

A close-up photograph of a woman's face, focusing on her right eye. She has a bindi on her forehead and is wearing a red sari with a gold border. The text is overlaid on the left side of the image.

# Gender into Urban Climate Change Initiative

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## Status Quo Report - Delhi

All India Women's Conference

## ACKNOWLEDGEMENT

Kalyani Raj - *Secretary General, AIWC*

Jitender - *Project Officer, AIWC*

Nimisha Jha - *Technical Expert*

Gotelind Alber - *Founder Gender CC*

Kate Cahoon - *Project Coordinator, Gender CC*

Patricia Bohland - *Project Coordinator, Gender CC*

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The background of the slide is a photograph of the Parliament Building in Delhi, India. The building is a large, classical-style structure with a prominent central dome and multiple columns. The sky is overcast and grey. In the foreground, there are some green trees and a small yellow building.

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# ABBREVIATIONS

ADB – The Asian Development Bank

AIWC - All India Women’s Conference

ASHA – Accredited Social Health Activist

CBOWTF – Bio-Medical Waste Treatment Facilities

CSIS – Centre for Strategic and International Studies

GUCCI: Gender Into Urban Climate Change Initiative

CO<sub>2</sub>, - Carbon Dioxide

CH<sub>4</sub>, - Methane

DAPCC - Delhi Action Plan on Climate Change

DDA – Delhi Development Authority

DDMA – Delhi Disaster Management Authority

DJB – Delhi Jal Board

DKVIB – Delhi Khadi Village Industries

DO – Dissolved Oxygen

DSCSC – Delhi State Civil Supplies Corporation Limited

DSSSB – Delhi Subordinate Services Selection Board

DPCC - Delhi Pollution Control Committee

DTC – Delhi Transport Corporation

EDMC - East Delhi Municipal Corporation

GDP – Gross Domestic Product

GHG – Greenhouse Gases

ICLEL - International Council for Local  
Environmental Initiatives

I&FCD - Irrigation & Flood Control Department

IKI: International Climate Initiative

INDC - Intended Nationally Determined Contribution

JNNURM - Jawaharlal Nehru National Urban Renewal  
Mission

JSY - Janani Suraksha Yojna

KWP - Kilowatt Peak

L.G. – Lieutenant General

MCD: Municipal Corporation Department

MGD – Million Gallon Daily

MoEF&CC - Ministry of Environment, Forest & Climate  
Change

MRTS Project – Multi Mode Mass Rapid Transport System  
Project

N<sub>2</sub>O – Nitrous Oxide

NAPCC - National Action Plan on Climate Change

NCT: National Capital Region

NDMC: New Delhi Municipal Corporation

NGOs - Non-Governmental Organizations

NO<sub>x</sub> – Nitrogen Dioxide

NRDC – Natural Resources Defence Council

PHC - Primary Health Centre

PM – Particle Pollution

PWD - Public Works Department

SAPCC - State Action Plan on Climate Change

SDMC – South Delhi Municipal Corporation

TPD – Tones Per Day

YAP - Yamuna Action Plan

U.P.: Uttar Pradesh, Indian State





Climate change issues are gradually escalating and having an impact throughout the world as well as receiving growing attention at the national level within most countries. Specific challenges that cities face in the light of climate change are also increasingly recognized. As a result, urban areas and cities are being considered as a key area of climate action and crucial for the implementation of climate policy. Further, gender issues are rarely considered in urban climate policy although there is considerable evidence that it is both necessary and strategic for local policy makers to integrate gender into the climate action plan. A number of studies have documented the fact that gender-sensitive urban climate policies can result in enhanced effectiveness, acceptance and a range of benefits.

In an attempt to close the gender gaps and explore options for integrating gender and social issues into urban climate policies, **All India Women's Conference**, in collaboration with **Gender CC**, Germany, has initiated GUCCI (Gender into Urban Climate Change Initiative) in the pilot city of New Delhi. Through capacity building and the development of policy recommendations the project seeks to strengthen citizens' capacity to get involved in local government planning process and implementation, as well as inclusiveness and acceptability of local mitigation and adaptation policies. This is a three year project by Gender CC as a part of the International Climate Initiative (IKI) supported by German Federal Ministry for the Environment, Natural Conservation, Building and Nuclear Safety



# 2

## Pilot City: Delhi

### General information

Delhi is situated in Northern India between the latitudes of 28°-24'-17" and 28°-53'-00" North and longitudes of 76°-50'-24" and 77°-20'-37" East. It has an area of 1,483 sq. kilometers out of which 1113.65 sq.kms is urban and 369.35 sq. kms comes under rural area. Density of Delhi is 11,320 per sq km which is higher than national average 382 per sq km. Delhi with its present population of about 16.78 million is one of the fastest growing urban centers of the nation. Delhi consists of 8.98 million male over 7.80 million female populations which makes sex ratio in Delhi among the lowest. According to census 2011 there are 0.419 million people living in rural areas in Delhi which amounts to 2.50% of the total population. The climate variation in Delhi is primarily due to its sensitive geo-ecological set-up, strategic location, presence of the mountain ranges, and trans-boundary river systems.

