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: Sustainable cities, integrated approach pilot in India			
Country(ies):	India	GEF Project ID:[1]	9323
GEF Agency(ies):	UNIDO(select)(select)	GEF Agency Project ID:	150312
Other Executing Partner(s):	Ministry of Urban Development; Municipal Corporations of Jaipur, Bhopal, Mysore, Vijaywada, Guntur; State Governments of Rajasthan, Madhya Pradesh, Karnataka and Andhra Pradesh	Submission Date: Resubmission Date:	07/29/2016 12/23/2016
GEF Focal Area (s):	Climate Change	Project Duration(Months)	60 months
Integrated Approach Pilot	IAP-Cities ☒IAP-Commodities ☐IAP-Food Security ☐	Corporate Program: SGP ☐	
Name of Parent Program	Sustainable Cities Integrated Approach Pilot	Agency Fee ($)	1,089,908

A. FOCAL AREA STRATEGY FRAMEWORK AND OTHER PROGRAM STRATEGIES[2]

Focal Area Objectives/Programs	Focal Area Outcomes	Trust Fund	(in $) GEF Project Financing	(in $) Co-financing
CCM-2 Program 3	Accelerated adoption of innovative technologies and management practices for GHG emission reduction and carbon sequestration	GEFTF	8,970,439	88,318,396
IAP-Sustainable Cities	To promote integrated planning and investments related to urban sustainability that result in environmental, social and economic benefits at the local and global scale.	GEFTF	3,139,653	25,635,309
	Total project costs		12,110,092	113,953,705

B. PROJECT DESCRIPTION SUMMARY

Project Objective: To integrate sustainability strategies into urban planning and management to create a favorable environment for investment in infrastructure and service delivery, thus building the resilience of pilot cities.

[1]Project ID number remains the same as the assigned PIF number.
[2]When completing Table A, refer to the excerpts on *GEF 6 Results Frameworks for GETF, LDCF and SCCF*.

Project Components/ Programs	Financing Type[3]	Project Outcomes	Project Outputs	Trust Fund	(in $)	
					GEF Project Financing	Confirmed Co-financing
1.Sustainable Urban Planning and Management	TA	1.1. Increased scope and depth of integrated urban sustainability management policies and processes, including institutionalization within the local governance structure	1.1.1. Guidance and methodology for sustainability plan development under SC-IAP proposed for adoption by the relevant national and local stakeholders 1.1.2. Established institutional framework for sustainable city planning and management 1.1.3. Integrated sustainability and resilience plans (SCS – Sustainable City Strategy) developed for at least 4-5 cities 1.1.4 City performance measured against indicators consistent with international standards (e.g. ISO 37120), as well as SC IAP program level indicators	GEFTF	1,769,288	6,865,042
2. Investment Projects and Technology Demonstration	Inv	2.1.Low-emission and environmentally-sound technologies contribute to city greenhouse gas emission reduction	2.1.1. Detailed project reports developed for 4-5 city pilot investment projects 2.1.2. Innovative waste-to-energy / clean technologies with productive use applications demonstrated in 4-5 cities	GEFTF	8,369,289	88,318,396

[3]Financing type can be either investment or technical assistance.

			2.1.3. Business model established and public-private partnership mode of operations promoted for the 4-5 investment projects 2.1.4. Enhanced capacity of local urban bodies in promoting investments in sustainability projects			
3. Partnerships and Knowledge Management Platform	TA	3.1.Promotion of "Sustainable Cities" through partnership approach	3.1.1. Partnership for sustainable cities in India established and linked with external networks 3.1.2. Platform for Urban Sustainability (PLATFUS) web service operationalized 3.1.3. Increased awareness on sustainability issues in cities and enhanced capacities of local urban bodies in promoting sustainable cities	GEFTF	769,287	9,252,971
4. Monitoring and Evaluation	TA	4.1. Project implementation in line with GEF and UNIDO guidelines	4.1.1.Regular monitoring exercises conducted 4.1.2. Mid-term review and final independent evaluation conducted	GEFTF	233,421	281,000
			Subtotal		11,141,285	104,717,409
			Project Management Cost (PMC)[4]	GEFTF	968,807[5]	9,236,296

[4]For GEF Project Financing up to $2 million, PMC could be up to10% of the subtotal; above $2 million, PMC could be up to 5% of the subtotal.PMC should be chargedproportionately to focal areas based on focal area project financingamount in Table D below.

Total project costs		12,110,092	113,953,705

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

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

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Amount ($)
Recipient Government	Municipal Corp. - Jaipur	Grant	24,000,000
Recipient Government	Municipal Corp. - Jaipur	In-kind	1,540,000
Recipient Government	Municipal Corp. - Mysore	Grant	9,306,757
Recipient Government	Municipal Corp. - Mysore	In-kind	4,543,456
Recipient Government	Municipal Corp. - Bhopal	In-kind	1,500,000
Recipient Government	Municipal Corp. - Bhopal	Grant	4,500,000
Recipient Government	Municipal Corp. - Vijaywada	Grant	8,998,974
Recipient Government	Municipal Corp. - Vijaywada	In-kind	6,012,018
Recipient Government	Municipal Corp. - Guntur	Grant	2,610,000
Recipient Government	Municipal Corp. - Guntur	In-kind	30,470,000
Donor Agency	Indian Renewable Energy Development Agency	Loans	10,000,000
Private Sector	Private Sector Enterprises working on PPPs[6]	Equity	10,000,000
GEF Agency	UNIDO	Grants	172,500
GEF Agency	UNIDO	In-kind	300,000
Total Co-financing			113,953,705

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
UNIDO	GEF TF	India	Climate Change	(select as applicable)	8,970,439	807,339	9,777,778
UNIDO	GEF TF	India	IAP Set Aside	IAP-Cities	3,139,653	282,569	3,422,222
Total Grant Resources					12,110,092	1,089,908	13,200,000

[5] During the PPG, the number of cities participating in the project has been defined to 5. To ensure effective project execution, as well as coordination between national, local and city level, a Sustainable City Strategy (SCS) steering committees (SC) and core teams (CT) will be established for each of the participating cities. Therefore the requested PMC is 8 % of the toal project cost, i.e 9 % of the subtotal.

[6] In line with the GEF co-financing policy, co-finaincing letters from the private sector entities will be provided during the project implementation.

E. PROJECT'S TARGET CONTRIBUTIONS TO GLOBAL ENVIRONMENTAL BENEFITS[7]

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	*hectares*
2. Sustainable land management in production systems (agriculture, rangelands, and forest landscapes)	120 million hectares under sustainable land management	*hectares*
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;	*Number of freshwater basins*
	20% of globally over-exploited fisheries (by volume) moved to more sustainable levels	*Percent of fisheries, by volume*
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)	5.72 M metric tons (760,000 metric tons direct; 4.96 M metric tons indirect)
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)	*metric tons*
	Reduction of 1000 tons of Mercury	*metric tons*
	Phase-out of 303.44 tons of ODP (HCFC)	*ODP tons*
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	*Number of Countries:*
	Functional environmental information systems are established to support decision-making in at least 10 countries	*Number of Countries:*

F. DOES THE PROJECT INCLUDE A "NON-GRANT" INSTRUMENT? No

(If non-grant instruments are used, provide an indicative calendar of expected reflows to your Agency and to the GEF/LDCF/SCCF Trust Fund) in Annex D.

[7] Update the applicable indicators provided at PIF stage. Progress in programming against these targets for the projects per the *Corporate Results Framework* in the *GEF-6 Programming Directions*, will be aggregated and reported during mid-term and at the conclusion of the replenishment period.

PART II: PROJECT JUSTIFICATION

A. DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN WITH THE ORIGINAL PIF[8]

Changes in alignment with the original Child Project Concept Note prepared for India was mainly due to the approach taken by UNIDO, in consultation with national/city counterparts. Upon UNIDO's official identification as GEF IA in September 2015 by the counterpart agency, Ministry of Urban Development, and further confirmed by the GEF Operational Focal Point, several consultation activities at the national and local level ensued, upon which the following changes have occurred and reflected in this document:

Parameter	Child Project Concept Note	Request for Project Endorsement/Approval
Project components	Integrated Planning Pilots; Integrated Investment Pilots; Knowledge Platform	Sustainable Urban Planning and Management; Investment Projects and Technology Demonstration; Partnerships and Knowledge Management Platform; Monitoring and Evaluation
Project Financing Allocation	Most of the funds allocated to Planning component	Most of the funds allocated to Investment Projects component (~70%) since country requested for tangible installations for climate mitigation
GEF Project Financing	Slightly higher	Slightly lower due to PPG (i.e. maximum amount requested), though PPG includes substantive assessments and participation to global meetings under the World Bank's GPSC
Co-financing	None identified	As reflected in this document
PMC	Requested amount 589,777 USD	During the PPG, the number of cities participating in the project has been defined to 5. To ensure effective project execution, as well as coordination among national, local and city levels, Sustainable City Strategy (SCS) steering committees (SC) and core teams (CT) will be established for each of the participating cities. Therefore the requested PMC amount is higher and amounts to 968,807 USD.

[8] For questions A.1 –A.7 in Part II, if there are no changes since PIF , no need to respond, please enter "NA" after the respective question.

Project Justification	Only sparsely described	As reflected in this document
Pilot Cities	5 cities: Jaipur, Bhopal, Mysore, Vijayawada-Guntur	Retained all; Vijayawada and Guntur participate as separate cities
Executing Partners	Ministry of Urban Development	Ministry of Urban Development; Municipal Corporations of Jaipur, Bhopal, Mysore, Vijayawada and Guntur; State Governments of Rajasthan, Madhya Pradesh, Karnataka and Andhra Pradesh

A.1. *Project Description*. Elaborate on: 1) the global environmental and/or adaptation problems, root causes and barriers that need to be addressed; 2) the baseline scenario or any associated baseline projects, 3) the proposed alternative scenario, GEF focal area[9] strategies, with a brief description of expected outcomes and components of the project, 4) incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing; 5) global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF); and 6) innovativeness, sustainability and potential for scaling up.

A.1. Project Description.

The GEF6 SC-IAP India Child Project's scope includes the implementation of sustainability planning, pilot sustainable investment projects, capacity building and knowledge transfer activities in selected 5 Indian cities: Jaipur, Mysore, Vijayawada, Guntur and Bhopal. Together, these cities represent the diverse urban environment of India, owing to their geographical spread and differences in economic development status. The pilot cities provide the context for addressing both global and specific local development challenges in an integrated manner and which could be replicated and scaled-up as aligned with the goals of the global program.

1) Global environmental and/or adaptation problems, root causes and barriers that need to be addressed:

The role of cities in addressing global environmental issues is two-pronged – they are both sources of emissions and other types of pollution, as a consequence of their being economic power houses; and, they can be avenues for providing innovative solutions for many of world's most important environmental issues. In 1950, only 30% of the world's population lived in urban areas, currently more than 50%, and by 2050, it is projected that 66% of the world's population will be in urban dwellings. As the world continues to urbanize, sustainable development challenges will be increasingly concentrated in cities, particularly in the lower-middle-income countries where the pace of urbanization is fastest. Integrated policies to improve the lives of both urban and rural dwellers are needed.[10]

Key sustainability issues facing cities are:

[9] For biodiversity projects, in addition to explaining the project's consistency with the biodiversity focal area strategy, objectives and programs, please also describe which Aichi Target(s) the project will directly contribute to achieving..

[10] United Nations. (2014). World Urbanization Prospects: The 2014 Revision, Highlights (ST/ESA/SER.A/352). New York. http://doi.org/10.4054/DemRes.2005.12.9

1. Climate change - The Intergovernmental Panel on Climate Change (IPCC) estimates that in 2010, urban areas accounted for 67–76% of global energy use and 71–76% of global CO2 emissions from final energy use[11]. In addition, urban areas are uniquely vulnerable to climate change like flooding (incl. sea level rise), cyclones, heat waves, water stress, among others.

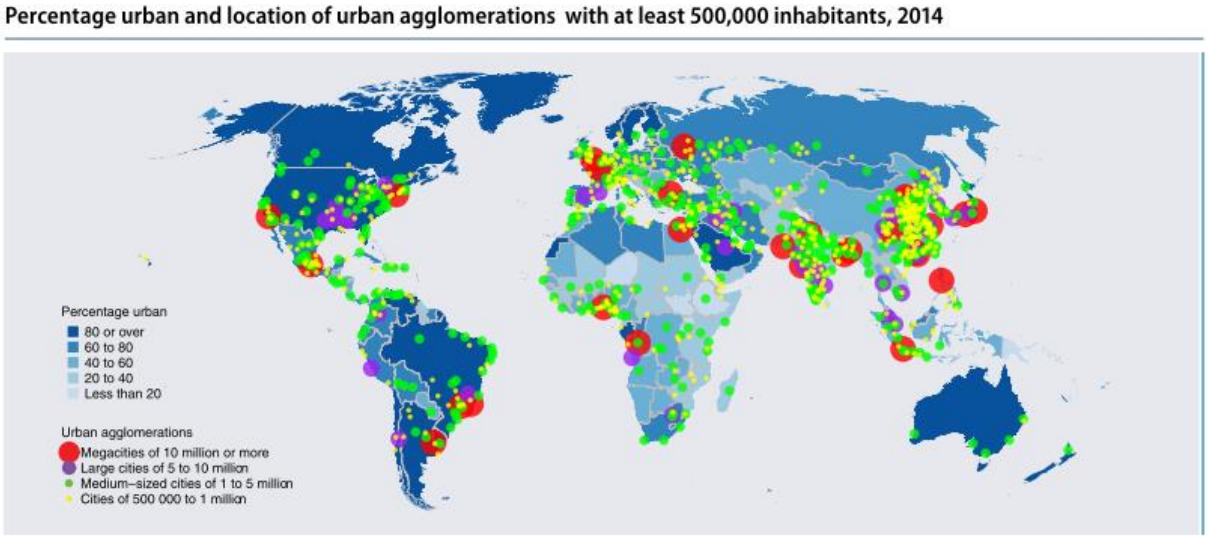

Figure 1. Locations of urban agglomerations in 2014.[12]

2. Unsustainable urban patterns; Low density and sprawling cities - Despite the advantages of agglomeration on economic efficiency and on environmental impact of human settlements, prevailing urban development is creating urban areas which expand their footprint twice as fast as the population within them[1314]. Such low-density urban development often increases travel distances, disperses the factors of production and encroaches on agricultural land. Often this is occurring on the peripheries of cities whose cores are simultaneously experiencing abandonment and dereliction.

By some estimates, urban areas now consume 75% of the earth's natural resources and produce 60% of its greenhouse gas emissions and 50% of its waste. Inefficient land use is seriously exacerbating this. A recent study concluded that 'for every 10 percent increase in sprawl, there is an approximately 5.7 percent increase in per capita carbon emissions, a 9.6 percent increase in per capita hazardous pollution, and a 4.1 percent and 2.9 percent reduction in the owner and renter housing affordability index, respectively.'[15] The report of the New Climate Economy also concluded that 'urban sprawl in the United

[11]Seto, K. C. and Dhakal, S., 2014. Chapter 12: Human Settlements, Infrastructure, and Spatial Planning. In Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.O. Edenhofer, R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, et al. (eds.). Cambridge University Press, Cambridge, UK, and New York

[12] Source: World Urbanization Prospects: The 2014 Revision

[13]Seto, K et al. (2011). A Meta-Analysis of Global Urban Land Expansion. PLoS ONE. Available at http://journals.plos.org/plosone/article?id=10.1371/journal.pone.002377.

[14] Angel, S et al. (2011). Making Room for a Planet of Cities. Lincoln Institute of Land Policy, Cambridge.

[15]http://www.citylab.com/commute/2015/02/a-new-index-to-measure-sprawl-gives-high-marks-to-los-angeles/385559/?utm_source=nl_daily_link2_021715

States adds costs of around US$400 billion per year, mostly as a result of greater infrastructure, public service delivery and transport costs.'[16]

On one side, planned urban development is often *planned badly*, with many of the mistakes of the 20th century being replicated in the fastest-growing cities: low-density, single-use zoned, often gated, superblock development designed for the private car. This typology restricts mixes of people and uses and requires traveling long distances between home, work and services. It also makes shared infrastructure virtually impossible, with individual building envelopes and scant opportunity for public transit. On the other side, *unplanned* urban development is often informal and underserviced, and may be *too compact* for its relatively low levels of infrastructure and public space. In such situations streets and open space must be carved out of the existing built fabric, with essential services to follow. Many existing slums will have to undergo such retrofitting.

Overall, the important increase of motorization rates in the developing world, coupled with form of low-density development associated with urban sprawl have resulted in a rapid increase of vehicle emissions that contribute significantly to global warming, (and in India's case, increased energy imports). This and additional externalities, including poor air quality, energy dependence and high costs for households are being corrected across cities in the world through planning that promotes compact urban forms, mixed uses and adequate public space to support public and collective transport options, within a larger network of connected and polycentric cities.

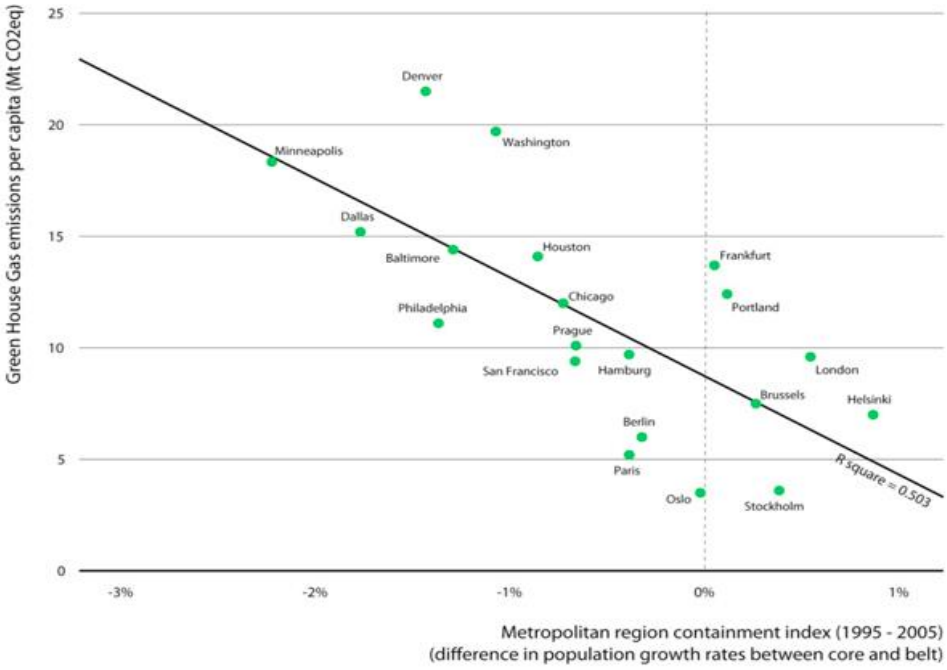

Figure 2. The striking inversely proportional relationship between GHG emissions and compact urban form: as metropolitan containment (urban compactness across a region) increases, per capita GHG emissions tend to decrease. © *Philipp Rode*

3. Changes in land use/land cover - As urban population increases, the demand for land to serve various urban activities also rises. Green areas are converted into other forms of use (agriculture, infrastructure, buildings) due to expanding cities. This is a challenge because reduced green cover leads to a decrease in CO_2 absorption and increase in

[16] http://static.newclimateeconomy.report/wp-content/uploads/2014/08/NCE_Chapter2_Cities.pdf

surface temperature. This is also a serious threat to cities' resilience capabilities. Since urban areas are predicted to occupy only 1.1 percent of the earth's land surface in 2030, and given that urban regions may consume between 5-7 percent of the earth's arable land by 2030, another principal problem is the forecasted aggregate loss of arable land, as well as land providing important recreational and environmental services for urban communities.

Among root causes of inadequate responses and patterns of urban development, are related to inadequate planning models, weak governance mechanisms, particularly in terms of coordination across administrative boundaries and levels and across sectors and weak capacities, particularly in the context of increasing decentralization and expectations on local government action in planning and management.

4. Social and environmental challenges compound each other - toward increased fragmentation, separation and specialized functions as a result of economic drivers of change that typically lie outside the control of local government (UNDP-UN-Habitat, 2009: xxiii). Cities with increasing differences between high-income and lower-income areas are common in developing countries. Without deliberate efforts to bridge socio-economic gaps, cities develop through, at one extreme, high-income gated communities and, at the other extreme, enclaves of poverty and ethnic communities and slums. As the recent UN-Habitat Global Report on Human Settlements (UN-Habitat, 2009: xxii) explains, high urban land and housing costs are pushing the poorest populations into areas that are prone to flooding, landslides and other natural disasters, especially slums and other informal settlements. This exposure is considered only partly due to natural forces, since it can be avoided or greatly minimized by improved urban development and land use planning and management.

5. Congestion and traffic - Due to growing population of urban areas and to inadequate urban planning, cities have grown with low percentage of public space and poorly connected urban fabric. Intervention in such respect will require, preliminary to the adaptation of infrastructure, the creation of adequate public space to offer leeway for network infrastructure, and improvement in its connectivity so as to facilitate mobility. Congestion also creates transportation problems and significant increase in traffic emissions (GHG and other air pollutants emissions leading to increase in overall GHG emissions and poor air quality). It is estimated that in 2030 there will be more than 2.5 billion cars most of which will be used in cities. Transportation problems, compounded by the increase in motorization, need to be addressed through reducing mobility needs, promoting walkability and facilitating public mass transport.

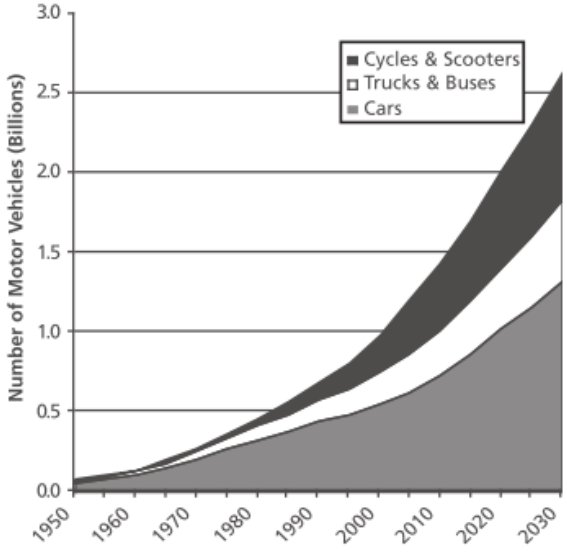

Figure3. Historical and projected increases in global motor vehicle population, 1950–2030[17]

[17] Source: Sperling, D., and D. Gordon. Two Billion Cars: Driving Toward Sustainability. Oxford University Press, 2009

6. Air quality - According to the World Health Organisation, air quality is currently one of the main issues for world cities, especially in developing countries where the fumes of growing numbers of diesel cars are combining with emissions from farming, wood and coal firing, tyre burning, open dumping, and dust from construction sites and brick kilns. This toxic air leads to heart and respiratory diseases, strokes, lung cancers and other long-term illnesses.

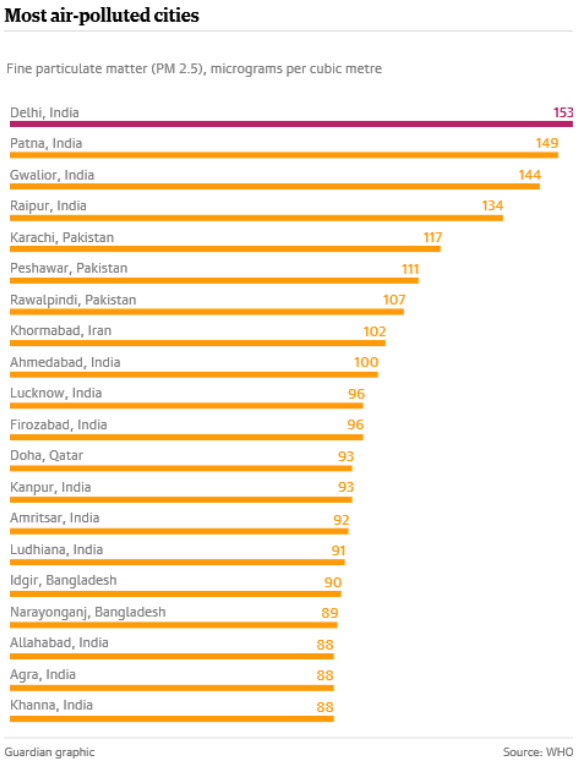

Figure4. Most air-polluted cities[18]

7. Waste - Growing population in cities cause problems with waste disposal. Enormous amounts of waste produced in cities pose a serious health threat. Many cities in fast growing developing countries do not have proper systems and facilities to collect and utilize solid waste, and most of the wastes are dumped usually into rivers or into open drains, causing inland water bodies to be polluted and water extracted unfit for human consumption, as well as urban flooding. Waste disposed in open dumps may contaminate soil and ground water and open burning of waste add to a problem of poor air quality.

8. Health & living conditions – Health issues in cities are directly connected with living conditions and environmental quality. In this context the most important aspects to consider are air quality and sanitation, as well as low grade housing (slums). Slums are a physical and spatial manifestation of urban poverty and intra-city inequality. In 2001, 924 million people, or 31.6 percent of the world's urban population, lived in slums. The majority of them were in the developing regions, accounting for 43 percent of the urban population, in contrast to 6 percent in more developed regions. The slum population is projected to significantly increase as the cities grow[19].

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[18] Source: The Guardian
[19]The challenge of slums : global report on human settlements, 2003 / United Nations Human Settlements Programme

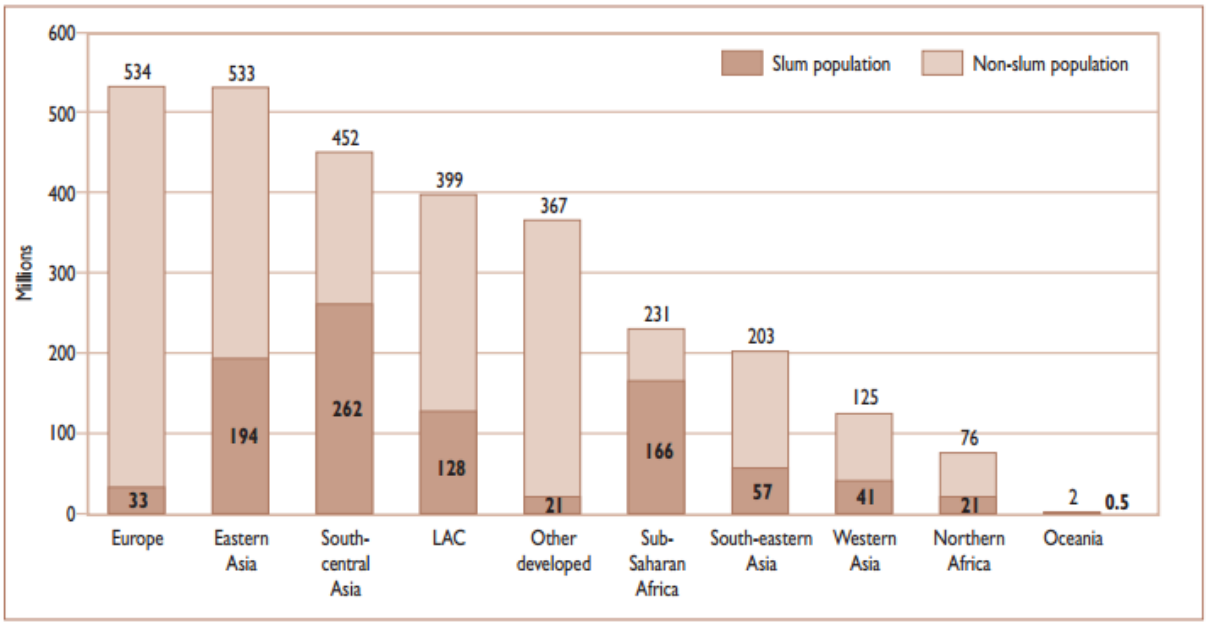

Figure 5. Proportion of slum dwellers in urban population by region, 2001.[20]

9. Water– Clean water and sanitation are the basic elements for a healthy city's population's development. Due to increase in population and the slum problem, it becomes difficult to ensure drinking water supply and to manage the wastewater generated in the city. Climate change also creates water stress conditions for many cities all over the world.

All the sustainability issues are interconnected with each other and therefore require an integrated, holistic approach to be resolved. Coordinated sustainable development policies, land use and transport planning efforts, combined with smart policies to promote efficiency in the built environment, offer significant potential to put cities on the path to low carbon development. As the 2014 Revision of World Urbanization Prospects summarizes: ***successful sustainable urbanization requires competent, responsive and accountable governments charged with the management of cities and urban expansion, as well appropriate use of information and communication technologies (ICTs) for more efficient service delivery. There is a need for building institutional capacities and applying integrated approaches so as to attain urban sustainability.*** If managed well, compact, resilient, inclusive and resource-efficient cities could become drivers of sustainable development and economic growth, contributing to both local livability and global public goods. If managed poorly, sprawling urban areas will result in land degradation and cause a strain on ecosystems and essential infrastructure services, increase levels of air and water pollution, and increase the size of vulnerable populations. India as the world's second most populous country with urban population to reach more than 800 million people in 2050 and fast growing cities is a perfect place for implementation of the SC-IAP.

Table 1. Number of Towns in India, according to the 2011 Census[21]

Type		Number of Towns	
		2011 Census	**2001 Census**
1	Statutory Towns	4,041	3,799
2	Census Towns	3,894	1,362
3	Urban Agglomerations	475	384
4	Out Growths	981	962

[20] Source: The challenge of slums: global report on human settlements, 2003 / United Nations Human Settlements Programme
[21] Source: Census 2011

Major challenges/problems of urbanization in India in the context of sustainable urban development:

1. GHG emissions and air quality – Emissions in fast developing Indian cities are growing, making cities one of the main contributors to India's GHG emissions and rapidly declining air quality. Some Indian cities top WHO rankings on poor air quality (see Fig. 3). GHG emissions are strongly related with energy use – with growing population and energy demand increasing energy use and generating significant increase of GHG emissions.

2. Energy security - India is still an energy deficient country and imports over 80% of its petroleum requirements (Planning Commission, 12th FYP)[22]. Given the maturing age of existing oil fields and the unexpected fall in gas production, securing access to adequate and affordable supply of energy will be a major challenge for the country. In 2012, India's largest energy source was coal (44%), followed by petroleum (22%), traditional biomass & waste (22%) and natural gas (7%). Renewables (hydro, solar, wind) accounted for the remaining 4% and nuclear 1% (India EIA Report 2014)[23]. Most analyses conclude that coal will remain the predominant energy source while oil and gas will gain relative importance; oil demand will be primarily driven by the transport sector and gas will increasingly displace coal in the power sector. India's energy production from existing sources does not look promising and therefore increasing energy demand has to be met from outside. Thus sprawling cities that encourage the use of automobiles not only contribute to bad air quality but directly contribute to India's energy imports.

3. Access to basic services - Even today 24x7 reliable electricity supply is not available in most of the cities. The frequent electricity fluctuation not only affects industrial productivity but it also affects the socio-economic aspect of the society. It affects children's education, women empowerment and their health. The non-availability of reliable electricity especially in the night also affects women's safety and to some extent, the law and order situation of the cities. Growing demand for energy in all forms of use leads to increase in GHG and other pollutants emissions.

4. Urban Sprawl and population influx - According to the 2011 Population Census, during the last decade 2774 new towns appeared in an immediate proximity of India's metropolis. With the fast city growth, infrastructure development does not keep at pace with rapidly expanding city areas; capacity of roads remain insufficient, lacking sewage system, and other service constraints ensue. In India this problem has much more severe consequences for the environment than in developed countries, since these rapidly growing areas are often slums.

5. Congestion. Transportation in cities is a major source of GHG emissions as well as the most important contributor to air quality decline. Urban transport problems in India are growing acute mainly because of rapid motorization. The consequence is extremely high air pollution (smog), increased noise, traffic congestion and accident rates (according to the WHO, India has the highest number of road accidents in the world and it contributes to nearly 10 percent of the world's road fatalities with 142 485 killed and 511 394 injured in accidents in 2011). Main reasons for this situation are:

- A high share of para-transit and private vehicles in traffic is responsible for a big part of traffic accidents and is characterized by high pollution.
- Lack of mixed use development and prevalence of low density patterns generate high mobility demand not matched by public transport of adequate quality and coverage
- Lack of adequate parking space in commercial areas, improper planning plus execution of road intersections along the highways and missing linkages. These create congestion, traffic accidents, and pollution.
- Undeveloped infrastructure for pedestrians and other forms of non-motorized transport.

