

## TC Document

### I. Basic Information for TC

▪ Country/Region:	PANAMA
▪ TC Name:	Support to promote solar renewable electricity generation in Panama
▪ TC Number:	PN-T1326
▪ Team Leader/Members:	Alarcon, Arturo (INE/ENE) Team Leader; Cuervo, Javier (INE/ENE) Alternate Team Leader; Corriols Diaz, Leonor Odilie (VPC/FMP); Johanna Montero (CID/CPN); Juan Tulande Lopez (INE/ENE); Landazuri-Levey, Maria C. (LEG/SGO); Laura Hinestroza Olascuaga (INE/ENE); Loana Vega (INE/ENE); Ochoa, David A. (VPC/FMP); Orellana, Miguel Angel (VPC/FMP); Ricardo Espino (INE/ENE)
▪ Taxonomy:	Client Support
▪ Operation Supported by the TC:	N/A
▪ Date of TC Abstract authorization:	01 Dec 2022.
▪ Beneficiary:	National Secretary of Energy
▪ Executing Agency and contact name:	Inter-American Development Bank
▪ Donors providing funding:	Low Carbon Energy Fund for People and Planet(LCE)
▪ IDB Funding Requested:	US\$250,000.00
▪ Local counterpart funding, if any:	US\$0
▪ Disbursement period (which includes Execution period):	24 months
▪ Required start date:	June 2023
▪ Types of consultants:	Individuals; Firms
▪ Prepared by Unit:	INE/ENE-Energy
▪ Unit of Disbursement Responsibility:	CID/CPN-Country Office Panama
▪ TC included in Country Strategy (y/n):	Yes
▪ TC included in CPD (y/n):	Yes
▪ Alignment to the Update to the Institutional Strategy 2020-2023:	Social inclusion and equality; Environmental sustainability; Gender equality; Diversity

### II. Objectives and Justification of the TC

- 2.1 **General Objective.** The objective of this Technical Cooperation (TC) is to promote the sustainability of the Panamanian electricity sector, through the development of solar renewable electricity generation in the country . The specific objectives are to: (i) demonstrate the feasibility of promoting distributed solar generation through a subsidy redirection program; (ii) support the implementation of solar microgrids identified in the national universal access plan.
- 2.2 **Context.** Panama's energy sector faces key challenges, including the need to: (i) diversify the electricity generation matrix by promoting the use of renewable energy generation (RE); (ii) achieve universal access by 2030 in compliance with the Sustainable Development Goal (SDG) 7; and (iii) reducing the electricity subsidies allocation in the country. Although the country has a high level of RE generation, nearly 45% of the installed capacity (as of 2022) is predominantly dependent on hydroelectric sources ([ASEP, 2022](#)). Thus, given the high variability of hydrology, it is necessary to scale up wind and solar generation, which not only contributes to reducing greenhouse gas (GHG) emissions in the generation activity but also to ensuring energy security in the electricity sector of Panama.

- 2.3 In this regard, there is also a high potential for promoting the use of RE generation at the distribution level, near the consumption points. In order to take advantage of this potential, the Government of Panama (GoP) set the [National Strategy of Distributed Generation](#) (ENGED in Spanish) which has the goal of reaching an installed capacity of RE distributed generation (DG) of 1,700 MW by 2030 ([SNE, 2021](#)).
- 2.4 The GoP also faces the challenge of reducing the fiscal impact of subsidies provided to users with a low and medium level of energy consumption in the country. According to the National Authority for Public Services (ASEP in Spanish), between 2010 and 2022, the allocation of subsidies to the electricity tariff corresponded to about US\$180 million per year ([ASEP, 2022](#)). The electricity subsidy was 2.17%<sup>1</sup> of total central government expenditures and 0.35% of the gross domestic product (GDP) at current prices for Panama in 2022, which is in line with values in the region<sup>2</sup>. These subsidies are paid directly by the Government to the distribution companies. Thus, given the need to reduce subsidies in a sustainable manner and in line with the potential of DG in the country, the ENGED proposes among its demonstrative projects, the development of a subsidy reorientation program that replaces the current electric subsidies for subsidies provided to the installation of DG to the population with limited access to develop this kind of projects. This initiative has been pre-designed with the support of the Bank and aims to increase solar energy generation and will demonstrate the feasibility of promoting distributed solar generation through a subsidy reorientation program.
- 2.5 On the other hand, the GoP is increasing efforts to close the energy access gap, which implies providing the electricity service to about 93,000 families across the country. The lack of access occurs mainly in the indigenous regions that only reach 8.1% of households in the Ngäbe Bugle, 10.0% in the Guna Yala and 68.0% in the Embera. In 2021, the Ministry of the Presidency, through the National Energy Secretariat (SNE) published the [Universal Access to Energy Strategy](#) (ENACU in Spanish), which sets the goals and lines of action to be implemented by the country to achieve universal access by 2030. Within these actions, the ENACU proposes the development of a National Universal Access Plan (PNAU in Spanish), which will help to identify the households without electricity access; analyze different alternative electrification modes (including grid extension, microgrids, and stand-alone systems), and define the investment plan required to achieve sustainable and reliable access by 2030. This plan will be supported by the IDB through the regional technical cooperation "[Regional Platform to Scale Up Rural Electrification Investment](#)", ATN/OC-19699-RG. The procurement process to contract a consulting firm to develop this plan was launched in December 2022 and it is currently under evaluation. It is expected that a final version of the PNAU will be presented by October 2023.
- 2.6 Once the PNAU is formulated, it will include a solar microgrids pipeline, with specific microgrid projects prioritized for implementation. Panama's Rural Electrification Office (OER in Spanish), the entity attached to the Ministry of public works and in charge of the country's rural electrification will support the implementation of these projects. However, since the country has no experience in the implementation of solar microgrids, and OER has limited personnel, there is a need for the strengthening of