میں مارکٹ کاؤنٹر  
میںار ٹکٹ کاؤنٹر  
TOWER TICKET COUNTER  
BILLET POUR LA TOUR  
ENTRÉE GÉNÉRALE POUR LA TOUR  
BILLET POUR LA TOUR





# Administration of Delhi

The Government of NCT Delhi is the main governing authority of the city. Delhi consists of eleven districts, an executive led by the Lieutenant Governor of Delhi, a legislative with Chief Minister being the head of seven cabinet members, a judiciary and several Independent Department such as Delhi Jal Board, MCDs and NDMC. Delhi legislative comprises 70 democratically elected members. As per article 239AA of the Constitution of India the Number of Cabinet Ministers cannot exceed 10% of Delhi assembly seats, as a result there are seven ministers heading multiple departments/ministries in Delhi. However, it's the LG who is the administrative head of the State in Delhi. The Chief Minister has no jurisdiction over the police, the Delhi Development Authority (DDA) and the MCD. Hence, the governance of the state of Delhi becomes a very complicated affair. The table below indicates the multiplicity of authority in the state

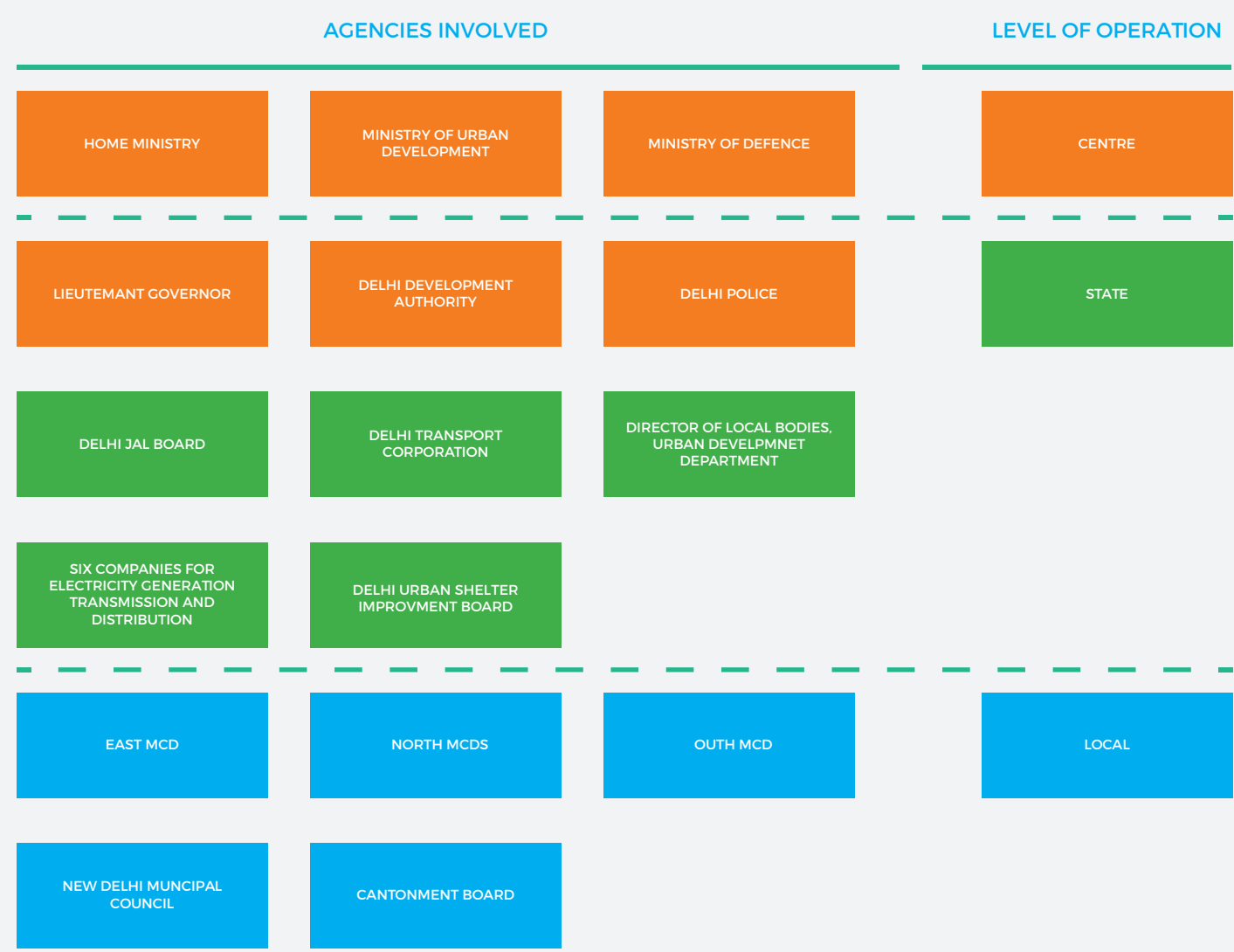


Fig - Multiplicity of agencies in government of Delhi





Minister 1	Minister 2	Minister 3	Minister 4	Minister 5	Minister 6
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Education	Employment	Health	Women & Child	Tourism	Food & Supply
Finance	Development	Industries	Social Welfare	Art, Culture & Languages	Environment & Forest
Planning	Labour	Public Work Department	Schedule Caste & Schedule Tribes	Gurudwara Election	Election
Land & Building	General Administration Department	Power		Water	
Vigilance	Irrigation & Flood Control	Home			
Services		Transport			
Administrative Reforms		Urban Development			
Information					
Technology					
Law, Justice & Legislative Affairs					

AUTONOMOUS BODIES

Delhi Jal Board
Delhi Khadi Village Industries (DKVIB)
Delhi Labor Welfare Board
Delhi State Civil Supplies Corporation Limited (DSCSC)
Delhi Subordinate Services Selection Board (DSSSB)
Delhi Transco Limited
Delhi Transport Corporation (DTC)
Mission Convergence
Rajsya Sainik Board
Shahjanabad Development Corporation

# Institutional Mapping of Delhi to Deal with Climate Change

Delhi was a Union Territory until the State of Delhi was created in 1992 through 69th Constitutional Amendment Act and was made a National Capital Territory . Since Delhi is also a national capital of the country, law and order remains with the central government. Besides, some of the administrative structure remains with the central government such as municipal bodies of NDMC, SDMC, NDMC, EDMC etc. The Lieutenant Governor (LG) has powers to overrule some of the decision of the Delhi Government. Delhi is a unique case of diarchy where the powers are shared between the centre and the state. Unlike other countries there have been no clear guidelines by the central government for the cities to prepare a climate change action plan however all the states have been directed to prepare a climate change action agenda and implement it, Thus, Delhi as a quasi-state is preparing a Delhi Action Plan on Climate Change. In this mixed landscape of governance and administration, the institutional landscape of managing environment (which has direct impact on climate change) lies with the following agencies:

(1) Delhi Development Authority (2) Delhi Disaster Management Authority (3) Civic Bodies: Municipal Corporation Departments (North, South and East, (4) New Delhi Municipal Corporation (NDMC) (5) Department of Forest and Environment and Forest NCT, Government of Delhi (6) PWD (7) Transport Department (9) Delhi Jal Board etc.

