

MEXICO

PROGRAM TO SUPPORT ENERGY STORAGE SYSTEMS IN MEXICO (GESP)

(ME-G1029)

NON-REIMBURSABLE FINANCING

GRANT PROPOSAL

This document was prepared by the project team consisting of: Fernando de Ollouqui (IFD/CMF) Team Leader; Leticia Riquelme (IFD/CMF) Alternate Team Leader; Joana Pascual (INO/IEN); Enrique Nieto, Aurea Fuentes, Karina Azar, Claudia Márquez, Tatiana Alves and Adriana Lozano (IFD/CMF); Uriel Barrios (CID/CME); Jose Antonio Urteaga (INE/ENE); Ignacio Barragan (LEG/SGO); Gloria Visconti and Fátima López (CSD/CCS); Elee Muslin (INO/FMP); and Lourdes Sanchez (VPC/FMP).

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ABBREVIATIONS	
BANCOMEXT	<i>Banco Nacional de Comercio Exterior S.N.C.</i>
BANXICO	Central Bank of Mexico
BESS	Battery Energy Storage Solutions
CIF	Climate Investment Funds
CTF	Clean Technology Fund
DG	Distributed Generation
EA	Executing Agency
EE	Energy Efficiency
EPE	Energy Research Office
FI	Financial Institutions
GDP	Gross Domestic Product
GESP	Global Energy Storage Program
GHG	Greenhouse Gas
IEA	International Energy Agency
IMF	International Monetary Fund
KW	Kilowatts
MDB	Multilateral Development Banks
MX\$	Mexican Pesos
NDB	National Development Banks
NDC	Nationally Determined Contributions
NPL	Non-Performing Loans
OECD	Organization for Economic Cooperation and Development
OR	Operating Regulations
PCR	Project Completion Reports
PV	Photovoltaic
RE	Renewable Energy
SME	Small and Medium Enterprises
TC	Technical Cooperation

PROJECT SUMMARY
MEXICO
PROGRAM TO SUPPORT ENERGY STORAGE SYSTEMS IN MEXICO (GESP)
(ME-G1029)

Financial Terms and Conditions				
Beneficiary and Executing Agency				
<i>Banco Nacional de Comercio Exterior S.N.C. (BANCOMEXT)</i>				
Source	Amount (US\$)	%	Coverage Period and Currency of Approval	
IDB-CTF Non-Reimbursable Investment Grant– Tranche I	2.0 million	22	Disbursement Period Tranche I:	3 years
			Execution Period Tranche I:	3 years
IDB-CTF Non-Reimbursable Investment Grant – Tranche II^(a)	7.0 million	78	Coverage Period Tranche II:	20 years
			Execution Period Tranche II:	3 years
Total IDB-CTF Non-Reimbursable Investment Grant:	9.0 million	100	Currency of Approval:	Dollars of the United States of America
Project at a Glance				
<p>Project objective/description: The general development objective of the program is to contribute to Small and Medium Enterprises (SME) operational efficiency and environmental goals by promoting the deployment of sustainable investments. The specific development objective is to pioneer financing flows to SME investments in Battery Energy Storage Solutions (BESS) paired with Energy Efficiency (EE) projects.</p>				
<p>Special contractual clauses: As a special contractual clause prior to disbursement of Tranche I resources and availability of Tranche II resources, BANCOMEXT must present evidence that it has approved the Operating Regulations (OR) of the program, in the terms previously agreed with the IDB , and that such OR has entered into effect (¶3.10).</p> <p>Also, as a special contractual clause for execution, during a period of three years from the date of eligibility of the non-reimbursable agreement with IDB, BANCOMEXT will be obliged to report on the program’s goals (¶3.10).</p> <p>For special contractual conditions related to social and environmental requirements, see Annex B of the Environmental and Social Review Summary (ESRS).</p>				
Exceptions to Bank policies: None.				
Strategic Alignment				
Challenges^(b):	SI <input type="checkbox"/>	PI <input checked="" type="checkbox"/>	EI <input type="checkbox"/>	
Cross-Cutting Themes^(c):	GE <input checked="" type="checkbox"/> and DI <input type="checkbox"/>	CC <input checked="" type="checkbox"/> and ES <input checked="" type="checkbox"/>	IC <input checked="" type="checkbox"/>	

^(a) The corresponding CTF instrument is a Contingent Finance Guarantee, with an annual recurring charge of 25 bps, and is executed upon non-performing loans by SME. It has a 20-year maturity.

^(b) SI (Social Inclusion and Equality); PI (Productivity and Innovation); and EI (Economic Integration).

^(c) 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 justification

- 1.1 **Macroeconomic context.** Mexico's economy has surpassed expectations for 2023. Supported by a strong labor market and solid growth in wages, remittances, and investment, Gross Domestic Product (GDP) growth is expected to reach 3.2% in 2023, well above the 1.7% projection earlier in the year.¹ Despite a loose fiscal policy projected for 2024, growth is expected to moderate in the face economic slowdown in the United States, a continuation of tight monetary policy (required to bring stubborn inflation back inside the Central Bank target range), and uncertainty related to the upcoming presidential elections, which will take place in June 2024. The Central Bank of Mexico ([BANXICO](#)) has addressed inflationary pressures proactively, setting the policy interest rate at record-high levels (11.25%).
- 1.2 The post pandemic social, economic, and financial environment provides the opportunity to align current challenges with long-term objectives of energy resilience and sustainable development.² Fossil global carbon (CO₂) emissions are estimated to have fallen by 5.6% in 2020, predominantly due to a drop in energy demand associated to the downturn in economic activity produced by the pandemic. However, the large emission rebound observed since 2021 could continue, unless efforts are put in place for supporting a clean energy transition as an essential element of economic recovery.³ A future more resilient economy will depend on a shift to sustainable practices, consistent with government commitments to tackle climate change, prioritizing industries and activities that can help promote sustainability further.⁴
- 1.3 **Energy Efficiency (EE) projects by Small and Medium Enterprises (SME).** In Mexico, SME form the bulk of firms in the economy and the most important source of employment across various sectors.⁵ Most of the activities in which SME are predominant, such as manufacturing and services, are considered essential in changing the productive structure to help close productivity gaps and support growth.⁶ In the current, rapidly transforming economic environment, SME need to generate ways to increase the value and productivity of their businesses by applying innovation and technological development, particularly through investments that achieve operational efficiency, such as EE projects. It has been demonstrated that firms can directly influence their energy costs by optimizing production processes, thereby increasing their competitiveness, as well as help reduce Greenhouse Gas (GHG) emissions.⁷ EE presents an opportunity to

¹ International Monetary Fund (IMF), [Mexico: Staff Concluding Statement of the 2022 Article IV Mission](#), 2022.

² International Energy Agency (IEA), "[Sustainable Recovery](#)", World Energy Outlook 2020 Special Report, 2020.

³ United Nations Environment Program (UNEP), "[COVID-19 caused only a temporary reduction in carbon emissions](#)", 2021. By May 2021 global emissions in the power, industry and residential sectors were already at the same level or higher than in the same period in 2019.

⁴ IMF, Special Series on Fiscal Policies to Respond to COVID-19, "Greening the Recovery", 2020; Organization for Economic Cooperation and Development (OECD), "Building back better: A sustainable, resilient recovery after COVID-19", 2020.

⁵ Including microenterprises, these firms constitute 52% of economic activity and 68.4% of employment.

⁶ Filippo, A., and Diaz, A., "*América Latina y el Caribe Post COVID-19, Retos y Oportunidades – México*", IDB, 2020. SME activity has boosted Mexico's industrial GDP, exports, and integration to global trade for years.

⁷ International Climate Initiative (IKI) Alliance Mexico.

stimulate viable sustainable investments that can support firm growth, while contributing to achieving climate change goals.