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<sup>1</sup> [Preliminar Fiscal Balance 2022. Ministry of Economy and Finance.](#)

<sup>2</sup> The average expenditures in Latin America and the Caribbean (LAC) was 2.95% and 0.80%, respectively, in the period 2012 – 2015 ([Fiscal and Welfare Impacts of Electricity Subsidies in Central America](#). World Bank Group).

planning, technical, monitoring and supervision capacities to ensure the execution of the projects identified in the PNAU.

- 2.7 Overall, the implementation of this technical assistance will support the GoP's efforts to ensure the sustainability of the Panamanian electricity sector. The installation of solar distributed generation reduces the need for centralized power generation. This increases the resilience of the power system, as it provides a more diversified generation mix. Moreover, as there is a high coincidence of solar generation with demand (air conditioning), it also improves the efficiency of the transmission and distribution systems. On the other hand, the use of solar power for rural electrification in microgrids reduces the need to use thermal power generation (diesel generators). The intended objectives are aligned with Panama's Energy Transition Agenda and their strategies, published by the National Energy Secretariat (SNE) in 2020; the Strategic Government Plan 2019 - 2024, the long-term energy policy, contained in the 2050 National Energy Plan and also with the framework of the SDGs to 2030.
- 2.8 **Strategic alignment.** This TC is aligned with the Bank's Second Update to the Institutional Strategy 2020-2023 (AB-3190-2), by addressing the development challenges of: (i) Gender Equality and diversity, through the implementation of training programs that promote gender equality and women empowerment; (ii) Productivity and Innovation, by promoting innovative technologies and financial instruments for sustainable RE access projects; (iii) Climate change and environmental sustainability, by promoting the development of stand-alone PV and mini-grids systems that will reduce Greenhouse Gas (GHG) emissions from electricity generation compared to other electrification alternatives such as thermal-based mini-grids and (iv) Institutional capacity and rule of law, by strengthen OER's technical capacities for managing rural electrification projects. This operation is also aligned with the Strategy for Sustainable Infrastructure for Competitiveness and Inclusive Growth (GN-2710-5). It is also consistent with the Corporate Results Framework 2020-2023 (GN-2727-12), contributing to the indicators of: (i) number of households with access to energy services; (ii) number of women benefiting from economic improvement activities; and (iii) increase in installed capacity with RE. Finally, the operation includes alignment with the Employment Action Framework with a Gender Focus (GN-3057) by promoting the labor participation of women in the energy sector; the thematic areas of the Energy Sectoral Framework (GN-2830-3) as it focuses on sustainable rural electrification and deployment of RE solutions and with the Sectoral Framework on Climate Change (GN-2835-3). This TC is also aligned with the [Country Strategy with Panama 2021-2024](#) (GN-3055)<sup>3</sup>, by contributing to the strategic objective of: (i) developing quality infrastructure services based on the inclusion and environmental sustainability criteria. Also, it is aligned with the cross-cutting areas of Gender Equality, Climate Change, and Environmental Sustainability.
- 2.9 The project is aligned with the Low Carbon Energy Fund for People and Planet (LCE)'s purpose established in ¶2.1 of Annex I of the Agreement between the Rockefeller Foundation and the IDB, by financing new sustainable energy solutions that contribute to increasing electricity access in the country through renewable energy systems and affordable tariffs. It is specifically aligned with the first specific objective of the Fund: "increasing access to affordable, reliable, and modern energy services to underserved communities in LAC by expanding the use of distributed renewable energy (DRE)

