British
High Commission
New Delhi

ICLEI
Local
Governments
for Sustainability

Urban Low Carbon Growth:
Financing Opportunities for Indian Cities

Note to the Readers

This report is an output of the Project titled **"Integrating urban climate guidelines through clean technologies (RE&EE) at the state and city level to build sustainable low carbon cities"**prepared by ICLEI-South Asia with support from British High Commission. This report provides the details on the available financing opportunities for Low Carbon Urban Growth for States in India including analysis of funding opportunities under various national and international financing schemes relevant to urban low carbon actions.

Comments and suggestions are welcome and should be sent to ICLEI South Asia at
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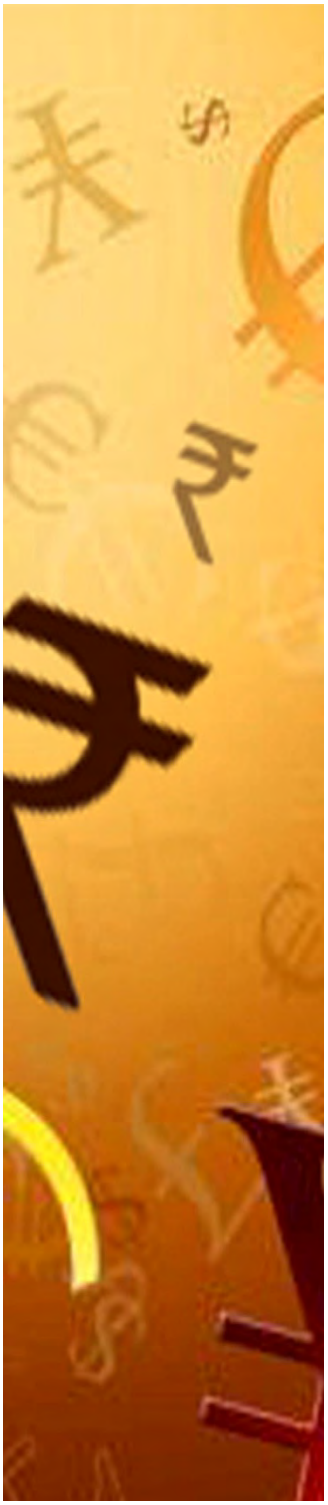


Preface

While Climate change concerns all of us, it is a particular threat for Indian cities; not only as centers of growth but also as major consumers of resources. The coming years are set to witness a major transformation in India's economy. Millions of Indians will become part of the global middle class, moving into cities and demanding modern energy, transport, communications and financial services. On the other hand, growing industrialization will result in increased carbon emissions. Since urban centers are particularly at risk, the response at the local level is the key. There is, therefore, an urgent need to address climate change as a corollary to economic growth.

Moving to a prosperous low carbon economy can drive innovation and increase productivity. However, to achieve this, significant new investment will need to be found out. Though government can provide necessary incentives, the private sectors could also be looked upon to provide the bulk of this investment. It is time to leverage private sector capital and unleashing the power of the markets to boost investment in green technology and pollution reducing projects that could help in meeting the challenges posed by climate change.

This report informs both policy makers and local governments about the financial opportunities available to them to move towards the low carbon path. It helps to understand how the funding organizations, private partners can support climate action at the urban and local levels. Thus, the report highlights the ways in which existing financial mechanisms can be perceived by the city decision- makers, reveals barriers to the local government action and record processes through which local governments can pursue mitigation activities.

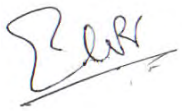
Message from the Executive Director, ICLEI South Asia

Cities and metropolitan regions have tremendous potential in reducing and stabilizing the greenhouse gas emissions. Accordingly, climate finance has become an intense talking point around the world. The climate-change mitigation investment needed in the developing world has been estimated to be around USD 400 billion per annum. A further USD 75 billion per annum of investment is required for adaptation. With mitigation and adaptation actions likely to increase financing requirements, international financing options offer opportunities to be integrated with local climate action for additional support. Access to international finance to augment internal resource generation is the major concern of local authorities all over the world.

ICLEI South Asia with support from British High Commission (BHC) is undertaking the project on "Integrating Urban Climate Guidelines through Clean Technologies (RE & EE) at the State and City level to build sustainable low carbon cities" to be implemented in Rajasthan & Tamil Nadu States. The project aims at developing State level guidelines and leveraging national and international finance for urban low carbon actions. One of the deliverables of the project is this Report "**Urban Low Carbon Growth: Financing Opportunities for Indian Cities"** which includes the rationale for states and cities to invest in low carbon projects.

We hope this Report will help all stakeholders, in particular the local governments, to plan and implement low carbon growth projects as part of global effect to combat climate change in urban areas.

With Best Regards,



Mr. Emani Kumar
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- Ministry of New and Renewable Energy
- Ministry of Urban Development
- Norwegian Embassy
- Renewable Energy and Energy Efficiency Partnership, Austria
- Small Industries Development Bank of India
- SNV Netherlands Development Organization
- The World Bank
- U.S Department of State
- UN HABITAT Environmental Defence Fund
- United Nations Capital Development Fund (UNCDF)
- United Nations Development Programme
- United Nations Environmental Programme

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Abbreviations

BAU	Business As Usual
BEE	Bureau of Energy Efficiency
BHC	British High Commission
CAC	Command and Control
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CNG	Compressed Natural Gas
CVD	Countervailing Duty
EE	Energy Efficiency
ESCO	Energy Service Company
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gases
HVAC	Heating, Ventilation and Air Conditioning
IHSDP	Integrated Housing and Slum Development Programme
INCCA	Indian Network for Climate Change Assessment
IPCC	Intergovernmental Panel on Climate Change
ITS	Intelligent Transport System
JNNSM	Jawaharlal Nehru National Solar Mission
JNNURM	Jawaharlal Nehru National Urban Renewable Mission
LPG	Liquified Petroleum Gas
MBI	Market Based Instrument
MNRE	Ministry of New and Renewable Energy
NAPCC	National Action Plan on Climate Change
NMT	Non Motorized Transport
NTPC	National Thermal Power Corporation
NUTP	National Urban Transport Policy
PIL	Public Interest Litigation
SPC	Special Purpose Company
SPE	Special Purpose Entity
SPV	Special Purpose Vehicle
UIDSST	Urban Infrastructure Development Scheme in Satellite Towns
UIDSSMT	Urban Infrastructure Development Scheme for Small and Medium Towns
ULBs	Urban Local Bodies
VAT	Value Added Tax

Executive Summary

Responding to the challenges of climate change, such as managing greenhouse gas (GHG) emissions, water consumption and waste, are national priorities that present major investment opportunities in the coming years. India aims to sustain its rapid economic growth, as well as deliver basic services to the millions of people who currently lack electricity and also protect the vulnerable segments of its society and climate – sensitive sectors from the negative impacts of climate change. India's path to further growth and prosperity and a low carbon economy will require the active involvement of business and financial institutions. Low carbon growth opportunities exist across a range of sectors, in particular water, waste management, clean energy, urban design, buildings and transportation. Improving resource efficiency can be both highly profitable and support conservation and access goals. In many cases, significant progress can be made through the widespread deployment of existing technologies, many of which are already commercially competitive.

This Report "**Urban Low Carbon Growth: Financing Opportunities for Indian Cities"** discusses opportunities and existing roadblocks to low carbon investment in India. This Report is an outcome of literature reviews, discussions with experts from various national and international funding organizations. This Report is meant for Urban Local Bodies, Policy Makers and the Indian Corporate and aims to provide detail of the mechanisms available to harness investment domestically and from abroad in the low carbon area.

It aims to provide:

- An understanding of low carbon development in the Indian context, explaining strategic and regulatory developments such as the National Action Plan for Climate Change (NAPCC)
- Useful information and links for businesses in India who aspire to be part of this clean revolution and require a quick reference to relevant issues.
- Succinct introductions and links to assistance in financing projects and services (particularly renewable energy and energy efficiency).
- An overview of the role that the national and state governments are playing in enabling an Investment-friendly environment.
- Case-studies of national and international projects.

The Report introduces to the impacts of climate change especially on Indian cities, being the hub, of the economic centers. It also gives a brief idea of the pace of urbanization taking in India and its impact on the urban local bodies. **Chapter 2** gives a graphical representation of the Methodology that was adopted to come out with the Report. Various national and international financing schemes for urban low carbon activities were reviewed; meetings with the government officials and experts of various funding organizations were conducted. **Chapter 3** introduces to the low carbon policies and initiatives that have been undertaken in Urban Sector such as water supply, sewerage and sanitation. **Chapter 4** presents the funding options that are

available to the ULBs for mitigation activities. The chapter contains both the funding opportunities available at the State level and at the Central level. Besides, it also discusses other funding opportunities that could be accessed. **Chapter 5** focuses on Renewable Energy & Energy Efficiency Programmes and financing opportunities available in this sector. The chapter describes in details the programmes and funding options available while also gives an indicative idea about the various Multilateral and Bilateral climate funds available especially for RE/EE Projects. The issues, roadblocks and challenges to access the funds are discussed in **Chapter 6**. **Chapter 7** presents few of the successful case studies in the urban sector. Some of the recommendations that came out during the meetings and desk review are given in **Chapter 8**.

Cities and local governments need to be informed and involved in the designing of relevant financing mechanisms, as well as integrate climate change and sustainable development mechanisms into their procedures.

1. Introduction

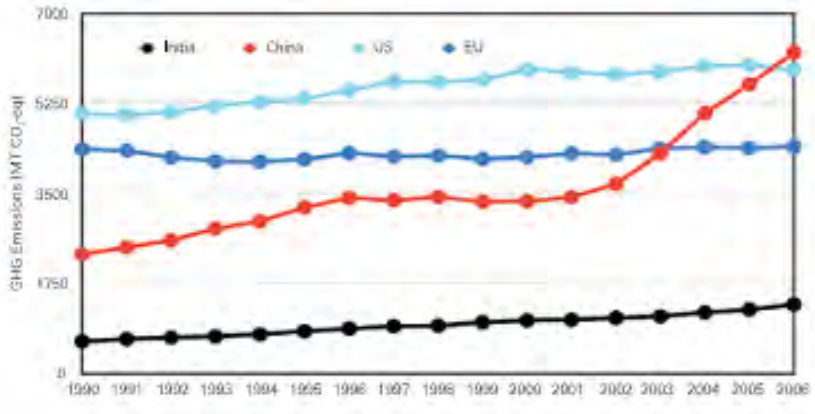
Climate change is the greatest long –term economic and environmental challenge facing the world today. Increase in anthropogenic activities since the advent of industrialization in the mid-18th century has led to cumulative accumulation of Greenhouse Gases (GHG) in the earth's atmosphere. According to the Fourth Assessment Report by IPCC (2007), over the last three decades, Greenhouse Gas emissions have increased by an average of 1.6 percent per year with carbon dioxide (CO_2) emissions from the use of fossil fuels growing at a rate of 1.9 percent per year. It is estimated that atmospheric CO_2 concentrations have increased by almost 100 ppm in comparison to its preindustrial level, reaching 379 ppm in 2005 (IPCC AR4). Changes in atmospheric concentrations of greenhouse gases and aerosols, land cover and solar radiation are altering the energy balance of the climate system. **Table1.1** shows GHG emissions of various countries since 1850 when the pace of industrial revolution accelerated and in 1990 when all the countries became aware of the threat of climate change. **Figure 1.1** shows the trends of the growth of CO_2 emissions in selected countries like India, China since 1990.

Table 1.1: GHG Emissions of Various Countries

Country/Region	MT CO_2	Percent	MT CO_2	Percent
	1990-2006	**1990-2006**	**1850-2006**	1850-2006
World	400834	100	1150702	100
India	15977	4.0	27433	2.4
China	61360	15.3	99204	8.6
Brazil	4925	1.2	9457	0.8
USA	92641	23.1	333747	29.0
Europe 15	55377	13.8	252148	21.9
Annex I	237534	59.3	856115	74.4
Non Annex I	157582	39.3	281497	24.5

(Source: Planning Commission of India, 2011)

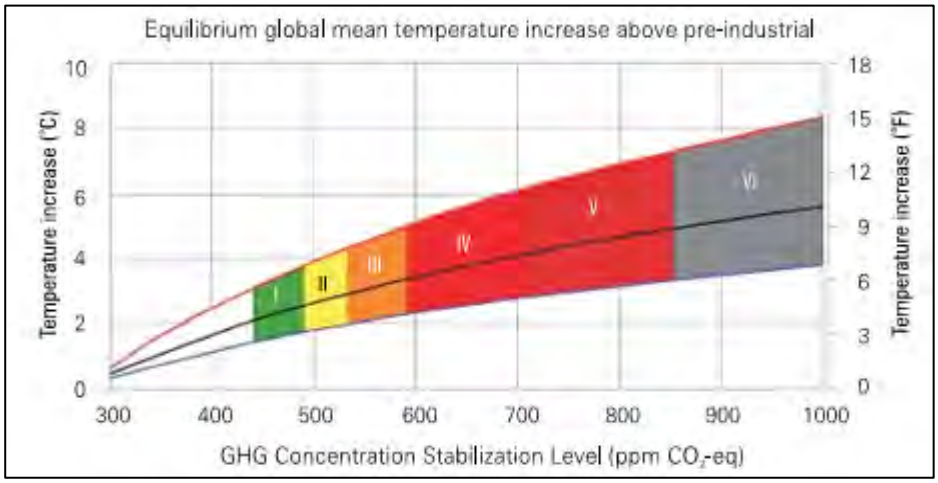
Figure 1.1: Growth of Total CO_2 Emissions of Selected Countries



(Source: Planning Commission of India, 2011)

It is apprehended that if emissions continue to rise at their current pace, the world will face an average temperature rise of 2-3°C this century which will lead to serious impacts.**Figure1.2** shows the effect of GHG concentration on temperature rise.

Figure1.2: Global Temperature Rise- Effect of GHG Concentration



Notes: Middle (black) line – 'best estimate' climate sensitivity of 3°C; upper (red) line – upper bound of likely range of climate sensitivity of 4.5°C; lower (blue) line – lower bound of likely range of climate sensitivity of 2°C. Coloured shading shows the concentration bands for stabilization of GHGs in the atmosphere corresponding to the stabilization scenario categories I to VI.

(Source: IPCC AR4- Working Group III: Mitigation of Climate Change) legends for different color codes in graph above required

IPCC defines climate change as a change in the state of the climate that can be identified by changes in the mean and/or the variability of its properties that persists for an extended period, typically decades or longer. It refers to any change in climate over time, whether due to natural variability or as a result of human activity. Over the past two decades several expert groups have sought to define levels of climate change that could be tolerable or intolerable, or which could be characterized by different levels of risk. Based on the available knowledge at the time, a 2°C increase was determined to be 'an upper limit beyond which the risks of grave damage to ecosystems, and of non-linear responses, are expected to increase rapidly' (IPCC, AR4). The first step towards limiting the temperature rise to 2° C would, therefore, be to reduce the level of GHG emissions which would require collective and cooperative global actions. Scientific consensus on global warming, together with the precautionary principle and the fear of abrupt climate change is leading to increased effort to develop new technologies and sciences to make an attempt to mitigate global warming. The IPCC has defined "mitigation" as an anthropogenic intervention to reduce the sources or enhance the sinks of greenhouse gases (IPCC, 2001a)."Adaptation" has been defined as "adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, that moderates harm and exploits beneficial opportunities" and "a process by which individuals, communities, and countries seek to cope with the consequences of climate change, including variability" (IPCC, AR4).

Mitigation has global benefits although effective mitigation needs to involve a sufficient number of major greenhouse-gas emitters to foreclose leakage. Adaptation typically works on the scale of an impacted system, which is regional at best, but mostly local. Expressed as CO_2-equivalents,

emissions reductions achieved by different mitigation actions can be compared, and if the costs of implementing the actions are known, their cost-effectiveness can be determined and compared (IPCC, AR4). The benefits of adaptation are more difficult to express in a single metric, impeding comparisons between adaptation efforts. Moreover, as a result of the predominantly local or regional effect of adaptation, benefits of adaptation will be valued differently depending on the social, economic and political contexts within which they occur. The benefits of mitigation carried out today will be evidenced in several decades because of the long residence time of greenhouse gases in the atmosphere (ancillary benefits such as reduced air pollution are possible in the near term), whereas many adaptation measures would be effective immediately and yield benefits by reducing vulnerability to climate variability.

Adaptation and mitigation can be complementary, substitutable or independent of each other. If complementary, adaptation reduces the costs of climate change impacts and thus reduces the benefits of mitigation. Although adaptation and mitigation may substitute each other to a certain extent, they could never be perfect substitutes for each other since mitigation will always be required to avoid dangerous and irreversible changes to the climate system. Looking into the current trends it will not be an exaggeration to state that unabated climate change would increase the risks and costs substantially. The stabilization of GHG concentrations and, in particular, of the main greenhouse gas, CO_2, will require substantial emission reductions and hence mitigation actions (IPCC, AR4).

1.1 Project Background and Objectives

Rapid urbanization and urban economic growth have led to emergence of a number of complex issues such as degradation of natural resources and increase in green house gas emissions that threaten sustainability of our cities. With Indian cities projected to rapidly urbanize between 2010 and 2030, the per capita carbon dioxide emissions are expected to increase from 1.0 -1.2 tonnes to 3.0-3.5 tonnes (Atkins, 2011). According to the McKinsey Global Institute, Indian cities have the potential to contribute approximately 70 percent of the country's Gross Domestic Product (GDP) by 2030 thus putting stress on the already overburdened urban systems which will be further aggravated on account of climate change factors (MGI, 2010). Managing greenhouse gas emissions, water consumption and waste management are some of the national priorities that present major investment opportunities in the coming years. The challenge of climate change and the need for a low carbon development model are well accepted by both policy makers and business leaders. Fuelled by economic liberalization and globalization, India aims to sustain its rapid economic growth, as well as protect the vulnerable segments of its society and climate sensitive sectors. India, with declining fossil fuel resources, needs to work towards transition to a more energy efficient, low carbon economy. However, these would require additional investment to facilitate growth that is more sustainable than the present situation. Financing mechanisms that facilitate funding of projects and programmes in which greenhouse gas emissions could be reduced, could further help to meet sustainable development goals. In addition to reducing carbon, many of these options could lead to a more sustainable growth by protecting natural resources, improving environmental quality, delivering economic opportunities and reducing reliance on fossil imports. It is accepted that it is high time to build- in low carbon processes into urban planning which will deliver energy savings and lower

emissions and at the same time yield economic, social and environmental benefits. India's path to further growth and prosperity and a low carbon economy will require active involvement of business and financial institutions. Leveraging public and private sector capital and unleashing the power of markets can boost investments in green technology.

The private sector in India has implemented low carbon projects using a variety of investment sources viz. self-financing, debt instruments, private equity investment, venture capital and carbon finance. The new impetus from the public sector reflects the considerable potential and sets a high level of ambition for further accelerating low carbon investment in India.

A British High Commission (BHC) funded programme implemented through ICLEI-SA developed the carbon emission inventory of 41 cities in India. The inventory accounted for emissions from Community level activities (Residential, Commercial, Industrial, Transportation and Waste disposal) and Corporation activities (Buildings & Facilities, Street Lighting, Water Supply & Sewerage and Transportation). The ICLEI GHG protocol was used and fuel/power consumption data was collected for the year 2008 - 09, as applicable to all the above mentioned sectors.

An analysis of the range of sectoral contributions to emissions from Community level and Corporation level activities in all the 41 Indian cities is given in the **Table1.2**. This analysis indicates that residential activities within a city consume maximum energy in these cities, thereby highlighting this to be a priority area for implementing Renewable Energy/Energy Efficiency initiatives. Street lighting, buildings and facilities and water supply emerged as priority areas within Corporation level activities.

Table1.2: Sector Wise Contribution of GHG Emissions from 41 City Study by BHC & ICLEI-SA

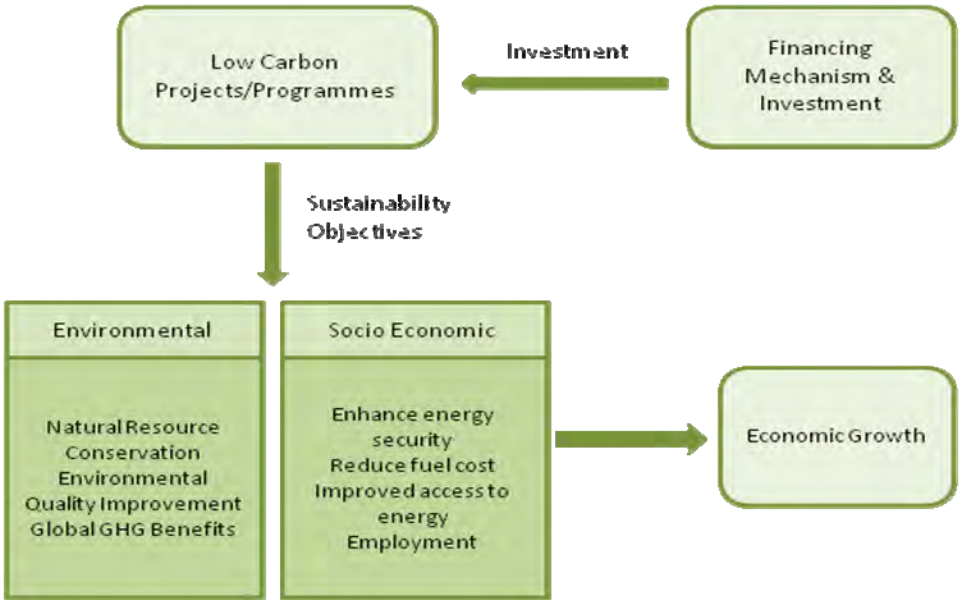
Sector	Contribution of Emissions from Each Sector
Community Level Activities	
Residential	20-55 %
Commercial	05-20%
Industrial	10-60%
Transport	10-40 %
Solid and Domestic Waste Management	03-15 %
Corporation Level Activities	
Street Lighting	40-70%
Water Supply	15-25%
Building & Facilities	20-40%
Transportation	05-15%

In the interactions between ICLEI-South Asia and State Governments, it has been found that while state and city governments are keen to implement low carbon initiatives, there exist no formal channels for interaction amongst state level stakeholders, on the one hand, and no existing systems to facilitate internal departmental interaction, on the other hand. Hence, even

states willing to implement low carbon policies need support for realizing willingness into action. Accordingly, the British High Commission (BHC) has initiated the project "**Integrating Urban Climate Guidelines through Clean Technologies at the State and City Level to build Sustainable Low Carbon Cities**" through ICLEI South Asia, funded under the Prosperity Fund of the UK's Foreign and Commonwealth Office. The objective of the project is to notify guidelines on urban low carbon actions and to leverage national/international finance for urban low carbon action for two Indian States.