[22]Planning Commission, Government of India, 12th Five Year Plan 2012-17, vol I, pp 130.
[23] US Energy Information Administration (2014). India EIA Report.

Overcrowding is especially visible in the city centers, which are often the only shopping hub/business area within the city.

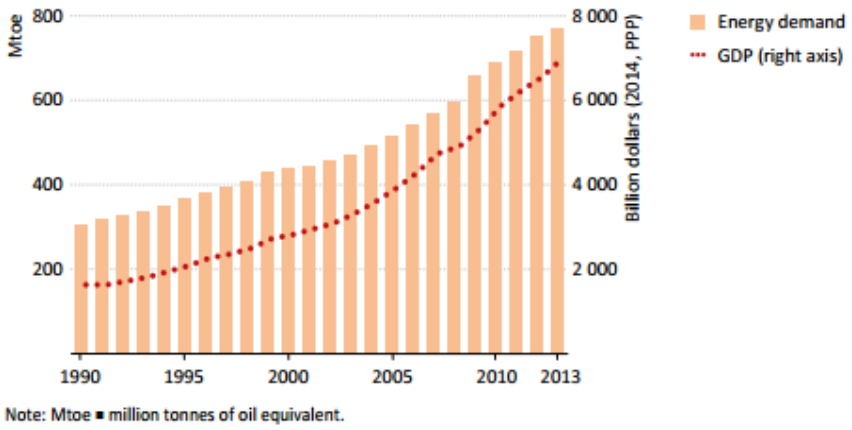

Figure 6. Primary energy demand and GDP in India.[24]

Table 2. Population Density in India 1901-2011[25]			
Census Year	**Density (per.sq.km)**	**Absolute Increase**	**% Increase**
1901	77		
1911	82	5	6,5
1921	81	-1	-1,2
1931	90	9	11,1
1941	103	13	14,4
1951	117	14	13,6
1961	142	25	21,4
1971	177	35	24,6
1981	216	39	22
1991	267	51	23,6
2001	325	58	21,7
2011	382	87	17,5

6. Slums and Squatter Settlements: In the year 2001, about 23.5% of the urban households were living in slums, which significantly reduced to 17% in 2011. However, the absolute number of households living in slums has increased from 10.15 million in 2001 to 13.75 million in 2011 due to urban population growth. The mega cities of Greater Mumbai, Delhi and Kolkata house about 42 to 55 per cent of slum population whereas the proportion of slums dwellers and urban poor in the 'million plus' cities is around 35%. Government of India has formulated various schemes to address the issues of slums.

Weak property rights imply that only 10 percent of the housing stock has legal title, so land redevelopment was curtailed. A similar situation prevails in many Indian cities, where a vicious circle of supply shortages and high land

[24] Source: World Energy Outlook 2015 – Special Report: India, IEA
[25] Source: 2011 Census India

prices lead to the growth of informal settlements. Progressive planning and building regulations can help smaller cities to avoid the trajectory of India's metropolises as growth of informal settlements is not simply a demographic issue but significantly in the realm of unfeasible planning standards as well as outdated land coding systems preventing legitimate claims to legal title and subsequent investments in land.

In 2009, Rajiv AwasYojana (RAY) was launched in pursuance of the vision for 'slum free India' wherein financial support was extended for providing housing, improvement of basic civic infrastructure and social amenities, creating rental housing stock and transit housing. More recently, in June 2015 the Pradhan MantriAwasYojana (urban) has been launched to address the housing need of the urban poor including slum dwellers.

7. Inadequate urban patterns: Indian cities growth has recently also proceeded through a clear dichotomy between informal development creating dense informal settlements and slums, either in marginal land or outside urban centers; and large private sector (and in some cases public sector Hudco) led developments, largely monofunctional and often low density, weakly connected and generating great demand for mobility and thus creating traffic and increased emissions.

8. Water and wastewater management. Only 65% of India's urban population has individual water connections and non-revenue water accounts for 50% of production. Only 5% of cities have any kind of sewerage system with 18% of urban households practicing open defecation. Only 21% of wastewater generated is treated. In most of the cases wastewater is let out untreated and it either penetrates into the ground as a potential pollutant of ground water or is discharged into the natural drainage system causing pollution in downstream areas. In many Indian metropolises, as well as cities and towns, a large area of the city has no sewage network, either internal or trunk, and the raw sewage or septic tank outflows are discharged into open drains which flow into the watercourses.

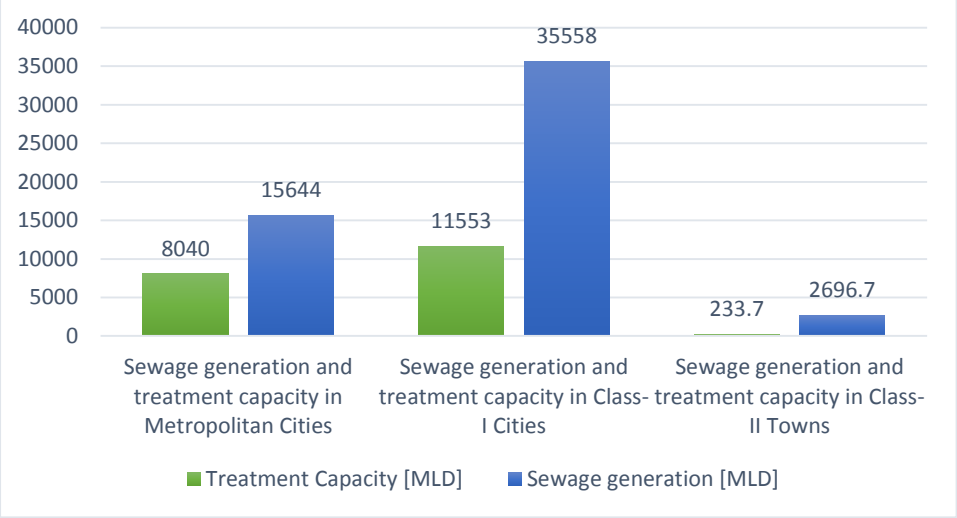

Figure 7. Sewage generation and treatment capacity in Metropolitan Cities, in Class-I Cities and in Class-II Towns[26]

9. Waste. It is estimated that 366 cities in India generated 31.6 million tons of waste in 2001 and within one decade the amount of generated wastes in Indian cities increased by 50% (to 47.3 million tons). At this rate the total MSW generated in 2041 would be 230 million TPY. Around 90% of the generated waste is simply dumped into open land, and most cities do not have engineered sanitary landfills. A large amount of solid waste is left on side of streets to decay or

[26] Source: Performance evaluation of sewage treatment plants in India funded under NRCD, Central Pollution Control Board, Ministry of Environment and Forests, India, 2013

burn, creating a major health concern. Further, there are no appropriate mechanisms of waste collection and disposal. Poor management of solid waste has led to contamination of groundwater and surface water through leachate and air pollution through open burning of waste. Unsustainable practices in processing and disposal of wastes compound the environmental hazards posed by solid waste. In India, apart from one in Delhi, WtE facilities are not operational; also biogas is not widely harnessed for energy generation.

The management and disposal of solid waste generated in Indian cities is the responsibility of the urban local bodies and for this, the Municipal Solid Waste Rules were put in place in the year 2000. Besides municipal bodies, non-governmental organizations (NGOs), community based organizations and private companies are usually involved in the collection of solid waste. Typically, collection of solid waste from roadside bins to transfer stations is done by municipal bodies with varying degree of efficiency. Transport of waste to transfer stations often takes place in open vehicles with manual loading. This is followed by transportation to open dumping grounds. The expansion of city limits has led to old dumping sites, which were relatively remote, now becoming part of the city. Disposal practices at the open dumping sites are highly unsatisfactory. Poor management of solid waste and unscientific practices in processing and disposal have led to contamination of groundwater and surface water.

Even with current levels of inadequate service, solid waste management accounts for 25-50 per cent of the municipal expenditure (World Bank 2006). Further, cities recover less than 50 per cent of the O&M cost, according to a study by the Ministry of Urban Development, Government of India (2010). The distribution of the expenditure is heavily loaded in favor of collection and transportation, and little attention is paid to processing and scientific disposal of the waste. The Swachh Bharat Mission targets to address these issues of solid waste management in all the 4041 statutory towns.

Table 3. Population growth and impact on overall urban waste generation and future predictions until 2041[27]

Year	Population (Millions)	Per Capita	Total Waste generation Thousand Tons/year
2001	197.3	0.439	31.63
2011	260.1	0.498	47.30
2021	342.8	0.569	71.15
2031	451.8	0.649	107.01
2036	518.6	0.693	131.24
2041	595.4	0.741	160.96

10. Changes in land use/land cover: As urban population increases, the demand for land to serve various urban activities also rises. Green areas are converted into other forms of use (agriculture, infrastructure, buildings) due to expanding cities. This is a challenge because reduced green cover leads to a decrease in CO2 absorption and increase in surface temperature. This is also a serious threat to cities' resilience capabilities.

11. Promote Compact Urban Form: Urban form is an important element of sustainable urban development since it impacts cost efficiency of services provided as well as mobility pattern. It is required that planning norms rules and regulations promote compact cities that support mixed land use and efficient densities as against urban sprawl and its associated problems.

[27] Source: Sustainable Solid Waste Management in India, RanjithKharvelAnnepuMasters Thesis, 2012, Columbia University, New York

12. Reorient Planning Approach: Restrictive zoning laws and unrealistic planning norms and standards are some of the reasons that have contributed to considerable deficiency in the actual provision of housing for the urban poor vis-à-vis its requirement. Should be redefined the zoning laws as well as approach / orientation towards development to ease net supply of land to make housing and other services accessible as well as affordable for the poor. The plan should aim optimal allocation of space, and focus on linking public transportation with zoning for affordable houses for low-income groups.

13. Land Availability for Productive Use: Land supply is constrained by excessive regulatory requirements and a dominant public-sector presence in land arrangements. The regulations have restricted private land supply and given the state, enormous powers to intervene in the urban land market. As a result of controlling regulations, limited financial resources and capacity of urban local bodies to implement the master plans, and loopholes in the regulations that have enabled rent-seeking, urban physical growth has stagnated or grown in a haphazard sprawl. While making land available for housing and other services for the poor is important, it is also imperative to make serviced land available for 'investors' to give the cities a much required economic base to make it vibrant.

14. Economy. The basic notion of 'development' viz. economic development, inclusive growth and environmental sustainability is not explicitly incorporated in the planning of cities.

15. Mobility. Many of the cities are 'automobile dependent' with established high rates of automobile ownership. Motorization in urban India is growing faster than the population; automobile ownership growth rates are of the order of 15–20% per annum in most cities (Indiastat.com, 2008). Motorcycles in particular, as well as cars, are burgeoning as major forms of personal mobility, while walking and bicycling, once very prominent in cities, have taken a back seat. Furthermore, the issues of enhancing mobility while minimizing time and distance on road and of redesigning transport networks have not been sufficiently addressed in urban planning in India. Land use plans have by and large been independent of transport plans.

To solve these major problems and challenges it is necessary to introduce integrated sustainable city strategies covering all city's sectors and sphere of activities in the urban planning process in India. The greatest challenge of sustainable city development in the Indian context is the rapid growth of urban population, which if unmanaged leads to:

- High sprawl of urban areas leading to severe environmental, social and economic problems;
- Limited efficiency of urban structure with consequent economic losses and loss of local revenue (both public and private) and inadequate management of economic growth and lack of funds and revenue for improving the infrastructure;
- Increased population increases unemployment, which in turn creates a burden on the economy due to restless, unemployed people creating crime problems for which a huge police force has to be maintained; Unusual strain on education and health infrastructure; and,
- Increased vehicles in shrinking transportation network, leading to pollution, and a waste of man-hours for commuting purposes.

Apart from rapid population growth there are also some **important barriers in sustainable cities development to overcome**:

- Low environmental awareness of urban population resulting in unsustainable lifestyle;
- Inefficient funding for necessary investments which are not economically viable. The PPP formula has implementation challenges in India;
- The segmented approach in city's political and operational structures result in poor integration of plans and actions;
- Insufficient transfer of knowledge on sustainability management and sectoral solutions, which are needed for improving environmental performance;

- Lack of integrated planning resulting to sustainable development strategies not being largely taken into account in development plans and are not addressed cohesively in different policy areas;
- Low sustainability of externally funded investment projects (in the context of continuity of projects).

2) The baseline scenario or any associated baseline projects

The following section has been structured addressing four (4) different aspects of the baseline in the country:

I) National Baseline
II) Pilot Cities Baseline
III) Financing Baseline
IV) Main challenges to be addressed by the project

I) National Baseline

Baseline scenario

India, with a population of over 1.21 billion, account for 17.5% of the world population (Census of India 2011). According to the provisional figures of Census of India 2011, 377 million people live in the urban areas of the country. This is 31.16 % of the Country's total population. It is expected, that by 2030, about half of the Indian population will be residing in urban areas. India's population is projected to grow for several decades to 1.5 billion in 2030 and 1.7 billion in 2050[28] with most of the increase to be in the cities. India is projected to be the most populous country in the world before 2030.

Also Indian economy is projected to be the third world economy (after the US and China) in the year 2030 (352% growth compared to 2014[29]). While the population and economy grows, also transportation needs are increasing, leading to significant increase in car ownership (387% increase in vehicle ownership in India compared to 2010 level[30]).

The existing pace of urbanization becomes a cause for increasing existing city problems concerning emissions, transportation, water supply, sewage disposal, municipal waste, the lack of open landscaped spaces, and water pollution. Most of these environmental problems have their origin in unplanned development of cities leading to significant increase in energy use and waste generation, with increased pressure on food production systems, and which results in increase GHG emissions and in severity of environmental and social problems observed in Indian cities. As a result the baseline scenario predicts significant increase in GHG emissions in all sectors of city activities (the Global Product Classification (GPC) classification of sectors for GHG emission reporting has been used: stationary energy, transportation, waste, IPPU and AFOLU).

Vertical integration (between scales of government)

Under India's constitutional scheme, State governments are partially federal units of government. Governmental power is shared between the 'Union' or national government and the 26 'State' or sub-national governments. In addition, there is a third tier of elected local governments ('local self-government'): Panchayats in rural areas and Municipalities or Municipal Corporations in urban areas. Local government in its present form in India was recast after the 73rd/74th Amendment to the Constitution of India, by which States were constitutionally mandated to set up elected local bodies. The 11th and 12th Schedules, added at the time to the Constitution, listed power and functions to be devolved to local

[28] World Population Prospects The 2015 Revision, United Nations 2015
[29] United States Department of Agriculture - The ERS International Macroeconomic Data Set
[30] Dargay, J., Gately, D., & Sommer, M. (2007). Vehicle Ownership and Income Growth, Worldwide: 1960-2030. The Energy Journal, Volume 28(Number 4),

bodies in rural and urban areas respectively[31]. Municipal corporations have begun to share responsibilities for some water supply, sanitation and development control related functions, but the whole gamut of 12th Schedule functions has not been devolved to any of these local bodies. The municipal corporations collect property tax, and may in addition have some charges and fees for services. However, rarely any of the municipal bodies are financially self-sufficient – in fact larger numbers of municipal bodies in India rely heavily on subventions from state government, as also on 'tied' funds for schemes and projects.

Overlapping urban development functions between the three tiers of government:

- State government functions
- Land Records Administration and Land Transaction Registration
- Police Functions
- Industrial Development
- Shared functions between State and national governments
- Environment and Forestry
- Fire and Disaster Management
- Shared functions between State and local governments
- Water Supply, Sewerage, Solid Waste Management, Drainage and Sweeping
- Urban Planning and Urban Development
- Building Control and Housing
- Strategic Planning
- Transport

The task of urban planning and development in India has been highly dependent on parastatal agencies created especially for the purpose. From the 1950's onwards, a number of parastatal agencies were created for water supply infrastructure development and service provision as well. These agencies are 'semi-autonomous' and have ring-fenced budgets and accounts, but are under the overall control of a department of the State government. Depending on the nature of their functions, they may or may not be dependent on budgetary support from the state government. Urban parastatal agencies may be city-specific or state-wide in scope. There is some contradiction between many of the urban parastatal agencies and the decentralization imperative of the 74th Amendment. Following the 74th Amendment, States are expected to devolve urban water supply and sanitation, roads and bridges, urban planning and land use functions to urban local bodies, and yet these functions remain with parastatal agencies in many cities all over India. In fact, in some States, new parastatal agencies have been set up to take over these functions even after the promulgation of the 74th Amendment. However, while the setting up of institutions of local self-government is legally compulsory for States of the Indian union, legal ambiguity vis-à-vis devolution of functions, funds and functionaries allows for gradual progress towards transfer of 12th Schedule functions. In actual practice, the continuing role of parastatal agencies is usually justified on account of the low managerial and financial capacity of local bodies.

Horizontal integration (between sectors)

Governance of select functions is described below:

[31]The 74th Amendment lists 18 functional areas for devolution to urban local government in the 12th Schedule of the Constitution of India. The Twelfth Schedule functions are: (1) Urban planning including town planning, (2) Regulation of land-use and construction of buildings, (3) Planning for economic and social development, (4) Roads and bridges, (5) Water supply for domestic, industrial and commercial purposes, (6) Public health, sanitation conservancy and solid waste management, (7) Fire services, (8) Urban forestry, protection of the environment and promotion of ecological aspects, (9) Safeguarding the interests of weaker sections of society, including the handicapped and mentally retarded, (10) Slum improvement and upgrading, (11) Urban poverty alleviation, (12) Provision of urban amenities and facilities such as parks, gardens, playgrounds, (13) Promotion of cultural, educational and aesthetic aspects, (14) Burials and burial grounds; cremations, cremation grounds and electric crematoriums, (15) Cattle pounds; prevention of cruelty to animals, (16) Vital statistics including registration of births and deaths, (17) Public amenities including street lighting, parking lots, bus stops and public conveniences, (18) Regulation of slaughter houses and tanneries.

1. Land -The land records administration and the land transaction registration system in India dates back to the colonial period. Even though there are many regional variations and subsequent modifications, it is important to understand the basic administrative and legal structure developed in British India. At the time, land records including survey maps and ownership records were developed in order to facilitate the levy and collection of land revenue on agricultural holdings. This was carried out by a provincial Board of Revenue or Land Revenue Department. The main functions of the district administration was collection of land revenue from agricultural holdings (therefore the position of District Collector) and maintenance of law and order (therefore also District Magistrate). The district administration was consequently the keeper of land records, including survey maps and ownership registers. Stamp duty on registration of transactions was also collected by the district administration. Today, land revenue collection is reduced to a minor function of the district administration, but Land Revenue Departments and district administrations of respective State governments usually continue to have a key role in land records administration. Typically, the State government's Department of Revenue (or equivalent) is responsible for survey, updating and maintenance of land records, for which it acts through the district administration. Stamp duty and registration of transactions (including sale and mortgage) may be the responsibility of the same department, or sometimes there is a separate Registration Department. Revenue and registration departments are represented at the district level through the district administration. In States where transaction registration records are maintained independently of the Land Revenue Department, registration applications may not be checked against revenue records at the time of registration. Consequently, revenue records may not also be automatically updated at the time when a transaction is registered. As a result, registration of a sale deed or other land transfer document is usually considered sufficient evidence of the land transaction itself, but may not be enough to prove ownership.

Land acquisition activities (survey, notifications and due process under land acquisition law) are also carried out through the district administration, though in some cases States may have a different department or officer nominated for the purpose. Urban land that is acquired by compulsory acquisition process or otherwise brought within the planning area of the city is then re-organized through a land use planning and plotting process. This effectively clears the title of previous claims, and also obviates the need for older land survey and revenue records. Following this process, new land records and maps are developed by the urban development authority, which may then become the custodian of the land records. However, in parallel with this formal urban land, older villages may continue to exist within the urban areas. Records for these areas will continue to be held by the applicable revenue authority of the State government, and changes in title will have to be updated through the revenue authority. There is also nazul land (i.e., public land) within the city area that is held by the State government but not transferred to the development – for this land also, records are held by the applicable revenue authority.

On account of these historical and institutional legacies, land records of the entire city may not be available in one department. In the capital city of Delhi, at least five agencies are involved.

2. Industrial Development - Factory licensing, including labor and environmental clearances, are granted by State governments. This includes multiple agencies of State government including the Department of Labour Welfare and the State Pollution Control Board. In addition, building plan and land use approval may have to be obtained from municipal agencies, development authorities or the district administration. Recently, many States have sought to reduce the 'red tape' faced by entrepreneurs by setting up 'single window' clearance systems.

3. Water Supply, Sewerage, Solid Waste Management, Drainage and Sweeping - Following the 74th Amendment, the functions of water supply and sewerage in urban areas are meant to be devolved to municipal bodies. However, in actual practice, these functions are with parastatal agencies in many cities all over India. Solid waste management, drainage and sweeping of streets tends to be the responsibility of municipal corporations wherever they exist, but in the case of recently formed or under-financed local bodies that have not extended services coverage to newly developed areas within their jurisdictional area. Where municipal corporations provide these services, they are in theory funded

through property taxes, plus water charges and other fees and levies, but as these receipts are inadequate to meet even current account expenditure commitments there is usually a subvention from the State government. Moreover, service delivery receipts and budgets are seldom ring-fenced, and services are as a result under-funded. Capital works are funded by State or central level schemes and grants, and in some cases through loan funds. In the case of smaller municipal corporations, capital works are usually developed by other State agencies and handed over to municipal corporations upon completion. In places where these services are provided by development authorities, they may be funded through one-time 'development charges' levied on buyers of flats and properties in the area. Development charge receipts may be commonly supplemented with funds earned by the development authority though their main urban development activity. In some areas, development authorities also levy periodic service charges for water supply and other services. Development authorities do not have the power to collect property taxes.

4. Urban Planning and Urban Development - Urban planning functions are meant to be devolved to municipal bodies in accordance with the 74th Amendment. In practice the power to grant building plan permissions is substantially delegated to local bodies in many Indian States, but very few have devolved the power to make master plans and zonal development plans (the top layers in the hierarchy of plans for a city).

Responsibility for 'implementation' of the master plan is vested primarily with development authorities. The main implementation activity undertaken by development authorities is that they acquire land from non-urban users, undertake plotting and development of network infrastructure, and then put this land on the market through auction or other allotment procedure. Other agencies such as Industrial Development Authorities and Housing Boards may also be involved in the implementation of the master plan. The development authorities and other agencies 'earn' the margin between acquisition and disposal cost of the land, and roads and network infrastructure in these areas are usually funded by these agencies through their own earnings.

For implementation of master plans by development authorities or other State agencies, land is usually acquired by the respective State governments through operation of the Land Acquisition Act and consequent exercise of 'eminent domain' powers of the state. Rates of compensation awarded through the land acquisition process are set by administrative order, which may in practice be quite different from the prevailing market rates in the area.

Almost all land acquisition orders are challenged in court by the original owners, and the rate of compensation often increased through the court order. In the recent past, land acquisition all over India has been challenged outside courts through political protest, sometimes leading to large political mobilizations, but more often resulting in local violence between state and factions for and against acquisition. The main point of contention, at least in urban and peri-urban areas, is that once an area has been brought within the "development area" of a master plan, there is limited scope for the original owners to participate in the urbanization of the land. However, as there is a substantial increase in the value of the land after it has been "developed" for urban uses, the exclusion of original owners becomes a much fraught issue.

Thus land acquisition poses the single biggest barrier in new urban developments and therefore more participatory and inclusive methods such as land pooling (e.g. Gujarat, Maharashtra) may be incorporated as pilots in the project cities.

5. Building Control and Housing - Development control regulations are set by the planning authority and backed by statute, but the power to sanction building plans is delegated to municipal bodies and in some cities, Development Authorities. Development authorities also undertake development of housing through partnerships with private development agencies. In the past decade, there is a booming market in high-end privately developed flats in "newly developed" (and often peri-urban) areas. Arrangements for development of commercial estates, shops and office complexes are similar to provision of housing. Specialized industrial development corporations and/ or development authorities may take up development of industrial estates and manufacturing zones.

6. Strategic and Regional Planning- Strategic planning for cities has, in the past, been an underserved function in India, but State governments may sometimes articulate a strategic vision of an important city in the State. In the past, wherever this has happened, the initiative is led by the Chief Minister of the State. At present, most of the major investment and planning decisions in the major cities are also taken by the respective Chief Ministers.

The 74th Amendment provides for the formation of a Metropolitan Planning Committee for the preparation of the draft development plan metropolitan areas as a whole. The Constitution mandates that not less than two-thirds of the members of the committee should be from amongst the elected representatives of the municipal bodies and panchayats that fall within the metropolitan area. In preparing the draft development plan, the committee is expected to have regard to:

- Plans prepared by the Municipalities and the Panchayats in the Metropolitan area;
- Matters of common interest between the Municipalities and the Panchayats, including coordinated spatial planning of the area, sharing of water and other physical and natural resources, the integrated development of infrastructure and environmental conservation;
- The overall objectives and priorities set by the Government of India and the Government of the State;
- The extent and nature of investments likely to be made in the Metropolitan area by agencies of the Government of India and of the Government of the State and other available resources whether financial or otherwise.

However, this provision has been largely ignored by State governments all over the country. Few Indian States have functioning Metropolitan Planning Committees, a few others have recently set up committees when pressurized to do this as a condition to their participation in various investment programmes and projects. There is so far no example of an inter-state Metropolitan Planning Committee. This lack of interest of state governments in Metropolitan Planning Committees has been attributed to the reluctance on the part of Chief Ministers for giving up direct control over important decisions relating to the capital city and other major cities of the state.

Since 2005 onwards cities participating in the national government's Jawaharlal Nehru National Urban Renewal Mission (JNNURM) have made City Development Plans (CDP). The JNNURM programme envisaged that municipal corporations would play a central role in the preparation of CDPs, but in many States, this task was actually entrusted to development authorities or State government agencies, which in practice ended up being outsourced to private consultants.

7. Transport- Responsibility for transport service provision, licensing and regulation and infrastructure provision is scattered across a number of State and local agencies. There is moreover, no unified technical agency to plan and regulate transport and inter-connectivity arrangements, with the result that public transport arrangements are fragmented across modes and regions.

Responsibility for roads development is also shared by several agencies including municipal corporations, Public Works Department, development Authority. In Gurgaon, roads are developed by the Haryana Urban Development Authorities and the National Highways Authority of India.

The traffic police division of the state level police force are responsible for traffic management. This allows for institutional coordination with the Regional Transport Authority (also a police agency) which is responsible for licensing of motorized vehicles, but links with the other licensing agencies and road building agencies are more ad hoc in nature.

II) Pilot Cities Baseline

Summary of the baseline scenario and baseline projects for the pilot project cities are presented below. For a detailed analysis please refer to Annex K.

Bhopal - baseline scenario:

Bhopal, the capital city of the state of Madhya Pradesh, is the 2nd largest state of India and is ranked as one of the 15 largest cities of India. Official languages are Hindi, English and Marathi. City is characterized by a humid subtropical climate and is populated with 1,7 M inhabitants, where from 2011, 11% were children below 6 years, and 12% were elderly above 60. Prospects for 2030 show increase of population to 2 887 450. Population density in 2011 was 4 658 people per km^2, informal settlement accounted for 28 % of building stock in the city, while the green area per 1,000 population was 77 m2.

The Bhopal Municipal Corporation (BMC) administers the city and is responsible for the city budget amounting around 412.1 million USD (annual city's budget value). Its jurisdiction, extending over an area of about 413 sq. km, is divided into 14 zones comprising 85 wards (administrative units).

Bhopal's dominating industries are: electrical and medicinal goods, textile, cotton, chemicals, jewelry, handicrafts, and tourism. Service sector, i.e. housing, banking and insurance, education is rapidly growing.

Per capita emissions for Bhopal have been 0.31T/Year in 2007-08. When it comes to GHG emissions of the city, transport, solid waste and waste water sectors are the main contributors. The main transport problems in Bhopal are: traffic accidents, air pollution and congestion (increased travel times).

Main reasons for this situation are:

- Suboptimal use of public transport (buses) which is further a consequence of poor last mile connectivity, congestion (which is also a consequence of high share of auto rickshaws and tempos within the public transport mode division – vicious circle) and a long time spent on boarding and alighting (Note that the city has a large horizontal spread, few high rises and a relatively low population density, necessitating Transit Oriented Development.)
- Inadequate transport infrastructure and its suboptimal use;
- Mixed traffic, and lack of infrastructure for pedestrians;
- On-road selling of goods; and,
- Big share of old-design, highly polluting tempos.

The main problems connected with solid waste management in Bhopal are: 1) Unpaved and open collection sites; 2) No waste segregation performed and only 20% of waste is processed; 3) Use of unscientific disposal techniques. The main problems associated with waste water management in Bhopal are: 1) A large area of the city has no sewage network (around 40%), either internal or trunk and the raw sewage or septic tank outflows are discharged into open drains which flow into the watercourses; 3) Ground and surface water contamination (chemical and microbial contamination).

Priority projects as indicated by Bhopal, which are solid waste management, sewage management and last mile connectivity to city public transport system, lie within the 3 sectors responsible for majority of GHG emission, as described above. The city is focusing on Housing for Urban Poor due to encroachment of public land by informal settlements (slums) and has adopted a cluster based approach for solid waste management with 8 other Urban Local Bodies (ULBs).

Bhopal -baseline projects:

Until 31/01/2019 Bhopal will realize projects within 100 Smart Cities Pan-Indian Programme. Under this scheme there will be undertaken projects within transport area, focusing on two main subfields: ICT and ICT field includes execution of the following projects: intelligent traffic management and smart parking. Mobility field involves implementation of: pedestrian friendly pathways, encouragement of non-motorized transport and non-vehicle streets/zones. (Source: Proposal for 100 Smart Cities Programme)

According to the Bhopal City Development Plan Bhopal will take action to rehabilitate existing sewerage systems, make an inventory of locations of spills, leaks and mixing areas of storm water with solid waste, create Geographical Information System and take up an awareness campaign on getting a sewerage connection. In the field of solid waste management, Bhopal wants to improve and make safer working conditions for municipal waste operators, improved final treatment and disposal of domestic solid waste and improved management of the process. [32]

Jaipur - baseline scenario:

Jaipur is the capital City of Rajasthan State, the biggest State of India. It is ranked as one of the 12 Indian cities with the biggest population growth in the last decade and it is one of the 10 biggest Indian Metropolitan Areas in India. It is characterized by a subtropical climate and was populated in 2011 with over 3 M inhabitants, where 26.5% were children below 6 years, and 4.9% were elderly above 60. Prospects for 2025 show increase of population to 4 298 000. Population density in 2011 was 8 016 per km2, informal settlements were inhabited by 10.62% of inhabitants, while the green area per 1,000 population was 0.153 sq. km. The large population coupled with rapid population growth exert ever-increasing pressure on civic infrastructure.

A part of being a capital of the biggest state of India, Jaipur is also enriched in heritage; it is a part of the golden triangle of tourism. Jaipur is one of the well planned cities of its time established by then Maharaja Sawai Jai Singh II in the year 1727, architecture by Vidhyadhar Bhattacharya, in the 2008. The Amber fort of Jaipur is listed in UNESCO world heritage sites besides other visitors attractions such as Hawa-mahal, a five story building which resembles to crown of lord Krishna has 953 windows, JantarMantar (observatory of celestial body, also included in UNESCO world heritage sites), Nahargarh Fort, Jaigarh fort, Galtaji, prominent seat of ramanandisact, GovindDevji Temple, IshwariLaat, ChhotiChopar, BadiChopar, Jaleb Chowk Old administration building etc.

The Jaipur Municipal Corporation (BMC) administers the city and is responsible for the city budget amounting to around 162.7 million USD. Its jurisdiction extends over an area of about 380 sq. km, divided into 8 zones, which are further divided into 91 wards.

Apart from being a budgetary body and being an administrative body, Jaipur Municipal Corporation has participated in the Smart City Mission of Government of India & got 3rd rank among the first declared 20 smart cities. In accordance with that, Jaipur Municipal Corporation has signed MoUs with CII (Confederation of Indian Industry) & Nottingham City Council (UK).

Jaipur Municipal Corporation has also actively participated in International C-40 networks for climate change. It has also been selected in the UNESCO creative cities network. Solar City Master Plan of Jaipur is also under process, which helps to create Jaipur conventional energy saving city.

[32] Source: BHOPAL CITY DEVELOPMENT PLAN http://www.mpurban.gov.in/Pdf/CDP/Bhopal%20CDP_Final%20.pdf

Jaipur Unites is an initiative of Jaipur Municipal Corporation under Swachh Bharat Campaign which has the objective to make Jaipur "Green & Clean City" and to enhance the heritage value of Jaipur through motivating the Citizens of Jaipur and engaging them to do cleaning, sanitation, beautification nearby their milieu voluntarily.