- 1.4 A significant potential for the deployment of EE lies in Distributed Generation (DG) installations,⁸ especially in commercial and industrial SME. DG is the most efficient solution to produce energy with reduced costs for firms, as the alternative is to use the national grid to cover their energy demand, which would involve higher operating expenses.⁹
- 1.5 **Battery Energy Storage Solutions (BESS) and their benefits.** The pairing of EE investments from renewable sources, such as solar photovoltaic (PV) technology, with BESS¹⁰ provides more efficiency to firms' projects, as BESS can enable SME to better align power generation with demand, increase resiliency of their self-producer system and further reduce energy costs by expanding the use of Renewable Energy (RE), storing excess energy to utilize during peak demand – instead of the more expensive national grid supply – or avoiding demand charges, ensuring any RE produced is not wasted.¹¹ Thus, investment in BESS can boost SME operational efficiency while helping to deliver affordability and reliability to their energy systems, subsequently supporting firm's growth. Moreover, at a macro level, the increasing share of variable RE in Mexico's energy systems is expected to result in greater need for storage to alleviate intermittency of production and reduce curtailments, given the nature of the resource.¹²
- 1.6 In 2019, the Energy Research Office (EPE)¹³ of Brazil launched a study that identified a series of benefits for the use of electrochemical batteries including energy management, backup, load balancing, frequency control, voltage control, grid stabilization, black-start, and compensation of the variability of wind and solar generation, which allow for greater penetration of renewable sources and, consequently, a reduction in GHG emissions.
- 1.7 In Mexico, BESS behind-the-meter have been shown to improve energy management through various applications for SME. Among them is the use of BESS to store excess solar energy – when a PV system is in place – during periods in which demand is lower than generation, increasing self-consumption. The analysis shows that, since tariffs tend to have a very high-cost component for energy consumption at peak times and energy billing based on usage time, by

⁸ DG refers to small-scale, decentralized installations of electricity generation close to where it will be used (on-site generation). In Mexico, DG corresponds to any system with capacity below 500 kilowatts (kW), which does not require permits.

⁹ DG systems have a number of other advantages, including reduced transmission and distribution losses, improved grid stability and security, and reduced environmental impact.

¹⁰ BESS are a type of energy storage systems consisting of one or more batteries that use kinetic energy to store and release electricity as needed. Throughout this proposal, BESS will refer to solutions used to store excess energy from renewable sources.

¹¹ International Renewable Energy Agency (IRENA), "[Behind-The-Meter Batteries – Innovation Landscape Brief](#)", 2019.

¹² Mexico's Energy Regulatory Commission (CRE) estimates that in 10 years' time Mexico will require 2.3 gigawatts (GW) of storage to offset solar and wind energy intermittency – it is foreseen that the RE share of installed capacity in the country will increase to 41.4% in 2031 (Ammper, "*Sistemas de Almacenamiento de Energía en la Red Eléctrica y su Desarrollo en México*", 2020).

¹³ EPE is linked to the Brazilian Federal Government, through the Ministry of Mines and Energy, and is responsible for the preparation of studies that support energy policies.

- shifting consumption during the day using BESS, total costs become considerably lower. Especially in an industrial environment, the battery becomes an asset to improve energy use and manage the electricity bill to reduce costs, making the increase in solar self-consumption one of the most suitable applications for SME in Mexico.¹⁴
- 1.8 Battery storage has become the most prominent solution because of its quick response, relatively simple installation, and the ability to store several hours of energy. In addition, their scalability allows them to be a viable solution for smaller businesses and installations. As the cost of batteries has decreased,¹⁵ global investment in battery storage grew by almost 40% in 2020. This was, however, led by a 60% growth in grid-scale investment, while investments in behind-the-meter storage fell by 12%, as these are generally financed by households and SME.¹⁶
- 1.9 All in all, the deployment of BESS at scale can contribute to establish reliable energy services to meet growing demands from sectors critical for economic recovery and growth, while at the same time contribute to countries' climate mitigation commitments. It can also contribute to avoid rising prices for energy sold in the market, by helping reduce grid saturation in periods when electricity demand exceeds the capacity of electricity transmission lines.¹⁷
- 1.10 **Financial barriers to BESS investments.** While the local financial sector is solid and well-capitalized, financial depth in Mexico is low relative to other major economies in Latin America.¹⁸ Total financing to firms reaches only 24.1% of GDP and small firms account for just 15% of total financing to firms in the private sector.¹⁹ Also, while new credit granted to large companies has stabilized since the pandemic, smaller companies continue to show a larger reduction in their portfolio levels.²⁰ As is the case in the rest of the region, data confirms that local SME face particularly greater credit constraints at base, which is exacerbated during periods of macroeconomic contraction.²¹
- 1.11 Regarding the gender gap, Mexico has abundant data disaggregated by sex for financial inclusion at the individual level, but the country still lacks adequate gender monitoring systems when it comes to firms. Surveys suggest that 30% of

¹⁴ Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), "Guía para el dimensionamiento de sistemas de almacenamiento de energía con baterías", 2022.

¹⁵ Battery costs declined by around 70% between 2015 and 2022 and are expected to continue to fall. IEA, "[Sustainable Recovery](#)", World Energy Outlook 2020 Special Report, 2020.

¹⁶ IEA, "[World Energy Outlook](#)", 2021. Battery storage systems deployed at the consumer level – that is, at the residential, commercial and/or industrial premises of consumers – are typically "behind-the-meter" batteries, because they are placed at a customer's facility.

¹⁷ National Renewable Energy Laboratory (NREL), "[Opportunities for Battery Storage Technologies in Mexico](#)", 2018.

¹⁸ Domestic credit by banks as a percentage of GDP is 28.5% for Mexico, compared to 44.7% in Peru, 51.5% in Colombia, 62.8% in Brazil and 87.2% in Chile. [World Bank Open Data](#), "Domestic credit to private sector by banks (% of GDP)", 2010-2020.

¹⁹ BANXICO, "[Reporte de Estabilidad Financiera – Primer Semestre](#)", 2022. The report categorizes "small firms" as non-financial private companies not listed in the Mexican stock exchange with historical maximum credits of less than 100 million Mexican Pesos (MX\$).

²⁰ BANXICO, op cit.

²¹ Due to their relatively fragile financial structure, SME are more dependent on financing in the face of fluctuations in the economic cycle. Thus, they are generally more sensitive to economic fluctuations because of higher credit restrictions.

microenterprises and SME are owned by women, compared to a 13% average share in Latin America, and that 35% of these firms are partially or fully credit-constrained, compared to 28% of those owned by their male counterparts.²² Additionally, only 3.9% of women microenterprises and SME report using banks to finance investments, compared to 17.4% in the case of men.²³ Among the causes, women tend to own or accumulate fewer assets that can be used as collateral and there are supply-side constraints, such as gender biases in the practices of financial institutions and the lack of financial products and services with a suitable value proposition for women entrepreneurs. By sector, the gender data gap is more pronounced for firms in the industrial and services sectors, impeding an adequate assessment of women participation in the relevant portfolios and the specific barriers they face.

