GREEN FINANCE FOR THE DEVELOPMENT OF SMART CITIES IN MEXICO

REPORT 2019 - 2020

IDOM

MEXICO UK PACT

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PROGRAMME: GREEN FINANCE FOR THE DEVELOPMENT OF SMART CITIES IN MEXICO, working to increase local implementation of low carbon projects

2019 – 2020

4 beneficiary cities

The beneficiary cities sum a total of 3,126,467 inhabitants

USD $ 899.7 million

Total capital investment value of a portfolio of 39 urban climate action projects, identified and evaluated

10 projects

Projects with high transformational potential in four urban focus areas were selected to receive specialised sectorial advice in their preparation process towards funding

15 partners and experts

Our partners or experts, with whom we have collaboration and synergies in action, for the preparation and implementation of the projects

2,100,102 tons

2,100,102 total expected reduction in tons of CO2 equivalent, expected over the lifetime of the 10 selected projects

10 mechanisms

10 different funding mechanisms or business model opportunities for cities explored or implemented [1]

[1])Public Private Partnership (PPP), ESCO model (Energy Efficiency as a Service), privately financed concessions, virtual social coin, Public and Public-Private Trust, Solar "Leasing", Conventional and Green Loans, Micro-mobility Tariffs Regulation, Waste Valorisation (Circular Economy), Power Purchase Agreement (PPA)

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"Over the period of one year, the programme has managed to strengthen the capacities of four cities in Mexico to identify, evaluate, select and prepare projects for climate change mitigation and sustainable development, in order to access funding sources or create innovative business models" Mariana Silva, Project Manager

THE CHALLENGE

In Mexico 62.7% of the population lives in 74 large metropolitan areas and another 11% in conurbations or urban centres between 15K and 50K inhabitants. (National Urban System, 2018). Cities play a crucial role in the lives of so many Mexicans in terms of sustainable development: economic, welfare and aligned to achieve the country's environmental goals.

Globally, cities occupy only 2% of the territory, but are responsible for 70% of greenhouse gas emissions and are expected to absorb 80% of the costs of climate change adaptation (I4C, 2019).

The transformation towards attractive and sustainable cities requires a combination of planning, policy, regulatory and investment actions.

Because of the climate urgency, it is imperative that cities accelerate the shift to smart green investment that will generate the expected impact on economic prosperity, social welfare, and environmental impact.

Hand in hand with green initiatives, technological innovation and digital solutions offer a potential to generate bankable, transparent projects that create competitive and resilient markets and economies.

Urban focus areas

Renewable energies and energy efficiency	Electric power generation from renewable sources in the country represents 16% and almost 25% of the installed capacity, showing an average growth of 27% from 2016 to 2017 (SENER, 2017)
Mobility and transport	In Mexico, 71% of GHG emissions correspond to the energy sector. Transport is the second largest contributor to the sector with 33% out of which private vehicles represent almost the totality of it with 93% (INECC, 2017)
Waste management and recovery	Only 2% of municipalities have adequate urban solid waste disposal (INEGI, 2014) and the sector contributes 4.3% of the country's emissions
Water management	Mexico's rivers and streams constitute a 633,000 km hydrographic network, which is essential to preserve in order to create resilience to climate change, although only 57% of the municipal wastewater generated in the country is treated (INEGI, CONAGUA, 2018). GHG emissions from this sector represent 3.2% nationally.
Green finance	From a rapid growth of green finance sources in Mexico, today a wide range of financial and public institutions have launched various initiatives that strengthen and promote evaluation and implementation of sustainable projects. In the banking sector there are about 12 products labelled as green and 40 more identified as potentially green; more than 5 sustainable infrastructure development funds and multiple investors and companies that incorporate Environmental, Social and Governance Criteria in their evaluations.

Methodology

Minimum Viability Criteria

Eligible projects are those innovative technological solutions, services or business models that can be applied in one of the urban focus areas described above.

Eligible projects are evaluated according to minimum viability criteria to be selected to follow a process of preparation towards access to funding and implementation.

Criterion 1
Intelligent Climate Solution

- Climate Change Mitigation Potential
- Digital or smart technology

Criterion 2
Feasible

- Strategic focus, policy and regulatory coherence
- Clear value proposition or profitable business model
- Preliminary market analysis
- Positive environmental and socio-economic impact

Criterion 3
Implementable

- Technical or technological feasibility, integrity and level of maturity
- Potential to achieve sustainable commercial viability or financial sustainability
- Source or mechanism of funding identified

Criterion 4
Transformational

- Scalable or replicable solution
- Involves technical capacity building

Project Preparation Path

All viable projects require taking on certain technical activities in their preparation from the conceptual level to the pre-investment, investment and execution phases. Based on our experience and lessons learned, we can accomplish that by using the following generic path as a guideline:

[1] *See Annex 1 Strategic Approach, Consistency and Regulatory Policy Alignment Tool*
[2] *See Annex 2 Review the Public Account – Support questionnaire*

Green finance: opportunities and barriers for cities

Opportunities with Development, Commercial, and Niche Banks

A total of 213 products and services available in 17 financial institutions in Mexico were analysed. Of this figure, 60% are loans, 35% are equity and debt products and 4% are investment funds. Also, of the overall total, 12 products are labelled as green products and 61 show potential to be labelled as such, according to the main international standards and the nature of the projects they finance. These products are:

Classification of banking products and services

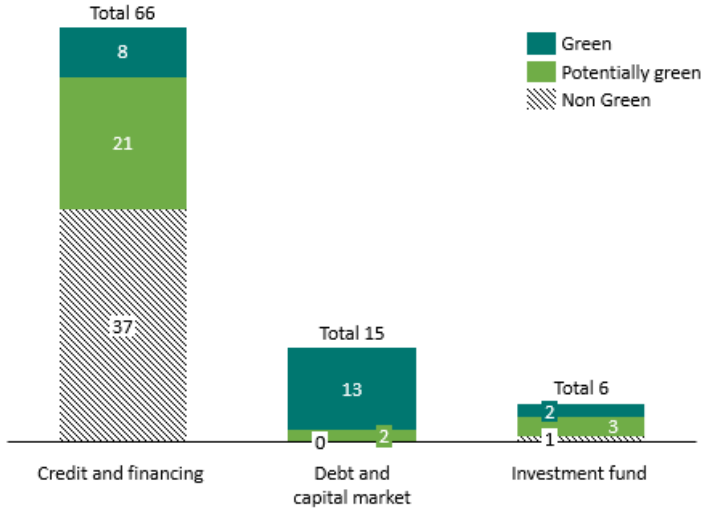
General Segments (%) [1]	Description	Product Type		Green "Labelled" Products
Credit and Financing (60%)	Resources granted by credit institutions	• Conventional • Guarantees • Housing • To Governments • Agriculture • Vehicles	• Infrastructure • Energy and environmental • International lines	1. Green mortgage credit 2. Eco-Credit to Enterprises 3. Hybrid or electric vehicle credit 4. Green Infrastructure Credit
Capital and Debt Market (35%)	Portfolio management, financial structuring, stock trading, government and corporate debt	• Corporate Financing • Capital and Debt Market		5. Green and sustainable bonds 6. Emissions Trading System (Commodities) 7. Certificates of Capital Development (CKD)
Funds (4%)	Main funds with guidelines in infrastructure development, social and economic development of cities	• National development funds • Second-tier banking funds • Private funds		8. FONADIN, National Infrastructure Fund 9. BEIF, Border Environmental Infrastructure Fund
Other products (1%)	Integral management of the administration, portfolio and services of a city and/or company	• Administration • Payroll • Transactions	• Collecting • Currencies	

(1) market presence in % with respect to the total number of products analysed with public information. Source: Prepared by IDOM with publicly available information. Products and services can be integrated in a multidisciplinary manner.

Green finance opportunities, accessible for cities

91 of the products studied are directly applicable to cities, from which 38 are potentially green, that is, they finance green technology or infrastructure projects without having any specific label. The commercial banking products most widely used by municipalities are integral administration management services (tax collection, subsidy dispersion and payroll payment) and loans with funds from the second tier of banks. Credits and financing services are generally offered to cities, but are not regularly requested, mainly due to their **fiscal and budgetary restrictions, and lack of knowledge of the applicability of specific financial services**. However, some investment funds show greater presence in financing to local governments, particularly for infrastructure projects in schemes such as grants, public - private trusts, guarantees, and subordinated loans.

Products and services accessible for cities



Examples of green labelled products

	Green and sustainable bonds
	Renewable energy credits
	Hybrid or electric car eco-credits
	Credits for sustainable infrastructure
	Guarantees

Source: Prepared by IDOM with publicly available information. This is a demonstrative exercise and frequently the products and services can be integrated in a multidisciplinary manner.

The second-tier banking, mainly represented by development banks in Mexico such as BANOBRAS and NAFIN, has positioned itself as the main funder of infrastructure projects for municipalities, and at the same time promotes the participation of private capital in the projects, reduces financial risks, improves interest rates and ensures a co-responsibility between the cities and the credit institutions.

HSBC

The elaboration of this study was supported by HSBC in Mexico and in the United Kingdom, whom from their departments for corporate sustainability and sustainable finance and government banking provided information and access to experts from different business units to investigate on sustainable projects from local governments, labelled green and potentially green products and services, as well as current barriers to their identification and articulation.

Income generation and land value capture

It is of great importance, for both public investment projects and to access external or (complementary) private financing, that sub-national governments take advantage of their possibility to **generate incomes through collection and land value capture instruments**, in order to ensure financial and economic sustainability of projects, enable their bankability, and make them attractive for the commercial sector.

For this, we recommend two main actions that governments can take:

1) **Develop, diversify, earmark and "greening" the sources of income,** from implementation of collection mechanisms such as:
    a. **Grants and subsidies:** Financing from federal, state or local programs or budget lines for the development of projects (payment of technical studies, public investment)
    b. **Taxes:** All taxes can potentially be used to finance climate objectives, examples in the four urban focus areas:
        1. Energy, such as carbon taxes, intensive use of electricity tax.
        2. Transport, taxing entry into high-congestion areas
        3. Management of urban waste, taxes related to collection and separation of waste and special collection fees for large waste generators. Sometimes included in the property tax.
        4. Water services, tax for water treatment services.
    c. **User charges and fees:** sources of income that can help finance local public services and projects such as, fees to operators for micro mobility solutions, vehicle parking in public spaces, verification of vehicle emissions, fixed fees for water treatment and distribution, waste collection and treatment fee, public transportation fees, among others.
    d. **Land use:** collection of income through income taxes or instruments to capture capital gains from land use in cities (see table below).
    e. **GHG emission reduction trading mechanisms:** Generation of Carbon Credits, establishment and/or participation in the Emissions Trading Scheme.

Land value capture instruments	What do they tax?
Contribution of improvements made under the value gains system and specific property improvements	Increase of value and specific improvement of the property of the lands that are benefit by public works, since it is considered that its development and conclusion will necessarily increase the value of such lands, without this being due to the economic effort of its owners or possessors.
Right of cooperation	The increase in the value of the land and properties as an immediate consequence of the execution of public works foreseen in the urban development programmes.
Contributions for capital (value) gains	Direct or indirect effects from the modification of urban regulations in the execution of public works, change of land use or any other act attributable to third parties, which will be taxed through this contribution, as established in the Law of Municipal Finance and other tax provisions of the State.
Special contribution for public works of direct benefit	Services provided by individuals, or corporations that are directly or indirectly benefited from public works or that receive a specific economic improvement, organised by the execution of a public work carried out under the modality of an agreement, with contributions from the government and individuals.
Tax on increase in value and specific improvement of the property	Properties that benefit from a public work, that considers its development and completion will increase the value of such properties, without the economic effort of its owners or possessors.

Source: Prepared by IDOM with information from the "Guide for the formulation of urban development projects with a focus on sustainability and climate change", IDB, 2020.

