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PANAMA

PROGRAM TO SUPPORT A FAIR, CLEAN, AND SUSTAINABLE ENERGY TRANSITION I

(PN-L1181)

LOAN PROPOSAL

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REQUIRED:

1. Policy Letter
2. Means of Verification Matrix
3. Monitoring and Evaluation Plan

OPTIONAL:

1. Analysis of Compliance with the Public Utilities Policy
2. Bank support for the sector
3. Donor coordination with the sector
4. Gender analysis
5. Climate change analysis

ABBREVIATIONS

ATE	Energy Transition Agenda
DCC	Climate Change Directorate
ENME	National Electric Mobility Strategy
ENSA	Elektra Noreste, S.A.
ESPF	Environmental and social policy framework
ETESA	Empresa de Transmisión Eléctrica S.A.
FONTE	Energy Transition Fund
GDP	Gross domestic product
GHG	Greenhouse gases
ICP	Colombia-Panama Interconnection
INADEH	National Institute of Training for Professionals and Human Development
MEF	Ministry of Economy and Finance
MER	Regional Electricity Market
MiAmbiente	Ministry of Environment
MMT	Millions of metric tons
NCRE	Non-conventional renewable energy
NDC	Nationally determined contribution
OC	Ordinary Capital
OECD	Organisation for Economic Co-operation and Development
OER	Rural Electrification Office
PBP	Programmatic policy-based loan
PUP	Public Utilities Policy
SDGs	Sustainable Development Goals
SIEPAC	Central American Electric Interconnection System
SIN	National Interconnected System
SNE	National Energy Secretariat
UNEP	United Nations Environment Programme

PROJECT SUMMARY

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<tr><th colspan="5">Financial Terms and Conditions</th></tr>
<tr><td colspan="3">Borrower</td><td colspan="2">Flexible Financing Facility[a]</td></tr>
<tr><td colspan="3">Republic of Panama</td><td>Amortization period:</td><td>15 years</td></tr>
<tr><td colspan="3">Executing agency</td><td>Disbursement period:</td><td>1 year</td></tr>
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<tr><td>Interest rate:</td><td>SOFR-based</td></tr>
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<tr><td>IDB (Ordinary Capital):</td><td>200,000,000</td><td>100</td><td>Inspection and supervision fee:</td><td>[c]</td></tr>
<tr><td rowspan="2">Total:</td><td rowspan="2">200,000,000</td><td rowspan="2">100</td><td>Weighted average life:</td><td>8.5 years</td></tr>
<tr><td>Currency of approval:</td><td>United States dollar (US$)</td></tr>
<tr><th colspan="5">Project at a Glance</th></tr>
<tr><td colspan="5">Project objective/description: The general objective of the programmatic series is to support low-emission, inclusive sustainable development in Panama, through a clean, fair, and inclusive energy transition. The specific objectives of the first operation are to: (i) promote increased power generation from variable renewable sources in the generation matrix; (ii) create incentives for the digitalization of the electricity sector; (iii) promote electric mobility; (iv) support increased access to electricity; (v) support the narrowing of the gender gap in the sector; and (vi) promote capacity-building in green jobs for the energy transition.</td></tr>
<tr><td colspan="5">Special contractual conditions precedent to the first and only disbursement of the loan proceeds: The sole disbursement of the loan proceeds will be subject to fulfillment by the borrower, to the Bank’s satisfaction, of the policy reform conditions as set forth in the Policy Matrix (Annex II), the Policy Letter, and the other conditions set forth in the applicable loan contract (paragraph 3.4).</td></tr>
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[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 the original weighted average life of the loan or the last payment date as documented in the loan contract are not exceeded.

[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 applicable 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).

I. PROJECT DESCRIPTION AND RESULTS MONITORING

A. Background, problem addressed, and rationale

1.1 **Macroeconomic situation.** In the 15 years prior to the pandemic, Panama's average economic growth was three times the regional average. After completion of the Canal expansion in 2016, this growth declined, posting the lowest rate in the previous 10 years in 2019 (3%); Even prior to the pandemic, the need for greater diversification of Panama's economy was evident. The decline in economic activity in 2020 was the highest in Latin America, after Venezuela, with a contraction of nearly 18%. The strong recovery in 2021 drove gross domestic product (GDP) growth of 15.3%,[1] and cumulative growth as of the third quarter of 2022 stood at 11%, enabling the country to exceed prepandemic levels of activity. Nonetheless, this overall outcome hides a clear duality between activities that are outpacing their 2019 levels, such as mining (218%), private health (19%), primary sector (10%), and transportation (9.8%) and others that have not managed to recover, such as tourism (-33%), construction (-29%), real estate (-15%), manufacturing (-12.6%), and private education (-11.9%). This duality is reflected in the labor market. Workforce participation improved in 2022, but failed to reach 2019 levels (62.3% versus 66.5% in 2019), as was the case with informality, which remains above past levels (48.2% versus 44.9% in 2019).[2] The decline in workforce participation hit women hardest (going from 55% in 2019 to 49.7% in 2022, compared to 78.8% to 76% for men).[3] In this context, a more inclusive and balanced postpandemic recovery is needed, along with greater diversification of productive activity to enable a return to a high growth path in the medium term. The energy transition, focused on non-conventional renewable energies (NCREs) and electrification, are actions that can contribute to this,[4] supporting job creation, with greater gender equity, and the country's sustainable growth. It is also important to bear in mind that Panama is one of the most vulnerable countries to the effects of natural disasters and climate change, therefore the actions undertaken need to consider the proper management of the risks that this vulnerability entails.

1.2 **Energy Transition Agenda (ATE) in the context of the Paris Agreement.** In 2020, the Government of Panama approved the strategic guidelines of the ATE, which establishes a vision for an orderly transition toward decarbonization of the economy, considering advances in technology, regulations, and the global energy supply. The ATE is framed within the Paris Agreement and Sustainable Development Goal 7 (SDG7), to ensure access to affordable, reliable, sustainable, and modern energy for all. To implement the ATE, between 2020 and 2023, the Panamanian government developed and approved five specific national strategies: (i) Universal Access to Energy; (ii) Energy Efficiency; (iii) Electric Mobility; (iv) Distributed Generation; and (v) Innovation of the National

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1 Data on national accounts from the World Bank and data on national accounts from the OECD, 2021.

2 National Statistics and Census Institute (INEC) - Panama, 2022.

3 Despite the fact that the educational gap is closed and that 49% graduates in science, technology, engineering, and mathematics are women, Panamanian women continue to participate primarily in lower-productivity activities than men.

4 UN Environment Programme. The energy transition as a path to prosperity. A cost-benefit analysis of integrating the energy transition at the heart of the COVID-19 recovery plan, 2020.

Interconnected System (SIN). In addition, the Panamanian government proposed, in a National Green Hydrogen Strategy, the creation of an Energy Hub, given the country's privileged geography and the existence of the Panama Canal. The process of developing the strategies included workshops with sector agents and a broad public consultation. Each of these strategies was approved by government cabinet resolution and proposed actions, responsible parties, and a timeline for promotion of the ATE.

1.3 **Nationally determined contribution (NDC).** The first NDC, submitted in 2016, includes the target of 30% of installed generation capacity with wind, solar, and biomass sources by 2050. The first update of the NDC (NDC1) was submitted in December 2020. The commitments under NDC1 in terms of energy are based on the implementation of the ATE and aim for the following: (i) by 2025, Panama will have a National Climate Change Plan for the energy sector with one component each for mitigation and adaptation; and (ii) by 2030, Panama will reduce CO_2 equivalent (CO_2eq) emissions in the energy sector by at least 11.5% and by at least 24% by 2050, with respect to the business-as-usual scenario, representing an estimated 10 million tons of CO_2eq ($MtCO_2$eq) between 2022 and 2030 and 60 $MtCO_2$eq between 2022 and 2050. In 2030, absolute emissions by the energy sector are projected to be 14 $MtCO_2$eq.[5] The Panamanian government is moving forward with the preparation of the second NDC (NDC2), which will increase the country's climate ambitions.

1.4 **Regulatory framework, organization of the sector, and climate change governance.** Law 41/1998, the General Environment Act, as amended by Law 8/2015, lays the groundwork in the area of climate change mitigation and adaptation. Law 40/2016 ratified the Paris Agreement, and with it the country affirmed its commitment to combat climate change. Executive Decree 36/2018 established the new organizational structure for the Ministry of Environment (MiAmbiente) and created the Climate Change Directorate (DCC) and its mitigation and adaptation departments. MiAmbiente, through the DCC, is responsible for periodically preparing national inventories of greenhouse gases (GHGs), analyzing mitigation measures, preparing NDCs, and submitting a five-year strategy for low-carbon economic and social development. There is a series of guiding instruments that have been developed since the DCC was created, such as: (i) National Climate Change Policy; (ii) National Climate Change Strategy 2050; (iii) National Climate Action Plan; and (iv) Long-term Low-emissions Economic and Social Development Strategy. In March 2023, discussion of the "Climate Change Framework Bill" began in the National Assembly; it includes making compliance with the NDCs compulsory. It also includes the establishment of new institutions in climate governance, such as the National Climate Change Cabinet, the Interagency Climate Change System, and Municipal Climate Change Units.

1.5 **Organization and regulatory framework for the electricity sector.** Panama liberalized its electricity sector in the late 1990s and it currently comprises: (i) a competitive generation sector, with participation of nearly 60 companies, most privately held; (ii) a transmission segment, under the responsibility of Empresa de

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[5] UN Environment Programme. The energy transition as a path to prosperity. A cost-benefit analysis of integrating the energy transition at the heart of the COVID-19 recovery plan, 2020.

Transmisión Eléctrica S.A. (ETESA), 100% state-owned, responsible for the system's operation and planning; (iii) distribution and marketing, under the responsibility of concession holders: Elektra Noreste, S.A. (ENSA), Empresa de Distribución Eléctrica Metro Oeste, S.A., and Empresa de Distribución Eléctrica Chiriquí, S.A., private companies with minority public stakes; and (iv) the Rural Electrification Office (OER), attached to the Ministry of Public Works, responsible for electrification development in unserved rural areas not under concession. Law 6/1997 establishes the regulatory and institutional framework for electricity service. The National Energy Secretariat (SNE) is responsible for determining policies. The National Public Utilities Authority (ASEP) regulates the electricity subsector. There are various laws and regulations for the promotion of generation based on hydropower and other renewable energies (Law 45/2004), wind power (Law 44/2011, amended by Law 18/2013), biofuels and biomass (Law 42/2011, amended by Law 355/2023), natural gas (Law 41/2012), and solar power (Law 37/2013). Law 69/2012 sets the guidelines for national policy on the Rational and Efficient Use of Energy.