Low carbon growth opportunities exist across a range of sectors, in particular water, waste management, clean energy, urban design, buildings and transportation. The successful formulation of urban low carbon policies at state level would set an example for other Indian states and cities to follow. While certain Indian states are shifting focus from traditional infrastructure development to issues related to sustainable and climate resilient development (progressive states), certain states are still meeting basic development needs. It is endeavored through the implementation of this project to understand the needs and gaps for capacity building, policies in the states, their financial needs and also create a replicable model indicated in **Figure 1.3** for the Indian context.

Figure1.3: Low Carbon Opportunities for Sustainable Growth



This Report focuses on the potential for low carbon technologies and the financing needs of such projects. It aims to:

- Provide an understanding of low carbon development in the context of urban Indian cities
- Discuss and assess the available assistance in financing projects and services for city based projects
- Provide an overview of the role that the national and state governments are playing in enabling an investment- friendly environment
- Discuss successful case studies at the city, state and national level in implementing city based plans

1.2 Country Context

1.2.1 Urbanization in India

In India, out of the total population of 1027 million, in 2001, about 285 million persons lived in urban areas. The proportion of urban population increased from 19.9% in the year 1971 to 27.8% in the year 2001**(Table 1.3).** While natural increase has been the principal source of urban population growth, the contribution of rural-urban migration ranges between 19 to 21 percent of the net increase in urban population. According to the Registrar General of India, 67 percent of total population growth in India in the next 25 years is expected to take place in urban areas. Urban population is expected to increase from 286 million in 2001 to 534 million in 2026**(Table1.4)**. The number of cities and towns in India increased from 4,651 in 1991 to 5,161 in 2001, with a significant increase in the number of cities with population above 1 million (12 in 1981 to 35 in 2001) (NIPFP, 2007).According to the McKinsey Global Institute, the urban population in India is growing by 7 million people every year (MGI, 2010).

Table1.3: Urbanization in India

	1961-71	1971-81	1981-91	1991-2001
Urban Population Increase (Millions)	30.18	49.45	56.45	67.81
Natural Increase (Millions)	19.68	25.56	35.37	40.17
Net Rural Urban Migration (Millions)	5.91	9.83	12.76	14.32
Residual Component (Millions)	4.59	14.06	8.32	13.32

(Source: Urban Issues, Reforms and Way Forward In India, Vaidya 2009)

Table1.4: Projected Urban and Total Population in India-2011, 2021 and 2026

	2001	2011	2021	2026
Total Population (Millions)	1028.61	1192.50	1339.74	1399.83
Urban Population (Millions)	286.12	357.94	432.61	534.80
Urban (%)	27.82	30.02	32.29	38.21
Total Annual Exponential Growth Rate (AEGR %)	1.48	1.32	1.23	1.16
Urban AEGR (%)	2.24	2.07	2.50	1.89

(Source: Urban Issues, Reforms and Way Forward In India, Vaidya 2009)

Cities in India can no longer ignore the challenges posed by rapid urbanization and vulnerability to the impacts of climate change. The Fourth Assessment Report of the Intergovernmental Panel on Climate Change has stated emphatically that the world is warming. Climate change poses difficult analytical problems characterized by varying levels (spatially and temporally) of complexity and uncertainty. Increased concentrations of Greenhouse Gases leading to warming of the atmosphere has resulted in changing rainfall patterns, disturbed hydrological cycles, melting of ice caps and glaciers, rise in sea levels and increase in frequency and intensity of extreme events such as heavy precipitation and cyclonic activities. These events in turn are

having serious impacts on sustainability of water resources, agriculture, forests and ecosystems, affecting the well being of billions of people.

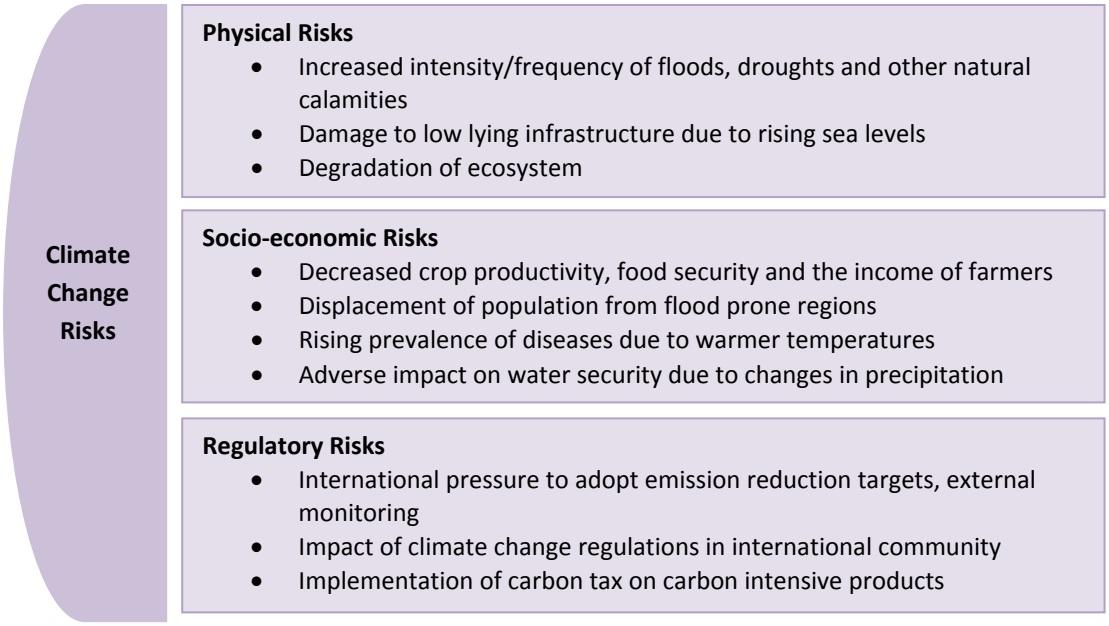
1.2.2 Climate Change and India

According to the Indian Network for Climate Change Assessment (INCCA, 2007), annual GHG emissions from India amount to 1.727 billion tonnes of CO_2 equivalent, making it the world's fourth largest GHG emitting nation. With the country's rapid economic growth, it is estimated that GHG emissions would increase to around 5.7 billion tonnes of CO_2 equivalent by 2030.

Indian cities are hubs of economic growth and social development and account for over 60 percent of the country's gross domestic product. They are the major drivers of climate change, releasing GHG into the atmosphere through different activities, including industrial processes, consumption of electricity in residential sector, burning of fossil fuels in transportation, dumping of solid waste, changes in land use through deforestation, and so on. Apart from being the drivers of climate change, they are also the victims of the impacts caused by climate change. They face multi - dimensional pressures of a rapidly growing population, economic growth, grossly inadequate infrastructure, and social inequities.

The rapid urbanization and growing urban population are stretching the limits of urban infrastructure and the urban systems, again impacting the basic services provided by urban local bodies. The poor population is more susceptible to these impacts due to their relative inability to protect themselves from these risks and hazards. Cities are, therefore, both the causes and the victims of climate change impacts **(Figure 1.4).**

Figure1.4: Risks Associated with Climate Change



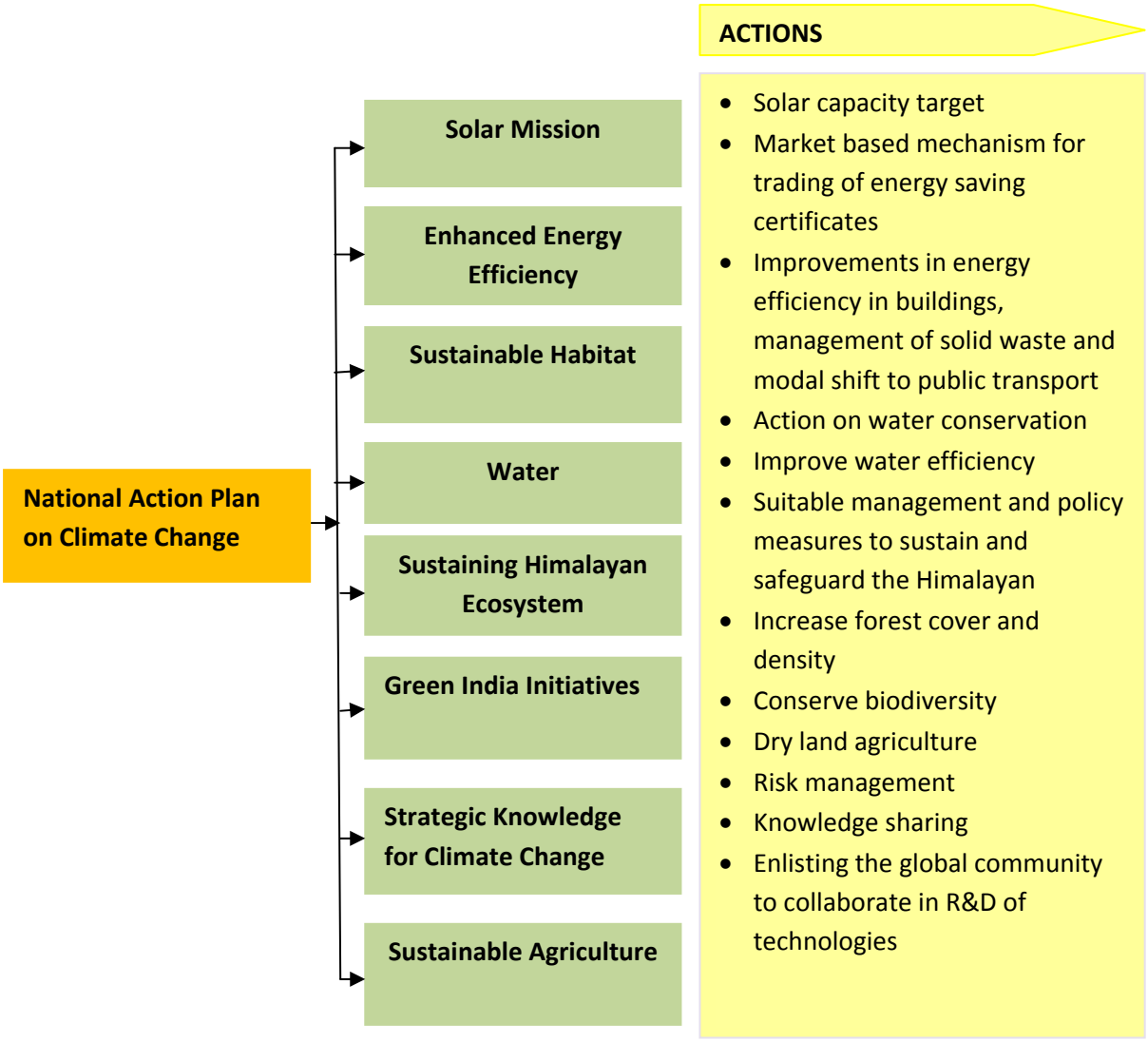
(Source: Low Carbon Transformation, 2011)

In a voluntary commitment towards the international community, India announced reduction of the emissions intensity of its GDP by 20-25 percent from 2005 levels by 2020 (Planning Commission, Govt. of India, 2011). This is a further articulation of India's voluntary domestic

commitment, even though it does not see itself as a part of any internationally legally binding agreement on emission intensity targets and emission reduction outcomes. This announcement shows India's resolve to ensure that its growth process is sustainable and based on low carbon principles. This goal will require necessary sector specific actions and funding to reduce emissions intensities over India's 12th, 13th and 14th Five Year Plan periods.

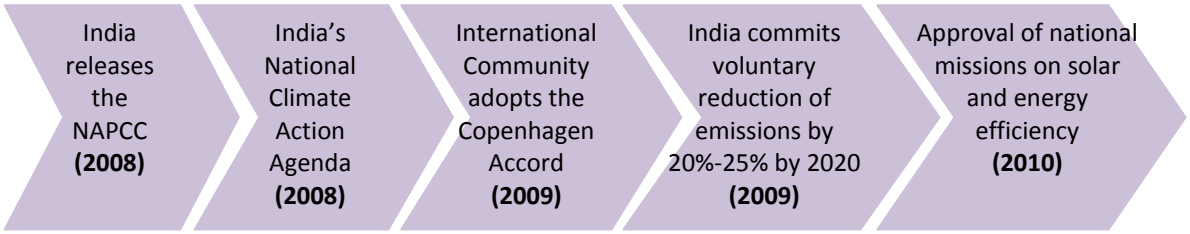
On 30th June 2008, the Indian Government announced the National Action Plan on Climate Change (NAPCC) which endeavors to outline the strategy for confronting the challenge of sustaining economic growth while coping with the global threat of climate change. The NAPCC primarily aims at identifying potential opportunities and delineating the path forward for the implementation of technologies that could address dual concerns of greenhouse gas mitigation and sustainable development. Among the eight National Missions under the NAPCC, the National Solar Mission, National Mission for Enhanced Energy Efficiency and the National Mission on Sustainable Habitat are the key components that strive to achieve climate change mitigation- related objectives **(Figure1.5).**

Figure1.5: National Action Plan on Climate Change



The multi - dimensional approach adopted by India towards climate mitigation has been illustrated below in **Figure 1.6**:

Figure1.6: India's Approach towards Climate Mitigation



Policy level interventions such as introducing renewable energy and clean technologies in industry, use of energy efficient technologies in buildings, or other municipal activities, use of low carbon fuels in transportation sector, can bring about significant reduction in carbon emissions from the city with no or little investment from municipal governments. In fact, cities can also link reduction of carbon emissions with initiatives to improve economic and environmental aspects in different sectors, so as to leverage funds from global support to climate change initiatives. India's economy is expected to grow at a rapid pace over the next 20 years. An estimated three-fourths of the infrastructure that will be used in India in 2030 is yet to be built. Therefore, India is presented with a unique opportunity to continue on its rapid economic growth trajectory and develop its infrastructure through a low-carbon pathway. The benefits of a low-carbon economy will include meeting the objectives of fast- paced economic growth and also address the challenge of climate change.

2. Methodology

One of the major outputs of the project is to come out with a Report that covers financing opportunities for low carbon urban growth for states in India including analysis of funding opportunities under various National schemes and International financing schemes. In order to assess the financial opportunities that could be available to cities for implementing and adapting to low carbon urban growth, ICLEI South Asia conducted an assessment of the opportunities available and status of efforts undertaken in the country towards low carbon urban growth.

The basic methodology adopted for this Study consists of four main stages:

1. **Desk Study** – a detailed assessment of various international and national financing schemes available at the central and state level for urban low carbon activities. All relevant schemes covering funding opportunities for local governments, funding approval procedures, city level low carbon actions eligible under each scheme were analyzed. The major sources of information included:

    a. the internet and all available published literature

    b. personal interactions with officials/institutions involved in projects/studies being conducted on climate mitigation.

2. **Primary information collection** – Meetings were conducted with relevant ministries of Government of India which included the Ministry of Urban Development (MoUD), the Ministry of New and Renewable Energy (MNRE,) among others. Meetings with key international financing institutions, donors and banks like JICA, JBIC were arranged to understand their funding mechanisms and procedures. All relevant schemes were assessed and included in the report. The list of all the meetings held is given in the Annexure.

3. **Preparation of Report** – The information collected through the Desk Study and the meetings was compiled and analyzed to prepare a Report on the financing opportunities available to the cities for moving towards a low carbon urban growth. Brief case studies on success stories were also collected and included for lessons learnt.

4. **Online Web portal-** An online knowledge portal is being developed to guide cities to identify and leverage international/central/state level programmes/funding schemes to enable them to implement city level low carbon actions have been developed. The web portal will be updated as and when required to provide up to date information.

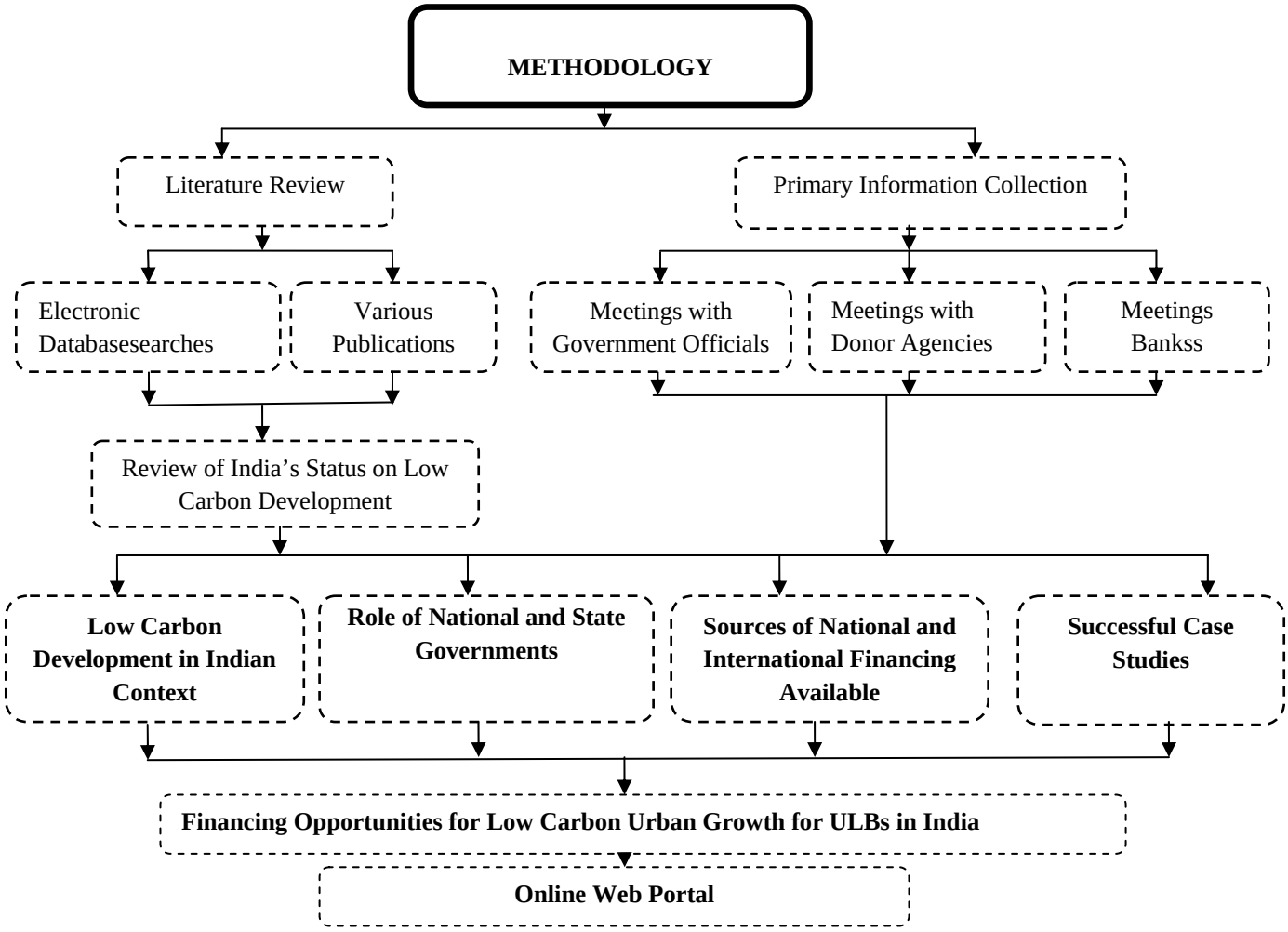
    The web link for the project information is http://urbanlowcarbonfinance.iclei.org/

    Figure 2.1 gives a snapshot of the project website.

Figure 2.1: Snapshot of Website

The Methodology adopted for the Study is presented in **Figure 2.2** below:

Figure 2.2: Methodology Adopted for Study



3. Low Carbon Policies and Initiatives in Urban Sector

India's urban system is second largest in the world and according to the 17th Electric Power Survey, public water works and public lighting consume 12,000 MW and 5,000 MW of electricity respectively. The sustainability of urban growth can be considered in three dimensions: economic, environmental and social. Growing cities require adequate provision of civic infrastructure services like water supply, sanitation, public transport – roads, street lighting and solid waste management among other amenities provided by local authorities. In addition, there are a number of important administration and monitoring roles covering buildings, traffic and mobility that the cities are responsible for. Low carbon based growth can be included in provision and administration of these services by cities ensuring large scale positive impacts.

