



Confederation of Indian Industry



CII-ITC Centre of Excellence  
for Sustainable Development



NITI Aayog

# स्वच्छ वायु – दीर्घायु

Cleaner Air - Better Life



CII - NITI Aayog Clean Air Initiative

supported by 

Improving Air Quality of NCR

# CONTEXT



Each day, every human being breathes in about 15,000 litres of air. Air, which provides us necessary oxygen, has reached dangerous levels of pollutants that pose serious danger to human health. These pollutants and resulting poor air quality have negative impacts on the environment, health and quality of life. Air pollution is one of the causes of mortality and morbidity in India. A World Bank report<sup>1</sup> highlights that cost of environmental damage due to air pollution amounts to three percent of India's GDP of which outdoor air pollution accounts for 1.7% and indoor air pollution for 1.3%.

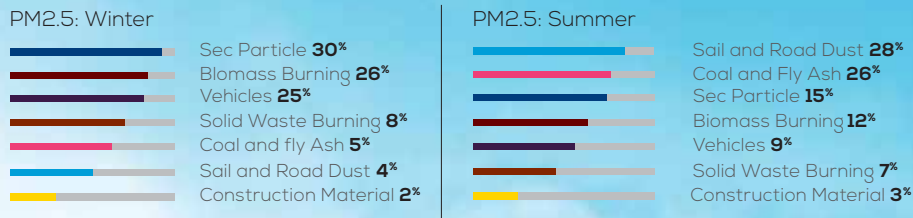
Rapidly expanding urban areas, such as the National Capital Region (NCR), are on the front lines of the fight against air pollution and climate change. City-level management of air pollution and emissions are complex tasks that require long-term commitment and actions from multiple stakeholders including industry, government, civic bodies, and citizens. Many schemes and measures have been implemented but with limited impact and acceptance. Ambient air quality level depends not only on the sources of pollution but also on meteorological conditions. In order to take substantive action, the sources of air pollution in NCR have to be identified and prioritised.

A recent study carried out by IIT Kanpur (2015)<sup>2</sup> on source apportionment in Delhi showed that sources of PM10 and PM2.5 include coal and fly ash, soil and road dust, biomass burning and vehicular emissions. The source contributions to PM2.5 during summer include coal and flyash (26%), soil and road dust (27%), secondary particles (15%), biomass burning (12%), vehicles (9%) and MSW burning (7%). The winter sources contributing to PM2.5 include secondary particles (30%), vehicles (25%), biomass burning (26%), MSW burning (8%) and to a lesser extent soil and road dust<sup>2</sup>.

The co-benefits approach highlights that in most of the cases reducing air pollution does reduce GHG emissions. Climate change mitigation is critical to prevent loss and damage from extreme events, which in India was estimated to be US \$ 5-6 billion during 2013-14<sup>3</sup>. As per the ADB study, economic damage and losses in India from climate change will be around 1.8% of its GDP annually by 2050.<sup>4</sup>

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- <sup>1</sup> <http://documents.worldbank.org/curated/en/220721468268504319/An-analysis-of-physical-and-monetary-losses-of-environmental-health-and-natural-resources>
  - <sup>2</sup> [http://delhi.gov.in/DoT/Environment/PDFs/Final\\_Report.pdf](http://delhi.gov.in/DoT/Environment/PDFs/Final_Report.pdf)
  - <sup>3</sup> <http://www.iimahd.ernet.in/assets/snippets/workingpaperpdf/10071603592015-11-01.pdf>

Figure 1: Contribution of Various sources to PM2.5 levels in Delhi<sup>2</sup>.



**\*Solid waste burning refers to MSW burning**

Many actions have been taken in the past to mitigate ambient air pollution in NCR such as shifting public transport to CNG, converting coal power plants to natural gas and relocation of polluting industries. However, levels of air pollutants especially PM10 and PM2.5 still exceed National Ambient Air Quality Standards. For the past two decades, Delhi has witnessed a phenomenal growth in terms of the urban infrastructure, vehicular growth, and use of DG sets. On an average, around 4-5 lakhs vehicles are registered in Delhi every year. Air polluting industries in Delhi include thermal power plant, foundries, ready mix concrete plants, boilers and furnaces. DG sets used in industries and residential areas are also a major source of particulate matter. Although Delhi is “kerosene free” and 90% of the households use LPG for cooking, the remaining 10% use wood, crop residue, cow dung, and coal for cooking<sup>2</sup>.

