

GEF-6 REQUEST FOR PROJECT ENDORSEMENT/APPROVAL

PROJECT TYPE: FULL-SIZED PROJECT

TYPE OF TRUST FUND: GEF TRUST FUND

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PART I: PROJECT INFORMATION

Project Title: Implementation of projects prioritized by the Sustainable and Emerging Cities Program in three Mexican Cities			
Country(ies):	Mexico	GEF Project ID:	9649
GEF Agency(ies):	Inter-American Development Bank	GEF Agency Project ID:	ME-G1012
Other Executing Partner(s):	Banco Nacional de Obras y Servicios Públicos (BANOBRAS)	Submission Date:	02/23/2017
GEF Focal Area (s):	Climate Change	Project Duration (Months)	60
Integrated Approach Pilot	IAP-Cities <input checked="" type="checkbox"/> IAP-Commodities <input type="checkbox"/> IAP-Food Security <input type="checkbox"/>	Corporate Program: SGP <input type="checkbox"/>	
Name of Parent Program	[if applicable]	Agency Fee (\$)	1,238,532

A. FOCAL AREA STRATEGY FRAMEWORK AND OTHER PROGRAM STRATEGIES¹

Focal Area Objectives/Programs	Focal Area Outcomes	Trust Fund	(in \$)	
			GEF Project Financing	Co-financing
CCM-1 Program 1 Objective 1: Promote Innovation, Technology Transfer, and Supportive Policies and Strategies	Accelerated adoption of innovative technologies and management practices for GHG emission reduction and carbon sequestration	TF	9,174,312	22,300,000
IAP-Sustainable Cities: Harnessing Local Action for Global Commons	To promote integrated planning and investments related to urban sustainability that result in environmental, social and economic benefits at the local and global scale.	TF	4,587,156	76,000,000
Total project costs			13,761,468	98,300,000

B. PROJECT DESCRIPTION SUMMARY

¹ When completing Table A, refer to the excerpts on *GEF 6 Results Frameworks for GETF, LDCF and SCCF*.

Project Objective: Enhance the mitigation and adaptation capacities in three Mexican cities (Xalapa, La Paz and Campeche) through the preparation and implementation of projects prioritized in the Emerging and Sustainable Cities Program (ESC) Action Plans for clean energy, waste management and water and sanitation sectors, and the development of policies to allow its replicability.

Project Components/ Programs	Financing Type ²	Project Outcomes	Project Outputs	Trust Fund	(in \$)	
					GEF Project Financing	Confirmed Co- financing
Biodigester for Xalapa's Solid Waste Management System	Investment	The biodigester plant demonstrates economic and environmental benefits stemming from the recovery of methane gas from waste and the diversion of organic material from landfill - 3,962 MWh/year of power production from renewable energy sources. - 56,401 ³ CO ₂ eq tons avoided - 26 tons of compost produced daily - 60 tons of municipal solid waste are no longer disposed daily at the sanitary landfill increasing 3 years its operational capacity	1 biodigester for Xalapa's solid waste management system built and operating	TF	7,181,093	11,050,000
Self-supply solar PV power plants for public buildings in La Paz	Investment	Investments in solar PV power plants in public buildings demonstrate their technical and financial feasibility as well as their global mitigation benefits - Production of 1,840 MWh/y of clean energy - 39,688 CO ₂ eq tons avoided directly and 524,034 CO ₂ eq tons indirectly	PV cells installed in 7 public buildings and 2 schools in La Paz	TF	4,500,000	11,250,000

² Financing type can be either investment or technical assistance.

³ 19,962 CO₂eq tons by energy production plus 36,641 CO₂eq tons by methane capture minus 202 CO₂eq tons as indirect emissions by waste collection vehicles. See Tracking tool.

Comprehensive executive study for the clean-up of the Bay of Campeche	Technical Assistance	Technical, environmental and economic studies agreed and approved by the municipality and stakeholders to build a sanitation system with integrated climate adaptation measures	1 detailed design study of the sanitation infrastructure in Campeche completed considering climate change adaptation measures	TF	1,000,000	76,000,000
Capacity building, communication and dissemination	Technical Assistance	<ul style="list-style-type: none"> - Increased knowledge and understanding of: (i) climate change, (ii) climate adaptation, (iii) the potential of climate mitigation in cities; and (iv) the multiple benefits associated with sustainable urban planning. - Strengthened technical and institutional capacities to develop and finance projects on: (i) solar energy (ii) biodigestion technologies; and (iii) bay clean-up 	<p>1 Technical and management guidelines developed to produce gas and compost from waste</p> <p>3 Technical training workshops conducted in Xalapa, La Paz and Campeche</p> <p>3 Biodigester, solar PV power plants and restoration in coastal areas dissemination events conducted</p> <p>1 Performance assessment study of solar PV technologies in schools developed</p> <p>1 Review paper with lessons learned from the experience on PV power plants in public schools developed</p> <p>Awareness raising materials developed to disseminate the integrated management program of the Bay of Campeche</p> <p>A communication strategy developed to disseminate the program's results in the three cities</p>	TF	230,000	
Monitoring and Evaluation (M&E)	Technical Assistance	Monitor and Evaluation Systems in Place	<p>Mid-Term and Final Evaluation</p> <p>Audit</p>	TF	215,000	

Subtotal	13,126,093	98,300,000
Project Management Cost (PMC)	635,375	
Total project costs	13,761,468	98,300,000

C. CONFIRMED SOURCES OF CO-FINANCING FOR THE PROJECT BY NAME AND BY TYPE

Please include evidence for co-financing for the project with this form.

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Amount (\$)
National Government	National Development Bank (BANOBAS)	Loans	30,000,000
National Government	National Water Commission (CONAGUA)	In Kind	1,000,000
National Government	Ministry of Natural Resources (SEMARNAT)	In Kind	250,000
National Government	Federal Electricity Commission (CFE)	In Kind	250,000
State Government	Baja California Sur State	In Kind	1,000,000
Municipal Government	Xalapa Municipal Government	In Kind	800,000
State Government	Campeche State	In Kind	65,000,000
Total Co-financing			98,300,000

D. TRUST FUND RESOURCES REQUESTED BY AGENCY(IES), COUNTRY(IES) AND THE PROGRAMMING OF FUNDS

GEF Agency	Trust Fund	Country Name/Global	Focal Area	Programming of Funds	(in \$)		
					GEF Project Financing (a)	Agency Fee ^{a)} (b) ²	Total (c)=a+b
IDB	GEFTF	Global Sustainable Cities Incentive	IAP	IAP-Cities	4,587,156	412,844	5,000,000
IDB	GEFTF	Mexico	Climate Change	CCM-1	9,174,312	825,688	10,000,000
Total Grant Resources					13,761,468	1,238,532	15,000,000

E. PROJECT'S TARGET CONTRIBUTIONS TO GLOBAL ENVIRONMENTAL BENEFITS

Provide the expected project targets as appropriate.

Corporate Results	Replenishment Targets	Project Targets
1. Maintain globally significant biodiversity and the ecosystem goods and services that it provides to society	Improved management of landscapes and seascapes covering 300 million hectares	<i>hectares</i>
2. Sustainable land management in production systems (agriculture, rangelands, and forest landscapes)	120 million hectares under sustainable land management	<i>hectares</i>
3. Promotion of collective management of transboundary water systems and implementation of the full range of policy, legal, and institutional reforms and investments contributing to sustainable use and maintenance of ecosystem services	Water-food-ecosystems security and conjunctive management of surface and groundwater in at least 10 freshwater basins;	<i>Number of freshwater basins</i>
	20% of globally over-exploited fisheries (by volume) moved to more sustainable levels	<i>Percent of fisheries, by volume</i>
4. Support to transformational shifts towards a low-emission and resilient development path	750 million tons of CO _{2e} mitigated (include both direct and indirect)	<i>1,294,261 tons of CO_{2eq}</i>
5. Increase in phase-out, disposal and reduction of releases of POPs, ODS, mercury and other chemicals of global concern	Disposal of 80,000 tons of POPs (PCB, obsolete pesticides)	<i>metric tons</i>
	Reduction of 1000 tons of Mercury	<i>metric tons</i>
	Phase-out of 303.44 tons of ODP (HCFC)	<i>ODP tons</i>
6. Enhance capacity of countries to implement MEAs (multilateral environmental agreements) and mainstream into national and sub-national policy, planning financial and legal frameworks	Development and sectoral planning frameworks integrate measurable targets drawn from the MEAs in at least 10 countries	<i>Number of Countries:</i>
	Functional environmental information systems are established to support decision-making in at least 10 countries	<i>Number of Countries:</i>

PART II: PROJECT JUSTIFICATION

A. DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN WITH THE ORIGINAL PIF

A.1. *Project Description.*

1. Global environmental and/or adaptation problems

Mexico is the 12th producer of emissions by energy consumption globally. According to the National Inventory of GHG 1990-2010 (INEGI), the country's total emissions in 2010 were 748 million of CO₂ equivalent tons, up 19% from 2001. In this scenario, the Mexican Government estimates that by 2020 this amount will increase by 28% and reach 1 billion CO₂ equivalent tons.⁴

The rapid urbanization of the country has exacerbated this situation. During recent years, the population in cities of more than 100,000 inhabitants has increased substantially. In 1990, 47.9 million people were living in urban areas and in 2010 this number rose to 88 million. By 2015, 79% of the total population (94 million inhabitants) resided in cities.⁵ This tendency towards urbanization is expected to continue for years to come.

Even when most urban growth has been traditionally fueled by large metropolitan areas with more than 1 million inhabitants, such as Mexico City, Guadalajara, Monterrey or Tijuana, the importance of intermediate cities (those with less than 1 million inhabitants) has been growing steadily. The number of intermediate cities in Mexico expanded from 55 in 1990 to 84 in 2010.⁶ According to World Bank data, 58 million inhabitants lived in this type of settlement in 2014.⁷ According to the Inter-American Development Bank's (IDB) projections based on UNHabitat data,⁸ Mexican intermediate cities will expand at a faster pace than large metropolitan areas from 2010-2020 at a rate of 13.2% and 0.019%, respectively.

Mexico is also highly vulnerable to climate change impacts. Its position between the Pacific Ocean and the Gulf of Mexico, its mountainous terrain, and the location of its urban areas make it vulnerable to floods, droughts, mudslides, and heat and cold waves. The country has experienced an average temperature increase greater than 0.85°C and has suffered an increased number of extreme weather events. Some projections show an increase in the mean annual temperature of between 1°C to 1.5°C, and a reduction in the annual precipitation rate that ranges from 10 to 20% across the country. Furthermore, due to the reduction in the return periods for hurricanes and tropical storms, it is expected that exposure to climate change vulnerability will worsen in the coming years. Thus far, the aforementioned situation has resulted in economic losses of around 1.4 billion USD from 2000 to 2012.⁹

According to data from the Mexican Federal Government, 75 municipalities are vulnerable to the effects of climate change.¹⁰ Most of these municipalities are intermediate cities located near low coastal areas prone to flooding; high-risk slopes susceptible to landslides; deserts; or very populated zones where water is scarce and droughts are commonplace. Ecosystems degradation in coastal areas increases the impact of climate change related events, such as flooding, coastal erosion and sea-level rise. In Mexico, the main ocean pollution source is sewages that evacuate directly into the ocean. A high percentage of this wastewater is untreated: out of the 154 coastal municipalities in Mexico, only 77 have wastewater treatment plants.¹¹ And even in these plants, a very limited amount operates in its full capacity due to lack of maintenance and regulation enforcement.

⁴ Special Program for Climate Change 2014-2018 (PECC), Mexican Ministry of Natural Resources (Semarnat)

⁵ Población Urbana en el Mundo. World Bank. <http://datos.bancomundial.org/indicador/SP.URB.TOTL.IN.ZS>

⁶ Trayectorias de Urbanización e Implicaciones Ambientales en México. Adrian Aguilar. UNAM Instituto de Geografía 2013.

⁷ World Development Indicators: Urbanization <http://wdi.worldbank.org/table/3.12>

⁸ Estado de las Ciudades de México 2011, ONU HABITAT and Mexican Ministry of Social Development (SEDESOL)

⁹ Special Program for Climate Change 2014-2018 (PECC), Mexican Ministry of Natural Resources (Semarnat)

¹⁰ Special Program for Climate Change 2014-2018 (PECC), Mexican Ministry of Natural Resources (Semarnat)

¹¹ <http://www.greenpeace.org/mexico/es/Campanas/Oceanos-y-costas/Que-amenaza-a-nuestros-oceanos/Turismo-depredador/Playas-sucias/>

In fact, at a national level, the country's sanitation sector faces important challenges. According to the National Water Commission (Conagua), Mexico's coverage of treated wastewater reached 52.7% by the end of 2014. Even though this figure demonstrates a notable improvement over coverage in 2000 (when reached 23%) more than 47% of municipal wastewater that is produced within the country still does not receive any kind of treatment. In addition, the sanitation sector faces an increase in the underuse of wastewater treatment infrastructure and unequal levels of coverage between states. There are only three Mexican states that treat 100% of their wastewater (Aguascalientes, Nayarit and Nuevo León), while the states of Campeche and Yucatan do not even reach 6%. This situation causes significant impacts on water quality and the preservation of aquatic ecosystems.

This project will address the following challenges:

(i) **Solid waste management - Xalapa.** In Mexico, solid waste generation has increased by 182% in 18 years (1992-2010).¹² In many regions, this situation has caused ecosystem degradation and human health risks, mainly due to open dump sites. Therefore, authorities at different levels have been focusing on the consolidation of the national solid waste legislation and the construction of controlled disposal sites. This has resulted in the construction of 230 landfills within the last 15 years. However, although landfills mitigate several environmental impacts by reducing the pollution of water catchments, decreasing the risk of explosions and eliminating smells; they also have the potential to produce large methane emissions when not managed properly.¹³ Therefore, the GoM still faces sustainability challenges in the solid waste sector, especially related to emissions reduction and control and recovery of materials¹⁴. There is also a potential to propagate the implementation of waste to energy, compost and recycling systems and technologies nationwide.