A Vehicle Tracking System (VTS) has been launched by Jaipur Municipal Corporation on August 16, 2015 for monitoring vehicles involved in cleanliness. Under Vehicle tracking system 400 JMC vehicles have been monitored. The system calculates the weight of the waste and round trip of a vehicle in a particular day which is helpful to manage city waste properly.

Under energy saving campaign, JMC has already installed 19,000 LEDs (Light emitting diodes). It has a target of 200,000 of light points and some remaining under process. This project is a big step of JMC towards energy conservation.

Jaipur's dominating industries are: IT/ITES, Engineering and Related Industries, Handicrafts, Apparel, Gems and Jewelry, Warehousing and Logistics, which are clustered into Mahindra World City, a multi-product Special Economic Zone.

Per capita emissions for Jaipur have been 1.63T/Year in 2007-08. When it comes to GHG emissions of the city, transport, solid waste and waste water sectors are the main contributors. The main transport problems in Jaipur are: traffic accidents, air pollution and congestion (increased travel times). Main reasons for this situation are: 1) Existing parking patterns: e.g. on street parking, which is present on majority of Jaipur roads (57%); 2) Suboptimal land use, i.e. extremely high number of shops and offices concentrated within a small area; 3) Upward trend for development in pollution generated by transport: as the city's population explodes, the number of fossil fuel driven vehicles also increases, which further induces large increases in greenhouse gases; 4) Public transport is inconvenient due to the existing bus route system spatial distribution. Another potentially problematic aspect is the relatively low frequency of connections: for 67% of the routes waiting time exceeds 10 minutes. The main problems connected with solid waste management in Jaipur are: Door-to- door waste collection system is not a common practice in the city. The predominant system of collection is through communal bins placed at various points along the roads, and key points of the city, which causes only around 20% of population to be covered with a regular waste collection service. Waste from the rest of settlements is dumped at an open land or into water canals, causing drain clogging. At-source waste segregation is also not implemented. Waste generation per capita rate decreased from 0,48 kg/capita/day to 0,44 kg/capita/day in period 2001-2010 (total waste production increased by 16%, while population increased by 28%). No scientific method of waste disposal was adopted at Jaipur's landfill sites. JMC has a refuse-derived fuel (RDF) plant of installed capacity 15000 Tons/Month, where only 4800 tones/month capacity is utilized, mainly due to lack of segregation at source.

The main problems associated with waste water management in Jaipur are: 1) According to the census of India 2001 - the percentage of households connected to open drainage system is 41.9% and those connected to closed drainage system is 37.7 %, while 20.5 % households are not connected to any drainage system. This situation contributes to a great extent to ground and surface water contamination since most slum dwellers resort to open defecation along the roads and open drains, polluting the surroundings, which also results in risks to human health; 2) 48% of waste water from all types of buildings receives no treatment. The city is implementing pan city solutions like integration of public transport and integration of solid waste management, with door to door collection of garbage and waste to energy plants.

The City of Jaipur has cut electricity consumption of street lights by 77% by replacing 90,000 conventional lights with LEDs and has mapped out a solar energy master plan.

Priority projects as indicated by Jaipur, which are waste to energy plant and common treatment plant for textile, lie within two out of three sectors described above, which are responsible for majority of GHG emissions, i.e. solid waste management and waste water management sectors.

Jaipur - baseline projects:

Jaipur will realize projects within the 100 Smart Cities Pan-Indian Programme. Under this scheme there will be undertaken projects within transport area, focusing on field of sustainable mobility with developments within: Non-motorised transport, Pedestrianisation, Public bike sharing system, Universal access (barrier free), Electric vehicles/IPT (rickshaws), Smart parking and smart signage, Smart signage for traffic/tourism, Intelligent car/coach parking system, Smart auto/taxi stands, App for IPT, Taxis & carpooling App and ITS for traffic signal cycles and bus information.

Further, according to Master Plan Jaipur, until 2025 there will be realised transport projects embracing the following policy priorities: flexibility in development promotion in fringe areas, preparation of a detailed zonal development plans for various zones on priority, regional transport corridors to be strengthened to enhance economic development within the region, development of an efficient Mass Rapid Transit System.

In addition to the Master Plan Jaipur 2025, the Mobility Plan Jaipur 2025 will also be prepared. Until 2020, 14 602 Crore Rupees (or ~2.2 B USD)is planned to be spent within the following fields: Public Transport Improvement (Bus fleet augmentation, Metro Rail, BRT, Intermodal Stations, Tourist Monorail, Terminals Improvements), Augmentation of Roads (Grade separators and ROB's, Road widening – 4laning and – 6laning, New roads (4lane), Ring road, Tunnels, Riverside Road), Non-motorized transport (Bike lane, Foot path cum drains, Pedestrian FoB), Traffic Management (Major Jct Improvements, Area Traffic Control, Signage and Road Markings)[33].

In the field of Solid waste management and waste management, Jaipur proposed to channelize the sewage generated from the western part as per the natural slope to south near Chandalai Dam. Hence, use of solid waste landfill gas for energy generation will be considered.

In accordance to the Master Development Plan, Jaipur wants to build integrated waste management, Green line service – scheme for management of solid waste generated from Hotels, restaurants, food joints and marriage gardens, and effective street sweeping and drain cleaning.[34]

Vijayawada - baseline scenario:

Vijayawada is within an interim capital of Andhra Pradesh, which is one of India's administrative States. The total area of the city is 61.88 sq. km. According to local census from 2011, the city had 1 034 358 people. It is expected that city's population will rapidly increase and reach a number of 1 505 000 people in 2020 and 1 684 000 people in 2025 (an increase of 62,8 % from 2011 to 2025).

Vijayawada is a center of local industry, focused on agriculture (cotton, turmeric, and tobacco), textile industry, automobile industry and other industrial products. Two industrial estates are located in and around the city. Total yearly budget is about 185 million USD.

Vijayawada is the biggest railway junction in India and the fourth biggest and busiest bus station in India. Traffic is dominated by two and three wheelers, with small, but rapidly growing share of private passenger vehicles and a big share of non-motorized transport. Main problems connected to transportation are: traffic accidents, pollution and congestion. These phenomena are mainly caused by a high share of para transit and two and three-motorized vehicles in traffic (which are responsible for a big part of traffic accidents and are characterized by high pollution emission) and lack of parking spaces, street infrastructure and pavements.

A rapid increase in waste production is expected due to population growth and high proximity of Amaravati (Andhra Pradesh's new capital city, currently under construction) to Vijayawada. Solid waste is commonly dumped on the

[33] Source: http://wricitieshub.org/sites/default/files/pdf_3.pdf, https://www.jaipurjda.org/page.aspx?pid=201&mid=31, Proposal for 100 Smart Cities Programme

[34] Source: Jaipur Master Development Plan https://www.jaipurjda.org/pdf/MDP/Vol2.pdf

drainage channels, which causes occlusion. There is no waste segregation and recycling in the city, which makes solid waste usage for energy and heat production difficult to achieve. The sewage network serves around 22% of households, with 78% of households with septic tanks, and from where 30% of wastewater is sent directly to the open drain. Untreated sewage is discharged into the water bodies.

Taking into account the significant issue of emissions from transportation or waste and wastewater management systems, it is important to support and implement projects which will have a positive impact on emission reduction and broaden the sustainable development agenda. Three sectors: transportation, solid waste management and wastewater management, are estimated to generate most of city's emissions and so have the greatest potential in greenhouse gas emission reduction. Projects shall be realized by different stakeholders and funded by national and international programs.

Vijayawada - baseline projects:

According to the Master Plan Vijayawada, transport projects will be realized within the following fields: 1) Strategies for improved share of public transport, including dedicated bus lines with bus bays, increased public transit fleet, increased frequency and improved signage; while field strategies for infrastructure improvement include introducing light rail system; 2) Strategies for infrastructure improvement include improving the existing roads, traffic signaling, signage and junction improvements, grade separators, parallel roads, link roads, road widening, parking of vehicles; 3) Strategies for improved pedestrian safety like pedestrian crossings, FoBs/subways, pedestrian guardrails, footpaths; 4) Strategies for environmental upgradation like strengthening the air quality and noise level monitoring, development of the green belts at all feasible locations, phasing out of the old vehicles, etc.

In accordance with the City Master Plan projects in the field of waste and wastewater management will be implemented, such as Solid Waste Management Facility, Water Treatment Plant, Recycling Centre, Composing Plant, Nellore Electrical Substation, Waste-to-Energy Plants. There is also a proposed Industrial Effluent Treatment Plant to be located in the north eastern part of the City. Vijayawada also plans to improve waste transportation system by using appropriate vehicles and minimizing manual handling, improve working conditions for municipal waste operators through better equipment and material and more effective procedures, improve final treatment and disposal of domestic solid waste through the development and use of a sanitary landfill. The City wants to increase the door-to-door waste collection performance and create waste transfer centers at appropriate locations with refuse compactor systems, waste segregator systems and reuse or recycle facilities. [35]

Guntur - baseline scenario:

Guntur is a city located in Andhra Pradesh State. The total area of the city is 168.41 km^2 where 39,77% of city's area is settled by local inhabitants. According to the local census from 2011, the city had 670 073 people. It is expected that population growth in Guntur will be the same as estimated for Vijayawada and reach 46% from 2011 to 2020 and 12% from 2020 to 2025.

The four main sectors of the city's economy are: trade and commerce, the service sector, industry and health&education sectors. Guntur is considered as the district's political, educational and commercial center and the whole district as a major industrial corridor in India (mainly agricultural products e.g. tobacco, chilies and cotton). Total yearly budget is about 87.476 million USD.

Guntur is an important transport junction. The city is well connected by national and state highways. The total length of road network in the city is approximately 1104 km. Main problems connected to transportation are: traffic accidents,

[35] Source: City Masterplan report, July 2015, http://crda.ap.gov.in/APCRDA/Downloads/MasterPlans/02-Draft%20Capital%20City%20Masterplan%20(Detailed%20Masster%20Plan).pdf; https://www.ourvmc.org/jnnurm/ch6.pdf

congestion and air pollution. Main contributors to these problems are: lack of public transport, too narrow streets in old areas (which determine congestion), lack of parking and pedestrian facilities, rapid growth of private vehicles and auto-rickshaws. The relatively small population makes public transportation systems financially unviable.

A rapid increase in waste production is expected due to population growth and high proximity of Amaravati (Andhra Pradesh's new capital city, currently under construction) to Guntur. The present coverage of waste collection is about 82% of city's area. There is no waste segregation and recycling in the city, which makes solid waste usage for energy production difficult. Open dumping of waste and lack of scientific disposal of garbage are observed in the city. Guntur city does not have a separate storm water drainage network. Polluted sewage flows freely into the open drains.

Taking into account the significant issue of emissions from transportation or waste and wastewater management systems, it is important to support and implement projects which will have a positive impact on emission reduction and broaden the sustainable development agenda. Three sectors: transportation, solid waste management and wastewater management are estimated to generate most of the city's emissions and so have the greatest potential in greenhouse gas emission reduction. Projects shall be realized by different stakeholders and funded by national and international programs. It should be noted that despite the requirement for job creation and revenue generation, the city has been forced to push out polluting industries (e.g. cotton, chilli, tobacco). The city has adopted the innovative approach of importing waste from neighbouring municipalities to ensure economies of scale for waste to energy plant. A suitable waste compacting technique for facilitating transportation is now being sought.

Guntur - baseline projects:

City Development Plan for Guntur proposes to undertake a large amount of projects within the transport area. They are concentrated within two main fields: Traffic, transport and road and street lighting. The first group includes the following project proposals: Major road widening and improvement, Improvement of road junctions, strengthening of existing CC & BT roads, Providing road markings, Traffic signs, Parking, Footpath and development of new link roads. The second group includes the following project proposals: Provision of new poles and light fixtures, providing adequate machinery for O&M of street lights, providing high masts lights and PPP initiation for installing energy savers and remote control operation of street lighting.

According to the City Development Plan for Guntur in the field of sewerage and waste management, the following projects will be implemented: collection, treatment, and reuse/disposal of wastewater, improvement of sewerage connection network, development of decentralized sewerage system and sewerage treatment plants across the city. Guntur will introduce efficient integrated solid waste management system, 100% door-to-door collection and segregation of waste at source, maximize recycling and reuse capacity and minimize disposal at landfill, improve the infrastructure related to treatment of waste for recovery of 50% waste collected, develop Naidu pet dumping yard as a regional landfill site with scientific closure mechanism. [36]

Mysore - baseline scenario:

Mysore City is situated in the southern part of the Indian State of Karnataka. It's a capital city Mysore District, is one of the largest districts in Karnataka. The city is located about 135 km from Bangalore - the capital city of Karnataka state. Mysore is a middle-sized Indian city with 914 550 inhabitants (Census 2011). The population growth is very high as for Indian conditions and it is expected to explode within the next decade, reaching by 2021 a doubling in size of the population as against that in 2001. The city is characterized by a moderate population density, which is on average 6 700 persons per km^2. City Administrative area covers 128.46 km^2. Yearly budget is around 106.33 million USD.

[36] Source: City Development Plan for Guntur - 2041 (Final City Development Plan) December 2014 http://www.gunturcorporation.org/Adminx/Development_Plan.pdf

Mysore is a historical and tourist center, each year about 3.15 million tourists come to the city. It's also a center of education as well as administration and trade. Mysore's main industrial and business sectors include: Information Technology, Research and Development Centers, Electronics and Engineering Industries, Agro and Food Processing Industries. Industrial sector is also playing an important role where most of the major industries are located in and around Mysore in six industrial areas. Twenty percent of district GDP is generated by agriculture and it provides employment to a large group of the rural population.

Some of the major city problems are: traffic accidents, congestion and pollution. Main contributors to these problems: 1) Very small number of footpaths and cycle routes – there is presently mixed traffic; 2) Public transport is unorganized and of poor quality; 3) Inadequate road transportation infrastructure. Heavy traffic and intensive road transport causes very high air pollution. There is also no proper airport, which could be a key reason why Mysore's development has been so different from that of Bangalore.

Mysore, with a population of less than one million has been recognized for aggressive waste management efforts and effective sanitation program. The city has been ranked as the cleanest city in India.

Waste is collected daily. However, the wastes are not segregated at source and nothing is done specifically for the plastic waste management in Mysore. Mixed waste is collected and dumped into the landfills. Total quantity of municipal solid waste generated in Mysore city is 402 TPD. Waste system is covering 75% of Mysore territory. The collection efficiency is estimated to be 80%. Mysore is one of the first cities in India to introduce a 'zero waste management scheme, where segregated waste from all places (organic and inorganic) is brought to Zero Waste Management Centre. Inorganic waste is packed separately after segregation and sold locally whereas organic wastes are sent for composting. Best practices employed at Mysore include composting, GPS enabled public transport, zero waste management plants with strong participation of women self-help groups (SHGs). The city also produces over 100 TPD of construction debris but lacks the technology and knowledge to recycle this waste.

Mysore was one of the earliest cities in India to have underground drainage (UGD). A major part of the city is provided with the underground drainage system. Currently 90% of the total population in the city is covered by the sewer system. The city has three sewage treatment plants with a total capacity of about 145 million liters per day (MLD), which does not fully satisfy the city's sewage problems. A large part of sewage, which is not directed to the treatment plants, goes into open water bodies causing high water contamination. Taking into account the major problems mentioned above, the following project implementation is proposed: Waste-to- Energy plant, sewage treatment plant upgrade for biogas collection and energy generation, and slaughterhouse and market waste biomethanation plant.

Mysore - baseline projects:

According to Master Plan Mysore 2031, works will be undertaken in the following transport areas: access control, development of a major road network in outer areas and road widening proposals. Access control will be installed over fast moving corridors in order to ensure smooth movement at the ring roads, main arterials and other important roads. Further, there are planned road widenings with the same goal. In addition there is planned development of a major road network in outer city's areas.

In the City master Plan, Mysore indicated projects in the field of sewage and waste management as follows: rehabilitation, expansion of underground drainage system, rehabilitation of sewage treatment plant (STP) for treatment of raw sewage, safe disposal of treated effluent at specified locations, segregation of waste, conducting awareness campaigns every month, familiarizing people about solid waste management system adopted in their ULB, training program for retrievers regarding importance of segregation, proper handling of waste and its hazards due to improper

handling, door to door waste collection system, systematic street sweeping, separate collection system for bulk generators and construction waste, secondary storage, transportation system, processing and disposal.[37]

III) Financing Baseline

Summary of the baseline programs and projects related to financing sustainable cities is presented below. For further mechanisms available to cities to fund sustainable projects, please refer to Annex H.

Financing sustainable cities - baseline scenario:

Financing urban infrastructure and sustainable city solutions is clearly a formidable challenge. The fact that municipal services in India are significantly underfunded has resulted in inadequate infrastructure and poor public service delivery by municipal bodies, which have seriously constrained the role of cities as centres of economic growth. In 2005 the poor state of urban infrastructure and services was a major motivation for initiating a Central programme, the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) with the aim of improving development incentives by linking grants for urban renewal to reforms at both State and local levels aimed at improving fiscal efficiency of the urban local bodies, freeing urban land and the housing market. Under the Mission, 65 ULBs (Urban Local Bodies) were selected and funds were given for identified projects to strengthen infrastructure in the areas of water supply, sewerage, sanitation, roads, urban renewal, etc. Under the Mission, Ministry of Urban Development (MoUD) approved 619 projects in different sectors with an approved cost over Rs. 66,000 crore (~9.9 B USD). For the non-Mission cities/towns, the MoUD sanctioned 1,148 projects at an approved cost of Rs. 26,816 crores (~4 B USD) in different sectors under Urban Infrastructure Development Scheme for Small & Medium Towns (UIDSSMT). The implementation status of the projects sanctioned and completed under JNNURM is less than 40% (Finance Commission, Government of India 2014). The first phase of the programme was for the period 2005-2012. During the first two years the progress was slow – this was complicated by the global financial crisis and the slowdown in the Indian economy.

In India, the gap in urban infrastructure is estimated at US $827 billion over the next 20 years, with 2/3 of this required for urban roads and traffic support. Some estimates show that the cumulative capital investment requirements for providing services at 2007 prices for the period 2006-2031 is at Rs. 71,251 billion (~1.07 T USD) and O&M requirements at Rs. 10,031 billion (~150.8 B USD). This works out to an annual average of Rs. 3,251 billion (~48.9 B USD) or about 25% of the consolidated revenue receipts of the Centre and States.

As illustrated below, the average cost recovery of selected cities in India for the period 2007-08 is dismal and does not bode well for cities self-funding their infrastructure needs based on revenue receipts:

City	Revenue expenditure on urban services (Rs. crore)	Revenue receipts from urban services (Rs. crore)	Average cost recovery (%)
Metropolitan cities			
Hyderabad	347	139	40
Bhopal	49	20	41
Lucknow	16	3	18
Other cities			
Amravati	26	2	8
Palakkad	3	2	55

Table 4. Average Cost Recovery[38]

[37] Source: Mysore City Development Plan, http://justmysuru.com.m-din-23.webhostbox.net/mudamysore.gov.in/MasterPlan/MP_Reports/VOL%202_PROPOSALS.pdf

The ability of cities to finance urban infrastructure is based on their budgets and creditworthiness; their ability to exploit existing assets in order to finance new developments; their ability to access regional or national government funding streams; and their access to international capital markets and private finance. Most municipal ULBs are operating at a deficit – which is compounded by their lack of capacity and expertise in financing options.

Today's financing landscape does not provide cities with adequate access to affordable financing suited to low-emission, climate resilient infrastructure. The challenge is to provide a broad range of financing sources – both public and private that can attract additional investment. Ramping up channels of city finance – such as transfers from national governments, revenues from local taxation and public services, and borrowing from financial institutions, development banks or public sources will be essential towards ensuring adequate project funding for sustainable cities.

Given that local governments have authority over the selection of infrastructure projects made at the municipal level, they exercise influence over the nature of infrastructure renewal and expansion and the promotion of more sustainable urban centres.

Investing in sustainable infrastructure is challenged by current global fiscal constraints: resources are scarce, and public authorities in all levels of government must do more with less. This decrease in public investment flows hits sub-national governments. Funding climate change adaptation in cities will require significant investment as well. Damages, especially to infrastructure, caused by climate change-related disasters are likely to pose increased costs for cities. Global climate change adaptation costs vary, but alone are estimated to be between USD$49 billion and 171 billion per year until 2030 (UNFCC, 2007) – cities will bear a large share of this cost.

In summary, a number of barriers to invest in sustainable city projects include:

- Lack of knowledge and/or capacity of the city to report and market mitigation projects;
- Climate change mitigation is low on the city agenda due to the lack of political willingness, electorate mandate or awareness of financial advantages;
- Difficulties in aligning all stakeholders involved, making integrated projects and aggregating smaller ones;
- Lack of track record or credit worthiness of the city;
- Regulatory disincentives; and,
- Lack of capacity and/or engagement of the private sector.

Financing sustainable cities - baseline projects and programs at the national level in India:

To overcome some of the sustainability problems occurring in cities, the Indian government embarked on nation-wide programs and missions focusing on renewable energy development, energy efficiency and sectoral development in cities. As most of the initiatives result in direct or indirect GHG emissions reduction as well as in climate change adaptation capabilities, they have been included in India's INDC submitted to UNFCCC.

Some of the most important general programs include:

- National Smart Grid Mission,
- National Mission for Enhanced Energy Efficiency (NMEEE),
- Energy Conservation Building Code (ECBC),
- National Electric Mobility Mission Plan 2020.

[38] Source: Ministry of Urban Development, Government of India (2013)

Apart from country and economy-wide programs, also specific city-targeted missions have been commissioned. Of these the most important for the baseline scenario development are:

1. Swachh Bharat Mission (SBM) - The SBM is a national Indian governmental program dealing with the problem of waste in India. Its main focus areas are: household, community and public toilets as well as solid waste management. SBM covers waste and wastewater sectors in cities' sustainability strategy together with improvement of quality of life, Under SBM, cities are required to prepare a concept sanitation plan and specific projects (esp. in the PPP formula) to be financed. The SBM defines types of technologies to be used within the SBM and it also requires monitoring and reporting.

2. AMRUT - Atal Mission for Rejuvenation and Urban Transformation - is national Indian governmental program aiming at improvement of water supply, wastewater management, mobility improvement and green areas development. Participating cities have to prepare Service Level Improvement Plans (SLIPs) which will be included into the State Annual Action Plan (SAAP). The plan has to include investments improving services in the thematic areas of AMRUT, also including smart solutions in the water and wastewater sectors, the energy supply system, safety, clean environment etc. The AMRUT program also has $10 billion available for projects that can be applied towards Smart City development.

3. Solar Cities Program - The solar city program aims to consolidate all the efforts of the Ministry in the Urban Sector and address the energy problem of the urban areas in a holistic manner. The program focuses on renewable energy development and energy efficiency measures in selected cities (sixty cities). Each city participating in the program, within 5 years, is obliged to reach a minimum 10% reduction in projected demand of conventional energy. For this purpose a Master Plan has to be developed by the city assessing current energy situation, future demand and creating action plan with involvement of the stakeholders.

4. Housing for All (Pradhan MantriAwasYojana) - The Project is aimed for urban areas with following components: slum rehabilitation of Slum Dwellers with participation of private developers using land as a resource; promotion of affordable housing for weaker section through credit linked subsidy; affordable housing in partnership with Public & Private sectors and subsidy for beneficiary-led individual house construction or enhancement. A Technology Sub-mission under the Mission has been set up to facilitate adoption of modern, innovative and green technologies and building material for faster and quality construction of houses. Technology Sub-Mission will also facilitate preparation and adoption of layout designs and building plans suitable for various geo-climatic zones. It will also assist Cities in deploying disaster resistant and environment friendly technologies.

5. Smart City Mission - The SCM is a governmental program focusing on development of core infrastructure and improvement of quality of life in cities with a clean and sustainable environment as well as application of 'Smart' Solutions. The SCM looks at compact areas to create a replicable model and covers: water and waste, transport, housing, governance, health and technology. SCM covers 100 cities within a 5-year timeframe (2015-2020). The strategic components of city development in the SCM are: city improvement (retrofitting), city renewal (redevelopment), and city extension (Greenfield development), a pan-city initiative in which Smart Solutions are applied covering larger parts of the city. Each participating city has to formulate its own concept, vision, mission and plan (proposal) for a Smart City that is appropriate to its local context, resources and levels of ambition.

The Smart City Mission is operated as a Centrally Sponsored Scheme (CCS) where the Government of India proposes to give financial support to the extent of about US$10 billion (Rs. 50,000 crores) over five years, i.e. on an average of US$20 million per city per year. With an equal amount to be contributed by the State/Urban Local Body (ULB), approximately US$20 billion will be available for financing the Smart City Mission/development.

Towards this end, the Ministry of Urban Development (MoUD), has developed a Draft Concept Note highlighting the criteria for developing potential smart cities and the mechanism for its implementation. *Key highlights include:*

- Operational procedures including development of Citizen Reference Framework, Smart City Development Plan and Environmental Sustainability Plan
- Selection of Smart cities from among:
- Satellite cities of four million+ population
- Cities in the population range of one to four million
- All State/Union Territory capitals
- Cities of tourism/religious/economic importance not included above and
- Cities having population between 0.2 – 1 million
- Leveraging instruments enabling smart cities like energy efficiency, Demand management, improved access to information, environmental sustainability, use of clean technology, use of ICT, participation of private sector, citizen participation and smart governance
- Conditions preceding smart city development including, commitment to tripartite agreement between ULB, State and MoUD, commitment of e-Governance & presence of citizen's charter; presence of notified Master Plan; clarity on financing mechanism – own source, grants, PPP and financial sustainability and Disaster Management strategies.
- Central government support in the form of financial support through viability gap funding, policy support and capability building support. Financing mechanism including, leveraging schemes by other Ministries, PPP projects, creation of a fund blending grants form central government, borrowing from multilateral/bilateral agencies and bonds subscribed by national and state level development agencies etc.

Though the Indian government has committed to the development of smart cities in India, the state and ULB level strategies for quick implementation needs to be formulated and the operating model needs to be finalized.

IV) Main challenges to be addressed by the project

The baseline programs and projects described above are aimed at increasing overall sustainability of the cities. Taking into consideration specific barriers, also previously described, the GEF6 SC-IAP India Child Project is designed to assist cities to take action based on their mandated roles towards achieving the goals of the different national missions, specifically the Swacch Bharat mission. The following challenges persist and will be considered as intervention areas for this project:

- Inefficient institutional capabilities for effective implementation of programs at national and local level – with different players not well-coordinated; lack of qualified human resource and poor knowledge transfer. Short-term planning with poorly integrated approach for city development. Coherent strategies are frequently developed and implemented by different responsible bodies but lacking coordination, sometimes resulting in contradictory actions being undertaken.

- Insufficient innovative funding schemes for investment projects – public-private partnership (PPP) implementation still has challenges to be overcome and the continuity of investment projects often impaired. Other options such as short-term capital investment plans, varied structures of Public-Private-Partnership and third party contracting will be explored.

- Low correlation between planning within national missions' guidelines and international standards – resulting in incomparability of current city state and policies implementation at the international level.

3) The proposal alternative scenario, GEF focal area strategies, with a brief description of expected outcomes and components of the project

The proposed project is in line with the Sustainable Cities Integrated Approach Pilot (IAP) Outcome "To promote integrated planning and investments related to urban sustainability that result in environmental, social and economic benefits at the local and global scale" as well as GEF-6 strategy CCM 2, programme 3, "To promote integrated low emission urban systems ".

Specifically, the proposed project aligns with the GEF6 SC-IAP program by:

- Scaling-up local climate change mitigation action in India - mainstreaming mitigation concern into sustainable development strategies of cities;
- Increasing local adaptation capabilities in India by fostering resilience of Indian cities;
- Empowering low carbon development at local level in India - promoting innovation, technology transfer, and supportive policies and strategies;
- Demonstration of sustainable pilot investment projects;
- Supporting sustainable development in cities including waste reduction.
- Integrating relevant gender mainstreaming strategies, as well as coordination and knowledge exchange with the Global Knowledge Platform.

Proposed intervention:

The proposed GEF project is aimed at removing identified gaps by:

- Integrating sustainability and resilience strategies into urban planning and management.
- Contributing to the attainment of goals of ongoing cities missions as well as implementing an integrated set of technologies and interventions to assist pilot cities in carrying out and facilitating investments which will reduce GHG emissions and enhance effectiveness, efficiency and safety of cities systems and processes, thus facilitating deployment of sustainable and resilient cities strategy within selected priority areas.
- Building institutional capabilities for effective implementation of programs at national and local level – with emphasis on the coordination between different national stakeholders as well as correlation with relevant international standards.

All Indian cities do not have a comprehensive methodological approach to development planning which incorporates sustainability issues (multi-dimensional and broadly inclusive planning processes that balance economic, social, and environmental resource considerations). The alternative scenario is aimed at the implementation of holistic sustainability planning in Indian cities through four components. One main component is the development of integrated sustainability plans focused on smart development for 4-5 selected cities followed by elaboration of strategies for these cities. Development and implementation of the sustainable city strategies involves broad interventions in all city sectors, including technology investment as well as behavioral changes. To ensure maximum effectiveness of the process other components are designed to facilitate the development and implementation of strategies. These components include pilot projects selection and implementation (technology demonstration), capacity building, knowledge management and monitoring and evaluation.

UNIDO's value addition to the project:

The project's unique feature is a systemic approach to planning with the development of a specific methodology for sustainable planning in cities, tailored to India, but taking into consideration all important international guidelines and trends. The idea of the methodology is presented on **Figure** 8. The methodology, which is fully in line with all GEF guidelines, covers the following components:

- International initiatives component – The methodology includes all major initiatives covering sustainable cities development, thus ensuring that cities can join and comply with the requirements of global initiatives enabling cooperation at international level.
- International standards and guidelines component – This component ensures that the developed strategy will be fully compliant with the most appropriate international level guidelines regarding sustainability strategy development.
- National policies and missions component – This component brings together Indian and international approaches. By including India's national missions' requirements, this combination allows Indian cities to integrate all relevant policies into one single holistic strategy.
- Emission inventory guidelines component – This ensures that GHG inventory will be developed according to most relevant international standards (GPC and PAS) allowing for comparison of the inventories worldwide.
- Indicators component – The adoption of ISO37120 and other relevant metrics (e.g. Consumer Price Index (CPIs)) will allow for sustainability monitoring and benchmarking within India and at international level.
- Implementation component– This will allow for proper implementation of the strategy at local level as well as monitoring and reporting progress according to international requirements.

As a result of the interventions, the outcomes will be realized:

- Demonstrated enhancement of institutional capacities of those dealing with urban planning and management in promoting sustainable city planning and management, appraising investment projects and development applications, and enforcing standards and guidelines;
- Building awareness through establishment of systems and processes to capture and share knowledge on sustainable city development;
- Building/enhancement of municipal institutional capacity in financing sustainability and demonstrate with financial and business models, including possibly PPP, green procurement, fund management and incentive mechanism to promote sustainable city investments;
- As highlighted by many of the IAP-cities, the main roadblock for developing sustainable cities is not much on technology transfer or innovation but rather partnership and financing mechanisms.
- Produce and disseminate information on lessons learned, best practices, technologies, human and technical resources, and establish a network for collaboration and sharing through workshops, forums, conferences and other professional interactions;

With these, the development of sustainable cities will be an integrated and inclusive approach.