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<sup>3</sup> IDB's Country Strategy (CS) with Panama (2021-2024) is in force.

services". The technical cooperation is also aligned with the Fund's eligible pillar 1, "Access to Energy Services and Distributed Renewable Energy (DRE)", (see ¶2.3 of Annex I of the Agreement) and its focus area for microgrids: off-grid, decentralized, and grid-connected renewable or renewable-hybrid microgrids of varying scales that provide reliable power to underserved communities and business in rural, peri-urban, and urban settings<sup>1</sup>.

- 2.10 **IDB experience and knowledge of Panama's energy sector.** The Bank has extensive experience in the country's electricity sector through of loans and technical cooperation for generation, transmission, rural electrification, institutional capacity-building, and support for improvements in the energy sector regulatory framework. In the last decade, the Bank supported the strengthening of Panama's energy sector through different technical cooperations such as: (i) "Support for the Implementation of the Universal Access to Energy Program" ([ATN/OC-18626-PN](#), [ATN/OC19211PN](#)); (ii) "Support for the Energy Transition Agenda (ATE in Spanish)" ([ATN/OC18916PN](#)); and (iii) "Support for Technical Transformation to promote the Energy Transition in Panama" ([ATN/TV-19320-PN](#)). Some of the measures are also being supported through regional technical cooperation for the development of Universal Access ([ATN/LE-19700-RG](#)). The Bank's support has helped to foster innovation in the sector, particularly in digitization, storage, and smart grids, and to promote gender equity and diversity. This TC will also support the implementation of the programmatic policy-based loan (PBL) "Program to Support a Fair, Clean and Sustainable Energy Transition I" which aims to support a sustainable, low emissions and inclusive development for Panama, through a clean, fair, and inclusive energy transition.

### III. Description of Activities/Components and Budget

- 3.1 **Component I: Support for the development of a distributed solar energy generation program based on the replacement of electricity subsidies (US\$ 100,000).** This component will support the development of the program structure and the mechanisms for its implementation. It will finance the following activities: (i) defining the typology of users and eligibility criteria with a gender and diversity approach; (ii) preparing legal mechanisms for its implementation; (iii) defining mechanisms to quantify the goals of the program; (iv) defining financial mechanisms and procedures for transferring expected savings to a fund for developing potential energy transition projects; (v) preparation of dissemination and awareness campaigns; (vi) definition of implementation budgets; (vii) defining the potential beneficiaries; and (viii) sizing a pilot project, including the structure for its replication. The preparation stage of the program contemplates setting the goals to (i) reduce the electricity subsidies, (ii) increase the integration of solar DG technologies, (iii) define the number of beneficiaries and (iv) contribute to greenhouse gas mitigation. This component will also explore options for tax benefits, including exploring the feasibility of allocating subsidy savings to the energy transition fund.
- 3.2 **Component II: National solar microgrid program (US\$ 150,000).** This component will support the development of a national solar microgrid program, as part of the National Universal Access Plan (PNAU in Spanish) and in line with the goal of achieving universal access by 2030. It contemplates financing the following activities: (i) defining the methodology to quantify the impact and siting of microgrids accounting for technical, socio-economic and regulatory aspects associated with the projects to be implemented; and (ii) strengthen the technical capacity of the OER for the planning, design, and implementation of solar microgrids prioritized within the PNAU. The implementation of this component is expected to strengthen the country's capacity in

the design and implementation of solar microgrids, including a gender component. The socio-economic analysis of the communities would be carried out with a gender and diversity approach to support the development of the projects to offer equitable benefits for the population of the area.