- 1.12 In addition to these structural conditions in the financial system, BESS investments generally face particular challenges due to: (i) higher upfront costs (Capital Expenditure, [CAPEX]) and longer maturities, when compared with other productive investments; (ii) structural lack of access to suitable long-term financing (lenders) and traditional forms of collateral (borrowers); (iii) lack of familiarity with storage technology and the complexities involved in designing its various arrangements; and (iv) relatively limited, albeit sufficient, market for sector providers (fairly restricted to developed countries).²⁴ All these factors translate into more complex financial structures and/or risks that are hard for the financial system to assess. In sum, not only SME face significant restrictions accessing credit overall, but also the financial system does not have specialized lines of credit for BESS.
- 1.13 **Potential demand aspects for EE and BESS.** The program is considered a pilot intended to trigger this demand, hindered by an absence of financing lines. Its viability will lead to demonstration effects for the market. However, potential demand can be derived from: (i) the significant opportunities for energy savings that exist in Mexico, particularly from renewable sources. The energy intensity of the country's economy is higher than the average for OECD countries, showing only limited improvement since 2000. Also, energy represents the sector with the highest GHG emissions, with 64% of national emissions in 2019. These come mainly from the burning of fossil fuels, 12% of which occur in the manufacturing and construction industries;²⁵ (ii) the investment in PV installations with a capacity of under 500 kW has increased exponentially, reaching more than 250,000 installations. As of December 2021, Mexico had 2,015 megawatts (MW) of DG installed, predominantly solar, growing 45% compared to 2020;²⁶ (iii) the lowering costs of battery storage solutions, which give SME a greater financial incentive to develop BESS alongside RE; and (iv) existing market evidence that suggests that small battery storage solutions make financial sense, that a pipeline of viable projects already exists (¶3.4), and that although some gaps remain in

²² World Bank, "MSME Finance Gap", 2017.

²³ World Bank, "Enterprise Survey", 2010.

²⁴ While providers remain primarily internationally-headquartered, adequate local presence in Mexico exists for behind-the-meter commercial and residential storage solutions, storage connected to and outside the network, and battery and software manufacturers.

²⁵ Gobierno de México, "[Inventario Nacional de Emisiones de Gases y Compuestos de Efecto Invernadero, 1990-2019](#)", 2022.

²⁶ Mexico Energy Partners, "[Distributed Generation in Mexico](#)", 2021.

current regulation (¶1.16), this poses no hurdle for small storage systems in DG installations (solutions behind-the-meter).²⁷

- 1.14 Since the pandemic, many firms have taken steps to reassess cost reductions in their businesses, looking for projects and ways to reduce energy expenses and their carbon footprint, as energy is generally one of the main cost centers. Key market players in the sector indicate that the main driver of the market will be the end-user actively seeking to reduce their energy costs by migrating from the national utility to another supplier, trying to optimize their current supply agreements, particularly in self-supply, and assessing self-generation capabilities and reliability of supply (including solar PV installations and/or batteries).²⁸
- 1.15 **Public policy and legal framework.** Mexico has been a pioneer in the region for mainstreaming climate action, particularly in legislation. In 2015, Mexico ratified the Paris Agreement at the Conference of the Parties (COP21) and was among the first countries to publish its commitments through the Nationally Determined Contributions (NDC), submitted in 2016, by which Mexico committed to a GHG reduction of 22% by 2030 with respect to its baseline, including a 31% reduction in the electricity sector. In November 2022, Mexico updated its NDC, increasing its GHG reduction goal to 30% by 2030 and conditionally increasing it up to 40% if international financing, innovation, and technology transfer are scaled up.²⁹ Recently, Mexico's Inter-Ministerial Commission on Climate Change expressed its support for the Special Climate Change Program 2020-2024 (PECC), reaffirming mitigation goals, especially those of the electricity sector.
- 1.16 Direct mention of energy storage in the existing legal framework is limited. The Energy Transition Law regulates the sustainable use of energy, as well as obligations in terms of clean energy and reduction of GHG emissions of the electricity industry, while maintaining the competitiveness of the productive sectors. In 2016, the Secretariat of Energy (SENER, by its acronym in Spanish) published an agreement detailing the first strategy for the Energy Transition Law, which has remained in place with the new administration. The agreement recognizes the importance of batteries in terms of energy security and the achievement of climate change goals through the facilitation of renewable generation technologies, not only at the level of DG, but for the national electric system entirely. It also recognizes the supply of batteries for services and their potentially essential role in the stability and reliability of the electric network. One of the specific lines of action set out in this strategy, under the category of markets and finance, is “to promote the development of business models that will drive technology and create products and services for the energy storage value chain”.³⁰
- 1.17 **Justification and additionality of the intervention.** Storage technologies will play a revolutionary role in the advancement and adoption of RE at different scales

²⁷ Mexico Business News, “[In Times of Uncertainty, Energy Storage Is the Answer](#)”, 2023; “[Energy Storage: Power Outage Solution for Industrial Clients](#)”, 2022; “[How Will Mexico’s Battery Storage Capacity Develop in 2022?](#)”, 2022.

²⁸ PV Magazine, “[Informe sobre el Mercado Energético de México. Qué esperar en 2021](#)”, 2021.

²⁹ Gobierno de México, “[Contribución Determinada a Nivel Nacional. Actualización 2022](#)”, 2022.

³⁰ Instituto Nacional de Ecología y Cambio Climático (INECC), “[Barreras y Habilitantes para la Implementación de Tecnologías de Almacenamiento de Energía](#)”, 2020.

- and are becoming increasingly attractive and demanded investments. As margins for battery storage services improve and become more predictable, the energy storage market will eventually attract more debt financing. Until then, concessional financing can facilitate its penetration and scaling-up through interventions that can help demonstrate commercial project viability and mitigate real and perceived risks to encourage finance. National Development Banks (NDB) are relevant in this regard, as they can afford greater appetite than commercial banks to assume risks, especially in the case of smaller firms, and mobilize financial resources.³¹ NDB are also crucial to facilitate access to national and international climate finance funds, and in combining all available sources of funds efficiently, within the framework of the energy transformation process.³² As of March 2022, Mexican NDB outstanding balance of direct and induced financing was equivalent to 27.4% of the total financing of the banking sector. Its share of financing to the private sector is 76%.³³
- 1.18 This program addresses the problem of lack of financing for BESS investments by SME (§§1.10-§1.12) by incentivizing these through a financial structure that will allow to mitigate the technological and financial risks, supporting the introduction and gradual scale-up of these innovative investments. Particularly, guarantees are executed by there being defaults on the sub-loans due to the underperformance of the PV+BESS project, in other words, that the energy savings generated are not sufficient to repay the sub-loan. As the program is considered a pilot (§1.13), it promotes the development of innovation in financial and technological solutions to improve the competitiveness of SMEs, supports the leverage of local resources and reinforces the impact on reducing emissions. The pilot program considers promoting finance to women led SME, by using guarantees to alleviate particular credit constraints that these SME face in terms of lack of collateral and of financial products that foster the inclusion of women entrepreneurs (§1.11).
- 1.19 Among Mexican NDB, the *Banco Nacional de Comercio Exterior S.N.C.* (BANCOMEXT) focuses on financing export and import activities to the private sector – 90% of firms supported by BANCOMEXT are SME –, both directly and via other Financial Institutions (FI). [BANCOMEXT institutional strategy](#) endeavors to offer targeted products and set goals related to the promotion of technological development and the adoption of best practices to mitigate impacts on climate change. In 2021, BANCOMEXT issued a sustainable bond for US\$500 million, which represents the first subordinated bond issuance with a sustainable label in Latin America.³⁴ In accordance with BANCOMEXT’s institutional strategy, the proposed program will support its efforts in creating a specific financing line that would pair DG investments with BESS.³⁵ In this regard, this operation complements an IDB program ([5455/OC-ME](#), [5456/TC-ME](#)) for US\$319 million,

³¹ De Ollóqui, F. et al., “*Bancos Públicos de Desarrollo ¿Hacia un Nuevo Paradigma?*”, IDB, 2013; Chelsky, J. et al., “*Investment Financing in the Wake of the Crisis: The Role of Multilateral Development Banks*”, World Bank, 2013.

³² Carlino, H., et al., “*El Papel Central del Financiamiento en el Acuerdo de París y las Oportunidades para los Bancos Nacionales de Desarrollo*”, IDB, 2017; Smallridge, D., et al., “*The Role of NDB in Catalyzing International Climate Finance*”, IDB, 2013.

³³ BANXICO, op cit.

³⁴ BANCOMEXT, [Annual Report 2021](#).