1.6 **The energy sector.** In 2021, the supply on the energy matrix included: 50% from petroleum derivatives, 20% from renewables, 14% from coal, 11% from natural gas, and 5% from firewood. The transportation sector was the main consumer of energy, with a 44% share. In 2019, emissions from the energy sector were 15.8 $MtCO_2eq$, representing more than half of the country's emissions, with a share of 47%[6] from transportation and the rest primarily from power generation and industry. In terms of energy efficiency, primary energy intensity has remained constant since 2000, while the energy intensity of consumption has gradually declined, from 0.808 kilo barrels of oil equivalent per million dollars of GDP (kBOE/US$1 million of GDP), in 2007, to 0.409 kBOE/US$1 million of GDP, in 2021. The National Monitoring Report on Energy Efficiency in Panama identifies that generation with renewable energies supports the improvement in primary energy intensity, while there is still potential to increase efficiency in the use of fuels and electricity in the residential sector, in addition to reducing the use of firewood.

1.7 **Transportation subsector.** The automotive fleet totals 927,243 vehicles in circulation, 189,109 of which are for freight and 691,053 for passengers; 89,6% are privately owned.[7] Electric mobility is incipient, primarily by private initiative. In 2022, there were 132 charging stations and 287 electric vehicles in the country, less than 1% of the total.[8] In 2020, the government published the National Electric Mobility Strategy (ENME). An impact evaluation conducted by the Inter-American Development Bank (IDB)[9] showed that, in a conservative scenario, its implementation would promote up to 30,000 electric vehicles by 2030, with investments of US$16 million per year in charging stations. Implementation of the ENME would reduce emissions in CO_2eq per year by 1.3% to 4.3%. At the same time, the use of green hydrogen and its derivatives have been proposed as an alternative in the medium term to reduce emissions in other hard-to-decarbonize sectors, such as air and sea freight transportation.

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6 Preliminary GHG inventory 2022. MiAmbiente. Data will be official until the release of the fourth communication.

7 National Statistics and Census Institute.

8 SNE.

9 Impact analysis of the National Electric Mobility Strategy.

1.8 **Electricity subsector.** As of 2022, the installed capacity was 3,926.0 MW, of which 2,508.3 MW was from renewable energies (44.7% hydropower, 6.9% wind, 11.3% photovoltaic, and 1.0% biogas;) and 1,417.7 MW thermoelectric (36.1%).[10] Peak demand was 2,031 MW, with a higher incidence during daylight hours, given the load from air conditioning and refrigeration. In turn, generation totaled 11,732 GWh: 67.9% hydropower; 11.7% natural gas; 7.6% coal, diesel, and bunker; 5.8% solar; 4.9% wind; and 2.0% imports.[11] Over the last five years, renewable generation has remained at between 52.3% and 78.7% (averaging 68.2%), with an increase in wind and solar energy, from 7.3% to 10.7%. ETESA projects annual growth of 4.42% in demand for energy and a peak demand of 3,196 MW by 2036, in a median scenario. The Government of Panama has identified the need to diversify generation, particularly due to the high dependence on hydropower, which has significant seasonal and year-on-year variability.

1.9 **Resilience of the energy sector.** Panama is located in one of the most vulnerable regions to natural disasters and the effects of climate change. Between 1970 and 2021, Panama suffered the impact of 55 natural disasters, of which 93% were of hydrometeorological origin.[12] Currently, disasters cost the country an average of US$157 million per year (0.3% of GDP).[13] There are no specific estimates for the energy sector. Nonetheless, it is clear that this sector is vulnerable to the impacts of natural disasters and climate change, such as, for example, droughts, given the proportion of hydroelectric generation, and floods. In this context, since it is critical infrastructure for economic growth, it is important to identify the climate risk for the energy sector and take measures that make the sector more resilient to the effects of climate change and reduce potential economic losses.

1.10 **Access to electricity.** Access to electricity is estimated at 93.6%, and there are over 93,000 households without access to electricity, primarily in Indigenous areas. Electrification reaches 8.1% in the Ngäbe Bugle Indigenous territory, 10.0% in the Guna Yala territory, and 68.0% in the Emberá territory.[14] Rural electrification is the responsibility of the distribution companies in the areas under concession, and of the OER in areas not under concession. The OER executes projects with public funds, sector funds,[15] and external loans.[16] Despite these efforts, the pace of electrification—less than 1% per year—is insufficient to achieve

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10 ASEP, 2022.

11 SNE electricity generation statistics.

12 EM-DAT; Consulted in January 2022.

13 World Bank; Risk Profiles; Available online: GAR15 scenario.

14 SNE estimates. Data will be confirmed by the results of the 2023 census.

15 Law 6/1997 created the Rural Electrification Fund, which receives annual allocations from the General Government Budget and from each of the agents in the electricity market, which cannot exceed 1% of their net profits, before income tax.

16 The OER executes the Universal Energy Access Program (loan 4790/OC-PN) with financing from the Bank (US$35 million), Spain's Fund for Promotion of Development (US$15 million), and a local counterpart of US$6 million. This program is expected to benefit more than 9,000 Indigenous households.

the universal access targets by 2030. The financing gap for achieving universal access is estimated at around US$500 million as of 2030.[17]

1.11 **Distributed generation,[18] smart metering, and storage.** Since 2013, small-scale generation for one's own consumption has been possible. There are currently 68 MW of distributed generation in more than 1,500 primarily solar installations. While this segment has grown at over 20% annually in recent years, the installed capacity is far from the viable potential, which has been identified as 1,700 MW and 137,000 installations, in an optimistic scenario.[19] Through the creation of new distributed generation models, the market could promote investments of over US$2 billion, providing opportunities to small and medium-sized enterprises in this field. Moreover, given the high alignment between solar generation and the demand for air conditioning, distributed generation would help reduce the need for additional generation and transmission capacity and increase the resilience of the electricity system. As of 2021, there were 6,231 users with smart meters, of a total of 1.2 million users. The limited penetration of smart metering is a barrier for creating incentives for the implementation of distributed generation, the use of hourly rates, and the use of other distributed energy resources (such as storage or demand management). Power storage is a fundamental element for facilitating the massive integration of NCREs, while helping to manage variability, increase resilience, and provide the electricity system with greater flexibility.[20] Given the reduced costs of these systems, which have followed a trend similar to that of solar panels, their use is expected to increase in large-scale installations and at the user level, as they become cost-effective.

1.12 **Energy integration.** Panama is part of the Central American Electric Interconnection System (SIEPAC) and participates in the Regional Electricity Market (MER). In 2022, it exported 392 GWh to the MER and imported 235 GWh. The Colombia-Panama Interconnection (ICP) project, planned for 400 MW, would connect the two countries and would eventually help consolidate a regional electricity market by integrating the electricity systems of the Andean Community with the SIEPAC, enhancing the region's energy security. The ICP project has been in development since 2005,[21] with IDB support, and significant progress has been made in determining the path of the line, the technology, and the technical design. Binational agreements have also been reached to move forward with its implementation. Currently, the binational enterprise responsible for the project is moving forward with environmental and social studies, and the countries are taking steps on regulatory definitions for implementation.

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17 National Universal Access Strategy. This amount of financing will be updated through the National Universal Access Plan.

18 Distributed generation is defined as the installation of power generation on the distribution grid, at or close to the point of consumption.

19 UNEP, 2021.

20 IEA, 2021.

21 Integration projects are complex by nature, since in addition to the development of technical, environmental, and social studies, they require reaching a number of agreements, both within and between both countries, for their implementation.

1.13 **Technical capabilities of the workforce in the energy sector.** The energy transition requires the development of industrial and training policies aimed at developing the necessary skills and competencies in all industries. Renewable sources are much more labor-intensive than fossil fuels (they create more sources of work per MW installed). Therefore, it is estimated that, with the implementation of the actions established in the ATE strategies, around 10,000 direct jobs would be created, along with 131,000 indirect jobs by 2030, versus a scenario without implementation of these actions.[22] However, the green skills gaps and shortfalls pose a challenge for making this transition and these job opportunities a reality.[23] In the case of electric mobility, the retraining of automotive mechanics will be required so they can service electric vehicles. This change will be gradual, as the penetration of electric vehicles increases. Moreover, to ensure that the energy transition is fair and inclusive, the creation of these jobs should consider a vision of gender equality and include vulnerable populations.

1.14 **Agenda for progress on gender equality in the sector.** The ATE establishes gender equality as a priority crosscutting pillar and considers that a high participation by women is needed to carry out the transition quickly. The gender agenda was promoted in 2021 with a diagnostic assessment of gender equality in the energy sector, which helped define the "Nexo Mujer y Energía" [Women and Energy Nexus] roadmap. It proposes two targets: (i) gender equity among the 141,000 jobs to be created by 2030; and (ii) 100% of the economically active population will have access to information on the use and opportunities of sustainable energy technologies with a gender approach. A survey of 42 companies in the electricity sector showed that 48% had implemented some sort of gender initiative or policy, while 33% had inclusion policies for Indigenous peoples or Afro-descendants. The gap in workforce participation among the surveyed companies, 33.66% women and 66.34% men, is in line with the global averages of the International Renewable Energy Agency (IRENA). Only 6% of Indigenous women, compared to 67% of non-Indigenous women are salaried employees, and informality (non-agricultural) affects 91% of Indigenous women, compared to 36.8% of non-Indigenous women. Just 0.67% of them own their own businesses.[24] For Indigenous peoples to benefit from universal access, the Strategy for Universal Access to Energy involves local stakeholders in all stages of training and awareness-raising, and plans actions to empower Indigenous young people and women to manage energy supply systems.

1.15 **Challenges for the energy sector in Panama in the context of the Paris Agreement.** The balance between CO_2eq emissions and sequestration was negative for 2019. However, emissions by the energy sector show a growth trend and represent more than half of the country's total emissions. In turn, the transportation sector is the highest emitter in the energy sector, due to the consumption of liquid fuel in ground transportation. Therefore, one challenge posed is that of reversing the CO_2eq emission trend, including the transportation

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22 UN Environment Programme. The energy transition as a path to prosperity. A cost-benefit analysis of integrating the energy transition at the heart of the COVID-19 recovery plan, 2020.

23 *Skills for a Greener Future: A Global View. International Labour Organization*.

24 Economic Empowerment Plan for Indigenous Women of Panama 2025.

sector, to continue meeting the international commitments under the Paris Agreement and supporting the country's sustainable growth. At the same time, NDC1 identifies the following challenges for the energy sector: (i) adapting the energy sector to the adverse effects of climate change; (ii) increasing the share of generation from variable renewable sources in the generation matrix, to reduce consumption of fossil fuels; and (iii) closing the access gap. Lastly, the energy transition toward low-carbon sources poses the challenge of implementing this process in a fair and inclusive manner, with a vision of gender and diversity.

1.16 **Challenge 1. Adapting the energy sector to the adverse effects of climate change.** The energy sector is vulnerable to the effects of climate change, such as temperature increases and changes in precipitation patterns, that have the potential to impact demand, distribution, transmission, and generation. Therefore, as measures are implemented to reduce emissions, progress must be made on adaptation to include climate risks in the sector's resilient infrastructure planning. To reduce the sector's climate risk, the following gaps have been identified: (i) identification and quantification of threats and risks to existing and future energy infrastructure, and estimation of the cost of the sector's climate risk; (ii) identification and proposal of measures to make energy infrastructure more resilient, including a cost-effectiveness analysis; (iii) climate risk monitoring mechanisms; and (iv) consideration at the planning, pre-feasibility, and feasibility levels of public investment projects with climate change guidelines. These gaps pose the need to strengthen governance to increase and mainstream climate action, as well as to promote climate action from public investment itself. Moreover, as an adaptation measure for power generation, the share of NCREs needs to be increased and energy efficiency needs to be promoted.

