	-	2	Monthly supervision progress report.	

Country: Colombia Division: Energy Division (ENE) Operation number: CO-L1271 Year: 2022

FIDUCIARY AGREEMENTS AND REQUIREMENTS

Executing agency: Ministry of Mines and Energy (MME)

Operation name: "Caribbean Sustainable Energy" Energy Efficiency Program (PEECES)

I. Fiduciary Context of the Executing Agency

1. Use of country system in the operation.¹

⊠ Budget	⊠ Reports	National competitive bidding (NCB)
	☐ Internal audit	☐ Other
□ Accounting		☐ Other

2. Fiduciary execution mechanism

	•	IDB resources will be executed through the trusteeship administered by the Autonomous Trust of the Fund for Nonconventional Energies and Efficient Energy Management (FENOGE). Direct contracting of the electricity utilities of the seven Caribbean departments, under financial, administrative, technical, legal, and environmental supervision, is planned for the changing of lightbulbs and replacement of cooling equipment under Component I, on the grounds of continuity of services and standardization of goods pursuant to paragraphs 3.7(a) and (b) of policy document GN-2349-15. For similar considerations, the executing agency may engage in direct contracting of Fiduciaria La Previsora S.A. for the financial administration of FENOGE.
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3. Fiduciary capacity

Fiduciary capacity of the executing agency

The fiduciary capacity assessment of the executing agency found the necessary structure, systems, policies, and experience in place for satisfactory execution of the Bank's resources. The program coordination unit (PCU) is part of the Technical Section, which in turn reports to the Office of the Executive Director of FENOGE. The PCU has staff experienced in executing Bank resources. Adding a procurement specialist, legal support, and an environmental, social, and occupational health and safety specialist to the PCU is recommended, to supplement the installed capacity. The fiduciary risk level for this operation is rated medium-low.

Any system or subsystem that is subsequently approved may be applicable to the operation, in accordance with the terms of validation by the Bank.

4. Fiduciary risks and risk response

Risk taxonomy	Risk	Risk level	Risk response
Integrity	Since the organization has no code of ethics, integrity, and corporate good practices, actions incompatible with the ethics and integrity implicit in execution of the program could occur, marring the reputation of FENOGE and Ministry of Mines and Energy (MME).	Medium- low	Execute the goal of formulating and adopting a code of ethics, integrity, and corporate good practices for FENOGE, as envisaged in the 2020 institutional strategic plan.
Economic/ financial	Given the variability in the representative market rate (exchange rate), a loss could potentially occur due to exchange rate differential.	Medium- high	Monitor changes in the representative market rate and reassess the risk on a quarterly basis.

- 5. <u>Policies and guidelines applicable to the operation:</u> Document GN-2811-1 (OP-273-12), and documents GN-2349-15, and GN-2350-15, as subsequently updated in both cases.
- 6. Exceptions to policies and guidelines: N/A.

II. Considerations for the Special Provisions of the Loan Contract

Special fiduciary conditions precedent to the first disbursement of the loan proceeds: (a) The borrower, acting itself or through the executing agency, has provided evidence that the commercial trust contract for the administration of FENOGE resources is in force and will remain in force during the program disbursement period. If the commercial trust agreement is amended, the borrower, acting itself or through the executing agency, will so notify the Bank.

(b) the borrower, acting itself or through the executing agency, has submitted the sections of the operations manual of the commercial trust agreement related to management of the loan proceeds to the Bank for its no objection.

Exchange rate: For the purposes of Article 4.10 of the General Conditions, the parties agree that the exchange rate to be used will be the rate stipulated in Article 4.10(b)(i). For the purpose of determining the equivalency of expenditures incurred in local currency chargeable against the local contribution or the reimbursement of expenditures chargeable to the loan, the agreed exchange rate will be the rate on the effective date on which the borrower, executing agency, or any other person or corporation with delegated authority to incur expenditures makes the respective payments to the contractor, vendor, or beneficiary.

Audit type: An initial internal control report on the program financed by the IDB will be delivered 180 days after the value date of the first disbursement made by the Bank. Additionally, the MME will commission the external financial audit for the loan execution period and deliver an audited special-purpose financial statements report on the program annually 120 days after the close of the relevant fiscal year.

Financial reporting: The resource administrator will have a financial management system for keeping records of program transactions, according to the classification by investment components and distribution of resources identified in the "cost and financing" table of the loan contract. The

executing agency, acting through FENOGE, will use the accounting information produced by the commercial trust to prepare the program financial reports.

III. Procurement Execution Agreements and Requirements

Bidding documents	The Bank's standard bidding documents or those agreed upon between the executing agency and the Bank for the specific procurement will be used for procurements of works, goods, and nonconsulting services conducted in accordance with the procurement policies (document GN-2349-15), subject to international competitive bidding (ICB). Additionally, the selection and contracting of consulting services will be conducted in accordance with the consultant selection policies (document GN-2350-15), using the standard request for proposals issued by the Bank or agreed upon between the executing agency and the Bank for the specific selection. The project sector specialist will be responsible for reviewing the technical specifications and terms of reference for procurements during the preparation of selection processes. This technical review may be done on an ex ante basis and is independent of the procurement review method.			
Use of country systems	Colombia's Public Procurement and Contracting System will be used for the procurement of works, goods, and consulting services, as approved by the Bank's Board of Executive Directors. The procurement plan for the operation will list the procurements to be conducted using the country system within the approved scope. If the scope of Board approval for use of the country system is expanded, it will be applicable to the operation.			
Direct contracting and single- source selection	The following direct contracting and single-source selection have been identified: The incumbent grid operators of the seven Caribbean departments for the changing of lightbulbs and replacement of cooling equipment under Component II, on the grounds of continuity of services and standardization of goods pursuant to paragraphs 3.7(a) and (b) of policy document GN-2349-15. Additionally, the trustee, Fiduciaria La Previsora S.A., may be contracted to continue exercising legal and oral representation and administration of FENOGE.			
Procurement supervision	The supervision method will be ex post, except in cases where ex ante supervision is warranted. For procurements executed using the country system, supervision will be conducted using the country supervision system. Use of the (i) ex ante, (ii) ex post, or (iii) country system supervision method will be determined for each selection process. Ex post reviews will be conducted every 12 months in accordance with the project supervision plan, subject to changes during execution. Ex post review reports will include at least one physical inspection visit for 10% of contracts fiscally reviewed, selected from among the procurement processes subject to ex post review. The thresholds for ex post review are as follows:			
	Executing agency	Works	Goods/services	Consulting services
	MME	10,000,000	1,000,000	200,000