³⁵ The economics of battery storage, particularly when integrated with solar PV and wind are rapidly improving because the cost of PV, wind and batteries have fallen dramatically in recent years. These cost declines are expected to continue (Clean Technology Fund Dedicated Private Sector Program - Battery Storage, 2019).

fully disbursed to the date, that support DG project financing (¶1.22), as part of a comprehensive strategy to enable financing of new markets, proving their viability, and generating a demonstration effect to the financial system. This program also is in line with the country's energy and finance policies (¶1.15-¶1.16).

- 1.20 **IDB experience and lessons learned.** The IDB has extensive experience with financing sustainable energy projects by SME. Loans [2226/OC-ME](#), approved in 2009 for US\$100 million, [2671/OC-ME](#) approved in 2011 for US\$50 million and [2843/OC-ME](#) approved in 2012 for US\$100 million, all of them with 100% execution and carried out under the CCLIP [ME-X1010](#), approved in 2009 for US\$1.2 billion with *Nacional Financiera* (NAFIN), provided medium and long-term financing for private investment projects by SME. Derived from the government's drive to reduce GHG emissions, these programs focused on RE projects, showing exceptional results in terms of leverage and new capacity installed. Regarding this program's borrower, there is experience with BANCOMEXT implementing prior loan operations ([3563/OC-ME](#) approved in 2015 for US\$200 million with 100% execution, and [4666/OC-ME](#) approved in 2018 for US\$100 million and fully executed), both of which have published Project Completion Reports (PCR) with satisfactory results,³⁶ qualifying BANCOMEXT's performance as excellent. This program is part of a long term effort to support BANCOMEXT in the promotion of technological development and the adoption of best practices to mitigate impacts on climate change, through loan operations ([5455/OC-ME](#), [5456/TC-ME](#)) that financed clean energy infrastructure projects and SME investments in energy efficiency, which helped increase the efficiency of the energy sector and reduce GHG emissions. The Bank has also supported BANCOMEXT through technical assistance (¶1.22) that built institutional strengthening in sustainable projects analysis, development and consolidation of Environmental, Social and Governance (ESG) management systems, and supervision of RE projects. Instrumenting a pilot program for BESS investments continues this process as it helps deploy a relevant technological solution for energy efficiency.
- 1.21 This experience and that related to complementary operations with BANCOMEXT (¶1.22), have been valuable in the preparation of the proposed program, as reflected by: (i) leveraging institutional capacities developed within Mexican NDB, including BANCOMEXT, through programs successfully executed or under implementation, particularly in the financing of sustainable energy projects (¶3.2); (ii) identifying a financial instrument (credit guarantee) that meets the specific challenges (mitigating risks of financing BESS projects) of the target beneficiary (SME) (¶1.28); (iii) designing operational rules for the financial instrument that balance market incentives with proper risk management (¶3.7); and (iv) using complementary Technical Cooperation (TC) activities to support the consolidation of a pipeline of eligible projects that ensures portfolio readiness and inclusiveness (¶1.22).

³⁶ For further details, see [PCR for operation 3563/OC-ME](#) and [PCR for operation 4666/OC-ME](#).

- 1.22 **Complementarity with other IDB operations.**³⁷ As it was stated previously, in December 2021, the IDB approved the Global Credit Program to Support Economic Recovery in Mexico ([5455/OC-ME](#), [5456/TC-ME](#)), with BANCOMEXT as borrower, having the specific objective of supporting the inclusive economic recovery of SME in the manufacture and tourism sectors, and its dependent firms, through long term financing for productive investment, including investment for EE. Total financing for the abovementioned program is US\$319 million,³⁸ including IDB's Ordinary Capital resources for US\$310 million and reimbursable resources from the Clean Technology Fund (CTF) for US\$9 million. Of the total resources, US\$92 million, including all CTF funds, are being used to finance EE investments by SME, namely in DG. The guarantee fund under the proposed program will partly ease the deployment of resources earmarked for DG under the [5455/OC-ME](#), [5456/TC-ME](#) program, while promoting the development of innovation through energy storage solutions, as well as increasing the leverage of local resources and the GHG avoided as a result of investments financed. This complementarity scheme for the proposed program considers that the DG and BESS investments are financed together and simultaneously. Also, the CTF-funded TC [ATN/TC-18688-ME](#),³⁹ approved for US\$953,000 for operational support to BANCOMEXT with 46.32% of execution, supports this process, via institutional strengthening for evaluation and management of EE projects and assisting the development of a pipeline of viable projects, much relevant due to the relative novelty of the sector and difficulties related to the risk assessment of these projects. Finally, the regional TC [ATN/OC-18036-RG](#), approved for US\$2 million for client support with 63.81% of its resources disbursed, complements the program with regards to its alignment with gender, by supporting BANCOMEXT's efforts to develop policies and financial products specifically directed to women, as well as in the collection, monitoring and analysis of sex disaggregated data following international best practices.⁴⁰
- 1.23 **Coordination with donors (multilateral organizations and/or cooperation agencies).** Resources for this program are part of CTF's Global Energy Storage Program (GESP) (¶2.2). The IDB is one of six implementing agencies of these funds, providing an additional tool to utilize different financing instruments to meet the countries' specific needs and leverage resources from other sources. Resources from the CTF are approved by the CTF Trust Fund Committee and transferred to the IDB under a Financial Procedures Agreement.⁴¹

³⁷ The project team, which includes IDB Invest, will be working on possible synergies during program execution. In this regard, IDB Invest could support project origination for BANCOMEXT by promoting PV+BESS projects among SME while also being a co-financer or risk taker in the operations. In any case as the proposed operation is a pilot, it is expected to have a demonstration effect that could be utilized by BID Invest for future projects.

³⁸ To this date, the operation has fully disbursed its resources.

³⁹ Activities under this TC contemplate the structuring and implementation of risk mitigation mechanisms, provide capacity building and/or program operational support for EE investments.

⁴⁰ Gender alignment activities under the complementary TC will also include working with BANCOMEXT in doing special outreach to women – not only that women apply for the line of credit, but that they know about the benefits of BESS and the resources available to them through the proposed program.

⁴¹ The CTF is part of the Climate Investment Funds (CIF), a collaborative effort among MDB and countries to bridge the climate financing and learning gap in the context of the global climate change agreement. The CIF are governed by a balanced representation of donors and recipient countries, with active observers from the United Nations, the Global Environment Facility, civil society, indigenous peoples, and the private sector.

- 1.24 **Strategic alignment.** The program is consistent with the Second Update of the Institutional Strategy (AB-3190-2) and aligns with the challenge of Productivity and Innovation, by supporting the financing of SME's investments in EE that also allow for greater productivity. It also aligns with the crosscutting issues of: (i) Institutional Capacity and the Rule of Law, by supporting BANCOMEEXT in developing the credit guarantee fund which strengthens their financial structuring capacity –this process will also be complementarily supported by [ATN/TC-18688-ME](#) (¶1.22); (ii) Climate Change, according to the [Joint Multilateral Development Banks \(MDB\) approach on climate finance tracking](#) the project has 100% of climate mitigation given that the entirety of the resources will finance a credit guarantee fund to partially cover sub-loans granted to SME investing in solar photovoltaic distributed generation projects with battery energy storage solutions; (iii) Environmental Sustainability, by targeting DG projects with BESS that contribute to cleaner and more efficient energy; and (iv) Gender Equality, by contributing to address the gender financial gap with a targeted allocation of 10% (US\$900,000) of program resources to women SME. By the same standard, the program aligns with IDB's Integrated Strategy for Climate Change Adaptation and Mitigation, and Sustainable and Renewable Energy (GN-2609-1), the Sustainable Infrastructure for Competitiveness and Inclusive Growth Strategy (GN-2710-5), by supporting BESS projects that increase RE and DG, and the Institutions for Growth and Social Welfare Sector Strategy (GN-2587-2), by increasing access to credit through local financial institutions.
- 1.25 The program contributes to the Corporate Results Framework (CRF) 2020-2023 (GN-2727-12) in its indicators of: (i) number of SME financed; (ii) number of women beneficiaries of economic empowerment initiatives; (iii) emissions avoided (annual tons CO₂ equivalent); and (iv) installed power generation capacity from renewable sources. Furthermore, it is consistent with the Climate Change Sector Framework Document (GN-2835-3) and the Energy Sector Framework Document (GN-2830-3). Finally, the program is aligned with IDB Group's Country Strategy with Mexico 2019-2024 (GN-2982) in its priority area of boosting investment, specifically contributing to the strategic objective of strengthening access to credit.
- 1.26 **Paris Agreement alignment.** This operation has been analyzed using the [Joint MDB Assessment Framework for Paris Alignment](#) and the IDB Group Paris Alignment Implementation Approach (PAIA, GN-3142-1). It has been determined aligned with the adaptation and mitigation goals of the Paris Agreement through a simplified assessment under the transaction-based approach for operations with financial intermediaries ([OEL#4](#)).