1.17 **Challenge 2. Increasing the share of NCREs in the generation matrix.**[25] Although the electricity sector already has regulations and incentives for the installation of NCREs (paragraph 1.5), and these have been increased in recent years, some gaps have been identified for increasing their growth in the matrix, both in centralized and decentralized (distributed generation) terms. For the distributed generation segment: (i) marketing exclusivity for distribution companies, which makes it difficult to empower the consumer and limits the use of innovative technologies; (ii) lack of smart metering for all users, which limits greater penetration of distributed generation; (iii) complex process for the installation of distributed generation, even at low capacity; and (iv) lack of innovative business models in the distributed generation segment, beyond consumption by producers. One marketing segment can deploy greater competition with more options of energy sources and benefits in reduced prices for users. The gaps identified for the growth of centralized NCRE are: (i) the methodology for calculating firm capacity that does not consider the contribution of NCREs, creating a disincentive for its participation in the market for capacity and innovation in adapting technology solutions that enable the increased capacity of these resources (e.g., storage); and (ii) the lack of a market for supplementary services, which makes it difficult to address the need for flexibility and security in the operation, limiting the adoption of new technologies and the creation of new business models that increase

[25] National Distributed Generation Strategy and National Strategy for SIN Innovation.

competition and allow greater efficiencies in price-setting. This diagnostic assessment shows that the legal framework for the electricity sector, based on Law 1997, is outdated in terms of leveraging the technological developments of the last quarter century.

1.18 The electricity integration of Panama with Colombia, which has a predominantly renewable matrix, with over 12,000 MW of installed renewable energy generation, could allow Panama to import renewable energy in times of surplus, supporting the optimization of energy resources. Moreover, the interconnection would effectively act as a robust backup for the Panamanian system, enhancing reliability and creating an incentive for penetration of NCRE in the local market. The interconnection would also help manage the hydrological variability between the two countries, supporting climate change adaptation. Progress on the interconnection project requires that regulatory agreements be reached between the two countries, in addition to completing environmental and social impact studies and the financial and legal structure.

1.19 **Challenge 3. Decarbonizing the ground transportation sector.** Transportation emissions remain on an upward trend, showing growth of 40.6% between 2010 and 2019. To move forward in decarbonizing this sector, the following gaps have been identified: (i) lack of legislative and regulatory frameworks focused on promoting electric mobility, eroding confidence in the adoption of this technology and investment in charging infrastructure; (ii) little promotion of the renewal of public and private fleets, limiting the inclusion of the benefits of the technologies in fleet planning; (iii) little dissemination of the benefits and process of transportation decarbonization, limiting its adoption; (iv) lack of technical capabilities in institutions for the planning of fleet replacement, reducing the development of policies and regulations; and (v) lack of technical training in the labor market on the issues of the energy transition in transportation, limiting the population's access to this labor market. In addition to promoting electric mobility, there is the possibility of promoting green hydrogen fuels to replace fuels in ground, marine, and air transportation.

1.20 **Challenge 4. Promoting a fair and inclusive energy transition.** Maintaining and deepening planning and execution of actions focused on a fair and inclusive energy transition require a continuous process of understanding the challenges of the populations and implementing actions aimed at strengthening the socioeconomic development of those who need it most. One essential aspect of the energy transition process is the inclusion of populations in decision-making and in the realization of solutions to democratize access to the transition's processes and technologies. To move forward on the development of a fair and inclusive energy transition, the following gaps have been identified: (i) lack of access to electricity service in rural areas and Indigenous territories; (ii) limited offering of training courses and programs on the core issues of the energy transition for the general population; (iii) lack of actions aimed at increasing women's participation in the energy and climate change sector; and (iv) limited inclusion of the issues of a fair and inclusive transition in the sector's policies.

1.21 At the current pace of electrification, universal access could only be achieved in 2039.[26] Since access to modern energy is directly related to the reduction of inequality and access to other basic services (education, health, water, sanitation, and telecommunications), closing this gap is fundamental. The following gaps have been identified for the fulfillment of SDG7: (i) limited strategic planning and monitoring of electrification progress; (ii) a needed update of the legal and regulatory framework to create a more dynamic enabling environment for the development of energy access projects; (iii) lack of a portfolio of project financing and implementation mechanisms to increase the pace of execution of electrification projects; (iv) lack of mechanisms for the execution of isolated systems and microgrids in areas not under concession; (v) limited involvement of communities in the electrification process, with a gender perspective; and (vi) little development of energy-intensive businesses in rural areas.

1.22 Training and retraining programs in the core skills for the energy transition are fundamental to provide the labor market with a skilled workforce and to increase the employability of workers who could be displaced by the transition. Nonetheless, there is a limited offering of training courses and programs on the core issues of the energy transition to support building this capacity. The National Institute of Training for Professionals and Human Development (INADEH)[27] plays a very important role in increasing the offering of relevant, quality training, with gender and diversity approaches to close the gaps in skills and educational and occupational segregation.[28]

1.23 **Rationale and proposed intervention.** The challenges of climate change, expressed in NDC1 (paragraph 1.3), show that it is necessary to promote policy, legal, regulatory, and institutional measures to accelerate the energy transition so it can contribute more forcefully to achieving the country's GHG emissions reduction targets. On one hand, an institutional framework for climate change will help elevate NDC1 and subsequent updates to status as compulsory measures. In addition, a climate change law and plans will create an adequate framework for planning, preparation for the climate change crisis, and real action on strategies aimed at mitigating carbon emissions and adapting to the effects of climate change. Moreover, this will promote public and private investment in resilient, low-carbon intensity infrastructure. On the other hand, the diagnostic assessment of the energy sector shows the need to update long-term energy policy, create a new legal framework for electric mobility (paragraph 1.19), and modernize the energy sector's regulatory framework, particularly considering the technological developments of the last quarter century and the creation of new segments and business models (paragraph 1.17) to decarbonize the energy matrix and promote innovation in the sector. Overcoming these challenges will achieve a fair, clean, and sustainable energy transition, therefore reinforcing its role in driving economic development and improving the quality of life of the entire Panamanian population. In this context, and in order to be able to move forward and realize the fair, clean, and sustainable energy transition, the Panamanian government requested the

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[26] National Universal Access Strategy.

[27] The lead government agency in professional, vocational, and business management training.

[28] Jobs in a Net-Zero Emissions Future in Latin America and the Caribbean.

Bank's support with the preparation of a programmatic policy-based loan (PBP) through two individual operations (PBP-I and PBP-II, with PBP-I being the operation proposed in this document).

1.24 **IDB support for the program policies.** The Bank has been providing ongoing support to the Government of Panama in the energy sector, through investment loans, nonreimbursable technical-cooperation operations, and policy-based loans. The year 2020 marked the conclusion of a series of two programmatic loans (4234/OC-PN and 5178/OC-PN) that supported reforms in the water and energy sectors, including aspects of diversification of the electricity matrix, regional integration, and consolidation of the sector's institutional capacity. Specifically, the policy matrix of the last operation included the approval of the guidelines for the ATE and the ENME.[29] These two instruments laid the groundwork for some of the reform proposals included in this operation, continuing a consistent line of support from the Bank[30] for development of the sector; for example, the ATE presented five strategies (paragraph 1.2) that have been developed as part of this operation and that provide essential inputs for the modification of the legal framework for the electricity sector. In addition, the ENME served as the basis for the preparation of the Electric Mobility Law and its regulations.

1.25 This program's value added is that it promotes the advancement of various reforms in the energy sector, which encourage decarbonization, innovation, sustainability, and modernization of the sector, under a fair and inclusive vision. Several of the reforms included under this operation have been supported with Bank-financed nonreimbursable technical-cooperation operations in Panama: (i) Support for the Implementation of the Universal Access to Energy Program (ATN/OC-18626-PN); (ii) Support for the Energy Transition Agenda in Panama (ATN/OC-18916-PN); (iii) Support to Promote Energy Efficiency in Public Spaces and Buildings in Panama (ATN/OC-19276-PN); and (iv) Support for Technical Transformation to Promote the Energy Transition in Panama (ATN/TV-19320-PN). There are also two technical cooperation operations in preparation to support the development of solar energy in Panama (PN-T1326) and the implementation of some of the conditions planned for the second operation in the series (PN-T1305). Other measures are being supported through regional technical-cooperation operations for the development of green hydrogen (ATN/AC-18948-RG and ATN/SX-19203-RG), digitalization (ATN/FG-18850-RG) and gender (ATN/OC-18760-RG). In terms of regional integration, the Bank has provided nearly US$5 million in support for the development of the ICP project[31] since 2005.

1.26 The Bank is supporting some of the measures identified for the second operation in the programmatic series, in particular the National Rural Electrification Plan (ATN/OC-19699-RG); the Roadmap for Sector Digitalization (ATN/FG-18850-RG); a

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[29] The policy conditions for loan 5178/OC-PN were: 2.1.1.1 The Guidelines of the Energy Transition Agenda of Panama were submitted to Cabinet Council for approval and 2.1.2.1. Approval of the National Electric Mobility Strategy, which promotes low-emission transportation and contributes to the fulfillment of Panama's climate commitments under the Paris Agreement.

[30] Optional link 2 - Bank support for the sector.

[31] ATN/OC-10110-RS, ATN/OC-11508-RG, ATN/OC-14807-RG, ATN/OC-17475-RG, ATN/OC-18736-RG, ATN/LE-19335-RG.

cost-benefit analysis of the energy transition (ATN/OC-17509-RG); the regulations for the Energy Transition Fund (FONTE) (ATN/OC-18916-PN); the development of a digital platform for distributed generation processes (ATN/OC-19276-PN); and the preparation of an interactive atlas of climate change risk (ATN/AC-18143-RG). In 2022, the Bank approved a loan for sustainable investment in small and medium-sized enterprises, including distributed generation (5630/OC-PN) and is supporting ETESA in the structuring of a green bond, which will enable investments in transmission to incorporate renewable energy into the matrix (ATN/CF-18899-RG). IDB Invest is also supporting ENSA in the structuring of a credit line to finance the expansion of the electricity distribution system. It is also monitoring and coordinating with counterparts to identify opportunities to support renewable energy generation, distribution, and transmission projects.

1.27 On the topic of electric mobility, the Bank supported the financing of the first five electric buses of the public operator MiBus,[32] through a loan in execution (4944/OC-PN). In addition, the Bank supported studies for the preparation of a fleet renewal program (PN-L1185), including an analysis of disaster and climate change risk for the transportation sector in Panama City, cofinanced with the E-mobility Fund for Sustainable Cities in Latin America. IDB Lab is also financing a micro e-mobility program for a delivery service, promoting innovation in the sector (ATN/ME-19668-PN).