According to ESC's analysis of Xalapa's metropolitan area, daily waste generation reaches 396 tons from which 364 tons (92%) are disposed of in a landfill; and the solid waste sector accounts for 16% of the city's total GHG emissions, representing the second largest source in the city. This is expected to grow by 45% and 70% by 2030 and 2050, respectively. Exponential urban and population growth over the last 30 years and limited long term planning in Xalapa have hindered the development of a comprehensive solid waste management system.

Recycling, composting and waste related energy generation are not commonplace in Mexico. Today, the country recycles only 4.9% of its total waste,¹⁵ 20% of its landfills use composting,¹⁶ and only 4 operational waste-to-energy plants exist – none of which use bio-digestion technologies.¹⁷ In Xalapa, a small compost pilot plant was tested by local authorities for 8 months.

(ii) **Energy generation - La Paz.** The energy sector plays an important role in GHG emissions in Mexico. In 2010, CO₂ emissions caused by energy consumption reached 407.3 mega tons, of which energy generation contributed 28%.¹⁸ Furthermore, between 1990 and 2012, GHG emissions associated with electricity production in the public sector had an annual growth rate of 3.1%.¹⁹ This has prompted the GoM to implement a series of policies to increase the share of renewable sources in the national energy matrix. The goal is to achieve 35% clean energy generation by 2024 and 50% by 2050.²⁰

¹² Semarnat, Compendio de Estadísticas Ambientales 2012.

¹³ Municipal waste GHG emissions increased 232% between 1990 and 2010 (SEMARNAT – Compendio de Estadísticas Ambientales 2012).

(http://apps1.SEMARNAT.gob.mx/dgeia/informe_12/conjuntob/conjunto_basico/10.100.8.236_8080/ibi_apps/04_residuos_solidos/indicador_4_2.html).

¹⁴ According to the study “conceptual design for a waste management system with energy production for Xalapa” undertaken by the IDB, only 7.1% of the urban solid waste of the city is recovered.

¹⁵ “El Reciclaje en Mexico” Revista de Comercio Exterior, Banco Mexicano de Comercio Exterior (Bancomext), June 2014

¹⁶ Instituto Nacional de Ecología y Cambio Climático (INECC) <http://www.inecc.gob.mx/publicaciones/libros/499/experiencias.html>

¹⁷ Programa Especial para el Aprovechamiento de Energías Renovables-Plan Nacional de Desarrollo 2013-2018. Page 24

¹⁸ Atlas de Almacenamiento Geológico de CO₂ – México (Sener, CFE, Gobierno de México)

<http://co2.energia.gob.mx/res/ATLAS%20FINAL.pdf>

¹⁹ Sener, Prospectiva del Sector Eléctrico 2015-2019, p. 75.

²⁰ Semarnat. Primer Informe Bienal de Actualización ante la Convención Marco de las Naciones Unidas sobre el Cambio Climático. 2015 p.13.

In 2010, GHG emissions in La Paz reached 1,383 Gg/Co₂, an increase of 17% from 2005 levels. Electricity consumption, the main emitter sector, represents 36% of the city's GHG emissions and it is estimated that this figure will grow 110% by 2030. Additionally, CO₂ emissions from the outdated plants that currently produce energy are 3 to 4 times higher than the national average. This situation has caused environmental and social costs for La Paz that have reached 200 million pesos (approx. 11.5 million USD).²¹ Air pollution is endangering human health as well as the rich and fragile ecosystems that sustain the life and development of the city.

Mexico has a vast potential for solar energy. As an example, in the Northwestern region of the country, where La Paz is located, the irradiance index exceeds 8kWh/m² in spring and summer. However, this resource has not been vastly exploited nationally either at a large scale or at a self-supply level. Recent reforms in the Mexican energy sector are expected to increase the share of renewables in the energy mix.

In this context, solar energy has the potential to become an important generation source in Mexico. In the case of La Paz, local and state governments have shown strong interest in promoting solar energy production technologies. Additionally, La Paz has other characteristics that allow it to become a national example in terms of solar energy generation. It has one of the highest electricity rates in the country, and also, as the city has its own independent electric grid, this makes it an ideal site to test the implementation of innovative projects that can be an example nationwide.

(iii) Water and sanitation - Campeche. Mexico has made important progress in monitoring and improving water quality for drinking and recreational purposes, as well as in restoring water ecosystems. Nevertheless, urbanization processes, uncontrolled urban and industrial discharges, and water stress exacerbated by increasing temperatures, threaten the welfare of local communities throughout the country.

Campeche is one of the few states whose beaches have failed to meet the bacteriological quality of sea water standards, as defined by the World Health Organization (WHO).²² In particular, the city of Campeche currently also faces important challenges in its water and sanitation sector. The aquifer that provides the city with water is under high risk of pollution mainly because it is unconfined and approximately 85% of households discharge their wastewater into septic tanks without any treatment, contributing to the pollution of the aquifer and ultimately to the Campeche Bay.

Additionally, the city's water distribution system operates inefficiently due to: (i) infrastructure that is no longer operational;²³ (ii) the high levels of water hardness that affect the water measuring equipment;²⁴ and (iii) the unplanned expansion of the city's water network over time.

The aforementioned challenges are representative of the situation in Mexican intermediate cities. Some of the reasons why the challenges in these urban areas have not been efficiently tackled in the country are: (i) Mitigation and adaptation efforts have been concentrated in large cities mostly due to the country's traditional centralized political and financial system; (ii) Intermediate Cities have reduced budgets and depended on financial transfers from the federal government, not necessarily focused on mitigation and adaptation; (iii) Intermediate cities have exponentially grown in size and number, this has affected the Federal Government's ability to implement far reaching, replicable measures that can be adopted by numerous municipalities.

Due to the aforementioned situation, the project proposes the development of projects in three intermediate Mexican cities in order to consolidate regional "*champions*" that will provide successful examples for other

²¹ Impactos de la contaminación del aire, IMCO 2014

http://imco.org.mx/wpcontent/uploads/2014/02/Impacto_Contaminacion_Aire_La_Paz_BC_DOC.pdf

²² Mexico's State of the Environment Report, Semarnat, 2012.

²³ According to a tariff study undertaken by Conagua in 2013, 16% of the storage tanks, 21% of the pumping stations and 13% of the collection wells are not in service. In addition there is an absence of macrometers in 36% of the infrastructure.

²⁴ Mexico's Official Norm for Testing Water for Human Use and Consumption in Potable Water systems (NOM-014-SSA1-1993) establishes that water will be considered hard if the amount of CaCO₃ exceeds 300 milligrams per liter (mg/l). According to the most recent available physicochemical tests for potable water performed daily by Campeche's water operator in 2012, the city's potable water had an average of 650 mg/l.

national urban centers in terms of addressing their mitigation (waste management, energy), water sanitation and adaptation challenges.

2. Baseline scenario or any associated baseline projects

Since 2000, Mexico has implemented three National Strategies on Climate Change. In 2009, the Government of Mexico (GoM) adopted its first Special Program on Climate Change, and has presented five National Communications with their respective GHG accounting to the United Nations Framework Convention on Climate Change (UNFCCC).²⁵

The GoM has also adopted different policies and regulations to promote sustainable growth that include (i) the General Law on Climate Change (GLCC); (iii) the National Strategy on Climate Change; (iv) the Special Program on Climate Change 2014-2018; and (v) the Intended Nationally Determined Contribution submitted by the GoM to the UNFCCC in 2015 which provides the local framework on climate change mitigation and adaptation. This last regulatory mechanism also aims to engage states, local municipalities and the private sector in projects that contribute to reaching the goals set for mitigation and adaptation to climate change.

The project will support the efforts of the GoM in the achievement of the aforementioned commitments and is consistent with Mexico's ambitious GLCC target, which aims to reduce national GHG emissions by 50% in 2050. Included in this target is the pledge that by 2024, 35% of national energy production will come from clean energy sources. The operation will also support the enhancement of local infrastructure and ecosystem resilience.

Even though some of these policies and programs are recognized worldwide as best practices, the country still has important climate change challenges to address, especially at the local level. Lessons learned from recent experiences regarding pollution contingencies and natural disasters have allowed the country to identify some of these challenges, as well as recognize the need to promote the involvement and commitment of medium-sized cities in the design of national adaptation and mitigation strategies, since there are at least 6 Mexican intermediate cities that have significantly higher GHG emissions than Mexico City,²⁶ and adaptation to climate change is a common challenge for mid-size cities, often more vulnerable to natural phenomena than the large metropolises.

Taking this into account, and in an effort to contribute to the country's climate change strategy, in 2012 the Inter-American Development Bank's (IDB) Emerging and Sustainable Cities (ESC) program, began operations in Mexico in La Paz, followed by Xalapa and Campeche in 2014. These three cities have completed their respective Action Plans (AP) and the Bank is working with local, state and federal authorities to implement them as part of the execution phase of ESC methodology²⁷.

The projects supported by this operation have been selected from the prioritized interventions listed in the Action Plan (AP) designed for Xalapa, Campeche and La Paz as part of ESC implementation phase. After a thorough analysis and negotiation process with local, state and federal authorities, it was concluded that these projects had a potential for GHG emission reduction which will best contribute to local sustainability and GoM goals. Moreover, prefeasibility studies for each of the proposed projects have already been developed, and their technical viability, scope and potential benefits have received full endorsement of the GoM. This will facilitate the implementation of the projects and will also have a significant role in their replicability potential.

Furthermore, the projects are aligned with specific national actions and policies which are currently being promoted by the federal authorities in terms of: (i) efficient management of solid waste systems; (ii) clean energy generation; and (iii) improvements in wastewater treatment in coastal areas. In the next section follows an

²⁵<http://www4.unfccc.int/submissions/INDC/Published%20Documents/Mexico/1/MEXICO%20INDC%2003.30.2015.pdf>.

²⁶ World Health Organization Global Urban Ambient Air Pollution Database (Update 2016).

²⁷ Several Technical Cooperations have supported these activities: The pre investment studies for component 1 were financed with resources from RG-T2310. The implementation of CES program in Xalapa was financed by ME-T1234 and ME-T1237; and for Campeche the resources came from TC ME-T1299. The pre-investment studies carried out for component 2 were financed by the TC RG-T2312,

individual analysis of the environmental and adaptation problems for each of these sectors in the cities that are part of this GEF project.

Base line for Component No. 1 - Waste Management Sector in Xalapa

Xalapa's solid waste sector has characteristics that are optimal for the development of nationwide pilot projects focused on GHG mitigation. A private operator is in charge of the landfill via a concession agreement. Both aspects are managed and operated in an acceptable fashion. However, the space available for expansion of the landfill is limited, and identifying a new location will be a difficult task for local authorities. Additionally, the concession agreement with the private operator will conclude in 2018. This puts the city in a unique position to look for innovative ways to increase the lifespan of the landfill and generate additional benefits for the local population.

Therefore, expanding the landfill's life and reducing emissions has become a prerogative for the current local administration. The solution to this challenge lies in using the waste for productive activities. Currently, the city has not adopted any recycling, compost production or waste-to-energy measures. These tools can provide the landfill with additional operating life, while at the same time contribute to GHG mitigation. Global examples show that the adoption of these activities can generate additional income for the municipality via savings or commercialization of different products derived from waste processing, such as plastics, electronics and energy.

Taking this into account, and as part of the pre-investment phase of ESCI's methodology, the Bank financed a study to define a new concession model which included more services for the municipality. Among these new services, landfill gas recovery and waste separation options were analyzed. The Bank took into account previous studies developed in the city, especially by the Global Methane Initiative. Under this Initiative, the US Environmental Protection Agency (EPA) carried out a preliminary assessment of Xalapa's landfill gas (LFG) capture potential and proved that there were important opportunities to collect and destroy methane from the landfill.

The Bank has also financed a study to determine the feasibility of the biodigester. This study took into account the potential to recover methane gas from the organic fraction of local waste and its energy generation capacity. The conclusion was that the project is feasible from an environmental, financial, economic and technical standpoint.

On the other hand, the Federal Mexican Ministry of Energy (Sener) and the Ministry of the Environment (Semarnat), in close collaboration with the German International Development Office (GIZ), developed a partnership through their Program for Energy from Solid Waste (EnRes) with the goal of promoting solid waste to energy projects and provide examples that can be replicated nationwide.²⁸ The Bank has begun collaboration with EnRes in an effort to involve the Federal agencies in the development of the project, increase capacity building and enhance the replicability potential of the plant in other Mexican cities.

As part of ESC's support to Xalapa, the IDB has held talks with both ministries to obtain their support for the project; so the pre-feasibility studies took into account not only previous studies but most importantly national and regional efforts to determine that the projects technological solution was feasible and would address the city's challenges effectively.

Root causes of the waste management challenges in Xalapa

- **Lack of long term planning.** As most Mexican intermediate cities, Xalapa has a financial dependency on federal transfers,²⁹ a weak local tax collection system and short-term local administration periods. This disincentives the development of long-term planning strategies which in turn affects the city's sustainability.

²⁸ The partnership focuses on: (i) capacity building; (ii) financing; (iii) legal and regulatory framework; and (iv) knowledge transfer and replicability

²⁹ According to data from the Mexican Ministry of Finance, 68% of the municipalities income comes from federal transfers. El Federalismo Fiscal en Mexico. SHCP, 2010

- **Urban and population growth:** As is the case for most Mexican intermediate cities, over the last 30 years, Xalapa's growth has been exponential. Population has doubled while the urban footprint has increased eightfold: from 917 hectares in 1980 to almost 8,000 hectares in 2010.³⁰ According to ESCI's figures, this puts Xalapa among the Mexican cities with the highest urban growth rates, which provides additional stress on the provision of public services.
- **Low technical capacity:** The constant personnel rotation within the municipality, which happens every three years when a new administration takes office, prevents the creation of a trained technical workforce in the city's public services offices. This also has an effect in the implementation of technological improvements in the sector.
- **Lack of alternative waste processing measures:** Recycling, composting and waste related energy generation are not commonplace in Mexico. Today, the country recycles only 4.9% of its total waste,³¹ 20% of its landfills use composting,³² and only 4 operational waste-to-energy plants exist – none of which use bio-digestion technologies.³³ In Xalapa, a small compost pilot plant was tested by local authorities for 8 months.