B. Objective, components, and cost

- 1.27 **Objective.** The general development objective of the program is to contribute to SME operational efficiency and environmental goals by promoting the deployment of sustainable investments. The specific development objective is to pioneer financing flows to SME investments in BESS paired with EE projects.
- 1.28 **Single component. Financing a partial credit guarantee fund (US\$9 million).** CTF resources will be used to finance a credit guarantee fund, managed by BANCOMEEXT, to partially cover sub-loans granted by either

BANCOMEXT itself (i.e., as first tier) or a FI (i.e., as second tier), to SME investing in solar PV DG projects with BESS. Partial credit guarantees are intended to help improve the risk profile of investments by covering the performance of the PV+BESS project and hence the energy savings generated, which will reduce financing cost for the borrower and net exposure of BANCOMEXT and its network of FI, increasing the attractiveness of the financing. In proposing this solution, the IDB follows CTF guidelines in recommending a necessary grant element that is tailored to the additional risk premium of this relatively new type of PV+BESS investment. The maximum capacity allowed for private investments in PV, without permits, is 500 kW due to national regulations (§1.13-§1.14). This restriction, and adding the cost of corresponding BESS, imply that the maximum amount of sub-loan would be US\$1 million (§3.7). The partial credit guarantee can be up to 80% which balances the need to incentivize the financing of these projects, while retaining risk exposure by the private sector. BANCOMEXT operates as first and second tier lender depending on the size of the borrowing SME; smaller firms are serviced through second tier operations. The program contemplates using both modalities. Program resources will be available to constitute the guarantee fund, once the contractual and eligibility conditions have been met, within an existing trust that administers BANCOMEXT's various guarantee instruments, that will have its own separate accounting for the program (§3.12). Tranche I resources will be totally disbursed to BANCOMEXT after program eligibility, while Tranche II resources will be available for execution in the event of default (§3.3). To address the gender financial gap (§1.11), a specific allocation of at least 10% of program resources will target women SME.⁴² Eligibility criteria (§3.7) and execution details of the funds, are described in Operating Regulations ([OR](#)).

- 1.29 **Beneficiaries.** The guarantee fund will be used to guarantee FI that support financing of projects eligible under this program, including BANCOMEXT, when acting in first tier, or eligible FI under BANCOMEXT's policies, when BANCOMEXT is acting in second tier. Final beneficiaries of the program will be SME investing in BESS paired with PV projects,⁴³ including Energy Services Companies (ESCO) or other specialized firms offering Energy-as-a-Service schemes.⁴⁴ The program will be primarily focused on final beneficiaries financed under the Global Credit Program to Support Economic Recovery in Mexico (§1.22),⁴⁵ under which pipeline development efforts for PV projects are currently on-going.
- 1.30 It is estimated that the guarantee fund could support a minimum of 70 PV+BESS projects⁴⁶ throughout the execution period, based on the assumptions used for the

⁴² The allocation for women SME was established conservatively based on the following considerations: (i) prior to the program BANCOMEXT has not granted any funds to BESS; and (ii) there is no data available on the share allocated to women SME in BANCOMEXT portfolio overall. [ATN/OC-18036-RG](#) complements the program to its alignment with gender, by supporting BANCOMEXT's efforts to develop policies and financial products geared towards identifying and improving access to finance to women led SME.

⁴³ The storage solution draws power from the PV generation source and, in some cases, directly from the grid in off-peak hours.

⁴⁴ Energy-as-a-service is a business model whereby customers pay for an energy service provided by a service company. Under this scheme, it is the service company who makes the investment upfront and retains ownership of the equipment throughout the duration of the service.

⁴⁵ While the use of program resources in transactions contracted under the program [5455/OC-ME](#), [5456/TC-ME](#) is not mandatory, it is expected that most of the funds will support this portfolio, given the consistencies with its characteristics and eligibility criteria.

⁴⁶ The number of PV+BESS projects are equivalent to the number of SMEs beneficiaries of the program.

economic evaluation of the program (¶1.32), including average size per DG installation, estimated capital cost of PV and BESS technology, average size of DG sub-loans financed with available complementary resources (¶1.22), and an expected leverage from a 2-time rollover of the guarantee fund (program funds are fully reused twice) (¶3.4). The number of beneficiary projects is indicative and may change depending on the actual portfolio financed, which will be reported by BANCOMEXT periodically during execution (¶3.14).

C. Key results indicators

- 1.31 **Expected impact and results.** The program's logic proposes that by providing guarantees to FI to cover the risk of SME loans for BESS projects, funds will be leveraged to expand credit for the sector. In turn, additional access to finance will enable investment and deployment of BESS, contributing to the operational efficiency and sustainable growth of SME, along with associated benefits from both productivity and climate standpoints. The results matrix outlines the indicators and targets associated with program objectives. These include for the specific development objective: (i) outstanding stock of guaranteed credit for PV+BESS investments by SME; (ii) Non-Performing Loans (NPL) ratio of the portfolio of guaranteed credit for PV+BESS investments by SME, relative to the average NPL of the total guaranteed SME portfolio at BANCOMEXT; (iii) RE-sourced installed capacity added by the projects financed; and (iv) total investment mobilized by program resources; and for the general development objective: (i) evolution of energy costs of SME financed with sub-loans guaranteed by the program; and (ii) annual GHG emissions reduced or avoided by projects financed.
- 1.32 **Economic evaluation.** A cost-benefit analysis was carried out to assess the viability of the program. The analysis calculates program net benefits and costs assumed to not otherwise accrue to the economy in the absence of the program. This analysis validates the program's creation of significant net benefits, projected for a 22-year period, using a 12% discount rate, yielding a Net Present Value (NPV) of MX\$99.46 million (US\$5.23 million).⁴⁷ The Internal Rate of Return (IRR) is 17%. Variations in key assumptions in a sensitivity analysis led to the same conclusion, namely that program benefits outweigh its costs ([OEL#1](#)).

II. FINANCING STRUCTURE AND MAIN RISKS

A. Financing instruments

- 2.1 The program is proposed as an Investment Grant financed with resources from the CTF, specifically as part of the GESP (¶2.2).⁴⁸ While total program resources are non-reimbursable, the nature of the corresponding CTF instruments differ for each Tranche. In case of Tranche I, resources are a non-reimbursable Investment Grant (US\$2 million), while Tranche II (US\$7 million) consists of a CTF Contingent Finance Guarantee with a 20-year maturity and an annual recurring charge of

⁴⁷ Based on a projected average as per [BANXICO's current published exchange rate](#) (MX\$/US\$), values are converted using a 19MX\$/US\$ exchange rate.