2) **Review the public account and potential alternatives for capturing value,** it is possible to determine the priorities of a government, through its budget allocations. It is suggested to analyse the budget of expenditures, which can potentially generate payment mechanisms to climate and sustainability related projects; and the Federal Income Law, since there are, enabled or disabled, sources that can be used. Analyse, possible capitalization from land value capture to generate financing mechanisms, as shown in the table above.

Existing barriers for cities to access financing

While we have identified that the debt and capital markets offer a growing amount of investment to green projects in cities through a range of financial products and services labelled green or not; there are limitations that cities face in accessing them. The main barriers are shown in the following figure, and stand put: the fiscal restrictions in the Law of Financial Discipline of the Federal Entities and Municipalities, low tax collection or income generation for projects, non-optimal municipal liquidity, limited capacities for projects preparation and disconnection between subnational governments and the financial sector for cooperation.

Due to tax restrictions, municipalities are commonly unable to access the 55% of credits and 29% of mapped stock market products available. Some of the main restrictions detected are: debt ceiling established in the Law of Financial Discipline of the Federal and Municipal Entities, limitations to access long term loans due to short-termism in municipal government cycle (political transition risk), limited federal participations and contributions, low credit rating, low debt management capacity, poor transparency of resources, among others.

However, there are successful experiences and mechanisms that have strengthen those aspects and enable access to products such as green bonds, bank loans, public-private partnerships, among others, with the approval of the Ministry of Finance and Public Credit and local congresses for their access.

Major barriers for local government to access external financing

ECONOMIC AND FINANCIAL

- Municipal debt ceiling
- Low credit rating and solvency
- Fiscal restrictions to access long-term financing
- Low dedicated financing to pre-feasibility and reinvestment
- Low tax collection and generation of new income
- High dependence on federal guarantees

CAPACITIES

- Limited capabilities to prepare bankable projects
- Technical or technological capabilities
- Lack of knowledge about public (disabled) and external funding opportunities
- Continuity in climate planning in terms of evaluation, selection and maturity of initiatives and projects

COORDINATION AND GOVERNANCE

- Short-term presidential term and long-term continuity of trans-government projects
- Disarticulation between administration or treasury and sectorial units in terms of investment priorities
- Lack of communication channels and synergies between the financial sector and local governments

Source: Elaborated by IDOM from the experience of the Programme: Green Finance for the Development of Smart Cities in Mexico

Diversification

The purpose of the programme **Green Finance for the Development of Smart Cities in Mexico, to create and promote access to green finance to increase local climate action**, demands diversification in scope, to scale up and replicate successfully throughout the country; since each city has its own peculiarities: geography, climate, population, social dynamics, productive sector, and financial possibilities. Therefore, 10 different financing mechanisms, investment sources, or new business models with high transformational potential have been explored. The case studies section explains more about the most successful ones, from the complete list below:

City	Sector	Project's name	Financial mechanism	Transformational Impact High (H)/ Medium (M)/ Low (L)
Hermosillo, Sonora		Energy efficiency and photovoltaic solar energy production at research and educational centres.	ESCO Model (private investment)	**H.** Highly replicable in decentralized educational institutions. The application of the ESCO model in these institutions is innovative in Mexico and could significantly reduce their operational costs.
Hermosillo, Sonora		Co-digestion of organic industrial waste at Municipal WWTP to generate Biogas.	Public-Private Partnership (PPP), possible participants: • PROMAGUA Grant • Municipal Budget • Private capital through extension of current concession or green loan	**H.** Highly replicable project in areas where there is a large amount of organic waste (agro-industrial parks). Of high interest to federal institutions, such as CONAGUA, as a public-private investment opportunity.
Naucalpan, Mexico		Transforming a closed landfill site into a solar PV park and supply renewable energy to the municipality.	• Bilateral Power Contract (PPA) • Land (Public Investment) • Private Investment, by the solar developer	**H.** Detected as good practice in land use solutions. Providing cities with a valuable contribution (land use) to participate in collaborative investments with developers.
Naucalpan, Mexico		Biological Mechanical Waste Treatment Plant.	Public-Private Partnership: PPP • 30% Public subsidy • 70% Private Investment • Energy sales and waste recovery as additional income	**H.** Second in its class in Latin America, MBT technology will generate additional revenue from waste recovery and energy generation, making it more attractive for investment.
Valle de Bravo, Mexico		Replacement to highly efficient motors in tourist service boats fleet.	Private financing: • Green Loan • Public (municipal) guarantee • Centralization of collection	**H.** Replicable in other cities with nautical tourism and coasts. This project will prevent gasoline and diesel water pollution and reduce operating costs for service providers.
Valle de Bravo, Mexico		Optimization of the municipal landfill & waste management infrastructure.	Public Private Co-investment (Concession) • Public Funds (PRORESOL) • Green Loan	**M.** The optimization of the waste centre will extend the life of the landfill cells and promote a circular economy.
Valle de Bravo, Mexico		River "Tizates" integrated urban regeneration.	Mixed Fund for Water Resilience • Municipal and federal contributions • Mixed private funds	**H.** Opportunity to build resilient urban infrastructure and improve capacities to deal with extreme climate events (currently exploring Ecosystem based Adaptation), as well as to test additional water service (ecosystem) tariffs, as a new income for the water system.
Zapopan, Jalisco		Smart cycleway system, including a mobile application, virtual social coin and data centre.	Integral Business Model with mixed sources of income and promotion: • License and operation charges to private mobility companies • Social Coing, reward scheme for users in local commerce • Tagged "Financial Vehicle"	**H.** It will promote urban intermodal mobility, and the use of non-motorized vehicles in the city, from different fronts and guarantees resources to the mobility unit for its expansion, operation and maintenance.
Zapopan, Jalisco		Zapopan Solar Homes - Pilot Project (300 Homes).	• Public subsidy (pilot phase) • Recognition of the avoided subsidy • Private investment (later stages)	**H.** A highly innovative model, it promotes the market for distributed photovoltaic generation by applying net metering, creates family savings in electricity consumption, and a mechanism for recognition of the subsidy avoided on public expenditure.