There are approximately 9,000 Hotels/Restaurants in Delhi, which use coal and the particulate matter emission in the form of flyash contributes to air pollution<sup>2</sup>. Secondary particles are also major source of PM2.5 in Delhi. These secondary particles are formed in the atmosphere by reaction of precursor gases such as SO<sub>2</sub>, NO<sub>x</sub> which are chemically transformed into particles in the atmosphere. According to the IIT Kanpur study, the major contributors of sulfates are large power plants and refineries. North-West (NW) wind is expected to transport SO<sub>2</sub> from large power plants and refineries situated in the upwind of Delhi and contribution of NO<sub>x</sub> from vehicles and power plants can also contribute to nitrates<sup>2</sup>. Such an increase in sources has negated the benefits derived from various actions taken to reduce air pollution. An integrated approach to tackle air pollution is required, one that breaks across industries, government, civil society and communities.

CII, with decades of experience working across industry, government and civil society, provides a multi-stakeholder platform to deliver near-term actions and long-term plans for a wide range of issues. Therefore it is in the unique position to facilitate a multi-stakeholder initiative of improving ambient air quality in NCR

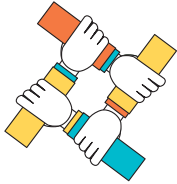
<sup>4</sup> <https://www.adb.org/sites/default/files/publication/42811/assessing-costs-climate-change-and-ada-plantation-south-asia.pdf>  
<sup>6</sup> <https://delhitrafficpolice.nic.in/about-us/statistics/>



# MISSION

Our mission is to improve air quality in the National Capital Region.

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# OBJECTIVES

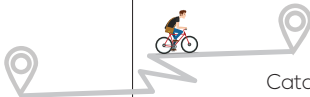
This initiative will work towards engaging business, civil society and government to learn from peers and take actionable steps to improve the air quality in NCR. Its specific objectives are:



Develop an integrated approach that brings together policy makers, industry, academia, community and civil society



Build consensus and get buy-in from stakeholders on actions for improving air quality in NCR



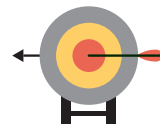
Catalyse voluntary commitments from stakeholders towards reducing air pollution



Influence adherence to existing policies and advocate new policies

# FOCUS AREAS

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The initiative will focus on three main areas that are also major sources of air pollution in NCR. A governing council, with the support of expert groups will help prioritise activities and develop strategies for near-term actions and long-term planning.

## TRANSPORTATION

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Transportation is also a major contributor to increasing ambient air pollution in NCR . Recent source apportionment study carried out by IIT Kanpur shows that contribution from vehicles is 25% to ambient PM<sub>2.5</sub> levels during winters whereas during summers the contribution of vehicles is nine percent<sup>2</sup>. During summers coal and fly ash are main sources as they become airborne. In recent years many policies and actions such as expansion of cleaner public transport system, have been taken. However, registered vehicular population has reached to nearly three times to 7.6 million from 2.2 million in 1994<sup>6</sup> Exponential increase in number of vehicles has negated the beneficial effects of the measures taken.

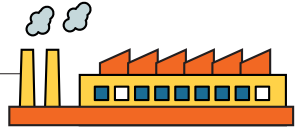
Some of the illustrative actions that can be taken to reduce impact of vehicular air pollution are

- Retrofitting of diesel vehicles with particulate filters
- Voluntary adoption of zero-idling policies by public, school and defence vehicles
- Installing Vapour Recovery systems in fueling station
- Leapfrog emission standards for new vehicles
- Promoting non-motorized transport

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— <sup>6</sup>[http://www.delhi.gov.in/wps/wcm/connect/doi\\_transport/Transport/Home/Pollution+Control/](http://www.delhi.gov.in/wps/wcm/connect/doi_transport/Transport/Home/Pollution+Control/)

