

Country profile for India¹

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The purpose of this country profile, developed in the framework of Urban-LEDS II project, is to provide a summary of relevant context at the national level, and background information that can feed into the overall project implementation and communication. It is intended to be a “*living document*” that will be updated over time during the project.

The document addresses the following specific requirements:

- To provide background information about the country to guide project implementation at the local level;
- To gain insight into the structures, process, roles and mandates of national, regional and local government levels with the aim to contribute towards vertical integration between national and local governments and to support the implementation of LEDS at the local level;
- To contribute towards the gap analysis and exploring vertical integration solutions with different levels of governments; and
- To establish a dialogue and explore partnerships and networking opportunities with political leaders at all government levels.

Please note that many of the information and indicators of this profile are aligned with the reporting platform carbonn Climate Registry (cCR) – <http://carbonn.org>

Human activities in cities contribute a significant and growing proportion of global greenhouse gas emissions, driving the demand for energy and other services in urban areas with rapid population growth. UN-Habitat and ICLEI are taking on this challenge by accelerating urban low emission development and climate resilience across more than 60 cities worldwide, using a multilevel governance approach to urban climate action. Through Urban-LEDS, cities develop comprehensive urban Low Emissions Development Strategies and work together to implement their plans and develop pilot projects and finance models for LEDS implementation. Urban-LEDS strengthens cooperation and information sharing across national and local governments, positioning all levels of government to advance, track and deliver on global climate and sustainability goals. www.urban-leds.org

¹ Urban-LEDS II project Output (Op1.2)




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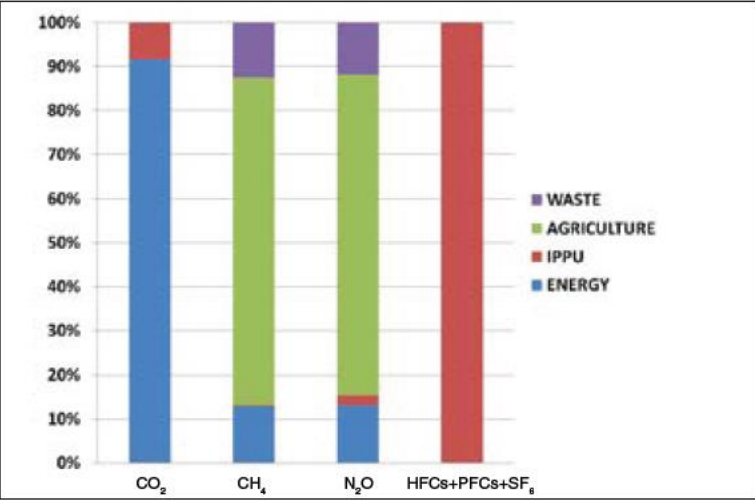


1. Overview

Key information of the country

Flag	
Key geographical attributes of the country	<p>Geographic Coordinates: Lying entirely in the Northern Hemisphere, the Country extends between 8° 4' and 37° 6' latitudes north of the Equator, and 68° 7' and 97° 25' longitudes east of it.</p> <p>The Indian peninsula is separated from mainland Asia by the Himalayas. The Country is surrounded by the Bay of Bengal in the east, the Arabian Sea in the west, and the Indian Ocean to the south.</p> <p>Coastline: 7,516.6 km encompassing the mainland, Lakshadweep Islands, and the Andaman & Nicobar Islands.</p> <p>Terrain: The mainland comprises of four regions, namely the great mountain zone, plains of the Ganga and the Indus, the desert region, and the southern peninsula.</p>
Size of population (year)	1,237,000,000 (2012)
Size (km ²)	3.3 Million km ²
Population density (year)	374 hab/km ²
Official language(s)	There are 22 different languages that have been recognised by the Constitution of India, of which Hindi is an Official Language. Article 343(3) empowered Parliament to provide by law for continued use of English for official purposes.
Major religions	Six major religious communities namely, Hindu, Muslim, Christian, Sikh, Buddhist, Jain besides “Other Religions and Persuasions”
Time zone	GMT + 05:30
GDP per capita (\$)	1408 Per capita GDP in USD (nominal)
Annual GDP Growth rate	6.624% (2017)
% of population living in poverty	Around 363 million people (30% of the population) live in poverty
Unemployment rate	3.5%
Greenhouse Gas emissions (total in CO ₂ e/year)	In 2010, India emitted 2,136.8 million tonnes of CO ₂ eq. from the energy, industrial processes and product use, agriculture, and waste sectors (excluding LULUCF). With