Barriers that need to be addressed

- Lack of incentives, weak market mechanisms and inefficient regulatory instruments to: (i) reduce the volume of waste generation; (ii) implement recycling measures; (iii) recover landfill gas for electricity generation; and (iii) reduce overall costs for Xalapa.
- In Mexico, gas recovery for both extending landfills' lifespan and energy generation is still incipient. Therefore, the development and operation of a bio-digester requires technical knowledge and an adequate institutional framework.
- Waste management in the Xalapa metropolitan area involves the participation of 5 municipalities with different populations and varying levels of economic and political development. Achieving coordination between them will be a key issue for the success of the project.
- Lack of community participation due to weak social awareness programs which translate into low levels of recycling, reuse, and reduction of waste.

Base line for Component No. 2 – Energy Sector in La Paz

Due to the special characteristics of La Paz's energy generation sector, the city has been the laboratory for the implementation of projects focused on cleaner energy generation. Thus, the national utility, has implemented a series of strategies to modernize the current installed generation capacity in the city. One of the alternatives which were considered included the construction of a natural gas pipeline that will cross the Sea of Cortez from the mainland to fuel the current electricity plants, which have to be updated to be capable of switching to the new fuel source. This will greatly reduce GHG emissions and will make the local electric system more efficient. However, implementation of this project is expected to take several years, as obtaining the required environmental permits and securing financing for its construction might take a significant span of time.

The other strategy was to promote the use of solar energy in the city. With irradiance indexes close to 6kWh/m², this city has one of the greatest solar energy potentials in the world. A 30MW solar power PV plant was built in La Paz in 2013, after the national regulatory commission approved several generation permits under the "small producer" program. However, one year later, Hurricane Odile damaged the plant's infrastructure and operational capacity, and today it is still undergoing renovations. Another 30MW plant is being built by private investors under the same program, but it is not expected to be operational within the short term.

In 2012, and following ESC's Action Plan recommendation, the Bank assisted local authorities in the development of a 1.3MW PV project in the City Hall. A pre-feasibility study was delivered to local authorities in

³⁰ ESCI's Xalapa Action Plan 2014

³¹ "El Reciclaje en Mexico" Revista de Comercio Exterior, Banco Mexicano de Comercio Exterior (Bancomext), June 2014

³² Instituto Nacional de Ecología y Cambio Climático (INECC) <http://www.inecc.gob.mx/publicaciones/libros/499/experiencias.html>

³³ Programa Especial para el Aprovechamiento de Energías Renovables-Plan Nacional de Desarrollo 2013-2018. Page 24

2013. However, reduced financial capacity at both levels of government stalled its development. In 2015, ESC built on the original study to assess the potential of installing a series of self-supply PV plants in public building across the city.

Based on this study, a series of small solar PV power plants (each with a generation capacity below 500kW) was planned to self-supply energy for both local and state government buildings in the city; this iconic project has been a priority in the city for the past 3 years. With its construction, the city will be able to establish a solid replicable project that can be followed by other municipalities. Also, savings in electricity costs will provide additional income for authorities, which can allocate financial resources to other social and productive projects. The GoM, through its Secretary of Education, has recently launched an initiative to provide all public schools in Mexico with electricity, including those located in off grid regions. For urban grid-connected schools, the initiative will study the provision of self-supply systems with solar energy. In this regard, the GEF pilot project, with the installation of solar PV power plants in public buildings and schools, will provide important lessons for the operation of solar PV systems in hot climates and will leverage future IDB interventions in this field.

Root Causes of the energy sector challenges in La Paz

- **La Paz's geographic location.** The remote peninsular location and arid climate of La Paz present several challenges for energy generation: (i) the isolation of the city rendered a physical connection with the rest of the country economically unfeasible, therefore La Paz's electric system is not connected to Mexico's national energy grid; (ii) the cost to transport fuel from the mainland is high, and this has made local electric tariffs the highest within Mexico.
- **Lack of resources.** The absence of local fossil fuel sources to produce electricity is the main cause of La Paz's energy dependence on the mainland. The use of water to generate electricity via hydropower is unfeasible and, up until recent years, the cost of adopting other renewable technologies was too high.
- **Use of outdated technology to produce electricity.** CFE installed a series of energy plants that use bunker and diesel fuel to supply the state's energy demand; three of those plants were located in the capital city of La Paz. Even after renovations and installation of costly filtering equipment, the efficiency of the plants is still very low and high emissions levels have not been curbed.

Barriers that need to be addressed

- As was previously mentioned, La Paz has significant solar irradiance resources. However, because the focus of the local government has been put on promoting the construction of large scale solar plants, small scale PV solar systems have not been widely adopted.
- In the past, the high cost of distributed energy plants in households or public buildings did not incentive their installation and use. However, recent reductions in the price of solar PV cells offer an opportunity to lower this barrier and popularize the use of this technology locally.
- Large and medium scale solar PV technology is vulnerable to extreme weather-related events. Resiliency of this type of infrastructure to high speed winds is a factor that can affect generation capacity at a local level.

Base line for Component No. 3 – Water and Sanitation sector in Campeche

Campeche's city center was declared a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site in 1999. As a result, federal, state, and local authorities have invested resources to improve local infrastructure including upgrades to water, drainage and wastewater systems, but still, just 15% of households are connected to the sewage system, and only 3% of these discharges are treated properly due to lack of maintenance of the wastewater treatment plants. Most of the inhabitants of San Francisco de Campeche use a septic tank or discharge directly to the ocean or the streets. This situation prevents the control and treatment of most of the local wastewater, and aggravates the pollution levels in the Bay of Campeche that also affect its mangroves. This also increases the city's exposure to climate change related events which have been increasing in the past 10 years.

The State and city of Campeche have undertaken various projects to mitigate flood risk and control water pollution. In 2013, the State and Federal Governments provided funding for the construction of a rainwater drainage system. This US\$65 million project was intended to prevent flash floods and to improve transportation in the city during the rainy season. However, the new infrastructure has not prevented further pollution in the Bay and in fact has increased it: the new drainage system discharges its untreated waters containing both solid waste from the city's streets and household sewage into the ocean.

The Autonomous University of Campeche has built a substantial body of knowledge on the Bay's degradation and the urban pressures behind it. The technical expertise of the University and the information it has generated (including The Coastal Integrated Management Program for Campeche's Bay Restoration), will serve as an important basis for this project and will ensure its continuity in the future. In addition, the Water National Commission (Conagua) and the State Commission of Potable Water and Sewage (CAPAE) have developed planning instruments and invested significant resources to improve sanitation and sewage infrastructure to decrease flood risk.

As part of the implementation of ESC's Action Plan for the city, a feasibility study that considers the aforementioned elements is currently under development. This study is being performed by the University of Cantabria (UC) with IDB's coordination and with financing from the General Cooperation Fund of Spain. The work by UC will bring an integrated approach and prioritized measures for the water sanitation and sewage system and it will represent a key input for the detailed engineering study that will be financed with GEF resources.

Root Causes of the water and sanitation sector challenges in Campeche

- **Scarce domestic sewage coverage:** Just 15% of households are connected to the sewage system, but only 3% of these discharges are treated properly due to lack of maintenance of the wastewater treatment plants. Most of the inhabitants of San Francisco de Campeche use a septic tank or discharge directly to the ocean or the streets. This situation prevents the control and treatment of most of the local wastewater, and aggravates the pollution levels in the Bay of Campeche.
- **Local attention has been focused on the City Center:** San Francisco de Campeche's City Center was declared a UNESCO World Heritage Site in 1999. Most local investments have been focused in this area, and other potential tourism, natural and recreational assets of the city, such as the Bay, have been neglected.
- **Lack of enforcement of local and state laws:** As is the case in most of Mexico, state and local laws prohibit discharging domestic wastewater into the streets, rivers or stormwater sewers. However, violation of these laws in San Francisco de Campeche is widespread, and this contributes to further degradation of the Bay

Barriers that need to be addressed

- Potable water and sanitation services are provided by two different entities: (i) the local water utility (Sistema Municipal de Agua Potable y Alcantarillado de Campeche - SMAPAC), is in charge only for the provision of water, while (ii) the Department of Public Services manages sanitation. This division of responsibilities prevents implementation of an integrated water system management. It also has negative financial implications as the budget of the sanitation system is contingent on the allocations provided in the municipal budget. Coordination between these two institutions is necessary to increase wastewater treatment and develop an sustainable planning instrument that address comprehensively the sanitation of the Bay.
- In general, the Bay and the value of the ecosystem services it provides (including resilience to climate events), are not appreciated or understood by the general public, so there are few incentives to conserve it.

3. Proposed alternative scenario

The alternative scenario includes a joint effort from two GEF sources: The Integrated Approach Pilot for Sustainable Cities; and the CCM1 –Program 1. The objective of the project is to enhance the mitigation (Xalapa

and La Paz) and adaptation (Campeche) capacities of three intermediate Mexican cities, through the preparation and implementation of ESC prioritized projects that will reduce GHG emissions in the clean energy and solid waste management for Xalapa and La Paz, and provide a sustainable and integrated sanitation sector planning framework for Campeche. It will also establish guidelines to incentivize the replication of the projects in other Mexican cities.

With support from IDB, GEF and other partners such as Banobras, the alternative will build on the baseline at both city level and national level. The alternative will support the transformation of the three intermediate cities into municipalities with a more comprehensive understanding of mitigation and adaptation to climate change projects in the three different sectors that will be addressed by each city.

The cities (Xalapa, Campeche and La Paz) are strategically located in the northern, central and southern region of Mexico; this national coverage will facilitate each component's replicability. These cities also have economic and population growth levels above the national average, and are the capital cities of their respective states, making them reference points for other intermediate cities in the country.



The selected cities will benefit from the technical expertise that will be provided and the policies and regulations that will be designed. The program aims to set a national example for the sustainable development of key sectors. The establishment of guidelines and knowledge transfer mechanisms (e.g. capacity building workshops) will support the replicability of the program. A brief description of components and its expected outcomes are provided below.

Component No. 1. Biodigester for Xalapa's solid waste management system

The objective of this component is to promote sustainable urban waste management activities in Mexico through the implementation of an innovative biodigester plant in Xalapa.

To this end, the component will finance: (i) detailed designs for the entire set of the plant's components and phases; (ii) pretreatment equipment; (iii) the installation of a biodigester and the equipment to generate electricity; (iv) post-treatment and composting equipment; and (v) the required civil works. The operation and maintenance of the biodigester plant and the landfill will be headed by the private sector through a concession agreement with the municipality and Banobras as the execution agency of the program will conduct the supervision and contract the audit.

The plant will receive 200 daily tons of municipal solid waste and will have an installed electricity generation capacity of 450kW. Throughout the project's lifespan, 56,400 tons of CO₂eq through methane capture and energy generation will be avoided. Additionally, the project will: (i) delay the expansion of the landfill by three years; (ii) lower the costs of electricity for the city; and (iii) provide 26 ton/day of compost.

The energy generated by this Project will be mostly used to supply the demand of the landfill. Future pre-investment studies for the plant, which will be financed with GEF resources, will help determine the best use for the remaining energy capacity.

The site was selected through a coordinated process between IDB specialists (water and sanitation; environment and safeguards; and housing and urban development units), and the local authorities (major's office, public services unit, treasurer). In the definition process IDB's consultants, the landfill's concessionaire, and the German Agency of International Cooperation (GIZ), also played an important role by providing advice, opinion and guidance. The principles used to define the site are:

1. Proximity to the current landfill and to the waste collection routes
2. Easy and convenient access via a paved road
3. Land that has no significant environmental challenges to overcome
4. Land that has no social issues and will not affect the population and/or their property.

Once built and operational, the proposed biodigester plant will become an asset for the Municipal government. It will be integrated with the collection system (managed by the municipality) which will supply the plant; and with the landfill (managed via a private concession) which will process the fraction that will not be used by the biodigester. This will allow the city to improve its current system and introduce new technologies to both Mexico and Latin America. Additionally, the plant will allow Xalapa to go beyond the two aforementioned operations and: (i) produce energy from the organic fraction; and (ii) produce compost. These benefits will go beyond the 3 year-period after which the landfill will be expanded. The plant is conceived as an expandable system, and its capacity for both processing organic waste and producing energy can be expanded relatively easily in the future as waste generation and energy demand of the city increases.

Component No. 2 Solar photovoltaic power plants for self-supply in public buildings and schools in La Paz

The objective of this project is to encourage the use of renewable energy sources in Mexican cities through the installation of self-supply PV power plants in public buildings.

This project will finance the installation of solar photovoltaic plants in seven municipal buildings and two public schools will be financed.³⁴ This will provide the following benefits: (i) diversify the local energy matrix; (ii) reduce an estimated 39,688 tons CO₂eq throughout the plants' life cycle; and (iii) reduce energy costs for the municipality. The aggregated solar PV power plants will produce 1840 MWh of energy on average per year during their lifetime. It is estimated that the energy produced will cover 48.2% of electricity consumption in municipal and state public buildings during its first operational year.

The system does not include storage, and individual PV systems were sized not to produce excess electricity on a yearly basis. There could be certain times when surplus electricity can be fed into the distribution grid and then, it will be compensated according to the Mexican regulation for self-supply systems ("Energy bank" regulation).

³⁴ If the cost reduction on solar technology continues, additional buildings might be included as part of this Project.

The sites were chosen by the Government of Baja California Sur and the Municipality of La Paz according to technical criteria (connection points, roof conditions, etc), also an independent engineer confirmed the suitability of the sites. Besides the technical feasibility, schools and public buildings were selected taken into account their demonstrative impact for solar technologies.