Skill Sharing

Throughout the programme we provided a series of webinars to build or improve capacities on different topics in the context of identifying and technically preparing climate action projects in **urban focus areas**. You can access the recording sessions using the following QR:

Sessions:

1. Green Financing: "An Opportunity for Cities"
2. Sustainable Urban Planning: "Planning today the cities of the future"
3. Smart Cities: "Smart solutions in telecommunications"
4. Financial Mechanisms: Public-Private Partnerships "An Opportunity to Finance Projects in Cities"
5. Public Procurement of Innovation: "A transformative tool for innovative cities"
6. Smart Cities - Best Practices in Waste Management: "Towards a Circular Economy Model".
7. Smart Cities - Water Management: "Addressing Current Water Management Challenges through smart solutions"
8. Energy Efficiency in Buildings: "NZero Energy Buildings Design at Optimal Cost".
9. Urban development projects with a sustainability and climate change focus: IDB guidelines to formulation at the Subnational Level.
10. Financial Modelling: basic principles and a generic tool.

Knowledge Exchange Mission UK- Mexico

The UK is world-leading in the field of climate finance. Mexico shares this vision with the United Kingdom. Historically, they were both pioneers in the establishment of federal laws facing climate change, and now Mexico aims to gradually become a regional leader in the field of green finance. As part of the bilateral dialogue, the programme organised a mission with the objective of acquiring new knowledge, sharing experience and building capacity among experts from the United Kingdom and a delegation of 8 Mexican public servants.

During the week of 13-18 October 2019, participants had the opportunity to attend the first **Public Sector Green Finance Summit 2019**, as well as to receive the executive training **"Sustainable Finance 101"** by the University of Oxford and attend various meetings with stakeholders such as: The Green Bank, Macquarie Green Investment Group, HSBC, London Stock Exchange, Climate Initiative, The UK Department for Business, Energy and Industrial Strategy (BEIS) and The Carbon Trust.

According to participants, some of the most important learnings were: gaps between project preparation and the financing mechanism requirements, innovative financing models, their characteristics and accessibility criteria, bilateral opportunities for technology transfer and investment, the ecosystem and institutional synergies as a key to access finance, methodologies and processes of environmental, social and institutional governance impact assessment.

Participants of the mission to London in Westminster. From left to right Omar Hernandez (IDOM), Mariana Silva (IDOM), Diana Avalos (British Embassy in Mexico), Manuel Hernández (Valle de Bravo), Daniel Hevia (IDOM), Jorge Carlos Macari (Yucatan), Roger Peniche (Naucalpan), Juan Quimbar (Hermosillo), Adriana Romo (Zapopan), Ana Amador (Zapopan), Eduardo Zepeda (Mexico City).

Main Lessons Learned

Public Financing

- Subnational governments do not have enough fiscal capacity to meet the wide range of responsibilities of their mandates, their budgets are quite limited and are already restricted to the daily needs of public operation and urban management expenditures. They focus on their core tasks and short-term obligations, at the expense of other long-term objectives such as climate change.

- Federal resources for climate purposes are limited, but these must be fully leveraged, especially those available to the infrastructure sector.

- In addition, there is great opportunity to access international public resources, through cooperation agencies and multilateral and bilateral development banks, both for technical assistance in project preparation and for investment capital, the latter being the most untapped.

Specific recommendations for cities:

- The three main recommendations to promote access to green finance for cities are (1) **generate additional revenues** within the design of projects or climate actions, (2) **capture value** from specific property improvement and value-added instruments, and (3) **allocate budgets that leverage private finance**, even small, it can substantially accelerate the implementation of Climate Change Action Plans. This can be achieved through two types of actions that generate specific budgetary resources for the preparation and implementation of projects or actions:

    1) Develop, diversify earmark and "greening" the sources of income, from the implementation of collection mechanisms such as:
        a. Grants and subsidies
        b. Taxes
        c. Charges and user fees
        d. Land value capture
        e. GHG emission reduction trading mechanisms

    2) Regularly review the public account and potential alternatives for capturing value

External Financing

- Public financing is insufficient to cover the needs for green infrastructure and climate change actions; therefore, external financing needs to be mobilized in this regard. Attracting private funds to sub-national initiatives is possible and there are success stories from which we can learn (see Annex Case Studies), however, great efforts are required to overcome existing barriers, mainly those of institutional capacity and liquidity. Some very positive and scalable efforts can be emphasised: 1. Support from federal institutions by providing technical advice and capacities to access capital markets, the accreditation and approval of capital funds for infrastructure, the implementation of financing mechanisms such as Trusts to access favourable long-term credits, among others; and 2. From national development banks their complementary products to

finance projects, for example, timely payment guarantees, pre-investment phase capital for projects, public grants in PPP models, subordinated credits, among others.

- There is clear evidence on "the greening" trend of the financial sector and the appetite for sustainable projects. Although the products and services labelled as "green" and identified available for cities are scarce (8 available products, i.e. green bonds, credits for renewable energy or infrastructure), others were identified as potentially green, such as the use of guarantees conditioned on green assets, ordinary credits focused on green projects, PPP services, among others. Although we have identified that the Debt and Capital Market offers a growing amount of investment to green projects in cities through different products and services labelled as green or not; **fiscal and budgetary restrictions, and the disconnection between both sectors, keep access to cities limited.**

- In addition to a range of financial products, banks offer advice, often underused by the cities, of various kinds to securitize project assets and receivables, which improves their financial conditions throughout the implementation cycle.

- The commercial banking products most used by municipalities are contracting integral administration services (tax collection, subsidy dispersion and payroll payment) and loans with funds from the second tier-banking.

- Due to the complexity to finance local climate action, especially in a rather neglected and uncommon sectors for the commercial sector, such as water and waste management, it is essential to bring together, the participation, and cooperation from wide range of actors in the triple helix[2], with special emphasis on an **open dialogue and innovation-oriented business models, between institutions, financial sector and local governments**, since only from working together under a common understanding enables transformational and successful stories emerge.

- A number of potential instruments have been identified to mobilize private financing for sub-national projects:

    - Use concessional financing (e.g., parallel loans) to enable development finance institutions to drive transformation.