1.28 **Effectiveness of sector policy reforms.** Policies that promote modernization and innovation in electricity systems can help integrate more renewable energy sources and enable the integration of new technologies, for example, energy storage. A report[33] found that these types of policies can also improve resilience and reliability, while offering electric companies a lower-cost alternative to traditional transmission and distribution solutions. A study by the United Nations Environment Programme (UNEP) shows that integrating the energy transition into post-COVID-19 stimulus and recovery plans is an investment that will yield significant benefits, not only for health and the environment, but also for the economy and job creation. In a recent report, IRENA[34] indicated that countries require a comprehensive set of policies that cover all the technological pathways to achieve deployment at the necessary levels by 2030. In turn, a progressive policy and regulatory measures aligned with the energy transition will generate greater benefits for the countries. In its flagship report,[35] the IDB provides an analysis of infrastructure in Latin America and the Caribbean and the policy reforms needed to improve infrastructure services in the region; in particular, it recommends that the region's countries address these challenges with the implementation of measures such as strengthening regulatory frameworks, promoting competition, and increasing access to energy services.

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[32] Transporte Masivo de Panamá S.A. (MiBus) is a public corporation, a subsidiary of Metro de Panamá, S.A., responsible for the design, supply, and operation of buses in the Mass Passenger Mobilization System in Panama City and San Miguelito.

[33] NCSL, 2019. The policy and regulatory approaches that can help modernize the grid include: (i) renewable portfolio standards; (ii) energy storage targets and mandates; (iii) net metering; and others.

[34] IRENA 2022.

[35] From Structures to Services: The Path to Better Infrastructure in Latin America and the Caribbean IDB, 2020.

1.29 The reforms proposed for modernization of the legal and regulatory framework of the electricity sector will promote the incorporation of new actors into the sector's supply chain and encourage competition. Given the conditions of the energy market in Panama, where private investment has a high share, the reforms will facilitate the development of new mechanisms and business models for private equity. In terms of distributed generation and NCREs, implementation of the policies will generate investments worth over US$1 billion by 2030, in a conservative scenario. For its part, achieving universal access will require public and private investments estimated at US$500 million by 2030. The enactment and regulation of the Law encouraging electric mobility will allow the establishment of new mechanisms for the development of charging stations for electric vehicles, with investments estimated at US$160 million by 2030 in this area, in a conservative scenario.

1.30 **Bank's experience in the sector and lessons learned.** The IDB has broad experience in climate change and sustainable development of the energy sector in the region, in particular in recent operations that supported energy transition processes such as in Panama itself (Support Program for Reforms in the Water, Sanitation, and Energy Sectors II 5178/OC-PN), Argentina (Federal Electric Power Transmission Program 5564/OC-AR), Chile (Program to Support a Fair, Clean, and Sustainable Energy Transition I and II, 5278/OC-CH and 5548/OC-CH), Colombia (Financing to support Colombia's Energy Transition, 5459/OC-CO), and Uruguay (Support for Consolidation of the Country's Low-Carbon Energy Transition, 5680/OC-UR). In addition to these, the investment operations in the sector that will serve as a foundation and experience for the development of this operation include: (i) Universal Energy Access Program (4790/OC-PN); and (ii) Sustainable Rural Electrification Program in Panama (3165/OC-PN, 3166/CH-PN). The lessons learned from these operations show: (i) the need for close, coordinated work with the sector entities for the development of the policy measures, in particular those that are innovative in the sector; and (ii) the importance of medium- and long-term support through technical assistance for their completion. In particular, these lessons have been applied through support of forums for sector dialogue for development of the reforms, including participation by public and private stakeholders and academia[36] and the approval of technical cooperation funding to support policy measures planned not only in the first operation, but also in the second (paragraphs 1.25-1.26).

1.31 **Collaboration with other agencies.** The SNE and MiAmbiente are working in coordination and actively collaborating with other public institutions to promote the sustainable development of the energy sector and fulfillment of their international commitments. Given the importance of the issue, several development institutions are supporting the Government of Panama in these sectors, and some have partially supported some of the reforms included in this operation (optional link 3), including the World Bank, the United Nations Development Programme, UNEP, Euroclima, the Central American Bank for Economic Integration, the Development

[36] As part of the development of the policy measures, workshops have been held with all sector stakeholders, along with two regional events and a legal forum, planned for 16 May. As part of the development of the policy measures for the second operation, workshops have been planned to discuss the pathways for the country's decarbonization.

Bank of Latin America, and the Spanish Agency for International Development Cooperation. The Bank's team is in periodic coordination with these institutions in order to optimize support for the country.

1.32 **The Bank's strategy with the country.** The operation is aligned with the IDB Group Country Strategy with Panama 2021-2024 (document GN-3055), through the strategic objective "Develop quality infrastructure services based on inclusion and environmental sustainability criteria" and with the crosscutting area of contributing to resilience, climate change adaptation, and environmental sustainability, as well as gender and diversity and institutional strengthening.

1.33 **Strategic alignment.** The operation is aligned with the second Update to the Institutional Strategy (document AB-3190-2), with the following development challenges: (i) Social Inclusion and Equality, by promoting universal access to energy and job and entrepreneurship opportunities in the most vulnerable segments of the population; (ii) Productivity and Innovation, by contributing to the energy sector's competitiveness and innovation and supporting policy measures to improve the connection between the skills in the workforce and those demanded by the productive sector; and (iii) Economic Integration, by supporting measures that promote the interconnection between Colombia and Panama, driving regional energy integration. The project is also aligned with the crosscutting themes of: (i) Gender Equality and Diversity, with measures promoting gender equality and the socioeconomic development of Panama's Indigenous peoples; (ii) Climate Change and Environmental Sustainability, by contributing to the energy sector's decarbonization, resilience, and sustainability; and (iii) Institutional Capacity and the Rule of Law, though the strengthening of the institutions in the energy and climate change sector. It will also contribute to the Corporate Results Framework 2020-2023 (document GN-2727-12) with the following indicators: (i) households with improved access to energy services; and (ii) installed power generation capacity from renewable sources. The operation is also consistent with the Energy Sector Framework Document (document GN-2830-8) and the Climate Change Sector Framework Document (document GN-2835-10) on the themes of sustainability, NCREs, and energy efficiency, as well as with the Gender and Diversity Sector Framework Document (document GN-2800-13) by including a gender lens in the policy measures. In addition, it is consistent with the IDB Infrastructure Strategy: Sustainable Infrastructure for Competitiveness and Inclusive Growth (document GN-2710-5), by promoting continuous improvements in infrastructure governance to increase efficiency in service delivery and by supporting the promotion of policies aimed at CO_2 mitigation. The operation is aligned with the Employment Action Framework with Gender Perspective (document GN-3057), as it considers analysis, interventions, and indicators in the talent pillar related to the development of skills to support the energy transition process. In all, 96.87% of the operation's resources will be invested in climate change mitigation activities, according to the joint methodology of the Multilateral Development Banks, contributing these resources to the IDB's climate finance target, 30% of the annual volume of approvals. The operation has also been analyzed using the Joint Framework of the Multilateral Development Banks and the IDB Group Paris Agreement implementation approach; based on this, it is considered aligned with the mitigation and adaptation objectives of the Paris Agreement.

1.34 **Consistency with the Public Utilities Policy (PUP) (optional link 1).** The program is consistent with the objectives of the Public Utilities Policy

(document GN-2716-6). The program complies with the principles of this policy with regard to: (i) financial sustainability, since the policy measures aim to make costs more efficient by promoting renewable energies and innovation, which are recovered by means of energy rates, based on the principles of financial adequacy and economic efficiency; (ii) social sustainability, seeking to promote gender equality and strengthen the inclusion of vulnerable groups in Panama in the energy transition with the empowerment of young and women community leaders to achieve universal access to energy nationwide; and (iii) environmental sustainability, through support for measures to decarbonize the electricity generation matrix and promote electric mobility.

B. Objectives, components, and cost

1.35 **General objective.** The general objective of the programmatic series is to support low-emission, inclusive sustainable development in Panama, through a clean, fair, and inclusive energy transition. The specific objectives of the first operation are to: (i) promote increased power generation from variable renewable sources in the generation matrix; (ii) create incentives for the digitalization of the electricity sector; (iii) promote electric mobility; (iv) support increased access to electricity; (v) support the narrowing of the gender gap in the sector; and (vi) promote capacity-building in green jobs for the energy transition.

1.36 **Component I. Macroeconomic stability.** This component aims to ensure a stable macroeconomic context conducive to achieving the program objectives as established in the Policy Matrix and consistent with the guidelines established in the Sector Policy Letter.

1.37 **Component II. Governance and financing of climate action and sustainability.** This component aims to support the strengthening of governance and financing of climate action and sustainability, with the objective of encouraging the reduction of CO_2 emissions in order to meet the international commitments assumed under the Paris Agreement, particularly in the energy sector, by increasing NCREs, electric mobility, and access to energy. It includes two subcomponents:

1.38 **Subcomponent II.1: Strengthening of governance to increase climate action.** This subcomponent promotes policies and measures to strengthen the governance and financing of climate action and sustainability, with an impact on the reduction of emissions in the economy and enhancing its resilience. The first operation supports: (2.1.1) presentation to the National Assembly of the Climate Change Framework Bill, which, in its chapter on energy, includes: (a) a ban on the construction of new coal, oil, crude, coke, petroleum coke, diesel, fuel oil, and other petroleum derivative-based generation plants; and (b) the establishment of the FONTE through the MEF, with the objective of financing climate change mitigation and adaptation programs and projects, including sustainable energy; (2.1.2) approval of the National Climate Action Plan, identifying mitigation and adaptation actions that should be carried out in the short term under each sector and strategic pillar of NDC1, including the energy sector; (2.1.3) approval of the update of the National Climate Change Policy, aligned with the Paris Agreement, as a guiding framework for the activities to be undertaken by the public and private sectors and civil society, to help stabilize GHGs, promote adaptation measures, and ensure sustainable development; (2.1.4) the gradual and progressive establishment of the National Carbon Market of

Panama, to promote the development of a low-emissions economy based on the purchase and sale of GHG emissions reduction units. This latter measure was approved in late 2021; it remains in the matrix due to its importance as a tool for promoting the reduction of emissions and the actions proposed in the second operation. To implerment this measure, MiAmbiente advanced in 2022 with the establishment of the Board of Directors of the Panamanian Carbon Exchange, whose first meeting was held in January 2023, and the launch of the roadmap for the development of the future national carbon market, also in 2023.

1.39 In the second operation, as an indicative measure, the approval of the Climate Change Framework Law (2.1.1.1) is anticipated. Also included are measures to promote long-term planning for decarbonization, including the resilience and adaptation of the energy sector, the approval of the sector plan for adaptation of the energy sector (2.1.2.1), and the preparation of a cost-benefit analysis of energy transition scenarios for the decarbonization of the energy and transportation sector by 2050 (2.1.2.2). Lastly, implementation of the program's "Reduce your corporate footprint" module of the climate transparency platform (2.1.4.1) is proposed. The foregoing inputs along with those described under Component III are key for developing the Nationally Determined Contribution 2 and subsequent updates (2.1.3.2).