	the inclusion of LULUCF, the net emissions in 2010 were 1,884.3 million tonnes of CO ₂ eq ² .																									
Greenhouse Gas emissions by sector	 <table border="1"> <caption>Greenhouse Gas emissions by sector (Estimated from chart)</caption> <thead> <tr> <th>Gas</th> <th>Energy (%)</th> <th>IPPU (%)</th> <th>Agriculture (%)</th> <th>Waste (%)</th> </tr> </thead> <tbody> <tr> <td>CO₂</td> <td>~92</td> <td>~8</td> <td>0</td> <td>0</td> </tr> <tr> <td>CH₄</td> <td>~13</td> <td>~1</td> <td>~74</td> <td>~12</td> </tr> <tr> <td>N₂O</td> <td>~13</td> <td>~2</td> <td>~74</td> <td>~11</td> </tr> <tr> <td>HFCs+PFCs+SF₆</td> <td>0</td> <td>100</td> <td>0</td> <td>0</td> </tr> </tbody> </table>	Gas	Energy (%)	IPPU (%)	Agriculture (%)	Waste (%)	CO ₂	~92	~8	0	0	CH ₄	~13	~1	~74	~12	N ₂ O	~13	~2	~74	~11	HFCs+PFCs+SF ₆	0	100	0	0
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GINI Index (World Bank) (year)	35.1 (2011)																									
Number of cities reporting in carbonn Climate Registry (cCR)	24 (2018)																									

² MoEFCC, G. (2015). India: First Biennial Update Report to the United Nations Framework Convention on Climate Change.



2. Governance structure

This section provides information on the governance structure of the country.

India is a Sovereign Socialist Secular Democratic Republic with a Parliamentary form of government which is federal in structure with unitary features. There is a Council of Ministers with the Prime Minister as its head to advise the President who is the constitutional head of the country. Similarly in states there is a Council of Ministers with the Chief Minister as its head, who advises the Governor.

The first table shows how governments are appointed, the nature of the relationships between different governments (hierarchical, collaborative and equal, etc), as well as the number of regional and local governments.

- Spheres or Levels of Government

Level of Government	Character	Mandate/Role	Head of government (type)	Appointment (elected or appointed)
National	<p>The union government is mainly composed of the executive, the legislature, and the judiciary, in which all powers are vested by the constitution in parliament, the prime minister and the supreme court.</p> <p>It is modelled after the Westminster system for governing the state.</p> <p>The President of India is the head of state and the commander-in-chief of the Indian Armed Forces whilst the elected prime minister acts as the head of the executive, and is responsible for running the union government³.</p>	<p>National legislative competencies on climate / energy / environment:</p> <p>The division of environmental policy-making and allocation of environmental functions amongst the Central, State and local Governments is regulated by the Indian Constitution.</p> <p>For climate change, the main responsibility for climate change agreements lies with the Union Government due to its global scope of the problem, as well as the constitutional capability of the Union Government for international agreements and treaties.</p>	<p>Prime Minister Narendra Modi since 26 May 2014</p>	<p>Elected by popular suffrage.</p> <p>Last election: April 2014, next election in April or May 2019</p> <p>5-year term</p>

³ MoEFCC, G. (2015). India: First Biennial Update Report to the United Nations Framework Convention on Climate Change.