This situation of being in a quasi-state, in fact, hinders both having a clear mandate and taking forward any initiative to deal with Climate Change for Delhi.



# Socioeconomic Factors

The Socio-economic condition of any city is a critical aspect of its planning to address the changing climatic conditions. These aspects also influence the policy formation and play an important role on implementation of state and central governments’ schemes. The policies which are formulated based on appropriately collected and disaggregated socioeconomic data are more likely to be able to deliver co-benefits to all especially those sections of society who are extremely poor and vulnerable.

The socio-economic factors highlighted and complexity of existing governance system add on to enhancing Delhi’s vulnerability.

Poverty	Out of the total poor population in Delhi, 97.05% live in urban space. Per Capita income is 16.78 US Dollars (1145 Rupees) per month 3.9 Million people living in slums.
Female Headed Household	There were 349,962 female headed households.
Education	Literacy rate in Delhi is 80.76% 69.06 % Literacy rate in urban areas. 60.87 % Literacy rate in Rural Areas
Employment	24% of women work in formal sector.

Poverty: According to a survey done by planning commission of India, Delhi had 1.696 million (2011-12) persons below poverty line (BPL) which is 9.91 % of the total population of Delhi. Per capita income in urban places is Rupees 1145.00 (16.78 US Dollars) per month.

Female Headed Households: At the national level India has 11% female headed households and according to census of India 2011 there were around .34 million female headed households in Delhi.

Education: according to census of Delhi conducted in 2011, Delhi has an 86.21% literacy rate where 80.76% of total female population is literate. If we see the difference between rural and urban literacy data, 69.06% women in urban areas and 60.87% in rural areas are literate.

Employment: In September 2016, a joint report by the Centre for strategic and International Studies (CSIS) and Nathan Associates credited Delhi 8.5 points reflecting challenging situation for women in workforce,. Only 24% of women participate in formal work sector in India which is among the lowest in the world.



# 3

## Delhi's Vulnerabilities to Environmental Degradation & Climate Change

Delhi is one of the fastest growing cities in the world and the city has created enormous stress on its habitat, resources and livelihood in past decades due to heavy urbanization. Delhi is facing a number of environmental challenges which include loss of green cover (currently 20.22% of total land area), loss of water bodies, heavy pollution in Yamuna River, air pollution, contamination of ground water resources, high incidences of diseases and mortality and a few more. While some of these have linkages with the climate change, it needs to be iterated that its relationships with environmental degradation is very complex. The socio-economic factors highlighted above and complexity of existing governance system also contribute to enhancing Delhi's vulnerability. The environmental degradation and climate change have hence, been discussed separately below.



# Environmental Challenges of Delhi

**Water Security and Pollution:** Delhi has four major sources for water supply, Yamuna River (310 Million Gallons Daily (MGD)), Ganga River (240 MGD), Bhakhra Beas Management Board (140 MGD), Ground Water (Est. 115 MGD). In addition, there are ground and surface water supply options. Against its current demand of 1080 MGD, the Delhi Jal Board (DJB) is supplying only about 880 MGD. So far government's schemes for rain water harvesting has been unsuccessful mainly because 80% water is raw waste water and there is no proper mechanism to contain the rain water in Delhi (there is an ongoing scheme of rainwater harvesting in Delhi, RWAs are doing it too but to some extent only in south Delhi). To supplement the total water demand of the city, Delhi's dependency of water on neighboring states sometime creates shortage in water supply due to internal conflicts. Recent example being when Delhi faced acute scarcity of water because there was an agitation in the neighboring state of Haryana and protesters disrupted the water supply to Delhi. .

The main water source of Delhi is Yamuna River which is currently highly polluted due to various activities in and around the river. At its entry point Yamuna contains 7.5 milligram dissolved oxygen (DO) per liter and when it exists out of the city the DO level is just 1.3 mg/l. likewise the coli-form level jumps from 8,500 per 100 ml at entry to 329,312 ml per 100 ml at exit. According to collected data in 2007, roughly 50% of city's raw sewage went straight into the river. 55% of the total population of Delhi is connected to the city's sewer system and its water treatment plants but because of corrosion and clogging in the system many of the treatment plants do not perform in their full capacity. The existing gap between the demand and supply of water is only expected to widen over the areas with predicted increase in temperature by as much as 3 to 4 degree Celsius by the end of 21st Century and more pronounced over northern parts of India (Shukla et al.2003)





**Noise Pollution:** Noise Pollution is another challenge being faced by Delhi city. Delhi has a large number of vehicles and a population which is growing at 21% growth rate. According to DPCC in 2009 the average noise pollution in day and night both were 60.54 dB which is relatively higher than the safer level of 55dB during the day and 45dB in Night.



**Impacts on Health due to Environmental challenges:** Citizens of Delhi are prone to heat stress related disorders due to the harsh summers, such as heat strokes, increase in eye diseases like cataract, dry eyes, respiratory disorders and skin diseases. In recent years, Delhi has experienced an increase in maximum summer temperatures, with temperature reaching to 47.C in parts of Delhi in 2016. Delhi also has about half of its BPL population living in informal settlements like JJ (Jhoogi-Jhopdi) clusters, slum designated area, unauthorized colonies and resettled colonies. (Delhi Government, 2010) and they are the most vulnerable to the impacts of health on climate change. This could be due to lack of basic essential facilities and the general trend of low socio-economic status of the population residing in these settlements. Primary health related concerns in Delhi are; quality of available health services, Inadequate early warning system regarding epidemic/s, lack of quick response medical teams, inadequate public sector medical facilities, low levels of research in developing low cost vaccination and insufficient rapid diagnostic tests and proper biomedical waste disposal system. Delhi's bed-population in hospitals ratio is 2.71 beds per 1000 population which is better than the national ratio but due to hyper sensitivity of Delhi towards epidemic/s is still an alarming fact.