1.40 **Subcomponent II.2: Climate action and sustainability from public investment.** This subcomponent is focused on the adoption of policies and measures to promote public investment mechanisms to incorporate resilience and adaptation to climate change. The measures include: Adoption of the Technical Guide to Climate Change for the Planning, Pre-feasibility, and Feasibility of Public Investment Projects (2.2.1) and Approval of an Implementation Manual for Climate Change Labelers for public investment projects (2.2.2). Both measures are expected to promote resilient and low-emissions public investment. Since the approval of the Implementation Manual for Labelers in April 2022, MiAmbiente has trained 45 public institutions for its implementation. The MEF has also requested support from the IDB to update the National Public Investment System in order to include climate labelers, which will be implemented in 2023. In the second operation, the preparation of an interactive atlas of climate change risk is anticipated, enabling the identification of threats and the quantification of risks, to support the development of resilient and sustainable energy infrastructure (2.2.1.1).

1.41 **Component III. Modernization of the energy sector to promote a fair and inclusive energy transition.** This component supports the adoption of policies and measures to modernize the energy sector, with the objective of increasing NCREs, promoting electric mobility, and enabling the reduction of CO_2 emissions. It also proposes measures aimed at promoting a fair and inclusive energy transition. Four subcomponents are proposed:

1.42 **Subcomponent III.1. Modernization of the legal and regulatory framework of the energy sector.** The first operation proposes measures that will help provide a modern legal framework and a strengthened governance structure in order to promote greater use of NCREs as well as competition, including: (3.1.1) preparation and submission to the Cabinet Council of a proposed amendment of the legal and regulatory framework for the electricity sector, proposing the grounds for adapting the system to NCREs and storage, promoting competition, promoting

universal access to energy, and strengthening the governance of the electricity sector, and (3.1.2) approval of the institutional strengthening roadmap for the electricity sector promoting actions to improve the structuring, governance, and institutional coordination for the effective implementation of the ATE. On an indicative basis, the following is expected in the second operation: presentation to the National Assembly of the electricity sector modernization bill (3.1.1.1); approval of specific regulations for energy storage (3.1.1.2); and preparation of a viability study for auxiliary service markets (3.1.1.3). Also proposed is the approval of the update of the National Energy Plan 2015-2050 (3.1.2.1), which will include input from the plans developed under Component II.

1.43 **Subcomponent III.2. Accelerating diversification, decarbonization, and digitalization of the energy sector.** The proposed policy measures aim to promote technological development and innovation in the sector, enabling greater use of NCREs, in both centralized and decentralized manners, diversification, the promotion of other energy sources, such as green hydrogen, and digitalization. Diversification of the matrix will help increase its resilience, while promoting mitigation of CO_2eq emissions. The first operation proposes: (3.2.1) the preparation and submission to the MEF, by the SNE, of the proposed design of the structure of FONTE, which will be implemented in the second operation; (3.2.2) approval of the National Distributed Generation Strategy, which proposes specific lines of action for the development of small-scale renewable generation; (3.2.3) approval of the National Green Hydrogen Strategy, which establishes specific actions for the development of the market for green hydrogen and its derivatives, supporting the reduction of emissions in hard-to-electrify sectors; (3.2.4) approval of the Innovation Strategy for the SIN, which proposes lines of action aimed at improving the SIN's flexibility and the digitalization of power grids for the integration of a larger proportion of NCREs, enabling reduction of the emissions factor from power generation; (3.2.5) approval of the rate structure, including hourly rates to promote the efficient use of energy resources by end customers, providing adequate price signals for energy efficiency and distributed generation; (3.2.6) approval of the Strategy for the Rational and Efficient Use of Energy. The component also proposes measures to move forward with the integration process through the ICP, which will help increase energy security and diversify the energy matrix, through: (3.2.7) the definition of the principles, basic criteria, and general guidelines on which the Regulatory Harmonization Structure of the ICP will be based, as agreed between the countries in July 2021,[37] and (3.2.8) the implementation of the ministerial coordination mechanisms to agree on the next steps of the ICP, undertaken in March 2023. The milestones included in the matrix are conditions necessary to move forward with the financing of the project. Two of the strategies proposed under this component were approved in early 2022 (3.2.2 and 3.2.6); they have been maintained in the matrix because they are essential inputs for the modernization of the sector's legal framework, proposed in

[37] This policy measure has been maintained in the matrix given its importance and the ongoing support from the Bank for the ICP project. The policy measure (3.2.8), undertaken in 2023, is a step forward in the development of the Regulatory Harmonization Structure for the project.

subcomponent III.1, and given the Bank's support for their development.[38] Both policy measures represent advances. In 2023, the SNE developed a proposal to approve and simplify processes for the installation of distributed generation, with the Bank's support, and a training program for municipios on distributed generation, with the support of the UNEP and AECID. In addition, to implement the Strategy for the Rational and Efficient Use of Energy, approved in June 2022, the SNE has been implementing a continuous energy auditor program in all public institutions, the update of the Sustainable Building Regulations in early 2023, and has developed an energy efficiency dissemination program with an gender vision. Moreover, the Bank is supporting studies to promote financing mechanisms for energy efficiency in the country, to be completed in 2023.

1.44 The second operation aims to deepen these policy measures, including: regulations for implementation of the FONTE (3.2.1.1); approval of the update of procedures on consumption for own use (3.2.2.1); implementation of a digital platform for distributed generation processes (3.2.2.2); implementation of a green hydrogen pilot for heavy transport (3.2.3.1); approval of the National Green Hydrogen Bill (3.2.3.2); implementation of a smart metering data management system (3.2.4.1); approval of the roadmap for digitalization of the electricity sector (3.2.4.2); implementation of smart metering for consumers of over 50 kW (3.2.4.3); approval of rate structures with hourly rates (3.2.5.1); and implementation of investments in a national energy efficiency program for public agencies (3.2.5.2). These measures will make it possible to implement the policies developed in the first operation with regard to financing, green hydrogen, distributed generation, and digitalization, as well as to continue generating specific regulations, as in the case of the Green Hydrogen bill. There is also a proposal to approve the Regulatory Harmonization Structure between Panama and Colombia for the Electricity Interconnection (3.2.5.3), a condition necessary to move forward with the implementation of this project.

1.45 **Subcomponent III.3.Promotion of Electric Transportation.** This subcomponent aims to support creation of the legal and regulatory framework for promoting electric transportation, through: (3.3.1) approval and regulation of the electric mobility law, including targets for public mobility[39] and specific mechanisms to promote private mobility; (3.3.2) approval of the regulations for the operation of electric vehicle charging stations for end customers; and (3.3.3) publication and implementation of a tool for the evaluation for the renewal of the transportation fleet. These measures will promote investment in charging stations and the adoption of public and private electric mobility. The second operation aims to implement these measures, specifically with strategies to renew the public fleet in MiBus (3.3.1.1 and 3.3.1.2), public transportation by private enterprises (3.3.1.3), and MiAmbiente (3.3.3.1). It also proposes the adoption of a strategy for collecting data to evaluate the impact of electric mobility (3.3.3.2). These measures will make it possible to continue deepening the shift toward electric mobility in public and private spheres, while supporting the reduction of transportation emissions.

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[38] The Bank directly supported the development of the National Distributed Generation Strategy (3.2.2), approved in the first quarter of 2022.

[39] By 2030, 40% of the fleet of public institutions and 33% of the mass transit fleet should be electric.

1.46 **Subcomponent III.4. Support for a fair and inclusive energy transition.** This subcomponent proposes measures to build technical capacity for the labor market and to strengthen the inclusion of vulnerable groups in the energy transition, with a gender equality approach. The proposed measures include: (3.4.1) approval of the Universal Access Strategy, whose objective is to implement new technologies, business models, and financial tools to promote innovation, together with the empowerment of young people and women community leaders to achieve universal access to energy; (3.4.2) approval of the National Gender and Climate Change Plan, to help drive prioritized processes of social and environmental transformation aimed at promoting sustainable, inclusive, low-emissions development that is resilient to climate change; (3.4.3) approval of the Women and Energy Nexus roadmap, which proposes measures considered for the reduction of the gender gap and to achieve parity in workforce participation for women in the sector; (3.4.4) the design and implementation of a training program for Indigenous women for installation of rural solar systems; and (3.4.5) the design and approval of technical training courses in distributed generation and electric mobility that meet the needs of the productive sector and consider a gender approach. The National Universal Access Strategy (3.4.1) and the Women and Energy Nexus roadmap (3.4.3) were approved in the first quarter of 2022, but they have been maintained in the matrix given the Bank's significant support for their development and implementation and their relevance for the development of actions in the second operation. The training program for indigenous women (3.4.4), undertaken in late 2022, is now part of the implementation of these two instruments.

1.47 In the second operation, these reforms are strengthened through the approval of: the National Rural Electrification Plan (3.4.1.1); and the creation of financing mechanisms for universal access (3.4.1.2). Proposals have also been made to update the diagnostic assessment of gender in the sector (3.4.3.1), expand the training program for Indigenous women (3.4.4.1), and implement the training courses by INADEH (3.4.5.1 and 3.4.5.2).

C. Key results indicators

1.48 **Results.** The following are expected results of implementing the proposed measures: (i) an increase in generation with NCREs in the electric generation matrix; (ii) an increase in smart metering; (iii) an increase in electric mobility; (iv) an expansion in access to electricity in rural areas; (v) a reduction in the gender gap in workforce participation in the energy sector; and (vi) capacity building in green jobs for the energy transition. In terms of impact, expectations include the reduction of the CO_2 emissions factor in power generation, the reduction of the economy's energy intensity, and a nationwide increase in access, driving a fair and sustainable energy transition in the country.

1.49 **Beneficiaries.** The program will benefit all of the country's inhabitants with the delivery of a more sustainable, affordable, and clean electricity service and the creation of opportunities to participate in the energy transition process. The energy transition process will support the country's sustainable development, not only through the creation of gren jobs, but also through the improvement of the sector's climate resilience. The measures proposed to increase access to energy will benefit primarily the economic development of rural populations, which are predominately Indigenous communities. As a result of the implementation of the

proposed measures, it is estimated that 12,000 households in Indigenous territories will be connected to the grid.[40] As a result of the implementation of the training programs with INADEH, it is expected that at least 840 people will be trained, of which at least 30% will be women. Lastly, as a result of the implementation of the Gender and Energy Roadmap, it is expected that at least 125 Indigenous women will be trained in the installation, operation, and maintenance of solar systems.

II. Financing Structure and Main Risks

A. Financing instruments

2.1 **Dimensioning of the operation.** This operation will be financed with a loan of up to US$200 million charged against the Bank's Ordinary Capital (OC) resources, as the first in a series of programmatic policy-based loans (PBPs) to be made up of two contractually independent and technically linked loans, in accordance with the guidelines established in the document Policy-based Loans: Guidelines for Preparation and Implementation (document CS-3633-2). The first of these operations is planned for 2023. The amount and timing of the next operation will be determined with the Government of Panama during the Bank's programming exercise, pursuant to document CS-3633-2 and based on the progress on the triggers defined in this operation. This structure and instrument are justified by the strategic relevance of the measures promoted, the preparation work that needs to be developed, and the complexity involved in monitoring its development and institutional implementation. The sustainability of the reforms is framed by two fundamental pillars: (i) the Republic of Panama's commitment to and fulfillment of the reforms proposed for this first operation; and (ii) the borrower's Policy Letter. As established in paragraph 3.27(b) of document CS-3633-2, the scale of the operation was determined based on the need for fiscal resources facing the country. The amount of the operation is equivalent to 4.8% of the gross financing needs of Panama's public system, which are estimated at US$4.153 billion for 2023, and to 2.1% of the balance of multilateral debt as of 31 March 2023.