The project is aligned with energy policies in the National and Federal levels. The National Energy Strategy (2014-2028) has as its two main pillars promote energy efficiency and renewable energy. In the other hand, the Climate Change Plan of the State of Baja California Sur pursues (i) higher energy efficiencies; and (ii) an increase in the number of energy renewable projects throughout the state. Based two strategies, the Municipal and State government are taking this opportunity to implement energy efficient measures in parallel with the GEF project in order to optimize power production of the PV systems. The project will deliver important results and lessons on energy efficiency and renewable energy which will create opportunities to discuss local policies and regulations to provide continuity to the project and replicate it in other areas of the city.

Thanks to IDB's ESC Program, the city of La Paz has a roadmap to include land use and climate change into its urban planning instruments. Energy efficiency and renewable energies are also key issues of the ESC Plan of Action in La Paz and both the municipal government and the State of Baja California are working in coordination to carry out the plan. However, there are no specific targets in terms of energy efficiency improvement.

The city is not connected to the national grid and it obtains its energy from highly polluting and GHG emitting sources. Development of the pilot project will have a demonstrative effect in the city and the region as it will show that: (i) it is possible to produce energy in a more sustainable way, (ii) the technology is mature and ready to be deployed; and (iii) the excellent local solar resource can be tapped in an effective manner. Most importantly, it will enable the city and the whole region to consider solar energy as a viable generation source.

The two levels of government (state and municipal) will work together towards improving the energy matrix of a city, in this case La Paz. The documentation developed under this component (procurement policies, tender and contracting) will constitute a valuable pilot project which will give a good market signal for the development of technology and services associated to solar energy. It will set a best practice example for other municipalities interested in developing public-private partnerships in the sustainable energy sector. Operation and maintenance of the plants will be provided by the private sector under a service provision contract.

This component will also finance the implementation of solar self-supply systems in two local schools of La Paz. The GoM, through its Secretary of Education, has recently launched an initiative to provide all public schools in Mexico with electricity, including those located in off grid regions. For urban grid-connected schools, the initiative will study the provision of self-supply systems with solar energy. In this regard, the GEF pilot project in public buildings and schools will provide important lessons for the operation of solar PV systems in hot climates and will leverage future IDB interventions in this field.

The business model for the project is based on a public-private partnership where the State of Baja California Sur does the investment and the private sector builds and operates the plant for an adequate period of time. It is planned that the State and Municipality take over the operation of the project in the long term. The IDB wants to replicate in other cities in Mexico, an innovative financial scheme that comprises an executing trust that will be carried out by Banobras since this entity acts as the financing platform for cities, states and municipalities throughout Mexico.

Component No. 3 Comprehensive executive study for the clean-up of the Bay of Campeche

The objectives of this component are a) to mainstream climate adaptation into urban planning; and b) to promote integral planning processes for flood risks reduction and sanitation and restoration of urban coastal areas.

This component will finance the development of a detailed study that will include technical, urban and ecosystem infrastructure options to restore the city's coastal area and increase local resiliency to climate change impacts. To this end, the development of the study will consider: (i) the feasibility analysis that is currently being performed by the University of Cantabria; (ii) previous climate vulnerability analyses performed by ESC in Campeche; (iii) geographic information systems to identify distribution and quality of urban green areas, the extent and type of urban settlements, wetland degradation and coastal erosion.

The study will also include a roadmap for the establishment of the required institutional and regulatory arrangements, as well as a financial structuring (including private and public participation).

This component will complement Campeche's State co-financing which includes investments in wastewater and water sanitation infrastructure for the city.

The study to be financed will deliver a sustainable planning tool for the sanitation of the Bay of Campeche and also will deliver adaptation policies that will aim at the decrease of flooding risk, the restoration of the coastal area, and will also build the technical capacities to restore the Bay's ecosystem.

Component No. 4 Capacity building, communication and dissemination

The objective of this component is to improve the technical capacities of Mexican local governments and stakeholders to upscale integrated approaches to climate resiliency and mitigation.

This component will finance workshops and actions focused on: (i) the preparation, operation and maintenance of biodigester, self-supply solar PV systems, and bay sanitation projects; and (ii) dissemination of each component's outcomes.

For Xalapa, the component will finance:

- (a) The organization of a workshop to strengthen the technical capacities of Xalapa's authorities in all areas pertaining to biodigester project development and operation (e.g. financial structuring, legal arrangements, management of organic waste, pre-treatment, energy generation and compost, among others). Workshop will include development of strategies to improve local waste collection system.
- (b) The design and publication of a manual to promote the replication of biodigester projects in other Mexican cities and metropolitan areas. This guideline will include the financial, technical and legal aspects required for the development of similar projects.
- (c) The organization of events to disseminate the results from Xalapa's biodigester project to local stakeholders, Banobras, other Mexican municipalities and the general public.

For La Paz, the component will finance:

- (a) The organization of a workshop to strengthen the technical capacities of La Paz's municipality and Baja California State authorities in all areas pertaining to self-supply solar PV project development and operation (e.g. financial structuring, legal arrangements, use of solar energy for energy generation, etc).

- (b) The publication of a performance assessment study of solar PV technologies in schools. The study will analyze the development of the project in La Paz and will evaluate its results to federal authorities and the general public.
- (c) The organization of events to disseminate the results from La Paz's self-supply PV project to local stakeholders, Banobras, the national electric utility (CFE), Mexican Ministry of Education (SEP), other Mexican municipalities and state authorities and the general public.
- (d) Publication of a review paper including lessons learned from the experience on PV plants in public schools to foster investments in this source of renewable energy in similar buildings throughout the country.

For Campeche, the component will finance:

- (a) The organization of a workshop to strengthen the technical capacities of Campeche's municipal and state authorities in the preparation of Bay sanitation projects.
- (b) The organization of an event to disseminate the results of the comprehensive executive study for the clean-up of the Bay Campeche to other Mexican municipalities, Banobras, National Water CONAGUA, academic institutions, and the general public.
- (c) Publication of materials to raise awareness on the social, health and environmental benefits that will stem from the adoption of the clean-up project of the Bay of Campeche. These publications will also include the role that local inhabitants need to play to ensure the long-term sustainability of the project.

Additionally, the component will also finance the development of a Communication strategy for this Project to highlight GEF's principles of sustainable planning, stakeholders' engagement, knowledge management, capacity building and financial sustainability. This Communication strategy will be based on the Global Platform indicators in an effort to use the lessons learned in other SC IAP cities.

Component No. 5 Monitoring and Evaluation

The objective of this component is to track progress of the project implementation results.

This component will finance project monitoring and evaluation activities that will be conducted in accordance with IDB and GEF procedures at three levels: i) Project outcomes and impacts as stated in the Results Matrix; ii) delivery of project outputs in accordance to the Annual Operation Plan³⁵; and iii) monitoring of project implementation and performance through two project evaluations.

The two evaluations for the project will be conducted as follows: i) a mid-term evaluation, after 2 years of project execution, or when 50% of IDB/GEF contribution has been disbursed, whichever comes first. The evaluation will include: (a) feedback for the activities in Components 1, 2, 3 and 4; (b) progress in the implementation of the monitoring system in the three participating cities; (c) success in the identification of required guidelines and policies reviews. (ii) The final evaluation will take place within the last 6 months of project execution and will focus on the overall achievement of results and the perceived impact of the project, as well as fulfilment of the project's objectives. As part of the final evaluation, ex post economic evaluations will be conducted for components 1 and 2. These evaluations will be done through cost-benefit analyses, using the same methodology as the ex-ante socioeconomic evaluations.

³⁵ See Annexes for more information

Program baseline changes in alignment with GEF focal areas

The figure below illustrates how the implementation of this project, will transform the baseline of the different sectors that will be addressed in each of the three cities. Project implementation will lead to (i) reduction in GHG emissions due to the implementation of catalytic projects in Xalapa and La Paz; and (ii) a sustainable and integrated sanitation sector planning framework for the Campeche Bay. The projects and planning document will include sustainable principles such as:

- **Resiliency** strategies for climate change adaptation will be identified and promoted;
- **Low carbon** projects to reduce GHG emissions, specifically from energy generation, and solid waste;
- **Inclusive** planning that engages different government levels, civil society and other stakeholders;
- **Economic sustainability** measures will be included in the project's structuring, to ensure their success in the short, medium and long terms

4. Incremental/additional cost reasoning

The proposed operation proposes a series of projects that will provide Mexico with a framework to: (i) mitigate its GHG emissions; (ii) consolidate urban development; and (iii) improve its adaptation capacities. Given the increased growth and importance of intermediate cities in Mexico and the potential for the replicability of these projects in other Mexican cities, changes in these urban areas will have a substantial national impact.

The main objective of the project is to enhance the mitigation capacities of Xalapa and La Paz, and the adaptation capacities in Campeche. Each of the projects plays has characteristics that make them unique in Latin America, as they use an integrated approach to promote pathways for sustainability in medium-sized cities. This vision and objectives are aligned to both the Global Environmental Benefits and the Global Platform for Sustainable Cities. These two programs set objectives to mitigate GHG and to promote the integration of environmental sustainability concepts in the planning and management of urban areas.

For instance, the construction of a biodigester plant in Xalapa will provide a holistic approach for the improvement of urban waste management and clean energy production, which in turn decrease GHG emission. The project is financially viable: the revenue generated by energy saving and the sale of composting will exceed the operational and maintenance cost of the facility.³⁶

The solar energy project takes advantage of La Paz's geographic location to produce sustainable energy. The adoption of solar PV power systems for public buildings has not been widely implemented throughout the country. Thus, this project will set an example for the rest of Mexican municipalities as to how governments can be active participants in the development of their own energy systems. The development of the pilot project will have a demonstrative effect in the city and the region as it will show that: (i) it is possible to produce energy in a more sustainable way, (ii) the technology is mature and ready to be deployed; and (iii) the excellent local solar resource can be tapped in an effective manner. Most importantly, it will enable the city and the whole region to consider solar energy as a viable generation source.

As for cost-benefit analysis, the project shows not only positive Interest Return rate (IRR) and positive Net Present Value (NPV), but also energy savings of up to US\$190,000 per year during the project's lifetime.³⁷

The study for Campeche's Bay will include a multi-sectorial approach by conducting the study and developing a program to clean-up of the Bay. Most notably, this study aims to generate climate change adaptation measures

³⁶ IDB. (2016). Desarrollo de diseño conceptual del sistema de tratamiento de residuos sólidos municipales con generación eléctrica asociada para la ciudad de Xalapa, México. Incluyendo el diseño del modelo de gestión, evaluación socioeconómica y financiera, factibilidad legal y análisis ambiental.

³⁷ IDB (2016). Estudio de viabilidad técnica y económica de plantas fotovoltaicas. Proyectos situados en Baja California Sur, México.

for the city, ensuring the protection of the local mangroves and a more integrated water system. The study will include guidelines that ensure the feasibility of the project, which will facilitate the possibility of securing access to public funds.

5. Global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF)

The four components of the Project will contribute to the global environmental and adaptation benefits that GEF has targeted on its planning strategic instruments.

The solid waste project in Xalapa will mitigate approximately 56,401 of CO₂eq, 19,962 of direct GHG emissions, 36,641 CO₂ eq. by methane capture.³⁸ Additionally, indirect GHG Emission reduction will reach 673,934 during the projects' lifecycle. These estimates were determined by the Bank using the following assumptions:³⁹ (i) Urban waste generation: 52,621 ton/day; (ii) Organic waste: 19,996 ton/day; (iii) W2E potential from organics 11,197 ton/day; and (iv) Market potential: 7,357,357 MWh. The project will also decrease the amount of waste that will reach the city's landfill (which will expand its lifespan) and produce around 1,840 MWh/year from a renewable energy source.

For the solar PV plants in La Paz, there will be substantial reduction of air pollutants emitted by dirty and highly carbon intensive power plants. Mitigation is estimated at 39,700 tons of CO₂eq emissions throughout the plants' lifetime. This will reduce a total of 1,294,261 CO₂ eq, including direct and indirect emissions. The component will help Mexico achieve its GEF's GHG mitigation goals at the subnational level, particularly those related to an increase in the use of renewable energy, and reduction in the use of fossil energy resources. The project will also promote the adoption of innovative technologies and management practices for GHG emission reduction in other Mexican cities.

The Bay's clean-up study in Campeche is aligned with GEF's strategic objectives on adaptation which goals are a) strengthen institutional and technical capacities for effective climate change adaptation and b) integrate climate change adaptation into relevant policies, plans and associated processes on the thematic programming activities of: (i) coastal management; (ii) infrastructure in water and sanitation systems; (iii) natural resources; and (iv) climate-resilient urban systems.

In addition, the study in Campeche is harmonized with GEF Adaptation Program's by: (i) increasing awareness of climate change impacts, ecosystems and infrastructure adaptation in the Bay area; (ii) improving technical knowledge base for the identification, prioritization and implementation of green infrastructure, flooding risk reduction, and wastewater adaptation measures in a coastal area.

The success of this Project will promote the mobilization of public and private funding to reduce the vulnerability of people, livelihoods, physical assets and natural systems in Campeche to the adverse effects of climate change.

The communication and capacity building efforts envisioned in the fourth component will increase the potential to scale up the rest of the components at a national level and ensure the institutional, technical and social sustainability of the Project.

6. Innovativeness, sustainability and potential for scaling up.

Xalapa, Campeche, and La Paz are regional hubs located in environmentally important areas for the country. Each of the projects is characterized by the following aspects:

Xalapa

Innovativeness: The biodigester project will become the first operational plant of its kind in Latin America. Both, the technologies associated with methane capture, energy and compost production as well as the institutional

³⁸ From the emissions reductions by energy production and methane capture, it was subtracted 202 of CO₂eq of indirect emissions generated by waste collection vehicles.

³⁹ These assumptions were determined through the development of a study performed by IDB which analyzed Xalapa's current solid waste management system

framework to manage the biodigester, the compost plant and the landfill will bring a new vision of urban waste management.