    - Improving the creditworthiness and rating of cities is key to enabling private financing, which is affected by limited financial discipline, inability to collect revenues, low accounting transparency, revenue and public debt poor management, and the maintenance of short and long-term assets and investment plans.

    - While fiscal capacities must be strengthened, legal frameworks at the national level for indebtedness must be adapted to allow schemes, such as subnational investment loans or credits.

    - Sub-national Public-Private Partnerships provide governments with an opportunity of private investment and risk sharing on green infrastructure, at a certain level of return on investment.

    - Joint investment programmes between institutions and cities.

2) The triple helix model refers to a set of interactions between academia, industry and government to foster economic and social development "The Triple Helix Concept". Stanford Universito.

- Concessions to private companies with public contributions are an effective model to enable private participation, which promotes the competitiveness of local companies. However, sovereignty must be taken care of, through good citizen communication, transparency of allocation and third-party monitoring of the continuous performance of the projects.

- Institutional investors, such as pension funds and insurance companies, are another important source of funding that can be implemented through specialised infrastructure capital funds, which also allow for the involvement of other private investors, such as urban infrastructure developers.

- "Products as a service" contracts (XaaS) are a new business model that enables low-carbon technology changes within the framework of public programmes, which can also generate savings in public spending or households from the outset. This type of scheme has great potential, especially in the energy efficiency sector (EaaS).

- The issue of green or sustainable bonds for the development of projects, with a recommended value of more than USD 50 million, allows the integration of different projects under a single bond issuance process, facilitating a capital raise for an entire portfolio.

- The use of complementary services offered by commercial and development banks, such as advice, structuring of financial instruments, seed capital in the pre-investment stage for technical studies.

- It is essential to note that external sources of financing must in every case be complementary to public contributions and the income generated by the projects themselves, creating a scheme of reciprocal responsibilities, shared risk and joint vision.

Project Preparation

- Effective climate change planning is achieved through a cyclical and highly participatory process between sectors, which promotes the identification, evaluation, selection and prioritization of technologies and actions, which should recognize those that can generate projects and investment portfolios[3]. Networks and shared efforts are key to success in the medium and long term.

- All viable projects require taking certain technical activities in their preparation from the conceptual level to the pre-investment, investment and execution phases. It is essential that project preparation activities be continuous within the public administration, and that progress and capacities of the institutions sustain. To achieve this, it is strongly suggested to establish project units; among other institutional arrangements, with responsibilities for maturation, follow-up and monitoring.

- From the definition of the projects, it is necessary to correctly identify the financial requirements for each phase of their maturity. For example, at the conceptual level, possible sources of financing and adequate mechanisms for studies and design must be identified; at the same time the public account and possible collection mechanisms are analysed, whereas in the feasibility phase a business plan, modelling and financial analysis of the project will be developed, in order to identify adequate sources of capital investment. See methodology section for more details.

3) Guía para la planeación ante el Cambio Climático y Tecnologías Ecológicamente Racionales: eficiencia energética, energías renovables y transporte." (IADB, 2019)

- It is key to distinguish from the design phase whether the project belongs to priority sectors for the government or financial institutions or whether it is part of a lagging sector, due to budget restrictions or limited return on investment. In Mexico, sectors such as water and waste management commonly lack access to finance, since they commonly do not generate income and their market situation is currently not favourable, rather highly subsidize sectors, so they require a paradigm shift in many ways and a greater degree of innovation in business models.

- In each political cycle, projects in preparation must be reviewed for their alignment with the new government's priorities and updated without losing the previously progress achieved, considering that climate responsibility consists on short, medium and long-term goals. For the current period in Mexico, it is recommended that projects and programs are aligned with the 2030 Agenda, welfare goals, and job creation for the youth population, among other social benefits of great current interest, and to highlight those impacts, increases the likelihood to be implemented and supported by the national level institutions. Some examples are the development of projects that combine investments in energy efficiency with training and job creation for young people by hiring small and medium-sized Mexican enterprises, while directly impacting most vulnerable family's incomes.

Anexo 1

Tool for the alignment of strategic approach, policy and regulatory coherence

In the planning stage it is important to review the consistency of the project with

- Existing planning instruments in the municipality,
- state instruments,
- federal instruments.

The revision of these instruments will serve to encourage local governments to align with state and federal legislation and receive better support from those levels. In order to do this, it is necessary to answer some questions: Which of the instruments at the local level does the project relate to and how does it do so? In a non-limitative way, policies and programs such as the Municipal Development Plan, the Municipal Urban Development Program, the Risk Atlas and the State Climate Action Plan can be taken into account.

It is presented below as a strategic "traffic light" tool and serves to visualize the extent to which project objectives are aligned with policies and planning instruments. The table guides a review of the level of relationship of the project to the different instruments, to give an idea of the coherence that the project has with the vision of government institutions and political actors. For example, a project with a "High ratio" (green traffic light) or "Medium ratio" (yellow traffic light) is more likely to be promoted among authorities than one with programs with "Low ratio" (red traffic light), "No ratio" (pink traffic light) or where "No instrument exists" (grey traffic light).

Instrument, policy or regulation	High Ratio	Medium Ratio	Low Ratio	No Ratio	Instrument does not exist	I do not know
Municipal Development Plan						
Municipal Urban Development Program						
Risk Atlas						
State Climate Action Plan						

Annex 2

Review the Public Account- Support Questionnaire

In the conceptual phase of project preparation, local governments are encouraged to review the public account through a series of questions that allow them to identify those budget items or programs with potential to be used in favour of the project, who are the stakeholders and instances that participate in its allocation, how it could have a strategic impact on its realization and what other financial mechanisms stand out to be taken into account.

- What items in the Federal Income Law are enabled and potentially usable for the project?
- What items or programs are disabled, and could they be taken advantage of?
- To which items of the Expenditure Budget have resources been assigned, and are somehow usable or related to the project?
- What items have not been allocated resources, and could be used?
- What actions are necessary to enable the items identified in the Income Law and the Expenditure Budget?
- Who would be the actors involved in these actions? (institutions, social actors, entrepreneurs, etc.)
- How would the project benefit from the activation of these items?
- What financial mechanisms already exist that can be used for the project (e.g. Trusts, Funds, specific items, decentralised organisation accounts, Tariffs, Taxes, etc.)
- What modifications would need to be made to use these financial mechanisms for the new project?