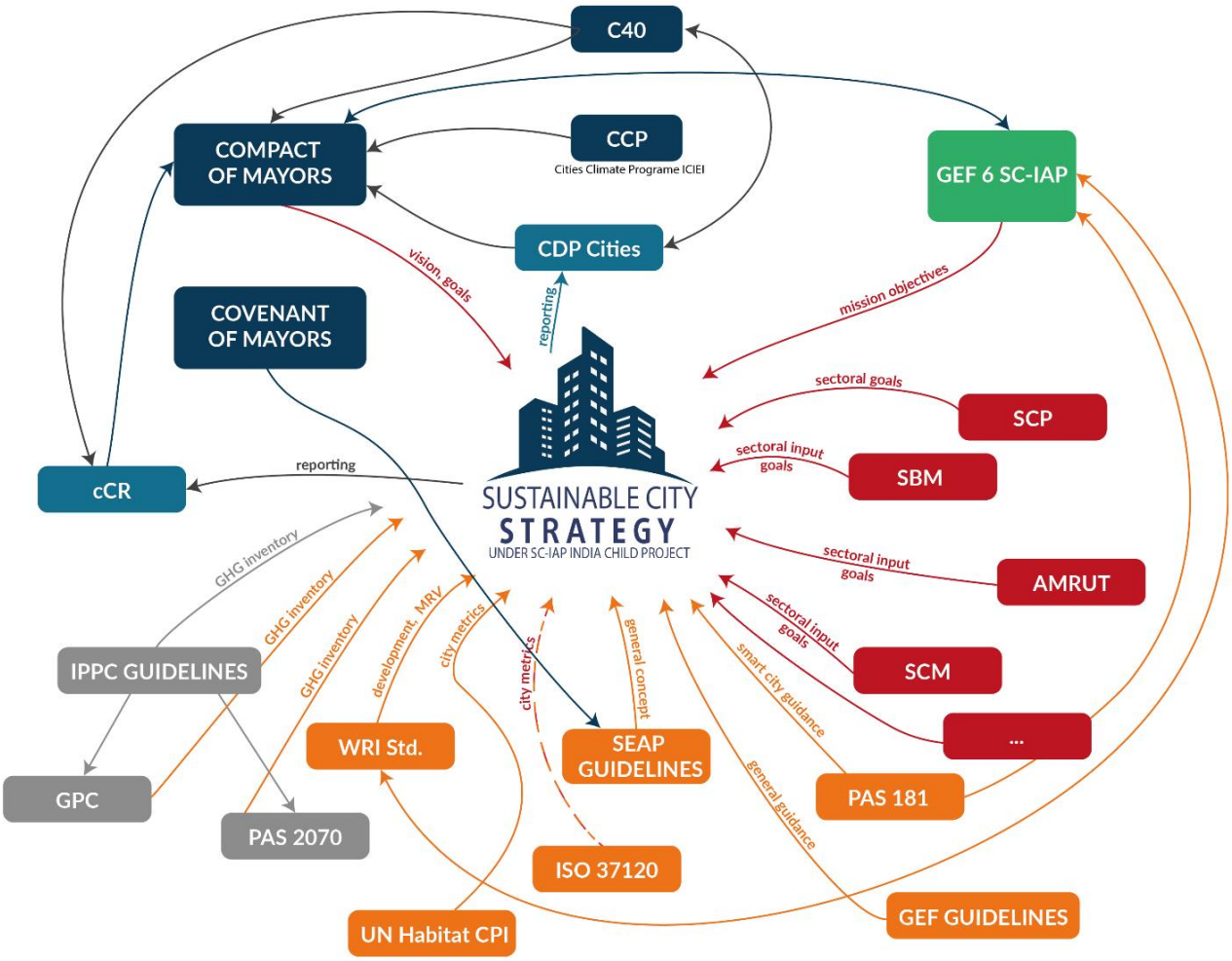

Figure 8. Illustration of the proposed approach of integrated urban sustainability planning in India for SC-IAP

Description of the project:

The project will be implemented in the framework of four Project Components:

Component 1: Sustainable urban planning and management

Role of Integrated Planning

Different layers of urban planning, such as water and waste management will be embedded in the urban planning activities within component 1 'Sustainable Urban Planning and Management' with an objective of reinforcing the existing city master plans. Based on the analysis of the current city master plans, once the new plans are issued, indicated gaps will be addressed in line with the pilot cities' conditions. Gap analysis of the existing master plans of the 5 pilot cities will also inform the guidelines to be issued by the Ministry of Urban Development and applied to all Indian cities beyond the scope of this project. Moreover, the use of geospatial tools will inform the updating of the existing land use plans, where as the data from existing national urban information system (NUIS) will be used for benchmarking purposes.

Integrated planning which encompasses different spatial contexts (core, expansion, peri-urban and rural), is conducted across sectors and at different scales and levels of government, can play an important role to solve many of the challenges below:

1. Energy consumption and greenhouse gas emissions - Urban form is important in reducing urban energy consumption, particularly through density and transportation efficiencies. For example, high-density neighborhoods with good accessibility and adequate public space enable the construction of energy-efficient, highly livable, high-rise neighborhoods. Land use policies, which emphasize density, mixed use and social mix, supported by adequate share of public and street space shorten travel distance, help reduce the emissions intensity of their economies and ecological footprint and emissions of greenhouse gas and other pollutants are highly correlated with automobile use and travel distances. The relationship between urban form, pollution and climate change can be reshaped through planning.

2. Disaster mitigation and adaptation - Risk assessment and hazard mitigation measures should be incorporated into land use planning to reduce vulnerability, for example by: identifying potential natural hazard areas; channeling growth away from high disaster risk areas, i.e., earthquake faults, coastlines subject to sea level rise and areas subject to mudslides; and introducing new building codes and materials specifications.

3. Public health - Poorly planned and managed peri-urban areas may be breeding grounds for epidemics (e.g., influenza, avian flu, SARS). On the other hand, well-functioning urban systems with improved waste management practices can improve the quality of air, soil and water bodies, and enable people and emergency vehicles to easily access health care facilities.

4. Per unit infrastructure costs - Infrastructure costs per housing or work unit served are much lower if land is used efficiently. Benefits are associated both with density and degree of contiguity of the built up area (e.g., minimizing leapfrogging and maximizing nodality).

5. Economic productivity - Economic productivity can be facilitated through agglomeration (density and mixed use) as well as through cluster development (localization, agglomeration economies), innovation (face-to-face) and logistics processes. Human time savings can be achieved through more efficient land use and urban form (for example, enabling a closer fit between workplace and residence, reducing congestion).

6. Food supply - Over consumption of land often implies destruction of the natural environment and a decrease in agricultural production. Thus, local, national and global food supplies can be protected through minimizing unnecessary loss of fertile land.

7. Poverty prevention in communities - Spatially efficient cities can deliver housing that is both affordable and accessible to employment, schooling and places of leisure. For example, high-density development clustered around transit stations enables lower cost housing (land costs per unit are lower) and accessibility. This is especially important to the poor, who are often recent migrants. Effective land use management ensures security and social mixing as benefits to the urban poor, especially woman and children, who are otherwise often isolated.

Comprehensive planning approach requires incorporation of sustainability strategies into urban planning and management. This can be achieved by development and implementation of Sustainable Cities Strategies (SCS) at local level. The new holistic approach will improve the quality and quantity of analytical work undertaken through tools, standards and sustainability guidelines closely linked to urban development topics, expanding the number of area thematic focus, increasing the level of planning ambition, strengthening stakeholders' engagement including civil society and private sector, and improving linkages with regional and national level planning, and the main task translating plans into actions. Using the methodology, a SCS will be elaborated for each of the project cities which then will be executed by local actors.

The SCS will be a city level strategy and will cover all sectors of a city: Stationary energy, Transportation, Waste, Industrial Processes and Product Use (IPPU), Agriculture, forestry, and other land use (AFOLU), other emissions (e.g. goods and services). The methodology will be consistent with significant international guidelines, standards and methodologies for urban projects, including IPCC Guidelines for National Greenhouse Gas Inventories, Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC), WRI Mitigation Goal and WRI Policy Action Standard, UN Habitat guidelines on climate action planning, ISO 37120:2014 – Sustainable development of communities, SEAP Guidebook and PAS 2070:2013 Specification for the assessment of greenhouse gas emissions of a city. Additionally the SCS will support the implementation India's national programs: The Swachh Bharat Mission, The Smart Cities Mission, Atal Mission for Rejuvenation and Urban Transformation and Solar Cities Program.

Special institutional framework for implementation of the strategies in Indian cities will be created on agreement with the MoUD. The methodology with relevant tools will be owned by MoUD and the ministry will create institutional capacity to foster development and implementation of the SCSs in other Indian cities.

Within this component a broad and planned stakeholder engagement process will be developed and implemented. Also cities' resilience will be addressed by risk assessment and development of relevant resilience management plans that will also be reflected in the SCS.

Through the project:

- a specific methodology and tools will be developed for the SCS in India including sustainability metrics;
- written guidance and other resources including existing case studies, videos will be used to demonstrate the Sustainable (Smart) Cities activities;
- Sustainable Cities Strategies will be developed for each of the cities and proposed for endorsement by the relevant national stakeholders;
- Risk and vulnerability will be mapped and resilience management plans will be developed and reflected in the SCS;
- Stakeholders engagement plan and media/communication and stakeholders engagement will be carried out – website, brochures, videos, and others communication activities to promote and disseminate to the broader audience the idea of sustainable (smart) city, guidelines, standards and sustainable methodologies for urban projects, results and experience of other cities.

Some of the main activities to support the above output include: capacity building events and local and national levels on sustainable city planning, technology, investment planning and financing; training programs for decision makers on sustainable urban planning/master plan development.

Outcome and outputs of the component:

1.1. Increased scope and depth of integrated urban sustainability management policies and processes, including institutionalization within the local governance structure	1.1.1. Guidance and methodology for sustainability plan development under SC-IAP proposed for adoption by the relevant national and local stakeholders 1.1.2. Established institutional framework for sustainable city planning and management 1.1.3. Integrated sustainability and resilience plans (SCS – Sustainable City Strategy) developed for at least 4-5 cities 1.1.4. City performance measured against indicators consistent with international standards (e.g. ISO 37120), as well as SC IAP program level indicators

Activities under outputs 1.1.1., 1.1.2., 1.1.3., and 1.1.4 are outlined below:

1.1.1. Guidance and methodology for sustainability plan development under SC-IAP proposed for adoption by the relevant national and local stakeholders

Activities:

- Verification of current methodology frameworks and guidelines applicable for the project
- Cities' resilience risk assessment
- Development of full methodology covering:
    - International standards and guidance,
    - National missions and programs,
    - Performance measurement metrics,
- Stakeholder consultation process,
- The final version of the methodology proposed for adoption by the relevant national stakeholders, including MoUD.

1.1.2. Established institutional framework for sustainable city planning and management

Activities:

- Appointment of official supporting bodies (national and state levels),
- Guidance and methodology proposed for adoption by the MoUD,
- Appointment of official structures in each city, as in a Sustainable City Cell,
- Formation of Steering Committees, Core Teams and Stakeholder Boards,
- Elaboration of stakeholder engagement procedure.

1.1.3. Integrated sustainability and resilience plans (SCS – Sustainable City Strategy) developed for at least 4-5 cities

In line with the guidance and methodology drafted under output 1.1.1, as part of the output 1.1.3. SCS – Sustainable City Strategies for at least 4-5 cities will be developed and proposed for the adoption by the relevant stakeholders.

Activities:

- Development of a comprehensive GHG inventory for each city, development of draft sustainability and resilience plans (SCS – Sustainable City Strategy) for consultation process for each city,
- Stakeholder consultation of the SCS,
- Elaboration of final SCS versions,
- SCS final versions proposed for adoption by the Municipal Corporations.

1.1.4 City performance measured against indicators consistent with international standards (e.g. ISO 37120), as well as SC IAP program level indicators

Activities:

- Verification of relevant city metrics, for each of the cities,
- Adoption of indicators set (e.g. ISO 37120, UN Habitat CPI) for planning purposes in project cities.
- Adoption of program level indicators set to ensure reporting on towards the programmatic goals of SC IAP.

Component 2: Investment Projects and Technology Demonstration

The aim of the pilots is to showcase a specific technology potential for each pilot city. The demonstration of technology or a set of technologies should enhance effectiveness, efficiency and safety of cities systems and processes, thus facilitating deployment of sustainable and resilient cities strategy within selected priority areas. A specific methodology for the project was developed, which allow selection of the best suited intervention pilots, fitting objectives of the GEF 6 SC-IAP Child Project India. The pilots will be integrated in the urban tissue following the principles of sustainable city strategy that will be developed under component 1. In order to facilitate project selection from a large number of initiatives undertaken by the city, a two staged qualification methodology has been developed.[39]

Phase I is a screening process, which is designed to assist in limiting the number of projects from the city's project pipeline list, into a more detailed evaluation in stage two. The aim of this phase is to quickly select eligible demonstration projects from often numerous lists of activities planned by the cities.

First, pilots that do not contribute to greenhouse gas emission reduction were excluded from further assessment, in light of the project being aligned with GEF's climate change focal area. Next, demonstration projects are assigned to city activity sectors. Projects that reduce greenhouse gas emission in more than one sector get preference. Stage three processes gives preference to projects that support most greenhouse gas emission intensive city sectors. Moreover, assessment of project eligibility for support under Indian missions and programs, allow for assuring investments and co-financing, while meeting Indian sustainability goals. Additionally, a local perspective is being taken into consideration, by giving additional score to activities considered as most demanding intervention by city administration and local stakeholders. Highest ranked projects are qualified to phase II.

Having obtained the most preferred project activities in the general assessment process of phase I, a more detailed analysis was required to select the best project activity. Phase II is more complex and requires supplementary data. GEF

[39] Please note that since the demonstration pilot for Guntur has been considered in the later stage of the PPG, the preselection of the demonstration pilot has not been conducted yet.

6 environmental and social indicators have to be assessed for each project, both quantitative as well as qualitative. Technical and economic project feasibility is also addressed here. This is to ensure that projects will achieve expected effects over their lifetime and increase chances for uninterrupted project operation. The final stage assessed project efficiency related to the idea of GEF 6 project objectives using three indicators:

- Number of people that would benefit from implementation of a pilot activity;
- Amount of greenhouse gas emissions avoided/reduced per capita per year of a pilot activity;
- Amount of greenhouse gas emissions avoided/reduced per total investment cost.

The project activity that received the highest cumulative score in phase II of the assessment methodology was selected as best responding to the objectives of the GEF 6 SC IAP Child Project India.

Screening and scoping methodology covers 9 stages for project selection:

Stage 1 Determining, whether a project contributes to a greenhouse gas emission reduction.

Stage 2 Assigning to a project the activity scope/scopes that it contributes to.

Stage 3 Supporting the most greenhouse gas emission intensive city sectors.

Stage 4 Contribution to national/local initiatives supporting sustainable city development.

Stage 5 Local perspective.

Stage 6 Final project qualification.

Stage 7 Estimating project indicators.

Stage 8 Technical and economic project feasibility.

Stage 9 Calculation of project efficiency.

Using such approach, allowed for the selection of eligible activities from a large number of projects in city's pipeline. Only a limited number of multi-benefit investment opportunities were then assessed against sustainability indicators and project efficiency factors, allowing for selecting investments that best utilize GEF support, meet global and local needs, but most of all, bring highest contribution to the sustainability objectives of the GEF and India.

Phase I of the methodology has been used presently to select 3 investment activities at this Project Preparation Phase, however, the complete methodology, divided even further into individual steps, will constitute as basis in a broader context, to assess every project to be implemented under the SC IAP sustainability strategies.

During project preparatory phase, cities have identified the following indicative priority projects: [40]

City	Indicative Priority Projects
Bhopal:	1. solid waste management and sewage management 2. last mile connectivity to city public transport system
Jaipur:	1. waste to energy plant 2. common treatment plant for textile
Vijayawada:	1. waste to energy plant 2. bio-methanation from STP

[40] Please note that since the demonstration pilot for Guntur has been considered in the later stage of the PPG, the pre-selection of the potential demonstration pilot has not been conducted yet. Based on the available resources, further assessments for a possible stand-alone demonstration pilot for Guntur will be done after the full GHG inventory for all cities in the 2nd half of 2017.

Mysore:	1. compost plant 2. biogas plant

In the course of site visits, identification of investment interventions has been conducted. This included stakeholder meetings as well as indicated site inspection.

City	Projects selected after Phase I of project selection methodology
Bhopal:	1. Vegetable market waste biomethanation (biogas plant)
	2. 200+100TPD compost plants
	3. Bhanpura dumping site closure
Jaipur:	1. Sewage treatment plant connecting to next part of the city, selling surplus biogas outside and auto rickshaw fuel switch to CNG from STP
	2. Electric public buses for Jaipur's city centre
	3. Waste to energy plant
Vijayawada:	1. Pandit Nehru Bus Station (PNBS) "last mile" connectivity system
	2. Energy generation from STP biogas
	3. Electric transportation system serving citizens and tourists
Mysore:	1. Sewage treatment plant upgrade for biogas collection and energy generation
	2. Slaughterhouse and vegetable market waste biomethanation plant
	3. 300TPD compost plant

Data collected during site-visits and received from local authorities and through internal research, allowed for the following estimations:

Table 5: Waste Management Projects

City	Project name	Project assumptions	Project results
BHOPAL	Vegetable market waste biomethanation (biogas plant)	• Anaerobic digestion of 6 tons per day (TPD) slaughterhouse waste and 14 TPD vegetable and fruit market organic waste • 300 kW biogas engine • Project cost: 1 500 000USD	Energy generation: 2812 MWh/year GHG emission reduction: 18146 tCO2e/year Number of project users:380 000
	200+100 TPD compost plants	• Construction of 200 TPD compost plant in Kesare and 100 TPD in Rayanakere • RDF production • Project cost: 3 560 000USD + 2270 000USD; total: 5 830 000USD	GHG emission reduction: 38 369 tCO2e/year Number of project users: 700 300
	Bhanpura dumping site closure (Closure with Land and Landfill Gas (LFG) Recovery)	• Shifting waste from 36.9 acres footprint to 12 acres area • Laying of top cover consisting of layers as specified in the new 12 acres foot print area • Ensure adequate drainage: laying of 1238m storm water drain and 1039m cascade drain • Landfill gas collection Wells (5 nos.) • Installation of gas collection network • Monitored and maintained	GHG emission reduction: 2 947 tCO2e/year Number of project users: 1 990 545

		continuously for at least 15-years (and usually for considerably longer) in accordance with the SWM 2000 Rules • Project costs: 2 000 000 USD	
JAIPUR	Sewage treatment plant connecting to next part of the city, selling surplus biogas outside and auto rickshaw fuel switch to CNG from STP	• Construction of 15,6 MLD Sewage treatment plant (STP) using USAB (Up flow Anaerobic Sludge Blanket) technology • Biogas electricity generation using 200 kW gas engine • Raw biogas purification and bottling option for CNG production • Project cost: 10 500 000USD	GHG emission reduction: 1 062 tCO2e/year Number of project users: 173 611

	Electric public buses for Jaipur's city centre	• Purchase of
		  • 20 electric buses
		  • Construction of electric bus charging points
		• Construction of 1,5 MW photovoltaic power plant
		Project cost: 8 000 000USD
			Energy generation: 3450 MWh/year
			GHG emission reduction: 2 550 tCO2e/year
			Number of project users: 14 256

	Waste to energy plant	• Waste to energy thermal power plant with capacity of processing 500 metric tonnes of waste to generate 19200 kWh of electricity per day, • Combustion system, • Flue gas cleaning installation • WtE plant area - around 8 acres of land (3,24 hectares), • Project cost: 900 000 USD	Energy generation 6720 MWh/year GHG emission reduction: 9 556 tCO2e/year Number of project users: 61 023
VIJAYAWADA	Pandit Nehru Bus Station (PNBS) "last mile" connectivity system	• Establishing Last mile connectivity from bus station to city centre/CBD and touristic places • Water tram connection • Construction of footpaths • Construction of bike lanes • Construction of B&R systems • Project cost: 10 500 000 USD	GHG emission reduction: 2 654 tCO2e/year Number of project users: 33 000
	Project Energy generation from STP biogas	• Construction of biogas utilisation for electricity production produced in UASB-reactor (Upflow Anaerobic Sludge Blanket) installations of Ajith Singh Nagar and Jakkampudi plants • Biogas generation at Ajith Singh Nagar – 800+600 m3/day; at Jakkampudi 1200 m3/day • Construction of 200 kW and 450 kW gas engines • Project cost: 1 000 000 USD	Energy generation: 1490 + 3350MWh/year GHG emission reduction: 4695 tCO2e/year Number of project users: 1 111 111

	Electric transportation system serving	• Purchase of
		  • 10 electric buses
		  • 160 electric bikes
			Energy generation: 3450 MWh/year
			GHG emission reduction:

	citizens and tourists	• 1800 electric rickshaws • Construction of 1,5 MW photovoltaic power plant • Project cost: 12 000 000 USD	1180 tCO2e/year Number of project users: 640 000
MYSORE	Sewage treatment plant upgrade for biogas collection and energy generation	• Construction of 15,6 MLD Sewage treatment plant (STP) using USAB-reactor(Upflow Anaerobic Sludge Blanket) technology • Biogas electricity generation using 200 kW gas engine • Raw biogas purification and bottling option for CNG production • Project cost: 10 500 000USD	GHG emission reduction: 1100 tCO2e/year Number of project users: 173 611
	Slaughterhouse and vegetable market waste biomethanation plant	• Anaerobic digestion of 6 tons per day (TPD) slaughterhouse waste and 14 TPD vegetable and fruit market organic waste • 300 kW biogas engine • Project cost: 1 500 000USD	Energy generation: 2812 MWh/year GHG emission reduction: 5052 tCO2e/year Number of project users: 380 000
	300 TPD compost plant	• Construction of 300 TPD compost plant • RDF production • Project cost: 5 900 000USD	GHG emission reduction: 52 321 tCO2e/year Number of project users: 666 464

Projects have been then assessed according to phase II of the methodology, which resulted in the following ranking:

Table 6. Project Scores Phase 2

City	Projects selected after Phase I of project selection methodology	Phase II score
Bhopal:	1. Vegetable market waste biomethanation (biogas plant)	1075
	2. 200+100 TPD compost plants	642
	3. Bhanpura dumping site closure	683
Jaipur:	1. Sewage treatment plant connecting to next part of the city, selling surplus biogas outside and auto rickshaw fuel switch to CNG from STP	580
	2. Electric public buses for Jaipur's city centre	419
	3. Solid waste to energy plant	1401
Vijayawada:	1. Pandit Nehru Bus Station (PNBS) "last mile" connectivity system	620
	2. Energy generation from STP biogas	1390
	3. Electric transportation system serving citizens and tourists	390
Mysore:	1. Sewage treatment plant (STP) upgrade for biogas collection and energy generation	383
	2. Slaughterhouse and vegetable market waste biomethanation plant	927

	3. 300 TPD compost plant	1090

Selected projects are estimated to jointly*:

1. save 764 700 tCO2e;
2. increase installed renewable energy capacity in India by 1 450 kW; ;
3. generate 127 159 MWh of renewable energy (457 772 400 Million Joules);
4. serve 3 829 143 users, of which 1 858 620 female;
5. add up to an approximate total projects cost of 9 300 000 USD; and,
6. Become feasible for implementation within 3 years compared to 6 years in baseline scenario allowing for saving 50 % of time for adoption of low-GHG technologies.

   * Above mentioned effects, do not include results of project for Guntur - to be determined.

All pilot site locations have been selected in collaboration with the Municipal Corporations and taking into account integrated urban planning principles, as well as alignment of the demonstration pilots with the national and local priorities including sustainable city development. Selected sites are already in use for similar activities and no new land acquisitions will be required. All sites are also well connected to cities and will not need new transport infrastructure development nor will it lead to uncontrolled city sprawl.

Furthermore, the selected pilots will enhance effectiveness, efficiency and safety of cities systems and processes, thus facilitating deployment of sustainable and resilient cities strategy within the city and site areas in particular. In addition, the pilot sites will be integrated in the surrounding urban tissue and demonstrate the principles of sustainable city strategy that will be developed under component 1.

For selected pilots the GEF funds will indicatively be spent on:

Table 7. Chosen pilots

Chosen pilots		GEF grant funds
Bhopal	Bhanpura dumping site closure[41]	• Preparation of closure and post-closure plan of activity • Purchase of relevant equipment and devices • Engineering works including excavation and earth works: shifting waste from closure dumping site

[41] GEF grant funds will leverage public as well as private sector co-financing, and demonstration project in Bhopal will be executed via public-private-partnership (PPP) business model. Closure activities including ensuring site safety, levelling and grading will be funded through public funds, after which the site will be opened for further development as green open space or recreational area (e.g. sports field), with green features (e.g. LED lighting and solar charging or mobile), which would eventually increase the value of the land and its adjacent areas. Development of the site as green open space or recreational area will be done in partnership with the private sector entity selected through a competitive tendering process. Viable business model proposal, including the co-financing commitment, will need to be submitted by competing private sector entities for evaluation by the Bhopal municipal corporation. Based on the outcome of the tendering process, PPP between Bhopal municipality and selected private sector entity will be formed. The responsibility of the private sector party will be explicitly defined in the land deed in order to ensure continuity of environmental controls over the former disposal area, in accordance with the approved closure and post-closure maintenance plan.

		to new destination, laying of top cover in accordance with technical criteria and requirements for landfill construction • Landfill leachate - removal and treatment, ensuring adequate drainage • Landfill degasification including installation of gas collection network • Other revitalisation works • Post-closure care actions - monitoring and maintenance actions
Jaipur	Waste to energy plant	• WtE plant engineering design • Purchase of a relevant combustion system • Purchase of a flue gas cleaning and monitoring installation • WtE plant construction
Vijayawada	Energy generation from STP biogas	• Plant engineering design • Interconnection of a UASB-reactor (Upflow Anaerobic Sludge Blanket) • Purchase the relevant 200kW and 450kW gas engines, • Plant construction • Analysis of usage of treated effluent for further applications in given industries or for irrigation (within first two years of implementation)
Mysore	300TPD compost plant	• Compost plant engineering design • Purchase composting installations • SWM development - purchase of relevant vehicles for waste collection and transportation • Plant construction • Development of the certification system for the quality of the compost (within first year of implementation)

Outcome and outputs of the component:

2.1. Low-emission and environmentally-sound technologies contribute to city greenhouse gas emission reduction	2.1.1. Detailed project reports developed for 4-5 city pilot investment projects 2.1.2. Innovative waste-to-energy / clean technologies with productive use applications demonstrated in 4-5 cities 2.1.3. Business model established and public-private partnership mode of operations promoted for the 4-5

	investment projects 2.1.4. Enhanced capacity of local urban bodies in promoting investments in sustainability projects

Activities under outputs 2.1.1., 2.1.2., 2.1.3., and 2.1.4 are outlined below:

2.1.1. Detailed project reports developed for 4-5 city investment projects

Activities:

- Pre-feasibility studies for selected projects, base case selection for developing projects, technology pre-selection
- Detailed project implementation plans developed for each pilot, on a basis of pre-feasibility study
- Environmental assessment of the investment projects in line with the national standards

2.1.2. Innovative waste-to-energy / clean technologies with productive use applications demonstrated in 4-5 cities

Activities:

- Partner/contractor selection responsible for further project development – a stakeholder interested in the project development, which would be further responsible for feasibility study and project implementation,
- Feasibility studies,
- Project implementation:
    - Technology transfer
    - Construction works
    - Commissioning

2.1.3. Business model established and public-private partnership mode of operations promoted for the 4-5 investment projects[42]

Activities:

- 1 National Workshop on Financing – dedicated to reviewing feasibility of various financial mechanism, e.g. Green bonds, PPP, multi-lateral banks, Corporate Social Responsibility (CSR) funding, alternative funding models. This would identify the right financial vehicle needed and overcome knowledge barriers
- 4-5 Multi-stakeholder Roundtable at City Level – to encourage communication between investors and cities to improve understanding of both sides need and add flexibility in the project, in terms of financial mechanisms and funding sources. Would also provide information on financial report mechanism and benchmarking
- Development of the Financial Plan for each of the 4-5 investment projects
- Development of 1 compendium of financial resources (i.e. instruments / schemes / models)

[42] To raise alternative sources of co-funding, economic mechanisms, such as property value capture, congestion charge, and road pricing will be considered throughout the project and in particular embedded in the activities under the output 2.1.3.

2.1.4. Enhanced capacity of local urban bodies in promoting investments in sustainability projects

Activities:

- Awareness-raising – Workshop to expose cities to investment criteria and benchmarks used by financial analysts to make the projects 'investor-ready'
- Training, resources, and technical assistance to cities on data collection strategies, validating the information, and other analytic tools required for investment analysis
- Media/communications, outreach, stakeholder engagement – assist cities to 'pitch' their investment projects – including social media campaigns, op-eds, infographics in order to engage a broader audience and 'learn the language' of the financial community
- Develop investments promotion strategy – addressing barriers to investments

Outcomes of the demonstration pilots and urban plan development practices: **Urban Management System (Plan-Do-Check-Act Cycle)**

Within the component 2, the project will demonstrate an integrated package of technologies and involve interventions to assist in carrying out and facilitating investments which will reduce GHG emissions and enhance the effectiveness, efficiency and safety of the cities technical and industrial systems and processes – with potential scale up to other cities. Pilot projects will be strategically integrated into mixed use city neighbourhoods, so as to produce not only better economic performance, but also create easily accessible and safe working environments, healthy surrounding neighbourhoods, and no negative impacts in the natural environment. The outcomes of the demonstration pilots will be closely monitored and will inform improvement/development of the national, state and city policies and strategies for development of sustainable and resilient cities under outcome 1 as demonstrated in the figure 9 below.

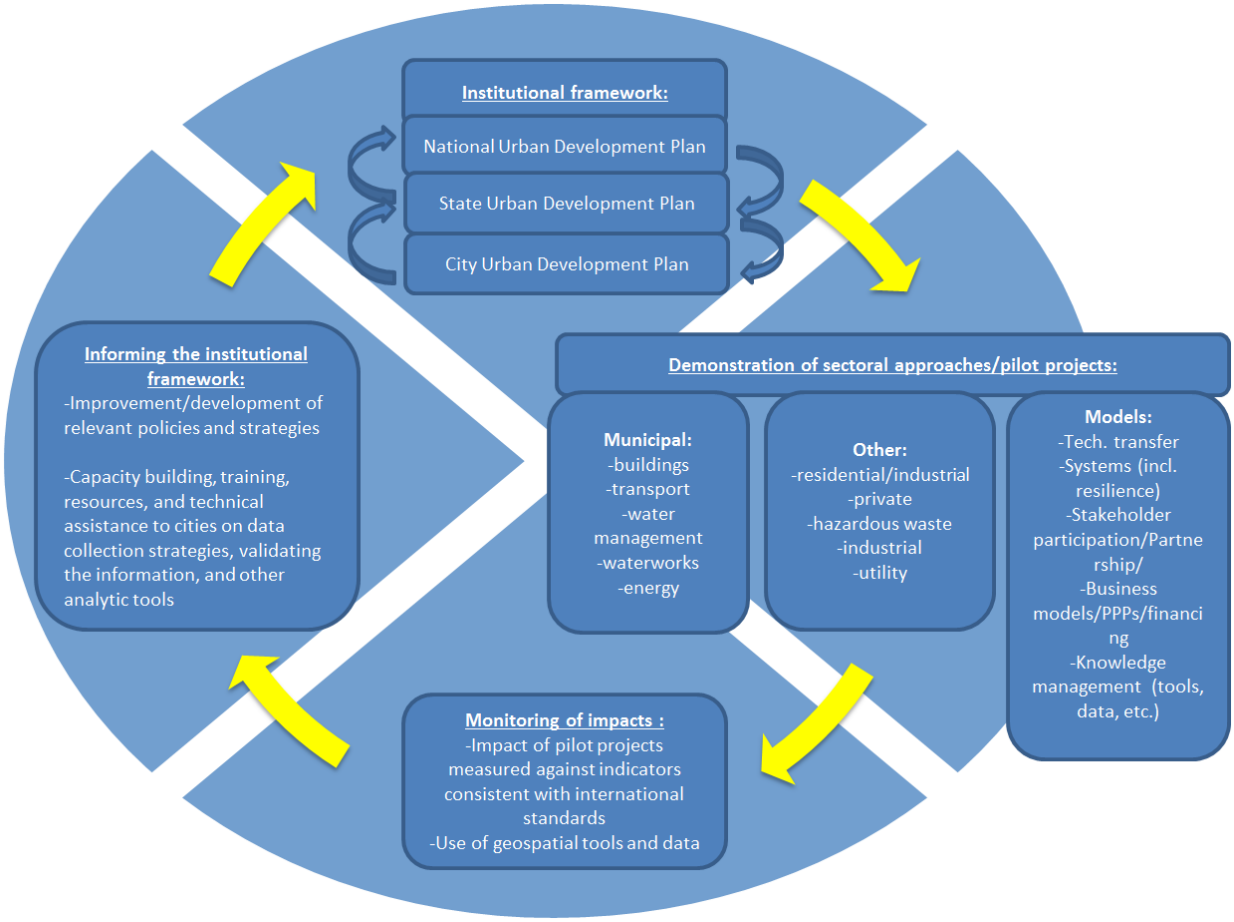

Figure 9: Urban Management System (Plan-Do-Check-Act Cycle)

Component 3: Partnerships and Knowledge Management Platform

The multi-sectoral partnership platform will be established to ensure the implementation of sustainable cities strategies, by bringing together technical, financial, political, social and business partners. The sustainable cities to be developed will be eventually managed by the state-level actors and their capacity should be enhanced for urban governance in general, and in particular: investment and finance, ITC integration for efficient service delivery, transformative urban planning approaches, sustainable energy and environmental management. Partnerships and knowledge management platform will encourage sharing, learning and dissemination of knowledge among participants and other stakeholders at the national level, between the cities and other urban areas within India, and at the international level with external networks, including Global Platform for Sustainable Cities (GPSC).