Sustainability: A financial analysis of Xalapa's Municipality, conducted by IDB for the 2010-2015 period,⁴⁰ had the following results: i) the city has a positive fiscal balance; and ii) the city's has low debt levels.⁴¹ It is estimated that the revenue by energy savings, the sale of Clean Energy Certificates (CEL), and the sale of compost will exceed the operational and maintenance costs of the plant. Thus, this project will be financially sustainable. (For more information see annexes)

Scaling up: The Project comprises communication and capacity building activities to replicate the outcomes of Xalapa's biodigester in other Mexican municipalities. For example, GIZ (The German Agency for International Cooperation) in coordination with the Secretary of Energy (Sener) and Semarnat developed a partnership through the program for Energy from Solid Waste and has provided technical assistance for structuring the Bio-digester project. This program will generate synergy between these projects. In addition, this program will provide valuable information for renewable energy program conducting in coordination with NAFIN (Nacional Financiera) with resources of Clean Technology Fund in terms of how to structure renewable energy projects in municipal level.

La Paz

Innovativeness: The project, will offer a unique example in the use of affordable and manageable renewable generation which has a high potential to increase energy savings for Mexican public buildings while addressing local and environmental problems.

Sustainability: The State of Baja California Sur marked low debt levels and an improving credit rating after a debt restructuring in 2015.⁴² Regarding the PV systems, a financial analysis was performed by the IDB for each one of the self-supply PV solar energy systems to be installed to the public buildings. This study shows positive Interest Return Rate (IRR) values of between 4.8% and 13.1% (aggregated IRR of 7.7%) and positive Net Present Value (NPV) with a payback time of 13 years when all projects are grouped into a single intervention. The savings to the public budget will amount to US\$190,000 per year on average during the lifetime of the project.⁴³

Scaling up: The project has the support of the municipal and State governments, which leads to a high commitment and national visibility. A review paper will be produced with this experience in order to support its scaling up and replicability, furthermore, the SEP program for PV installation in public schools will enable a possible alliance with the project to scale-up the experience.

Campeche

Innovativeness: The project will develop the first integrated approach for the sanitation of the Bay of Campeche (addressing issues such as water quality, wastewater, storm water management and sensitive habitat restoration in a climate change context). The Bay of Campeche is the second largest in Mexico, and the country does not have any successful examples of integrated long-term planning tools that tackle climate change adaptation measures.

Sustainability: This study will identify the cost of sanitizing the Bay and the future savings and benefits that will result due to its clean up. The project will also identify innovative sources of financing and prepare the documents

⁴⁰ "Desarrollo de Diseño Conceptual del Sistema de Tratamiento de Residuos Sólidos municipales con Generación Eléctrica Asociada para la Ciudad de Xalapa, México, Incluyendo el Diseño del Modelo de Gestión, Evaluación Socioeconómica y Financiera, Factibilidad Legal y Análisis Ambiental" INE/WSA Water and Sanitation Division, IDB. August 2016.

⁴¹ <https://www.fitchratings.com/site/pr/995267>

⁴² http://www.fitchratings.mx/ArchivosHTML/Com_15753.pdf.

⁴³ "Estudio de viabilidad técnica y económica de plantas fotovoltaicas. Proyectos situados en Baja California Sur, México" Energy Division, IDB, August 2016

needed to access those funds. Involvement of the Mexican Ministry of Finance and Banobras in the project and the potential participation of the latter in the future financing enhance the long-term sustainability of the project.

Scaling up: Given Campeche's environmental diversity and historic and cultural significance within Mexico, the development of the detailed study and related capacity building and dissemination activities, will enhance its replicability potential in other municipalities.

For all the components, involvement in ESC program and the use of the SC IAP cities Global Platform will increase the replication potential of these projects and outcomes in other cities in Mexico and LAC.

A.2. Child Project? If this is a child project under a program, describe how the components contribute to the overall program impact?

The Sustainable Cities Integrated Approach, which is the umbrella program of this Child Project, has been designed to strengthen local action through partnerships among national, regional and local stakeholders which seek to build sustainable cities models. The three cities that are part of this Child Project have already embraced sustainable city plans with a long term vision developed through the Banks ESC's program. The project's 4 components, which reflect the priorities of ESC Action Plans in Xalapa, Campeche and La Paz, were designed through strong partnerships among local, state and federal authorities.

The contribution of this Child Project to the Sustainable Cities IAP's expected results will be the recognition of the projects in La Paz and Xalapa as leading examples of sustainability in the urban waste and energy sectors. They will have clear and quantified GHG mitigation results integrated into Mexico's sustainable development strategies.

The outcomes of the components in La Paz will contribute to transit towards a more clean and low carbon energy matrix locally which in turn will bring important benefits in air quality and health. In Xalapa, the project will also demonstrate measurable local impacts through the reduction of solid waste for final disposal and the use of compost.

In Campeche, the adoption of an integrated sustainable plan for the sanitation of the city's Bay area will be an example to other cities of comprehensive planning and climate adaptation mainstreaming into urban development plans. Increased capacities on renewable energy sources and urban planning to reduce climate change emissions and impacts will contribute to the Sustainable Cities IAP's expected results focused on fostering the expertise of government officials to address global environmental concerns in an integrated manner.

SC IAP	Child project in three Mexican cities
Sustainable planning	<p>Component 1. The institutional and financial model to produce gas and compost from waste will impact urban waste management in Xalapa. This will facilitate long-term sustainable planning.</p> <p>Component 2. The financial and management model to install, operate and maintain solar plants in La Paz will be recognized as a successful project and will influence planning processes on climate mitigation, air quality and energy in La Paz.</p> <p>Component 3. The study for the sanitation of the Bay of Campeche and related investment in wastewater, flooding and green infrastructure will be an example of climate adaptation mainstreaming and sustainable urban planning.</p>
Stakeholder engagement	Components 1, 2, 3 and 4. As it was the case during ESC's methodology implementation in each city,

	<p>Federal, State and Municipal levels will be engaged throughout the different stages of the project.</p> <p>Component 4. Will ensure the participation of the private and social sectors to enable policy environment for long- term planning on energy, urban waste, climate change mitigation, and sanitation of coastal urban areas.</p>
Knowledge management and capacity building	<p>Component 3. The Spatial GIS services will identify urban green areas and surface imperviousness, the extension and type of urban settlements, wetland degradation and coastal erosion. This will increase knowledge capacities and bring additional information to restore land and water ecosystems in Campeche and other coastal cities.</p> <p>Component 4. The guidelines, workshops and other dissemination tools will encourage the creation, sharing, enhancement and dissemination of knowledge among stakeholders in Xalapa, La Paz, Campeche and other cities. Knowledge management and capacity building activities will contribute to create a shared vision of urban sustainability pertaining to coastal management; water and sanitation systems; climate-resilient urban systems, urban waste, climate mitigation and renewable energy.</p>
Financing sustainability	<p>Components 1, 2 and 3. Will establish financial and management models to ensure the financial sustainability and replication of these projects.</p>

A.3. *Stakeholders.*

Do they include civil society organizations (yes x /no ☐)? and indigenous peoples (yes ☐ /no x)? ⁴⁴

National authorities:

CONAGUA: Administrative, normative, technical consultative and decentralized agency of the Secretary of the Environment and Natural Resources (SEMARNAT). Its main tasks are managing national waters, managing and controlling the hydrologic system, and promote social development. For this operation, Conagua authorities will work closely with BANOBRAS, IDB and local and state authorities in the development of the study for the Bay of Campeche. Their participation in the project will enhance the replicability of the study in other Mexican cities.

Secretary of Finance and Public Credit (SHCP): This institution is responsible for regulating and supervising the federal government economic policies for the financial, fiscal, expenditure, income, and public debt sectors. In addition, the institution is in charge of conducting statistical reviews and background studies in order to improve the quality of Mexico's economy. SHCP has been an active supporter of ESCI's activities in Mexico and they have committed to provide assistance for the replication of the projects financed by this operation on other intermediate Mexican cities.

National Bank of Public Works and Services (BANOBRAS): Mexican Development Bank in charge of promoting and financing infrastructure projects and public services, through sub-national government lending and project finance. BANOBRAS has partnered with IDB in the development of ESCI's Action Plan in

⁴⁴ As per the GEF-6 Corporate Results Framework in the GEF Programming Directions and GEF-6 Gender Core Indicators in the Gender Equality Action Plan, provide information on these specific indicators on stakeholders (including civil society organization and indigenous peoples) and gender.

Campeche, and has provided financial and technical assistance for the execution of the Action Plans in the three cities. BANOBRAS is the executing agency for this project. Their participation in the project will enhance the replicability of the projects in other Mexican cities y providing financial support.

Secretary of Agricultural, Territorial and Urban Development (SEDATU): This institution is in charge of regulating land ownership, promoting planned use of the territory and enhancing urban development and construction of urban and regional infrastructure. The institution will provide technical support to BANOBRAS, IDB and state and local authorities to facilitate the development of this operation's projects

Secretary of Energy (SENER): This institution is in charge of regulation and production of national energy and has the responsibility for ensuring a continuous supply of energy services in an energy sufficient, environmentally friendly manner. SENER will provide technical and financial support in the development of the Xalapa and La Paz projects. Their participation in the project will enhance the replicability of the solar and biodigester projects in other Mexican cities. This will be done through a series of programs already put in place at this Secretary, such as the Program to Generate Electricity from Solid Waste (EnRes).

Secretary of Environment and Natural Resources (SEMARNAT): This institution is responsible for the protection, restoration and conservation of the country's ecosystems and natural resources, as well as pollution control, climate change prevention and water resources management. Also it is in charge of construction and rehabilitation of potable water, sewage and sanitation systems in rural and urban areas, development of waste management strategies, and the implementation of air quality management programs. This institution will provide support both in the development of Xalapa's project and will collaborate in the GHG emission reduction target set in this operation. This will be done through a series of programs already put in place at this Secretary, such as the Program to Generate Electricity from Solid Waste (EnRes).

Local authorities:

Municipalities of Xalapa, La Paz, y Campeche: These municipalities have undergone the first phase of Inter-American Development Bank (IDB) ESC program. The Action Plans for each city detected prioritized area of water and wastewater, efficient urban transport, management of solid waste, control of GHG emissions, and vulnerability to climate change. The municipalities of these cities have been involved in the projects preparation meetings and have provided and will continue to provide support to the activities related to this operation.

Xalapa

University of Veracruz: This University will provide data and scientific resources during the design of the biodigester as well as during the construction process. This academic institution is one of the most respected regional universities in Mexico; they have already assisted IDB and local authorities in the development of strategies to improve Xalapa's environmental, urban and fiscal sustainability prospects. They have played an important role in the definition of the biodigester project and will continue to collaborate during the following phases which will be financed by this operation.

GIZ: The German Agency for International Cooperation has provided technical assistance for the development of a feasibility study for the biodigester. With its own resources, this Agency hired an international expert to help IDB's experts in the definitions of the technical aspects of the project. Their international experience financing similar projects as well as their strategic alliance with SENER and SEMARNAT will continue to be important for the project in the future.

Campeche

Autonomous University of Campeche (UAC): The Ecology, fisheries and Oceanography Institute (EPOMEX) of this university will support the implementation of the project. This institution has done substantial work in the definition and identification of the challenges that the Bay of Campeche faces. UAC is currently working with the University of Cantabria in the development of the feasibility study for the Clean-Up of the Bay of Campeche.

La Paz

University of Baja California (UBC): This local university has developed a series of studies regarding solar energy in La Paz. Thus, this institution is considered a national reference in terms of PV generation. Experts from these institutions actively participated during the design of ESCI's Action Plan for the city and will continue doing so during the development of the project that will be financed with GEF resources.

Como Vamos La Paz (CVLP): This monitoring system was created by the civil society as a response to the development of ESCI's Action Plan. Thus, IDB provided technical assistance for its creation and also initial financing. The system links ESCI's projects with La Paz's civil society. Its work has been vital in the continuation of the Initiative's recommendation after the local and state government elections, when new authorities that had limited knowledge of the Action Plan took office. This has given the organization national recognition and it has become an example for other monitoring systems throughout Mexico. CVLP will continue providing support throughout the development of the PV project.

International Community Foundation (ICF): This is a US nonprofit organization which partnered with IDB to finance the implementation of ESCI's methodology in La Paz. Its work along the Bank and CVLP has been vital in securing financing from international and national sources for the development of projects that have been prioritized by ESCI's. ICF will continue providing assistance and support throughout the implementation of the PV plants.

A.4. Gender Equality and Women's Empowerment.

- 1) Did the project conduct a gender analysis during project preparation (yes ☒/ No)
 2) Did the project incorporate a gender responsive project results framework, including sex-disaggregated indicators (yes / ☒ No X); and 3) What is the share of women and men direct beneficiaries? Not applicable

After a thorough evaluation of potential gender issues of all components, no Gender Equality and Women's Empowerment issues were identified for this project.

A.5 Risk.

Risk	Level	Mitigation Strategy
Lack of coordination between local, state and federal authorities during the implementation phase.	Medium	IDB and Banobras will closely monitor the interinstitutional coordination and project implementation in order to advise when lack of communication is detected; there will be quarterly meetings with all the stakeholders to ensure compliance with the individual technical and institutional commitments of each participating agency
Inadequate implementation of the social and environmental management plan	Medium	Banobras and IDB will do a close follow-up to the implementation
Natural disasters and other contingencies	Medium	Technical studies will take into account the risk of exposure to natural disasters that will lead to adequate mitigation measures for natural disaster risk
Decrease of the income projected for the biodigester due to inability to sell compost and CELs	Medium	A market analysis will be undertaken to ensure the benefits.
Delay or unprecise information regarding cash flows.	Medium	The program incorporates training for both the executing agency and local governments to ensure that they have the required capabilities

Risk	Level	Mitigation Strategy
Delayed acquisition processes	Medium	Continuous training to the acquisition officials in each beneficiary city and Banobras
Unreliable data for monitoring results.	Medium	To ensure an effective compliance with the Bank and GEF requirements, a baseline and a monitoring frequency was established for each indicator in the results matrix and in the monitoring and evaluating agreement, additionally in the supervising missions the quality of the information will be assessed and reviews by external auditors with specific terms of reference will be conducted
Lack of raw material for energy production in Xalapa and La Paz.	Medium	For Xalapa a detailed business model will be conducted to ensure the availability of the required amount of urban solid waste, and for La Paz an energy production assessment will be conducted in order to mitigate this risk
Unsatisfactory performance of the solar panels.	Medium	The procurement process will include technical specifications for the required equipment as well as guarantee form the provider.
Inadequate performance of the biodigester	Medium	The procurement process will include technical specifications for the required equipment as well as guarantee form the provider.
Operation of the plants in Xalapa and La Paz after the project completion	Low	The Bank, in coordination with the municipalities, have promoted the participation of the private sector to operate the plants that will be installed in Xalapa and La Paz during their initial phase. Through a PPP contract, the private sector will be in charge of all the aspects pertaining to the management and maintenance of both plants through a Build-Operate Transfer (BOT) scheme or a concession.