Annex 3

ESG Impact Assessment

The incorporation of Environmental, Social and Governance (ESG) criteria is a major trend in green, climate and sustainable finance. The use of these criteria by public and private financial institutions and investors has been increasing around the world, including a wide range of institutions that have incorporated them through different methodologies, either their own or those of external rating agencies, in their evaluation and decision-making processes.

In order to ensure that the projects supported under the programme comply with good practice, all projects in the portfolio were assessed under ESG impact assessment criteria and methodologies during their life cycle, specifically under the **International Finance Corporation's (IFC) Policy and Performance Standards on Environmental and Social Sustainability**, and some under specific standards required by their funding source such matched as the methodology that identifies sustainability practices based on the framework **"Attributes and Framework for Sustainable Infrastructure" developed by the Inter-American Development Bank (IADB)**, used as a reference by the National Bank of Public Works and Services (BANOBRAS), for the elaboration of **Sustainability Sheets** (see Annex 5) of its project portfolio published in the website of *Proyectos México*.

In a non-limitative manner and in broad terms, the main aspects that evaluate the ESG criteria are listed below:

Environmental and Climate Change:

- Avoid or minimize adverse impacts on the environment and health by avoiding or minimizing pollution generated by project activities
- Promoting more sustainable use of resources, including water, energy and waste
- Effects on biodiversity in the area and/or indigenous flora and fauna
- Reduction of GHG emissions related to the project's sector

Social:

- Ensure that the safeguarding of personnel and property is carried out in accordance with relevant human rights principles and avoid or minimize risks to impacted communities
- Reduction and Economic Growth - Economic and Social Return of the Project
- Promotion of gender equity and inclusion measures

Governance and Institutionality

- Establish internal systems of internal governance practices, controls and procedures, which ensure effective decision-making, compliance with the law and meet the needs of external stakeholders (such as national and international targets)
- Specify the distribution of rights and responsibilities among the different participants, such as the board of directors, managers, shareholders and other stakeholders, and detail the rules and procedures for making decisions in a way that ensures corporate and governance sustainability
- Establish the measures that will be used to ensure transparency and anti-corruption

Annex 4

Executive Sheet for Investors (model)

Date:

A. Project's Summary		
Project's Name		Photo
Project Aim	*Insert the objective of the project*	
Context	*(political alignment)* *- Country goal: Contribute to the national goal towards ...* *- action line development plan?* *- Commitment/goal of the Municipal President to consume 75% of clean energy*	
Project implementing agent	*Institution: Presidency of the Government*	
Location	*Colonia, Municipality, State*	
Short description	*Photovoltaic solar installation that generates approximately XX.XXX MWh per year, in an old sanitary landfill, (contracting, sale of energy etc.)*	
Summary of environmental and social impact	*Emission reduction in XX* *% in the consumption of the municipality*	
Total investment	*MXN $ XXX million*	
Possible sources of funding	*Possible sources of funding*	
B. Technical specifications		
Corresponding sector		
☐ Mobility	☐ Waste management	☐ Water Management ☒ Clean energy
Technology/green solution	*Photovoltaic solar technology*	
Technology/smart solution (Smart city)	*Description on the use of the intelligent technologies, current and to be developed in the project in the municipality and/or state*	
Climate impact	*Mitigation of GHG emissions by 9,486 tonCO2 eq* *Clean Energy Generation*	
Environmental impact (other)	*Reduction of particulate matter and nitrogen and sulphur oxides*	
Social and developmental impact	*Job creation, positive health impacts by reducing pollutants associated with electricity production*	
Maturity Level	*(Conceptual Level, Feasibility Studies, Risk Analysis, Detailed Engineering)*	
Main Risks	• Environmental, Social and Governance • *Legal* • *Market or financing (hedging)*	
Risk Mitigation	*Actions to mitigate the risks mentioned*	
B. Financial Information		
Possible funding mechanism	*Public-Private Partnership* *Energy purchase (difference energy sale MEM, or a long-term contract)*	
Green label	*Indicate whether the instrument has the potential to be green*	
Other participants in the financial transaction	*List of financial actors involved (multiple banking, development, funds, legal representatives, etc.)*	

<table>
<tr><td>Type of investment and amounts</td><td>Clear description of financing flows including the combination of project debt and equity by stakeholder
<table>
<tr><th>Type of investment</th><th>Investor</th><th>Amount of investment</th></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
</table>
If available, include terms, guarantees, total costs, tax sources.</td></tr>
<tr><td>Conditions</td><td>Interest rate, expected return, etc.</td></tr>
<tr><td>Guarantees</td><td>Type of guarantee terms</td></tr>
<tr><td>Investment vehicle</td><td>Description of any company, fund or legal instrument that needs to be implemented</td></tr>
<tr><td>Interest margins</td><td>Margins of interest</td></tr>
<tr><td>Termination date</td><td>Expected completion date</td></tr>
<tr><td>Use of financial resources</td><td>
<table>
<tr><th>Project phase or activities</th><th>Type A investment</th><th>Type B investment</th><th>Total</th></tr>
<tr><td>Phase 1</td><td></td><td></td><td></td></tr>
<tr><td>Phase 2</td><td></td><td></td><td></td></tr>
<tr><td>Total</td><td></td><td></td><td></td></tr>
</table>
If available, include an assessment of the maturity of the project. If it is in the pre-feasibility stage, it could provide an example of a similar project carried out previously.</td></tr>
<tr><td>Requirements identified prior to closing</td><td>Points about:
- Conditions of the due diligence
- Relevant arrangements
- Completion of processing documents
Hedging and Tax Agreements</td></tr>
<tr><td>Transaction Documents</td><td>Depending on the nature of the transaction, the expected documentation (e.g. stock subscription agreement, loan agreements, collateral agreement and hedging contracts).</td></tr>
<tr><td colspan="2">C. Potential for transformation, innovation and scalability</td></tr>
<tr><td>Degree of innovation (novelty status)</td><td>The climate technology is not innovative; however, the use of the intelligent component is innovative or the purchase model for the municipality is an innovative mechanism</td></tr>
<tr><td>Potential for replication in other territories or sectors</td><td>Highly replicable potential in other closed landfills</td></tr>
<tr><td>Potential to attract/scale green financing for private sector investment</td><td>High potential for obtaining sustainable financing</td></tr>
<tr><td colspan="2">D. Range of Eligibility by Criteria</td></tr>
<tr><td colspan="2">*
<table>
<tr><th>Evaluation criteria [1]</th><th>Rating (%)</th></tr>
<tr><td>A. General eligibility criteria</td><td>Eligible</td></tr>
<tr><td>B. Strategy approach and coherence with national and international objectives</td><td>100%</td></tr>
<tr><td>C. Environmental impact and mitigation</td><td>31%</td></tr>
<tr><td>D. Socio-economic impact and potential benefits</td><td>79%</td></tr>
<tr><td>E. Intelligent technologies</td><td>100%</td></tr>
<tr><td>F. Transformational and scalability potential.</td><td>100%</td></tr>
<tr><td>G. Feasibility, integrity and level of maturity</td><td>60%</td></tr>
<tr><td>H. Preparation for funding</td><td>64%</td></tr>
</table>
*See the evaluation sheet (excel) for more details.
1) Each eligibility criterion was calculated on a 100% scale by sector and weighted according to the needs of the project.</td></tr>
</table>