The relevant urban sectors where specific approaches and strategies can be adopted towards meeting the emission reduction vision and corresponding energy usage have been discussed in this Chapter. GHG emissions in urban areas arise from buildings, transport, municipal solid waste disposal and sewage treatment. This Chapter also highlights the specific low carbon actions, which can be implemented at city level by ULBs and available specific financial schemes at state/central and international level apart from the simplest pathway for ULBs to get the finances for their low carbon implementable actions.

3.1 Water Supply, Sewerage and Sanitation

Cities are mainly responsible for the provision of water supply, management of waste water and management of solid waste. These services are key to having a clean and green urban environment, however in light of increasing urban population the pressure for expanded and better services is constantly increasing too.

It is well known that urban water sector is energy intensive and highly sensitive to climate change. Potable water supply as a basic human need for survival is a very important city service and climate change represents a huge challenge to the sustainable management of water resources. Pressures include increasing demand for water, stricter water-quality standards and the need to adapt to climate change induced impacts. It is also notable that water use and energy are inextricably linked due to the linkages during the process of abstraction, conveyance and treatment of fresh water and wastewater.

With increase in populations and resulting increase in consumption, there has been an increase in solid waste and wastewater output also. Systematic collection of solid waste, its recycling and management for recovering energy has a large potential for reducing emissions from this sector. However, in India, solid waste though sometimes systematically collected, is dumped in non-scientific ways in most urban areas which leads to substantial methane emissions. Similarly, the domestic wastewater and industrial wastewater in cities are also large sources of methane emissions. The waste sector emissions given in **Table 3.1** are estimated to be approximately 57.73 million tons of CO_2 which include municipal solid waste management, domestic wastewater and industrial wastewater management (INCCA, 2007)

Table 3.1: Emissions from Domestic and Industrial Waste in India(million tonnes)

Waste	Methane	Nitrous Oxide	CO_2 Equivalent
Municipal Solid Waste	604.51		12694.71
Domestic Wastewater	861.07	15.80	22980.47
Industrial wastewater	1050		22050.00
Total	2515.58	15.80	57725.178

(Source: INCCA, 2007)

The water supply sector offers a significant opportunity in terms of savings through reduction of Non Revenue Water (NRW) which is estimated to be between 20-40% in most cities. This can be achieved by reducing leakage, pilferage, improving pumping and pipeline system efficiencies etc. One of the very common areas that consume energy in the urban water supply sector is individual booster pump-sets used by urban population to increase pressure of water and pull more water from the system. Though illegal this is a common practice and municipal corporations are advised to go for 24X7 water supply provision to address the same.

Methane gas is emitted during wastewater transport, sewage treatment process and leakage from anaerobic digestion of wastewater sludge. GHG mitigation measures could include full collection, conveyance and treatment of wastewater, reuse and recycling of treated effluent and gas recovery from sludge as well as use of treated wastewater for artificial recharge of aquifers or water bodies. At the household level separation of black water and grey water needs to be promoted to enable recycling. Effective management of wastewater would result in availability of treated water for reuse, capture of methane gas from power generation and hence improvement in the quality of the environment.

Solid waste management is a major concern for almost all urban areas. It is imperative to treat waste produced as a resource and work towards reducing the production of waste, reusing and recycling waste materials as resource where possible. The mitigation of GHG emissions from waste must be addressed in the context of integrated waste management. Improved waste management will not only provide for significant GHG mitigation, but will also improve public health and environment quality. Potential areas for urban low carbon initiatives in waste sector are given in **Table 3.2**.

Table 3.2: Potential Areas for Urban Low Carbon Initiatives in Waste Sector

Potential Areas For Urban Low Carbon Initiatives.	Guidelines, Policy and Byelaws	Municipal Service related projects	Showcase/Demonstration Projects
Solid waste management	Zero(low) waste policy. Bylaws promoting organic management of local waste locally.	Recycling and reuse of relevant waste. Promote decentralized waste management sites Develop a scientific landfill	Decentralized – ward level waste management(composting, waste to energy) sites
Water supply/Waste water management	Waste water recycling byelaw. Water harvesting byelaws Setting water supply/management protocol.	Recycling and reuse of waste water locally. Promote decentralized waste water treatment systems. Energy audit of pumping systems. Use computerized control systems to manage bulk waste water SCADAbasedsystems. Implement computerized metering system.	Implement pilot waste water recycling and reuse projects at local levels. Demonstrate water audit by public audit and implementing recommendations and showcase benefits.

3.2. Urban Transport and Street Lighting

City governments traditionally have not been responsible for urban transport in Indian cities. However cities have been administering and controlling urban transport through their control on parking areas, roads, development controls, street lighting etc. Growing urban population has led to de-densification of cities, with rapid growth in sub urban areas. This de-densification has resulted in rising demand for travel as longer distances are required to be travelled to access jobs and basic services.

Public transport has been the primary mode of motorized local travel in cities while commuter rail services are available only in the six metropolitan cities viz. Mumbai, Delhi, Chennai, Bangalore, Hyderabad and Kolkata. Dedicated city bus services are known to operate in at least 25 cities with a population of over one million while other intermediate public transport modes like autos and cycle rickshaws assume importance in medium size cities. However, the share of buses is negligible in most Indian cities when compared to personalized vehicles and two-wheelers and cars account for more than 80 percent of the vehicle population in most large cities.

The Ministry of Urban Development through the National Urban Transport Policy (NUTP, 2006) has formulated a Central policy to enable and guide State level Action Plans within an overall framework. The increasing transportation demand can be met by focusing on efficiency and hence through technological improvements in fuels or automobiles. The other and more

important strategy could be shifting demand from personal vehicles to less carbon intensive modes such as mass transit and non motorized transport.

Street lighting is one of the main services provided by the Urban Local Bodies (ULBs) to the citizens in the city. It is crucial from the point of view of providing satisfactory lighting facilities to all the parts of the city. It includes major roads, arterial roads and internal roads of the city. With the rapid urbanization and consequent expansion of the city limits it has become a challenging job for the ULBs to provide lighting facilities to the citizens. Street Lighting Energy Efficiency project will reduce electricity consumption by improving street lighting efficiency in the municipal street lighting services. The Municipal Corporation is all served by grid power and the project will result in reduced energy consumption for the provision of basic municipal services. The energy savings are both direct, from installation of more energy efficient technologies, and indirect from optimizing existing systems.

Potential areas for low carbon initiatives in urban transport and street lighting are given in **Table 3.3**

Table 3.3: Potential Areas for Urban Low Carbon Initiatives in Transport and Street-lighting

Potential areas For Urban Low Carbon Initiatives.	Guidelines, Policy and Byelaws	Municipal Service related Projects	Showcase/Demonstration Projects
Transport	NMT policy(Pedestrian and Non motorized) Parking Policy (parking charges and facilities) Fuel efficiency policy.	Road widening including NMT and pedestrian lanes. Organized public bicycle share system. BRT/Metro system projects E-taxies systems.	No motor road stretches. NMT/Bus days. NMT infrastructure demonstration projects in closed loop pilot areas.
Street Lighting	City Energy policy/bylaw	LED for traffic signals, Design based street lighting + solar (and solar PV based) street and emergency lighting. Timer based computerized operations. Mandatory solar power lit hoardings.	Demonstration street lighting, solar or LED lighting pilot projects.

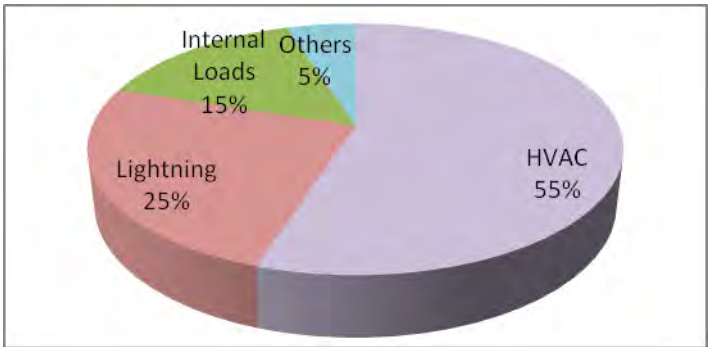
3.3 Buildings

Cities keep a check on the quality and quantity of buildings in municipal limits through development control regulations, taxes, fines, registration and approval to build mechanisms. With increase in city population levels and the extent of construction, activities in cities have increased substantially.

Construction and realty sector is one of the most resource consuming sectors in its entire life cycle. Moreover, energy consumption in buildings gives rise, directly and indirectly, to as much as 40 percent of CO_2 emissions and represents more than a third of global consumption. The demand for energy to run appliances such as televisions, air conditioning and refrigerators is also increasing substantially with rise in living standards putting pressure on the emissions balance. Among the buildings, the residential sector has witnessed phenomenal growth over the last 15 years, and accounts for 21 percent of the total energy consumption in India (Planning Commission, 2011).

The major energy consuming equipment in commercial sector are lighting, heating, ventilation and cooling are illustrated in the **Figure 3.1**.

Figure 3.1: Energy Consumption Distribution in Commercial Buildings



(Source: Planning Commission, 2011)

India has seen a surge of policy instruments to mainstream energy efficient buildings. Energy Conservation Act, 2001 was a landmark legislation which led to the setting up of the Bureau of Energy Efficiency (BEE), which later developed the Energy Conservation Building Code (ECBC) and scheme for Star Rating of Buildings. The Ministry of New and Renewable Energy (MNRE) has initiated several programs focusing on the utilization of renewable energy sources in buildings. MNRE has a Green Buildings Programme that provides financial support for the design and construction of energy efficient and solar passive buildings. Also, MNRE promotes green buildings through adoption of an indigenous Building Rating System, Green Rating for Integrated Habitat Assessment GRIHA e-Laws can be developed as guidelines for design of buildings and building systems and services with focus on safety and comfort. Various agencies at the State and City Level across the country have taken specific initiatives to integrate energy efficiency guidelines into the existing bye-laws. To name a few, Ahmedabad, Hyderabad, Kolkata and Bengaluru have been proactive in integrating energy efficiency guidelines with building bye laws. Some city governments such as Pune and Hyderabad have also attempted their own green building rating system. Potential areas for urban low carbon initiatives in the building sector are given in **Table 3.4.**

Table 3.4: Potential Areas for Urban Low Carbon Initiatives in Building Sector

Potential areas For Urban Low Carbon Initiatives.	Guidelines, Policy and Byelaws	Municipal Service Related Projects	Showcase/Demonstration Projects
Buildings	Green building Bylaws. Building energy consumption standards. Green campuses and complexes guidelines. Adopt ECBC.	New municipal buildings to be green buildings. Old government buildings to be retrofitted for less energy consumption. Lower fees for private green buildings approvals/registrations	Certain new public buildings made green (bus stands, municipal zonal offices). Model demonstration week. When builders present their green building initiatives to public and are awarded by the corporation

3.4 Urban Planning

Urban Planning is one of the most crucial activities managed and controlled by cities in India. This is important as urban planning decisions taken today can shape the urban growth and well being of people in long term. Planning has a decisive role to play in climate resilience because it spatially influences activities that lead to GHG emissions and guides patterns of land use as well as energy use. Strategic urban planning directly supports urban resilience and encourages urban sustainability in a number of ways. Planning can reduce population vulnerability to climate impacts by facilitating improved access to resources, services and amenities. It also creates sensitivity towards the environment whilst incorporating social and economic goals.

Cities are key contributors to carbon emission and climate change because most human and economic activities are concentrated here and much of the built form exists here. Cities also influence energy and land-use patterns of the surrounding and hinterland population through livelihood and quality of life linkages. Moreover, cities have a larger ecological footprint as compared to non-urban areas.

In India, urbanization and urban area expansion have grown significantly in the last few decades. Urban planning is a key area that could focus on low carbon development in the cities through decentralized waste, water supply and sewage systems, off grid power systems, transit oriented development, open spaces and local climate improvement options etc. Potential areas for low carbon initiatives in urban planning are given in **Table 3.5.**

Table 3.5: Potential Areas for Urban Low Carbon Policies in Urban Planning

Potential areas For Urban Low Carbon initiatives.	Guidelines, Policy and Byelaws	Municipal Service Related Projects	Showcase/Demonstration Projects
Master Planning	Low carbon development guidelines. City Greening guidelines. Transit oriented development bylaws. Development control (or promotion) regulations. Environmental resource management guidelines/plans	Low carbon Town planning schemes. TOD based Planning schemes. Master plans including all of the above measures.	Town planning schemes including green development principals.
Others	Green Procurement policy. Carbon emissions monitoring and reporting system. Renewable energy generation/offgrid energy policy.	Sustainable solid waste collection mechanisms	Solar water heating systems, Solar Hoardings etc.

4. Schemes and Financing for Low Carbon Urban Growth

Low-carbon urban development seeks to promote sustainable economic development while keeping GHG emissions low. Although the term low-carbon development has been introduced as part of the international climate negotiations only in 2009, aligning climate and development is not new, and various countries have designed and implemented integrated national strategies and policies. The term 'low-carbon' does not necessarily imply that overall emissions in a country will decrease, but it does mean an emission trajectory below business as usual, i.e. below what would happen without additional policy interventions. Most low-carbon development actions require significant investments. While some investments will need to be done by government, many will require private sector investors.

Finance is a key ingredient of the global response to climate change. The success of low-carbon urban development depends on the quantity and type of finance made available to support these efforts. In the Copenhagen Accord, developed countries pledged to collectively support developing countries' transitions to low-carbon futures with an annual USD 100 billion of 'new and additional' public and private finance by 2020, a commitment now included in the UNFCCC following the recent Cancún and Durban negotiations. This Green Climate Fund will support projects, programmes, policies and other activities in developing country Parties using thematic funding windows.

4.1 Funding Options Available to ULBs for Climate Action

The municipalities can utilize their own funds to take actions on climate change, by integrating low cost policy interventions in their own routine operations. A large portion of the carbon emissions is due to daily activities (including pumping of water, transportation, street lighting, solid waste disposal, etc) which can be easily modified or tweaked to get a good reduction in emissions with minimum financial implications. However, in certain cases, ULBs may require financial assistance to take up specific action on climate change if it entails significant amount of investment. Such financial assistance can be obtained from the Central level funds or from other funding opportunities including international sources. There are resources available to the ULBs for planning and development of the municipalities but it is up to the ULBs to plan their infrastructure development projects in a climate friendly manner. Simple climate related policies can be developed in the municipalities and developmental planning be done keeping in tune with these policies to get significant reduction in carbon emissions and reducing the carbon footprint of the municipalities.

4.1.1 State Level Funding Opportunities

The State governments allocate funds for urban services including water supply and sewerage management through their Planning and Development Departments which can be accessed by the ULBs. Under the 12th Finance Commission Award, 50% of the funds allocated to urban local bodies through the Municipal Affairs department are meant to be utilized for solid waste management including door to door collection, secondary collection at specified points and disposal at sanitary landfill sites. The Thirteenth Finance Commission has recommended three

grants of Rs 5000 crores each to encourage states into adopting renewable energy sources, conserving forests and improving water management systems. This amount is expected to trigger a more aggressive climate change policy from individual states and is significantly higher than the Twelfth Finance Commission grant. The various States also provide funds to local governments for projects on solar or other forms of renewable energy through their Energy Development Agencies or State Nodal Agencies (SNAs) such as Rajasthan Energy Development Agency (REDA), Tamil Nadu Energy Development Agency (TEDA) etc.

While accelerating overall development of existing and emerging urban growth centers, care is being taken to protect the environment. Land use and development control plans are carefully prepared and implemented. Several ULBs are already in the process of developing such draft development plans.

4.1.2 Central Level Funding Opportunities

The central government scheme envisages integrated development of urban infrastructure and urban services, through asset creation and better maintenance of assets in a financially sustainable manner. Infrastructure development schemes of the Central Government such as the Urban Infrastructure Development and Governance (UIG) and Basic Services to the Urban Poor (BSUP) along with Scheme for Small and Medium Towns (UIDSSMT) in association with the State Plan Funds can be used for new development within ULBs. UIDSSMT is a central scheme providing a city-wide framework for planning and governance for urban areas, and promotes access to basic level of urban services to all urban residents. It promotes good governance through transparent and accountable systems and reforms to revenue systems, and focuses on infrastructure development to improve service delivery in urban areas. Urban Infrastructure Development Scheme for Satellite Towns (UIDSST) focuses on developing satellite towns around large cities, to reduce the pressure on bigger cities, and promotes institutional reforms and infrastructure development in satellite towns. Integrated Housing and Slum Development Programme (IHSDP) is implemented by the state governments to promote holistic slum development with a healthy and enabling urban environment by providing adequate shelter and basic infrastructure facilities to the slum dwellers. The various National funding opportunities available under JNNURM and other schemes are discussed in**Table4.1**.

Table 4.1: Various National Funding Opportunities Available under JNNURM and Other Schemes

Name	Geographical Area	Sector	Description/Status
Urban Infrastructure and Governance (UIG) and Basic Services to the Urban Poor (BSUP)	64 Indian cities – cities including state capitals, and those with more than 1 million population	All sectors – water supply, drainage, sanitation, transport, roads, street lighting, conservation of heritage bodies, housing and integrated slum development, basic services to poor	The Ministry of Urban Development and Ministry of Housing & Urban Poverty Alleviation has sanctioned 32 water supply projects with a total approved cost of Rs 1829.59 crores representing 41.3 percent of the total cost. Sewerage and storm water drainage projects constitutes next chunk of approved

Name	Geographical Area	Sector	Description/Status
			projects. A total of 18 sewerage projects with an approved cost of Rs 1281.83 crores have been sanctioned which represents 28.9 percent of aggregate value. **Duration: 7 years 2005-2012**
Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT)	All cities and towns as per 2001 Census, except those covered under JNNURM	All sectors – water supply, drainage, sanitation, roads, street lighting, conservation of heritage bodies, housing and integrated slum development, basic services to poor, preservation of water bodies	About 65 percent of the projects approved under the scheme are related to water supply. The approximate cost of the projects sanctioned is Rs 10 lacs. 19 percent of the project sanctioned constitutes sewerage and drainage worth Rs6.14 lacs. While only 2 percent of the projects constitutes for Solid Waste Management. **Duration: 7 years, 2005-06 to 2012-13**
Urban Infrastructure Development Scheme for Satellite Towns (UIDSST)	Satellite towns for million plus cities under JNNURM; planning for 3-5 lakhs for million plus cities, and 5-10 lakhs for 4 million plus cities	Water supply, sewerage, solid waste management, institutional reforms of e-governance, accrual based accounting, etc	It calls for improved urban planning, improved urban environment, improved basic services and infrastructure, and urban services to the poor. The budget allocated under the scheme is Rs 500 Crores **Duration: Co-terminus with 11th five year plan (2007-2012)**
Scheme for Urban Transport Planning	JNNURM cities primarily.	Urban Transport	Promotion of comprehensive traffic and transportation studies, integrated land use and transport planning and research Preparation of complete mobility plan, detailed project reports and Launching awareness campaigns. Clean Development Mechanism measures. Pilot studies as envisaged in NUTP, 2006 **Duration: since 2008-09 for 4 years**
Solar Cities Master Plan scheme	Any city , Funded by the Ministry of New and Renewable Energy	Renewable Energy and Energy Efficiency projects in Cities	MNRE has sanctioned the Solar Cities program under their 11th Five Year Plan with an objective to help Urban Local Bodies guide their cities towards becoming **"Solar Cities"**. About 60 cities and towns across India

Name	Geographical Area	Sector	Description/Status
			have been selected for the program. MNRE provides uptoRs50 lakhs to each city for implementing the master plans through PPP mode. Additional funding can be routed through its various programs such as the solar mission.

The Ministry of Power is primarily responsible for the generation, transmission and distribution of electrical energy in the country. The Government of India set up the **Bureau of Energy Efficiency** (BEE)[1]on 1st March, 2002 under the provisions of the Energy Conservation Act, 2001. The mission of the Bureau of Energy Efficiency is to assist in developing policies and strategies with a thrust on self-regulation and market principles, within the overall framework of the Energy Conservation Act, 2001 with the primary objective of reducing energy intensity of the Indian economy. The Bureau of Energy Efficiency (BEE) has developed a manual to support ULBs to explore options of energy efficiency and conservation in their activities. **Power Finance Corporation** (PFC) was set up on 16th July, 1986 as a Financial Institution (FI) dedicated to Power Sector financing and committed to the integrated development of the power and associated sectors. PFC was incorporated with an objective to provide financial resources and encourage flow of investments to the power and associated sectors, to work as a catalyst to bring about institutional improvements in streamlining the functions of its borrowers in financial, technical and managerial areas to ensure optimum utilization of available resources and to mobilize various resources from domestic and international sources at competitive rates.

The Ministry of New and Renewable Energy (MNRE) also offers funding opportunities in its schemes. The most recently launched Solar Cities Program encourages ULBs to apply for funding to prepare master plans for integrating renewable energy in their activities and reducing carbon emissions. All ULBs with more than 5 lakhs population can apply for these funds through state nodal agencies. The Ministry of New and Renewable Energy (MNRE) also has schemes on green buildings and Demonstration and Promotion of Solar Photovoltaic Devices/ Systems in Urban Areas &Industry. The Indian Renewable Energy Development Agency Limited (IREDA), New Delhi, under MNRE, also provides loans to ULBs to take up energy efficiency or renewable energy projects under various programmes such as the Solar Thermal Programme, Solar Water Pumping Programme, Solar Photovoltaic Market Development Programme, etc. Programmes on sanitation under the National Urban Sanitation Policy and Service Level Benchmarking Pilot projects of the NUSP also prepare ULBs to build capacity and plan for requisite infrastructure to tackle the problems of providing clean drinking water, adequate and appropriate sanitation and other municipal services. Cities/ULBs could utilize funds available through these programmes to build safer cleaner and climate resilient societies.