**Waste Generation in Delhi:** Improper waste management system in the metro city can results in increasing GHG emissions and the landfills can contaminate ground water.

1. Solid Waste: MoEF&CC (Ministry of Environment, Forest and Climate Change), Government of India has notified the revised Solid Waste management Rules, 2016. As per these rules “Solid Waste” means and includes solid or semi-solid domestic waste, sanitary waste, commercial waste, institutional waste, catering & market waste and other non-residential waste, street sweeping, silt removed or collected from surface drains, horticulture waste, agriculture and dairy waste, treated bio-medical waste excluding industrial waste, bio-medical waste and e-waste, battery waste, radio-active waste generated in the area under local authorities etc. As per these rules the responsibility of waste management has been entrusted with the Urban Development Department and the urban local authorities.

2. Bio-Medical Waste: There are about 2070 Health Care establishments in Delhi. According to the Bio-Medical waste status report-2006, 1.36 TPD of bio-medical Waste was generated in Delhi in 2006. At present, two common bio-medical waste treatment facilities (CBWTF) are operational in Delhi for the collection, treatment & disposal of the Bio-Medical waste

3. Hazardous Waste: There are nearly 2000 units approved industrial areas generating hazardous waste of about 5300 MT annum and they are governed by the Hazardous and Other Wastes (Management and Trans-boundary Movement) Rules, 2016. However, stringent implementation of the laws for rightful disposal of hazardous waste is often lacking.

4. Electronic Waste: In 2007 Delhi generated 50000 T/annum of e-waste and this figure is steadily rising. The Ministry of Environment and Forest, Government of India has issued E-Waste (Management) Rules 2016 for handling electronic waste. The implementing agency for these rules in Delhi is Delhi Pollution Control Committee (DPCC)

5. Plastic Waste: Plastic waste generated is 580 MT per year and plastics below 40 micros are banned.

6. Constructional and Demolition Waste: It is another reason for Delhi’s poor air situation as it emanates significant amount of dust. The high level of constructions taking place in Delhi such as housing, commercial and metro work has increased the level of pollution in Delhi.



# Climate change Scenario of Delhi and Key Environmental Challenges

Delhi is situated in the Indo-Gangetic alluvial plains of North India. According to the research conducted by Indian Institute of Tropical Meteorology in collaboration with the Hadley Centre for Climate Prediction and Research, UK, a major impact of climate change is expected to be changes in the river hydrology in the Indo-Gangetic plain due to glacial melt and regression of the Himalayan glaciers. This may result in higher average rainfall (causing floods) and decrease in number of rainy days resulting in escalating the issues of water supply and management. Non-climatic stressors such as increase in migratory population and informal settlement along the Yamuna Banks pose major challenges for flood control and the recharge of groundwater along the plains. These challenges are likely to worsen with projected frequency and magnitude of flooding events due to climate change.

The IPCC, 2015 estimates that the region where Delhi is located has experienced 0.5°C – 1.0°C rise in annual average temperature from 1901-2012. The following tables give the future projection for the Delhi region:

### TEMPERATURE

	By mid 21st Century	By late 21st Century
RCP 8.5	2.5°C – 3.0°C increase from mean.	4.5°C – 5.0°C increase from mean.
RCP 2.6	1.0°C – 1.5°C increase from mean.	1.0°C – 1.5°C increase from mean.

Difference from mean between 1986-2005

### PRECIPITATION

Decrease in precipitation by -10mm to -25mm/decade (significant) between 1951-2010

	By mid 21st Century	By late 21st Century
RCP 8.5	10-20% increase from mean.	10-20% increase from mean.
RCP 2.6	10-20% increase from mean.	10-20% increase from mean.

Difference from mean precipitation from 1986-2005

A recent study conducted by the Indian Metrological Department (IMD) and Pune based Indian Institute of Tropical Meteorology (IITM) collaborates the above mentioned findings showing an increased heat index in Delhi causing discomfort in humans at particular temperatures. The index has so far risen by 0.56 degree Celsius on an average every decade during summers and 0.32 degree Celsius a decade in monsoon. In the study 10 cities were found with hotter monsoon with heat index being increased around 0.53 to 0.77 degree Celsius every ten years.

Delhi lies in semi-arid zone and is faced with growing temperatures and rise in hot weather. This might result in urban heat island effects and intense heat waves. It is estimated that the region in and around Delhi will warm up by 1.5-2.5 degree Celsius by 2050s . The increase in temperature combined with the shortage of drinking water may create a situation of first-order drought. There are trends of decrease in rainfall in the city as is evident from the trend between the years 1987 and 2002 that had almost no rains. In a scenario of depletion of water bodies in city and decrease in rainfall, Delhi will face water scarcity especially in summer season. The city will also be faced with energy shortages due to reduction in upstream flows.

Urban flooding in the colonies residing next to the banks Of Yamuna and water logging in Delhi are other common scenes during the peak of monsoon season. Poor and old sewage technology with the changing patterns of rainfall often leads to the severe conditions of water logging in Delhi and NCR. Further, poorly planned habitats in low lying areas are the main drivers for this situation. This is more of an environmental hazard but becomes critical with the unseasonal intensity of rain due to climate variation.