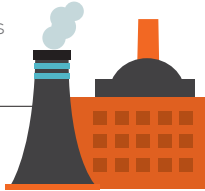
## INDUSTRIES



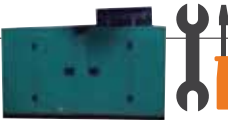
Industries are another major source contributing to ambient air pollution. According to the IIT Kanpur study, sources of coal and flyash are fugitive in nature rather than regular point sources<sup>2</sup>. Re-suspension of flyash from flyash ponds and flyash emissions from hotels and restaurants may also be contributing to ambient PM<sub>2.5</sub> levels. Although several measures have been taken to reduce air pollution from industries such as relocation of industries, more needs to be done such as shifting to cleaner fuels.

Some of the illustrative actions that can be taken to reduce impact of industrial air pollution are

1 Switching over to cleaner fuels such as natural gas by industries

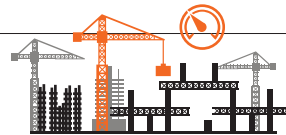


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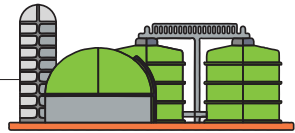
Tightening of DG set emissions norms and ensuring strict compliance of acoustic and stack height norms for DG sets

2 Voluntary adoption of dust reduction charter by construction companies and highway authority



3 Undertaking control measures in construction industry for fugitive emissions through water sprinkling, curtains, barriers and dust suppression units

## DOMESTIC SOURCES



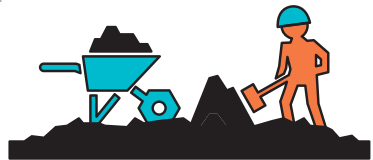
Domestic fuel consumption, uncontrolled burning of solid waste, seasonal burning of crop residue are other major contributors of air pollution in NCR. Biomass burning is a major area of concern contributing to 26% in winters and 12% in summers to ambient PM<sub>2.5</sub> levels<sup>2</sup>. IIT Kanpur study also highlights that the enhanced concentration in October-November is possibly due to the effect of post-monsoon crop residue burning. Despite the ban, farm fires in states neighbouring Delhi such as the Punjab, Haryana and Uttar Pradesh contribute towards particulate matter pollution in NCR. Use of wood, crop residue, cow dung, and coal for cooking also contributes to particulate matter emission.

Some of the illustrative actions that can be taken to reduce impact of domestic air pollution are

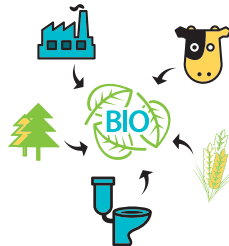


Collection and composting of horticulture waste

Prohibit use of coal in hotels, restaurants and promote use of LPG.



Maximize coverage of LPG / PNG for domestic cooking purposes



Adopt crop residue burning techniques such as biomass based power generation units

## SECRETARIAT

CII-ITC Centre of Excellence for Sustainable Development will be the Secretariat for the initiative. It will organise and conduct activities of and assist interactions between Governing Council and various Expert Groups.

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**CII-ITC Centre of Excellence  
for Sustainable Development**

CII-ITC Centre of Excellence for Sustainable Development is a not-for-profit, industry-led institution that helps business become sustainable organisations. It is on a mission to catalyse innovative ideas and solutions, in India, and globally, to enable business, and its stakeholders, in sustainable value creation. It's knowledge, action and recognition activities enable companies to be future ready, improve footprints profiles, and advocate policymakers and legislators to improve standards of sustainable business through domestic and global policy interventions. CESD leverages its role of all-inclusive ecosystem player, partnering industry, government, and civil society. It has been a pioneer of environment management systems, biodiversity mapping, sustainability reporting, integrated reporting, and social & natural capital valuation in India, thus upgrading business in India to sustainable competitiveness. With three locations in India, CESD operates across the country and has also been active in parts of South and South East Asia, Middle East, and Africa. It has held institutional partnerships and memberships of the United Nations Global Compact, Global Reporting Initiative, International Integrated Reporting Council, Carbon Disclosure Project, development agencies of Canada, the USA, the UK, and Germany.