[1] http://www.bee-india.nic.in

4.2 Other Funding Opportunities

In addition to funds available through different central and state government schemes, ULBs can also apply directly to various funding agencies, including multilateral and national development banks, who are interested in funding activities that address climate change. All projects designed and developed by the ULBs can be prepared keeping in mind climate concerns.

ULBs can also access funds for energy related projects under the Energy Service Company (ESCO) model of financing. An ESCO is a company that provides integrated energy services to its customers (mainly large energy users, but also utilities), which may include implementation of energy-efficiency improvement projects, on a turnkey basis. An ESCO designs, implements and finances energy efficiency and energy conservation projects on behalf of its customers on a guaranteed performance basis. In India, the ESCO mode is currently used to finance street lighting and water pumping projects as well as in the agricultural sector. The project design is such that the savings will usually be large enough to service the debt accessed to implement the measures and leave a surplus that is shared between the customer and the ESCO. ULBs can also utilize the funds available as part of the Corporate Social Responsibility (CSR) of major industrial companies to supplement funding of their climate responsive activities.

5. Renewable Energy & Energy Efficiency Programmes & Financing Schemes

A crucial requirement is to mobilize the resources to finance the Renewable Energy (RE) and Energy Efficiency (EE) Projects. In urban centers lack of adequate finance is one of the reasons that even being technically and economically feasible, several energy conservation or renewable energy generation programmes do not get implemented.

The quantum of finance required varies from a few hundred rupees for financing CFL replacements in a household to budgets ranging in crores of rupees for setting up a Solar PV Project. Financing for RE & EE projects from domestic and international sources ranges from government grants, loans from commercial banks, specialized energy efficiency/renewable energy funds, carbon finance to socially responsible investments. Sometimes, a variety of financing instruments and financing institutions have to be integrated to come up with a feasible financing plan.

5.1 Programmes and Financing Options Available

A. Grants/Finance from Central Government, State Government or International Agencies

There are several central and state government agencies that give grants or create special funds for the purpose of providing finance for energy efficiency and renewable energy generation projects. Several international lending and donor institutions such as the World Bank, the Asian Development Bank, etc provide funds for development of energy efficiency and conservation projects in India. Some of the case studies and programmes funded by these donor institutions are presented in **Chapter 7**.

(i) Financial and Fiscal Incentives from MNRE for Renewable Energy Projects:

Under the Solar Cities Programme, MNRE provides up to Rs. 50.00 Lakhs per city/ town, depending upon population and initiatives decided to be taken by the City Council/Administration, with up to Rs 10.00 lakhs for preparation of a Master Plan; up to Rs. 10.00 lakhs for oversight of implementation for five years; upto Rs. 10.00 lakhs for setting up of Solar Cell and its functioning for a period of five years; and, the remaining amount of Rs. 20 lakhs to be utilized in five years for other promotional activities.

EUR 200 million loan for climate change mitigation RE projects:

The European Investment Bank (EIB) has granted a loan of EUR 200 million to ICICI Bank of India for projects in the renewable energy sector supporting climate change mitigation.

The main objective of this climate change framework loan is to make long-term finance available for investments in renewable energy projects that mitigate climate change by contributing to the avoidance or reduction of greenhouse gas emissions. The operation will focus on electricity generating projects only, especially solar photovoltaic, biomass and onshore wind. The project will be located in India and will be implemented by private sector companies.

The EIB will ensure that all projects are economically and financially viable, technically adequate and in compliance with the Bank's environmental and social requirements. This loan is being provided under the EUR 4.5billion Energy Sustainability and Security of Supply Facility

EUR 12.5 million (USD 16.75 million) commitments to Berkeley Energy's Renewable Energy Asia Fund (REAF), which primarily focuses on India. The Fund will specifically focus on operationally and economically mature technologies which are best placed to help Asia bridge its current electricity supply/demand gap (primarily with wind, small hydro and solar energy). REAF is managed by Berkeley Energy, which is a private equity fund manager specialising in renewable energy infrastructure investments in developing markets with initial focus on Asia

Financial assistance for implementation of the Master Plan strategies, particularly for renewable energy projects can be availed as per the provisions of various schemes of the Ministry. Priority for support under various schemes will also be given to cities identified as potential Solar Cities. The Ministry, IREDA and other implementation agencies for promoting the use of renewable energy devices/systems will consider these cities as priority cities. SNAs may also request the Ministry to allocate higher targets and provide subsidies for installation of various renewable energy devices/systems in these cities under its different schemes.

In order to develop the use of renewable energies India is trying to make the opportunity attractive for investors. To promote renewable energy technologies in the country, the Government has put in place subsidies and certain fiscal incentives. Some of the measures are given in **Table 5.1**:

Table 5.1: Subsidies and Fiscal Incentives

1.	**Income Tax Breaks**	Wind power project owners are exempt from income tax on all earnings generated from the project for any single 10-year period during the first 15 years of the project's life.
2.	**Accelerated Depreciation**	Investors can take advantage of accelerated depreciation of up to 80% of the project cost if the project is commissioned before 30 September of the financial year, or 40% if the project is commissioned before 31 March of the financial year. This provision has enabled large profit making companies, small investors, captive users and ULBs to participate in this sector.
3.	**Feed-in-Tariffs (FiT)**	Feed-in-tariffs are a fixed price for every unit of electricity produced by a renewable source that is usually above the tariff rates of conventional power. The feed-in-tariff gives investors a guaranteed price for the power produced by them using renewable energy sources. In India, the Ministry of New and Renewable Energy declared feed-in-tariffs first for solar and wind power projects. These feed-in tariffs were made available for projects supported by MNRE. This in turn served as a guideline for states to come up with a preferential tariff for renewable energy projects.
4.	**Custom duty/duty free imports concession**	Lower customs and excise duties for specified equipment. Exemption or reduced rates of central and state taxes.

5.	**Generation Based Incentive**	MNRE has announced the Generation Based Incentive (GBI) for Grid Interactive Wind Power Projects, commissioned after 17th December .2009. The main objectives of the GBI scheme are: a. To Broaden Investor Base by: ✓ Facilitating the entry of large Independent Power Producers (IPPs) ✓ Attracting FDI in the Wind Power Sector b. To Provide level playing field between various classes of investors. c. To incentivize higher efficiencies. d. To provide a framework for transition from an investment based incentive to outcome based incentive.
6.	**Property Tax Rebate**	Property tax is levied by the local authorities such as Municipal Corporation, which levy the tax on property owners in their designated area. Further, a few State Governments have issued orders to their Municipal Corporations to promote Solar Water Heating SWH by providing a rebate in annual property tax to the property owners with SWHS in their designated area. **Property Tax Rebate across Various Municipal Corporations (MNRE, 2010)** • Thane (Maharashtra): 10% Rebate in Annual Property Tax • Amravati (Maharashtra): 5% Rebate in Annual Property Tax • Durgapur (West Bengal): 10 % Rebate in Annual Property Tax • Navi Mumbai (Maharashtra): Proposed
7.	**Income Tax Rebate**	Typical features of income- tax rebate scheme for domestic SWHS are as follows: • Government levies income tax as per provisions of the Income Tax Act 1965 • Government may incentivize SWHS users by allowing investments in SWHS as eligible investment under Section 80 (c) • The rebate will not be useful in reducing the financial burden of high capital cost
8.	**Green Building Incentives**	GRIHA the National Rating System evaluates the environmental performance of a building holistically over its entire life cycle, thereby providing a definitive standard for what constitutes a 'green building'. The rating system, based on accepted energy and environmental principles, will seek to strike a balance between the established practices and emerging concepts, both

		national and international. To encourage Architects and consultants to design buildings on Green Architectural concepts and get them rated under GRIHA, and incentive as given below will be available from MNRE. • Rs. 2.50 lakhs for projects upto 5000 sq.m. built-up area with minimum 3 star rating • Rs. 5.0 lakhs for projects > 5000 sq.m. built-up area with minimum 4 star rating A one-time incentive of Rs. 50 lakhs to Municipal Corporations and Rs. 25.00 lakhs to other Urban Local Bodies will be available to those who i) announce rebate in property tax for energy efficient solar/green buildings rated under GRIHA, ii) make it compulsory to get the new buildings under Govt. & Public Sector rated under GRIHA and iii) sign an MOU with GRIHA Secretariat in presence of MNRE for large scale promotion of Green Buildings in their area. Cash incentive of Rs. 50 lakhs to Municipal corporations and Rs.25 lakhs to municipalities/other Urban Local Bodies (one each to them) will also be given away that perform the best in promoting Green Buildings in their areas from 2011-12 onwards. MoUD could also be approached for assistance under their schemes e.g., JNNURM, etc., as well as the BEE. Asian Development Bank (ADB) is funding the Integrated Renewable Energy Development Project, which would be implemented through IREDA and has roof-top solar PV as one of the components. These include USAID (United States Agency for International Development) DFID (Department for International Development) etc. **Leadership in Energy and Environmental Design – India (LEED – India)** infact sets down standards that have been customized according to Indian conditions in terms of design, construction and operation of buildings that seek high, yet environment-friendly performance.

(Source: http://mnre.gov.in/)

B. Self financing – recovery of investment through tax (Municipal Corporation) or tariffs (DISCOM)

Under the self financing model, the implementing entity (Municipal Corporation or DISCOM) could allocate funds to Solar City Programs (SCPs) either by utilizing its own funds (may be in the form of a special fund created for SCPs), or though loans, or outsourcing a part by technology or service providers through the certain portion of the project work and execution. Tax and tariff collections could be used to self finance the projects. Rationale of investment recovery is essential for the implementing entity (Municipal Corporation or DISCOM), as failure to recover any costs directly impacts utility earnings, and sends a discouraging message regarding further investment. Sometimes it may be possible to create Specialized Funds for design, development and implementation of SCPs.

C. ESCO Mode

ESCO mode is the most familiar model of financing energy efficiency projects. Under this category of finance, the ESCO signs an agreement with the authority (Municipal Corporation or DISCOM) to finance and the implement project; the ESCO may borrow the project debt and pay it back from project revenues. An Energy Service Company (ESCO) is a specialized service provider offering a wide range of complete energy solutions together with planning, designing and implementation of energy efficiency projects. ESCO also operates the project to make certain energy savings during the payback phase. The income from energy savings is often used to pay back the capital investment made by the ESCO. Performance contract signed between ESCO and the authority is directly related to the quantity of energy saved. ESCOs offer guaranteed savings and their compensation is related to the projects performance. ESCOs may also provide or arrange financing. There are basically three types of performance contracts for Energy Efficiency Projects:

Case Study I: PPP for street lighting energy conservation in Bangalore for Bangalore Development Authority (BDA)

Elpro Energy with the Bangalore Development Authority (BDA) executed the PPP Project for energy efficiency in the street lighting system in Bangalore city. The objective of the project was to improve the energy efficiency and to reduce the operational and maintenance costs of the street lighting system of 63 km long Outer Ring Road (ORR) and Inner Ring Road (IRR) around Bangalore, which currently has a total load of 1.1 MW of installed street lighting using an Energy Management System called ETRACS.

Specific Objectives

1. Develop, install, commission the street light energy efficiency project
2. Review and periodically monitor the energy savings
3. Document the energy savings and replicate the results

Benefits to BDA: Huge energy savings annually; excellent central operation and maintenance of street lights; centralized monitoring of all streetlights; less labour costs; less capital expenditure on lamps and fittings; less contract charges and better contractors' monitoring; improved public image as a cost conscious and efficient public service provider. The project at ORR-IRR for BDA Bangalore has generated energy savings to the tune of 40-45% monthly and thus has satisfied the main objective of the project i.e energy savings. The annual maintenance bill of the street lights themselves got reduced from approximately Rs.60 Lakhs in the year 2004-05 to Rs.29 Lakhs in the year 2005-06.

(i) **Energy Audit Model:** EE project is implemented by the project sponsors themselves based on recommendations by energy auditors for retrofitment of existing facilities. Financial commitments are made by the project sponsors and the energy auditor/ consultant is confined to being a technical advisor. For the project sponsor and the lender, the EC project is a normal capital expenditure eligible for funding under regular lending programs.

(ii) **Guaranteed Savings Model*:*** The EE project investment continues to be made by the project sponsor, but the risk of non- performance is mitigated by performance guarantees of ESCOs who play a dynamic role, committing themselves to guaranteeing a certain minimum level of performance resulting from the implementation of the EC project, in exchange for a higher compensation package (*if certain levels of technical performance are achieved and/or energy savings is generated*) in the form of:

(a) Higher fees for ESCOs,
(b) Additional contracts for implementing, operating and maintaining the EE Project, and
(c) Captive or tied-up equipment procurement contracts

Usually, such EE projects are implemented through an ESCO-type entity whereby the risks of non-performance are borne partially or completely by the ESCO. This model has had limited application as project sponsors are not convinced about the financial ability of the ESCOs to compensate them in the event of non-performance and risk-mitigation products are not available in the market, such as performance guarantee insurance.

(iii) **Shared Savings Model**: Many project sponsors prefer to concentrate on their core competencies and avoid blocking their resources to building up an optimal energy management/services infrastructure. In this context, ESCOs pursue an integrated business model - technical tasks to diagnose and fix energy efficiency solutions, invest in energy assets, build, operate and maintain them. There are several approaches to business modeling and financing. In India, Project Sponsors are either not familiar or comfortable with the concept of parting with their energy savings. Their negative perceptions are accentuated by the inadequate financial stature of ESCOs and inability of ESCOs to obtain financing for EE Projects.

However, as opposed to the *Guaranteed Savings* model, the *Shared Savings* model is more remunerative to the ESCO commensurate with the higher risks shared by the ESCO and most likely to be the model pursued in the days to come in the Indian energy management industry.
Typical projects that could be implemented by ESCOs include (but not be limited to):

- HVAC systems improvement in Buildings
- Installation and operation of combined heat and power plants
- Industrial facility refurbishment and operation
- Industrial process improvements
- Public lighting and Public water refurbishment and operation
- Solar water heating and steam generation projects

5.2 Supportive Financing Options Available to RE/EE Projects

The following four supportive options available to RE and EE projects have been discussed in the report:

- Bonds (Municipal, Energy Efficiency or Carbon)
- Carbon Market
- Renewable Energy Certificates
- Energy Efficiency Certificates

(i).Bonds (Municipal, Energy Efficiency or Carbon)

This is one of the innovative ideas to generate funds for any RE/EE project at local level by Urban Local Bodies (ULBs). Municipal bond is a bond issued by a city or other local government, or their agencies. Potential issuers of municipal bonds include cities, counties, redevelopment agencies, special-purpose districts, school districts, publicly owned airports and seaports, and any other governmental entity (or group of governments) below the state level. Municipal bonds may be general obligations of the issuer or secured by specified revenues. Interest income received by holders of municipal bonds is often exempt from the federal income tax.

Issuing bonds (Municipal, Energy Efficiency or Carbon), or debt, in procuring funding for project makes the most sense when the size of the issuing agency (urban local body etc) is significant enough to attract the attention of investors for financing its ventures. Issuing bonds requires lengthy and expensive preparatory work that consists of analyzing and forecasting the project's financial resources, and launching a procedure for obtaining a credit rating from credit agency (e.g. CRISIL, CARE etc). Bond financing is beneficial when the revenue from bond issuance is qualified for tax breaks or tax exemptions. The disadvantage of bond financing is that profit from the project accrues over time, usually 5-10 years, while repayment of principal on the bonds has to occur simultaneously at maturity. This can create cash-flow issues if bonds' maturity date is not correlated to the financial savings from the project. Certificates of participation or lease buyback agreements are similar forms of debt issuance.

(ii). Carbon Market

The Clean Development Mechanism (CDM) is an arrangement under the Kyoto Protocol that allows industrialized countries with a GHG reduction commitment (called Annex 1 countries) to invest in ventures that reduce GHG emissions in developing countries where costs are lower than in industrialized countries. The benefits of these reductions are monetized through the issuance of Certified Emissions Reductions (CERs). A price on these CERs enables the monetisation of future cash flows from the advanced sale of CERs. This is popularly known as carbon finance. Though India does not have any emission reduction target, it is able to sell CERs pursuant to the CDM, to large emitters covered by the EU ETS, countries that have emission reduction targets under the Kyoto Protocol, or any other entity that wishes to purchase such CERs for compliance purposes. India ranks second by number of projects registered by the CDM Executive Board and second by volume of issued CERs.

Though CDM is an important financing mechanism for incremental costs, it has been well short of the scale required. This is because the carbon market has not provided investors with the strong, long-term price signals that are necessary to support large investments in low-carbon solutions. At the recent COP 17 at Durban, it has been agreed to extend Kyoto for five years from January 2013 until the end of December 2017. However, uncertainties remain regarding price regimes in the extended period. Secondly, the short-term, compliance-driven buying interests in industrialized countries have not supported large, cleaner investments in infrastructure that have long-term emission reduction potential. Thirdly, the project-by-project approach under the Kyoto Protocol involves high transaction costs for developers of Low Carbon projects.

The financing requirements of a CDM project can vary tremendously, depending on the project type. The following sections provide information about potential sources of finance for CDM projects. Multilateral, governmental and private sector carbon funds are listed in **Tables 5.2 and 5.3** below. Although the list is by no means exhaustive, it provides an indication of the types of funds in existence and their specific characteristics, including whether or not they provide any support for CDM project development. For more information on the different funds, it is recommended to consult the funds' websites.

Please include Voluntary carbon market opportunities as well as Gold Standard project opportunities

Table 5.2: Multilateral & Government Carbon Funds

FUND/WEBSITE	MANAGEMENT	TYPE OF PROJECTS	CDM PROJECT SUPPORT & FUND DATES
BioCarbon Fund www.carbonfinance.org	World Bank Carbon Finance Group	Aforestation/Reforestation. LULUCF. Also plans to purchase credits not applicable under Kyoto.	Some project related documents can be paid by Fund (baseline study, additionality, verification) but charged to project, if approved. Fund is expected to stop purchase in 2017.
Community Development Carbon Fund www.carbonfinance.org	World Bank Carbon Finance Unit	All CDM project types(incl. afforestation, reforestation & LULUCF) that make sustainable contribution to community development. Large-scale project must yield >50,000 tCO_2-e per year	Project related document costs (baseline study, monitoring plan, PDD) are initially covered by Fund but reimbursed via adjustment of CER level after issuance. Closed to investors. Operational until 2015.

FUND/WEBSITE	MANAGEMENT	TYPE OF PROJECTS	CDM PROJECT SUPPORT & FUND DATES
Netherlands Carbon Facility (INCaF) www.ifc.org/carbonfinance	International Finance Corporation(IFC)	CDM projects, focus on renewable energy, energy efficiency, capture and use of Methane, fuel switching, mitigation of potent GHGs	Generally CDM project documentation related costs are not paid although it may be requested by client. Costs will have to be reimbursed or are integrated into CER price. To be fully invested in 2007. Ongoing IFC activity planned.
Prototype Carbon Fund (PCF) www.carbonfinance.org	World Bank Carbon Finance Unit	CDM projects (incl. LULUCF). Projects must yield >30,000 tCO_2-e per year.	Project related document costs (baseline study, monitoring plan, PDD) are initially covered by Fund but reimbursed via adjustment of CER level after issuance. Operational until 2013 unless participants decide to extend.
Rabobank-Dutch Government CDM Facility www.rabobank.com	Rabobank	CDM projects (excl. forestry projects) Geographic focus: preferably China, India, Brazil and Mexico. Preference for projects with 1Mt of CERs before 2012.	Project specific. To be fully invested in 2012

Table5.3: Private Carbon Funds

FUNDS/WEBSITE	MANAGEMENT	TYPE OF PROJECTS	CDM PROJECT SUPPORT & FUND DATES
European Carbon Fund www.europeancarbonfund.com	IXIS Environment and Infrastructure	CDM projects (excl. LULUCF) Invests in all carbon assets: CERs, ERUs, EUAs & derivatives. Projects must yield 50,000-1m tCO2-e per year.	CDM project development costs are not covered by Fund but may be advanced. To be fully invested by 2012.
ICECAP www.icecapltd.com	ICECAP CarbonPortfolio Limited	CDM/JI projects. Projects must yield >100,000 tCO2-e per year.	Generally no support for project documentation development, project specific.
Japan Carbon Finance Ltd www.ecosecurities.com, www.jcarbon.co.jp	EcoSecurities, Japan Carbon Finance	Small-scale CDM projects.	CDM project documentation development costs as well as validation and verification fees are covered by Fund.
KfW Carbon Fund www.kfw.de/carbonfund	KreditanstaltfuerWiederaufbau (KfW)	CDM/JI projects Projects must yield >50,000 tCO2-e per year.	Generally no support, but loan facility for up to 50% of project documentation development costs (max. €50,000) is available)

The project eligibility criteria for multilateral and private financiers are in many cases similar to the criteria set out for the multilateral and governmental carbon funds. A non-exhaustive list of multilateral and private financiers is provided in the **Table5.4** below.