# Greenhouse Gas Emissions of Delhi

GHGs in the atmosphere absorb the heat reflected by the earth’s surface, keeping the earth’s average temperature at a level that favors the existence of life. The main GHGs are carbon dioxide (CO2), Nitrous Oxide, Ozone, CFCs etc. CO2 is responsible for over 60% of the greenhouse effect. A mapping of carbon emissions in Delhi by Hindustan Times reveals that the transport sector (46%) and the domestic sector (34%) are the largest contributors to emission of GHGs in Delhi. According to the 2009 carbon mapping, four major sectors- Transport, domestic, commercial and industry emit 15/41 Million Metric Tonnes of GHGs per year. In 2009 Delhi’s total CO2 emission was 29513.52 Gg. from power, domestic and transport sector



On July 9th 2004 the Delhi High Court directed DPCC to shift pollution emitting Industries out of Delhi. This is why in the table the CO2 emission recorded in 2009-10 is comparatively lower than the emission recorded in 2001

SECTOR WISE CO2  
EMISSION (MILLION  
TONES)

Sector	Years 2001	Years 2009-10
Industrial	9.76	3.05
Transport	8.17	12.36
Domestic	4.56	11.69
Total	22.46	38

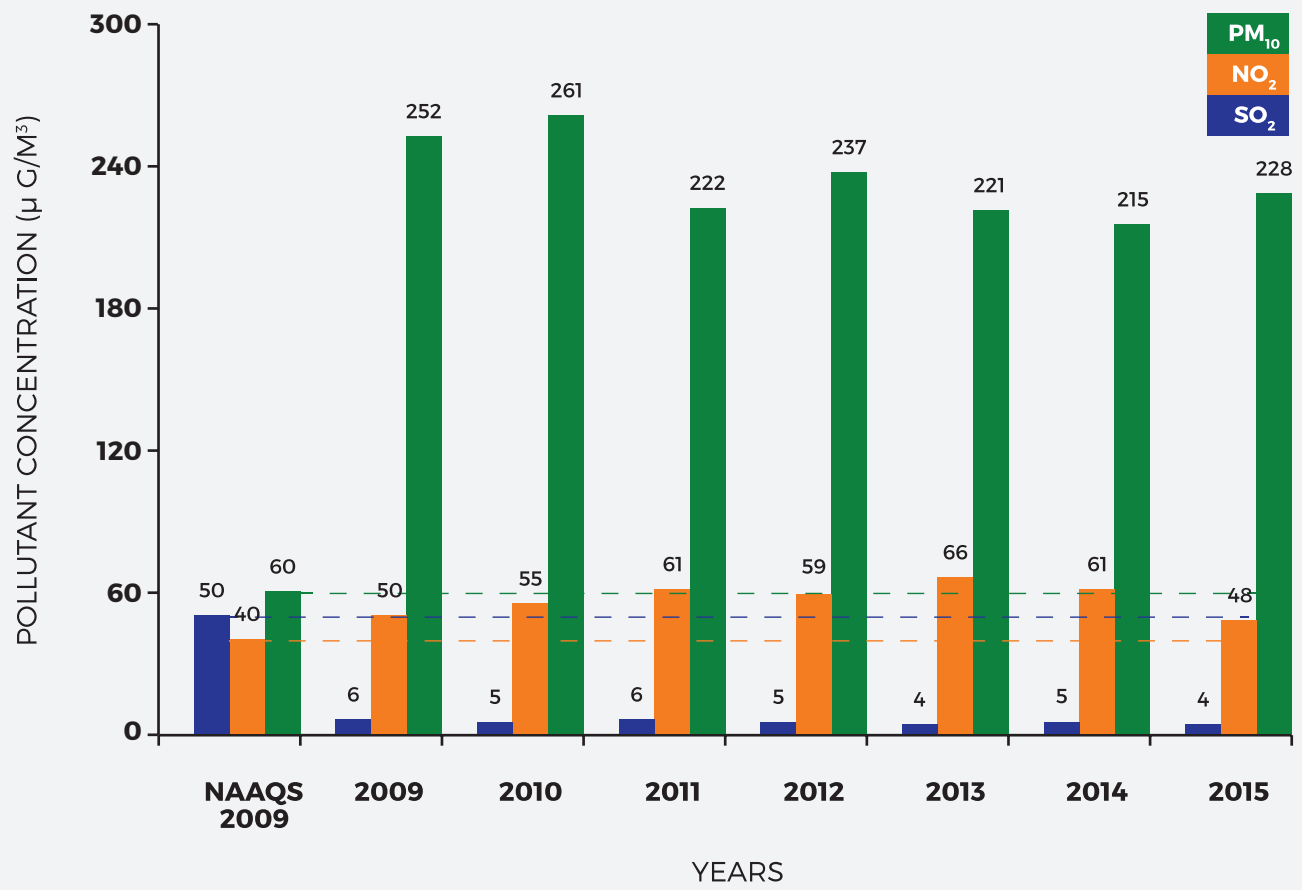
**GHGs Emission from Vehicular Activities:** In November 2016 Delhi faced the great smog where visibility and breathing level of air in Delhi was reduced to minimum level. Air pollution this time peaked on both PM 2.5 and PM 10 levels which was the worst since 1999 . This smog caused breathlessness, chest constriction, irritation in eyes, Asthma and many allergies. Supreme Court of India blamed Delhi Govt. for the reduction of 3 years in the life expectancy of the population of Delhi due to recent dangerously high level of pollution. Delhi has the highest number of registered vehicles (approx. 6.46 Million) in the country. In addition approximately 1.1 million vehicles enter or leave Delhi every day. The city has 21% of its land area under roads and it is among the highest in the world..

Vehicles on Road in Major Cities (March, 2016) in Millions :

- Delhi 8.8
- Chennai 4.4
- Kolkata 3.8
- Mumbai 2.7

High growth rate of vehicles and heavy vehicular volumes on road are causing congestion, carbon emissions and pollution. In the last two decades Delhi’s population, motor vehicles and commercial activities all have increased by manifold. In the past 30 years, its population has more than tripled and vehicle population has increased almost fifteen fold.

Transport is the biggest contributor to greenhouse gases emissions and to air pollution in Delhi,. The GHGs coming from transport sector on one side contributes to the carbon emission at global level and on the other side it also pollutes the environment of Delhi. It creates local impacts of increase public health disorder and may damage the natural and built environment. In 2015 Delhi ranked 11th as the most polluted cities in WHO’s list of polluted cities. Delhi has 85 private cars per 1000 population against the national average of eight private cars per 1000 population.