B. Environmental and social risks

2.2 The PBP operation is not expected to generate significant adverse impacts on the country's environment and natural resources; therefore, the PBP is excluded from the scope of the IDB's Environmental and Social Policy Framework (ESPF), pursuant to the provisions of paragraph 4.7 of the ESPF.

C. Fiduciary risks

2.3 No fiduciary risks were identified. The operation's proceeds will go to the treasury single account at the General Treasury of the Republic in order to meet the country's financing requirements. To that end, the borrower has the necessary financial management instruments and control systems.

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[40] INEC data shows that as of 2019, there were 7.41 persons/household in the Indigenous territories of Emberá, Guna Yala, and Ngäbe Buglé. Twelve thousand households with new connections represent approximately 89,000 persons.

D. Other risks and key issues

2.4 A potential medium-high level risk has been identified that could affect the development of the program during its implementation and relates to the fact that if, due to the innovative nature of some of the policy conditions proposed in the two programmatic operations, the counterparties do not have the due capacity, delays could be caused in fulfillment of the measures, which would delay fulfillment of the policy reforms. To mitigate this risk, work will be done with the counterparties on capacity-building, and the technical assistance that has been provided in these areas will continue with technical cooperation operations that have been approved and are in the process of approval (paragraph 1.26), until approval and execution of the second operation. A medium-high risk was identified that the proposal to create the FONTE, included in the Climate Change Framework Law, could undergo modifications when the law is taken up in the Assembly. This risk cannot be mitigated, so it will be monitored and, if this occurs, other financing mechanisms for the energy transition will be evaluated with the counterparties; these measures may be supported as part of the second operation.

2.5 **Sustainability.** The Government of Panama has provided firm support for the actions promoted under this programmatic series, and no additional expenditures by the government are anticipated for the fulfillment of these actions, underscoring its commitment to the country's fiscal sustainability. The sustainability of the reforms is framed by four fundamental pillars: (i) the commitment of the Panamanian government to the energy sector's modernization, reflected in the guidelines of the ATE and its strategies (ii) the Panamanian government's climate commitment under the Paris Agreement, expressed in the voluntary agreements under the NDC and NDC1; (iii) the fulfillment of the reforms proposed for this first operation; and (iv) the Policy Letter. In addition, the development of the policy measures has followed a broad public consultation process, with the involvement of diverse sector stakeholders (government, businesses, academia, and the regulator),[41] ensuring the empowerment of these stakeholders in the reform process and support for its continuity. Technical support will continue in the form of technical cooperation (paragraph 1.26) and the portfolio in execution; moreover, the ongoing wide-reaching dialogue with various sector stakeholders will continue to keep the discussion up-to-date (paragraph 1.29). Given the foregoing, it is estimated that the program's reform objective will be met in the medium term as planned.

III. Implementation and Management Plan

A. Summary of implementation arrangements

3.1 The borrower is the Republic of Panama, and the program's executing agency is the borrower by means of the Ministry of Economy and Finance (MEF), through the Public Financing Department, which will be responsible for general program coordination. For the energy sector, the program's strategic coordination will be

[41] For the execution of each strategy under the ATE, three sector workshops were held. In addition, each strategy was subject to a month-long public consultation. Likewise, the development of the proposal to modify the legal framework has been undertaken through workshops with the sector stakeholders in order to incorporate different viewpoints into the process.

the responsibility of the SNE attached to the Ministry of the Presidency. For the climate change sector, MiAmbiente will be the responsible party.

3.2 By holding periodic meetings for analysis and monitoring, the MEF will coordinate fulfillment of the policy commitments and consolidation of the sector reform with the SNE, ASEP, ETESA, and MiAmbiente. The MEF is responsible for: (i) advancing achievement of the policy objectives; (ii) providing evidence of fulfillment of the agreed policy conditions; and (iii) compiling and providing the information allowing the Panamanian government and the Bank to measure and evaluate the program's results.

3.3 **Interagency coordination mechanisms.** The SNE will work very closely with various agencies and ministries through interagency commissions created for each strategy under the ATE, which will also include private sector representatives.[42] The SNE has also established a National Energy Transition Council, created when the ATE guidelines were approved, which includes public and private stakeholders, through a public call, with renewal every two years, to monitor progress on the energy transition. In addition, the SNE has convoked a Panel of Experts including seven international experts, to provide information and advisory support for the process. Lastly, the SNE has created the Group of Observers for the Energy Transition, with international institutions, in which the Bank has been invited to participate.

3.4 **Special contractual conditions precedent to the first and only disbursement of the loan proceeds.** The sole disbursement of the loan proceeds will be subject to fulfillment by the borrower, to the Bank's satisfaction, of the policy reform conditions as set forth in the Policy Matrix (Annex II), the Policy Letter, and the other conditions set forth in the applicable loan contract.

B. Summary of arrangements for monitoring results

3.5 The program's monitoring is defined by the verification of the policy measures agreed upon as disbursement conditions and described in the Results Matrix, the Policy Matrix, and the Means of Verification Matrix. Fulfillment of the output indicators will be confirmed with the information detailed in the Means of Verification Matrix. This contains all actions to be implemented under the program, the entities responsible for achieving them, and the specific information that will enable the Bank to verify their fulfillment. The outcomes of the policy changes promoted will be monitored using the information provided by the SNE as reported in the Results Matrix and the Monitoring and Evaluation Plan.

3.6 A final evaluation will be conducted as part of the Project Completion Report (PCR), which will be prepared, for the two operations together, after completion of the second operation, or, in the absence thereof, 12 months after disbursement of the first operation. The program's effectiveness will be evaluated using an effectiveness analysis that contrasts the scenarios with and without the reform.

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[42] These are the interagency commissions for: electric mobility; distributed generation; universal access; the Intergovernmental Commission for the Formulation of the National Innovation Strategy for the SIN and the National Institutional Strengthening Strategy. These commissions are responsible for formulating and monitoring the activities planned under each of the strategies.

IV. POLICY LETTER

4.1 The Policy Letter reiterates the Panamanian government's commitment to the objectives and actions considered for the programmatic series and the consistency of the policy measures for the fair, clean, and sustainable energy transition.

Development Effectiveness Matrix		
Summary	PN-L1181	
I. Corporate and Country Priorities		
Section 1. IDB Group Strategic Priorities and CRF Indicators		
Development Challenges & Cross-cutting Issues	-Social Inclusion and Equality -Productivity and Innovation -Economic Integration -Gender Equality and Diversity -Climate Change -Institutional Capacity and the Rule of Law	
CRF Level 2 Indicators: IDB Group Contributions to Development Results	-Households with improved access to energy services (#) -Installed power generation capacity from renewable sources (MW)	
2. Country Development Objectives		
Country Strategy Results Matrix	GN-3055	(i) Develop quality infrastructure services with inclusion criteria and environmental sustainability.
Country Program Results Matrix	GN-3154-1	The intervention is included in the 2023 Operational Program.
Relevance of this project to country development challenges (If not aligned to country strategy or country program)		
II. Development Outcomes - Evaluability		Evaluable
3. Evidence-based Assessment & Solution	8.1	
3.1 Program Diagnosis	2.5	
3.2 Proposed Interventions or Solutions	1.6	
3.3 Results Matrix Quality	4.0	
4. Ex ante Economic Analysis	N/A	
5. Monitoring and Evaluation	7.2	
5.1 Monitoring Mechanisms	1.7	
5.2 Evaluation Plan	5.5	
III. Risks & Mitigation Monitoring Matrix		
Overall risks rate = magnitude of risks*likelihood	Low	
Environmental & social risk classification	N.A.	
IV. IDB´s Role - Additionality		
The project relies on the use of country systems		
Fiduciary (VPC/FMP Criteria)	Yes	Financial Management: Budget, Treasury, Accounting and Reporting, External Control, Internal Audit.
Non-Fiduciary		
The IDB's involvement promotes additional improvements of the intended beneficiaries and/or public sector entity in the following dimensions:		
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	Yes	PN-T1269, PN-T1290, PN-T1293, PN-T1311

The general objective is to support Panama's low-emission and inclusive sustainable development through a clean, fair, and inclusive energy transition. The specific objectives are: (i) to promote an increase in variable renewable sources in the generation matrix, (ii) to incentivize the digitalization of the electricity sector, (iii) to promote electric mobility, (iv) to support increased access to electricity, (v) to support the reduction of the gender gap in the sector, and (vi) to promote capacity building in green employment for the energy transition. The instrument to finance this operation is a Programmatic Policy-Based Loan (PBP) through two individual operations (PBP-I and PBP-II, with this being the first operation).

The project has an adequate diagnosis of Panama's context. The problems and their determinants are correctly identified and quantified. The results matrix is congruent with the vertical logic, with clear specific objectives and SMART result indicators. The Monitoring and Evaluation Plan presents a description of the sources of information and verification means, describes the attribution of results to the project, and specifies an estimated budget. To measure the achievement of the objectives, a before-and-after methodology is proposed.

The data to measure some of the result indicators must be requested by the Bank to the National Energy Secretariat (SNE), the National Authority for Public Services (ASEP), the Panama Mass Transit Company (Mi Bus), and the Rural Electrification Office (OER). Additionally, one of the indicators contemplates the updating of a survey to companies by the SNE. It is recommended to follow up on these requirements with the corresponding institutions to ensure the availability of information.

POLICY MATRIX

Objective:	The general objective of the programmatic series is to support low-emission, inclusive sustainable development in Panama, through a clean, fair, and inclusive energy transition. The specific objectives of the first operation are to: (i) promote increased power generation from variable renewable sources in the generation matrix; (ii) create incentives for the digitalization of the electricity sector; (iii) promote electric mobility; (iv) support increased access to electricity; (v) support the narrowing of the gender gap in the sector; and (vi) promote capacity-building in green jobs for the energy transition.

Components/Policy objectives	Policy conditions for programmatic operation I	Fulfillment status of conditions Programmatic operation I*	Triggers Programmatic operation II
Component I. Macroeconomic stability			
1.1 Macroeconomic stability	1.1.1 Maintain a macroeconomic framework consistent with program objectives and the guidelines set forth in the sector policy letter.	**Fulfilled**	1.1.1.1 Maintain a macroeconomic framework consistent with program objectives and the guidelines set forth in the sector policy letter.
Component II. Governance and financing of climate action and sustainability			
Subcomponent II.1. Strengthening of governance to increase climate action			
2.1 Strengthen governance and financing of climate action and sustainability	2.1.1 Presentation to the National Assembly of the Climate Change Framework Bill, which establishes the regulatory framework for the national response to climate change and issues provisions to fulfill the international commitment assumed with the signing of the Paris Agreement.	**Fulfilled (Q1 2023)**	2.1.1.1 Approval by the National Assembly of the Climate Change Framework Bill, which establishes the regulatory framework for the national response to climate change and issues provisions to fulfill the international commitment assumed with the signing of the Paris Agreement.