Table 5.4: Bilateral, Multilateral Agencies and Financial Institutions

FINANCIER	MORE INFORMATION
Asian Development Bank	http://www.adb.org
African Development Bank	http://www.afdb.org
European Bank for Reconstruction and Development	http://www.ebrd.org
European Investment Bank	http://www.eib.org
Export Import Bank (USA)	http://www.exim.gov
Export Import Bank (Japan)	http://www.jbic.go.jp
Global Environmental Facility	http://www.gefweb.org
Inter American Development Bank	http://www.iadb.org
International Fund for Agricultural Development	http://www.ifad.org
International Monetary Fund	http://www.imf.org
KreditanstaltfürWiederaufbau (German Bank for Reconstruction and Development)	http://www.kfw.de
North American Development Bank	http://www.nadb.org
Overseas Economic Cooperation Fund (Japan)	http://www.jbic.go.jp
Swedish International Development Agency	http://www.sida.se/
United States Agency for International Development	http://www.usaid.gov/
World Bank Group (including IBRD, IDA, IFC, and MIGA)	http://www.worldbank.org

Table 5.5 lists out a few Indian CDM projects undertaken by various municipalities and Urban Local Bodies. Most of the projects are funded by Third Party while some are self financed:

Table 5.5: List of CDM Projects by Indian Urban Local Bodies

PROJECT	URBAN LOCAL BODIES INVOLVED	CDM STATUS
Avoidance of methane emissions from Municipal Solid Waste and Food Waste through Composting	Puri Municipality, Orissa	Registered http://cdm.unfccc.int/Projects/DB/SGS-UKL1185291186.52/view
Municipal Solid Waste based Composting at Kolhapur, Maharashtra	Kolhapur Municipal Corporation	Registered
Municipal Solid Waste processing (MSW) in the city of Rajkot, India at Hanjer Biotech Energies (P) Ltd in Nakrawadi Village, Rajkot, Gujarat by M/s Hanjer Biotech Energies (P)	Rajkot Municipal Corporation	Under Validation
Karnataka Municipal Water Energy Efficiency Project	Karnataka Municipal Corporation	Under Validation
Methane recovery and power generation from sewage treatment plant by Surat Municipal Corporation, Gujarat, India	Surat Municipal Corporation	Under Validation
Municipal Solid Waste Management Project at Navi Mumbai Municipal Corporation.	Navi Mumbai Municipal Corporation	Under Validation
Avoidance of methane from biomass decay by up gradation and capacity enhancement of the existing Municipal Solid Waste (MSW) composting plant in Shillong, Meghalaya	Shillong, Meghalaya	Under Validation
Empowerment of residential house-holds for adoption of efficient house-hold lighting by distribution of CFL lamps at token Price in the District of Ahmedabad (India)	Districts of Ahmedabad	Under Validation
Composting Project at Coimbatore in Tamil Nadu, India	Coimbatore Municipal Corporation (CMC)	Under Validation

(iii). Renewable Energy Certificates (RECs)

In January 2010, the Central Electricity Regulatory Commission issued a notification on 'Terms and Conditions for recognition and issuance of Renewable Energy Certificate (REC) for Renewable Energy Generation'. Renewable Energy Certificates (RECs), also known as Green Tags, are tradable, non-tangible energy commodities that represent proof that 1 Megawatt-hour (MWh) of electricity was generated from an eligible renewable energy resource (renewable electricity).REC seeks to address the mismatch between availability of renewable sources and the requirements of the obligated entities to meet their renewable purchase obligation. It allows certificate holders to sell renewable energy to states deficient on this front, individual or other entities is expected to stimulate competition and create a market for power across states. The National Load Dispatch Centre has been appointed as Central Agency for implementation of RECs. Renewable Energy Certificate Mechanism has been launched on 18 November 2010. Based on

this states like Maharashtra, Gujarat, Chhattisgarh and Kerala have started accepting application for accreditation of renewable energy projects. 646 REC generators have already signed up under the scheme. As of now, all the RECs are under non solar category. There are 183 accredited generators with a total capacity of about 1100 MW.

(iv). Energy Efficiency Certificates (EECs)

The Ministry of Power and Bureau of Energy Efficiency (BEE) approved (in December 2009) the National Mission of Enhanced Energy Efficiency (NMEEE).In this context, the NAPCC aims at creating a market based instrument to facilitate energy efficiency measures in the country. The mission aims at creating a market for energy efficiency of nearly Rs 1,500 crores by facilitating a trade in **Energy Saving Certificates** (ESCerts). Under the National Mission on Enhanced Energy Efficiency, the Perform, Achieve and Trade (PAT) mechanism is introduced which assigns energy efficiency improvement targets to various industrial units in nine emission intensive sectors. The nine sectors are: thermal power plants, cement, fertilisers, aluminum, iron and steel, chlor-alkali, railways, pulp and paper and textiles. Under this scheme, these units will be allowed to retain any energy-efficiency improvements in excess of their target in the form of Energy Savings Certificates, called ESCerts. These certificates will be allowed to be traded in the market to meet energy efficiency improvement targets.

5.3 Multilateral/Bilateral Climate Funds for RE/EE Projects

A non-exhaustive list of multilateral/bilateral climate funds is given below in the **Table 5.6**:

Table 5.6Multilateral/Bilateral Climate Funds for RE/EE Projects:

FUNDS	TYPE	ADMINISTERED BY	AREA OF FOCUS
Clean Technology Fund	Multilateral	The World bank	Mitigation
GEF Trust Fund-Climate Change Focal Area	Multilateral	The Global Environment Facility (GEF)	Mitigation/Adaptation
The Global Energy Efficiency and Renewable Energy Fund (GEEREF)	Multilateral	The European Commission	Mitigation
Green Climate Fund	Multilateral	The World Bank	Mitigation/Adaptation
Strategic Climate Fund	Multilateral	The World Bank	Mitigation

5.4 Summary of Financing Mechanisms and Schemes for Urban Local Bodies

The Government of India has numerous ongoing developmental and social schemes for urban development. These schemes have components of infrastructure development, institutional development and capacity building for local governments which can be integrated with climate change planning to ensure sustainable development.

Low carbon growth projects at local government level can be financed through various mechanisms and by various institutions, and often a combination of mechanisms and tools is used for a project. For example, a municipality seeking to retrofit its district heating system might use a combination of a soft loan from the state or a designated special purpose fund (with

donor contributions); a portion of its own budget to finance a percentage of the project cost up-front; and financing from the equipment provider to pay for any new equipment using the energy cost savings from the project to repay the loans and the vendor. **Table 5.7** presents an overview of the existing mechanisms that can be used for financing municipal low carbon projects i.e EE/RE initiatives. **Table 5.8** gives a summary of various financing schemes available.

Table 5.7: Available Government Financing Mechanisms and Financial Institutions

FINANCIAL MECHANISM	USE	ACCESS	ADVANTAGES	LIMITATIONS
Municipal/ State General Budgetary Funds	All types of municipal projects.	Municipal/state government	Independent decision-making power	Limited funds availability;
Soft loans	Uses below-market interest rates to lower cost of borrowing money.	From municipalities, State, Banks (sometimes as part of a program with IFIs), loan, funds supported by International Organizations and Multilaterals.	Interest holidays Long repayment periods	Municipalities are unfamiliar with specific procedures and requirements of institutions
Commercial Bank Loans	Issued by banks, credit unions, finance companies to municipalities at market interest rates	Local and foreign commercial banks	Can be faster than financing tied to government or donor programs.	If municipality lacks credit-worthiness, loans need credit guarantees
Grants	Provided by IFIs, usually through local and International implementing NGOs, international development agencies	Government (state and municipal); donors (usually tied to specific development assistance programs); state banks (to encourage commercial financing and open market for EE finance)	No repayment necessary. Lowers barriers to projects.	Might delay commercialization of EE finance.
Partial Loan Guarantees	Secure a loan in case the borrower defaults	Special guarantee facilities. Sovereign guarantees offered by the state.	Qualify for a loan from a financial institution that for which otherwise unqualified	Cumbersome financial paperwork
Performance Contracting	For projects that generate sufficient energy- cost savings to pay project costs.	Contract signed between municipality and an energy service provider such as an energy service company (ESCO), EU Energy Center, NGO, or consulting firm. Financing can be provided through municipality, service provider or third party.	Eliminates the need for the municipality to have the upfront capitol to fund the project.	Savings from the project must be shared with the service provider. Requires sufficient metering to establish a baseline and monitor savings against it.

FINANCIAL MECHANISM	USE	ACCESS	ADVANTAGES	LIMITATIONS
Leasing	Allows firms to lease assets instead of borrowing and then buy them out later	Private companies wanting to lease DH assets. Equipment manufacturers and distributors wanting to enter a market.	3-20 year maturity; use the equipment now and with the option of paying for it later, making cash available for other use.	In addition to paying to use the equipment, pay additional charges on the lease as well.
Vendor Credit	When purchasing equipment, municipalities pays for it over short-term	Equipment Vendors	Helps build credit history if a municipality is not creditworthy; easier to obtain than loans; widely offered by vendors; no interest	
Municipal Bonds	Raise internal equity for municipality by issuing a bond	Contact investment specialist	Interest rate is likely to be exempt from taxes	Requires lengthy and expensive preparatory work. Incur large debt and risk of default
Revolving Fund	Accumulates savings from EE projects for self-perpetuating investments in more EE projects	NGOs, governments, international donors, municipalities	Self-sustaining after first capitalization	Requires large upfront investment. Can be cumbersome and expensive to administer. Legislative and institutional barriers may prevent municipalities from accruing savings.

The **5.8**below shows some indicative key low carbon actions under ULB/city activities that can be implemented by cities and lists out major available funding options that typically can be accessed for implementing the same in India. For an exhaustive list of funding agencies and schemes that can finance such actions see Annex 1.

Table 5.8: Available Financing Schemes for Various Services/Actions of Local Government

ULBs SERVICES/ ACTIONS	ACTION DETAILS	AVAILABLE SCHEMES	ACCESS
Transport	Road widening including NMT and pedestrian lanes.Organized public bicycle share system. BRT/Metro projects, E-taxi systems.	JNNURM	http://jnnurm.nic.in/
Solar Water Heater	Installation of SWH for residential, commercial & industrial usage	MNRE Solar City Programme, State and city specific schemes	http://www.mnre.gov.in/
Solar Cookers	Installation of solar cookers for residential, commercial & industrial usage	MNRE Solar City Programme, State and city specific schemes	http://www.mnre.gov.in/
PV Gen Set	Installation of Solar PV Genset for residential, commercial & industrial usage	MNRE Solar City Programme, State and city specific schemes	http://www.mnre.gov.in/
Urban Planning	Low carbon Town planning schemes.TOD based Planning schemes.Master plans including above measures.	JNNURM	http://jnnurm.nic.in/
RE Projects (Wind, Biomass, Hydro)	Projects for wind, biomass and hydro energy	IREDA, Central Level & State level Tariff Policies, JNNSM	http://www.bee-india.nic.in/ http://ireda.gov.in/
Building EE	New municipal green buildings.Old government buildings retrofitted for less energy consumption.Lower fees for private green buildings approvals/registrations	ESCOs, GRIHA, Star Labeling etc.	http://grihaindia.org/ http://www.bee-india.nic.in/
Street Lighting	LED for traffic signals,Design based street lighting + solar(and solar PV based) street and emergency lighting.Timer based computerized operations.Mandatory solar power lit hoardings.	Individual State Schemes	
Solid Waste Management	Recycling and reuse of relevant waste.Promote decentralized waste management sites. Develop scientific landfills.	JNNURM	http://jnnurm.nic.in/
Water Supply/Waste Water Management	Recycling and reuse of waste water locally.Promote decentralized waste water treatment systems.Energy audit of pumping systems.Use computerized control systems to manage bulk waste water – SCADA system.Implement computerized metering system.	JNNURM	http://jnnurm.nic.in/

6. Issues and Challenges in Tracking & Accessing Available Finance

The provision of basic urban services by local governments remained neglected in India primarily due to their limited financial, technical and managerial capacities. Municipalities require a substantial amount of money to execute their functions. They derive the money from various internal and external sources. Internal sources comprises from various taxes and non-taxes levied by the municipality. External sources include funds obtained (in the form of grants, loans, etc.) from the Central government, State government, domestic institutions, financial intermediaries, capital markets, and bilateral and multi-lateral donor agencies. Most municipalities in India are unable to generate adequate funds from their internal sources. This is mainly due to the following reasons: (a) low level of services provided to citizens ;(b) deficiencies in calculating the tax, non-tax rates; (c) reluctance in imposing or increasing direct taxes; and (d) inadequate attention to citizens' grievances. This leads to a low recovery from internal sources. Municipalities are, therefore, heavily dependent on external sources. The budget statements of several municipalities show that they obtain as much as 80 per cent of their income from external sources. Moreover, non convergence of authority, lack of unified authority and jurisdiction over planning and provision of urban sectors leads to fragmentation of authorities and hence functions. In recent times, and due to global trend towards decentralization, attempts have been made to identify new avenues for mobilizing resources for municipalities, such as capital markets, financial intermediaries, etc. Furthermore, a number of innovative practices are visible at the local level, which aims at raising the financial resources of local governments. Other municipalities continue to depend on traditional sources, namely, the Central and State government grants and loans. What about PPP models in Municipal projects as a means of financing urban projects ?

Successful implementation of low carbon growth projects depends on the management of various challenges to achieve financial closure of the projects. The implementation of low carbon growth projects requires enabling government policies, municipal leadership and the involvement and support of a wide variety of actors from the both the public and the private sectors.

The high upfront investment costs for low carbon growth projects and unavailability/ difficulties of getting funds from commercial financial institutions are considered to be one of the major barriers to promote low carbon technologies in developing countries. Due to the current small scale of the market and lack of familiarity with new technologies, banks tend to overprice the risk of operating in this sector or do not lend at all. Companies find borrowing costs prohibitive and instead finance growth out of cash flow that is usually meagre. As a result, financial linkages remain undeveloped and consumer credit is generally unavailable.

Although finance could become available from multilateral/bilateral sources and private sources for low carbon technologies at various levels, the local government faces a number of challenges in tracking and accessing these funds. Cities face major barriers to implementing low carbon projects/technologies, even where there is a desire to implement such projects. Lack of access to finance impedes the uptake and development of low carbon projects by municipalities, despite projects being identified where considerable savings in both energy and cash are realizable.

Cities often lack the requisite information, supportive national level policies, access to financing, and other support. Some of challenges are discussed below:

1. ***The cumbersome and complex administrative procedures:*** Procedure to avail limited financial and fiscal incentives from government is one of the major reasons that keep away the local governments and ULBs from taking initiatives on low carbon growth projects. To overcome this barrier, the state/central government and city administration must work together to simplify the process to avail incentives and ensure that users get the benefit without any hassles. There should be an option of a single window clearance for incentives/ benefits available for ULBs to undertake technology piloting, demonstration and implementation.
2. ***Lack of dedicated manpower***: Most of the staff in ULBs is allocated with diverse responsibilities. Municipalities spend most of their time in maintaining the basic services, they hardly find any time for new initiatives. Moreover, there is lack of motivation to staff to undertake challenging projects
3. ***High project development costs*:** As EE and RE projects are often small and distributed across a large number of end-users, the existing procedures in both development and commercial banks involve high transaction costs for these types of projects. A major issue will, therefore, be to develop strategies and instruments to bring down transaction costs per project.
4. ***Lack of Energy Audits, Energy Feasibility Studies and Carbon Inventories:*** The lack of low carbon technologies investments at ULB level is partly due to the limited information on specific energy consumption and carbon data in a given municipality and a lack of awareness of the technical solutions available.
5. ***Low capacity and low awareness of opportunities***: Costs and benefits of mitigation are not clearly understood by project developers and sponsors and domestic financiers.
6. ***Inadequate technical skills, local competence and capacity:*** Lack of dedicated manpower for installation and maintenance of low carbon investment projects like RE/EE, inadequate knowledge of system developers and end users about RE market conditions and availability of RE systems, poor availability of spare parts for operation and maintenance of renewable energy systems are considered to be one of the major challenge for successful implementation of such projects.
7. ***Rigid procurement and budgeting policies: Often tied down to very local and bureaucratic procedures which may be time consuming and lack of political will to undertake sustainable development projects as this may not be seen as a priority area and with little policy support.***
8. ***Public repayment concerns: Many City corporations may have a tight budgeting policy and could have problems in repaying the loans targeted specifically for city improvement schemes due to cost escalation and other immediate concerns.***

Perspective and approach towards low carbon financing is generally based on the assessment and control of risks, on the one hand, and the calculation and estimation of returns on the other. The resulting risk/return profile which determines the attractiveness for investments highlights the remaining uncertainties and establishes the conditions for the ULBs to secure the financing.

The three most important 'deal breakers' for investments have been found to be:

- Insufficient legal protection and framework for protection of investor rights;
- Lack of payment discipline and enforcement;
- Too few guarantees from governments or multilateral institutions.

Key regulatory risks experienced at local government level are:

- Weak and ever-changing regulatory frameworks;
- Right of government to override regulatory decisions;
- Lack of clarity about power of regulator;
- Regulator without necessary minimum skills, capacity and competence;
- Unilateral regulatory decisions undermining project and investment returns;

A Strategy aiming to attract more private sectors funding at local government needs to be formulated.

7. Case Studies/Projects

A few case studies of successful projects that have been financed in the urban sector have been highlighted in this Chapter.

7.1. SUSTAINABLE URBAN TRANSPORT PROJECT

(Demonstration Cities: Pimpri-Chinchwad, Pune, Naya Raipur, Indore and Mysore)

Project Name: Sustainable Urban Transport

Project Location: India

Project Start Date: December, 2007

Project End Date: September, 2012 (Implementation)

Project Description: Reduction of the growth trajectory of GHG emissions from the transport sector in India through the promotion of environmentally sustainable urban transport, strengthening government capacity to plan, finance, implement, operate, and manage climate friendly and sustainable urban transport interventions at national, state and city levels, and increasing the modal share of environmentally friendly transport modes in project cities. Projects aims to help developing world cities achieve their sustainable transport goals, through the dissemination of information about international experience, policy advice, training and capacity building and targeted work on sustainable transport projects within.

Funding Agency: International Bank for Reconstruction and Development (IBRD) / United Nations Development Programme (UNDP)

Total Project Cost: 375,800,000 USD

Type of Funding: Grant, Co- finance and loan

Implementing Agency: Ministry of Urban Development, Government of India

Current Status: Under Implementation

7.2. LOW CARBON CAMPAIGN FOR COMMONWEALTH GAMES 2010, DELHI

Project Name: Low Carbon Campaign for Commonwealth Games 2010 Delhi

Project Location: New Delhi, India

Duration: 9 Months, Starting from April, 2010.

Project Description: Development and promotion of a low carbon campaign for the 2010 Commonwealth Games as a means of inducing a behavioural change amongst the citizens, athletes and visitors for the adoption of environmentally sustainable practices.

Funding Agency: United Nations Development Program (UNDP)

Total Project Cost: 2,910,000 USD (Grant and Co finance)

Type of Funding: Grant and Co- financing

Implementing Agency: Commonwealth Games Organizing Committee,Government of NCT Delhi, Ministry of Environment and Forests, GoI.

Current Status: Successfully implemented

7.3. IND PROGRAMMATIC FRAMEWORK PROJECT FOR ENERGY EFFICIENCY IN INDIA(PROGRAM)

Project Name: IND Programmatic Framework Project for Energy Efficiency in India (PROGRAM)

Project Location: India

Approval Date: April 25, 2008

Executing Agency: Bureau of Energy Efficiency

Project Description: To promote energy efficiency in Buildings through increased market penetration of energy-efficient technologies, practices, products, and materials in the residential and commercial building markets, To increase deployment of energy efficient technologies and support adoption of energy-saving practices in the industrial sector (Small & Medium Enterprises (SMEs) and To Implement EE technologies and measures in Indian Railways.

Funding Agency: GEF Trust Fund

Project Status: Council Endorsed

7.4. CHILLER ENERGY EFFICIENCY PROJECT- UNDER THE PROGRAMMATIC FRAMEWORK FOR ENERGY EFFICIENCY

Project Name: Chiller Energy Efficiency Project - under the Programmatic Framework for Energy Efficiency

Project Location: India

Approval Date: April 24, 2008

Project Description: The Project will assist in accelerating the conversion of ODS-based chillers to new and more energy efficient technology through the provision of financial incentives, to address well-documented techno-economic barriers and overcome market barriers for Energy efficiency (EE). The project will also support the strengthening of national capacity for carbon finance intermediation which will further ensure sustainability resulting in a permanent transformation of the chiller market. The sustainability of this endeavor is supported by a robust policy framework and would be further enhanced through the capture of carbon finance revenues.

Funding Agency: GEF, IBRD - The World Bank
Total Project Cost: GEF Project Grant: 6,300,000 US$

Type of Funding: Co financing

Implementing Agency: ICICI Bank

Project Status: Under Implementation

7.5. IND ENERGY EFFICIENCY IMPROVEMENTS IN COMMERCIAL BUILDINGS – UNDER THE PROGRAMMATIC FRAMEWORK FOR ENERGY EFFICIENCY

Project Name: IND Energy Efficiency Improvements in Commercial Buildings - under the Programmatic Framework for Energy Efficiency

Project Location: India

Approval Date: January 27, 2009

Description: Operationalization of the Energy Conservation Building Code (ECBC) for new commercial buildings.