The possibility to be active part of global and national networks focused on capacity development for a city in the area of urban development strategies and sustainability will be nurtured for the participating cities through connection of city departments and stakeholders, as well as Universities with the Compact of Mayors, the University Initiative and the Climate Change Initiative Network.

Partnership is an integral part of the City Lab method (cf. Component 1, Urban Planning and Management). In line with the City Lab method, collaboration and exchange of knowledge between partners will be facilitated through a *collaborative design process.* Knowledge exchange will happen as follows: the methods for integrating spatial planning with sustainability strategies that are developed within the city labs will be turned into guidelines for other cities. The

labs will liaise with each other on national level labs to share practical working experiences, or work in teams in a specific case in one city.

On an international level, the labs will become part of the Global Network of Planning and Design Labs. This is an initiative of UN-Habitat to support local governments in achieving sustainable urban development, by bringing together local and international planners to work on concrete projects. The network develops capacity of local and international planners with'Learning by Doing'-approach and creates as such a global portfolio of practice that is being exchanged in the Network. As such the lessons learnt in the cities will have both a national and an international impact through a community of practice.

In addition, cities will be able to participate as observers or active learners in the exchange and learning events organized by the Rapid Planning Programme, gathering ten (10) German Universities and four (4) cities in Asia, Arab States, Africa and Europe.

With the founding members of the Compact of Mayors there will be partnerships to facilitate access to international relevant experience and exchange, including at ICLEI Congress every year in Bonn, and other regional networks, such as the CCCI (Cities and Climate Change Initiative). The networking with Brazil and South Africa will be particularly significant given the ongoing work in Johannesburg and São Paulo through the labs.

On a national level, linking and liaising this project with national initiatives such as Smart Cities and Atal Mission for Rejuvenation and Urban Transformation (AMRUT) would be a perfect space for exchange. This initiative could create common understanding, forge relationships with other cities, commitments to new approaches, and partnerships as foundation for future networking. Visits and participation to same workshops/conferences would allow participants to focus on specific topics, learning deeply, sharing ideas, etc.

Capacity Building

Associations of universities and institutes of higher learning will collaborate in this process by working with the labs on specific cases. Through this approach, the project content end process will serve as training ground for students, and as such influence and provide content and focus of specific university courses. Over the medium term, knowledge and skills will thus be generated and disseminated through the alumni of this course and the project will be transformed into case studies of sustainable urban development. UN-Habitat is currently running multiple capacity building programs, notably in Myanmar, Palestine and the Philippines.

Capacity building is the foundation for project success, focusing on development and strengthening of human and institutional resources. Local authorities in Indian cities are often faced with staff problems, particularly in aspects of the implementation of modern solutions concerning zero-emission and environmental friendly technologies. Strengthening this aspect will be implemented by delivering guidance, training and practical tools to enhance their capacity. In parallel adequate measures will be undertaken to strengthen other stakeholders. Part of capacity building activities will be managed and delivered through a special web based platform – PLATFUS.

PLATFUS India (PLATform for Urban Sustainability in India)

To enhance capacity building capabilities the PLATFUS will be implemented within the project. PLATFUS will be a multi-functional web based platform intended as a facilitator for sustainable city strategy implementation. PLATFUS will be available for all key stakeholders in the city (with different functionalities). Through national ownership (specific national entity with the suitable IT capacity will be defined during the project implementation), the long term sustainability will be ensured. In addition, operation business models, such as membership fee, will be explored to support the economic feasibility of the long term operation of PLATFUS. Key PLATFUS modules will be:

- Helpdesk – an online library and FAQ of development and implementation related information based upon experiences of other world cities; apart from the online information available, the stakeholders will be able to ask questions from experts on a variety of topics related to SCS development and implementation; also occasional webinars and online trainings will be available through the Helpdesk.
- GHG inventory and monitoring – an online database for GHG emissions, inventory and scenarios compilation, facilitating future inventories compilation through online forms and data collection templates, data quality checks and backups etc.; the GHG inventory and monitoring will enable Municipal Corporations to monitor city's emissions, measure progress in achieving reduction goals and report emissions and progress in standardized form (e.g. directly through cCR and/or CDP to Compact of Mayors).
- Policy options analysis – a set of pre-selected policy options for India (projects, strategies, investments, actions, laws, etc.) focused on increasing urban sustainability, with a possibility to quantify impact of implementation options through different development scenarios at city level (user defined list of interventions).
- Interventions monitoring – a selected set of policy options intended for implementation within the SCS in the city, with assigned and updated implementation metrics, will allow the Municipal Corporation and key stakeholders the ability to monitor the realization of the defined scenario as well as evaluation of its current outcomes.
- City metrics – inclusion of a set of standardized metrics (ISO37120 city indicators) will allow thorough monitoring of a city's sustainable development performance (by compiling data from GHG inventory module, interventions monitoring module and other stakeholder provided data) as well as benchmarking of the city with other Indian cities.
- Spatial visualization (GIS) – this module will provide data visualizations for PLATFUS users using Open GIS data as well as other spatial data provided by users (cities). Visualization possibilities will cover data from other PLATFUS modules (e.g. GHG inventory sources, interventions monitoring, city metrics and other data with spatial reference); the module will help to better manage cities by improving potential for city planners.
- Financing – a module providing information on currently available funding schemes (national and international) for the implementation of SCS, specifically designed to match funding sources with selected interventions and inform specific stakeholders potentially interested in obtaining external funding; also enabling quantification of basic project financial metrics and potential financial engineering including available sources.
- Sustainability partnerships platform – the module will enable stakeholders to find partners for realization of local scale sustainability projects.
- Knowledge management (see description provided below);
- Project promotion – a module covering all issues regarding project information, promotion and dissemination including project cities' activities promotion, with UNIDO and GEF engagement in the project.

Overall the capacity building activities will contribute to successful implementation of the strategies at local level, contribution to indirect (consequential) emission reductions and scaling up of foreseen activities (by enhancing stakeholders capabilities and potential for new projects).

Knowledge management is a special element of the project. It covers both capacity building for local authorities and stakeholders and broader dissemination of the project results. Knowledge management and especially knowledge transfer is crucial for scaling up of the project outcomes. This will be done starting with the network of Indian cities which share similar scale and complexity of issues in implementing sustainable strategies and which could follow the

similar framework and set of methodologies and performance indicators. Knowledge management will be carried out through development of the platform for sustainable cities in India (PLATFUS) and complimentary activities such as trainings, study tours and city twinning activities.

The platform will facilitate the transfer of knowledge: 1) from already proven smart sustainable cities abroad to Indian cities, 2) among Indian cities and 3) from Indian cities to other developing country cities striving to be smart and sustainable. The platform will provide a knowledge base for the project. Other knowledge transfer activities will be carried out through:

- Site visits and study tours (in India as well as in developed countries and possibly other successful sites all over the world);
- Trainings carried out by international experts;
- Workshops and seminars with real case studies (Indian and other relevant);
- City twinning sessions;
- Conferences (Sustainable City);
- Publications; and,
- Advocacy and learning materials.

Overall the knowledge management component will contribute to broad dissemination of project results, contribution to indirect (consequential) emission reductions and scaling up of existing activities (i.e. UNIDO's eco-cities network and others).

Workshops, training and study visits, as well as hands-on support, are part of the backbone of the project implementation. They have a great significance for the sector development and establish sustainability since they build on the knowledge gained from previous sustainable city development activities, projects and other trainings. The beneficiaries in all city sectors have shown great interest for training opportunities, study tours, visits to the cities which developed the sustainable approach and ideas into their planning and daily practice.

Development of the capacity building and training program will be preceded by a comprehensive Training and Assistance Needs Analysis (TANA). This analysis will provide the necessary information for developing an on-the-job training program. The approved program will allow the participants (in majority staff of Municipal Corporation) to learn about methodology and tools concerning strategies for Sustainable City development, worldwide programs and initiatives for Sustainable City, like: Compact of Mayors, C40 Cities, Cities for Climate Protection program or Carbon Disclosure Project and current Indian initiatives and programs. Additionally, the training program will build capacity on GHG inventory and monitoring, policy options analysis, infrastructure productivity, city metrics application, as well as be acquainted with financial metrics and engineering to obtain the foundations and sources for sustainable, green investment projects.

Initially planned training program includes the following training modules/workshops:

Table 8. Training Program

Training modules/workshops	Target group / number of participants	Scope	Methods and Materials
Sustainable City Strategy – methodology approach	representatives of municipal corporation, other stakeholder	How to build the Sustainable City Strategy, Programs and initiatives	Methods : Presentations (lectures and audio visual

	members	for Sustainable City development, Tools and methodologies for Sustainable City Strategy, Tools for investment projects selection	techniques) • Case-studies • Discussion panel • Working group sessions • Individual meeting/discussion with instructors/experts – to discuss individual question, issues, problems. • Training evaluation form <u>Materials:</u> guidance documents and manuals, handbooks, presentations, case-study - sustainable cities, • India Missions and policies, India legislation, • Training materials, papers, case-study, to be made available in PLATFUS • Guidance/training on mobilization of own-source revenues • Guidance/training on capital budget development and project investment plans
Sustainable City Strategy – methodology approach	Banks and financial institutions	Sustainable City Strategy, Programs and initiatives for Sustainable City development, Tools and methodologies for Sustainable City Strategy, Sustainable approach, innovative solutions	
Creating a Sustainable City: Common Challenges – Possible Solutions	representatives of municipal corporation, other stakeholder members	Big Cities – current economic, social and environmental problems Sustainable approach and innovative solutions for: land use and urban planning, transport, waste management, water supply, wastewater issues, sanitation problems, energy, city lightening, greening the city; Infrastructure productivity - governance, processes, and capabilities for comprenhensive infrastructure portfolio managment	

Sustainable City Management	representatives of municipal corporation, other stakeholder members	GHG inventory, monitoring and data base, GHG reduction calculation, policy options analysis, city metrics application, benchmarking of the city with the other Indian and world cities. Smart governance mechanisms including streamlining permit approvals and land acquisition without compromising the quality of outcome.	
Sustainable City in Practice	representatives of municipal corporation, Utility company staff, NGO's rep.	Examples of activity and option to implement energy efficiency, GHG emission reduction, waste minimization, innovative solution implementation in daily operations	
Financing Sustainable Cities	representatives of municipal corporation, Utility company staff, NGO's rep.	Identification of financing sources, Feasibility studies of financing strategies, scale and scope of needed finance, support for design and bid document preparation for projects, advisory support to invite private sector participation, financial engineering.	

Another initiative is the organization and implementation of benchmarking activities as part of the training program. Effective study tours can be a very powerful tool to enhance knowledge and understanding of the practical implications of the sustainable city functioning.

The Project will, in close cooperation with the city authorities, prepare a study trip of one week, discussing tour content, targeted participants and appropriate locations. In general, the trip will visit four cities (two in EU Member States) and will focus on the lessons learned from the implementation of a sustainable approach to city management, experience in low emission strategies, and advantage solution on energy efficiency, waste management system and waste to energy solution and as well on financial mechanisms for sustainable city development.

The partnership platform will ensure broad engagement with a number of stakeholders across the country as a means of ensuring that their perspectives and inputs are factored into the project. By sharing expertise and resources, the cities will be able to access new markets, extend their marketing reach, and achieve greater outcomes. A structured approach to developing the partnership platform will ensure the success of the program. Partnership program considerations and related activities are highlighted in the figure below:

Figure 10. Partnership Approach

At the program level, UNIDO has been involved in consultative meetings to shape the SC-IAP project in India, including the World Bank, UN Habitat, ICLEI, Climate-KIC, PWC, Oxford Policy Management, Green Business Certification Inc. (GBCI), US Green Building Council (USGBC), TERI and others. Throughout this project strong relationships will be built with organizations well positioned to provide regional, sectoral or global support for the pilot cities so that expertise and knowledge can be shared and disseminated.

Outcome and outputs of the component:

3.1. Promotion of "Sustainable Cities"	3.1.1. Partnership for sustainable cities in India established and linked with external networks 3.1.2. Platform for Urban Sustainability (PLATFUS) web service operationalized 3.1.3. Increased awareness on sustainability issues in cities and enhanced capacities of local urban bodies in promoting sustainable cities

Activities under outputs3.1.1., 3.1.2., and 3.1.3.are outlined below:

3.1.1. Partnership for sustainable cities in India established and linked with external networks

Activities:

- Identification and development of partnership plan with national and global networks in the sustainable cities and finance sector, e.g. Climate-KIC, UN Habitat, ICLEI, C40 Cities Network, City Climate Finance Leadership Alliance, Smart Cities Council, etc.;

- 4-5 National meetings: Convening a pan-India meeting to share learnings with other sub-national government entities, other 'smart cities', and stakeholders with the country
    - Organize cities and network roundtable to discuss optimal financing schemes, partnership mobilization programs, best practices;
- Communications: Prepare and disseminate on a periodic basis an e-newsletter to highlight progress to date, lessons learned and to share best practices with other stakeholders;
- 1 International Conference on Sustainable Cities;
- Build capacity of 1 local institution for hosting the partnership platform.

3.1.2. Platform for Urban Sustainability (PLATFUS) web service operationalized

Activities:

- Design of the PLATFUS:
    - Requirements specification,
    - Review and approval of specification by key project stakeholders,
    - Technical specification,
    - Implementation to beta-version.
- Beta version testing (key stakeholders),
- Development of final version of the system based on beta-testing results.
- PLATFUS official launch (linked with 2.1.3 and 3.1.1 activities).

3.1.3. Increased awareness on sustainability issues in cities and enhanced capacities of local urban bodies in promoting sustainable cities

Activities:

- Global Platform for Sustainable Cities (GPSC): Participation in global meeting of all IAP cities which will discuss current status of the program, share knowledge between cities and focus on skill development activities
- Develop city plan to encourage residents to adopt a more sustainable lifestyle:
    - Create a city-delivered 'one-window' source of information on programs related to sustainability, e.g. Energy and other environmental issues. Invite the public to engage and contribute.
    - Explore social media and other information technologies to assess utility in delivering sustainability information and create social campaign as appropriate
    - Create sustainability 'toolkit' and presentations that students, community members, neighborhood associations and other groups can use.
    - Collaborate with other institutions within the city – especially learning/academic groups to assess gaps in training programs.
- Translate the Sustainable City action plan into specific civic engagement plan. This can also include sustainable purchasing initiatives, healthy school programmes, i.e. 'no package' lunch days in schools, greening the business community, greening city operations, etc.

- Foster better collaboration between city agencies and departments – engineering, planning, operations etc.

- Dissemination of lessons learned
    - Implement twinning strategy for cities to share knowledge and best practices
    - Other activities from the Global Platform for Sustainable Cities (GPSC)

Component 4: Monitoring and Evaluation

Monitoring and evaluation plan will be put in place, M&E plan is an essential step to manage the process of assessing and reporting progress towards achieving project outputs and outcomes, and to identify what questions will be addressed through evaluation. Monitoring and evaluation will be carried out in accordance with the requirements of the GEF and UNIDO. For further information on the M&E, please refer to section C.

Outcome and outputs of the component:

4.1. Project implementation in line with GEF and UNIDO guidelines	4.1.1.Regular monitoring exercises conducted
	4.1.2. Mid-term review and final independent evaluation conducted

Activities under outputs 4.1.1 and 4.1.2., are outlined below:

4.1.1.Regular monitoring exercises conducted

Activities:

- Preparation of Annual Progress Reports (monitoring and reporting activities);
- Reporting on the program level indicators (three times during the project implementation);

4.1.2. Mid-term review and final independent evaluation conducted

Activities:

- Mid-Term review;
- Terminal independent evaluation.

For further details on the monitoring and evaluation activities, please refer to section C.

Impact of the project

The expected outputs and outcomes of the project will address specific barriers identified at the PPG stage:

Table 9. Project Barriers

Barrier/challenge	How it is addressed
Low environmental awareness of urban population resulting in unsustainable lifestyle.	Stakeholders engagement, Training and education activities, Pilot projects investments, Engaging technology tools (e.g. social media),

	Capacity building.
Inefficient funding for necessary investments which are not economically viable. The PPP mode of implementation has been challenging in terms of proper implementation at the level of cities in India.	Pilot projects investments, Capacity building, Early engagement of financial partners, Development of Platform For Urban Sustainability (PLATFUS).
The segmented approach in city's political and operational structures resulting in ineffective integration of plans and actions.	Specific integrated planning methodology development and institutionalization in local governance structures, Capacity building, Development of Platform For Urban Sustainability(PLATFUS), Knowledge transfer.
Insufficient transfer of knowledge on sustainability management, and sectoral solutions improving environmental performance.	Capacity building, Knowledge transfer, Development of Platform For Urban Sustainability (PLATFUS).
Lack of integrated planning - Sustainable development strategies are only sparsely taken into account in development policies and are not integrated in different thematic and sectoral areas	Specific integrated planning methodology development, Development of sustainable city strategies (SCS) for project cities.
Low sustainability of externally funded investment projects (in the context of continuity of projects).	Business model establishment, Stakeholders engagement, Training and education activities, Pilot project investments, Capacity building.

4) Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing

Baseline

National programs and missions notified under INDC altogether can bring significant GHG emission reduction (it is predicted that 33-35% GDP emission intensity reduction will be achieved in India till 2030). However, these actions have not yet provided an avenue for integrated approach towards urban sustainability. For the baseline projects scenario it is assumed that only a small level of GHG emission reduction in the SC-IAP cities will be achieved, as a result of the implementation of:

- Solar City Program – with estimated maximum impact of 10% emissions reduction from the 2020 baseline in the stationary energy sector (due to increased RES capacity and energy efficiency measures),
- AMRUT and Smart Cities Mission – with estimated maximum impact of 5% emission reduction from the 2020 baseline in the transportation sector (due to modal shift to NMT and public transport modes);
- Swachh Bharat Mission – with indirect emission reduction due to better waste and wastewater management practices;
- Also the baseline projects emissions can be reduced due to decrease in national grid electricity emission intensity.

However due to barriers and identified gaps which the project is addressing, the effects for ongoing projects will probably not be fully achieved.

GEF contribution

The project components contribute to overall improvement of the planning and investment process in the cities. As a result of the interventions, the cities will achieve ongoing missions and projects objectives while going further in the level of ambition (higher GHG emission reductions). This in turn will:

- improve quality of life, resource efficiency and increase environmental performance of cities;
- enable thoughtful and evidence-based planning of urban sustainability in the strategic development of cities;
- involve a wider set of stakeholders in sustainability planning, allowing of formal integration of into local policy and institutional arrangements; and,
- allow cities to exploit existing sustainability frameworks and networks worldwide.

As a result, the project will achieve for each of the cities:

- Demonstration projects designed with a highly integrated multi-sectoral approach linked to a multi-sectoral plan (Sustainable City Strategy);
- Established process for stakeholder engagement for the projects supported by the IAP, involving multiple types of stakeholders, including civil society;
- A vulnerabilities map and a resilience/disaster management action plan, and the city's vulnerabilities influence the city's planning, decision-making, implementation and financing processes;
- A system in place to track wide range of sustainability indicators, covering environmental, social and financial sustainability;
- A comprehensive GHG emissions inventory elaborated according to GPC standard;
- Participation in capacity-building activities, with relevant representation from the local authority (mid-level officials from the appropriate agencies related to budgeting, project planning or managing).
- Investment projects incorporate sustainability factors/considerations.
- Increased level of collaboration of the city with local, subnational, regional and global partners.

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

Environmental and adaptation benefits of the project include:

- Direct and indirect GHG emissions and their precursors reduction (incl. black carbon)
- Reduction in emissions of air pollutants (PM, NOx, SO2, CO, etc.)
- Increased resilience of cities

The table below summarizes results of indirect GHG emission reduction to be achieved due to the SC-IAP India Child Project implementation. The assessment has been made taking into account current program framework being implemented in each of the cities (as described above). The table shows results of calculated projected emission reductions for each city: the "Total reduction from baseline" presents projected reduction from baseline scenario emissions (shown in tables in the cities description part) and the "Additional reduction from program by GEF project" presents the value directly attributed to the GEF intervention (it is a part of the "Total reduction from baseline"). Total indirect emissions reductions attributed to the GEF intervention is 4 960 113 metric tons of CO2 equivalent.

		2020		2030	
		Emission [Mg CO2e]	Energy use [MWh]	Emission [Mg CO2e]	Energy use [MWh]
Jaipur	Total reduction from baseline	-312 822	-337 680	-2 036 878	-3 066 355
		-6,51%	-3,33%	-24,30%	-17,00%
	Additional reduction from program by GEF project	-171 596	-41 901	-1 396 212	-1 824 041
		-3,68%	-0,43%	-18,04%	-10,86%
Bhopal	Total reduction from baseline	-190 762	-149 055	-1 396 917	-1 452 943
		-9,37%	-3,49%	-36,09%	-19,60%
	Additional reduction from program by GEF project	-122 949	-4 304	-1 150 486	-927 045
		-6,25%	-0,10%	-31,74%	-13,46%
Vijayawada	Total reduction from baseline	-201 507	-160 125	-1 011 642	-1 445 970
		-8,71%	-3,53%	-26,95%	-18,37%
	Additional reduction from program by GEF project	-127 798	-17 071	-726 994	-881 651
		-5,70%	-0,39%	-20,96%	-12,06%
Guntur	Total reduction from baseline	-132 918	-132 419	-858 077	-1 327 494
		-9,10%	-4,15%	-33,90%	-25,02%
	Additional reduction from program by GEF project	-128 183	-114 046	-834 795	-1 237 138
		-8,80%	-3,59%	-33,29%	-23,72%
Mysore	Total reduction from baseline	-159 906	-155 385	-1 205 378	-1 525 105
		-7,08%	-3,80%	-27,94%	-20,11%
	Additional reduction from program by GEF project	-99 249	-40 594	-851 626	-930 903
		-4,52%	-1,02%	-21,51%	-13,32%
TOTAL	Total reduction from baseline	-997 914	-934 665	-6 508 893	-8 817 865
		-8,15%	-3,66%	-29,84%	-20,02%
	Additional reduction from program by GEF project	**-649 775**	**-217 916**	**-4 960 113**	**-5 800 780**
		-5,79%	-1,11%	-25,11%	-14,69%

Table 10. Assessed results of indirect emission rand energy use reductions for the project cities due to the project implementation

For further details on the direct and indirect GHG emissions calculation, please refer to Annex G.

6) Innovativeness, sustainability and potential for scaling up.

Innovativeness

In terms of innovation, this project will demonstrate integrated methodological approach of sustainability strategies into urban planning and management. The sustainable city strategies development methodology will combine all relevant international guidelines, standards and methodologies for urban projects. Furthermore, it will support the implementation India's national program like The Swachh Bharat Mission, The Smart Cities Mission, Atal Mission for Rejuvenation and Urban Transformation and Solar Cities Program.

The project will demonstrate innovativeness by providing a clear methodology template – SCS-DM and clear tools for selecting best suited intervention projects, which would most fit objectives of the GEF 6 SC IAP Child Project India.

SCS – DM and investment project selection tools allow for standardization of innovative approaches across projects involving cities, with the flexibility to consider other specific city circumstances.

The project is also unique by bringing together two visions for city-wide development – the sustainable city concept and the smart city concept. By combining these two models UNIDO creates more holistic approach to city planning and future development in smart sustainable way. For that reason smart cities framework are combined with sustainability frameworks thus strengthening the outcomes of the project and their usability.

Sustainability

The design of each project activity and selection of counterparts is premised on ensuring long-term sustainability of the change that this GEF project will catalyse. Fundamentally, there needs to be national ownership of all interventions and their mainstreaming into the operations of the national entities to ensure that institutions will be responsible for taking actions forward beyond the project implementation period.

Long term ownership and sustainability will be ensured through working closely with Ministry of Urban Development (MoUD), as well as the city partners, including Municipal Corporations of Jaipur, Bhopal, Mysore, Vijaywada and Guntur. Developed tools and methodology will be universal and owned by the MoUD which will guarantee the overall sustainability of the project outcomes. Cities will own the developed strategies (SCS), allowing full implementation and continuity of sustainable development. In addition, the knowledge created by the project implementation and resources developed under the project will continue to be relevant and available via nationally owned Platform for Urban Sustainability (PLATFUS) after the GEF program is completed.

The demonstration pilots will be executed as public-private partnerships. The selected private sector partners will secure part of the required financing for the pilots execution, as defined in the tendering process. As such, the private partner will have a vested interest that the demonstration projects operate successfully for them to recover their investments. Given the commercial interest in sustaining the operations of the projects, the different proponents will also have an interest in keeping the projects running and hence sustain the global environmental benefits beyond the project lifetime.

Scaling-up potential

The project strategy to ensure scale-up and replication is to develop the supporting policy framework, national examples and build up capacity, particularly within national and local government departments, private sector, research and academic institutions, and financial institutions since these organisations are in the best position to replicate the activities. The outputs to be generated by the Project will contribute to creating an enabling environment for integrating sustainability strategies into urban planning and management. All planned outputs are consistent with, and instrumental to, achievement of the objectives of India's key urban policies and legislation. Therefore, the combined efforts of the three technical project components are designed in such a way to ensure the scale-up of global environmental benefits beyond the life of the project.

1. Sustainable Urban Planning and Management (component 1)

The goal of the project is to integrate sustainability strategies into urban planning and management. Developed methodology and tools contribute to the attainment of goals of city missions, which could also be implemented and will be applicable to other Indian cities, as guaranteed by MoUD's ownership of the tools and methodologies developed in the project. To raise alternative sources of funding, the project will integrate the module to enable stakeholders in finding partners for realization of local scale sustainability projects. Existing city networks will be used as a base for building the platform. Moreover, in the execution of the demonstration projects via PPP modality, as well as in knowledge sharing activities, the private sector will be engaged in the project to ensure the scale up and continuity of the project results. Macro assessments on the existing business models and technologies available in India will be conducted and serve as input to policy making for the Indian cities.

2. Investment Projects and Technology Demonstration (component 2)

Demonstrating the technical feasibility and commercial viability of piloting projects will provide city level examples that can be replicated across the country. Not only will the demonstration projects show what is possible and the examples be disseminated widely in the country, but the implementation and operation of these projects will build up the technical capacity within the private sector partners to help in the replication of these projects. The projects will give confidence to all parties involved in relevant technologies. The actual financial performance of the various project business models will also be tested using real performance data over the five-year period of the project. The case studies will open opportunities for future investors in the improved designs from lessons learned during the implementation of the project.

3. Partnerships and Knowledge Management (component 3)

The project will leverage the work of several city partners, including Municipal Corporation, other local authorities, financial institutions, NGOs and other stakeholders to provide assistance and scientific guidance as well as financial support on sustainable urban planning and management. The knowledge management and other capacity building components are designed to increase the scaling-up potential of the project to the most possible extent.

The training activities will be incorporated into curricula of relevant national educational institutions and technical colleges. The trainings will include train-the-trainers sessions ensuring that staff from these universities and technical colleges will be in a position to mainstream sustainable urban training in their institutions and be in a position to provide similar training to more people. Training, either as part of the mainstream courses or targeted short-term training courses, will continue to be offered beyond the project implementation by these institutions on a full cost-recovery basis.

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

The GEF 6 Programming Directions devised a new approach - a pilot effort which is proposed to support activities in recipient countries that can help them meet commitments to more than one global convention or thematic area by tackling underlying drivers of environmental degradation[43] by using an integrated, holistic approach.

The SC-IAP approach to support planning and implementation efforts in cities emphasizes:

- That a thoughtful, evidence-based planning process is fundamental to urban sustainability, driving strategic decision-making and investments that will result in greater economic and resource efficiency, improved quality of life, and enhanced environmental performance;
- A set of sustainability planning ideals, promoting broad topical coverage, engagement that reaches a wide set of stakeholders, and the formal integration of these ideas into local policy and institutional arrangements;
- The development or nature of relationships of cities which are part of a complex web of stakeholders, and the reflection of this stakeholder environment in the design and implementation of a local sustainability strategy; and,
- Advancing the cause of urban sustainability in the current global policy discourse.

The proposed project is part of the global GEF project on Sustainable Cities Integrated Approach Pilot (IAP) programme. The Sustainable Cities Integrated Approach Pilot (SC IAP) is an integrated program consisting of two

[43] GEF-6 PROGRAMMING DIRECTIONS

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.

The objectives of the Global Platform for Sustainable Cities (GPSC) are to

- Support the participating cities' work on evidenced-based urban planning with the aim of forging a common vison and approach to urban sustainability;
  Provide a platform for knowledge sharing and learning on integrated approach to urban planning and management; and
- Create a space for networking and learning among cities and relevant organizations on issues related to urban sustainable development.

In order to successfully support the participating cities in their sustainability initiatives, the GPSC and city-level projects will carry out joint activities, which may include:

- Supporting cities in the use of geospatial data/tools;
- Supporting cities to establish or enhance a set of indicators for urban sustainability, including the core indicators for achieving SDG goal 11;
- Using of tools for integrated urban planning;
- An assessment on urban sustainability and action plan; or
- Activities to enhance municipal financing.

In addition, the pilot cities are expected to participate in knowledge sharing activities such as the GPSC annual meetings, trainings, and working group meetings.

As each city's needs are different, and as there are many existing efforts at the city-level, the GPSC, together with the Implementing Agency(ies) and other relevant partner organizations, will fully flesh out the specific work plan, laying out key activities, timetable, deliverables and budget for each interested IAP city by the end of 2016.

In order to maximize the use of the limited resources in a fair and efficient manner, in principle, the GPSC will provide the general framework and guidance in the form of trainings, guidance documents, etc., while the Implementing Agency(ies) will cover the activities in this framework that are city- or country-specific with the allocated budget. Should some cities already have some components of the framework (such as certain geospatial data), they will be encouraged to identify other services/products that would complement or further their work in other components.

Furthermore, the GPSC will lead the global efforts to promote an integrated approach to urban sustainability and bring international expertise to individual projects. In principle, the GPSC will cover most of the cost of the global events (annual meetings, workshops, working group meetings, etc.), and to some extent, some regional events.

The Implementing Agencies and participating cities should allocate sufficient resources to ensure the implementation of the joint deliverables and to cover the cost of participation (e.g. travel, accommodations, etc.) of city/country representatives in GPSC activities/events for the full duration of the program (60 months). As such, it is suggested that implementing agency (ies) budget $1 million to $1.5 million for each city. It is likely that the budget per city will be less should the country have several cities in the SC IAP program, as the work program will probably be more cost efficient due to the economy of scale of having more participating cities. Similarly, the GPSC will dedicate resources for all participating countries to ensure that all interested IAP cities have sufficient resources to participate in the joint deliverables.

Contribution of the India Child project to overall program impact

- Cities participating in the project will be expected to monitor GHG emission and report it with new standardized global emission inventory reporting methods (i.e. to Compact of Mayors). Also the project will link cities development with other initiatives on urban sustainability (i.e. Cities Biodiversity initiative at ICLEI, clean air and clean water initiatives).
- Cities participating in the project will adopt performance frameworks for generating and monitoring environmental and socio-economic benefits[44] which will integrate environmental sustainability in planning and management initiatives especially by enhancing the capacity of city leaders to develop and execute city-wide low-carbon plans together with financing for demonstration projects in cities.
- Cities participating in the project will be encouraged to work together and in line with other international and national organizations, initiatives and programs (e.g. Compact of Mayors, C40 Large Cities Climate Leadership Group, the International Council for Environmental Initiatives' Cities for Climate Protection and others).

The GEF-6 SC-IAP India child Project outcomes are in line with the new set of transformative and universal sustainable development goals (SDGs) through actions at the local level. The project specifically contributes to realization of SDG 11: 'Make cities and human settlements inclusive, safe, resilient and sustainable'.

A.3. . Identify key stakeholders and elaborate on how the key stakeholders engagement is incorporated in the preparation and implementation of the project. Do they include civil society organizations (yes ☒ /no☐)? and indigenous peoples (yes ☐ /no☒)? [45]

Involvement of stakeholders is a key element of successful SCS (Sustainable City Strategy) development and implementation. For efficient preparation of the SCS, the city should form a SCS steering committee (SC) and a core team (CT) responsible for development and implementation of the SCS.