files	The executing agency and FENOGE, acting through the trustee, will retain complete documentation of procurement processes, as appropriate, in physical or digital files as part of the document management system. The
	contracting system used by the executing agency will administer and archive the procurement documentation in properly digitized format.

Main procurements

Description of procurement	Selection method	New procedures/ tools	Estimated date	Estimated amount (US\$)
Goods				
Replacement of inefficient AIR-E lightbulbs	Direct contracting		January 2023	US\$1,280,000.00
Replacement of inefficient AFINIA lightbulbs	Direct contracting		January 2023	US\$1,920,000.00
Replacement of inefficient cooling equipment and improvement of thermal comfort conditions of dwellings.	ICB		April 2023	US\$6,510,000.00
Replacement of inefficient cooling equipment and improvement of thermal comfort conditions of dwellings. Procurement of goods and services	ICB		April 2023	US\$9,800,000.00
Works				
Nonconsulting services				
Firms				
Technical, legal, environmental, financial, and administrative supervision of the program	Quality and cost- based selection (QCBS)		January 2023	US\$2,390,000.00
Individuals				

Link to access the project execution plan.

Other relevant information for the operation (BI).

IV. Financial Management Agreements and Requirements

Programming and budget	The PCU will use the project's annual work plan, procurement plan, and cash flow schedule to inform and support the project's annual budget allocation request. The PCU will coordinate the budget request through the focal point at the MME's Administrative and Financial Section and adhere to the national and institutional budget calendar. The loan proceeds will be included in the national budget under the MME, and budget execution will be controlled through the SIIF Nación II system.
Treasury and disbursement management	 The program cash flow will be consistent with the annual work plan and procurement plan, after they have received the Bank's no objection, and span a moving horizon of at least 12 months. The special bank account in United States dollars identified by the Ministry of Finance and Public Credit (MHCP) in the project's name will be used exclusively for management of the loan proceeds. The disbursement mechanism will be electronic, using the Online Disbursement application. The currency for management of the operation is the United States dollar (US\$). The exchange rate to be used in the operation will be the effective rate on the date when the currency of approval is converted into local currency; option (b)(i) under Article 4.10 of the General Conditions of the loan contract will apply. The operation will generally work with a financial period of six months. The preferred disbursement method will be advance of funds. The operation is expected to justify 80% of the cumulative balances pending justification.
Accounting, information systems, and reporting	The specific accounting rules to be followed will be the International Financial Report Standards (IFRS). For the accounting records of the operation, the trustee's system will be employed as a technology platform, using the accrual method. The reports to be issued by the trustee are the statement of cumulative investments and the statement of cash received and disbursements made. The program Operating Regulations with the documented definition of workflows and internal controls will be used as a supplement to the policies and guidelines applicable to the operation. The PCU will be responsible to the IDB for the program's financial and accounting management, but will be supported by, and work closely with, the relevant units of the MME's Administrative and Financial Section and the trustee.
External control and financial reports	The MME will select and contract the external audit services in accordance with the terms of reference previously agreed upon between the executing agency and the Bank. A first internal control report will be required with a cutoff date of 180 days after the value date of the first disbursement made by the Bank; subsequently, an audited special-purpose financial statements report will be required for each year of program execution. The selected external auditor and audit rules to be applied will be acceptable to the Bank. Depending on the nature and risk of the operation, the required scope of the external audit may be adjusted throughout the life of the project, depending on the results of the Bank's supervision. The cutoff date of the audited financial report that will be required to meet the financial information needs of the external audit in the operation will be 31 December, and the deadline for delivery will be 120 days after the cutoff

	date. If, during the execution period, the Comptroller General of the Republic (CGR) becomes eligible to audit projects financed by the IDB, it may be considered for auditing this operation.
Financial supervision of the operation	• The operation requires financial supervision focused on ensuring that the Bank's fiduciary policies and requirements are applied correctly. The Country Office specialists will be responsible for performing onsite and desk reviews and monitoring annually, subject to adjustments during execution, consisting of supervision of financial and procurement execution. Additionally, the external auditor will determine whether the resources are executed in accordance with the Bank's fiduciary rules and policies and the conditions stipulated in the program Operating Regulations.

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

PROPOSED RESOLUTION DE- /23

Colombia. Loan ____/OC-CO to the Republic of Colombia "Caribbean Sustainable Energy" Energy Efficiency Program (PEECES)

The Board of Executive Directors

RESOLVES:

That the President of the Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such contract or contracts as may be necessary with the Republic of Colombia, as borrower, for the purpose of granting it a financing to cooperate in the execution of the "Caribbean Sustainable Energy" Energy Efficiency Program (PEECES). Such financing will be for the amount of up to US\$34,500,000 from the resources of the Bank's Ordinary Capital, and will be subject to the Financial Terms and Conditions and the Special Contractual Conditions of the Project Summary of the Loan Proposal.

(Adopted on ____ 2023)

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