Funding Agency: GEF Agency, UNDP - United Nations Development Programme
Project Cost: 20,017,500 US$

Type of Funding: Co financing

7.6. FINANCING ENERGY EFFICIENCY AT MICRO, SMALL AND MEDIUM ENTERPRISES (MSMEs)

Project Name: Financing Energy Efficiency at Micro, Small and Medium Enterprises (MSMEs)

Project Location: India

Project Approval Date: November 13, 2008

Description: To increase demand for energy efficiency investments in target micro, small and medium enterprise clusters and to build their capacity to access commercial finance.

Funding Agency: GEF Agency, IBRD - The World Bank
Total Project Cost: 68,800,000 US$

Type of Funding: Grant and Co financing

Implementing Agency: India Bureau of Energy Efficiency

7.7. UNEP Indian Solar Loan Programme

Project Name: UNEP Indian Solar Loan Programme

Project Location: India

Project Approval Date: launched in April 2003

Description: to help accelerate the market for financing solar home systems in southern India

Funding Agency: UNEP Energy Branch, UNEP Risoe Centre (URC), Canara Bank and Syndicate Bank.

Total Project Cost: $7.6 million (UNEP grant – $1.5 million)

Type of Funding: Grant and Co financing

Implementing Agency: Syndicate or Canara bank

8. Recommendations & Conclusions

A strategy aiming to attract more private sectors funding at local government level should provide the following incentives:

1. ***Restructuring and Reorganization of Municipal Sector:*** to provide more functional, autonomous, dedicated budget and manpower and greater citizen participation

2. ***Lower investment costs for investors and project developers:*** instruments include subsidies, tax measures, feed-in or quota schemes and a use of the market based mechanism like Clean Development Mechanism etc;

3. ***Lower transaction costs*** by developing new and innovative tools to address the small-scale nature of RE/EE projects.

4. ***Fewer risks for investors:*** governments and development organizations can provide guarantees, while private investors should get familiar with the specific nature of low carbon investment projects in order to better assess, control and price the risks and returns;

5. ***More investor confidence***: By adopting legal frameworks, setting long-term targets and incentives; the involvement of the investors will depend highly on the perceived stability and commitment of the government in the medium and long term.

6. ***Simplifying Administrative Procedures***: Single window clearance for all kind of incentives and benefits to be made available to ULBs.

7. ***Studies on Energy Needs and Greenhouse Gas Inventorization:*** There is a need for more studies on energy needs and greenhouse inventorization to know the present scenario.

8. ***Simplified Procurement and Budgeting Policies: This*** will make the entire process simpler and easier to execute city based plans.

9. ***Awareness***: There is a clear need for capacity-building among a range of stakeholders, including local bankers, industries, municipal officials, engineers, transmission system operators, electrification agencies and NGOs.

10. ***Dedicated and Specialized Staff***: Required for challenging projects like installations of solar panels etc will make the ULBs self competent and would not require the need to hire external experts.

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UNDP 'Fast-start finance', available at: www.faststartfinance.org

UNDP/GEF Small Grants Programme project database, available at: http://sgp.undp.org/index.cfm?mo dule=Projects&page=AdvancedSearch

UNFCCC Finance Portal for Climate Change, available at: http://unfccc.int/cooperation_support/financial_mechanism/finance_portal/items/5824.php.

World Bank / UNDP Climate Finance Options database, available at: www.climatefinanceoptions.org/ cfo.

Institute for Global Environmental Strategies (IGES) CDM Programme database: http://www.iges.or.jp/ en/cdm/report_cdm.html

UNEP-Risø CDM/JI Pipeline Analysis and Database: http://cdmpipeline.org

UNFCCC CDM and JI Project Activities databases:http://cdm.unfccc.int/Projects/projsearch.html

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Tirpak, D. and H. Adams (2008). Bilateral and Multilateral Financial Assistance for the Energy Sector of Developing Countries. Climate Policy, No. 8 Retrieved from:*www.ibcperu.org/doc/isis/10532.pdf*

Annexure I

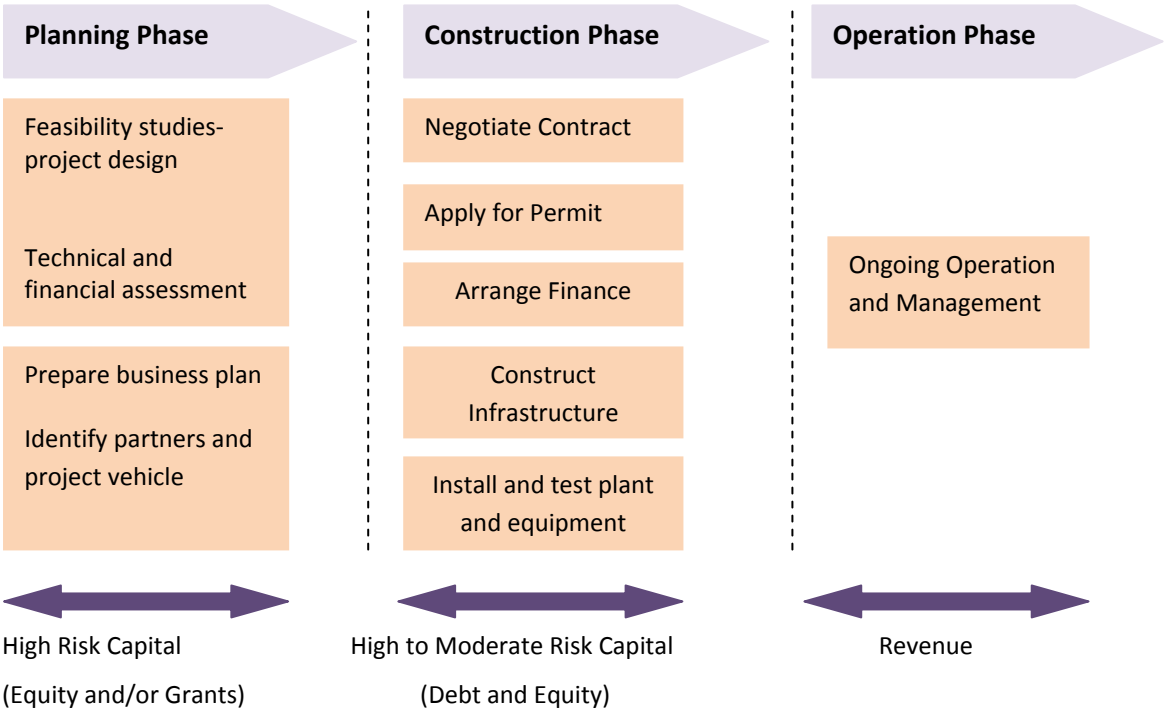
Introduction to Financing Models

This section provides an outline of the types of finance available for conventional projects, the parties involved in financing a project, and typical models used for financing projects. The section is intentionally generic in order to highlight the traditional means that are commonly applied to finance projects.

(i) The Conventional Project Cycle

The conventional project cycle generally has three phases, with different forms of finance associated with each phase which are described below in the figure

The Conventional Project Cycle



1. Planning Phase involves
   - ✓ Feasibility studies:
   - ✓ Project design
   - ✓ Technical feasibility
   - ✓ Financial feasibility
   - ✓ Business plan
   - ✓ Identify partners and project vehicle
   - ✓ Contracts (fuel/technology supply, construction, operation, sales or other performance contracts)
   - ✓ Permits (planning permission, health & safety, emissions permits and/or other environmental licenses, subject to environmental impact assessment, if applicable)

- ✓ Finance (identifies sources of finance, carry out risk assessment, management and mitigation)

2. Construction Phase
   - ✓ Construct associated infrastructure, install and test plant & equipment

3. Operation Phase
   - ✓ Ongoing operation & maintenance

(ii) Parties Involved in Financing a Project

The key parties involved in a project are shown diagrammatically in Figure 9 below. Each party involved in financing a project is explained in further detail below.

Parties Involved in Financing a Project

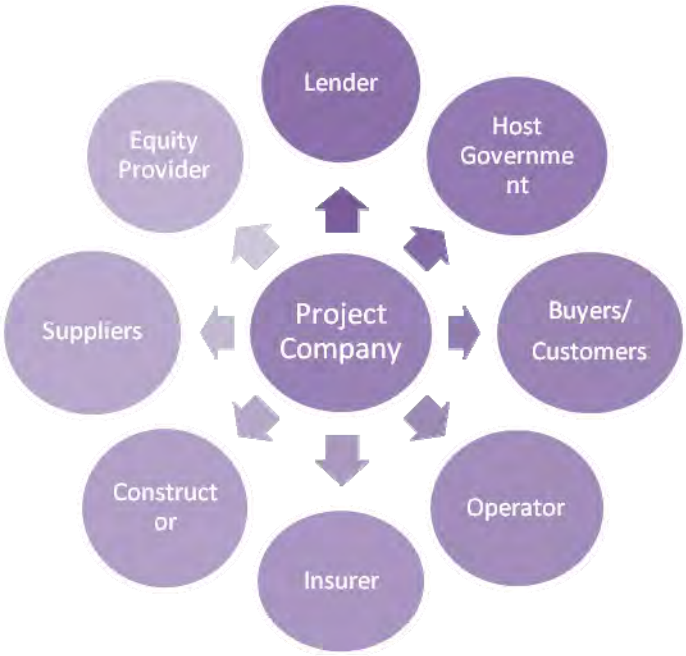


Table: Brief Description of Parties Involved in Financing of a Project

Project Company/Project Developer	The project company is often a Special Purpose Vehicle (SPV, also known as a Special Purpose Entity, SPE, or Special Purpose Company, SPC) such as a joint venture company or a limited partnership set up specifically to undertake the project. Creating a Special Purpose Vehicle may be useful in order to keep a project at arm's length from the project sponsors, for legal, tax or financial reasons. Alternatively, the project entity may be an individual, an existing company, a government agency, and a charity, NGO or community organisation. A project may also encompass several different entities. In such cases it is critical to have clear contractual arrangements in place specifying how the different entities are going to work together to implement the project.
Lender	If the project is financed through debt, one or more banks may be involved in providing this. A loan from a group of banks is known as a syndicated loan. Typically one of the banks will take the lead role in arranging the finance and syndication agreements, while another (called the engineering or technical bank) will monitor the technical aspects of the project. Others may be appointed to deal with other specific aspects such as insurance. Other types of lenders may include individuals, corporations, contractors, community groups and institutional investors such as the World Bank and other international agencies.
Equity provider	Equity may be provided by project sponsors or third party investors. Equity providers will wish to ensure that the project produces a return on their investment as set out in the business plan or prospectus.
Constructor	Construction is usually carried out by specialist contractors who have responsibility for the completion of the works, and often have to assume liability for finishing construction on time and to budget. Lenders will usually require contractors to demonstrate a good track record in completing the same or similar project activities.
Operator	Operation of the project may be carried out by the project entity, one of the sponsors, or a third party appointed to be responsible for the operation and maintenance of the project facilities once completed.
Supplier	Various companies will supply goods and services to the project. Lenders will generally prefer supplier agreements and contracts to be in place for the delivery of essentials such as fuel and equipment. Equipment suppliers will generally be required to have a track record of supplying the relevant equipment and to provide equipment performance guarantees.
Buyer	A project may produce one or more outputs. Lenders will wish to have contracts in place with buyers of the outputs constituting the majority of the project's future cash flow. The nature of these contracts will be subject to particular scrutiny and the terms of a loan may well be dependent upon factors such as the minimum price level in a contract and how various risks are apportioned between the buyer and the project entity. In order for a lender to place any reliance on a purchase agreement as an indication of a project's ability to repay a loan, the lender will need to be satisfied as to the credit-worthiness of the buyer.
Insurer	Insurers can assist in identifying and mitigating risks associated with the project. If a risk is to be mitigated by purchasing insurance, the lender will need to be satisfied as to the track record and credit-worthiness of the insurer.

Host government	The objectives and role of the host government will vary but may involve economic, social and environmental guidelines and issuance of relevant consents, permits and licenses. The host government may be involved through state owned or controlled companies that may take on any of the above roles in relation to the project.
Rating agencies	The rating agencies (e.g. Moody's, Standard & Poor's, Fitch Ratings) may be involved if the financing of the project involves the issue of securities.

(iii) Financing Requirements

In most of the cases the largest costs associated with a project are incurred at the construction stage. At this stage, for a commercially/financially viable project, lenders and investors will only provide finance on the expectation that, on completion of construction and commissioning, the project will go on to generate revenue. This revenue should at least be sufficient to cover ongoing operation and maintenance costs for the operation phase, and also to provide a commercial return to the lenders and investors.

During the early stages of planning a project, the chances of the project not proceeding (for example because the necessary permits cannot be obtained), and therefore not generating any future revenue, are significantly higher. Therefore, although the costs associated with the planning stage (typically in the hundreds of thousands of dollars) are much lower than construction costs, the risk is much higher.

Depending on the type of financing, the project sponsor will have to present different kinds of data and documentation to the lender at different stages. For example, for project financing, a minimum requirement for international banks is a business plan which includes at least feasibility studies, financial statements and financial projections. For corporate finance on the other hand, relationship banks may be more focused on collateral and long-term client relationships.

(iv)Types of Finance Available

In general, there are three forms of finance that can be used to develop projects: grants, loans (debt) and equity. Most projects will incorporate a varying mix of two or more of these sources of finance.

a. Grants

A grant is an amount of money provided by a third party to a project, person or organization that contributes to the objectives of the third party. In general, grants are provided to projects that are commercially marginal, and they do not need to be repaid (provided the stated purpose of the grant funding is achieved). However, in some cases grants may be convertible to loans or equity if the project achieves commercial success (if so, this will be stated in the terms and conditions of the grant).

Grants are typically provided by government organizations and only cover a percentage of project costs; other forms of finance are also therefore required.

b. Loans (debt)

A loan or debt is an amount of money provided by a third party to a project, person or organization that must be repaid either during or at the end of its agreed term, plus interest over the period of the borrowing. The majority of loans to projects are provided by banks. There are many different types of loans, including:

- **Senior loans or debt**: The 'senior' debt is the debt which must be serviced before any other debt or equity in the project. This is generally a precondition of loans by large local or international banks. The debt is usually secured over the assets of the project, which can include the contracts for sale of outputs from the project. However, it may also be secured over the assets of a project sponsor. Because the debt ranks highest in priority for repayment and is secured over assets, it has the lowest risk of the commercial financing instruments, and hence usually represents the cheapest source of capital. The interest rate will typically be based on the interest rates prevailing in the market for the currency in question, plus a margin depending on the perceived risk of the project. Other variables in a loan include fixed or floating interest rates, the term of the loan, 'stepped' interest rates over the term, the repayment schedule, interest and/or repayment 'holidays', and agreed 'trigger points' at which the bank can make certain demands on the borrower to safeguard its investment, culminating in bankruptcy proceedings if necessary.

- **Junior (or subordinate) loans or debt**: The 'junior' or 'subordinate' debt has priority for repayment after senior debt (but still before equity). It is either unsecured, or has a lower priority claim over the assets of the project than senior debt. This type of loan is often used to bridge the gap between what senior debt lenders is willing to provide and the equity that is available for a project. As the risk of non-payment is higher than for senior debt, junior debt requires a higher rate of return (interest rate). Alternatively, lenders of junior debt may expect to share some of the potential 'upside' of a project by holding options to convert the debt to equity if the project exceeds expectations.

- **Low interest loans or debt***:* Loans at preferential (below market) rates may sometimes be obtained from multilateral banks for projects which meet particular economic, social or environmental objectives.

- **Up-front payments***:* For some projects, a buyer of some of the outputs from the project may be willing to pay up-front for future delivery of those outputs. Such up-front payments can be used to finance the project's up-front costs. The advantage of this form of finance is that it does not need to be repaid in cash, only 'in kind'. The disadvantage is that the buyer will typically expect a substantial discount on the future price of the output, in order to reflect both the cost of capital (i.e. the cost of providing cash now rather than at some point in future) and the risk of non-delivery.

- **Lease finance**: Lease finance is similar to senior debt, except that instead of lending cash, the lessor 'lends' (or rather, leases) an asset (e.g. land, buildings or equipment) in return for an agreed cash flow or 'rent'. The lessor continues to own the asset and can reclaim it in the event

of non-payment by the lessee. Depending on the terms of the lease, the lessee may or may not have the option to convert the lease to full ownership on payment of a final amount at the end of the lease. Lease financing is often provided by equipment manufacturers in order to facilitate the purchase of an asset by the project.

c. Equity

Equity is capital raised from shareholders. Shareholders have only a residual claim to the assets of the project company – in other words, they are last in line after other stakeholders such as senior and junior lenders have been repaid. This represents the highest level of risk, and the expected returns for equity holders are accordingly higher than for lenders. From the project developer's point of view, equity has the advantage of not having to be paid back, thereby freeing up cash flow, which is often particularly important during the early years of a project.

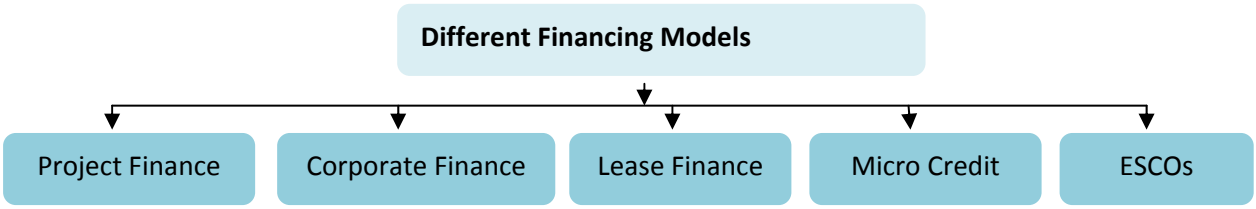
Equity providers receive returns through dividends (distributions of cash from after-tax profits), or from the sale of shares. Typically, equity providers will only cover part of a project's total cost, as the rate of return on equity can be increased ('geared' up or leveraged') by increasing the amount of debt in the project finance structure.

(v) Different Financing Models

The common structures used to finance projects are:

- Project financing
- Corporate financing
- Lease financing
- Micro Credit
- ESCO

Different Financing Models



a. Project financing

The term 'project finance' (or 'project financing') refers to financing structures wherein the lender has recourse only or primarily to the assets of the project and looks primarily to the cash flows of the project as the source of funds for repayment.

b. Corporate Financing

Corporate financing, also known as on-balance sheet financing, is the use of internal company capital to finance a project directly, or the use of internal company assets as collateral to obtain a loan from a bank or other lender.

c. Lease financing

Leasing essentially involves the supplier of an asset financing the use and possibly also the eventual purchase of the asset, on behalf of the project sponsor. Assets which are typically leased include land, buildings, and specialised equipment. Ownership of the asset remains with the lessor unless purchased by mutual agreement at the end of the lease. A lease may be combined with a contract for operation and maintenance of the asset. It may also be a sub-set of a broader financing model (e.g. project finance or corporate finance).

d. Micro-credit

Micro-credit is similar to traditional bank debt, but aimed at providing very small amounts of credit to lenders with limited ability to pay, particularly in rural areas. Some microcredit models rely on peer group lending – borrowers form a group that then applies for the loan, and the entire group is responsible for payment of the loan. Many focus on women as the primary lenders, having found that women are generally a good credit risk and that loans to women tend to benefit the whole family.

e. ESCO/RESCO

An ESCO, Energy Service Company is typically used to deliver demand-side energy efficiency projects, where the result of an investment is energy savings for a customer. Since the customer may not have the will (or the financial capacity) to make the energy-saving investment, an ESCO can offer to undertake the project, receiving revenue from the customer in proportion to energy savings, as set out under an Energy Performance Contract.