* This information is merely indicative as of the date of this document. In accordance with document GN-3633-2, (Policy-based Loans: Guidelines for Preparation and Implementation), compliance with all the specified conditions for disbursement, including the maintenance of an appropriate macroeconomic policy framework, will be verified by the Bank at the time of the borrower's request for the corresponding disbursement, as aptly reflected in the disbursement eligibility memorandum.

Components/Policy objectives	Policy conditions for programmatic operation I	Fulfillment status of conditions Programmatic operation I*	Triggers Programmatic operation II
	2.1.2 Approval of the National Climate Action Plan, a planning instrument with a long-term vision, for implementation of key climate change mitigation and adaptation actions to achieve the ambition of low-emissions, resilient, and inclusive development.	**Fulfilled (Q2 2022)**	2.1.2.1 Approval of the energy sector climate change adaptation plan. 2.1.2.2 Preparation of a cost-benefit analysis of energy transition scenarios for the decarbonization of the energy and transportation sector by 2050 in Panama.
	2.1.3 Approval of the update of the National Climate Change Policy, aligned with the Paris Agreement.	**To be Fulfilled (Q2 2023)**	2.1.3.1 Approval of the long-term (2050) low-emissions, inclusive, and climate change-resilient socioeconomic strategy. 2.1.3.2 Submission to the UNFCCC of Nationally Determined Contribution 2.
	2.1.4 Progressive, gradual establishment of the National Carbon Market of Panama as a tool to promote the reduction of emissions and compliance with the National Low-Carbon Economic and Social Development Strategy.	**Fulfilled (Q4 2021)**	2.1.4.1 Implementation of the “Reduce your corporate footprint” module on the climate transparency platform.
Subcomponent II.2. Climate action and sustainability from public investment			
2.2 Strengthen governance and financing of climate action and sustainability, using public investment.	2.2.1 Adoption of the Technical Guide to Climate Change for the Planning, Pre-feasibility, and Feasibility of Public Investment Projects, which guides and promotes the implementation of mitigation and adaptation measures in the various phases of projects.	**Fulfilled (Q2 2022)**	2.2.1.1 Implementation of the interactive climate change risk atlas on the climate transparency platform, to support development of sustainable energy infrastructure.
	2.2.2 Approval of the Implementation Manual for Climate Change Labelers for Public Investment Projects, which helps identify investment projects with climate change criteria, as well as determining the annual amount of climate finance allocated to public investment.	**Fulfilled (Q2 2022)**	

Components/Policy objectives	Policy conditions for programmatic operation I	Fulfillment status of conditions Programmatic operation I*	Triggers Programmatic operation II
Component III. Modernization of the energy sector to promote a fair and inclusive energy transition			
Subcomponent III.1. Modernization of the legal and regulatory framework of the energy sector			
3.1 Modernize the legal framework of the electricity sector and strengthen sector governance to support the energy transition.	3.1.1 Preparation and submission to the Cabinet Council of a proposed modification of the legal and regulatory framework of the electricity sector, proposing the grounds for adapting the system to variable renewable energies and storage, promoting competition and universal access to energy, and strengthening electricity sector governance.	**To be Fulfilled (Q2 2023)**	3.1.1.1 Presentation to the National Assembly of the electricity sector modernization bill. 3.1.1.2 Approval of specific regulations for the use of energy storage as a primary reserve service. 3.1.1.3 Preparation of a viability study for the development of an auxiliary services market.
	3.1.2 Approval of the institutional strengthening roadmap for the electricity sector that promotes actions to improve the structuring, governance, and institutional coordination for the effective implementation of the Energy Transition Agenda.	**To be Fulfilled (Q2 2023)**	3.1.2.1 Approval of the Update of the National Energy Plan 2015-2050 developed by the SNE.
Subcomponent III.2. Accelerating diversification, decarbonization, and digitalization of the energy sector			
3.2 Promote technological development and innovation in the sector, enabling greater use of renewable energies, in both centralized and decentralized manners, diversification, the promotion of other energy sources, such as green hydrogen, and digitalization.	3.2.1 Preparation and submission to the MEF, by the SNE, of the proposed design of the Energy Transition Fund, which contributes to the implementation of the lines of action of the strategies under the Energy Transition Agenda and to the fulfillment of the targets established under United Nations Sustainable Development Goal 7 and the Paris Agreement.	**Fulfilled (Q2 2023)**	3.2.1.1 Regulations for implementation of the Energy Transition Fund.
	3.2.2 Approval of the National Distributed Generation Strategy, which promotes the sustainable implementation of electricity production from renewable and clean sources.	**Fulfilled (Q1 2022)**	3.2.2.1 Approval of the update of the guidelines and procedures for own consumption using new, renewable, and clean sources. 3.2.2.2 Implementation of the digital platform operation for distributed generation processes.

Components/Policy objectives	Policy conditions for programmatic operation I	Fulfillment status of conditions Programmatic operation I*	Triggers Programmatic operation II
	3.2.3 Approval of the National Green Hydrogen Strategy, which establishes targets, specific actions, and responsible parties for the promotion of the generation, transformation, and use of green hydrogen in the country.	**To be Fulfilled (Q2 2023)**	3.2.3.1 Design and implementation of a pilot for green hydrogen heavy-duty vehicles. 3.2.3.2 Approval of the National Green Hydrogen Bill.
	3.2.4 Approval of the Innovation Strategy for the National Interconnected System, with the objective of integrating renewable energies into the generation system, as well as smart grid control and the future introduction of large-scale energy storage.	**Fulfilled (Q4 2022)**	3.2.4.1 Implementation of a data management system for smart metering for oversight of the reliability and quality of the power. 3.2.4.2 Approval of the roadmap for digitalization of the sector. 3.2.4.3 Implementation of smart metering for consumers of 50 kW or more.
	3.2.5 Approval of the modification of the rate structure, including hourly rates to promote more efficient use of energy resources by end customers.	**Fulfilled (Q1 2023)**	3.2.5.1 Approval of the rate structures that implement hourly rates.
	3.2.6 Approval of the Strategy for the Rational and Efficient Use of Energy that defines the pillars and priority lines of action for compliance with Law 69 of 2012, through the implementation of rational and efficient energy use programs in all sectors of energy consumption.	**Fulfilled (Q2 2022)**	3.2.5.2 Implementation of investments in a national energy efficiency program for public agencies.
	3.2.7 Definition of the principles, basic criteria, and general guidelines on which the Regulatory Harmonization Structure for the Colombia-Panama Electric Interconnection will be based.	**Fulfilled (Q2 2021)**	3.2.5.3 Approval of the Regulatory Harmonization Structure between Panama and Colombia for the Electric Interconnection.
	3.2.8 Implementation of the ministerial coordination mechanisms for agreement on the next steps of the Colombia-Panama Electric Interconnection.	**Fulfilled (Q1 2023)**	

Components/Policy objectives	Policy conditions for programmatic operation I	Fulfillment status of conditions Programmatic operation I*	Triggers Programmatic operation II
Subcomponent III.3. Promotion of Electric Transportation			
3.3 Support actions to promote electric transportation	3.3.1 Approval and regulation of the Law, which creates incentives for electric mobility in ground transportation, the purpose of which is to reduce greenhouse gas emissions by increasing the use of renewable energies.	**Fulfilled (Q1 2023)**	3.3.1.1 Adoption of the public bus fleet renewal strategy (MiBus). 3.3.1.2 Preparation of a rate study for electric buses (MiBus/ATTT). 3.3.1.3 Strategy for the renewal of the public transportation bus fleet for private companies – ATTT.
	3.3.2 Approval of the regulation for the operation of electric vehicle charging stations for end customers.	**To be Fulfilled (Q2 2023)**	
	3.3.3 Publication and implementation of the tool for the evaluation of the transportation fleet renewal that cost-effectively supports the achievement of the targets of the electric mobility law.	**Fulfilled (Q2 2023)**	3.3.3.1 Adoption of a program to renew the public fleet of Ministry of Environment vehicles. 3.3.3.2 Adoption of a data collection strategy for the evaluation of the impact of reduced mobility emissions and evaluate the resilience of mobility.
Subcomponent III.4. Support for a fair and inclusive energy transition			
3.4 Build technical capacity for the labor market and strengthen the inclusion of vulnerable groups in the energy transition, with a gender equality approach.	3.4.1 Approval of the Universal Access Strategy, whose objective is to implement new technologies, business models, and financial tools to promote innovation, together with the empowerment of young people and women community leaders to achieve nationwide universal access to energy.	**Fulfilled (Q1 2022)**	3.4.1.1 Approval of the National Rural Electrification Plan. 3.4.1.2 Approval of proposed universal access financing mechanisms.
	3.4.2 Approval of the National Gender and Climate Change Plan, to help drive prioritized processes of social and environmental transformation aimed at promoting sustainable, inclusive, low-emissions development that is resilient to climate change with the incorporation of gender considerations.	**Fulfilled (Q2 2022)**	

Components/Policy objectives	Policy conditions for programmatic operation I	Fulfillment status of conditions Programmatic operation I*	Triggers Programmatic operation II
	3.4.3 Approval of the Women and Energy Nexus roadmap, which promotes women's participation in the Energy Transition Agenda.	**Fulfilled (Q1 2022)**	3.4.3.1 Update of the diagnostic assessment of gender in the energy sector.
	3.4.4 Design and implementation of the training program for Indigenous women on the installation of rural solar systems, supporting the Universal Access Strategy and the Women and Energy Nexus roadmap.	**Fulfilled (Q4 2022)**	3.4.4.1 Implementation of a training program for women on the installation of rural solar systems in at least three Indigenous territories.
	3.4.5 Design and approval of technical training courses on solar distributed generation and electric mobility, responding to the productive sector's needs and considering a gender approach.	**To be Fulfilled Q2 2023**	3.4.5.1 Implementation of the first generation of technical training on the core themes of the energy transition. 3.4.5.2 Training strategy for electric vehicle mechanics and certification officials.

RESULTS MATRIX

Project objective:	The general objective of the programmatic series is to support low-emission, inclusive sustainable development in Panama, through a clean, fair, and inclusive energy transition. The specific objectives of the first operation are to: (i) promote increased power generation from variable renewable sources in the generation matrix; (ii) create incentives for the digitalization of the electricity sector; (iii) promote electric mobility; (iv) support increased access to electricity; (v) support the narrowing of the gender gap in the sector; and (vi) promote capacity-building in green jobs for the energy transition.