A.6. Institutional Arrangements and Coordination.

Banobras will be the executing agency for this operation and the procurement activities will be performed by the municipalities under Banobras and IDB supervision. The execution will be preceded by the approval of the Operational Manual (OM) for the project. Banobras will set a trust fund for the financial management of the resources; the technical unit in charge of managing the trust fund will be the Administrative Department within Banobras. This department has coordinated the implementation of similar projects and has the installed knowledge and technical capacity required.

Banobras will create a Program Coordination Unit within its organizational structure and will allocate all necessary human and technical resources needed for project execution.⁴⁵ In addition, the project will use Banobras's systems for integrated procurement, financial administration and reporting, as well as project management and monitoring systems, while ensuring their compatibility with Bank's norms, procedures and control and reporting systems. It is a contractual condition to the first disbursement of the IDB/GEF resources the evidence of the establishment of the Program Coordination Unit, within the organizational structure of Banobras, staffed with the technical team that will coordinate the program's execution.

Banobras will designate a Project Leader and will allocate the required additional technical and administrative human resources, based on a pro-rated cost reimbursement structure that is included in the budget of the project. Banobras will ensure presence of its technical personnel in the geographic areas of the project, in coordination with the technical counterparts assigned to the project by the state and federal agencies, in accordance with the OM.

Additional Information not well elaborated at PIF Stage:

A.7 Benefits.

⁴⁵ This Unit will also serve as Banobras counterpart for the project.

Cost-Benefit Analyses were performed on component 1 and component 2.

The benefits of component 1 are: i) Operational and maintenance cost reduction due to that project generate less urban solid waste; ii) GHG emission will be reduced; iii) Compost generated from solid waste will be utilized for energy production. The evaluation of the Component 1 shows that the biodigester is economically viable; the Economic Rate of Return is 26.6% and using a discount rate of 12%, an Economic Net Present Value is US\$3,490,182 million. The analysis was complemented by a sensitivity assessment of the main assumptions and of the investment costs. This study demonstrates that the project is supported by the benefit of positive financial return. In terms of social benefit, the implementation of biodigester plant will reduce 56,400 tons of CO₂e, which is an equivalent of 5,127 tons of CO₂eq annually. Thus, this project is viable and ensures the reduction of greenhouse gas emission.

The evaluation of component 2 consists of the financial cost of the model and social benefit. The economic analysis considered all solar system as a single project, quantifying additional benefits to the society, resulting in an IRR of 12.6% and an economic NPV of US\$49,135 at a 12% discount rate. Therefore, this intervention seems justified from an economic perspective. The mentioned ERR is a lower bound value since the non-quantified project benefits are likely to exceed the non-quantified project costs and many of the assumptions such as increase of fossil fuel prices in the long term remain conservative and other benefits such as savings in electricity subsidies were not taken into account in the analysis.

Considering these socioeconomic benefits, the use of renewable resources supported by component 1 and 2 improves the energy efficiency and contributes to mitigate and manage social and environmental impact at the national and local levels.

A.8 Knowledge Management.

IDB will play a lead role in promoting the dissemination of knowledge and the experiences that these cities will obtain, through Global Platform for Sustainable Cities. Especially, IDB will also contribute to disseminate the experiences and providing their tools and resources to other cities through conferences, training programs, and social media. This will increase the replicability prospects in other cities of the network. Moreover, the experiences of these cities will be introduced to our partner cities through dissemination events and social media platforms, sharing the lessons learned on designing, financing and monitoring interventions that promote urban sustainability.

The IDB will also share the results of the project through its blogs, urban dashboard, web pages and other means of communication, acknowledging the importance and significance of the GEF in the leverage of the ESC program. Also the citizens monitoring systems developed under the ESC program will support the social engagement for the dissemination of knowledge.

Regarding the GPSC, this project acknowledges the wide range of on-going initiatives and will support the platform for knowledge sharing. The project will compile the lessons learned from this child project, as well as indicators that will add valuable contribution to the platform as said before.

The IDB can also provide valuable information to the GPSC through the information it has already collected from the cities and that is available through the urban dashboard of the Bank.

The child project will contribute to the thematic areas proposed by the GPSC. One of the thematic areas is climate change, specifically GHG mitigation strategy, in this regard; the child project will support the platform with two cases studies that will be developed to recognize the preparation and implementation processes of the projects described under components 1 and 2. The results and lesson learned will be shared with the platform in order to contribute to replicate the strategies in similar contexts. Component 3 and 4 will support the thematic area of integrated urban planning guidance and tools; component 3 by sharing an important sustainable management tool for the integrated sanitation of the largest bay in Mexico, and component 4 by workshops and events to disseminate the results of the child project and to ensure that all the members of the GPSC have access to the information.

During the implementation phase, the results of the monitoring reports process will also be shared with the GPSC.

A results matrix has been developed for the project in compliance with the IDB's policies, and the intermediate and final results will be shared with the platform. The data from the results will be collected through the implementation entities. The IDB has also developed a Monitoring and Evaluation Program (M&E) following the IDB operation guidelines and procedures. The M&E program establishes the audits that will be carried out to guarantee the projects correct implementation and data collection.

The GPSC has two main ways of collecting data and indicators: the tracking tool and the results matrix. The tracking tool is provided for this project and will be updated with the GEF requirements. On the other hand, the project results matrix is aligned with the GPSC results matrix, specifically in the outputs described below and its related indicators:

1.3 Latest technical knowledge, tools and methods on integrated urban planning are synthesized and made available to decision makers

1.4 Participating cities' urban sustainability status is assessed, and action plans are developed

1.5 Knowledge guidance on cross-cutting themes, including transit oriented development, climate change, resilience, urban flooding, etc. are provided to cities, including relevant training

1.6 Best practices, lessons of regional, national, and subnational policies, and strategies for urban sustainability and integrated planning are synthesized and made available to decision makers

3.1. Annual GPSC meetings with the participation by cities (including non-IAP cities), implementing agencies and partner organizations, experts and policy makers

3.3. An interactive website serves as an information and knowledge hub to connect participants and relevant stakeholders

B. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:

B.1 Consistency with National Priorities.

The projects are aligned with the National Strategy on Climate Change and the Intended Nationally Determined Contribution (INDC) submitted to the UNFCCC in 2015 based on the Paris Agreement. The project contributes to this Agreement by: i) taking GHG mitigation actions in accordance with long-term low greenhouse gas emission strategies; ii) introducing innovative clean energy technologies to reduce GHG emissions; iii) sharing good practices and lesson learned about adaptation actions to other cities and regions to ensure the sustainability of the project and; iv) enhancing public and private sector participation in mitigation efforts. This project is aligned with the SDGs goals. particularly to Goal 6,7, and 11 by i) promoting an improvement of water and sanitation management ii) adopting energy efficient technologies for reducing GHG emissions; and iii) reducing the adverse environmental impact of cities.

Components 1, 2 and 4 are aligned with national goals set forth in the Special Program for the Development of Renewable Energy 2014-2018 to increase the installed capacity and power production from renewable sources, increment public and private investment and foster technological development in these energy sources. It is worth mentioning that the Bank is currently coordinating with the Secretary of Energy (Sener), Semarnat and the German Agency for International Cooperation (GIZ) to enhance the technical, institutional and financial structuring of the Bio-digester project and to develop mechanisms for its eventual replication in other cities through the Partnership among these three institutions which aims to promote energy generation through the use of solid waste sources, while also improving the lifespan and management of landfills .

The Project's activities in component 3 as well capacity building and communication actions established in the fourth component correspond to the National Water Program (PNH) 2014-2018 goals to establish an integrated

and sustainable approach to water management and strengthen water security in the face of droughts and floods; and (iii) increase water provision and access to water, drainage and sanitation services.

Objectives and actions of the forth components are aligned with national policies and the institutional framework in the water, energy and urban waste sectors as well as with international commitments to reduce Mexico's carbon footprint and increase its adaptation capacities to climate change.

C. DESCRIBE THE BUDGETED M&E PLAN:

Project monitoring and evaluation will be conducted in accordance with IDB and GEF procedures, at three levels: (i) project outcomes and impacts as stated in the projects' Results Framework; (ii) delivery of project outputs in accordance with the Annual Operation Plan (AOP); and (iii) monitoring of project implementation and performance through two project evaluations (see Monitoring and Evaluation Arrangements).


The project's Results Framework will be the main monitoring instrument. (Annex II) The project team will supervise the achievement of the outcomes and results associated to BID/GEF funding and will incorporate them in the Project Monitoring Report (PMR); the project team will also incorporate all project outcomes and results associated to the financing into the Project Implementation Reports (PIR), to be reported periodically to GEF. The AOP will be used to monitor progress in physical implementation.

M&E	Year 1	Year 2	Year 3	Year 4	Year 5	Total
2. Audit	15,000	15,000	15,000	15,000	15,000	75,000
3. Monitoring	12,000	12,000	12,000	12,000	12,000	60,000
4. Mid - term Evaluation			30,000			30,000
5. Final Evaluation					50,000	50,000
Totals	27,000	27,000	57,000	27,000	77,000	215,000

PART III: CERTIFICATION BY GEF PARTNER AGENCY(IES)

A. GEF Agency(ies) certification

This request has been prepared in accordance with GEF policies and procedures and meets the GEF criteria for CEO endorsement under GEF-6.

Agency Coordinator, Agency Name	Signature	Date (MM/dd/yyyy)	Project Contact Person	Telephone	Email Address
Juan Pablo Bonilla IDB-GEF Coordinator		02/23/2017	Maria Eugenia de la Peña	+1 202 623 2117	mdelapena@ iadb.org

ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

Results Matrix										
Project Name	GEF Program for the implementation of prioritized ESC projects in three Mexican cities									
Project Objective	The objective is to enhance the mitigation and adaptation capacities in three Mexican cities (Xalapa, La Paz and Campeche) through the preparation and implementation of ESC prioritized projects for clean energy, waste management, and sanitation sectors. Furthermore, it will also establish guidelines to incentivize the replication of the projects in other Mexican cities. The specific objectives of the project are to reduce greenhouse emissions by improving the solid waste management system in Xalapa and increasing the production of low carbon energy in La Paz; additionally, in Campeche, information will be generated so the relevant stakeholders can decide whether or not to construct sanitation infrastructure.									
Outcomes										
Outcome 1: Improve and increase the solid waste management and the generation of low-carbon energy to reduce greenhouse emissions in Xalapa										
Indicator	Unit of Measure	Baseline	Baseline Year	Year 1	Year 2	Year 3	Year 4	Year 5	End of Project	Comments/ Means of Verification
Tons of greenhouse gas emissions avoided associated to energy production by the biodigester plant in Xalapa ⁴⁶	Tons of CO2eq/y	0	2016					1,792	1,792*	*Annual Average The information will be provided by Banobras based on the reports delivered by the operator
Tons of municipal solid waste disposed at the sanitary landfill of Xalapa	ton/day	490	2016					430	430	Operation log of incoming and outgoing solid waste conducted by operator and included in the Final Evaluation
Power production from low-carbon energy sources in Xalapa	MWh/year	0	2016					3,962	3,962	Power: 452 KW. Operation log tracked by the meter and included in the Final Evaluation
Tons of compost produced by the biodigester in Xalapa	ton/day	0	2016					26	26	Operation log of incoming and outgoing compost conducted by the operator, and included in the Final Evaluation
Outcome 2: Increase the production of low carbon energy to reduce greenhouse gas emissions in La Paz										
Indicator	Unit of Measure	Baseline	Baseline Year	Year 1	Year 2	Year 3	Year 4	Year 5	End of Project	Comments/ Means of Verification
Tons of greenhouse gas emissions avoided through	Tons of CO2eq/y	0	2016		1,692	1,684 ⁴⁷	TBC ⁴⁸	TBC	1,589*	*Annual Average during project lifetime taking into account public buildings from first phase.

⁴⁶ Emission reductions associated to energy production by waste gas will be positive since the first year of the plants operation. In contrast, emissions reductions associated to methane collection will be positive until the 3rd year when the accumulation of organic waste diverted from the landfill will offset fugitive and projects emission.

⁴⁷ Emission reduction figures slightly decrease with time as electricity production from the PV plants also decreases due to normal degradation of the solar cells.