Annexure II

Details on Different International Funding Organizations

Name of the Fund /Loan/Scheme	The Special Climate Change Fund (SCCF)
Areas Applicable	There are two active funding windows under SCCF: Adaptation window (SCCF-A) and Technology Transfer window (SCCF-B). The SCCF supports both long-term and short-term adaptation activities in water resources management, land management, agriculture, health, infrastructure development, fragile ecosystems, including mountainous ecosystems, and integrated coastal zone management.
Description of Fund / Scheme	The Global Environment Facility (GEF) Trust Fund was established in 1994, and succeeded the Global Environment Trust Fund (GET) of the pilot phase (1991-1994). The GEF Trust Fund is replenished every 4-years. The GEF also manages two separate adaptation-focused Funds under the UNFCCC — the Least Developed Countries Fund (LCDF); and the Special Climate Change Fund (SCCF). SCCF was established under the UNFCCC in 2001 to finance activities, programs, and measures relating to climate change. All adaptation related work for the GEF-5 2010–14 cycle is to be financed through the SCCF. Objectives of the SCCF are, • To support adaptation and technology transfer projects • Programs that are country-driven, cost-effective and integrated into national sustainable development and poverty-reduction strategies; and, take into account national communications or NAPAs and other relevant studies and information provided by the Party.
Implementing Agency / Fund Manager	The Global Environment Facility (GEF) develops projects through ten Implementing Agencies: UNDP, UNEP,the World Bank, the African Development Bank (AfDB), ADB, the European Bank for Reconstruction and Development (EBRD), the Inter-American Development Bank (IAD), the International Fund for Agricultural Development (IFAD), the United Nations Food and Agricultural Organization (FAO), and the United Nations Industrial Development Organization (UNIDO)
Application Procedure	The proponent of the project – a person or entity– pursues a partnership with one of the ten GEF Agencies and GEF Operational Focal Point endorsement of the project concept. Submission of the concept in Project Identification Form (PIF) if a request for a project preparation grant is being submitted (a PPG cannot be granted before a PIF is approved.) Please refer to the website (see link below) for more details. 1) http://www.adb.org/themes/environment/environmental-initiatives-partnerships/adb-gef 2) http://www.thegef.org/gef/SCCF

Name of the Fund /Loan/Scheme	JICA two steps loan
Areas Applicable	Climate change adaptation and Mitigation projects
Description of Fund / Scheme	Japan International Cooperation Agency (JICA) will actively support mitigation, adaptation and mechanisms to accelerate mitigation and adaptation by developing countries. JICA will promote such measures according to the three guiding principles of 1) climate compatible sustainable development, 2) comprehensive assistance to meet the diverse needs in developing countries, and 3) collaboration with development and climate partners, and by utilizing the experiences, achievements and technologies of Japan and JICA
Implementing Agency / Fund Manager	Japan International Cooperation Agency (JICA)
Application Procedure	Please refer to the website (see link below) for more details, 1)http://www.jica.go.jp/english/our_work/climate_change/pdf/direction.pdf 2)http://www.jica.go.jp/english/our_work/types_of_assistance/oda_loans/overseas/types.html

Name of the Fund /Loan/Scheme	JICA Grant Aid
Areas Applicable	infrastructure, environment, education and other areas
Description of Fund / Scheme	Grant Aid is financial cooperation implemented by the Japanese government with no obligation for repayment by the developing country concerned. Targeted mainly at developing countries with low income levels, this type of aid covers a wide range of cooperation related to the future of developing countries, including development of social and economic infrastructure, such as the construction of hospitals or bridges, as well as education, HIV/AIDS awareness, children's health, the environment and other areas
Implementing Agency / Fund Manager	Japan International Cooperation Agency (JICA)
Application Procedure	Please refer to the website (see link below) for more details, http://www.jica.go.jp/english/our_work/types_of_assistance/grant_aid/index.html

Name of the Fund /Loan/Scheme	Green Climate Fund (GCF) * * It is expected that the GCF will be fully operational in 2014
Areas Applicable	Climate change Adaptation and Mitigation
Description of Fund / Scheme	At the sixteenth session of the Conference of the Parties (COP) to UNFCCC, held in Cancun, Mexico, from 29 November to 10 December 2010, the Parties decided to establish the Green Climate Fund. The Fund will promote the paradigm shift towards low-emission and climate-resilient development pathways by providing support to developing countries to limit or reduce their greenhouse gas emissions and to adapt to the impacts of climate change, taking into account the needs of those developing countries particularly vulnerable to the adverse effects of climate change.
Implementing Agency / Fund Manager	Green Climate Fund Manager / Board (UNFCCC)
Application Procedure	Please refer to the website for more information, http://gcfund.net/home.html or Contact : Interim Secretariat of the Green Climate Fund P.O. Box 260124 53153 Bonn, Germany Telephone: +49 228 815-1371 Email: isecretariat@gcfund.net

Name of the Fund /Loan/Scheme	The International Climate Fund
Areas Applicable	adaptation, low carbon development and forestry projects
Description of Fund / Scheme	The UK Government has set up the International Climate Fund (ICF) to help developing countries tackle climate change and reduce poverty. UK Government will work in partnership with developing countries to take action to reduce carbon emissions, to help people adapt to the effects of climate change and to tackle deforestation. The UK will provide £2.9 billion of international climate finance through the ICF from April 2011 to March 2015.
Implementing Agency / Fund Manager	Proposals for ICF expenditure will be prepared for Ministers by an ICF Board comprising of Directors General from DECC, DFID, FCO, Defra, HMT, and chaired by DFID.
Application Procedure	Proposals for ICF expenditure will be prepared for Ministers by an ICF Board comprising of Directors General from DECC, DFID, FCO, DEFRA and Her Majesty's Treasury (HMT). Please refer to the website for application procedure, 1)http://www.decc.gov.uk/en/content/cms/tackling/international/icf/icf.aspx 2) http://www.decc.gov.uk/assets/decc/11/tackling-climate-change/international-climate-change/3390-international-climate-fund-implementation-plan-201.pdf

Name of the Fund /Loan/Scheme	United Nations Environment Programme
Areas Applicable	Climate Change Adaptation, Climate Change Mitigation, Ecosystem Management, Environmental Governance
Description of Fund / Scheme	Projects addressing climate change make up a large group of GEF - funded projects. As the financial mechanism for the United Nations Framework Convention on Climate Change (UNFCCC) , GEF receives guidance from the COP on policy, program priorities, and eligibility criteria related to the Convention. Climate change projects are designed to reduce the risks of global climate change while providing energy for sustainable development. GEF climate change projects are organized into four areas: • Removing barriers to energy efficiency and energy conservation; • Promoting the adoption of renewable energy by removing barriers and reducing implementation costs; • Reducing the long-term costs of low greenhouse gas emitting energy technologies; and • Supporting the development of sustainable transport.
Implementing Agency / Fund Manager	UNEP
Application Procedure	For more details please refer to the website: http://www.unep.org/dgef/ClimateChangeMitigation/tabid/1699/Default.aspx Or contact : UNEP 55 Lodi Estate New Delhi-110003 India Tel: 91-11-46532333

Name of the Fund /Loan/Scheme	The Climate Change Fund
Areas Applicable	Climate Change Adaptation and Mitigation, Transport, Energy, Urban, Agriculture and Natural Resources Management
Description of Fund / Scheme	The Climate Change Fund (CCF) was established in May 2008 to facilitate greater investments in developing member countries to effectively address the causes and consequences of climate change. The CCF is a key mechanism to pool resources within ADB to address climate change through technical assistance (TA) and grant components of investment projects. CCF will focus on three areas: • Clean Energy Development: prioritizing interventions that help developing member countries achieve energy security and transition to low carbon economies through cost effective investments • Reduced Emissions from Deforestation and Degradation: Prioritizing interventions that maintain, restore and enhance carbon-rich natural ecosystems, especially forests and prevent these carbon sinks from becoming sources of GHG emissions • Improved Landuse Management and Adaptation: Focusing on interventions that will enhance the climate resilience of infrastructure and other investments, community livelihoods and key sectors
Implementing Agency / Fund Manager	ADB
Application Procedure	User Departments (ADB departments that apply for CCF funding) will prepare a proposal using the application form and draft concept paper in standard ADB concept paper format and will submit them to the CCF Manager. Applications will be reviewed in batches. Due dates for applications are: 31st January, 31st March, 31st May, 31st July. 30th September, 30th November. Successful applications will receive confirmation from the Secretariat within approximately 5 weeks of the relevant deadline Please refer to the website (see link below) for more details.http://beta.adb.org/site/funds/financing-partnership-facilities/climate-change-fund

Name of the Fund /Loan/Scheme	Loans & grants (AFD's strategy to combat climate change : 50% of AFD's allocations to developing countries- climate change policy loans)
Areas Applicable	Energy,Trnasport,EE,RE,Bio-diversity, climate change adaptation and Mitigation
Description of Fund / Scheme	• AFD is launching an ambitious strategy and action plan for 2012-2016* based on three core pillars. The operational application of these pillars is tailored to the Geographical areas of operation: 1) An objective of a sustainable financial commitment to the climate representing 50% of AFD's allocations to developing countries and 30% of the allocations of proparco, its private sector financing arm; 2)A systematic measurement of the carbon footprint of funded projects using a robust and transparent methodology; 3) A policy of selecting projects according to their climate impacts, taking into account the level of development of the countries in question. • AFD uses a wide variety of financial instruments to intervene in India. Some of them are: The concessional sovereign loans & The Concessional Non Sovereign Loans • Grants for technical assistance granted from time to time come in support of projects financed loans for technology exchange and capacity building in areas of intervention in India. Finally, subsidies also contribute to the support of NGO activities.
Implementing Agency / Fund Manager	AFD
Application Procedure	For all the activities of the AFD in India, the technical conditions must be consistent with the eligibility rules of the DAC (Development Assistance Committee) of the OECD and have been strictly regulated in the Memorandum of 2008 agreement currently being renegotiated. For more details please visit: 1) http://www.afd.fr/home/pays/asie/geo-asie/inde/afd-en-inde/outils-financement 2) http://www.afd.fr/home/projets_afd/AFD-et-environnement/changement_climatique/strategie_climat

Name of the Fund /Loan/Scheme	The Interact Climate Change Fund (ICCF)
Areas Applicable	Climate mitigation; adaptation; research, development and innovation (RDI); technology transfer and co-operation; and carbon markets
Description of Fund / Scheme	In May 2010 the EIB agreed to establish a joint climate change fund with the Agence Française de Développement (AFD) and European Development Finance Institutions (EDFI). The parties intend to establish before the end of 2010 an investment matching facility – called the Interact Climate Change Fund - to invest in private sector climate change projects in Africa, the Caribbean and the Pacific, Asia and Latin America. The institutions share a joint interest in financing climate change and climate efficiency projects with the aim of creating a portfolio of climate friendly private sector investments in target countries. The institutions will further promote use of clean technology as an integral part of economic development and provide long term financing for renewable energy projects in countries facing acute energy shortages and restricted energy access, further contributing to economic development
Implementing Agency / Fund Manager	European Investment Bank
Application Procedure	No special formalities are involved for the submission of applications to the EIB for individual loans. Project promoters are required to provide the Bank's Operations Directorate with a detailed description of their capital investment together with the prospective financing arrangements. For further details of required documentations please refer, http://www.eib.org/attachments/application_documents_en.pdf

Name of the Fund /Loan/Scheme	Climate Investment Funds (CIF)
Areas Applicable	Climate change mitigation ,Clean technology
Description of Fund / Scheme	The Climate Investment Funds approved in July 2008, are a collaborative effort among the multi-lateral development banks and member countries. They aim to bridge the financing and learning gaps for low-carbon and climate-resilient development between now and a post-2012 global climate change agreement. CIF are designed as an interim measure for the banks to demonstrate what can be achieved through scaled-up financing blended with development finance. The CIF comprise two distinct trust funds and provide a structure through which concessional financing may be made available for both low carbon growth and climate resilience activities. Each of the funds – the Clean Technology Fund (CTF) and Strategic Climate Fund (SCF) has a specific scope and objective, as well as its own governance structure.
Implementing Agency / Fund Manager	World Bank
Application Procedure	MDBs' jointly assess interested eligible countries' investment potential to meet CTF investment criteria. For more details please refer to the website: http://www.worldbank.org.in/WBSITE/EXTERNAL/COUNTRIES/SOUTHASIAEXT/INDIAEXTN/0,,contentMDK:22019695~pagePK:141137~piPK:141127~theSitePK:295584,00.html or https://www.climateinvestmentfunds.org/cif/CTF_Governance

Name of the Fund /Loan/Scheme	United Nations Development Programme
Areas Applicable	Democratic governance, Poverty reduction, HIV/AIDS, Disaster Risk Management, Environment- chemicals management, natural resource management and biodiversity, climate change mitigation-renewable energy and energy efficiency
Description of Fund / Scheme	The programme supports initiatives to reduce greenhouse gas emissions in energy-intensive industries, transport and commercial sectors by promoting energy-efficient and environment friendly technologies, and reducing vulnerability to the negative impact of climate change by mainstreaming adaptation in different development initiatives. Support for the conservation and sustainable use of natural resources focuses on bio diversity conservation, strengthening relevant institutional structures, creating conservation incentives and reducing land degradation through cross-sectoral initiatives. UNDP also supports national initiatives to phase out ozone depleting substances and reduce persistent organic pollutants.
Implementing Agency / Fund Manager	UNDP
Application Procedure	For details regarding application procedure please refer: http://www.undp.org.in/aboutus/un_partnership Or contact : United Nations Development Programme (UNDP) Post Box No. 3059, 55 Lodhi Estate New Delhi, India. Pin Code - 110 003 Tel: 91 11 46532333 Fax: 91 11 24627612 Email: info.in@undp.org

Name of the Fund /Loan/Scheme	Asia's regional environmental strategy,
Areas Applicable	Climate change, Nature and biodiversity, Environment and health and Natural resources and waste, energy efficiency, renewable energy, technology transfer, and water management
Description of Fund / Scheme	Funding of about 102 million Euro (US$131.6 million) has been allocated for the first four years of Asia's regional environmental strategy, which comprises two programmes: 'SWITCH Asia' which focuses on sustainable consumption and production, and 'Forest Law Enforcement, Governance and Trade Asia' (FLEGT) which promotes sustainable forest management.
Implementing Agency / Fund Manager	European Commission
Application Procedure	For application queries please visit: https://webgate.ec.europa.eu/europeaid/online-services/index.cfm?ADSSChck=1278513838903&do=publi.welcome&userlanguage=en
Any Other Relevant Information	Registration in the EC's 'Potential Applicant Data On-Line Registration' (PADOR) is required prior to submission of concept notes. PADOR is an on-line database in which organisations register themselves and update regularly their data through the Europeaid website.

Name of the Fund /Loan/Scheme	KFW's Grants, Loans for Environment and Climate
Areas Applicable	Climate Change, Environment, Water, Renewable Energy, Microfinance
Description of Fund / Scheme	Environmental and climate-related aspects are increasingly important in promoting sustainable development in partner countries: More than 60 per cent of all new commitments by KFW Entwicklungsbank are geared towards environmental and climate projects. For More information, please visit the website http://www.kfw-entwicklungsbank.de/ebank/EN_Home/Climate_Change/index.jsp
Implementing Agency / Fund Manager	Kreditanstalt für Wiederaufbau (KfW)
Application Procedure	KfW's project cycle is as follows: • The German Government formulates country strategies which usually consist of 3 focal areas in each partner country. KfW cannot finance anything outside the scope of these country strategies. • With regards to project procurement, ideally a city approaches KfW with a project proposal. Often, KfW identifies projects during missions or will send out a fact finding mission to identify needs and develop new projects. More recently, CDIA will also approach them with project proposals. • Once a project idea is formulated, a (pre-) feasibility study financed with grant fundsis conducted. If the feasibility is confirmed, they propose the project to the German Government. At the same time, the city or partners in the country initiate their own internal approval procedures. If all sides agree, funds for the projects are pledged in bi-lateral government negotiations. • After that, KfW appraises the project and sends an appraisal report to the German Government. If this is positive, they enter into loan negotiations. They have different grant and loan products depending on the financial strength of the country that they lend to. Then consulting services are procured and implementation begins. • Some projects are jointly implemented with GTZ who take care of technical assistance at national and local levels. However, KfW also has grant funds available to train partners. A full project cycle usually takes 5 years. For more details please visit the website: http://www.kfwentwicklungsbank.de/ebank/EN_Home/Countries_and_Programmes/Asia/India/index.jsp

Name of the Fund /Loan/Scheme	Loan
Areas Applicable	Infrastructure, renewable energy, clean energy, energy and water efficiency, sustainable agriculture and forestry, low-income housing
Description of Fund / Scheme	IFC in South Asia has concentrated on low-income, rural, and fragile regions while building infrastructure and assisting public-private-partnerships; facilitating renewable energy generation; promoting cleaner production, energy and water efficiency; supporting agriculture and sustainable forestry; creating growth opportunities for small businesses; reforming investment climate; encouraging low-income housing; and making affordable healthcare accessible. IFC's strategy in South Asia is built on three pillars: • IFC aims to promote economic inclusion at the base of the pyramid, particularly in the low income states of India • Help address climate change impacts • Encourage global and regional integration including promoting investments from South Asia into Africa
Implementing Agency / Fund Manager	International Finance Corporation
Application Procedure	For details please refer to the website: http://www1.ifc.org/wps/wcm/connect/REGION__EXT_Content/Regions/South+Asia/ Or contact : ICF South Asia Maruti Suzuki Building 3rd & 4th floor 1 Nelson Mandela Road Vasant Kunj, New Delhi 110 070 Tel: +91 11 4111 1000/ 3000 Fax: +91 11 4111 1001/ 3001
Any Other Relevant Information	The committed portfolio for IFC's own account, as of June 30 2010 is 3,932.8 millions USD

Name of the Fund /Loan/Scheme	Clean Energy Financing Partnership Facility (CEFPF)
Areas Applicable	Mitigation, Energy , Energy Efficiency , Fuel Switching , Renewable Energy
Description of Fund / Scheme	The CEFPF was established in 2007 to help improve energy security in developing member countries and decrease the rate of climate change. CEFPF resources are also intended to finance policy, regulatory, and institutional reforms that encourage clean energy development. Potential investments include: • Deployment of new clean energy technology • Projects that lower the barriers to adopting clean energy technologies • Projects that increase access to modern forms of clean and energy efficient energy for the poor • Technical capacity programs for clean energy
Implementing Agency / Fund Manager	ADB
Application Procedure	CEFPF resources are used to service DMCs and can be tapped through ADB's operations department. CEFPF/CCF reviews applications in six (6) batches throughout the year. Applications should be submitted (including application form and concept paper) to the Secretariat on or before the following deadlines: January 31st, March 31st, May 31st, July 31st, September 30th, November 30th Please refer to the website (see link below) for more details. 1) http://www.adb.org/site/funds/funds/clean-energy-financing-partnership-facility

Name of the Fund /Loan/Scheme	South Asia Clean Energy Fund (SACEF)
Areas Applicable	Energy Efficiency technology and services and renewable energy generation.
Description of Fund / Scheme	South Asia Clean Energy Fund (SACEF) managed by the Global Environment Fund (GEF), a manager with 20 years of successful investments in the environment sector and services around the world. SACEF will invest in SMEs providing environmental products and services, energy efficiency technology and services and renewable energy generation. India will be the main target country.
Implementing Agency / Fund Manager	Global Environment Fund Manager
Application Procedure	Please refer to the website for application procedure, http://www.globalenvironmentfund.com/ or Contact : Global Environment Fund 5471 Wisconsin Avenue, Suite 300 Chevy Chase, MD 20815 Tel: 240-482-8900 Fax: 240-482-8908 Email : gmcpherson@gefdc.com

Name of the Fund /Loan/Scheme	The Global Climate Partnership Fund
Areas Applicable	energy efficiency and renewable energy projects
Description of Fund / Scheme	GCPF is an innovative public-private partnership dedicated to mitigating climate change through a reduction of greenhouse gas emissions in emerging and developing markets. GCPF aims to enable an environmentally friendly economic growth in these countries. The final beneficiaries of GCPF mainly comprise households, home owner associations, leasing companies, SMEs (including ESCOs and small renewable energy companies) as well as municipal entities (all of which are established and have primary operations in the locations of the target countries) and which require financing in order to improve energy efficiency performance of their (or their clients') buildings or processes, or to produce renewable energy.
Implementing Agency / Fund Manager	The Global Climate Partnership Fund was initiated by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) and KfW Entwicklungsbank.
Application Procedure	Please refer to the website for direct investment Procedure, 1) http://gcpf.lu/home.html 2) http://gcpf.lu/investment-process-direct-investments.html

Name of the Fund /Loan/Scheme	The Water Financing Program (Water Financing Partnership Facility (WFPF) trust Fund)
Areas Applicable	The WFPF's resources finance direct project support and program quality support. Direct project support covers the WFP's three investment areas: • Rural water (rural water supply and sanitation and irrigation and drainage), • Urban water (urban water supply, sanitation and wastewater management), and • Basin water (water resources development and management, flood management, wetlands and watershed protection, and hydropower generation).
Description of Fund / Scheme	The WFPF was established in 2006 to bring in additional financial resources and technical support for components of investment projects, technical assistance operations, knowledge management, and regional cooperation
Implementing Agency / Fund Manager	ADB
Application Procedure	Please refer to the website (see link below) for more details, 1) http://www.adb.org/site/funds/funds/water-financing-partnership-facility 2) http://www.adb.org/sectors/water/funds

Name of the Fund /Loan/Scheme	Renewable Energy Asia Fund (REAF)
Areas Applicable	Renewable energy
Description of Fund / Scheme	The Renewable Energy Asia Fund ('REAF') invests into post-permitted projects and project developers using proven technologies in those geographies demonstrating mature renewable energy legislation and deregulated power markets.The Fund's technology focus is wind, small hydro, biomass, solar, geothermal and landfill gas. The Fund's geographical focus is primarily India with additional target markets including Philippines, Sri Lanka, Thailand and Vietnam.
Implementing Agency / Fund Manager	Fund can be acces through ADB's Seed Capital Assistance Facility (SCAF) , Fund manager- Berkeley Energy
Application Procedure	Please refer to the website for application procedure, http://www.berkeley-energy.com/index.php?page=about or Contact : Berkeley Energy India Private Limited Unit No. 228, The Galleria Mall, Plot No. 1 B, Mayur District Center, Mayur Vihar, Phase - I Delhi - 110091 +91 11 4703 7474 Email : info@berkeley-energy.com

Name of the Fund /Loan/Scheme	Aloe Private Equity fund
Areas Applicable	clean energy and environment sectors
Description of Fund / Scheme	Aloe Private Equity SAS (Aloe) is a fund management company with particular focus on managing investments in the clean energy and environment sectors. Aloe is currently managing three funds with an aggregate size of around €173 million(2011). Aside from these three operating funds, Aloe Environment Fund III (AEF III) has been set up as a fourth fund which targets a size of at least €200 million. ADB recently invested up to $20 million in AEF III. The strategy of all these funds is primarily to generate venture-like returns by making active investment in companies working to sustain, restore, and improve the global environment and anchoring on proven technologies in the clean energy, recycling, and eco-process sectors. The focus countries include India and the People's Republic of China.
Implementing Agency / Fund Manager	Fund can be acces through ADB's Seed Capital Assistance Facility (SCAF) , Fund manager- Aloe Private Equity SAS
Application Procedure	Please refer to the website for application procedure, http://www.aloe-group.com or Contact : India Executive Suite 2 International Business Park Westin Oberoi Garden City Goregaon East Mumbai Email : aloe@aloe-group.com

Name of the Fund /Loan/Scheme	The Pilot Climate Technology Network and Finance Center
Areas Applicable	climate change technology transfer
Description of Fund / Scheme	Center aims to help mobilize financing for clean technology by folding technology considerations into national investment plans and strategies, and by piloting innovative financing mechanisms. The Network will provide complementary technical support and policy advice, as well as a forum for knowledge sharing.
Implementing Agency / Fund Manager	ADB
Application Procedure	Please http://www.esmap.org/Results_Based_Approaches http://www.adb.org/news/adb-unep-gef-finance-climate-friendly-technologies-asia

Name of the Fund /Loan/Scheme	Abu Dhabi Fund for Development - ADFD (Online applications close on 12 January 2013, 17:00 (Abu Dhabi local time)).
Areas Applicable	Renewable Energy
Description of Fund / Scheme	IRENA is welcoming online applications with project summaries for concessional loans worth USD 50 million from the Abu Dhabi Fund for Development (ADFD) to facilitate renewable energy projects in developing countries, in the first of seven funding cycles totalling USD 350 million. Renewable energy projects must be government-led or government-guaranteed.
Implementing Agency / Fund Manager	International renewable Energy Agency (IRENA)
Application Procedure	Please refer to the website (see link below) for application procedure, http://www.irena.org/adfd/ or contact the IRENA/ADFD Secretariat via email at adfd@irena.org.