⁴⁸ The resources from the CTF have been pre-approved. Once the Quality and Risk Review process is concluded, the current document will be transmitted to the CTF for final approval.

25 bps, which is executed and disbursed upon non-performing loans by SME (¶3.3). The total amount (US\$9 million) will be fully used to finance the guarantee fund under the program’s single component (¶1.28) and will be available after program eligibility requirements are met.

Table 2.1. Total estimated cost (US\$ million)

Category	IDB-CTF
Single component – Financing a partial credit guarantee fund	
Tranche I	2.0
Tranche II	7.0
Total	9.0
Percentage (%)	100

Note: Implementation, auditing, monitoring, and evaluation costs will be covered by BANCOMEXT with own administrative funds and with support from the TC [ATN/OC-18036-RG](#).

- 2.2 The CTF provides scaled-up financing for public and private sector projects that contribute to the demonstration, deployment, and transfer of low-carbon technologies with significant potential for GHG emission reductions. Investments for the promotion of RE, sustainable transport, and energy efficiency are eligible under the CTF. Resources from CTF may also be used for the financing of projects with very high additional costs or with significant risks. Resources from the CTF are transferred to the IDB, acting as implementing agency, under a Financial Procedures Agreement and are administered by the IDB in a trust fund created within its organizational structure (IDB-CTF Trust Fund). The [GESP](#) is an endowment with a flexible and cross-sector approach. Consistent with CTF practice, GESP concessional finance is intended to make use of a range of instruments to mitigate risk, reduce costs, and clear a path for expanding the use and availability of these critically important technologies.

B. Environmental and social risks

- 2.3 The program is classified as Financial Intermediation under the Environmental and Social Policy Framework (GN-2965-23). The Environmental and Social Risk Rating (ESRR) of the operation has been assessed as moderate, related to short-term, localized impacts that can be mitigated with standard and known measures. The operation will not finance Category A subprojects or subprojects of substantial or high risk. Potential environmental and social impacts associated with the program will be managed by applying an Environmental and Social Management System, which is based on compliance with the IDB Exclusion List, local law, and additional criteria of exclusion and eligibility, which are established in the program’s [OR](#).
- 2.4 Although the objective of this program is not the direct financing of solar modules, it must be considered that the guarantee fund under this operation will partly ease the financing of solar modules under program [5455/OC-ME](#), [5456/TC-ME](#). Pursuant to IDB Group Measures to Address the Risk of Forced Labor in the Supply Chain of Silicon-Based Solar Modules (GN-3062-1), the measures already in place for program [5455/OC-ME](#), [5456/TC-ME](#) are adequate to avoid and mitigate the risk of forced labor.

C. Other risks and key issues

- 2.5 **Other risks.** A technical design risk of medium-high level has been identified as BESS involve relatively new technologies that are costlier than a simple DG system, which could hinder demand for BESS and its financing. To mitigate this risk, the program is supported by the complementary TC [ATN/TC-18688-ME](#) (¶1.22) that provides BANCOMEXT institutional and operational support for EE financing, including BESS, designing the financial structure, including guarantees, that mitigate risk and support demand for these projects, including guarantees. It envisions support to BANCOMEXT's for pipeline creation and supervision, such as dissemination efforts to promote the program among potential beneficiaries and consolidating sales channels with strategic FI.
- 2.6 Another internal process risk of medium-high level has been identified as a delay in the implementation of BANCOMEXT's Gender Action Plan and data capturing systems, may have a negative impact on the execution of program resources towards closing the gender gap. This is mitigated by complementing the program with activities under the regional TC [ATN/OC-18036-RG](#) (¶1.22), that will support BANCOMEXT's efforts to develop policies specifically directed to women SME.
- 2.7 **Program sustainability.** The proposed execution mechanism offers the opportunity to keep risk mitigation instruments in place beyond program support, by establishing a Fund that is likely to induce credit in amounts much larger than the amount of program funds, and for a longer period. Through its second-tier structure and increased access to credit, the program is expected to have a positive demonstrative effect, since the portfolio enabled helps establish viable business models and a track record for other SME, bringing up their confidence to invest more in PV+BESS and helping improve the development of the local energy storage market. The program can also play a critical role to fill the identified financing gap (¶1.10) and mobilize FI intervention more broadly, helping reduce the long-lasting credit constraints faced by SME.⁴⁹ Results in terms of energy savings and GHG emission reductions are likely to be sustained after program implementation.

III. IMPLEMENTATION AND MANAGEMENT PLAN

A. Summary of implementation arrangements

- 3.1 **Beneficiary and Executing Agency (EA).** The beneficiary and EA of the program will be BANCOMEXT, which has the necessary administrative, fiduciary and control mechanisms to provide and maintain a transparent and effective administration of the program. The agreement to be signed between the IDB and BANCOMEXT will establish all obligations in relation to the overall implementation of the program, including planning, origination, promotion, structuring, and formalization of the guarantees, monitoring and evaluation of the program following IDB guidelines, legal and accounting supervision, E&S management, and any

⁴⁹ Program activities enable on-lending of resources via FI to many small borrowers across productive sectors, thrusting the inclusion of SME in FI's portfolios by imposing SME-directed credit eligibility conditions for accessing funds. When accessing credit, SME may be encouraged to use other banking services from the FI, contributing to the expansion of the market.

other responsibilities acquired for the management of the program. Based on experience with BANCOMEXT acting as executor of prior operations (¶1.20) no substantial changes in its current structure or operation are envisioned to successfully carry out activities under the proposed program.⁵⁰

- 3.2 Program resources will be channeled through BANCOMEXT, acting as manager of the guarantee fund, who will establish the precise terms and conditions (i.e., coverage, fees) of the guarantee for each sub-loan. The resources will be used to guarantee the loans to the PV+BESS projects (¶1.28). The guarantee fund will function as follows: in case of sub-loan default, program resources will be used to reimburse the amount covered by the guarantee; if the loan is repaid by the final beneficiary (¶1.29), resources committed under its guarantee will be released so that they can be used to issue guarantees for new PV+BESS projects. BANCOMEXT shall carry out its own supervision of guaranteed sub-loans that allows for an effective verification of the use of program resources.
- 3.3 The guarantee fund will have the complete amount of the program resources (US\$9 million) available at the outset once all program eligibility requirements are met. Of this total: (i) Tranche I resources (US\$2 million) will be disbursed to BANCOMEXT for the guarantee fund with a maximum disbursement period of three years; and (ii) Tranche II resources (US\$7 million) will be made available to the guarantee fund for their use to guarantee sub-loans, but will be drawn upon and disbursed from the Bank on demand, as required during the 20-year term of this type of grant instrument, when the guarantees are executed by there being defaults on the sub-loans. This will allow for an optimization of the leveraging potential of guaranteed scheme. At the end of the program's guarantee obligations, remaining CTF resources that have not been executed will be reimbursed by the Bank to the CTF.
- 3.4 As a special contractual requirement, during a period of three years from the date of eligibility, BANCOMEXT will be obliged to report on the program's indicators and targets associated with the specific objectives (outlined in the Results Matrix). During this period, it is expected that the guarantee fund will support a minimum of PV+BESS projects and installed energy capacity (¶1.30). This period is based on demand projections for credit for DG projects involving BESS, according to ongoing pipeline development activities at BANCOMEXT and in line with the complementary operation [5455/OC-ME](#), [5456/TC-ME](#) (¶1.22). Particularly, the target projects involve relatively complex infrastructure and technical decisions that are more difficult to plan and execute than other type of investments.
- 3.5 Based on similar experiences in the region, this intermediation scheme is considered appropriate for: (i) serving SME across sectors of the economy; (ii) encouraging FI to make sub-loans they would not have conceded in the absence of guaranteed coverage; and (iii) distributing resources among various FI. Moreover, BANCOMEXT experience and involvement in the sector will allow for: (i) enhancing management and operational synergies between the

⁵⁰ BANCOMEXT is a solvent financial institution with all relevant ratios, such as capital, non-performing loans, and coverage, well above minimum standards required. By year-end 2020, its outstanding loan portfolio reached approximately US\$12.2 billion.

guarantee and sub-loans provided either by BANCOMEXT or eligible FI; (ii) using financial techniques in structuring the pricing of the guarantee; and (iii) improving financial risk analysis of BESS projects by BANCOMEXT and eligible FI involved.