⁴⁸ Emission reductions for the second phase of the project need to be calculated (TBC) corresponding to a second group of buildings still to be selected for the Phase II of the project. These would be additional to the existing emission reductions from Phase I buildings.

solar panels in La Paz											Semester Report of overall production
Power production from low-carbon energy sources in La Paz	MWh/y	0	2016		1,959	1,949	TBC	TBC	1,840*		*Annual Average during project lifetime taking into account public buildings from first phase. Operational logs from meter readings aggregated over all PV plants
Outcome 3: The municipality and stakeholders have the technical, environmental and economic information needed to make a decision on whether or not make the investment in Campeche											
Technical, environmental and economic studies agreed and approved by the Municipality and stakeholders to build the Campeche infrastructure project ⁴⁹ .	# of times	0	2016						1	1	Report of the municipality approving the project
Outcome 4: Improve and promote solid waste management –control and recovery of materials- in order to encourage the generation of low-carbon energy and the reduction of GHG emissions											
Number of times that the pilot projects have served as a reference for other projects in the country	# of times	0	2016						2	2	The information will be provided by Banobras and included in the Final Evaluation
Outputs											
Component 1: Biodigester for Xalapa's solid waste management system operating											
Output	Unit of Measure	Associated Outcomes	Cost (US\$)	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	End of Project	Comments/ Means of Verification
Biodigester for Xalapa's solid waste management system operating	Biodigester	1	7,181,93	0				1		1	
Milestones:											
1. Final design of the biodigester plant in Xalapa finalized	Study	1		0		1				1	Study finalized and submitted by consultant and approved by Team Leader
2. Preliminary works ⁵⁰ executed	works	1		0			1				Provisional Certificate of Acceptance
3. Biodigester and energy production plant in Xalapa built	Plant	1		0				1		1	Provisional Certificate of Acceptance
Component 2: Solar photovoltaic power plants for self-supply in public buildings and schools in La Paz											
kW of generation capacity installed – low carbon sources in La Paz	kW	2	4,500,000	0		1040		1500		1540	DC capacity verified by Independent engineer

⁴⁹ These studies will be inclusive and will be developed under public consultations with relevant actors.

⁵⁰ Preliminary works include site preparation and structural works.

Component 3: Comprehensive program for the sanitation of the Bay of Campeche											
Output	Unit of Measure	Associate d Outcomes	Cost (US\$)	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	End of Project	Comments/ Means of Verification
Detailed-design of the sanitation infrastructure in Campeche completed considering climate change adaptation measures	Study	3	1,000,000	0		1				1	Study finalized and submitted by consultant and approved by Team Leader
Component 4: Institutional strengthening, dissemination and communication											
Biodigester and solar photovoltaic power plants seminars, conference, capacity building and lesson-learned activities conducted	Seminars, conference, activities	1, 2 and 4	30,000	0		1	1	1		3	Final reports with the conclusion/results of the events approved by the Team Leader
Biodigester, solar photovoltaic power plants, and sanitation technical training workshops in Xalapa, La Paz and Campeche conducted	Trainings	1, 2 and 4	50,000	0		1	1	1		3	Final reports with the conclusion/results of the events approved by the Team Leader
Technical guidelines ⁵¹ developed to replicate the biodigester technology	Document	4	50,000	0				1		1	Study finalized and submitted by consultant and approved by Team Leader
Performance assessment study of solar PV technologies in schools developed	Report	4	50,000	0				1		1	Study finalized and submitted by consultant and approved by Team Leader
Review paper with lessons learned from the experience on photovoltaic plants in public schools developed	Paper	4	50,000	0				1		1	Study finalized and submitted by consultant and approved by Team Leader

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

Comments below were provided during the program concept review and are mostly applicable to the SC IAP program level. Therefore, the response for the overall program has been provided below.

STAP Comments	Team responses
1. Collective Impact and Stakeholder Engagement	

⁵¹ Technical guidelines will consist on recommendations to select the most appropriate biodigestion technology and to execute a biodigestion project considering local conditions.

STAP Comments	Team responses
<p>Acknowledging that in approaching complex environmental problems, stakeholder engagement and collective action is critical. The overarching objective of the PFD document speaks to broad inclusiveness in the pursuit of urban development planning and implementation, stressing a "network" approach to help pull the complex web of urban stakeholders onto a path of united vision and effort (see page 9 of PFD).</p> <p>The strength of many GEF initiatives is typically in the technical and institutional components. Often social science components which can enhance performance of GEF interventions are lacking. It was also recognized that the link between local action and global impacts/benefits in this context must be supported with a clear conceptual framework, such that local intent and action is in step with national, regional and international actions. In addition, many governments marginalize informal settlements in their formal decision-making processes. As such, the IAP should attempt to address this challenge as it may undermine success in other areas.</p> <p>One can compare and contrast the traditional isolated impact approach with the collective impact approach (Kania, J.; Kramer, M. 2011. "Collective Impact". Stanford Social Innovation Review. See also http://www.fsg.org/OurApproach/WhatIsCollectiveImpact.aspx)</p> <p>Isolated Impacts:- Funders select individual grantees that offer the most promising solutions Collective Impacts:- Funders and implementers understand that social problems, and their solutions, arise from the interaction of many organizations within a larger system</p> <p>Isolated Impacts:- Non-profits work separately and compete to produce the greatest independent impact Collective Impact:- Progress depends on working toward the same goal and measuring the same things</p> <p>Isolated Impacts:- Evaluation attempts to isolate a particular organization's impact Collective Impacts:- Large scale impact depends on increasing cross-sector alignment and learning among many organizations</p> <p>Isolated Impacts:- Large scale change is assumed to depend on scaling a single organization Collective Impacts:- Corporate and government sectors are essential partners</p> <p>Isolated Impacts:- Corporate and government sectors are often disconnected from the efforts of foundations and nonprofits Collective Impacts:- Organizations actively coordinate their action and shared lessons learned.</p> <p>Over time, the GEF has moved towards the collective approach, though it could be made more comprehensive and better embedded in GEF operations. Collective impacts provide a significant shift away from the traditional paradigm of "isolated impact," because the underlying premise of collective impact is that no single organization can create large-scale, lasting social change alone. This has been transposed to tackling environmental problems</p>	<p>The GPSC acknowledges the important role that stakeholder engagement plays in urban change and has been designed in such a way to ensure that all relevant stakeholders will be involved in the GPSC's design and implementation process. The Program-Level Results Framework measures stakeholder engagement in the design and implementation of IAP child projects (Indicator 3: Number of cities with meaningful engagement of multiple stakeholders in planning and implementation of the projects supported by the IAP).</p> <p>To ensure that the GPSC achieves a lasting, collective impact, the GPSC will coordinate and collaborate with the relevant entities working in the larger web of urban sustainability. Working within this larger web, the GPSC will actively coordinate its actions to complement and build off of current work, actively seeking to communicate and align initiatives—as demonstrated by the Joint Deliverables section of the PCN. The GPSC, the implementing agencies, and the participating cities will deliver a set of joint activities at the city-level, focusing on geospatial data/tools, indicators, urban planning, and urban finance. To achieve this, the GPSC will have to actively partner with the implementing agencies, international organizations and networks, local governments, civil societies, and the private sector.</p> <p>The design of the GPSC endeavors to encompass the right conditions for a successful collective impact:</p> <ol style="list-style-type: none"> 1. Common Agenda/Framework: The objectives of the GPSC are to (i) provide a platform for knowledge sharing and learning on an integrated approach to urban planning and management, (ii) create a space for networking and learning among cities and relevant organizations on issues related

STAP Comments	Team responses
<p>as well, since the social issues actually heavily influence success in tackling environmental problems at scale even where there are technological solutions available. Typically, there is no "silver bullet" solution to systemic problems, and these problems cannot be solved by simply scaling or replicating one organization or program.</p> <p>Collective impact is best employed for problems that are complex and systemic rather than technical in nature. Collective impact initiatives are currently being employed to address a wide variety of issues around the world, including education, healthcare, homelessness, the environment, and community development. Many of these initiatives are already showing concrete results, reinforcing the promise of collective impact in solving complex social problems.</p> <p>This gradual change in thinking has been well researched, culminating in 2011 with the publishing of a critical article by Kania et. al (2011), which, based on evidence of success and failure in tackling complex and systemic problems, was able to devolve five conditions of collective impact success.</p> <p>Conditions of Collective Impact Success</p> <p>Collective impact is more rigorous and specific than collaboration among organizations. There are five conditions that, together, lead to meaningful results from collective impact:</p> <ol style="list-style-type: none"> 1. Common Agenda: All participants share a vision for change that includes a common understanding of the problem and a joint approach to solving the problem through agreed-upon actions. 2. Shared Measurement: All participating organizations agree on the ways success will be measured and reported, with a short list of common indicators identified and used for learning and improvement. 3. Mutually Reinforcing Activities: A diverse set of stakeholders, typically across sectors, coordinate a set of differentiated activities through a mutually reinforcing plan of action. 4. Continuous Communication: All players engage in frequent and structured open communication to build trust, assure mutual objectives, and create common motivation. 5. Backbone Support: An independent, funded staff dedicated to the initiative provides ongoing support by guiding the initiative's vision and strategy, supporting aligned activities, establishing shared measurement practices, building public will, advancing policy, and mobilizing resources <p>The STAP has consulted with the US Department of Housing and Urban Development on their experience in applying this approach to their urban projects, and they reported significant improvements in accomplishment of project objectives that this model is endorsed by the White House council for Community Solutions. A follow-up study and updated guidance was also published in the Stanford Social Review in 2012 to highlight successes of the performance of initiatives by various municipalities as well as large private sector and CSO entities and foundations (e.g. UN GAIN, Communities That Care, Calgary Homeless Foundation, Bill and Melinda Gates Foundation, AVINA).</p>	<p>to urban sustainable development, and (iii) support the participating cities' work on evidence-based urban planning with the aim of forging an agreed-upon common vision and approach to urban sustainability. The Joint Deliverables at the city-level attempt to co-align actions and approaches. The Joint Deliverables framework will focus on urban indicators and geospatial data/tools, urban planning, and urban finance at the city-level.</p> <ol style="list-style-type: none"> 2. Shared Measurement: All participating cities will share a common urban sustainability framework for selecting indicators and geospatial datasets that are relevant to the city's contexts. In addition to this shared framework, participating cities will be encouraged to adopt core common indicators that reflect progress made towards UN SDG 11. The GEF Tracking Tool and Program-Level Results Framework will be tracked across all 11 child projects at the program-level to measure and report the progress of each child project. 3. Mutually Reinforcing Activities: The PCN of the GPSC indicates the type of coordinated activities that will be offered through collaboration with urban think tanks, networks, and implementing agencies. Cities interested in participating in Joint Deliverables will develop a city-specific work program outlining a set of differentiated activities around the GPSC framework. 4. Continuous Communication: The GPSC holds a monthly conference call with all implementing agencies to

STAP Comments	Team responses
<p>STAP has passed on information to the lead agency regarding experts in this area who could be consulted as the program document is further developed, along with the Global Knowledge Platform and other child projects. Indeed the Capacity Building subsection of the Global Platform document (see page 9 of the concept note) discusses how to overcome the cacophony of local city decisions that can threaten a united development path. Also in terms of the Global Knowledge platform, there can be support provided to all involved to show how they can be involved in the collective impact community (http://www.collectiveimpactforum.org/). This approach does seem to be emerging as the definitive way in which private and public entities (including funding bodies) are tackling complex social and environment problems, including leveraging and sourcing funding. Also in its favor is the fact that there has been high level, peer-reviewed research involved in devolving these principles for stakeholder engagement.</p>	<p>ensure frequent and structured open communication to build trust, assure mutual objectives, and create common motivation. In addition, GPSC will conduct active and inclusive city-level consultations with the implementing agencies to define a relevant city-level work program.</p> <p>5. Backbone Support: The GPSC will provide ongoing support by guiding the initiative's vision and strategy, supporting aligned activities, establishing shared measurement practices, building public will, advancing policy, and mobilizing resources.</p>
<h2>2. Results Framework</h2>	
<p>Looking at the PFD document, to measure a city's "increased scope and depth of integrated urban sustainability planning management policies" will be challenging against a baseline, as will the other proposed metrics. Therefore, the rating system alluded to in Component 1 will be a critical part of the M&E framework and methodology. Similarly, for Component 2 the proposed core performance framework is difficult to understand without putting the concept into practice. A few details are provided in the M&E section on page 24 but there remain many uncertainties as to how this will be achieved in practice given the wide variations between cities as is evident from the section outlining the Child projects.</p> <p>On the issue of process indicators, one might be included to measure the extent of stakeholder engagement, as it is so critical to the IAP success. The aim of the IAP pilot to "ensure broad engagement with stakeholders across a city" is commendable, as is having a process-focused indicator to measure change over the life of the IAP program. Indeed the 5 conditions of success of the Collective impact model could be used as a ratings system based on increasingly comprehensive permutations of these criteria, with a 1 rating meaning perhaps only 1 condition is being met, and 5 meaning all have been met. This is also an important aspect of learning from, and ultimately capitalizing on, the IAP experience to determine best practices in stakeholder engagement, and other processes that may be identified as critical, foundational actions for Cities integrated projects.</p> <p>STAP does not question the need for selected Cities to have some latitude in selecting indicators for their locally specific work. However, there should be an assessment process or preferably a common conceptual framework to ensure that the indicators selected are appropriate to measure the areas of performance critical to the specific interventions, relevant to the overall IAP knowledge needs, benchmarking, and comparability. Indeed the PFD and Global Knowledge Platform documents both cite a medium level risk of lack of alignment between child projects and overall program goals. <u>A</u></p>	<p>The GPSC aims to support cities in developing or adopting an evidence-based, integrated approach toward resilient and sustainable cities. As such, the GPSC will lead the development of a comprehensive framework that supports cities in choosing among a suite of locally-specific indicators based on common criteria. As part of the Joint Deliverables, cities wishing to enhance their capacity for measuring urban sustainability will receive guidance on selecting and implementing a set of locally relevant indicators. This work will be part of the GPSC's work towards enhancing a city's capacity for an evidence-based planning approach that is not tied to the duration of the program.</p> <p>Separate from the city-level work on indicators, the GPSC, as a child project of the SC IAP, has developed a results framework to evaluate its progress as a knowledge platform during the duration of the program.</p> <p>At the SC IAP program-level are two results frameworks that attempt to assess the results of all 11 child projects + GPSC: the GEF Tracking Tool and the Program-Level Results Framework.</p>