Environmental Impact Indicators

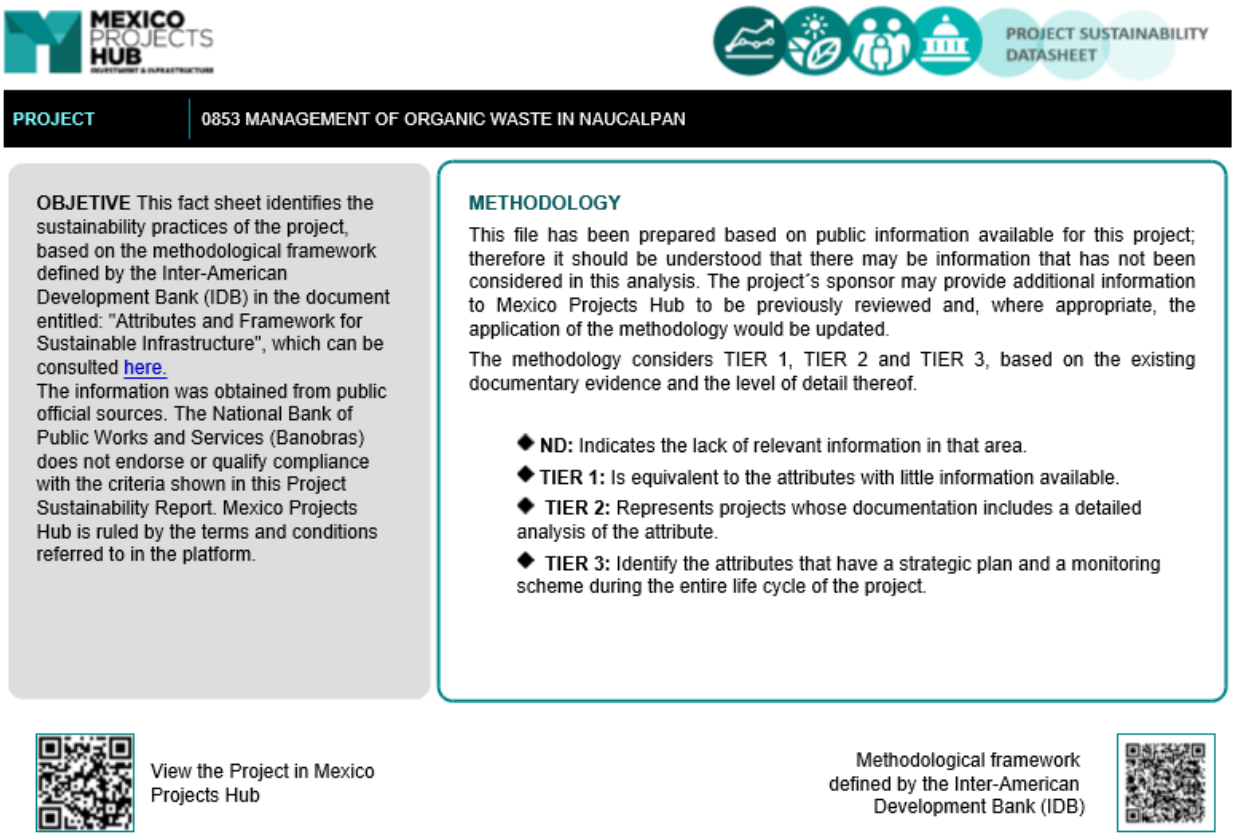
No.	Category / Indicator	Units per year	Quantity
GHG indicator			
1	GHG reduction	Tons of CO_2 equivalent	9,486
Energy indicators			
2	Renewable/clean energy generation	MWh	18,000
3	Biofuels produced or consumed	Giga Joules	NA
4	Energy Saving	MWh	NA
Water indicators			
5	Reduction in water consumption	m^3	NA
6	Treated or properly disposed water	m^3	NA
7	Reused water	m^3	NA
Waste indicators			
8	Non-generated waste	Tons	NA
9	Revalued, recycled or reused waste	Tons	NA
10	Properly disposed of waste	Tons	NA
Air pollution indicators			
11	Reduction of particulate matter emissions	Tons	NA
12	Reduction of NOx and SOx emissions	Tons	NA

*NA: Non-Applicable

Annex 5

Sustainability Sheet

Due to the relevance to provide greater visibility to investors on the environmental benefits of investment infrastructure projects, **we have prepared Sustainability Sheets for the BANOBRAS' *Proyectos México* platform**[4], based on the methodological framework **"Attributes and Framework for Sustainable Infrastructure"** developed by the Inter-American Development Bank (IADB), which incorporates an impact assessment under sustainability ESG criteria, which are described in general terms in Annex 3.