- 3.6 **Institutional capacity of the EA.** In accordance with the Framework for Risk Management in Sovereign Guaranteed Operations (OP-1519-5), an institutional capacity assessment was carried out in February 2021, using the Institutional Capacity Analysis Platform (ICAP) tool, in the context of the [5455/OC-ME](#), [5456/TC-ME](#) (¶1.22). This evaluation confirmed the suitability of BANCOMEXT's internal control environment and systems, resulting in a satisfactory level of development and a low fiduciary risk for program execution.
- 3.7 **Eligibility criteria.** Specific procedures, conditions, and requirements for the use of program funds (including technical, regulatory, and financial criteria for accessing the guarantees), and selection of beneficiaries and participating FI are described in the [OR](#) (¶3.9). These include: (i) classification requirements of SME, which are those defined by Mexican government institutions, per the standard used by BANCOMEXT;⁵¹ (ii) an average guarantee coverage of up to 80% per loan; (iii) eligible sectors of activity (industrial, service and commercial), in line with BANCOMEXT's criteria for categorizing transactions; (iv) a maximum total credit amount for each individual sub-loan covered to an SME of up to US\$1 million and a maximum size of GD installation of 500 kW; (v) sector restrictions as per the Environmental and Social Safeguards exclusion list (¶2.3); and (vi) accreditation requirements for FI participating in the program, which will resemble BANCOMEXT's own accreditation and risk management policies and procedures. BANCOMEXT will evaluate and select a portfolio of projects that meet these criteria and will guarantee sub-loans on a first come first served basis upon demand.
- 3.8 **Coordination with institutions involved in the program.** The proposed execution scheme does not require coordination or formal agreements with other public entities. As part of its own operational activity, BANCOMEXT will coordinate with each FI with regards to potential sub-loans eligible for coverage from the guarantee beyond those financed with resources from the complementary operation [5455/OC-ME](#), [5456/TC-ME](#) (¶1.22).
- 3.9 **OR.** The conditions and requirements for the use of program resources, financial products, intermediation scheme and accreditation of intermediary financial institution, and eligibility of projects are established in the [OR](#), to be agreed between the IDB and BANCOMEXT in accordance with their policies and procedures, and with Mexican norms and legislation. This includes: (i) technical, regulatory, and financial criteria for accessing the sub-loans (¶3.7); (ii) environmental and social safeguards requirements (¶2.3); (iii) disbursement mechanism (¶3.12); (iv) IDB supervision mechanisms (¶3.14); (v) monitoring, evaluation, and reporting requirements (¶3.14); and (vi) guidance on actions and

⁵¹ While it is not specifically restricted, the program is focused on more medium-sized SMEs due the tariff structure of the Mexican market where the price of peak energy rises after a certain threshold. The economic analysis assumptions suggest an average loan of US\$300,000 for PV+BESS projects, in line with BANCOMEXT projections.

measures for the management of integrity risks during execution, related to conflict of interest management and integrity due diligence ([OR](#)).

- 3.10 **Special contractual clauses.** As a special contractual clause prior to disbursement of Tranche I resources and availability of Tranche II resources, **BANCOMEXT must present evidence that it has approved the [OR](#) of the program, in the terms previously agreed with the IDB, and that such [OR](#) has entered into effect.** This condition is justified on account of the role of the [OR](#) in defining essential criteria and requirements for program execution. **Also, as a special contractual clause for execution, during a period of three years from the date of eligibility of the non-reimbursable agreement with IDB, BANCOMEXT will be obliged to report on the program's goals (¶3.4).** This condition is required so as to verify the achievement of the program's outcomes.
- 3.11 **Procurement of goods and services.** No procurement of works, goods, services, or consulting services are expected for the program as 100% of resources will be used for financing the guarantee fund through BANCOMEXT.
- 3.12 **Disbursements and advances.** The total amount of program resources (US\$9 million) will be available to BANCOMEXT from the beginning of the program for the use of guarantees of sub-loans, however the IDB will disburse program resources to the designated account, in dollars of the United States of America, based on the liquidity needs by BANCOMEXT for the program in function of the amount of guarantees executed by sub-loan defaults. As such, Tranche I resources will be disbursed as soon as program eligibility is met, and Tranche II will be made available to the fund for their use to guarantee sub-loans but will be drawn upon and disbursed from the Bank on demand, as required, during a 20-year period (¶3.3). Any unused resources from the Tranche II Investment Grant will be returned to the CTF by the Bank at maturity (20 years) (¶2.1).
- 3.13 **Audits.** External audit requirements and financial reports will be fulfilled jointly with the Global Credit Operation ([5455/OC-ME](#), [5456/TC-ME](#)) that this program is related. Once the Global Credit Operations are closed for Bank purposes the program resources will be audited in accordance with the Terms of Reference (TOR), harmonized with the Secretariat of Public Function (SFP, by its acronym in spanish). Such financial reports shall include reports of the enforcement of guarantees.

B. Summary of arrangements for monitoring results

- 3.14 **Monitoring.** BANCOMEXT will be responsible for preparing all financial and operational information related to the program and submitting to the IDB the plans and operational documents, including Pluri-annual Execution Plans (PEP), Annual Operational Plans (AOP) and Financial Plans (FP), as well as preparing and submitting to the IDB the disbursement requests and justification of use of resources, in accordance with the [OR](#). BANCOMEXT will also be responsible of compiling, producing, and maintaining data to verify achieved values of development indicators included in the results framework. As established in the [Monitoring and Evaluation Arrangements](#) and the [OR](#), the evolution of development indicators and any additional monitoring requirements will be reported by BANCOMEXT to the IDB during program execution via annual

reports. BANCOMEXT will also submit a final report, necessary for the PCR to be prepared by the IDB six months following the three-year period, as well as for any ex post assessment the IDB or CTF may wish to conduct.

- 3.15 **Evaluation.** The evaluation plan considers a before-and-after comparison methodology as well as a qualitative analysis based on evidence available at the end of execution. Due to the scale and scope of the intervention, considered as one of many elements that will contribute to the long-term development of BESS in Mexico, the proposal is not able to present a more rigorous impact evaluation, which would require controlling for a series of variables that are out of the scope of the program ([M&E Arrangements](#)).