STAP Comments	Team responses
<p><u>comprehensive, suite of locally specific indicators might be achieved through use of a common conceptual framework such that all projects would use similar criteria in determining if the suite of indicators selected covers all the critical areas to be monitored.</u> STAP has developing a similar process for socio-ecological systems, and application of it under the Food Security IAP is already underway. This approach could also be used in the Cities IAP as the program develops.</p> <p>STAP welcomes the opportunity for research on other urban sustainability indicators, and hopes that work for instance on urban metabolism indicators can be included going forward. In addition, in order to contribute to the GEF 2020 IAP strategic priority as relates to resilience and adaptation, open source indices for resilience such as the Notre Dame Global Adaptation Index (ND-GAIN) might be consulted as there exists a clear methodology that can assist with indicator selection, data sources, and rationale for indicator selection.</p>	
3. Knowledge Management	
<p>Knowledge Management is a key part of the IAP if the ambition is to widely disseminate information from lessons learned to other cities. STAP welcomes the Global Knowledge Platform as a key component of this effort. STAP looks forward to engaging with this component of the IAP going forward.</p> <p>The PFD makes reference to the importance of comprehensive, evidence-based planning, and states that the IAP is "designed to function as proof of concept". The Global Knowledge Platform, however, emphasizes a construct that speaks to swapping of information between Cities, but reporting nothing back to the GEF and its donors to indicate whether investment was impactful or not. The difference between information gathering and knowledge generation is not clearly delimited, and there is no indication of any plans to develop overarching knowledge questions into a centralized Knowledge Management Strategy for the IAP and then the GEF. (For example: What are the overarching knowledge goals of the IAP? In what ways did the IAP contribute to the GEF 2020 strategic vision? Is the sum of the outputs of the child projects likely to contribute to overall outcomes and ultimately the overall objective of the IAP? What are the best conditions for successful investment?). Developing a Knowledge Management strategy will help inform the Results Framework such that indicators utilized will need to be as objective as possible, and quantifiable where feasible. Without such an approach resulting in clear information flows back to the GEF partnership, including its donors, there will be no way for any objectively derived conclusions to be made about why an intervention succeeded or failed, nor to capture best practices for replication and scale-up. This is critical to any pilot activity, and the STAP wishes to re-emphasize this point because it was made during the consultations.</p> <p>There should also be consultation between the authors of the upcoming STAP and GEF Sec papers on Knowledge Management in the GEF to help organize this area of the IAP. In addition, consultation with the Knowledge Management mechanisms as proposed in the other IAPs should be encouraged.</p>	<p>The GPSC fully acknowledges the wide range of ongoing initiatives and currently existing knowledge on urban sustainability and does not attempt to duplicate them. In addition to serving as a platform for knowledge sharing, it endeavors to compile lessons learned from the child projects and promote innovation through collaboration and knowledge exchange. Case studies on each city will be created at the end of the program to evaluate whether the knowledge positively affected the urban processes and systems. Given the limited budget and timeline, it is unlikely that the GPSC will be heavily engaged in knowledge creation activities but rather it will prioritize knowledge curation and sharing through its platform.</p>
4. Program Structure	
<ul style="list-style-type: none"> Number of Pilot Cities 	

STAP Comments	Team responses
<ul style="list-style-type: none"> - While STAP typically does not comment upon funding aspects of projects, it can raise questions related to incremental cost reasoning and expected contributions from the baseline. Based on the PFD child project descriptors, as well as Table C of the PFD, it is clear that agencies have wisely targeted cities with ongoing urban sustainability initiatives and investment, and the co-financing arrangements appear robust. However, with each country averaging around \$2M per city from the IAP set-aside, even with the STAR country allocations it is uncertain if the GEF funding spread across 23 cities can trigger the incremental globally beneficial action of improving "the depth, breadth, and quality of local sustainability planning efforts and investment decisions." For example, are resources sufficient to significantly develop resilience to future extreme events including climate change impacts? The increase in number of pilots expected also further reconfirms the need for streamlined stakeholder engagement processes, indicator assessment and knowledge management. • Link to other IAPs - A review of child projects indicates potential opportunities for linkages with other IAPs (e.g., South Africa's Johannesburg project has a clear component for food (in) security). It would be useful to explore these possibilities for engagement in this case, as this could present interesting learning opportunities on urban-periurban-rural interactions. Other examples may exist in the portfolio. 	<p><u>Number of Pilot Cities:</u></p> <ul style="list-style-type: none"> - We agree that the funding is not enough to achieve the desired change and suggest tempering expectations. The funding is simply insufficient to achieve the long-lasting, in-depth change to which the Pilot Program professes to aspire. Taking a more realistic approach given the limited budget can help direct the limited budget to key priorities instead of trying to overcommit. The Joint Deliverables approach attempts to address this by dedicating resources to jointly-agreed upon actions at the city-level. The GPSC will also rely upon existing initiatives to leverage the knowledge and resources of entities currently working on the urban sustainability agenda. <p><u>Link to other IAPs:</u></p> <ul style="list-style-type: none"> - We will recommend to the South Africa child project that synergies with the IAP on Food Security be sought.
5. Miscellaneous Comments	
<ul style="list-style-type: none"> • Table C of PFD - The Table C of the PFD makes it very difficult to assess the precise municipalities to be covered in each country, and therefore to align with the city names laid out in the text of the report. There are also several instances of acronyms used without explanations. • Section E of PFD: "Program's target contributions to GEBs" - The only relevant target shown is the mitigation of 106,669,069 metric tons of GHG emission reductions. There should be some clarification as to how this figure was reached, especially given the various emission factors that differ widely between each city's energy and electricity sources. Direct and indirect emissions are included. Was this estimate made using the old GEF definition for "indirect" which is under review? For cities to be able to track their own GHG emissions will require a standard method offered as detailed guidelines if there is to be any real benefit from benchmarking and having a common baseline. For example, accounting for road/rail/air traffic passing through a city requires a common boundary to be used. STAP realizes that there has been much good work already done on identifying indicators, but questions whether it will be possible to produce a set of practical guidelines in time for practical use by the pilot cities as they begin their programs. • Program Challenges - Under the "Global Coordination and Knowledge-Sharing Platform" section, there are many activities listed. Acknowledging the short time 	<p><u>Table C of PFD:</u></p> <ul style="list-style-type: none"> - We agree that there has been confusion about the precise municipalities to be covered in each country. Currently, we have identified 27 participating cities: Xalapa, La Paz (Mexico), Campeche, Recife, Brasilia, Johannesburg, Abidjan, Vijayawada, Guntur, Bhopal, Jaipur, Mysore, Melaka, Saint-Louis (Senegal), Greater Dakar (Diamniadio Industrial Park), Guiyang, Shenzhen, Ningbo, Nanchang, Beijing, Tianjin, Shijiazhuang, Lima, Asuncion, Hue, Ha Giang, and Vinh Yen. <p><u>Section E of PFD:</u></p> <ul style="list-style-type: none"> - Given that many cities use various GHG emissions methodologies, it was agreed at the first GPSC meeting in March 2016 that though there will not be a standard methodology, participating cities will be required to report their target contributions to GHG emissions according to internationally accepted methods and to disclose their methodology.

STAP Comments	Team responses
<p>line that the agency has had to outline potential activities, there should be attention paid to the planning, timelines and quantification of the human and other resource issues needed for enabling a city/municipality to participate actively and make a useful contribution. It is a very ambitious program, covering 23 pilot cities, and as noted by the authors, continual turnover of local government officials (and of elected representatives) will make capacity building particularly challenging. Further, the 23 pilot cities outlined in the PFD have very different issues to cope with. This will add challenges to the services to be provided using the various joint activities as planned.</p>	<p><u>Program Challenges:</u></p> <p>- We acknowledge that the SC IAP program poses many challenges and have tried to address the details of planning and timelines in our PCN. We are sensitive to resource constraints of cities and are in continued conversation with the implementing agencies to ensure that enough resources are allocated to ensure the successful participation of cities in GPSC activities throughout the duration of the program. The GPSC will focus on shared themes and common challenges of the participating cities in GPSC learning activities and products.</p>

Comments received from GEF Council Members, namely: Canada; France; Germany and USA

Comments	Team responses
6. GPSC v. Existing Initiatives	
<p>The proposal has parallels to the very successful Cities Development Initiative Asia (CDIA, with parallel funding from BMZ and ADB), which supports medium sized Asian municipalities in infrastructure projects development and access to finance (from development banks and private sector). It needs to be ensured that this project can learn from CDIA's experiences and success factors. [Germany]</p> <p>The PFD provides too few details of the activities the program will support and how they will differ from those of other organizations that are developing similar sustainable cities-focused programs. We expect that the PFD will be modified to respond to STAP comments, and look forward to reviewing the child projects for this program prior to GEF CEO Endorsement. [USA]</p>	<p>We acknowledge the importance of learning from existing initiatives and will work closely with Cities Development Initiative Asia as well as other entities working on the urban sustainability agenda to avoid duplication of efforts and to leverage their knowledge and expertise in certain fields. The GPSC is unique among existing initiatives in that it works to operationalize the knowledge shared and learned in the fully-funded projects of the 27 pilot cities. The immediacy in impact is a rare opportunity for urban practitioners to translate the learned knowledge into a better designed and implemented project. In addition, as a knowledge platform, the GPSC is able to help cities navigate the overwhelming amount of initiatives and knowledge on urban sustainability. The GPSC can also serve as a global network for collaborative engagement on the urban agenda. In addition, the GPSC can contribute to the implementation of the SGD goals. The GPSC concept note outlines the types of activities the program will support.</p>

Comments	Team responses
7. Common Framework & Scope	
<p>The project will contribute to promote among participating cities an approach to urban sustainability that is guided by evidence-based, multi-dimensional, and broadly inclusive planning processes that balance economic, social and environmental resource considerations.</p> <p>We globally support this proposal but we would like to underline the following points.</p> <p>Indeed, regarding the aim of the project and its thematic and geographical (11 countries) scope, it seems that :</p> <ul style="list-style-type: none"> - the common methodological framework could be strengthened by systematically conducting vulnerability studies on hydrological, environmental and socio-economic aspects. These studies will notably allow to take into account resilience and adaptation to climate change; - the common framework of knowledge capitalization must be more precise ; - the issues of urban mobility, in particular in Abidjan, might benefit from the application of innovative planning tools based on analysis of Big Data that have already been tested in these contexts. <p>Opinion: Favorable provided the above comments are taken into account in the design phase.</p> <p>[France]</p> <p>While we recognize that multidimensionality is an aspect of the program, it may be useful to limit the variables for each city. This would make the information more comparable, make it easier to assess overall objectives of the program, and facilitate the exchange and dissemination of knowledge.</p> <p>[Canada]</p>	<p>We agree that a common framework is key, given the wide range of thematic and geographic scope of the program. As such, the GPSC proposes an integrated approach based on 4 components: (i) indicators for urban sustainability and geospatial data/tools, (ii) urban planning, (iii) urban finance, (iv) partnerships and engagement. Within this framework, each interested city will develop a roadmap to sustainability.</p> <p>We agree that a systematic assessment of the cities will help given the vast thematic and geographical scope of the program—the GPSC will develop a common assessment framework that may include vulnerability studies. Through these assessments, a more tailored, city-specific action plan will be developed as one of the possible Joint Deliverables. The GPSC will serve as a knowledge repository as well as a collaborative forum where knowledge can be accessed and shared. Case studies of the participating cities will also be developed at the end of the program.</p> <p>We agree with the suggestion of using Big Data in understanding urban mobility issues and look forward to investigating that modality with the Abidjan child project as part of the Joint Deliverables.</p> <p>We agree to limit the variables for each city for ease of implementation and evaluation and will endeavor to keep this in mind.</p>
8. Risks	
<p>The scope of this IAP will make it difficult to sufficiently finance and manage, and it is uncertain that funding and resources spread across 23 cities will result in the desired beneficial outcome for improving local sustainability planning efforts. Please strengthen the proposal to show how these risks will be mitigated. [Canada]</p>	<p>We agree that the funding is not enough to achieve the desired change and scope of the program. Taking a more realistic approach given the limited budget can help direct the limited budget to key priorities instead of trying to overcommit. The Joint Deliverables approach attempts to address this by dedicating resources to jointly-agreed upon actions at the city-level: the GPSC,</p>

Comments	Team responses
	<p>the implementing agencies, and the participating cities will deliver a set of joint activities at the city-level, focusing on geospatial data/tools, indicators, urban planning, and urban finance. More details on this approach can be found in our Concept Note.</p> <p>The GPSC will also rely upon existing initiatives to leverage the knowledge and resources of entities currently working on the urban sustainability agenda.</p> <p>We acknowledge that the SC IAP program poses many challenges and have tried to address the details of planning and timelines in our Concept Note. The GPSC will also focus on shared themes and common challenges of the participating cities in GPSC learning activities and products.</p>
9. Miscellaneous	
<p>Please clearly outline the methodology for this IAP, including: the criteria used to choose cities; and, the criteria that will be used to measure the effectiveness, efficiency, budgetary cost, and level of stakeholder engagement involved within each child project. [Canada]</p> <p>We note that sound management of harmful chemicals and wastes in urban environment is an expected outcome of the IAP. This link should be strengthened in the project proposal, as only two cities identified chemicals and wastes management as a dimension of their project. We propose that more emphasis be placed on the objective of developing “the enabling conditions, tools and environment for the sound management of harmful chemicals and wastes” within all pilot cities proposals, and more detail is included as to how this objective would be met. [Canada]</p>	<p>The Sustainable Cities Integrated Approach Pilot (SC IAP) is an integrated program consisting of two tracks: (a) City-level projects in 27 cities across 11 countries, with around US\$140 million in GEF grant funding. Each country is supported by one or several implementing agencies to manage the various projects in the participating cities. (b) The Global Platform for Sustainable Cities (GPSC), led by the World Bank with US\$10 million in GEF grant funding. The GPSC is a knowledge platform that ties all participating cities together and creates a collaborative space for cities aspiring towards sustainability to engage with entities already working in the urban realm.</p> <p>Within this framework, it is important to clarify that the World Bank is the lead organization for the GPSC track. However, the World Bank did not play a major role in defining the “methodology for this IAP” (i.e. the criteria used to choose the cities, etc.) nor in defining the scope of each project in all pilot cities.</p>