Delhi had around 6.45 Million registered vehicles in 2009 out of which, total carbon emissions from CNG vehicle was 1527.03 and from remaining vehicle it was recorded 10867.51 Gg. The State of Delhi is continually faced with extreme weather events and these are expected to rise in future. Delhi's shrinking monsoon days, extensive rainy days, urban flooding, spreading of epidemics are increasing with every passing year. Further, Delhi's poor waste management system, , continuously changing climatic events, high level of pollution and the deteriorating environment continues to enhance the vulnerability of urban poor and the marginalized section of the society.



# 4

## The City's Response to Climate Change: National Framework

National Action Plan on Climate Change (NAPCC) was initiated by the Indian Government in June 2008. There are Eight National Missions which form the core of the National Action Plan, representing multi-pronged, long-term and integrated strategies for achieving key goals in the context of climate change.

1. National Solar Mission
2. National Mission for Enhanced Energy Efficiency
3. National Mission on Sustainable Habitat
4. National Water Mission
5. National Mission for Sustaining the Himalayan Ecosystem
6. National Mission for a Green India
7. National Mission for Sustainable Agriculture
8. National Mission on Strategic Knowledge for Climate Change

India is committed to engaging actively in multilateral negotiations under the UNFCCC. The main objective mentioned in the INDC of India is that the state wants to establish an effective, cooperative and equitable global architecture based on climate justice and the principles of Equality and Common But differentiated responsibilities and respective capabilities.

India has laid out few city specific actions in its INDC submitted to UNFCCC. The implementation of solar power in Indian Railway, which is one of the largest, 4th in the world, railway network, is also taking place. Delhi metro, which is the first Metro Railways Transit System (MRTS) project to earn carbon credits, has also initiated installation of 9 solar power generation facilities and plans to replicate more.. This apart, Delhi has legally made it compulsory for every large house or hotel which is 200 yards or more in area to undertake rainwater harvesting. It is also mandatory for all the States to submit State Climate change action plan. Till now 32 out of India's 29 states and 7 union territories have submitted their state action plans on climate change, which complement India's NAPCC.

Smart Cities Mission : In 2015 India launched this mission which is an urban renewal and retrofitting program by the Government of India to create model cities. 100 cities have been included from all states and Union Territories (UTs) on the basis of their size and existing infrastructure to be serviced under this mission. New Delhi Municipal Corporation area is one of such city under the Smart City Mission. The main objective of this mission is to promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of Smart Solutions. The focus is on sustainable and inclusive development and the idea is to look at compact areas, create a replicable model for other cities. Smart cities also aim to prepare the cities to deal with climate change through careful identification of challenges the cities are facing and provide them with infrastructure that deals with these challenges. Efforts are being made to make Indian cities climate sensitive and make them resilient.

However, there is a limited integration of NAPCC with different developmental programs/mission/plans managed by various government departments at all levels. Necessary coordination or interaction between the departments have also not been specified nor any mention of civil society's engagement in the process of formulation and implementation of NAPCC.



# Delhi's Initiatives under Climate Change Action Plan

Delhi was the first state to prepare a comprehensive Climate Change Agenda for Delhi 2009-2012 (CCAD 2009 -2012) . Under this plan, the State identified areas of Noise pollution, air pollution, water pollution, municipal waste management and greening as key issues. These were in synchronization with the NAPCC. Here the policy focus was on environmental improvement of the key sectors that have large emissions and urgent steps were needed to redress these challenges. CCAD 2009 -2012 however, could not trickle down to the city level. There is an absence of clear guidelines for the Urban Local Bodies (ULBs) to prepare any climate change action plan at the city level.

Some of the actions implemented by the CCAD 2009 -2012 under the plan are as follows:

Sr.	MISSION	ACTION IMPLEMENTER	DEPARTMENT
1	Air Pollution	Prohibition on burning of dry leaves Stop operation of electric generators run on diesel/petrol Carbon green credit scheme Augment Public Transport on CNG Discourage the usages of private cars and encourage the use of public transport Work on increasing the green cover of Delhi to 33%	Transport, Environment, Planning, Finance, Geo-Spatial Delhi, IT Department, Higher Education/colleges, Industries, DPCC, DSIIDC, EEREMC, MCD, PWD, BEE, Police, DDA, Trade and Taxes, Power, PGCL, PPCL, DAMB, Revenue, DMRC,
2	Water	Rain Water Harvesting	DJB, MCD, DDA, PWD, Urban Development, I & FC, DSIIDC, Industries
3	Green India	Efforts to increase green cover to 500 sq. km. by promoting plantation in degraded area Development and maintenance of 1000 parks by 2012 in colonies Providing assistance to low income groups for greening campaign State has about 20 percent of green cover Financial assistance to the RWA's in greening of parks	NDMC, MCD, DP&GS, Environment, DDA, PWD, Forest
4	Solar Mission	Under the Energy Conservation Act 2001 , the use of solar water heating devices has been made compulsory in all industries, hotels, educational institutions, hostels, canteens and residential buildings on plots above 500 Sq. meters  Main target of including Solar Mission into climate agenda was to reduce GHGs and reducing the dependency on coal fired electricity	EEREMC, Environment, PWD, MCD, Power, DISCOM, DERC
5	Enhanced Energy Efficiency	Main target to include this mission in the climate action plan was to reduce GHGs in Delhi through enhancing the energy efficiency.  Promotion of the usage of CFL bulbs.	Environment, DPCC, Manufacturers DISCOM, EEREMC, PWD, MCD, BEE,

Note: Due to the spacing issue, expanded version are mentioned in the abbreviation table



Apart from the plans mentioned in the table there are few other initiatives also proposed to be taken by the Delhi Government which are as follow:

**Water Resources :** The city government recognizes the need for comprehensive reforms in the water sector to ensure a significantly higher level of service provided in a sustainable manner by Delhi Jal Board (Delhi Water Board) Some of the strategies and commitments are as follow:

Augmentation and Sustainability of Water Resources and Conservation of Water

Delhi Jal Board Project Cleaning Yamuna through interceptor sewers

Prevention of Pollution in River Yamuna: The Yamuna Action Plan (YAP), a bilateral project between the Government of India and Japan-one of the largest river restoration projects in India.