Stakeholders will be identified within groups, whose interests are affected by the SCS or have activities affecting the SCS;and who possess information, resources or expertise needed in SCS. Special focus should be put on existing interest groups already engaged in sustainability planning in cities.

For successful implementation of SCS, active involvement of various stakeholders identified during SCS elaboration phase is needed (the Stakeholder Board). Within the SCS, the CT should be responsible for providing necessary stakeholder engagement during the implementation phase. For this purpose, a plan of activities for the engagement is required.

Stakeholders' engagement plan should specifically cover:

- Regular meetings of the Stakeholder Board,
- Information and dissemination actions for the broad stakeholders,

[44] Example of such benefits may include GHG emission reduction from urban sources established and achieved(e.g., percent of renewable energy sources, percent use of public transit, and others); maintained or improved flow ofagro-ecosystem and forest service's sustaining the livelihoods of local communities; improved governance of sharedwater bodies, including integrated management of surface and groundwater through regional institutions andframeworks for cooperation, and others (GEF GEF-6 PROGRAMMING DIRECTIONS).

[45] *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.*

- Training for the stakeholders,
- Providing technical and organizational assistance.

For further details on the institutional arrangements for the project implementation, please refer to section A6. Institutional Arrangement and Coordination.

Table 11. Initial stakeholder list

Stakeholder	Role in the project
Executing partners	
Ministry of Urban Development	MoUD is the apex body for formulation and administration of the rules and regulations as well as laws relating to urban development in India. Is responsible for formulating policies, supporting programs, monitoring programs and coordinate the activities of various Central Ministries, State Governments and other nodal authorities in so far as they relate to urban development concerning all the issues in the country. Currently, the ministry manages and coordinates the completion of the following programs and mission: Smart Cities, AMRUT, Swachh Bharat, and Metro Project in 6 Indian Cities. The Ministry assists the State Governments in their programmes of urban development by way of formulating broad policy framework; providing legislative support by way of constitutional amendment, legislation or issue of guidelines; implementing a number of centrally sponsored schemes; processing and monitoring assistance from multilateral/bilateral institutions for State Government projects; and, finally providing technical support and advice for promoting orderly urbanization. Role in the Project: MoUD, as the main executing partner, is one of the key institutions for project delivery and achievement of project objectives.
State Governments	Under the Constitution of India, the State Governments are empowered to enforce and enact necessary laws and frame policies that support its governing functions related to land, housing, urban development and provision of civic infrastructure. The state government formulates state specific urban development policies, set up institutional arrangements for advancing the urban policy agenda and design and implement urban development programmes and projects. The State Urban Development Departments are in charge of the town planning department, urban development authorities, urban water supply, sewerage and sanitation boards, housing departments, etc. Role in the project: Serve as executing partners, providing technical assistance and reinforcing capacities to municipalities through Urban and Town

	Planning Departments, as well as through Infrastructure and Public Works Departments. Support the planning (global and thematic) of the cities and neighborhoods Complete funding of demonstration projects. The **Municipal Commissioners** being appointed by the States will have a key role in liaising with States authorities and officials. They will support execution of the project's activities. They will be the nodal points in each municipality, coordinating the work between municipality and state, mobilizing different stakeholders, facilitating the investments. Urban Development Authorities: Rajasthan, Madhya Pradesh, Karnataka and Andhra Pradesh
Local Government Authorities (Municipal Corporations, City Corporation)	Municipal Corporations of Pilot Cities: Bhopal, Jaipur, Vijayawada, Guntur, Mysore The municipal bodies of India are vested with a long list of eighteen (18) functions delegated to them by the state governments under the municipal legislation. These functions broadly relate to public health, welfare, regulatory functions, public safety, public infrastructure works, and development activities. Role in the Project: Executing partners Preparing sustainable cities plans. They will be directly involved in the governance – including mobilizing stakeholders at city level --, planning and delivery of some basic services, as well as engaged in direct infrastructure development and service delivery in the urban areas touched by the project.
Counterparts and stakeholders	
Ministry of Environment, Forest and Climate Change	The Ministry of Environment and Forests (MoEF) is the nodal agency in the administrative structure of the Central Government for planning, promotion, co-ordination and overseeing the implementation of India's environmental and forestry policies and programs. Initiates actions and prepare the reports related to climate change and biodiversity conservation in India. Climate Change Division was engaged in development both the National and State Actin Plan on Climate Change. Role in the Project: Support and advise the project through the Project Steering Committee; provide technical and policy support regarding waste management and climate change mitigation aspects

Ministry of New and Renewable Energy	The Ministry of New and Renewable Energy (MNRE) is the nodal Ministry of the Government of India for all matters relating to new and renewable energy. The broad aim of the Ministry is to develop and deploy new and renewable energy for supplementing the energy requirements of the country. The Solar City aims at minimum 10% reduction in projected demand of conventional energy at the end of five years, through a combination of enhancing supply from renewable energy sources in the city and energy efficiency measures. Role in the Project: Support and advise the project; Provide technical and policy support in components of the project dedicated to new and renewable energy and energy efficiency measures
Ministry of Power	The Ministry of Power is mainly responsible for evolving general policy in the field of energy. The main issues of Ministry activity include among others: formulation and implementation the General Policy in the electric power sector and issues relating to energy policy and coordination thereof; - all matters including research, development and technical assistance relating to hydro-electric power and thermal power and transmission & distribution system network; all matters concerning energy conservation and energy efficiency pertaining to Power Sector. Role in the Project: Support and advise the project; Provide technical and policy support in energy demand analysis, energy conservation efficiency issues
Ministry of Road Transport & Highways	Ministry is entrusted with the task of formulating and administering, policies for Road Transport, National Highways and Transport Research with a view to increasing the mobility and efficiency of the road transport system in the country. Ministry has two wings: Roads wing and Transport wing. Role in the Project: Support and advise the project; Provide technical and policy support concerning transportation issues
Ministry of Heavy Industry and Public Enterprises	The Ministry spearheads the uptake of Electric Mobility. The National Electric Mobility Plan (NEMMP) has an aspirational target of 6-7 million hybrid and electric vehicles per year by 2020. Under the Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles in India, the Ministry has provided financial outlays for Technology platforms, demand incentives, charging infrastructure and demonstration projects. Role in the Project: Support and advise the project
Cities in India (non-project cities)	Benchmarking and information exchange
UN-Habitat	Mandated by the UN General Assembly in 1978 to address the issues of

	urban growth, it is a knowledgeable institution on urban development processes, and understands the aspirations of cities and their residents. UN-Habitat has a unique and a universally acknowledged expertise in all things urban. This has placed UN-Habitat in the best position to provide answers and achievable solutions to the current challenges faced by the five cities. UN-Habitat is capitalizing on its experience in India and elsewhere and position to work with partners in order to formulate the urban vision of tomorrow. It works to ensure that cities become inclusive and affordable drivers of economic growth and social development. Role in the project: UN-Habitat will be engaged in the project via contractual arrangements and will (i) provide policy and operational support for governments and cities to identify urban challenges and opportunities, to reform and to adopt rules and process that effectively regulate urbanization issues such as land use, urban planning, taxation, infrastructure, etc.; (ii) would improve policies, plans, and designs for more compact, socially inclusive, and better integrated and connected cities that foster sustainable urban development and are resilient to climate change; (iii) could provide capacity building activities to professionals, managers, and authorities; (iv) facilitate the establishment of networks, exchanges and knowledge platform, using its current network of cities, hubs, academia; (v) facilitate the implementation of the M&E component through the use of tools and methods responding to the SDGs urban indicators (Goal 11 and other indicators with an urban component) and to the possible indicators of the New Urban Agenda.
Financial Institutions, Banks	Will receive training from the project; will provide financial support for the demonstration projects, when applicable, participating in the application of non-grant instrument, as applicable
Local Chamber of Commerce Associations in the field of sustainable development	Andhra Pradesh Chambers of Commerce and Industry Federation; Rajasthan Chamber of Commerce & Industry; Mysore Chamber of Commerce & Industry; Bhopal Chamber of Commerce and Industry in Bhopal, FICCI and CII Role in the Project: Chambers: provide technical support to project activity in particular demonstration project implementation; promote and protect interests of its members; Associations: opinion-firming, supporting, providing good practices examples, integrating communities with industries
Policy development institutes	For example: Institute for Transportation & Development Policy (India section). ITDP works on climate and transport policy and aims to ensure that global institutions enable, and favor socially, economically and environmentally sustainable transportation. CPR (Centre for policy Research, India), which has a dedicated thematic research area on

	urbanization. Role in the Project: support to deliver the best transportation solution and practice
Private Sector	Companies interested in PPP formula of project implementation; for example corporation Jaipur – Mahindra which actively participates in the PPP in Jaipur (PPP between the Mahindra Group and RIICO (Govt. of Rajasthan), HUDCO (Housing and Urban Development Corporation) Role in the Project: participation in PPP formula of project execution
Universities, Research centers, R&D	Local Universities, Research centers, R&D Role in the Project: knowledge support, analysis, research, surveys, laboratory analysis, standards development
Schools of Planning and Architecture (SPA)	Coincidentally, two of the cities, Bhopal and Vijayawada, are hosting two out of the three Schools of Planning and Architecture in India. Role in the project: These two Schools will be good place for (i) recruiting urban planners and managers, and will also be useful in preparing and participating in Workshops, Conferences, etc., (ii) providing strategic guidance and substantial inputs to different themes related to urban planning and management, waste management, urban mobility, (iii) support the definition and review of policies, programmes and projects initiated at state or city level, (iv) production of analytical reports/studies.
International Organizations and Industries	International Organizations such as European Space Agency (ESA), multi-national corporations as well local companies will be engaged in the project through provision of services such as delivering technology solutions, equipment, realization - construction of new facilities as part of demonstration projects; Industries could also be beneficiaries of project interventions
Civil society organizations, CSO Non-governmental Organizations, NGO	Relevant CSOs and NGOs which are active in a field of environment protection, climate change, social issues, including those focusing on gender equality – will be invited to participate in project activities by consultation and general public participation. For example, Climate – KIC, Cities Climate Finance Leadership Alliance, C40 Group etc.

List of stakeholders will be expanded and finalized during project implementation.

A.4. Gender Equality and Women's Empowerment.Elaborate on how gender equality and women's empowerment issues are mainstreamed into the project implementation and monitoring, taking into account the differences, needs, roles and priorities of women and men. In addition, 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☐)?; and 3) what is the share of women and men direct beneficiaries (women 40%, men 60%[46])? [47]

UNIDO recognizes that gender equality and the empowerment of women have a significant positive impact on sustained economic growth and inclusive industrial development, which are key drivers of poverty alleviation and social progress. Commitment of UNIDO towards gender equality and women's empowerment is demonstrated in its policy on Gender Equality and the Empowerment of Women (2015), which provides overall guidelines for establishing a gender mainstreaming strategy, UNIDO has also developed an operational energy-gender guide to support gender mainstreaming of its sustainable energy initiatives.

UNIDO recognizes that interventions related to energy and climate change are expected to have an impact on people and are, therefore, not gender-neutral[48]. This is also true for projects related to sustainable cities. In fact, due to diverging needs and rights regarding energy consumption and production, different exposure and thresholds relevant for women and men of different age, each individual is expected to be affected differently by the project (in terms of their rights, needs, roles, opportunities, etc.).

This project aims to demonstrate good practices in mainstreaming gender aspects into promoting sustainable cities in India, wherever possible and avoid negative impacts on women or men due to their gender, ethnicity, social status or age. Consequently, the project will actively seek to gender mainstream the whole project cycle. The project log-frame as well as assessment methodologies for selecting priority projects were developed to reflect key gender dimensions of the respective outputs, activities, indicators and targets. Furthermore the project is planning to recruit a national Gender Consultant, to support the implementation of gender mainstreaming measures into the project activities.

Guiding principle of the project will be to ensure that both women and men are provided equal opportunities to access participate in and benefit from the project, without compromising the technical quality of the project results. In practical terms:

- Efforts will be taken to ensure that both women and men have equal opportunity to participate in and benefit from all project activities, both at managerial and technical levels.
- Based on the Gender-Neutral ToRs, gender-sensitive recruitment will be practiced at all levels where possible, especially in selection of project staff, researchers and experts, as well as technical staff.. In cases where the project does not have direct influence, gender-sensitive recruitment will be encouraged.
- Whenever possible existing staff will be trained and their awareness raised regarding gender issues.
- When data-collection or assessments are conducted as part of project implementation, gender dimensions will be considered. This can include sex-disaggregated data collection, performing gender analysis as part of ESIAs, etc.
- All decision-making processes will consider gender dimensions. At project management level, Project Steering Committee meetings will make efforts to be gender balanced and invite observers to ensure that gender dimensions are represented, including organizations/ associations promoting gender equality and advocating women's empowerment Also, at the level of project activity implementation, effort will be made to consult with stakeholders focusing on gender equality and women's empowerment issues. This is especially relevant in policy review and formulation.

[46]Please note that the figures are indicative and will be verified during the project implementation.
[47]Same as footnote 8 above.
[48] ENERGIA "Turning Information into Empowerment: Strengthening Gender and Energy Networking in Africa. Leusden, 2008; Joy Clancy "Later Developers: Gender Mainstreaming in the Energy Sector", 2009

- Research, data and alters will consider gender and age differentiated needs of women and men from different social groups.

A.5 Risk. Elaborate on indicated risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, the proposed measures that address these risks at the time of project implementation.(table format acceptable):

Table 12. Project Risks

No.	Risk	Probability	Preventive or mitigating action
Project specific risks:			
1	Lack of project implementation support at national and state level	low	Project is in line with national adopted programs and missions. Additionally implementation of GEF 6 SC IAP Child Project India received support and is implemented in cooperation with MoUD of India. State Governments have been requested by MoUD to extend all support to development and deployment of the programme. Additionally, Municipal Corporations of all cities have been engaged actively in formulating project objectives and potential outcomes.
2	Lack of project implementation support at local level - other city development strategies will be adopted/used as they were initiated earlier/result from other national/state regulations and programs	low	Methodology has been designed to incorporate and be compatible with relevant national regulations, standards and strategies, therefore using the methodology for preparing sustainable city development strategy should render the resultant document fully compliant to national requirements.
3	Lack of project implementation support at local level – no clear responsibilities and authorities assigned at city level	low	Methodology requires establishing a Core Team covering vital areas of city operations and development especially in engineering and town planning area responsible for development and implementation of the sustainable city strategy. Officials from various departments have been engaged even in the proposal preparation and data collection stage to ensure buy in during implementation. Potential institutional mechanism for the implementation of the project has been arrived at jointly by MoUD, and Commissioners and Additional Commissioners of participating cities, with an objective to synchronize ongoing initiatives.
4	Project will not cover all important city activities	low	Methodology is based on most comprehensive and most widely used standards, where all important city sectors are covered both for baseline estimation as well as for strategy planning. Comprehensive interaction with city officials

			ensured to identify important city needs and requirements.
5	Insufficient financial resources to complete GHG reduction actions	low	Methodology recognizes national programs and missions for support of undertaken GHG reduction actions. Investment pilot project selection methodology promotes activities that are eligible for co-financing under relevant national programs and missions. Participating cities have formally committed to co-financing support under ongoing initiatives.
6	Implemented pilot investment project will not continue operation	low	Demonstration investment project selection methodology promote activities, that are eligible for co-financing under relevant national programs and missions as well as are in line with city most required interventions. Additionally project methodology requires establishing and operating a MRV process. Selected investment projects will be co-financed under other national programs, so their financing sources are diversified. Capacity building and skill development activities shall be taken up at implementation level to ensure qualified manpower is available at operational level to ensure project operation and maintenance.
7	Lack of partnership engagement (from stakeholders, government, private sector, etc.)	low	Early engagement strategy, regular outreach with networks to keep the momentum. Dissemination of information and knowledge to ensure scalability of project beyond the selected pilot cities.
8	Unviable investment/project	low	The project will actively involve the private sector to ensure that financial modelling, business plan development, roll-out of financial mechanisms are in alignment with the interest of investors. Early partners can create flexibility to overcome financial challenges and build trust between the municipalities and investors, where a track record does not exist.
9	Financial/Market Risk: The price of energy generated from WTE plant in Jaipur, biogas utilization plant in Vijayawada, and the compost from Mysore compost plant may not be competitive in the market.	medium	For WTE plant in Jaipur – there is an existing government of India policy that all energy from WTE plants must be absolutely bought by utilities and the project will ensure that this is implemented in the Jaipur plant. For the biogas utilization in Vijayawada - it will be studied and considered during project implementation whether conversion to electricity or bottling of the biogas for industrial/transport applications would be more profitable

			and the best options will be chosen to ensure sustainability of the operations of the private sector partner. For the Compost Plant in Mysore, while there is considerable risk that the compost produced could be more costly than ordinary compost or fertilizers in the market, the value addition will be that the compost produced from the Mysore plant will be ensured to be free from heavy metals.
General risks:			
10	Climate change: - Increase in intensity and frequency of extreme events (cyclones, floods etc.); - Droughts; - Heat waves;	medium	The project will focus on increasing overall resilience of the cities – the climate change risks will directly be addressed by project activities significantly reducing impact of climate change on the project. During site selection for the demonstration projects, relevant climate change risks will be taken into consideration.
11	Environmental change	low	The project components address the problem of sustainability taking into account local ecosystems, so the realization of the project should effectively decrease the risk of environmental change.
12	Social instabilities (e.g. riots)	low	The project components address the problem of social welfare, so the realization of the project should effectively decrease the risk of social instabilities.
13	Significant political instability in India or in the region (e.g. civil war, regional war)	low	The risk of political instability cannot be mitigated effectively. This risk is identified and accepted.
13	Gender Risk: Risk of resistance against, or lack of interest in, the project activities from stakeholders, especially with regard to the active promotion of gender equality. Low participation rates of suitable female candidates due to lack of interest, inadequate project activity or missing qualified female population within engineering sector.	low	The project will pursue thorough and gender responsive communication and ensure stakeholder involvement at all levels, with special regard to involving women and men, as well as civil society and non-governmental organizations promoting gender equality. This shall mitigate social and gender related risks, promote gender equality, create a culture of mutual acceptance, and maximize the potential contribution of the project to improving gender equality in the energy field. As gender has been clearly mainstreamed throughout the project design, this will help mitigate any potential risk. Furthermore a national Gender Consultant will be recruited to support the implementation of gender mainstreaming measures into the project activities.

A.6. Institutional Arrangement and Coordination. Describe the institutional arrangement for project implementation. Elaborate on the planned coordination with other relevant GEF-financed projects and other initiatives.

Institutional Arrangement for Project Implementation

UNIDO, as the GEF implementing agency, is responsible for overall project development and oversight, and will provide technical support towards project implementation. Support staff for administrative and other management functions will be made available to the PM at the headquarters, also for ensuring coherence with UNIDO's Sustainable Cities strategy.

A Project Steering Committee (PSC) will provide strategic and operational guidance to the project and ensure its smooth execution according to the approved project document. The PSC will also be consulted on matters relating to project budget and work plans. Any changes to the project budget and work plan will be done in accordance with the approved project document and GEF Council document C 39. Inf 03. The constitution of the PSC will be decided and formalized by the Government of India as represented by the executing partner, the Ministry of Urban Development (MoUD), in coordination with the GEF Focal Point at the Ministry of Environment Forests and Climate Change (MoEFCC). Government support will also be required in identifying a National Project Director (NPD) to act as main project focal point between UNIDO and the MoUD being the main executing partner. The NPD will also provide guidance to the Project Management Unit (PMU) as far as government policies and regulations are concerned, facilitate coordination with other government entities, and facilitate approvals required from government in relation to project activities.

For efficient preparation of the Sustainable City Strategy (SCS), the cities will form SCS steering committees (SC) and core teams (CT) responsible for development and implementation of the SCS. Stakeholders will be identified within groups, whose interests are affected by the SCS or have activities affecting the SCS; and who possess information, resources or expertise needed in SCS. Special focus should be put on existing interest groups already engaged in sustainability planning in cities.

Within the SCS, the CT will be responsible for providing necessary stakeholder engagement during the implementation phase. For this purpose, a plan of activities for the engagement is required.

Stakeholders' engagement plan should specifically cover:

- Regular meetings of the Stakeholder Board,
- Information and dissemination actions for the broad stakeholders,
- Training for the stakeholders,
- Providing technical and organizational assistance.

Municipal Corporations will act as executing partners at the municipal level and will ensure that the activities are properly coordinated with the government programmes and other on-going activities. Municipal corporations will carry out duties in line with the approved project document and work plan, as well as per partnership agreement with UNIDO. To ensure that rules and regulations of UNIDO and the GEF will be upheld in the procurement of goods and services funded from the project's financing, the project will also provide capacity building support to the executing partners on international procurement standards and procedures.

Project Management Unit (PMU) will be responsible for the day-to-day planning and execution of project activities as in the agreed project work plan. The PMU will consist of at least one National Project Coordinator (NPC), one

Technical Expert (TE), and one Project Assistant (PA). The NPC will be recruited directly by UNIDO. The PMU will coordinate all project activities and will report to UNIDO and PSC. City-level coordinators will also be identified and established to ensure that city-level activities are carried out efficiently, that required city information and reports are provided in a timely manner, and that dealings with city stakeholders, including State governments, are facilitated. They will also form the beginnings of institutionalizing sustainable urban planning and management at city level. The PMU shall be provided with an appropriate office space and will work in close coordination with the NPD and the UNIDO Regional Office in India.

At the beginning of project implementation a detailed work plan for the first year of implementation will be developed by the PMU in collaboration with UNIDO and PSC, based on the overall work plan for the entire duration of the project. The yearly work plan will clearly define roles and responsibilities for the execution of project activities, including monitoring and evaluation; it will set milestones for deliverables and outputs. The overall and yearly work plans will be used as management and monitoring tool by PMU and UNIDO and the overall work plan will be reviewed and updated as appropriate on a biannual basis.

Project Management Framework is given in the figure below.

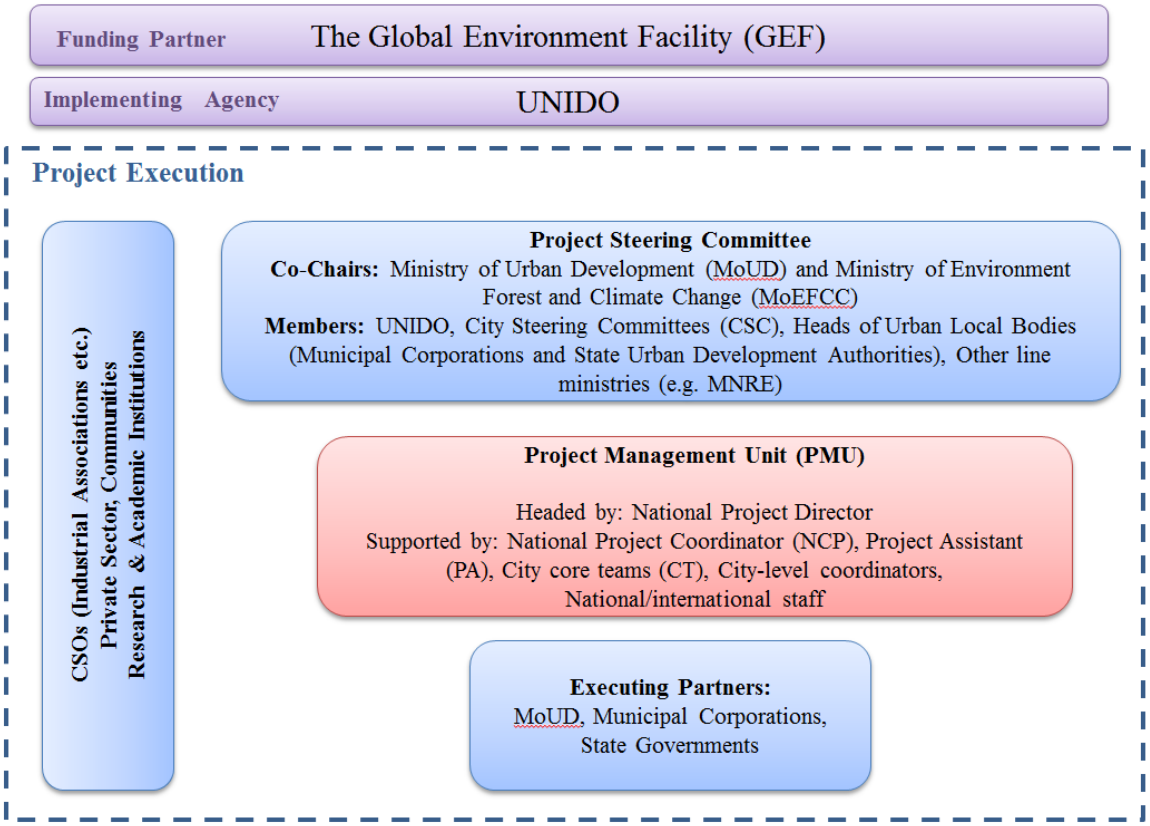

Figure 11. Project Management Framework

Planned Coordination

Efforts will be made to establish synergies with ongoing projects in India while avoiding overlaps. The proposed project will benefit from existing support structures already built in the UNIDO-GEF climate change projects on "Promoting Market Transformation for Energy Efficiency in Micro, Small & Medium Enterprises" (GEF ID #4893), "Promoting Energy Efficiency and Renewable Energy in Selected MSME Clusters in India" (GEF ID #3553), "Promoting Business Models for Increasing Penetration and Scaling Up of Solar Energy" (GEF ID #4788), and

especially the "Organic Waste Streams for Industrial Renewable Energy Applications in India" (GEF ID #5087). The last project is most closely related as most of the investment pilots in the "SC-IAP in India" are geared towards improving waste management services. Though dealing mostly with industrial sectors, the technology assessments and business model development already being carried out in the Organic Waste project, could provide basis for the SC-IAP project, which will deal mostly with area-based municipal wastes.

To ensure the sustainability of the proposed project, private sector companies already participating in the other projects, could be involved in terms of accessing best available technologies. Project team will also look for synergies to increase awareness and create interest in the project within the private sector by demonstrating the impact of sustainable urban planning and improved waste management services in the pilot cities.

The proposed project will also link with ongoing initiatives of the World Bank and UN-HABITAT in India dealing with sustainable cities, especially the former's infrastructure development projects related to wastewater and municipal waste management.

Additional Information not well elaborated at PIF Stage:

A.7 Benefits. Describe the socioeconomic benefits to be delivered by the project at the national and local levels. How do these benefits translate in supporting the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCF/SCCF)?

In integrated planning process that combines urban, industrial, and sustainable planning in a Sustainable City Strategy is expected to have the following benefits:

Environmental dimensions:

- Reducing greenhouse gas emissions and implementing serious climate change mitigation and adaptation actions
- Minimizing urban sprawl and developing more compact towns and cities served by public transport
- Sensibly using and conserving non-renewable resources
- Reducing energy use and waste produced per unit of output or consumption
- Recycling or disposing of waste produced in ways that do not damage the wider environment
- Reducing the ecological footprint of towns and cities
- Addressing the problem of climate change and reducing the carbon footprint of cities

Economic dimensions:

- Reliable infrastructure and services, including for water supply, waste management, transport and communications, and energy supply
- Affordable access to land or premises in appropriate locations with secure tenure
- Financial institutions and markets capable of mobilizing investment and credit
- A healthy educated workforce with appropriate skills
- An enforceable legal system that ensures competition, accountability and property rights
- Appropriate and adequately resourced regulatory frameworks which define and enforce non-disciplinary, locally appropriate minimum standards for the provision of safe and healthy workplaces and the treatment and handling of waste emissions

Social dimensions:

- Promoting equal access to, and fair and equitable provision of, services
- Advancing social integration by prohibiting discrimination and offering opportunities and physical space to encourage positive interactions
- Assuring gender and disability sensitive planning and management
- Preventing, reducing and eliminating violence and crime, including its causes

Institutional dimensions:

- Political will and support in the delivery of sustainable visions
- Transparent administrative structures and processes
- Adequate and sustained institutional capacities
- Appropriate supporting legal frameworks
- Sustained stakeholder involvement
- Adequate sustained coordination between concerned government bodies, and among government bodies, community groups and private sector stakeholders
- Relevant and effective regulations for the sustained management and revenue generation of urban development services effectively linking urban land use planning, urban development and infrastructure planning; and undertaking planning in peri-urban areas and at the regional level, particularly in the case of regional metropolitan areas and megacities.

A.8 Knowledge Management. Elaborate on the knowledge management approach for the project, including, if any, plans for the project to learn from other relevant projects and initiatives (e.g. participate in trainings, conferences, stakeholder exchanges, virtual networks, project twinning) and plans for the project to assess and document in a user-friendly form (e.g. lessons learned briefs, engaging websites, guidebooks based on experience) and share these experiences and expertise (e.g. participate in community of practices, organize seminars, trainings and conferences) with relevant stakeholders.

Knowledge management is a key part of the whole project and is therefore integrated into three technical project components which tackle knowledge management and capacity building of relevant stakeholders, including governmental national, local and city officials, private sector, academia, civil societies, etc.

Component 1 includes the following knowledge management activities i) Documentation of inspiring planning practices and solutions; ii) Peer to peer learning with LABs and cities; iii) Communication strategy around the planning process and production of well-designed and easy to understand materials on the plan and on its sustainability proposals and iv) Tailored trainings for key actors in the planning and management process.

Component 2 includes the following knowledge management activities and will address capacity of local urban bodies thought the following activities: i) Awareness-raising ; ii) Training, resources, and technical assistance to cities on data collection strategies, validating the information, and other analytic tools required for investment analysis; and iii) Media/communications, outreach, stakeholder engagement.

Component 3 which is dedicated to enhancing partnerships and knowledge, a network of stakeholders in the different cities will be established at national level and opportunities created for exchange with networks such as Cities Development Initiative Asia (CDIA, with parallel funding from BMZ and ADB), as well as Global Platform for Sustainable Cities (GPSC). GPSC, in addition to serving as a platform for knowledge sharing, endeavors to compile lessons learned from the child projects, including this project and will promote innovation through collaboration and knowledge exchange. Case studies on each child project will be created at the end of the program to evaluate whether the knowledge positively affected the urban processes and systems.

In addition, within the component 3, knowledge management will be carried out through development of the platform for sustainable cities in India (PLATFUS) and complimentary activities such as trainings, study tours and city twinning activities. The platform will facilitate the transfer of knowledge: i) from already proven smart sustainable cities abroad to Indian cities, ii) among Indian cities and iii) from Indian cities to other developing country cities striving to be smart and sustainable. The platform will provide a knowledge base for the project. For further information of the PLATFUS, please refer to the component description on pages 49-53.

B. Description of the consistency of the project with

B.1 Consistency with National Priorities. Describe the consistency of the project with national strategies and plans or reports and assessments under relevant conventions such as NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, etc.:

All components (listed below) of the SC-IAP meet national strategies and plans:

- Sustainable urban planning and management
- Demonstration project / technology demonstration
- Investment platform / including capacity building and knowledge management
- Monitoring and evaluation

Sustainable urban planning and management: An important component of the programme, projects identified contribute to the overall urban planning and management for each city. This project aims to ensure that best practices are integrated at various levels (including technology, implementation mechanisms, institutional arrangements etc.). Coordinating between issues addressed at the Master Planning level and Town and Country Planning Organization (TCPO) levels, the SC-IAP has facilitated convergence on ongoing government schemes including Swachh Bharat, Smart Cities Mission, AMRUT and others to ensure convergence and a larger impact at an urban level. Management at city level has been identified as an important issue, which is being addressed by the SC-IAP project across the five cities. Since the 74th amendment to the Indian Constitution vests the power for planning with the municipal corporations, on ground, the TCPO manages planning while the municipality ensures implementation and execution of the plans. Interdepartmental coordination and cooperation is being proposed to ensure effective planning and execution of SC-IAP projects.

Demonstration project/ technology component: All projects identified under this programme contribute to promoting sustainable city development, and especially address climate change mitigation. In summary, the following priority and demonstration projects are recommended and verified by city-representatives

- **Bhopal:** closing and capping of Bhanupura Dumpsite
- **Jaipur:** Municipal Solid Waste to Energy plant
- **Vijayawada:** Energy generation from STP biogas
- **Mysuru:** 300TPD municipal waste compost plant
- **Guntur:** TBD

The proposed projects (i.e. solid waste management and waste to energy meet important objectives and are aligned to India's Intended Nationally Determined Contributions (INDCs), where India has committed to:

- Reduce emission intensity by 33% - 35% by 2030 compared to 2005 levels;
- Introduce new, more efficient, cleaner technologies in thermal power generation
- Reduce emissions from transport sector

- Promote energy efficiency, mainly in industry, transport, buildings and appliances
- Develop climate resilient infrastructure
- Pursue Zero Defect, Zero Effect policy under Make in India programme
- Produce 40% of electricity from non-fossil fuel energy resources by 2030; and
- Create additional carbon sink of 2.5 to 3 billion tonnes of carbon dioxide equivalent by 2030 through additional forest and tree cover.