- 3.3 The TC's total cost is US\$ 250,000 to be funded by the Low Carbon Energy Fund for People and Planet (LCE) in the form of a non-reimbursable investment grant administered by the IDB. The indicative budget is presented in the following table:

**Indicative Budget**

Activity/Component	Description	IDB/Fund Funding	Counterpart Funding	Total Funding
<b>Component I: Support for the development of a distributed solar energy generation program based on the replacement of electricity subsidies.</b>	Development of the program structure, including the eligibility criteria, legal mechanisms for its implementation, and procedures for transferring expected savings to a fund for developing potential energy transition projects	US\$100,000.00	US\$0.00	US\$100,000.00
<b>Component II. National solar microgrid program</b>	Definition of a National solar microgrid program and support to strengthening the OER technical capacity	US\$150,000.00	US\$0.00	US\$150,000.00
<b>Total</b>		<b>US\$250,000.00</b>	<b>US\$0.00</b>	<b>US\$250,000.00</b>

#### **IV. Executing Agency and Execution Structure**

- 4.1 The Executing Agency (EA) is the Inter-American Development Bank (IDB). The implementation of this TC will be carried out by the Energy Division team responsible for the Division's portfolio in the Representation of Panama and the designated Project Team. The SNE will appoint a team of professionals to act as the technical counterpart to the Bank's Project Team in the implementation process of this TC. Also, there will be focal points in key entities associated with the rural electrification of Panama, including the OER and the National Authority for Public Services (ASEP).
- 4.2 The SNE has expressed its interest in the IDB being the executing agency considering the Bank's experience in both DG and energy access projects. On the other hand, the execution by the IDB will guarantee the agility for the procurement process and coordination of the consultancies, considering that the staff of the SNE is limited for the administrative execution of this TC and, the SNE would need to follow budgetary

and financial procedures to implement this TC. Constant coordination at the technical level between the SNE and the IDB is envisaged, as has been done in the implementation of other technical cooperation to support the sector ([PN-T1169](#), [PN-T1199](#), [PN-T1249](#), [PN-T1290](#) and [PN-T1293](#)). The IDB will be responsible for the fiduciary activities such as selection of consultants, reporting, monitoring, and evaluation.

- 4.3 **Procurement policies.** The activities to be executed under this operation have been included in the Procurement Plan (Annex IV) and will be executed in accordance with the Bank's established procurement methods, namely: (a) Hiring of individual consultants, as established in the regulations AM-650; (b) Hiring of consulting firms for services of an intellectual nature according to GN-2765-4 and its associated operating guides (OP- 1155-4) and (c) Hiring of logistics services and other services other than consulting, according to the policy GN-2303-28.
- 4.4 A single source selection (SSS) is contemplated in the procurement plan for a training course for the implementation of isolated solar systems, considering the hiring of the Latin American Energy Organization (OLADE). This justification of this SSS is that OLADE was hired in 2022 in a competitive process (process PN-T1269-P003) to implement a similar training. The training was implemented successfully, and there is an economic advantage of using the materials already prepared for the 2022 course. Moreover, the estimated value of the contract (US\$40,000) is below the limit for SSS established in the Operational Guidelines for the Selection and Contracting of Consulting Firms in Bank-Executed Operational Work (OP-1155-4).
- 4.5 **Monitoring and Evaluation.** Supervision and coordination of the consultant's work will be the responsibility of the Team Leader of this operation, with support of the INE/ENE team. The project will be monitored using the Bank's supervision instruments and the contract of consultants will comply with the Policies for the Selection and Contracting of Consultants Financed by the IDB (GN-2350-9). The team will hold regular meetings with the counterparty and report the progress of the TC, through the IDB standard system (Monitoring and Reporting System - M&R system); this will include information related to progress in delivering outputs and achieving results.

## **V. Major Issues**

- 5.1. The main risks of this TC are linked to possible problems and delays that could arise due to difficulties in coordination between the multiple stakeholders of the counterparty that depend on different ministries and public agencies, the complexity of the technical aspects and the availability of reliable data. The risks will be mitigated by involving counterparties from the beginning of the TC execution, presenting, and regularly discussing the progress of studies and consultancies. Furthermore, implementation from INE/ENE, with the support of specialized consultants, will help mitigate these potential risks. The IDB will also act as the executing agency of the TC generating the dialogue and the spaces of cooperation and coordination required among the institutions.

## **VI. Exceptions to Bank policy**

- 6.1. There are no exceptions to Bank policies in this operation.

## **VII. Environmental and Social Strategy**

- 7.1. This TC will not finance feasibility or prefeasibility studies of investment projects with associated environmental and social studies; therefore, it is excluded from the scope of the Bank's Environmental and Social Policy Framework (MPAS).

**Required Annexes:**

[Request from the Client - PN-T1326](#)

[Results Matrix - PN-T1326](#)

[Terms of Reference - PN-T1326](#)

[Procurement Plan - PN-T1326](#)