Groundwater Regulation and Management: As per Groundwater Regulation & Management Notification F8(348)/EA/Env/09/2246 dated 12.07.2010 and as amended to date if the plot size of the building is more than 200 sq. meters, the permission to draw groundwater through bore well or tube well (both new as well as existing and drawing groundwater without permission of Central Ground Water Authority) is subject to the condition that the occupier or owner of the said plot or building shall install rain water harvesting system in such building.

Create City Level Watershed Management Plan and Urban Drainage Master plan based on natural treatment, conveyance, capture, and infiltration systems. Structured systems may be used only for overflow capture.

**Transport :** Under NAPCC, the National Mission on Sustainable Habitat suggests a future focus on strengthening the enforcement of vehicle economy standards and using pricing measures to encourage the purchase of efficient vehicles and promotion of the use of public transport. 'CCAD 2009-12 also lists some policies on the line of given framework which are as follow :

- Augmentation of CNG buses
- Expansion of Metro rail network
- Plan, design and implement infrastructure to enable feeder services to become a meaningful and legal mobility option.
- Promoting Non- motorized vehicle s movement
- Development & implementation of vehicle emission b standard for GHGs (presently standard are only for CO and Hydrocarbons) Effective implementation and tightening of PUC norms for all vehicles.
- An Air Ambiance Fund has been set up under the Air Act to provide support for battery operated vehicles like car, scooters etc.

The Constitution of India has enshrined special status to Delhi which makes Delhi both a Union Territory and the Capital of the country. The city is being governed by multiple administrations such as the democratically elected state government and a Centre-appointed Lieutenant Governor and both of these players in the administrating process of Delhi often clash with each other. The other players in the same game of governing Delhi are three Municipal Corporation and one municipal council that report directly to the Centre Ministry of Home Affairs. Apart these governing bodies there are also many autonomous bodies in Delhi such as, Delhi Development Authority, Delhi Cantonment Board, and Public works Department etc. The tug of war between all these city authorities often make the implementation of any policy slow due to the lack of coordination among all of the city authority such is the case with climate change action plan which cut across all the working areas of these authorities. The state is currently under the process of finalizing Delhi Climate Change Action Plan for the period of 2016-2030.

## Policies, Strategies, Priorities

Apart from the CCAS 2009-2012, there have been many climate change mitigation initiative by Delhi state which are as follow:

**Energy :** The focus is primarily on reducing transmission and distribution losses, promoting energy efficiency, maximizing renewable power generation such as solar, biogas etc. The plan also promises to:

- Spread awareness regarding eco-friendly practices such as using appliances (refrigerators and air conditioners) with star rate and by 2020 replace all of the appliances with the star rated one,
- Promoting the construction of green building and by 2020 build 250 green buildings in Delhi,
- Replacement of conventional lighting system with energy efficient lighting system,
- Adoption of renewable energy and by 2017, make renewable energy to be 1% of Delhi Energy mix,
- Adoption & Implementation of Solar Policy and by 2020 start consuming 1GW of energy through this sector.

**Water harvesting :** Keeping in view the water scarcity in Delhi, Its local bodies have been asked to adopt water harvesting through storing rainwater. In Delhi Rainwater harvesting



structures have been made mandatory for property/floor size of 500 Sq. mtr. Or more. This provision was to be made functional by the commercial/industrial category consumers of the board within one year and by the domestic consumers within 3 years from the date of coming into force of the regulations. DJB has been identified as the nodal agency to impart all technical assistance and further help.

**Eco clubs :** Eco clubs is an initiative by Delhi Government to spread awareness amongst the youth by instituting eco clubs in schools and colleges in Delhi. Till now there have been 2000 Eco-Clubs established in Government and Private, Public Schools and Colleges of NCT of Delhi. Department of Environment provides increased token grant at 308.71 US dollars for activities to involve young people in the climate change awareness program in each club. The government of India has framed “Member of Parliament Local Area Development Scheme ” under which MPs, including those from Delhi, can recommend works to be carried out in their constituencies. The scheme has been framed on the understanding that the Members of Legislative Assembly (MLA) are frequently being asked for carrying small work of capital nature. The Govt. of India framed this nature of work into this scheme where MLAs of any constituencies on the approach of citizens can carry out the development work which includes rain water harvesting in government and public buildings and places of local bodies alongside many other construction works. A total amount of 615716.40 US Dollars (4 Crore in Indian Currency) has been allocated under this scheme.

**Managing construction waste :** The Delhi Municipal Corporation (DMC) has implemented a pioneering project. It has set up a C&D waste processing plant where 2000 tonnes of debris is processed every day to make multiple products such as paver blocks, kerb stones, ready mix concrete and a variety of pre-fabricated structures (DMC, 2010). The processing plant has been running successfully since 2010. The DMC plan was based on the success of the similar plant established by two other cities in India and depending on the success of the pilot plant, the DMC proposes to set up two additional debris processing plant in the coming years . This program was introduced as part of MSW Rule 2016.. Apart from this plan on 29th March 2016 the government has also issued the Construction and Demolition Waste Management Rules, 2016. As Per these rules every waste generator shall prima-facie be responsible for collection, segregation of concrete, soil and others and storage of construction and demolition waste generated, as directed or notified by the concerned local authority. In consonance with these rules the waste generator shall ensure that solid waste does not get mixed with other waste and is stored and disposed desperately.

**Delhi Metro Rail Corporation's (DMRC) Environment Policy :** Delhi Metro was started in Delhi in 2002, since then it has become the lifeline of Delhi's transport system. Over two million people commute through the metro everyday which makes the system important and in demand to expand more and more. DMRC has recognized the paramount importance of protecting the environment because major construction in Delhi are being led by DMRC. Therefore, the company has published a policy to have least negative impacts on the environment due to construction and metro activities. The policy complies with state and national level environment safety measures and has promised to take many environment friendly actions with future expansion.