MEXICO PROJECTS HUB

PROJECT SUSTAINABILITY DATASHEET

PROJECT | 0853 MANAGEMENT OF ORGANIC WASTE IN NAUCALPAN

OBJETIVE This fact sheet identifies the sustainability practices of the project, based on the methodological framework defined by the Inter-American Development Bank (IDB) in the document entitled: "Attributes and Framework for Sustainable Infrastructure", which can be consulted here.
The information was obtained from public official sources. The National Bank of Public Works and Services (Banobras) does not endorse or qualify compliance with the criteria shown in this Project Sustainability Report. Mexico Projects Hub is ruled by the terms and conditions referred to in the platform.

METHODOLOGY

This file has been prepared based on public information available for this project; therefore it should be understood that there may be information that has not been considered in this analysis. The project´s sponsor may provide additional information to Mexico Projects Hub to be previously reviewed and, where appropriate, the application of the methodology would be updated.

The methodology considers TIER 1, TIER 2 and TIER 3, based on the existing documentary evidence and the level of detail thereof.

- **ND:** Indicates the lack of relevant information in that area.
- **TIER 1:** Is equivalent to the attributes with little information available.
- **TIER 2:** Represents projects whose documentation includes a detailed analysis of the attribute.
- **TIER 3:** Identify the attributes that have a strategic plan and a monitoring scheme during the entire life cycle of the project.

View the Project in Mexico Projects Hub

Methodological framework defined by the Inter-American Development Bank (IDB)

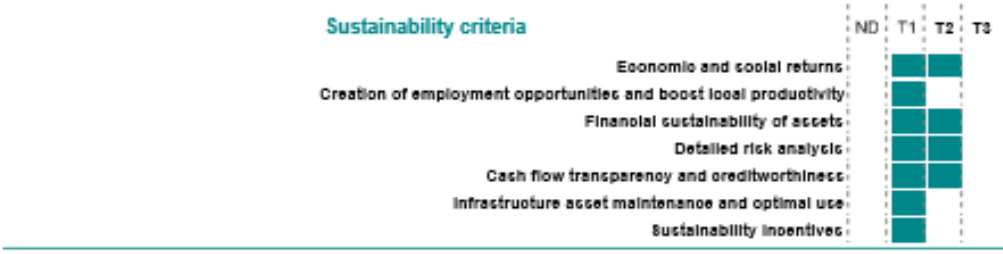
4) Banobras – Proyectos México Platform https://www.proyectosmexico.gob.mx/

PROJECT	0853 MANAGEMENT OF ORGANIC WASTE IN NAUCALPAN		
SECTOR	**SUBSECTOR**	**STAGE ANALYZED**	**YEAR OF UPDATE**
Water and Environment	Solid Waste	Preinvestment	2020

PROJECT'S SUSTAINABILITY SUMMARY The project seeks a comprehensive management of urban solid waste from the municipality of Naucalpan. This will be accomplished through the separation and recovery of inorganic waste and the use of organic waste for the generation of electrical energy, while aiming to reduce the impact on the environment and risks on the population.

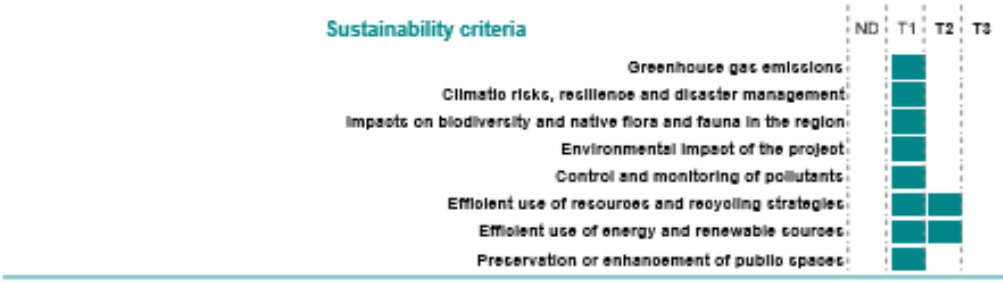
SUSTAINABILITY ECONOMIC AND FINANCIAL

EXAMPLE OF GOOD PRACTICE
The project will generate formal employment opportunities that will benefit vulnerable groups and foster the local recycling economy.



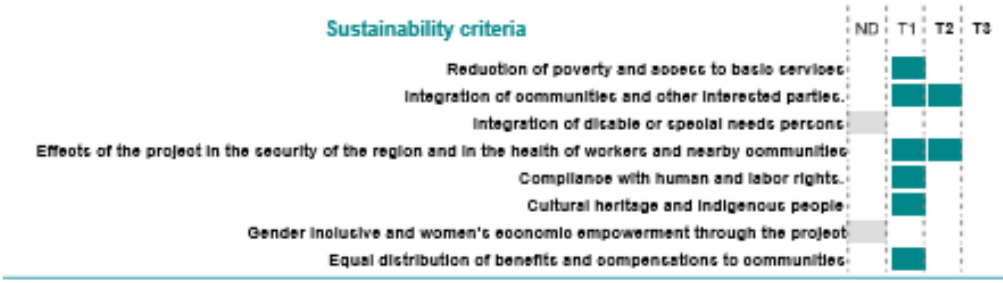
SUSTAINABILITY ENVIRONMENTAL AND CLIMATE CHANGE

EXAMPLE OF GOOD PRACTICE
The volume of emissions generated before and during the operation of the project will be estimated and reported to the National Registry of Emissions.



SUSTAINABILITY SOCIAL

EXAMPLE OF GOOD PRACTICE
The project will increase formal labor capacities with gender integration policies during the operation of the project.



SUSTAINABILITY INSTITUTIONAL

EXAMPLE OF GOOD PRACTICE
The project meets nine standards, from the European Investment Bank, to measure the degree of socio-environmental impact, as well as consider and integrate mitigation measures.

Source of this project: Evaluation of the Potential Climate Benefits of the Project / Environmental Impact Evaluation / Study on the Electric Market in Cities / Waste Characterization Study: Naucalpan-Mexico Transfer Station