India's INDCs outline the strong policy framework on environment and climate change including the National Environment Policy (NEP) 2006, which promotes efficiency in environmental resource use (among other things). The proposed projects (focusing on conversion of waste to energy) focus on efficient use of environmental resources, to minimize adverse environmental impact.

The National Action Plan on Climate Change (NAPCC) provides a sharper focus on required interventions. Currently, NAPCC is implemented through eight National Missions, outlining priorities for mitigation and adaptation to combat climate change. The broad policy initiatives of the government are supplemented by actions of the State Governments, Non-Governmental Organizations (NGOs), initiatives of the private sector and other stakeholders. 32 States and Union Territories have put in place the State Action Plan on Climate Change (SAPCC) attempting to mainstream climate change concerns in their planning process.

Expected outcomes of the project are aligned to India's National Action Plan on Climate Change, which includes a specific Mission on Sustainable Habitat with **a greater emphasis on urban waste management and recycling, including power production from waste;**

Additionally, the Government of India has launched ambitious Smart Cities Mission and AMRUT to fulfill the aspirations of the growing urban and semi urban Indian population, and provide an inclusive and sustainable urban quality life with all kinds of modern infrastructure and amenities.

As part of the Smart City plans submitted for evaluation to the Government of India, Bhopal and Jaipur have developed Pan City and Area Based Development priorities, with proposals for mitigating the impacts of climate change through emission reduction, waste management, facilitating use of public transport and enhancing air quality form important components of each plan.

Similarly the "Swachh Bharat Mission" aims to create awareness and clean the public area with the use of innovative waste management system and highlights the following objectives, which also form a part of India's INDCs:

- Elimination of open defecation,
- Achieving 100 per cent collection, and
- Scientific processing, disposal, re-use and recycling of municipal solid waste
- Awareness generation about sanitation
- Create enabling environment for private sector participation

India's INDC requires development of climate resilient urban centres through integrated implementation of Smart Cities Mission and AMRUT, which are key to co-financing of the SC-IAP project. Thus, the SCIAP project is completely aligned with the above programmes with a special emphasis on the managerial aspect and tool to avoid any duplication between several projects operational at city level.

Another important aspect of India's INDC is to promote waste to wealth conversion. While the government is promoting conversion of waste to compost and providing market development assistance- including grants in aid to States and Urban Local Bodies for Solid Waste Management, for, the SC-IAP project also aims to achieve the same, as

described earlier in the document. External cooperation for adoption of new and innovative technologies that address climate change mitigation and adaptation has been identified as a critical enabler for India to achieve INDC targets. The SC-IAP project shall further enhance bilateral and multilateral collaborative efforts in the private and public sector while ensuring deployment of climate friendly technologies in select cities.

Investment platform / including capacity building and knowledge management: Knowledge management and capacity building is a key component of the SC-IAP as well as India's INDCs. Objectives of various schemes of the Government of India including 'National Training Policy' and 'Skill India' shall be achieved through SC-IAP. Various partners to the SC-IAP shall also contribute to the INCCA (Indian Network on Climate Change Assessment), a network of 127 institutions.

Monitoring and evaluation: As per the NEP 2006, weak enforcement of environmental compliance is attributed to inadequate technical capacities, monitoring infrastructure, and trained staff in enforcement institutions. All of these attributes are being addressed in the proposed SC-IAP project with a strong monitoring and evaluation protocol to ensure sustained operations and maintenance of technologies.

C. Describe the Budgeted M & E Plan:

Formal monitoring and evaluation (M&E) of the project will follow the principles, criteria and minimum requirements set out in the GEF Monitoring and Evaluation policy in its current version and the respective guidelines and procedures issued by the GEF Evaluation Office and/or the GEF Secretariat. At the same time, M&E will comply with the rules and regulations governing the M&E of UNIDO technical cooperation projects, in particular the UNIDO Evaluation Policy and the Guidelines for Technical Cooperation, both in their respective current versions.

The overall objective of the monitoring and evaluation process is to ensure successful and quality implementation of the project by:

- Tracking and reviewing project activities execution and actual accomplishments;
- Leading the project processes so that the implementation team can take early corrective action if performance deviates significantly from original plans;
- Adjust and update project strategy and implementation plan to reflect possible changes on the ground, results achieved and corrective actions taken; and
- Ensure linkages and harmonisation of project activities with that of other related projects at national, regional and global levels.

A detailed monitoring plan for tracking and reporting on project time-bound milestones and accomplishments will be prepared by UNIDO in collaboration with the PMU and project partners at the beginning of project implementation and then periodically updated.

By making reference to the impact and performance indicators defined in the Project Results Framework, the monitoring plan will track, report on and review project activities and accomplishments.

One mid-term review will be carried out and a terminal independent evaluation at least one month before the completion of the project. UNIDO will make arrangements for the terminal independent evaluation of the project. The UNIDO project manager will inform UNIDO Evaluation Group at least 6 months before project completion about the expected timing for the Terminal Evaluation (TE). The UNIDO Evaluation Group will then manage the terminal evaluation in close consultation with the project manager.

All monitoring and evaluation documents, such as progress reports, final evaluation report, and thematic evaluations (such as capacity needs assessment), as well as publications reporting on the project, will include gender dimensions wherever adequate. Table below provides the tentative budget for the two evaluations, which has been included in Project Component 4. UNIDO as the Implementing Agency will involve the GEF Operational Focal Point and project stakeholders in order to ensure the use of the evaluation results for further planning and implementation.

Table 13. Monitoring and Evaluation

M&E activity categories	Feeds into	Timeframe	GEF Budget USD	Co-financing USD	Responsible parties
Measurement of specific indicators based on the results framework	Mid-term Review and Terminal Evaluation Reports	At project mid-term and completion	33,421	55,000	M&E consultant provide feedback to project executing partner / PMUs
Monitoring of project indicators based on the results framework	Project management; semi annual progress report; annual GEF PIR	Semi-annually	90,000	100,000	M&E Consultant provides feedback to project executing partner; PMU submits inputs for consolidation and approval to Project Steering Committee (PSC), through UNIDO PM; Final report submitted toUNIDO
Periodic Progress Reports	Project management; Annual GEF PIR	Annually	50,000	100,000	PMU and experts submit progress reports to PSC, through UNIDO PM, for approval; PSC submits final reports to UNIDO
Mid-term review	Project management	At project mid-term	20,000	10,500	Independent Evaluator or

					UNIDO PM, in cordination with UNIDO EVA and UNIDO Quality Monitoring Division
Independent Terminal Evaluation	Terminal Evaluation Review (TER) conducted by UNIDO EVA	Project completion (not later than six months after project completion)	40,000	15,500	Independent evaluator for submission to UNIDO PM and UNIDO EVA
Total indicative costs			**233,421**	**281,000**	

According to the Monitoring and Evaluation policy of GEF and UNIDO, follow-up studies like Country Portfolio Evaluations and Thematic Evaluations can be initiated and conducted. All project partners and contractors are obliged to (i) make available studies, reports and other documentation related to the project and (ii) facilitate interviews with staff involved in the project activities.

Legal Context:

The Government of the Republic of India agrees to apply to the present project, mutatis mutandis, the provisions of the Revised Standard Technical Assistance Agreement concluded between the United Nations and the Specialized Agencies and the Government on 31 August 1956 and as amended on 3 October 1963.

PART III: CERTIFICATION BY GEF PARTNER AGENCY(IES)

A. GEF Agency(ies) certification

This request has been prepared in accordance with GEF policies[49] 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
Mr. Philippe R. Scholtès, Managing Director, Programme Development and Technical Cooperation (PTC), UNIDO GEF Focal Point		12/23/2016	Tonilyn P. Lim 	+43 - 1 - 260263847	t.lim@unido.org

[49] GEF policies encompass all managed trust funds, namely: GEFTF, LDCF, and SCCF

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ANNEX K: INDIA CITY REPORT

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).

Please note that since this project is a child project under a larger GEF Programmatic Approach entitled "Sustainable Cities Integrated Approach Pilot", the bellow project results framework has been created in line with the project, as well as program requirements that were provided by the World Bank as a lead program agency.

Project objectives	Indicator	Baseline	Targets end of project	Source of verification	Assumptions/risks
To integrate sustainability strategies into urban planning and management to create a favourable environment for investment in infrastructure and service delivery, thus building the resilience of pilot cities.	Number of cities with integrated multi-sector sustainability planning and management capabilities	Currently urban planning does not take into account the integrated Sustainable City Strategy (SCS)	Sustainability strategies incorporated into urban planning and management of each of 4-5 demonstration project cities	Project reports; National documents	Sustainability strategies incorporated into urban planning and management
Component 1 Sustainable urban planning and management					
	Indicator	**Baseline**	**Targets end of project**	**Source of verification**	**Assumptions/risks**
Outcome 1.1. Increased scope and depth of integrated sustainability management policies and processes, including institutionalization within the local governance structure	SC IAP Indicator 1: Number of cities with integrated multi-sector sustainability planning capabilities	Less integrated planning, lacking capacity for various sustainability aspects, and with low-level integration locally, observed in all 4-5 cities	Each of the 4-5 pilot cities have integrated, multi-sector sustainability planning capabilities.	Project reports; Urban development plans	Support of national and local governments in allowing the process and adopting the plans; stakeholder engagement in the planning process
	SC IAP Indicator 3: Number of cities with meaningful engagement of multiple	Limited scope of Stakeholders involved in planning and implementation of sustainability	Multiple groups attend the stakeholder engagement events at the design and/or implementation	Stakeholder map identifying the relevant stakeholders with corresponding engagement strategies	Relevant stakeholders engage involved in planning and implementation of sustainability plans

	stakeholders in planning and implementation of sustainability plans	plans	stages, and the events complement or enhance the local authority's established process for stakeholder engagement	is prepared	
	SC IAP Indicator 2 Number of cities have integrated resilience consideration into their planning process	Resilience not integrated into urban development plans	SCSs ,that includes resilience aspects, developed and proposed for adoption in at least 4-5 cities	SCSs includes resilience aspects	Resilience integrated into SCSs
Output 1.1.1. Guidance and methodology for sustainability plan development under SC-IAP proposed for adoption by the relevant national and local stakeholders	Methodology for development of SCS – guidance document (specific for Indian cities) adopted	No available integrated methodology for SCS development for Indian cities	One (1) methodology guidance document for development of specific for Indian cities including stakeholders engagement process and resilience management	Project reports; Government issuances	SCS Methodology will be aligned with ongoing cities missions and proposed for adoption by relevant stakeholders and MoUD
Output 1.1.2. Established institutional framework for sustainable city planning and management	National and local level sustainable city planning and management supporting structure	Structures created per national mission	Adopted official structure for integrated sustainability planning and management in cities	Project reports; Government issuances	Established institutional framework aligned and harmonized with ongoing cities missions and proposed for adoption by relevant stakeholders and MoUD
Output 1.1.3. Integrated sustainability and resilience plans (SCS – Sustainable City Strategy)	Number of SCSs developed	Only urban development plans and separate plans for different national missions available	4-5 SCSs developed	Project reports; Finalized SCSs	Stakeholders agree to the adoption and implementation of SCSs; Financing for SCS implementation available

developed for at least 4-5 cities	SC IAP Indicator 5 Number of cities to have completed comprehensive GHG emissions inventories according to internationally-accepted methodology	GHG emissions inventories initiated during the PPG	GHG emissions inventories according to internationally-accepted methodology finalized for at least 4-5 cities	GHG emissions inventories	GHG emissions inventories completed
Output 1.1.4 City performance measured against indicators consistent with international standards (e.g. ISO 37120), as well as SC IAP program level indicators	SC IAP Indicator 4 Number of cities with improved tracking systems and enhanced capacity for measuring local and global sustainability indicators	Indicators dependent on different cities missions, without reference to international standards	Indicator set for performance measurement aligned with international standards, adopted and used for monitoring and reporting	Project reports; Indicator database; City performance reports	Relevant information needed per indicator is accessible and made available
Component 2 Investment projects and technology demonstration					
	Indicator	**Baseline**	**Targets end of project**	**Source of verification**	**Assumptions/risks**
Outcome 2.1. Low-emission and environmentally-sound technologies contribute to city greenhouse gas emission reduction	Energy produced from renewable / alternative sources; GHG emissions reduced tCO2e; Amounts of wastes handled in environmentally-sound manner	Project has not started implementation yet.	Save 2 919 290 tCO2e	City reports/databases on emissions	
	SC IAP Indicator 7 Number of cities where investment projects have incorporated	No city investment projects incorporating sustainability indicators or factors,	Four (4) to five (5) city investment projects incorporating sustainability indicators or factors,	Project reports; Physical verification of installations; Operations records	Techno-economic feasibility of projects established; Appropriate contractors / technology suppliers found

	sustainability indicators or factors	implemented under SC-IAP	implemented under SC-IAP		
	SC IAP Indicator 6 Number of cities that have learned about best practices for municipal financial management and financing for sustainability	No training or awareness raising provided yet under SC-IAP	At least 50 key officials and contractors within pilot cities (40% of which are female) trained on technological, financial and management aspects of sustainability investment projects	Project reports, Training records;	Officials have time to participate and complete the training events; Trained officials use acquired skills/knowledge in sustainability investment projects
Output 2.1.1. Detailed project reports developed for 4-5 city investment projects	Number of bankable project reports	None readily available	Four (4) to five (5) bankable detailed project reports developed	Project reports; DPRs	Agreement with financing sources on quality and content of DPRs; Suitable experts are found to carry out the task (vis-a-viz empanelled consultants)
Output 2.1.2. Innovative waste-to-energy / clean technologies with productive use applications demonstrated in 4-5 cities	Number of pilot projects	No city projects on low-emission and environmentally sound technologies implemented under SC-IAP	Four (4) to five (5) city demonstration projects on low-emission and environmentally sound technologies implemented under SC-IAP	Project reports; Physical verification of installations; Operations records	Techno-economic feasibility of projects established; Appropriate contractors / technology suppliers found; Project execution modality agreed between UNIDO and executing agency
Output 2.1.3. Business model established and PPP mode of operations promoted for the 4-5 investment projects	Business models / Contractual agreements between cities and operating entities; Number of innovative financing mechanisms and	No business models / contractual agreements established under SC-IAP; Some PPP models already in place in some cities	4-5 business models / contractual agreements established in the 4-5 investment projects	Project reports, Contracts	Co-financing for the projects can be sourced from government, banks and private investors

	approaches; Funds leveraged to support the investment flow to urban sustainability in the IAP projects				
Output 2.1.4. Enhanced capacity of local urban bodies in promoting investments in sustainability projects	Number of local officials trained	No training or awareness raising provided yet under SC-IAP	At least 50 key officials and contractors within pilot cities (40% of which are female) trained on technological, financial and management aspects of sustainability investment projects	Project reports, Training records;	Officials have time to participate and complete the training events; Trained officials use acquired skills/knowledge in sustainability investment projects
Component 3 Partnerships and knowledge management platform					
	Indicator	**Baseline**	**Targets end of project**	**Source of verification**	**Assumptions/risks**
Outcome 3.1. Promotion of sustainable cities through partnership approach	City networks which Indian cities are participating in	None identified	1 global city network promotes Indian sustainable cities	Network documents / websites	
Output 3.1.1. Partnership for sustainable cities in India established and linked with external networks	Partnership platforms for sustainable cities established	Some platforms may have been established within the different cities missions but not within the context of SCIAP	Established partnership platforms for sustainable cities, comprising of technical, financial, political, social and business partners, participated in by at least 4-5 cities	Project reports; Documents establishing the partnership/s and membership; Meeting minutes of the partnerships	Potential partners willing to devote time (and resources) to the partnership; Partnership platforms recognized and supported by the government
Output 3.1.2. Platform for Urban Sustainability (PLATFUS) web service operationalized	Web service operationalized	Web service for different cities missions operational but none particularly integrated for	Multi-functional web based PLATFUS operationalized and available for access by city stakeholders	World wide web; Links from other government websites	PLATFUS can be linked and aligned with other operational web services for the different cities mission; Stakeholders

		sustainable cities	and partners		find contents useful and relevant
Output 3.1.3. Increased awareness on sustainability issues in cities and enhanced capacities of local urban bodies in promoting and implementing sustainable city strategies	Number of trainings, study tours, site visits, city twinning sessions, meetings, organized and delivered Number of stakeholders trained Number of learning materials prepared	None in the context of SCIAP, except for participation in the Global Platform for Sustainable Cities (GPSC) managed by World Bank	Participation in activities of the GPSC Training and other learning events on sustainable urban planning practices and other thematic areas of sustainable cities for at least 200 stakeholders (30% of which are female) Study visits to at least two model cities Learning and advocacy materials on sustainable cities	Project reports; Training/events reports/documentation; Learning and advocacy materials	Stakeholders devote time for completing the learning events and find relevance in them
Component 4 Monitoring and evaluation					
	Indicator	**Baseline**	**Targets end of project**	**Source of verification**	**Assumptions/risks**
Outcome 4.1. Project implementation in line with GEF and UNIDO guidelines	Adherence with UNIDO and GEF M&E requirements	Not yet started for the SCIAP	100% compliance with GEF M&E requirements	Project reports, GEF evaluation result	
Output 4.1.1. Regular monitoring exercises conducted	GEF PIRs prepared	Not yet started for the SCIAP	Prepare GEF PIRs on yearly basis	GEF PIRs	Project monitored in line with UNIDO and GEF rules and regulations
Output 4.1.2. Mid-term review and final independent evaluation conducted	Project mid-term review carried out including	Not yet started for the SCIAP	Carry out independent mid-term review in	Mid-term review report, Final evaluation report	Evaluation experts in the field of sustainable cities are available for the

	submission of GEF Tracking Tools Project final evaluation carried out including submission of GEF Tracking Tools		project year 3 Carry out independent final evaluation		assignment; Relevant project stakeholders readily provide objective inputs; Midterm review and final independent evaluation done in line with UNIDO and GEF rules and regulations

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).

Since most of the comments that were received at the concept level from STAP and Council are referring to the SC IAP program level, the relevant answer from the World Bank as a lead program agency has been provided below. In addition, where applicable, answers relevant to this child project have been included.

GEF STAP

The following Table shows comments on the SCIAP program received from GEF STAP and responses at PIF stage.

Comments	Team responses
Collective Impact and Stakeholder Engagement	
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). 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. 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) 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 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	Within the project context India project will ensure wide stakeholder engagement and entail the coordination of objectives and programmes among different city stakeholders (e.g., citizens, government, CSOs and the business sector), as well as the development of linkages between and within socioeconomic sectors and activities. Social, economic, environmental and governance components will be integrated part of sustainable city planning, and active participation of all stakeholders will be s at the local and national level, as well as, at the global level, mainly thought the coordination and contribution to the activities of the Global Platform for Sustainable Cities (GPSC). 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

measuring the same things

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

Isolated Impacts:- Large scale change is assumed to depend on scaling a single organization

Collective Impacts:- Corporate and government sectors are essential partners

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.

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 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.

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.

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.

Conditions of Collective Impact Success

Collective impact is more rigorous and specific than collaboration among organizations. There are five conditions that, together, lead to meaningful results from collective impact:

stakeholders in planning and implementation of the projects supported by the IAP).

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.

The design of the GPSC endeavors to encompass the right conditions for a successful collective impact:

- 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 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

- 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.
- 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.
- Mutually Reinforcing Activities: A diverse set of stakeholders, typically across sectors, coordinate a set of differentiated activities through a mutually reinforcing plan of action.
- Continuous Communication: All players engage in frequent and structured open communication to build trust, assure mutual objectives, and create common motivation.
- 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

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 (eg. UN GAIN, Communities That Care, Calgary Homeless Foundation, Bill and Melinda Gates Foundation, AVINA).

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.

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.

- 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 reflects 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.
- 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.
- Continuous Communication: The GPSC holds a monthly conference call with all implementing agencies to 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. • 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.
Results Framework	
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. So 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. 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. 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	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. 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.

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. A 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. 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. 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.	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.
Knowledge Management	
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. 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,	The project will seek sharing of best practices through national and international events that will be organized by the project, as well as Global knowledge platform of the IAP. Results from the project will be disseminated within and beyond the project intervention zone through existing information sharing networks and forums. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation though lessons learned. The project will identify, analyse, and share lessons learned that might be beneficial in the design and implementation of similar future projects. A web portal will also be established to create awareness and disseminate outputs of the project. Finally, there will be a two-way flow of

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. 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.	information between this project and other projects of a similar focus, as well as with the GPSC. 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.
Program Structure	
Number of Pilot Cities: 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:	Number of Pilot Cities: - 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

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.	sustainability agenda. Link to other IAPs: - We will recommend to the South Africa child project that synergies with the IAP on Food Security be sought.
Miscellaneous Comments	
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 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	Table C of PFD: 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. Section E of PFD: 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. Program Challenges: 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

cope with. This will add challenges to the services to be provided using the various joint activities as planned.	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.

GEF Council

The following Table shows comments on the SCIAP program received from Council members (Canada, France, Germany, USA) and responses at PIF stage.

Comments	Team responses
GPSC v. Existing Initiatives	
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]** 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]**	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.
Common Framework & Scope	
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. We globally support this proposal but we would like to	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

underline the following points. Indeed, regarding the aim of the project and its thematic and geographical (11 countries) scope, it seems that : - 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. **Opinion:** Favorable provided the above comments are taken into account in the design phase.**[France]** 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. **[Canada]**	sustainability. 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. 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. We agree to limiting the variables for each city for ease of implementation and evaluation and will endeavor to keep this in mind.
Risks	
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]**	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, 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. The GPSC will also rely upon existing initiatives to leverage the knowledge and resources of entities currently working on the urban sustainability agenda. 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.
Miscellaneous	
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]** 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 be included as to how this objective would be met.**[Canada]**	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. 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. Taking into account the limited financial recourses, within the context of India child project, the project priorities and interventions have been defined though extensive consultations with the national stakeholders, and have been built on the baseline situation in the country, to ensure sustainability and scale up of the project interventions and results.

ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS[50]

A. Provide detailed funding amount of the PPG activities financing status in the table below:

[50] If at CEO Endorsement, the PPG activities have not been completed and there is a balance of unspent fund, Agencies can continue to undertake the activities up to one year of project start. No later than one year from start of project implementation, Agencies should report this table to the GEF Secretariat on the completion of PPG activities and the amount spent for the activities. Agencies should also report closing of PPG to Trustee in its Quarterly Report.

During the PPG, relevant baseline studies, as well as the preselection of demonstration pilots were conducted (please see Annex K). Furthermore, a number of consultative meetings with key stakeholders to identify barriers and issues took place, as well as coordination activities with the Global Platform for Sustainable Cities (GPSC). In addition, Environmental and Social Management Plan (please see annex I) and detailed calculation of GEBs (please see annex G) were prepared.

PPG Grant Approved at PIF: **275,229**			
Project Preparation Activities Implemented	***GEF/LDCF/SCCF Amount ($)***		
	Budgeted Amount	***Amount Spent Todate***	***Amount Committed***
City-level Assessments	110,000	41,157	80,000
Partnerships/Investments Study	15,000	15,000	
Environmental and Social Safeguards Report	10,000	10,000	
Validation Workshop	15,000	15,000	5,000
Participation in World Bank GPSC	17,500		17,500
Project coordination at national and city levels	62,500	22,129	40,000
Capacity building	43,000		27,214
Miscellaneous	2,229		2,229
Total	275,229	103,286	171,943

ANNEX D: CALENDAR OF EXPECTED REFLOWS (if non-grant instrument is used**)**

Provide a calendar of expected reflows to the GEF/LDCF/SCCF Trust Funds or to your Agency (and/or revolving fund that will be set up)

N/A

ANNEX E: TIMELINE OF ACTIVITIES:

Timeline of activities																				
	Year 1				Year 2				Year 3				Year 4				Year 5			
Outputs by project component	Q1	Q2	Q 3	Q 4	Q1	Q2	Q 3	Q 4	Q1	Q2	Q 3	Q 4	Q1	Q2	Q 3	Q 4	Q1	Q2	Q 3	Q 4
1.1.1. Guidance and methodology for sustainability plan development under SC-IAP proposed for adoption by the relevant national stakeholders																				
1.1.2. Established institutional framework for sustainable city planning and management																				
1.1.3. Integrated sustainability and resilience plans (SCS – Sustainable City Strategy) developed for at least 4-5 cities																				
1.1.4 City performance measured against indicators consistent with international standards (e.g. ISO 37120), as well as SC IAP program																				
2.1.1. Detailed project reports developed for 4-5 city investment projects																				
2.1.2. Innovative waste-to-energy / clean technologies with productive use applications demonstrated in 4-5 cities																				
2.1.3. Business model established and public-private partnership mode of operations promoted for the 4-5 investment projects																				
2.1.4. Enhanced capacity of local urban bodies in promoting investments in sustainability projects																				
3.1.1. Partnership for sustainable cities in India established and linked with external networks																				
3.1.2. Platform for Urban Sustainability (PLATFUS) web service operationalized																				
3.1.3. Increased awareness on sustainability issues in cities and enhanced capacities of local urban bodies in promoting sustainble cities																				
4.1.1.Regular monitoring exercises conducted																				
4.1.2. Mid-term review and final independent evaluation conducted																				

ANNEX F: GEF GRANT BUDGET

GEF Grant Budget							
Component 1. Sustainable Urban Planning and Management	Type of expense	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Output Total
1.1. Increased scope and depth of integrated urban sustainability management policies and processes, including institutionalization within the local governance structure	International Expertise	60,000.00	110,000.00	120,000.00	90,000.00	70,000.00	450,000.00
	Local Travel	18,000.00	20,000.00	20,000.00	20,000.00	20,000.00	98,000.00
	National Expertise	34,157.00	62,377.00	62,377.00	62,377.00	60,000.00	281,288.00
	Contractual Arrangement		220,000.00	250,000.00	250,000.00	220,000.00	940,000.00
	Training/Workshops						-
	International Meetings/Workshops						-
	Equipment						-
	Miscellaneous						-
	Output subtotal						1,769,288
Component 2. Investment Projects and Technology Demonstration	Type of expense	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Output Total
2.1. Low-emission and environmentally-sound technologies contribute to city greenhouse gas emission reduction	International Expertise	15,000.00	50,000.00	50,000.00	50,000.00	50,000.00	215,000.00
	Local Travel	9,999.00	15,000.00	15,000.00	15,000.00	15,000.00	69,999.00
	National Expertise	35,000.00	35,000.00	55,000.00	56,000.00	35,000.00	216,000.00
	Contractual Arrangement		2,289,430.00	2,289,430.00	2,289,430.00	1,000,000.00	7,868,290.00
	Training/Workshops						-
	International Meetings/Workshops						-
	Equipment						-
	Miscellaneous						-
	Output subtotal						8,369,289
Component 3. Partnerships and Knowledge Management Platform	Type of expense	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Output Total
3.1. Promotion of "Sustainable Cities" through partnership approach	International Expertise						-
	Local Travel						-
	National Expertise						-
	Contractual Arrangement		81,287.00	104,000.00	104,000.00	80,000.00	369,287.00
	Training/Workshops						-
	International Meetings/Workshops	80,000.00	80,000.00	80,000.00	80,000.00	80,000.00	400,000.00
	Equipment						-
	Miscellaneous						-
	Output subtotal						769,287

Component 4. Monitoring and Evaluation	Type of expense	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Output Total
4.1. Project implementation in line with GEF and UNIDO guidelines	International Expertise			20,000.00			20,000.00
	Local Travel	6,000.00	10,000.00	10,000.00	10,000.00	10,000.00	46,000.00
	National Expertise	15,000.00	15,000.00	15,000.00	15,000.00	15,000.00	75,000.00
	Contractual Arrangement					40,000.00	40,000.00
	Training/Workshops						-
	International Meetings/Workshops			20,710.00		31,711.00	52,421.00
	Equipment						-
	Miscellaneous						-
	Output subtotal						233,421
5. Project management cost (PMC)	Type of expense	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	PMC Total
5.1. PMC	International Expertise						-
	Local Travel	21,049.00	21,047.00	21,047.00	21,047.00	21,047.00	105,237.00
	National Expertise	65,000.00	65,000.00	65,000.00	65,000.00	65,000.00	325,000.00
	Contractual Arrangement						-
	Training/Workshops						-
	International Meetings/Workshops	82,000.00	82,000.00	82,000.00	82,000.00	82,000.00	410,000.00
	Equipment	15,000.00	15,000.00	15,000.00	15,000.00	15,000.00	75,000.00
	Miscellaneous	10,714.00	10,714.00	10,714.00	10,714.00	10,714.00	53,570.00
	PMC subtotal						968,807
Total project costs							12,110,092.00

ANNEX G: DIRECT AND INDIRECT EMISSION REDUCTION CALCULATION

For the purpose of estimating emission reductions from the project the following assumprions have been made:

1) Direct emission reductions are those attributed to pilot project reduction effects within their lifetime (depending on the project). These reductions were calculated based on pilot projects technical data (which was already known) or best possible estimates.
2) Indirect emission reduction are those that are attributed to emission reductions resulting from implementation of the SCS in each of the cities.
3)

Description of direct emission reduction assessment methodology

Direct carbon emission reductions attributed to solid waste management projects are due mainly to reductions in methane releases arising from degradation of the organic component of the waste, if they were to be disposed in a manner that is not environmentally-sound. Emission factor for amount of methane per amount of waste, 0.036 t CH_4/t waste, based on IPCC guidelines, was used for the calculation. Specifically for:

- Banpura dumpsite capping and closing - emission reductions were based on flaring of methane to be captured from the dumpsite after closure (from CH_4 to CO_2);
- Jaipur waste to energy plant – emission reductions were based on the difference between emissions from grid electricity generation (using India's 0.97 t CO_2/MWh grid emission factor) and emissions from electricity generated from the waste to energy plant;
- Mysore compost plant – emission reductions were based on avoided CH_4 releases arising from composting;
- Vijayawada STP biogas production – emission reductions were based on the difference between emissions from grid electricity generation (using India's 0.97 t CO2/MWh grid emission factor) and emissions from electricity generated from biogas (Note: There is also an option for bottling biogas for industrial and/or transport applications so in this case emission reduction will be based on actual selected application).

Description of indirect emission reduction assessment methodology

For the estimation three scenarios have been created (all these scenarios have 2010 as a base year):

1. Baseline scenario (BaU) – is based on BaU projections (business-as-usual) created for each of the cities, taking into account regional and national trends for each of the emission inventory sectors. The assumptions are given in the EMISSION SCENARIOS Excel file (sheet 'BaselineGeneralData').
2. Baseline program scenario (BPS) – is based on foreseen outcomes of current India's missions and programs. The assumptions are given in the EMISSION SCENARIOS Excel file (sheet 'BaselineProgramData').
3. Alternative scenario (AS) – which is based on foreseen results of actions undertaken within SCS implementation in each of the cities. Results of actions are diversified between emission inventory sectors and have been assessed based on existing best practices from project implementation worldwide, assessment of Idia's potential in relevant sectors. The assumptions and data sources are given in the EMISSION SCENARIOS Excel file (sheet 'AleternativeScenario').

For each of the project cities all three scenarios have been calculated based on emission inventories. Indirect emission reductions attributed directly to GEF intervention have been obtained as a difference between scenarios:

Reductions attributed to GEF = AS – BPS

The calculation is presented in in the EMISSION SCENARIOS Excel file (sheet 'SC-IAP_IndirectReduction').