# Budget and Financial Resources

In the Twelfth Five Year Plan (2012-2017) the estimated allotted budget has been provided by the government agencies. The following table shows the estimated budget for the plan:

Sr.	PARTICULARS	APPROX. AMOUNT IN MILLION US DOLLARS
A.	Sectors	
Fifth Year Plan 2012-2017(12th)	1. Energy & Power	1. 694.453 Million US Dollars (4820.20 Rupees)
	2. Water Resources & Sanita- tion	2. 1653.452 Million US Dollars (11000 Rupees)
	3. Forest, Biodiversity & Agri- culture	3. 22.548 Million US Dollars (21.345+1.203)150Crore Rupees
	4. Urban Planning	4. 1307.73 Million US Dollars (8700 Crore Rupees)
	5. Transportation	5. 3300.082 Million US Dollars (21954.62Crore Rupees)
	6. Environment Sub Total	6. 18.038 Million US Dollars (120Crore Ru- pees) 6996.303 (46745 Crore Rupees)
B.		
Delhi state Budget – 2014-2015	Delhi State Budget 2014-15 Power Reform (proposed)	100.04 Million Million US Dollars (675Rupees) + 29.64 (200 Rupees)
C.		
Union Budget 2017-18 (National & yearly)	Union Budget: 2017-18 Environment Ministry of India (Proposed)	4021.55 Million US Dollars (26754.42Crore Rupees)

(12th Five Year Plan Budget for Delhi Action Plan on Climate Change (2012-2017)



# 5

## Gender Considerations

### Relevant Policy Frameworks

As is evident from above details, currently, the draft Delhi Action Plan on Climate Change integrates gender considerations only in the sectors of health and education. Poor air pollution, lack of clean water, increasing temperature, lack of clean energy etc. directly impact women, particularly poor women in a major way. Inclusion of ASHAs as major health provider in National Rural/Urban Health Mission/s and plans to implement Janani Suraksha Yojna (JSY) are few of the examples where women are direct beneficiaries.

### Possible Gender Dimensions of Climate Change in Delhi

The 4th assessment report of the Inter-governmental Panel on Climate Change in 2007 has stated that climate change is not gender neutral and it affects women differently than men. Several studies have also proved that less access to resources, opportunities and social constraints create an environment where the policies are gender neutral only in language. The rising temperatures, uncertain rains, increasing number of seasonal diseases add to the challenges women face. There is a strong need to draw attention of the policymakers to this direction and make them realize that women's issues and gender concerns are majorly missing from any of the climate change related plans and social schemes. Gender dimensions are limited just to raising awareness campaigns, improvement of health, access of education to girls and addressing environmental concerns especially of increasing forest cover.



# 6

## Knowledge Gaps/ Challenges

While there is Ministry of Women and Child Development at the Central level and related department at the State level, Gender mainstreaming has been missing from most of the policies, probably because it has not been a priority. Lack of political will could also be one of the reasons for the absence of gender focus. There is hardly any data available about women working in unorganized sectors, their vulnerable status in the society and socio-economic situation. While the Indian Government has announced gender budgeting mandatory for all the departments, there is lack of clear data on resource allocation for gender consideration as well as appropriate utilization. Moreover, there is significant lacking in the popularization of existing government schemes relating to health, education and other relevant essential sectors. While number of women are involved in different climate change mitigation and adaptation activities at the grassroots level based on their traditional knowledge and practices, the number of women in policy formulation or planning implementation level is very negligible.

Though climate change is a certainty now (IPCC AR5), its effects would be determined not only by magnitude of climate change but also by inherent vulnerability of population, social and ecological systems. The policy landscape allows lot of scope primarily restricted to mitigation actions such as low carbon energy solutions, energy efficiency. However, one finds very little that could possibly address the vulnerabilities with specific reference to gender. The ongoing policies both at the center and the state level have done very little to integrate climate change aspects with their ongoing policies. The IPCC AR5 does emphasize the need for integration of climate change with the ongoing developmental initiatives. Most prominent reason for this could be lack of basic knowledge that link specific vulnerabilities with

climate change in absence of any concrete research on these aspects. In most policies the gender aspect either is missing or limited to maternal health.. Lack of education and literacy of women continues to be added factor that inhibits them to find adequate channels to articulate their demands. Involvement of women in decision making is a big challenge due to their vulnerable status in the society and socio-economic situation. Some steps such as gender based budgeting have been taken by the government but these spending have by and large been very restricted in nature such as awareness campaigns.

The policy land space of Delhi also suffers from this malaise with even more limited action and plans of climate change due to its complex administrative structure and governance mechanism. Furthermore, climate change is also not thrust area in the state government that could allow specific allocations based on identified vulnerabilities. The gender specific climate change action in Delhi can only be found at the local level that are largely carried out informally. There is lack of any mechanism that could formalize such initiatives through its institutionalization. This could lead to its scalability and wider outreach.



# 7

## PRELIMINARY CONCLUSION

The focus of the Climate policy in Delhi has been very sector specific and has very limited holistic perspective on inclusion of all stakeholders. Furthermore, it has been observed that absence of frameworks for specific vulnerability assessments, lack of resources, limited opportunities for institutionalization of gender oriented climate change initiatives and poor representation of women at decision making level seem to be primary reasons for the missing gender considerations in the policies. There is also strong need for gender sensitization of stakeholders at the government as well as autonomous agencies. Particularly in the field of Climate Change, women from community, who lead mitigation and adaptation activities, need to be equipped with capacity to take leading roles in policy formulation level as well and their views included in the implementation strategies.



# 8

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## All India Women's Conference

Sarojini House, 6 Bhagwan Dass Road, New Delhi-110001

Tel: 91-11- 23389680/1165 | Fax: 91-11-23384092/8567

[info@aiwc.org.in](mailto:info@aiwc.org.in) | [president@aiwc.org.in](mailto:president@aiwc.org.in)