RESULTS MATRIX

Project Objective	The specific development objective is to pioneer financing flows to Small and Medium Enterprises (SME) investments in Battery Energy Storage Solutions (BESS) paired with Energy Efficiency (EE) projects. The general development objective of the program is to contribute to SME operational efficiency and environmental goals by promoting the deployment of sustainable investments.
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GENERAL DEVELOPMENT OBJECTIVE

Indicators	Unit of measurement	Baseline value	Baseline year	Expected year for achievement	Target	Means of verification	Comments
General development objective: To contribute to SME operational efficiency and environmental goals by promoting the deployment of sustainable investments.							
Indicator 1: Evolution of energy costs of SME financed with sub-loans guaranteed by the program	Index	1	t	t+1	0.14	Cost data reported by beneficiaries as per requirement for accessing funds from the program, and support information from Technical Cooperation (TC) ATN/TC-18688-ME . Validation may be conducted on a sample of projects, based on energy billing documentation.	Where t = year immediately prior to sub-loan Indicator is measured as an index equal to energy payments to the utility from energy consumed by firms financed in year (t+1) relative to these payments in the year (t), including tariffs per kWh consumed and demand fees. Given the timeframe to verify any potential changes at the firm level, this indicator will exclude firms that receive guaranteed sub-loans up to one year before program completion. The reported value will be the average of the indexes at the project level. Baseline is one as the achievement will be measured as an index relative to the baseline. Project-level data will be collected throughout execution. Target is estimated as 0.14 (14% of the baseline value, equivalent to 86% savings) based on the estimations from the economic analysis.
Indicator 2: Annual Greenhouse Gas (GHG) emissions	tCO ₂ e	0	2023	2026	2,952	Calculations by BANCOMETX and IDB, based on PV+BESS-sourced energy reported by	Indicator corresponds to the annual emissions reduced by the PV+BESS projects supported relative to the emissions produced by the Mexican grid that would otherwise supply demand in the absence of the PV+BESS. Given

Indicators	Unit of measurement	Baseline value	Baseline year	Expected year for achievement	Target	Means of verification	Comments
reduced or avoided by projects financed						beneficiaries as per requirement for accessing funds from the program	<p>the average timeframes between the financing and full deployment of financed capacity installed, and consequently of the clean energy generation that produces emissions reductions/avoidance, values corresponding to subprojects financed in Year 3 might not be observable at closure. Thus, the achieved value for the totality of the portfolio of subprojects financed might not be available at closure and within the timeframes required for PCR submission. Thus, only subprojects financed in Y1 and Y2 are considered for the target.</p> <p>Baseline is zero since it is assumed that without the program-funded guarantees, firms would not be able to invest in PV+BESS projects.</p> <p>Target is based on estimated installed capacity of the PV+BESS projects financed (Result 3) and the average emission factor for the Mexican grid (0,435 tCO₂/MWh).¹ As a reference, total GHG emissions reduced/avoided by Y4 (one year after closure) are expected to be 14,760. Subprojects expected to be financed in Year 3 of execution correspond to 80% of the total.</p> <p>This is a mandatory Clean Technology Fund (CTF) core indicator applicable to Global Energy Storage Program (GESP).</p>

¹ Secretaría de Medio Ambiente y Recursos Naturales, [Factor de Emisión del Sistema Eléctrico Nacional 2022](#), 2023.

SPECIFIC DEVELOPMENT OBJECTIVES

Indicators	Unit of measurement	Baseline value	Baseline year	End of Project	Means of verification	Comments
Specific development objective: To pioneer financing flows to SME investments in BESS paired with EE projects.						
Result 1: Outstanding stock of guaranteed credit for PV+BESS investments by SME	US\$ million	0	2023	22.5	Tracking and monitoring data from BANCOMEXT's operational systems	<p>Indicator measures the value of credit induced by the guarantee fund, including but not limited to guarantees funded with program resources.</p> <p>Baseline is zero since this is a new financing line and no guarantee/credit for PV+BESS investments has been granted before the program.</p> <p>Target was estimated based on an average coverage of the guarantees of 80% and a 2-time full use of program resources under the proposed revolving scheme during the 3-year execution period (US\$18 million in guarantees cover US\$22.5 million of credit).</p> <p>This is a portfolio-based indicator.</p>
Result 2: Non-performing loans (NPL) ratio of the portfolio of guaranteed credit for PV+BESS investments by SME, relative to the average NPL of the total guaranteed SME portfolio at BANCOMEXT	Index	0	2023	1	Tracking and monitoring data from BANCOMEXT's operational systems	<p>The indicator is calculated as: $\text{Index} = \frac{\text{NPL of targeted portfolio}}{\text{NPL of benchmark portfolio}}$ where NPL is defined in terms of guaranteed money called when covered loans enter into default, relative to the total guaranteed portfolio. Then: $\text{NPL of targeted portfolio} = \frac{\text{Guarantee money of PV+BESS sub-loans called}}{\text{Total amount of PV+BESS guaranteed portfolio}}$ and $\text{NPL of benchmark portfolio} = \frac{\text{Guarantee money of SME loans called}}{\text{Total amount of SME guaranteed portfolio}}$ </p> <p>Baseline is zero since this is a new financing line and no guarantee/credit for PV+BESS investments has been granted before the program.</p> <p>Target is set as 1, meaning that the quality of the target portfolio is expected to be at least as good as that of the benchmark.</p> <p>This is a portfolio-based indicator.</p>

Indicators	Unit of measurement	Baseline value	Baseline year	End of Project	Means of verification	Comments
Result 3: Renewable Energy (RE)-sourced installed capacity added by the projects financed	MW	0	2023	4.0	Project data provided by beneficiaries and support information from TC ATN/TC-18688-ME .	<p>Indicator is equivalent to the aggregated installed capacity in all projects financed that has been fully implemented. Given the average timeframes between the financing and full deployment of financed capacity installed, only subprojects financed in Y1 and Y2 are considered for the target. Target was estimated assuming 100% of financing enabled by the program is used to finance small-scale solar PV+BESS energy systems (288 kW. in average) with electrochemical energy storage (lithium-based battery) that allows for 3 hours of daily use. As a reference, total capacity installed by Y4 (one year after closure), is expected to be 20.2 MW.</p> <p>Baseline is zero since it measures only new installed capacity from PV+BESS added, and it is assumed that without program-funded guarantees, firms would not be able to pair PV projects with BESS.</p> <p>This is a mandatory CTF core indicator applicable to GESP.</p>
Result 4: Total investment mobilized by program resources	US\$ million	0	2023	28.1	Project data provided by beneficiaries and supervision visits as part of program activities.	<p>Indicator includes resources from the program plus expected leverage, all sources (leveraged credit and other sources that co-finance PV+BESS projects).</p> <p>Baseline is zero since this is a new financing line and no guarantee/credit for PV+BESS investments has been granted before the program.</p> <p>Target is calculated assuming that guarantees cover an average 80% of the sub-loans with a 2-time full use of program resources under the proposed revolving scheme during the 3-year execution period (US\$18 million in guarantees cover US\$22.5 million of credit) and that those sub-loans finance 80% of the total investment (the remaining 20% being equity from project developers).</p> <p>This is a mandatory CTF core indicator applicable to GESP.</p>

PRODUCTS

Indicators	Unit of measurement	Baseline value	Baseline year	Year 1	Year 2	Year 3	End of project	Means of verification	Comments
Single component: Financing a partial credit guarantee fund (US\$9.0 million)									
Product 1: Guarantees provided by BANCOMEXT with program resources to SME	US\$ million	0	2023	0.40	1.22	6.48	8.10	Tracking and monitoring data from BANCOMEXT's and IDB's operational systems	Annual target values were estimated based on demand projections for sub-loans eligible for guaranteed coverage. While a 2-time full use of program resources under the proposed revolving scheme is expected, this product considers only the first use of the funds. Leverage produced by subsequent uses (in terms of credit and investment induced) is reflected at the outcome level. End-of-project value is accumulated.
Cost of product 1:	US\$ million	0	2023	0.40	1.22	6.48	8.10		
Product 2: Guarantees provided by BANCOMEXT with program resources to SME owned or led by women	US\$ million	0	2023	0.04	0.14	0.72	0.90	Tracking and monitoring data from BANCOMEXT	Pro-Gender Indicator SME led by women are defined as 51% or more ownership by woman/women, or woman/women has at least 20% of ownership and (i) Chief Executive Officer/ Chief Operating Officer/ Vice president is woman/women, or (ii) 30% or more of the board of directors is comprised by women, where it exists. Annual target values were estimated considering 10% of program resources goes to SME led by women. This share was established conservatively based on the following considerations: (i) prior to the program BANCOMEXT has not granted any funds to BESS; and (ii) there is no data available on the share allocated to women SME in BANCOMEXT portfolio overall. End-of-project value is accumulated.
Cost of product 2:	US\$ million	0	2023	0.04	0.14	0.72	0.90		