Name of the Fund /Loan/Scheme	Cities development Initiative for India
Areas Applicable	Slum upgrading, urban transport, drainage & sewerage, solid waste, environment, water & sanitation, urban renewal,Climate change mitigation and adaptation and Good governance
Description of Fund / Scheme	CDIA is a regional initiative established in 2007 by the Asian Development Bank and the Government of Germany, with additional support of the governments of Sweden and Austria and the Shanghai People's Municipal Government. The Initiative provides assistance to medium-sized Asian cities to bridge the gap between their development plans and the implementation of their infrastructure investments.
Implementing Agency / Fund Manager	Cities Development Initiative for Asia (ADB,BMZ,SIDA,BMF,Shanghai Municipal Corporation)
Application Procedure	Local governments of eligible cities will develop their own request for CDIA support (which the CDIA Core Management Team (CMT) may facilitate) and must be committed to cost-sharing principles. To qualify for CDIA support, cities will be expected to submit an application indicating that they have: • prepared and adopted an urban development strategy and/or integrated urban development plan; • a demonstrable intent to address social and environmental issues in infrastructure provision; • demonstrated commitment of local government through pledging their own contributions (indicatively about 20 % of total CDIA support costs); • demonstrable in-principle central/state level support for the development of an urban infrastructure projects portfolio and its financing, and for the assistance application to the CDIA CMT/ Secretariat; and • endorsement for the request from the relevant national agency and one of the CDIA funding members. The request for pre-project preparation support may be dovetailed with a request for strategic capacity-building. This would involve addressing key capacity constraints (if any) that must be resolved as a pre-requisite for project preparation and implementation. Following approval of the support request, a technical assistance contract agreement will be entered into between the applicant and one or more funding partners of CDIA, specifying details of the assignment, sources of funds and consultant recruitment procedure. For more details, please refer to the website: http://www.cdia.asia/services/requesting-assistance/

Name of the Fund /Loan/Scheme	Energy Sector Management Assistance Program
Areas Applicable	analytical and advisory services, financing for energy efficiency initiatives , technical assistance to support policy development and upstream investment preparation
Description of Fund / Scheme	Established in 1983, the Energy Sector Management Assistance Program (ESMAP) is a global, multi-donor technical assistance trust fund administered by the World Bank and cosponsored by 12 official bilateral donors. The Energy Sector Management Assistance Program (ESMAP) is a global knowledge and technical assistance program administered by the World Bank. Its mission is to assist low- and middle-income countries to increase know-how and institutional capacity to achieve environmentally sustainable energy solutions for poverty reduction and economic growth.
Implementing Agency / Fund Manager	World Bank
Application procedure	For application procedure , please contact Oliver Knight or Almudena Mateos Merino at esmap@worldbank.org or refer to the website for the more information http://www.esmap.org/Results_Based_Approaches

Name of the Fund /Loan/Scheme	The Adaptation Fund
Areas Applicable	Ten Multilateral Implementing Entities (MIEs) have been approved: IFAD, ADB, UNDP, UNEP, the World Food Program (WFP), the World Meteorological Organisation (WMO), the United Nations Educational Scientific and Cultural Organisation (UNESCO), the World Bank (International Bank for Reconstruction and Development), the Inter-American Development Bank (IDB) and the AfDB.
Description of Fund / Scheme	The Adaptation Fund was established to finance concrete adaptation projects and programmes in developing countries that are parties to the Kyoto Protocol and are particularly vulnerable to the adverse effects of climate change.
Implementing Agency / Fund Manager	Ten Multilateral Implementing Entities (MIEs) have been approved: IFAD, ADB, UNDP, UNEP, the World Food Program (WFP), the World Meteorological Organisation (WMO), the United Nations Educational Scientific and Cultural Organisation (UNESCO), the World Bank (International Bank for Reconstruction and Development), the Inter-American Development Bank (IDB) and the AfDB.
Application procedure	Fund can be access through multilateral implementing entities. Any organisation that wishes to implement Adaptation Fund projects must submit an application for accreditation providing documentation indicating that it meets the fiduciary standards adopted by the Board. Please refer to the website (see link below) for more details, 1) https://www.adaptation-fund.org/about 2) https://www.adaptation-fund.org/page/apply-for-funding

Name of the Fund /Loan/Scheme	International Climate Initiative fund
Areas Applicable	The ICI is active in four areas: promoting climate-friendly economies, fostering measures to adapt to the effects of climate change, ensuring the conservation and sustainable use of natural carbon reservoirs, and conservation of biodiversity.
Description of Fund / Scheme	Since 2008, the International Climate Initiative (ICI) of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) has been financing climate and biodiversity projects in developing and newly industrialising countries, as well as in countries in transition.
Implementing Agency / Fund Manager	Fund Manager: The German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU). & Fund can be access through Multilateral Implementing Entities (MIEs)
Application procedure	Projects are selected through a two-stage procedure that takes place once a year. Informative project outlines in German or English are prepared and submitted electronically to the Programme Office. Project proposals can be submitted by German development cooperation implementing organizations, non-governmental or governmental organizations, universities and research institutes, private-sector companies, multilateral development banks, and organizations and programmes of the United Nations; Please refer to the website (see link below) for more details, 1)http://www.bmu-klimaschutzinitiative.de/en/objectives 2)http://www.bmu-klimaschutzinitiative.de/en/selection_procedure (Deadline : 9 th January 2013)

Name of the Fund /Loan/Scheme	The Forest Carbon Partnership Facility (FCPF) - (consists of a Readiness Fund and a Carbon Fund)
Areas Applicable	Forest sector
Description of Fund / Scheme	The Forest Carbon Partnership Facility (FCPF), which became operational in June 2008, is a global partnership focused on reducing emissions from deforestation and forest degradation, forest carbon stock conservation, sustainable management of forests and enhancement of forest carbon stocks (REDD+).
Implementing Agency / Fund Manager	World bank
Application procedure	Please refer to the website (see link below) for more details and Conditions for participation in the Fund, http://www.forestcarbonpartnership.org/fcp/sites/forestcarbonpartnership.org/files/Documents/PDF/May2011/FCPF%20Charter%20-%20CF%2005-11-2011%20clean.pdf

Name of the Fund /Loan/Scheme	Critical Ecosystem Partnership Fund
Areas Applicable	Eco system and biodiversity conservation
Description of Fund / Scheme	Founded in 2000, the Critical Ecosystem Partnership Fund is a global leader in enabling civil society to participate in and benefit from conserving some of the world's most critical ecosystems. CEPF provide grants for nongovernmental and private sector organizations to help protect biodiversity hotspots, Earth's most biologically rich yet threatened areas. It includes four overarching and interlinked components: 1. Strengthening protection and management of globally significant biodiversity 2. Increasing local and national capacity to integrate biodiversity conservation into development and landscape planning 3. Effective monitoring and knowledge sharing 4. Ecosystem profile development and program execution
Implementing Agency / Fund Manager	The French Development Agency, The Global Environment Facility, The Government of Japan, The John D. and Catherine T. MacArthur Foundation, The World Bank
Application procedure	Please refer to the website for application procedure, 1) http://www.cepf.net/grants/apply/Pages/default.aspx For, Proposals, 2) http://www.cepf.net/grants/Pages/recent_calls.aspx

Annexure III

Details on Different National Funding Schemes/Organizations

Scheme Name	**Bachat Lamp Yojna**
Scheme details	Initiated by the GoI and being implemented through BEE in association with State DISCOMs, the BLY scheme aims at large scale replacement of Incandescent bulbs with CFLs. The initiative has been estimated to reduce electricity demand of about 10,000 MW and also reduce GHG emissions. The program was launched in 2009 and has currently passed its first and second phases of implementation with 39 DISCOM circles implementing the program affecting 135 lakh consumers. In late 2010, the State Government of Tamil Nadu issued directives for provides CFLs to 14.62 lakh huts free of cost with an estimated saving of 45MW of power.
Nodal Agency	State level DISCOMs. Implementation through PPP
Application procedure	The scheme is voluntary and no application procedure exists as such. The DISCOMs initiate the awareness campaigns in their distribution circle and encourage purchase of CFLs for Rs. 15 (4 CFLs maximum per household) in exchange of incandescent bulbs.
Any forms/ processes	None
Contact details	Local DISCOMs
Any other relevant information	DISCOMs avail the services of CFLs manufacturers through due diligence of a list of suppliers empanelled by BEE

Scheme Name	**Solar Photovoltaic Market Development Plan**
Scheme details	Implementation of SPV systems including Solar Lanterns, Solar Home Systems, BIPV etc by direct users or through intermediaries is offered through soft loan financing from IREDA with 80% accelerated depreciation for first year as incentive. Direct users can avail a minimum loan amount of 5 Lakh and intermediaries like financial institutions, banks, manufacturers etc can serve different end users through a loan of 10 Lakh from IREDA. Procurement of SPV systems can only be done from 9 IREDA empanelled suppliers.
Nodal Agency	IREDA
Application procedure	Interested agencies/end users avail the soft loan facility for their choice of SPV system from one of 9 designated suppliers and apply for a soft loan from IREDA.
Any forms/ processes	Application forms available at IREDA website for direct users and intermediaries
Any other relevant information	Additional queries have been answered at the IREDA website
Links	IREDA website: http://www.ireda.gov.in/homepage1.asp?parent_category=2&sub_category=31&category=120 Contact email: http://www.ireda.gov.in/homepage1.asp?parent_category=2&sub_category=31&category=121

Scheme Name	**Financial support for Wind Electric Generators (WEGs)**
Scheme details	Profit making companies, Power utilities, Industrial investors etc can install wind farms and avail income tax deduction through accelerated depreciation up to 80% from TNEB in addition to tax holidays for up to 10 years. The surplus power generated is purchased by TNEB at Rs. 3.39 per unit. Under the same scheme, subsidies up to Rs.30, 000 can be availed for wind mill water pumps and small aero generators.
Nodal Agency	TEDA and TNEB
Application procedure	In consultation with the nodal agencies, applicants assess and select land for wind farm construction based on its wind potential. A standard application is submitted to avail consent letter from TNEB directly or via TEDA. Application for tie-up arrangement with TNEB is submitted and interface arrangements are executed as per TNEB norms. Install the wind generating systems through approved manufacturers. Remit prescribed development charges for power evacuation to TNEB. Allow site inspections by Chief Electrical Inspectors and commission the system tying it to the grid.
Any forms/ processes	TNEB can be contacted directly or via TEDA for application forms and document requirements
Any other relevant information	-
Links	Contact: http://www.teda.in/index.php?r=site/index&id=1Y1e4W1W4n

Scheme Name	**Financial support for Solar Water Heaters**
Scheme details	Institutions, domestic users etc can avail depreciation at GoI prescribed rate in first year of SWH installation. Suggested sites of implementation in Municipalities and Corporations in the State include nursing homes, hotels, hostels, military barracks, community centers etc.
Nodal Agency	TEDA
Application procedure	In consultation with the TEDA, interested applicants can have SWH installed by one of the TEDA approved manufacturers/suppliers. New buildings have been directed to have SWH installed under order by the State government.
Any forms/ processes	TEDA can be contacted directly and forms and documents are available at their website
Any other relevant information	-
Links	TEDA website: http://www.teda.in/index.php?r=forms/index Contact: http://www.teda.in/index.php?r=site/index&id=6B2P6C3z6l

Scheme Name	**Financial support for Solar Air Heating systems**
Scheme details	Institutions, domestic users etc can avail 50% subsidy subject to the system costing a maximum of Rs. 2500 per sq m. for non-profit organizations and 35% subsidy subject to the system costing a maximum of Rs. 1750 per sq m. for industries and commercial users.
Nodal Agency	TEDA
Application procedure	In consultation with the TEDA, interested applicants can have SAHS installed by one of the TEDA approved manufacturers/suppliers.
Any forms/ processes	TEDA can be contacted directly and forms and documents are available at their website
Any other relevant information	-
Links	TEDA website: http://www.teda.in/index.php?r=forms/index Contact: http://www.teda.in/index.php?r=site/index&id=6B2P6C3z6l

Scheme Name	**Financial support for Solar Cookers**
Scheme details	Interested users can avail solar cooker incentives outlined for different types of uses as follows: Box type: No subsidy but interest free loan available through IREDA and other banks Dish type solar cooker: 30% subsidy available subject to a maximum of Rs. 1500 per cooker Community solar cooker: 30% subsidy available subject to a maximum of Rs. 15,000 per cooker Solar steam cooker: 50% of ex-works cost of the system
Nodal Agency	TEDA
Application procedure	In consultation with the TEDA, interested applicants can have the systems installed by one of the TEDA approved manufacturers/suppliers.
Any forms/ processes	TEDA can be contacted directly and forms and documents are available at their website
Any other relevant information	-
Links	TEDA website: http://www.teda.in/index.php?r=forms/index Contact: http://www.teda.in/index.php?r=site/index&id=6B2P6C3z6l

Name of organization/bank	**Bank of India**
Details	Funding through soft loans is provided to eligible beneficiaries for energy conservation initiatives and solar water heater installations. Eligible borrowers may be Individuals, institutions, non- commercial organizations/commercial organizations (hotels, hospitals etc). The loan covers up to 85% of the project cost for SWH installation projects and 80% of the project cost for energy conservation initiatives up to a maximum value of Rs. 1 crore. Other project eligibility stipulations are available on the website.
Application procedure	Similar to a general loan application process

Any forms/ processes	Include specific pointers to improve possibility of loan sanction and also approved vendors. All details are available on the website.
Any other relevant information	Note that loan duration, repayment period and amounts vary for each project.
Links	Bank of India website: http://www.bankofindia.com/energy.aspx Contact: http://www.bankofindia.com/solar.aspx

Name of organization/bank	**NABARD**
Details	• Capital subsidy or concessional bank loan is available for SWH installations-for both FPC based and ETC based. • Funding eligibility is based on type of users and location of projects. • For both type of SWH: Subsidy is calculated on 30% of benchmark cost @ Rs.3300/- per sq. m of collector area whichever is less for General Category states and Subsidy will be calculated based on 60% of benchmark cost or Rs.6000/- per sq. m of collector area whichever is less for Special category states
Application procedure	Claimants of funding need to have a prescribed claim form authorized by a nationalized bank which would support the transfer of capital subsidy from NABARD to the supplier of the equipment after verification of its installation and operation.
Any forms/ processes	Prescribed claim form to be authorized by a nationalized bank to be submitted to NABARD
Any other relevant information	-
Links	NABARD Website: http://www.nabard.org/pdf/1.%20Circular.doc Contact: http://www.nabard.org/investmentcredit/govt_sponsored.asp

Name of organization/bank	**NABARD**
Details	• Capital subsidy or concessional bank loan is available for solar lighting and small scale PV systems • Funding is valid for MNRE approved suppliers of equipments. • Eligible subsidy is for 40% of the approved unit cost and may be less if the system cost is less than benchmark cost set by MNRE at Rs. 270 per Wp. • All individuals, SHGs, JLGs, NGOs, Farmers' Clubs etc. will be eligible for subsidy.
Application procedure	Claimants of funding need to have a prescribed claim form authorized by a nationalized bank which would support the transfer of capital subsidy

	from NABARD to the supplier of the equipment after verification of its installation and operation.
Any forms/ processes	Prescribed claim form to be authorized by a nationalized bank to be submitted to NABARD
Link	NABARD Website: http://www.nabard.org/pdf/Capital%20Subsidy%20Scheme%20for%20Solar%20Lighting%20and%20Small%20Capacity%20PV%20Systems.PDF Contact: http://www.nabard.org/investmentcredit/govt_sponsored.asp

Name of the Bank	**The Industrial Development Bank of India (IDBI)**
	IDBI offers financial services in support of CDM projects in the form of advisory services in emissions trading, RECs etc. The bank also facilitates registration of CDM projects with UNFCCC for availing carbon credits. Upfront financing is also provided for CDM projects against Carbon Credits/Carbon Credits Receivables. Source: http://www.idbi.com/products_services.asp

Name of the Bank	**Industrial Finance Corporation of India (IFCI)**
Details	This institution focuses on financing and development of large projects in the realm of energy and infrastructure. The offer assistance towards end-to-end solutions to infrastructure sector that includes conceiving, techno economic viability study, financial advisory, monitoring of implementation and commercial production of the projects in sectors like Power Generation ;Thermal, Hydro, Wind, Solar, Biomass etc. Source: http://www.ifciltd.com/ProductsampServices/ProjectDevelopment.aspx

Name of the Bank	**State Bank of India**
Details	Targeting the urban housing infrastructure, SBI has introduced Green Home Loans scheme that seeks of offer 0.25% concession in interest rates and waiver of processing fees towards financing of housing projects which reduce Carbon Emissions and promote Renewable Energy identified as “Green Housing” or “Green Home”

Annexure IV

Meetings conducted with Funding Organizations

Organization	Name of Personnel
KFW	Mr. Anirban Kundu, Program Manager
GIZ-ASEM	Ms. Regina Dube, Senior Advisor
JICA	Ms. AditiPuri, Development Specialist
JBIC	MsDeepaSalwan, International Finance Specialist
Norwegian embassy	Dr. Vivek Kumar, Senior Advisor, Environment, Climate & Energy
MNRE	Dr. Arun K. Tripathi, Director, MNRE
IDFC	Dr. Sambhit Das, Director and Ranesh Nair, Consultant IDFC
MOUD	Mr. Arun Goyal, Joint Secretary
Danish Embassy	Mr. SantonuKashyap, Commercial Officer & Sector Expert-CDM
SIDBI	Dy. Manager, Energy Cell
REEEP, Austria	Mr. BinuParthan, Deputy Director General, REEEP, Austria
UN-HABITAT EDF (Environmental Defence Fund)	Mr. AxumiteGebre-Egziabher, Director of Global Division, UN-Habitat
The World Bank	Mr. Judy L. Baker, Lead Economist finance, Economics and Urban Development Sustainable Development Network
Heinrich BOLL Stiftung foundation	Ms. Bjorn Ecklundt, Project Management International climate and energy Policy, Berlin
UNEP	Ms. Amina Mohammed, Deputy Executive Director, UNEP
SNV	Mr. Keshav Das, SNV, carbon finance advisors
United Nations Capital Development Fund (UNCDF)	Mr. Vincent Hungwe, Regional Technical Advisor, Local Development, United Nations Capital Development Fund (UNCDF)
United Nations Capital Development Fund (UNCDF)	Mr. David Jackson, Head of Asia and Pacific Office Senior Regional Technical advisor Local Government
UNDP	Mr. Ian Rector, Programme Manager, UNDP Africa Adaptation Programme
European Commission	Mr. Jos Delbeke, Director General, Directorate General Climate Action, European Commission
FundacionPensar, Mexico	Ms. AinaAguilaTurss, Climate Change Coordination
U.S. Department of State	Dr. Griffin M. Thompson, PhD. Senior Climate Change Program Manager
Department of Energy & Climate Change, London	Fiona Gruber, Programme Support, International Climate Change

British
High Commission
New Delhi

British High Commission

The British High Commission in India supports projects combating climate change across the country through various funding streams including the Prosperity Fund to promote Low Carbon High Growth initiatives. The Fund will focus on promoting sustainable global growth, consistent with the UK's development objectives of promoting sustainable development and improving welfare.

ICLEI
Local
Governments
for Sustainability

ICLEI - Local Governments for Sustainability - South Asia

ICLEI - Local Governments for Sustainability - South Asia is a non-profit making organisation operating from New Delhi, India. It began its activities in April 2005 and is presently supporting over 40 South Asian cities. ICLEI South Asia supports environmental and other sustainability initiatives at the local level by working with city governments as well as with state, national and international governmental bodies to build appropriate local environment initiatives and policies.

ICLEI - Local Governments for Sustainability - South Asia

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