GENERAL DEVELOPMENT OBJECTIVE

Indicator	Unit of measure	Baseline value	Baseline year	Target (2027)	Means of verification	Comments
General development objective: To support low-emission, inclusive sustainable development in Panama, through a clean, fair, and inclusive energy transition.						
CO_2 equivalent emissions factor per MWh for the SIN	tCO_2eq/MWh	0.182	2021*	0.149**	Calculation report on the CO_2 emissions factor for the SIN.	Factor based on the "GHG Protocol" methodology. The report is published annually by the SNE.
Energy intensity	kBOE/GDP US$ millions	0.409	2021	0.387	Statistical report on economic and energy indicators published by the SNE.	Quotient of final energy consumption and gross domestic product expressed in real terms at a constant 2007 value. Indicators published annually by the SNE.
Nationwide access to electricity	%	93.6	2020	98.3	Statistical report published by the SNE.	Target estimated based on the objective of achieving universal electrification by 2030. The baseline will be confirmed and adjusted with the updated data from the 2023 population census. Coverage statistics are published annually by the SNE.

* 2019, 2020, 2021.

** 2025, 2026, 2027.

SPECIFIC DEVELOPMENT OBJECTIVES

Indicator	Unit of measure	Baseline value	Baseline year	End of project target (2027)	Means of verification	Comments
Specific development objective 1: promote increased power generation from variable renewable sources in the generation matrix						
Share of NCREs in power generation (centralized)	%	10.7	2022	17.0	Monthly statistical report for the electricity sector.	% of total electricity generation. Statistics published periodically by ASEP.
Installed capacity for renewable own consumption	MW	68.3	2022	310	Statistical report on installed capacity for own consumption.	Estimated target based on the country objective to reach 950 MW by 2030. Statistics published periodically by ASEP.
Specific development objective 2: create incentives for the digitalization of the electricity sector						
Quantity of smart meters at end customers	#	6,231	2021	35,000	Statistics on smart meters (ASEP).	The target is estimated based on information shared by ASEP for the maximum income allowed for the period from 1 July 2022 to 30 June 2026, which is in public consultation on the date of preparation of this matrix. Monitoring will be with ASEP.
Specific development objective 3: promote electric mobility						
Electric vehicles in the total vehicle fleet	#	287	2022	3,500	Statistics on electric mobility and the implementation of the National Electric Mobility Strategy.	Target estimated based on current trend and the country's objectives by 2030. Statistics published annually by the SNE.
Electric buses operated by MiBus	#	0	2022	55	Statistics on the number of electric buses.	Statistical information from MiBus.
Total charging stations for electric vehicles	#	132	2022	500	Statistics on advances in electric mobility in the country and the implementation of the National Electric Mobility Strategy published by the SNE.	Statistics published annually by the SNE.

Indicator	Unit of measure	Baseline value	Baseline year	End of project target (2027)	Means of verification	Comments
Specific development objective 4: support increased access to electricity						
Percentage with access to electricity in rural areas	%	81.0	2018	95.7	Statistics from the National Statistics and Census Institute (INEC).	Target estimated based on the country's objective of achieving universal electrification by 2030. The baseline will be confirmed and adjusted with the updated data from the 2023 population census. INEC has developed annual estimates on the percentage with access to electricity. To be requested from the SNE.
Number of households with new connections in Indigenous areas	#	0	2021	12,000	Statistics constructed and developed by the OER.	Target estimated based on the country's objective of achieving universal electrification by 2030. The statistics on households with new connections are organized by the OER.
Number of 100% renewable mini power grids in isolated areas	#	0	2022	4	Statistics constructed and developed by the OER.	The statistics on the number of mini power grids are organized by the OER.
Specific development objective 5: support the narrowing of the gender gap in the sector						
Proportion of companies in the electricity sector with gender initiatives or policies established in their operations	%	48	2021	80	Survey to update gender initiatives or policies in electricity sector companies by the SNE.	Target estimated based on a target of 100% by 2030. Baseline constructed by the SNE using a survey developed in 2021. The statistical information will be constructed and compiled by the SNE as a means of verification of the target in 2027.
Number of training programs implemented for Indigenous women on the installation of rural solar systems	#	1	2022	5	Reports on results of training programs developed by the SNE.	The information will be compiled by the SNE.

Indicator	Unit of measure	Baseline value	Baseline year	End of project target (2027)	Means of verification	Comments
Number of Indigenous women trained in the installation of rural solar systems	#	25	2022	125	Reports on results of training programs developed by the SNE.	The information will be compiled by the SNE.
Specific development objective 6: promote capacity-building in green jobs for the energy transition						
Persons trained in diagnostics and maintenance of electric vehicles	#	0	2022	370	Monthly statistics published by INADEH on the results of the training.	Target estimated based on historical INADEH statistics.
Women trained in diagnostics and maintenance of electric vehicles	#	0	2022	111	Monthly statistics published by INADEH on the results of the training.	Target estimated based on historical INADEH statistics.
People trained in installation and maintenance of electric vehicle charging stations and solar distributed generation	#	0	2022	470	Monthly statistics published by INADEH on the results of the training.	Target estimated based on historical INADEH statistics.
Women trained in installation and maintenance of electric vehicle charging stations and solar distributed generation	#	0	2022	141	Monthly statistics published by INADEH on the results of the training.	Target estimated based on historical INADEH statistics.

OUTPUTS

Indicator	Unit of measure	Baseline value (2021)	PBP I (Q2 2023)	Means of verification	Comments
Climate Change Framework Bill presented by the Ministry of Environment to the National Assembly	Bill	0	1	Climate Change Framework Bill 942 proposed by the Ministry of Environment to the National Assembly.	
National Climate Action Plan approved by executive decree of the Ministry of Environment	National Plan	0	1	Executive Decree 10 of 16 June 2022, published in Digital Official Gazette 29558-C.	
Update of the National Climate Change Policy approved by executive decree of the Ministry of Environment	National Policy	0	1	(Executive Decree pending confirmation of means of verification with the Ministry of Environment)	
National Carbon Market of Panama (MNCP) established progressively by executive decree of the Ministry of Environment	Regulations	0	1	Executive Decree 142 of 9 December 2021, published in Digital Official Gazette 29430-C.	
Technical Guide to Climate Change for the Planning, Pre-feasibility, and Feasibility of Public Investment Projects adopted by resolution	Guide	0	1	Resolution DM-0131-2022 of 15 June 2022, published in Digital Official Gazette 29565-A.	
Implementation Manual for Climate Change Labelers for Public Investment Projects adopted by resolution	Manual	0	1	Resolution DM-0110-2022 of 20 April 2022, published in Digital Official Gazette 29528-A.	
Proposed modification of the legal and regulatory framework for the electricity sector prepared and submitted by the National Energy Secretariat to the Cabinet Council	Proposal	0	1	Transmittal memo of the proposed modification of the legal framework by the National Energy Secretariat for consideration by the Cabinet.	
Institutional strengthening roadmap for the electricity sector approved by resolution	Roadmap	0	1	MIPRE resolution approving the institutional strengthening roadmap published in the Gazette.	
Proposed design of the Energy Transition Fund prepared and submitted by the National Energy Secretariat to the Ministry of Economy and Finance	Proposal	0	1	Transmittal memo of the initial structure of the proposed design of the Energy Transition Fund from the National Energy Secretariat to the Ministry of Economy and Finance. Transmittal memo MIPRE-2023-0005873.	
National Distributed Generation Strategy approved by Cabinet resolution	Strategy	0	1	Cabinet Resolution 5 of 5 January 2022, approving the National Distributed Generation Strategy, published in Digital Official Gazette 29451-A of 7 January 2022.	

Indicator	Unit of measure	Baseline value (2021)	PBP I (Q2 2023)	Means of verification	Comments
National Green Hydrogen Strategy approved by Cabinet resolution	Strategy	0	1	Cabinet Resolution approving the National Green Hydrogen Strategy, published in the Gazette.	
Innovation Strategy for the National Interconnected System approved by Cabinet resolution	Strategy	0	1	Cabinet Resolution 139 of 6 December 2022, approving the Innovation Strategy for the National Interconnected System, published in Digital Official Gazette 29681-A.	
Modification of the rate structure, including hourly rates approved by ASEP resolution	Rate structure	0	1	Resolution AN 18165 – Elec. of 17 January 2023 by ASEP, approving the modification of the rate structure.	
Strategy for the Rational and Efficient Use of Energy approved by Cabinet resolution	Strategy	0	1	Cabinet Resolution 66 of 1 June 2022, published in Digital Official Gazette 29549-B.	
Defined principles, basic criteria, and general guidelines on which the Regulatory Harmonization Structure for the Colombia-Panama Electric Interconnection will be based	Principles and criteria	0	1	Signed agreement between the Secretariat and the Ministry. Agreement_SNE_MME_Panama-Colombia.	
Ministerial coordination mechanisms to agree on the next steps for the Colombia-Panama Electric Interconnection have been implemented	Mechanisms	0	1	Minutes of the ministerial meeting between Colombia's Ministry of Mines and Energy and Panama's National Energy Secretariat on 1 and 2 March 2023.	
Law on electric mobility that creates incentives for e-mobility in ground transportation approved and regulated	Law and regulations	0	2	Law of the National Assembly 295 of 25 April 2022, published in Digital Official Gazette 29523-A. Executive Decree 51 of 15 February 2023, approving the Regulations of the Law on electric mobility, published in Digital Official Gazette 29723-B.	
Regulations for the operation of electric vehicle charging stations for end customers approved by ASEP resolution	Regulations	0	1	ASEP resolution approving the regulations for the operation of electric vehicle charging stations for end customers.	
Instrument for evaluating the renewal of the transportation fleet published and implemented by the National Energy Secretariat	Instrument	0	1	SNE note documenting evidence of the publication of the instrument on the National Energy Secretariat website. Letter on the SNE instrument.	

Indicator	Unit of measure	Baseline value (2021)	PBP I (Q2 2023)	Means of verification	Comments
Universal Access Strategy approved by Cabinet resolution	Strategy	0	1	Cabinet Resolution 28 of 9 March 2022, approving the Universal Access Strategy, published in Digital Official Gazette 28892-A.	
National Gender and Climate Change Plan approved by executive decree	Plan	0	1	Executive Decree 11 of 16 June 2022, approving the National Gender and Climate Change Plan, published in Digital Official Gazette 29558-C.	
Women and Energy Nexus roadmap approved by resolution	Roadmap	0	1	Resolution MIPRE-2022-0010543 of 22 March 2022, approving the Women and Energy Nexus roadmap published in Digital Official Gazette 29501-A.	
Training program for Indigenous women on the installation of rural solar systems designed and implemented	Program	0	1	SNE official letter submitting the evaluation report on the women solar champions program.	
Technical training course on solar distributed generation and electric mobility designed and approved by INADEH	Course	0	1	INADEH official letter to the SNE indicating approval of the curriculum for the training on distributed generation and charging stations.	

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

PROPOSED RESOLUTION DE-__/23

Panama. Loan ____/OC-PN to the Republic of Panama.
Program to Support a Fair, Clean, and Sustainable
Energy Transition I

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 Panama, as borrower, for the purpose of granting it a financing aimed at cooperating in the execution of the Program to Support a Fair, Clean, and Sustainable Energy Transition I. Such financing will be for the amount of up to US$200,000,000 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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