Alternative scenario reduction factors used for calculation

1. For energy consumption reduction factors only non-renewable energy is considered (the factor represents non-renewable energy consumption reduction), therefore reductions can be obtained as a result of renewable energy use and energy efficiency measures.
2. GHG emissions are primarily result of non-renewable energy consumption (except Waste and AFOLU sectors), therefore emission reductions are mainly attributed to reductions in non-renewable energy consumption and changes in fuel mix.
3. Reduction factors by sectors:
    a. I.1 – Residential:
        i. 2020 – 5% reduction is directly attributed to baseline programs (e.g. The Solar City Mission);
        ii. 2030 – 30% reduction is attributed to full implementation of baseline programs and additional measures to be proposed in the SCS – additional RES, energy efficiency of residential houses (energy efficient equipment, efficient electricity use, thermal insulation and others); the value is conservative (models for residential buildings efficiency assume up to 60% reduction – e.g. http://www.gbpn.org)
    b. I.2. – Commercial:
        i. 2020 – 5% reduction is directly attributed to baseline programs (e.g. The Solar City Mission);
        ii. 2030 – 40% reduction is attributed to full implementation of baseline programs and additional measures to be proposed in the SCS – additional RES, energy efficiency of commercial and office building (energy efficient equipment, efficient electricity use, thermal insulation and others); the value is conservative (models for residential buildings efficiency assume up to 60% reduction – e.g. http://www.gbpn.org), higher value for commercial sector than for residential is assumed as a result of higher financial viability oef energy efficiency in this sector.
    c. I.3 – Industry:
        i. 2020 – 5% reduction is attributed of additional measures to be proposed in the SCS – energy efficiency in industrial processes and buildings – investments with high payback time; the 5% value is conservative.
        ii. 2030 – 15% reduction is a result of broader implementation of measures proposed in SCS; the value is conservative.
    d. I.6 – Lighting:
        i. 2020 – 10% reduction is attributed of additional measures to be proposed in the SCS – energy efficient lighting, these measures are simple (like replacement of old light sources with LED lamps) and very effective, with high payback time; the 10% value is conservative – it is assumed that onli pilot projects on lighitng can be implemented till 2020.
        ii. 2030 – 25% reduction is a result of broader implementation of measures proposed in SCS; the value is conservative (projects in energy efficiency in lighting can easily achieve 60% energy reduction).
    e. II.1 – Transport on road:
        i. 2020 – 2% reduction is directly attributed to baseline programs (e.g. AMRUT and Smart Cities Mission);
        ii. 2030 – 10% reduction is attributed to to full implementation of baseline programs and additional measures to be proposed in the SCS (measures focusing on modal share – decrease of private transport use, development of public transportation, fuel switch – biofuels, renewable electricity and others); the value are conservative compared to IEA urban transport scenarios which assume 40% emission reduction up to 2050.

f. II.2 – Transport – rail – emission from railways was not estimated and not included in the draft inventory for cities. For scenarios a 10% reduction value would have been used (similar to road transport).
g. III. – Waste:
    i. 2020 – 50% reduction covers the emission reductions to be achieved by pilot projects implementation.
    ii. 2030 – 80% reduction is a conservative value, covering wide-spread use of low emission waste management techniques to be implemented as a result of SCS implementation (emission reductions of up tu 95% could be obtained compared to implemented projects worldwide).
h. V. - AFOLU – there were no emission reductions assumed for this sectors.

ANNEX H:AVAILABLE FINANCING MECHANISMS

Below are various mechanisms available to cities to fund sustainable projects and initiatives. The section is divided into public sector and private sector finance.

Public Sector Finance

These are a category of municipal financial instruments which can in effect promote the greening of the local infrastructure:

1. Transportation fees and charges - Transport fees would discourage car use and encourage public transit and non-motorized travel. While state or national governments often control transportation-related taxes and the flow of transport cargo within their territory, local governments often control transportation fees and charges. The following instruments have been successfully used to reduce the share of vehicle traffic, reduce emissions and raise funding to finance local transportation infrastructure:

Congestion charges are fees for road use that are applied exclusively or more intensely during peak traffic periods. Reports from the OECD has estimated that congestion charges have reduced air pollution, including a decrease in carbon dioxide emissions of up to 19.5% in the cities where a charge has been implemented. Some cities (e.g. London) use the revenue from congestion charges to finance urban public transport.

	London	Stockholm	Singapore	Milan
Introduced	2003	2006	1975-98 (2nd generation)	2008
Reduction CO2 emissions (in %)	19.5%	13%	n.a.	9%
Period of effect	2002-03	January-July 2006	n.a.	January-December 2008
Other effects	Reductions of emissions (NOx, PM10), car traffic	Reductions of emissions (NOx, CO, PM10), vehicle passages	Reductions of car traffic and car share modal split.	Reductions of emissions (PM10, NOx) and traffic volumes.

Table 14. Urban congestion charges and its impact[51]

Parking fees and taxes can reduce car trips and encourages public transportation use. In certain cities in the U.S., parking fees can vary according to peak hours. Therefore this mechanism has a dual impact – it also serves to influence commuting choices and patterns in favour of public transport as well as generating revenue for local governments

[51] Source: OECD, Cities and climate change, 2010

India	Parking Fees ($)
Bengaluru	1.54
Delhi	1.32
Mumbai	1.11
Chennai	0.99
Abroad	
Dubai	4.08
Beijing	7.05
Bangkok	13.2
Hong Kong	28.25
New York	41
London	65.97

Table 15. Comparison of Daily Parking fees (2011)[52]

Toll lanes or high occupancy vehicle (HOV) lanes can encourage carpooling by charging a toll on vehicles with less than a minimum number of passengers (usually two or three).

2. User Charges or Utility fees - User charges signals the price at which people are willing to pay for specific services. It is appropriate for water, sewage, garbage collection, highway improvement (tolls) and public transit. It allows governments and citizens to make efficient decisions about how much to provide and how much to consume – highlighting the scarcity of the resource. Utility fees would encourage resource conservation and in turn drive efficiency and revenues. Many local governments already link fees to actual consumption of water and energy and actual generation of waste. Fees tied to resource consumption or waste reduction can fund service delivery and infrastructure improvements. User charges are especially important in large metropolitan areas, because they encourage more efficient land use. Currently the user charges in India are well below cost recovery in delivery of urban infrastructure. See graph below from MoUD (2014).

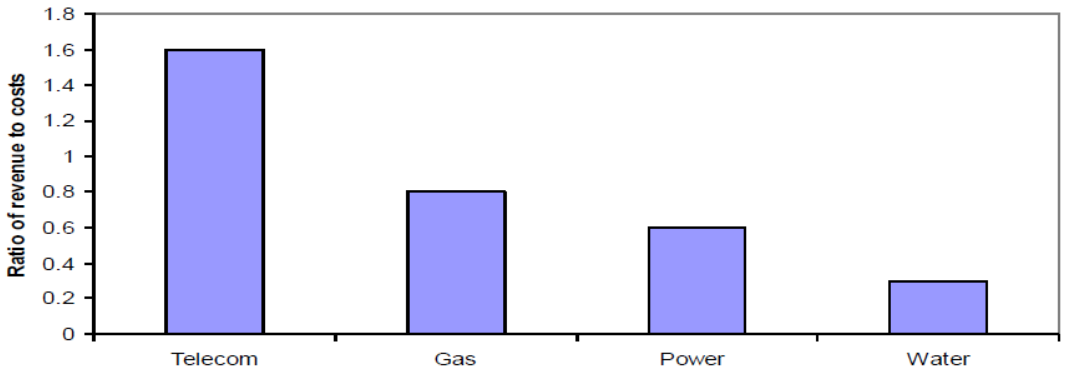

Figure 12. Cost Recover from User Charges[53]

[52] Source: MoUD, Government of India

[53] Source: Ministry of Urban Development, Government of India.

There are certain principles that guide levying user charge(s). The MoUD has recommended that user charges should be applied, rather than taxes in the case where services can be measured and beneficiaries identified, e.g. water and sewerage levied separately rather than built into the property tax.

The municipality of Delhi has recently introduced an odd-even scheme to reduce emissions and pollution. Under the plan, cards with odd-numbered license plates could be driven on odd dates and even-numbered ones on even dates (exemptions for women and CNG vehicles). Objective was to substantially reduce the number of cars on the road, hence the pollution levels. Research is being conducted on the results of this scheme – however it was noted that congestion was substantially reduced.

3. Property Tax and development fees - Property tax is appropriate for financing urban infrastructure and sustainable cities for at least two reasons: first it is immovable – cannot be moved away to a lower-tax jurisdiction when it is taxed. Second there is a connection between the types of services funded at the local level and the benefit to property values. Those who enjoy the benefits of local services are required to pay for them. Property Taxes can be designed to limited urban growth and offer a more deliberate and structured planning process. Local governments earn the most revenue from property taxes. Development fees can also fund infrastructure. In this situation, municipalities make new land available for urban development on the condition that additional floor spaces on the top of existing buildings that exceed normal maximum density at a notable premium. This is referred to as 'selling of additional building rights' which is particularly relevant for growing cities with scarce land.

Note that the Fourteenth Finance Commission (2015-20), Government of India has made a number of recommendations on land-based financing instruments to be used to finance sustainable cities. These include:

- Levy of vacant land tax be considered;
- Conversion charges are collected at the time of land use conversation, e.g. from rural to urban use, and from residential to commercial use – part of this can be shared by State Governments with municipalities;
- Betterment tax: States should prepare a clear framework of rules for the levy of betterment tax (A betterment levy is a tax that the State collects on a plot of land that its actions have in some way made 'better'. For instance, if building roads, metros or airports with public money leads to an appreciation in land prices in the vicinity of these projects, then landowners enjoy a financial benefit that is not directly attributed to their actions.);
- Impact fees which distinguish between differing impacts that buildings have on urban infrastructure and are charged at the time of giving building permission – separate rates for residential and commercial building.
- Floor Space Index beyond a certain minimum which can be claimed as a right – such charges can be pegged higher because they get associated with land costs and the costs of developed property.

4. Sales Tax: Sales taxes are generally levied by state governments; however, some jurisdictions could examine this option. Broadening the local tax base to include sales would help to address some of the externalities in municipal services (e.g. visitors or commuters who do not pay for urban transport), thus allowing municipalities to benefit from growth in the economy. Selective sales taxes on vehicles (such as fuel taxes, registration levies, tolls on major roads) – both discourage road use and produce revenues. The implementation of the Goods and Services Tax Bill in India (currently to be implemented in June 2016) would be a game changer that has the ability to positively contribute to government coffers to fund sustainable cities initiatives.

5. Tax Increment Financing (TIF): Cities designate a TIF area for capital improvements and then earmark any future growth in property taxes to pay for investments in infrastructure and other economic development initiatives. TIF are not tax abatement in which the property tax are forgiven. Rather, TIFs use the increase in tax revenue generated from the development to pay back funds that have been borrowed to make capital investments. Revenues from the increases in property tax are often escrowed for a defined period of time to finance new infrastructure investments in the area. TIFs are being encouraged by the Finance Commission, Government of India as a viable financing instrument for smart cities.

6. Pooled Finance Mechanism: The Ministry of Urban Development, India has introduced a Pooled Finance Development Fund (PFDF) Scheme to provide credit enhancement to Urban Local Bodies (ULBs) to access market borrowings based on their credit worthiness through State-Level-Pooled Finance Mechanism. The main aim of the Government authorities is to provide credit enhancement facilities to the ULBs based on their credit worthiness. This will enable them to access market borrowings through state-level pooled mechanism to fund infrastructure projects.

This scheme is broadly defined as cooperation between local municipalities with a focus on local infrastructure investments financing through market-based borrowing. This allows funding at a reduced cost of borrowing and supports decentralization.

7. Intergovernmental Transfers: Large metropolitans have the ability to levy and collect their own revenues; however this is not the case with smaller cities. Many of the cities announced under the Smart Cities mission would need to rely on intergovernmental transfers and grants. Given the wide regional economic disparities within India, this financial mechanism would greatly assist the lesser-known areas. Certainly in the case of this proposal, the cities of Bhopal, Mysore, Jaipur and the newer city of Vijayawada-Guntur would qualify.

The Indian government has identified a number of initiatives, the most prominent is the **National Investment and Infrastructure Fund (NIIF)** which was announced in the Union Budget 2015-16.

The objective of the NIIF is to maximize economic impact mainly through infrastructure development in commercially viable projects, both greenfield and brownfield opportunities. The initial corpus will be invested by the Government of India in the amount of Rs 20,000 crore ($3.5 billion) from the Budget, with another Rs 20,000 crore expected to come from private investors. The government's share of the NIIF's corpus is envisaged to be under 50%. Functions include investing, which would entail considering and approving candidate companies/institutions/projects (including state entities) for investments – both debt and equity. According to the Finance Ministry, the NIFF would be a fund of funds structure which would be open for international pension funds, multilateral agencies, sovereign wealth funds, and other financial institutes.

According to the charter of the NIFF, the functions of NIIF are as follows:

2. Fund raising through suitable instruments including off-shore credit enhanced bonds, and attracting anchor investors to participate as partners in NIIF;
3. Servicing of the investors of NIIF.
4. Considering and approving candidate companies/institutions/ projects (including state entities) for investments and periodic monitoring of investments.
5. Investing in the corpus created by Asset Management Companies (AMCs) for investing in private equity.

6. Preparing a shelf of infrastructure projects and providing advisory services.

The main activities of the NIIF are:

1. Provides equity / quasi-equity support to those Non-Banking Financial Companies (NBFCs)/Financial Institutions (FIs) that are engaged mainly in infrastructure financing. These institutions will be able to leverage this equity support and provide debt to the projects selected.
2. Invest in funds engaged mainly in infrastructure sectors and managed by Asset Management Companies (AMCs) for equity / quasi-equity funding of listed / unlisted companies.
3. Provides Equity/ quasi-equity support / debt to projects, to commercially viable projects, both greenfield and brownfield, including stalled projects.

8. Green Bonds: Green bonds are debt instruments, which local governments can use to finance sustainable projects that are contributing to a low-carbon economy. For example, this can range from energy efficiency, sustainable infrastructure, renewable energy etc. Once the local government issues green bonds it is obliged to pay back the amount lent to the creditors within an agreed period of time and interest rate. Holder of the bond, creditors, can include institutions, pension funds and insurance companies. Following the UN Climate Summit in 2014, institutional investors pledged to invest over USD 5 billion in green bonds.

The green bond market has experienced rapid growth in the last two years – reached USD 53.6 billion in 2014 (however still accounted for less than 1% of the total global bond market). Approximately 75% of green bonds have been issued by government-owned or backed agencies and development finance institutions at the multi-national, national or municipal level in developed countries, including China, France, Germany, US, UK and Canada. Developing country institutions have also attracted international investment though green bonds, for example, the city of Johannesburg, South Africa and the commercial Yes Bank of India have also issued green bonds. There is certainly the opportunity that governments and DFIs could attract more private investment in green bonds by reducing the market risk (e.g. currency fluctuations, political risk and credit risk).

Private Finance:

Given the scale of the gap for climate relevant urban infrastructure, public sector financing in itself is not sufficient to stimulate a dramatic shift. This warrants attention from a spectrum of investors including development banks, private corporations and financial institutions. Therefore, the critical step is to identify and mobilize private sector investments to fill funding gaps for sustainable infrastructure projects. However, there are certain conditions that are required to attract private sector investors – these are also perceived as major hurdles that municipalities must address to attract investment. These include:

- Market for 'bankable' sustainable investment projects: in order to engage the private sector, there must be a steady supply of appropriate projects that can monetize the benefits of the infrastructure; otherwise the size of the market might be too small. A relatively limited market size might pose a challenge for private financing or urban projects as capital could not be adequately deployed in too small or fragmented market, which would result in large transaction costs. This may not be an issue for large metropolitan areas, however for smaller cities, pooling projects and capacity would address some concerns of the investors.[54]

[54] Note: Guntur has adopted the innovative approach of importing waste from neighbouring municipalities to ensure economies of scale for a waste to energy plant.

- Return on investment: municipalities need to demonstrate that smart city projects can offer an attractive return on investment, especially in regards to other alternative investment options that might be available to the investor. For example clean energy projects often have a longer timeline which impacts the investor return – in this case, benefits to society must also be taken into account.
- Limited risk: here risk can refer to either technology uncertainty, which can vary according to stage of development and implementation. Government supported policies need to be tailored to the stages of a technology's development: venture capital is generally suited for unproven technologies, while project finance is more relevant for mature technologies. Consequently sustainable city projects with high capital intensity and high technology risk would be the most difficult to finance. Infrastructure projects can also have long term delays before reaching profitability. Hence cities must be able to reduce both the real and the perceived risks of the investment projects.

Cities and countries differ with respect to these conditions; as such some financial instruments could be more appropriate for cities in medium-income countries versus lower-income developing countries, where grants, loans and other development finance instruments could be more relevant. Several instruments have been applied to attract private finance for smart cities and green infrastructure development. Private sector involvement in urban infrastructure can take the form of public-private-partnerships (PPPs), whereby the long-term risk is transferred to the private sector.

PPPs

Many cities are using public-private-partnerships (PPPs) to finance their growth. The notion of PPPs is multifaceted and cover a wide diversity of contractual agreements characterized by different risk sharing and financing schemes. Public-private partnerships are broadly defined as long-term arrangements between a government body and a private sector party (or a consortium) in which the private sector provides infrastructure or services that have traditional been delivered by the public sector. PPPs do not necessarily mean full privatization – often the government body retains ownership of the assets and sets the policies and level of service.

PPPs are essentially "risk sharing partnerships" between governments and the private sector on financing, designing, constructing and operating public infrastructure and public services. PPPs are becoming the default method of infrastructure procurement, and the government of India is a forerunner in the emerging world. It boasts a vibrant PPP market; as of July 2013, the PPP Database of the Department of Economic Affairs, Ministry of Finance, indicated that 758 PPP projects with a total value of Rs. 3,833 billion (approximately US$62 billion) were in the operational and construction stages. Unmet infrastructure needs in sectors such as water supply, sewerage, solid waste management, urban transport – all sectors under the Smart City Initiatives – are immense and PPPs can bring capital as well as private sector efficiencies.

The essential elements of a PPP are also applicable to the SC-IAP project in that the private sector:

- Takes on a function traditionally performed by the public sector for an extended period of time;
- Assumes related construction, commercial and operational risks; and
- Receives a benefit in exchange, either by way of public authority paying from its budget, or user fees, or a combination of these.

A competitive bidding process for projects under the PPP framework ensures that value for money is delivered as well as transparency. The Indian government has advocated the use of PPP arrangements for the ULBs through the SPV structure, in order to bring consistency, predictability as well as transparency to the entire procurement process.

Below is a table that illustrates the 'best practices' projects by the C40 which are governed by PPPs. The different types of contract indicated for the PPP projects show the diversity of contractual practices among various cases.

	Activity	City	Country	Governance	Type of contract
Transport	Bicycle sharing	Paris	France	PPP	Concession
		London	UK	PPP	
		Barcelona	Spain	PPP	
		Oslo	Norway	PPP	
		Lyon	France	PPP	
		Stockholm	Sweden	PPP	
		Brussels	Belgium	PPP	
		Seville	Spain	PPP	
		Dublin	Ireland	PPP	
		Copenhagen	Denmark	NGO	
	Bicycles paths	Bogota	Columbia	In-house	
	Congestion charge	Stockholm	Sweden	Procurement	
Energy	Renewable energy supply	Austin	USA	In-house	
		Melbourne	Australia	Procurement	Supply and install
		Rizhao	China	Public	Regulation, subsidy
		Barcelona	Spain	Public	Regulation
	Energy savings	Chicago	USA	In-house	
		Copenhagen	Denmark	In-house	
		Tokyo	Japan	Public	Regulation
	Street lighting	Los Angeles	USA	In-house	
Building	Energy savings	Berlin	Germany	PPP	ESP
		London	UK	PPP	EPC
		Stuttgart	Germany	In-house	
		Paris	France	PPP	PFI[3]
Urban development		Dongguan	China	PPP	
Waste	Waste management	Gothenburg	Sweden	PPP	Management contract
		Sydney	Australia	PPP	BOO
		Dhaka	India	NGO	
Water	Water distribution	Tokyo	Japan	In-house	
		Emefuloni	South Africa	PPP	BOT
		Austin	USA	Public	Regulation, subsidy

Table 16. C40 PPP Best Practices[55]

Bilateral Finance

Bilateral development actors are public bilateral agencies and development finance institutions (DFIs) based in developed countries. A number of them have overseas development mandates and provide mainly technical assistance based on grants (e.g. GIZ – the German Federal Enterprise for International Corporation, USAID – the United States

[55] Source: C40 Cities Climate Leadership Group, 2014
Note: PPP are also referred to as P3s and Alternative Finance & Procurement method (AFP)

Agency for International Development) thereby building local governments capacity to develop climate strategies and policies and share best practices.

Bilateral DFIs are public finance institutions with development mandates (e.g. JICA – the Japan International Cooperation Agency, KfW – the German development bank and AFD – French Agency for Development, which comprise the three largest bilateral DFIs), that mostly provide finance in the form of loans (90%) and grants (10%) to finance projects and programmes.

In 2013, bilateral agencies and DFIs contribute USD $26-27 billion to developed-to-developing country climate finance (KfW, JICA and AFD together committed USD $11 billion of that amount), including USD $22 billion of official development assistance (ODA) flows (Source: OECD, 2014). ODA typically comprise of technical assistance and capacity building to support developing countries in achieving climate adaptation and sustainable growth and to develop national climate policies and action plans. DFIs typically provide loans and use their balance sheets to raise debt on capital markets. The Indian government has reached out to bilateral agencies and DFIs to channel funds into financing the Smart Cities initiative.

Table 17. List of DFIs

DFI	Full Name	Shareholder ownership
DEG	Deutsche Investitions – und Entwicklungsgesellschaft mbH (German Investment Corporation)	KfW Kankengruppe
Proparco	Societe de Promotion et de participation pour La Cooperation Economique (Investment and Promotion company for Economic Cooperation, France)	AFD, French Financial Institute, French companies, funds and ethical foundations
FMO	NederlandseFinancieringsMaatschappijvoorOntwikkelingslandenn.v. (Netherlands Development Finance Company)	Dutch government, banks, private companies, trade unions
COFIDES	Compania Espanola de Financiacion del Desarrollo S.A. (Spanish Development Funding Company)	Spanish Foreign Trade Institute, Official Credit Institute, Santander
SIMEST	Sociedade para o Financialmento do Desenvolvimento, InstituicaoFinanceira de Credito, SA (Portuguese Development Finance Institution)	Ministry for Economic Development, IMI, Unicreditor, Banco Popolare di Vicenza

SIFEM	Swiss Investment Fund for Emerging Market	Privately held management company
SwedFund	Swedfund International AB (Sweden)	Swedish State
Norfund	Norwegian Investment Fund for Developing Countries	Norwegian Government
IDC	Industrial Development Corporation	South African government
OPIC	Overseas Private Investment Corporation (USA)	Agency of the US government
IFC	International Finance Corporation	Member countries: US, Japan, Germany, France, UK, Canada, India, Italy, Russia, Netherlands
EBRD	European Bank for Reconstruction and Development	Member countries
EIB	European Investment Bank	EU member states
PIDG	Private Investment Development Group	DFID, SECO, Dutch Ministry of Foreign Affairs, Irish Aid, KfW
AfDB	African Development Bank	Member countries
ADB	Asian Development Bank	Member countries
CDC	CDC Group plc (UK)	UK Government (DFID)

Notes: ADA: Austrian Development Agency; AFD: French Development Agency; EC: European Commission; IFI: International financial institutions; RMC: regional member country; SECO: Swiss State Secretariat for Economic Affairs; SIDA: Swedish International Development Cooperation Agency

Multilateral Development Bank (MDB) and Climate Funds

Multilateral institutions and organizations consist of multilateral development banks (MDBs), multilateral climate funds (MCFs) and other organizations. MDBs are public financial institutions whose development mandates include climate change, under which SC-IAP would be included. Their main financial instruments are long term loans, although some offer grants, consulting services and project preparation.

MCFs, such as the Climate Investment Fund (CIF) and the Green Climate Fund (GCF), are financial vehicles that pool government contributions and then distribute them to support mitigation and adaptation purposes. They often use MDBs or UN agencies (e.g. UNDP, UNEP or UNIDO) as implementing entities.

It is widely acknowledged that the MDBs will be an important channel of financing for smart cities in developing countries and can play a significant multiplier role catalyzing private finance, given their ability to leverage their balance sheets, and their track record with technical assistance, PPPs and other risk mitigation instruments and carbon markets. They often function as intermediaries for international and bilateral funding flows as well.

According to annual reports issued by the organizations, the MDBs committed between USD $21.6 and 24.7 billion of their resources to climate financing between 2011 and 2013.

Partial List:

Asian Development Bank: The ADB has an Urban Operational Plan for the years 2012 to 2020, with a focus on improving planning and financing capacities. In addition, the ADB has also announced increasing funding for climate financing in the Asia-Pacific region to USD 6 billion by 2020. The Climate Change Fund, although fully allocated in 2012, also supports sustainable transport and low carbon urban development.

Asian Infrastructure Investment Bank: The Asian Infrastructure Investment Bank (AIIB) is an international financial institution that aims to support the building of infrastructure in the Asia-Pacific region. The bank was proposed as an initiative by the government of China in 2013 and was launched in October 2014. The AIIB is supported by 37 regional and 20 non-regional Prospective Founding Members (PFM), all of which have signed the Articles of Agreement that form the legal basis for the proposed bank.

India is the AIIB's second largest shareholder and one of the 22 countries that joined the initial Memorandum of Understanding on Establishing the AIIB.

From the Articles of Agreement:

Purpose:

- The AIIB will be a new multilateral development bank (MDB) designed to provide financial support for infrastructure development and regional connectivity in Asia. The purpose of the Bank is to: (i) foster sustainable economic development, create wealth and improve infrastructure connectivity in Asia by investing in infrastructure and other productive sectors; and (ii) promote regional cooperation and partnership in addressing development challenges by working in close collaboration with other multilateral and bilateral development institutions.

Functions:

- The AIIB has broad functions, similar to other MDBs. Under its Articles of Agreement, the AIIB's functions include: (i) promoting public and private investment in the Asia region for development, in particular for infrastructure and other productive sectors; (ii) utilizing the resources at its disposal for financing such development in the region; and (iii) encouraging private investment that contributes to economic development in the Asia region, in particular in infrastructure and other productive sectors, and supplementing private investment when private capital is not available on reasonable terms and conditions.
- The AIIB will focus principally on financing specific projects or specific investment programs, equity investments; and guarantees. It may: (i) make, co-finance or participate in direct loans; (ii) invest in the equity capital of an institution or enterprise; (iii) guarantee loans for economic development; (iv) deploy Special Funds resources in accordance with the agreements determining their use; or (vi) provide other types of financing as

may be determined by the Board of Governors. Special Funds would be donor funds that are given to the Bank for use consistent with its purpose and functions.

International Finance Corporation: The IFC supports private corporations in developing countries, also has a Cities initiative to bring municipalities, utilities and private sector players together. The Subnational Finance Programme set up by the World Bank and the IFC allows direct access for cities for essential infrastructure investments, including PPPs.

In addition in March 2015, with funding from the EU, the IFC has set up an eco-cities program which is to support sustainable transformation of Indian cities consistent with the World Bank. It is a four year technical assistance program to develop and finance clean energy and energy efficiency interventions in five cities, namely Vijayawada (Andhra Pradesh), Mumbai (Maharashtra), Bangalore (Karnataka), Bhubaneshwar (Odisha) and Jamshedpur (Jharkhand). The main objective of the program is to contribute to India's sustainable and inclusive development objectives through improved regulation and use of clean technologies and energy efficiencies in a) municipal services, b) the building market, and c) manufacturing production by SMEs.

The consortium partners and stakeholders are:

- National Housing Bank
- Tata Capital
- PE International
- CREDAI – Confederation of Real Estate Developers' Associations of India
- EU

New Development Bank (NDB): Formerly referred to as the BRICS Development Bank, is a multilateral development bank operated by the BRICS states (Brazil, Russia, India, China and South Africa) established in July 2014. The goal of the bank, headquartered in China, is to "mobilize resources for infrastructure and sustainable development projects in BRICS and other emerging economies and developing countries".

The bank was established to foster greater financial and development cooperation among the five emerging markets. Together, the four original BRIC countries comprise in 2014 more than 3 billion people or 41.4 percent of the world's population, cover more than a quarter of the world's land area over three continents, and account for more than 25 percent of global GDP.

The primary focus of lending of the NDB will be infrastructure and sustainable development projects through the provision of loans, guarantees, equity participation and other financial instruments with authorized lending of up to $34 billion annually. The Bank will also provide technical assistance for the preparation and implementation of infrastructure and sustainable development projects that are supported by the Bank. South Africa will be the African Headquarters of the Bank named the "New Development Bank Africa Regional Centre". The bank will have starting capital of $50 billion, with capital increased to $100 billion over time. Brazil, Russia, India, China and South Africa will initially contribute $10 billion each to bring the total to $50 billion. In April 2016, the NDB announced its first set of loans amounting to more than US$800 million for renewable energy projects to Brazil, China, South Africa and India. Of that amount, US $250 million will be disbursed to India's Canara Bank of which a first tranche of $75 million will be for "on-lending to projects for generating 500 MW additional renewable energy capacity". The clean energy generated by the projects in India is expected to reduce greenhouse gas emissions by around 815,000 tonnes. [56]

[56] Source: http://ndbbrics.org/agreement.html

World Bank: The two main financial instruments of the World Bank are loans and credits from the International Bank for Reconstruction and Development as well as the International Development Association. The Indian MoUD has indicated that $500 million of funding is available from the World Bank to provide funds to set up SPVs for Smart City solutions.

The most prominent multilateral climate funds (MCFs) are the **Green Climate Fund**, the **Climate Investment Funds**, the **Adaptation Fund**, the **Least Developed Countries Fund**, the **Special Climate Change Fund** and the climate-related share of the GEF Trust Fund. MCFs increased their allocation from USD 1.5 billion in 2011 to USD 2 billion in 2013 – but are increasing over the next few years, as the Green Climate Fund, under the UNFCCC, becomes operational. By declaring the "design and planning of cities to support mitigation and adaptation" as one of its initial result areas, the GCF indicates that cities play a critical role in combating climate change and will therefore need support on an international level (GCF, 2013).[57]

MDBs currently provide administrative, trustee and/or implementation services to all relevant multilateral climate funds and are playing multiple functions beyond funding and implementing agents.

The Adaptation Fund has committed over USD 320 million since 2009 to finance adaptation projects in developing countries. The AF provides funding through multilateral, regional of national implementing entities are not on a direct basis. To receive funding, projects have to be endorsed by the National Designated Authority and submitted through the appropriate implementing entity. [58]

A number of climate investment funds (CIFs) were set up in 2009 and have received a total USD 8.1 billion of pledges from contributing countries. The projects are implemented by MDBs and provide resources for climate mitigation and adaptation to developing and middle income countries.

The **Clean Technology Fund (CTF)** under the CIFs is the largest international player in financing urban projects with a funding focus on middle income cities – with the thematic emphasis on urban transport systems and energy.

The Strategic Climate Funds focus on strategic support for designing programmes for climate resilience and renewable energy in selected pilot countries, including urban issues. A strong collaboration with national governments and MDBs in a prerequisite for accessing the funds.

Most of the dedicated climate funds and initiatives are active in Asia. The largest contributions are from the Clean Technology Fund which has approved a total of USD $1.21 billion for twenty projects, mostly in the form of concessional loans. In addition, the governments of Germany, Australia, Norway, and the UK have cumulatively provided USD 471 million for projects in Asia through their climate funds. India, Indonesia and China have received 50% of the funding approved for Asia since 2003.

Below is a table of funds supporting climate change and adaptation/mitigation in the Asia region.

[57] Source: www.greenclimate.fund
[58] Source: www.adaptation-fund.org

Fund or Initiative	Amount Approved (USD millions)	Projects approved
Clean Technology Fund (CTF)	1207.07	20
Global Environment Facility (GEF4)	362.58	69
Global Environment Facility (GEF5)	324.81	70
Pilot Program for Climate Resilience (PPCR)	271.32	21
Germany's International Climate Initiative	263.02	72
Least Developed Countries Fund (LDCF)	136.94	32
UK's International Climate Fund	111.99	27
Australia's International Forest Carbon Initiative	96.40	4
Adaptation for Smallholder Agriculture Programme (ASAP)	67.00	6
Special Climate Change Fund (SCCF)	58.20	15
Other 14 contributors	457.10	89

Table 18. Funds supporting Asia (2003 – 2015)[59]

The Ministry of Urban Government has urged the 20 Smart Cities that have been selected in the first round of competition within India to firm up bankable projects to obtain loan assistance from the Asian Development Bank (ADB), the World Bank and the BRICS or New Development Bank. Of those cities, Jaipur also qualifies as a city within the GEF SC-IAP program. MoUD has also encouraged the cities to obtain credit ratings from agencies approved by SEBI (Securities and Exchange Board of India). In addition, MoUD has also initiated a process under AMRUT for providing credit ratings for the 100 Smart Cities selected under the program.

[59] Source: Climate Change Finance Initiative, 2015.