		<p>The Ministry of Environment, Forest & Climate Change deals with subjects such as Forest, Pollution and climate change. MoEFCC is responsible</p> <p>The energy sector is under the responsibility of the Ministry of Power, Ministry of Petroleum & Natural Gas and Ministry of Coal. The National programs on energy efficiency is handled by Bureau of Energy Efficiency (BEE) which is an agency of the Government of India, under the Ministry of Power created under the provisions of the nation's 2001 Energy Conservation Act.</p> <p>The responsibility of developing and deploying new and renewable energy for supplementing the energy requirements of India is with the Ministry of New and Renewable Energy (MNRE).</p> <p>NITI Aayog is a policy Think Tank of the Government of India, providing both directional and policy inputs on various issues such as energy security, environment and climate change.</p>		
States	Power is divided between the central government and state governments. State government	The subnational state level provides an important interface between the federal	Chief Minister	Appointed by council of ministers



	<p>deals with internal security (through state police) and other state issues.</p> <p>Each state has a legislative assembly. A state legislature that has two houses known as Vidhan Sabha and Vidhan Parishad, is a bicameral legislature. The Vidhan Sabha is the lower house and corresponds to the Lok Sabha. The Vidhan Parishad is the upper house and corresponds to the Rajya Sabha.</p>	<p>and the local level.</p> <p>Vide India Constitution, the State Governments have been given exclusive jurisdiction over public health and sanitation, agriculture, land improvement and water thereby providing States with number of important legislative powers relevant to climate, environment and energy policy. Energy comes under concurrent legislation, hence involving both levels of government.</p> <p>Every States have State Pollution Control Boards (SPCBs), which is responsible for implementation of legislation relating to prevention and control of environmental pollution.</p> <p>The broad climate policy initiatives of the Union Government are supplemented by actions of the State Governments through their State Action Plan on Climate Change. Key sectors covered by SAPCCs include agriculture, water, habitat, forestry, and health and disaster management among others. No state specific goals are set under the Paris Agreement.</p>		
<p>Urban Local Bodies (ULBs)</p>	<p>At the urban level, the urban local bodies (ULBs) work in close association with the Ministry of Urban Development and other ministries to provide public services</p>	<p>The municipality can undertake town planning; regulation of land-use and construction of buildings; roads and bridges; water supply for domestic, industrial and commercial purposes;</p>	<p>Mayor</p>	<p>Elected</p>



	<p>to their respective regions. Local Bodies play a critical role in the delivery of social, economic and infrastructure services.</p> <p>A Municipal corporation is set up only as a result of statute to be passed by the state legislative assembly.</p> <p>The 74th Constitutional Amendment Act 1992, brought uniformity in the constitution of the municipal bodies by classifying them as Municipal Corporations for large urban areas, Municipalities for smaller urban areas, followed by Nagar Panchayats and suburban government bodies. However, the 74 Constitution Amendment Act does not specify any specific organizational structure for municipal administration in India. This is an issue for state legislation and the structure differs from state to state</p>	<p>public health, sanitation, solid waste management; urban forestry, protection of environment and promotion of ecological aspects; slum improvement and up-gradation; provision of urban amenities and facilities such as parks and gardens; and few more.</p> <p>ULBs are key administrative institution for implementation of various Central and State schemes and programs on environment, sustainable urban development, energy and climate change such as Atal Mission for Rejuvenation and Urban Transformation –AMRUT, Smart Cities Mission, green urban mobility scheme, etc.</p>		
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- List of key actors and map institutions of the country

Please find the institutional mapping of the country in Annex A of this document.



3. Relevant national legislation and context

Please list legislations, governing policies, documents and plans with hyperlinks, including relevant targets or indicators, on the following areas:

Sector	Legislation / policy/ plan name	Brief description	Year adopted	Hyperlink	Headline target/ goal	Key related statistics
Climate	Nationally Determined Contribution (NDC)	The Indian NDC centre around India's policies and programmes on promotion of clean energy, especially renewable energy, enhancement of energy efficiency, development of less carbon intensive and resilient urban centres, promotion of waste to wealth, safe, smart and sustainable green transportation network, abatement of pollution and India's efforts to enhance carbon sink through creation of forest and tree cover. It also captures citizens and private sector contribution to combating climate change ⁴ .	2015	http://www4.unfccc.int/ndcregistry/PublishedDocuments/India%20First/INDIA%20INDC%20TO%20UNFCCC.pdf	<p>To reduce the emissions intensity of GDP by 33%–35% by 2030 below 2005 levels;</p> <p>To increase the share of non-fossil-based energy resources to 40% of installed electric power capacity by 2030, with help of transfer of technology and low cost international finance including from Green Climate Fund (GCF);</p> <p>To create an additional (cumulative) carbon sink of 2.5–3 GtCO₂e through additional forest and tree cover by 2030.</p>	<p>Indicates that India would need around USD 206 billion (at 2014-15 prices) between 2015 and 2030 for implementing adaptation actions in agriculture, forestry, fisheries infrastructure, water resources and ecosystems.</p> <p>The report also projects the economic damage and losses in India from climate change to be around 1.8% of its GDP annually by 2050.</p>

⁴ MoEFCC Press Release, 2015 (source: <http://pib.nic.in/newsite/PrintRelease.aspx?relid=128403>, accessed on 15/10/2018)

	National Action on Climate Change (NAPCC)	<p>India's National Action Plan on Climate Change (NAPCC) identifies a number of measures that simultaneously advance the country's development and climate change related objectives of adaptation and mitigation.</p> <p>The implementation of the NAPCC is designed to take place through eight National Missions, which form the core of the National Action Plan and incorporate multi-pronged, long-term and integrated strategies for achieving India's key goals in the context of climate change.</p>	2008	http://www.moef.nic.in/downloads/home/Pg01-52.pdf	<p>The NAPCC has eight core "National Missions" which are essentially multi-pronged, long term and integrated responses to address climate mitigation and adaptation. These missions outline sector-specific measures and are focussed on solar energy development, energy efficiency promotion, developing sustainable habitats, water conservation and management, sustainable and climate resilient agriculture, afforestation, sustaining the Himalayan State eco-system and building strategic knowledge-base</p>	Suggests that at least USD 2.5 trillion (at 2014-15 prices) will be required for meeting India's climate change actions between now and 2030.
Energy	Renewable Power by 2022	The Government has up-scaled the target of renewable energy capacity to 175 GW by the year 2022 which includes 100 GW from solar, 60 GW from wind, 10 GW from bio-power and 5 GW from small hydro-power. The target of 100 GW capacity set under the National Solar Mission (NSM) will principally comprise of 40 GW Rooftop and 60 GW through Large and Medium Scale Grid Connected Solar Power Projects. With this target, India will become one of the largest Green	2015	https://mnre.gov.in/file-manager/UserFiles/Tentative-State-wise-break-up-of-Renewable-Power-by-2022.pdf	A target of installing 175 GW of renewable energy capacity by the year 2022 has been set, which includes 100 GW from solar, 60 GW from wind, 10 GW from bio-power and 5 GW from small hydro-power.	<p>Total installed capacity for electricity generation in the country as on August 2018 was 3,44,688 MW.</p> <p>Estimated renewable energy potential in India : 10,01,132 MW</p>



	Renewable Purchase Obligation (RPO)	<p>Energy producers in the world, surpassing several developed countries. Government of India in its submission to the United Nations Framework Convention on Climate Change on Intended Nationally Determined Contribution (INDC) has stated that India will achieve 40% cumulative Electric power capacity from non-fossil fuel based energy resources by 2030⁵.</p> <p>Renewable Purchase Obligation (RPO) is the obligation mandated by the State Electricity Regulatory Commission (SERC) under the Electricity Act, to purchase a minimum level of renewable energy out of the total consumption in the area of a distribution licensee. Obligated entities meet their RPOs by trading in Renewable Energy Certificates (RECs). The RPO are the backbone of India's renewable energy programme. Higher RPOs are being instituted to achieve the target of 175 GW of renewable energy capacity by March 2022.</p>	2008	<p>Earlier Target: http://www.moef.nic.in/downloads/home/Pg01-52.pdf</p> <p>Revised target: https://mnre.gov.in/file-manager/UserFiles/Solar%20RPO/analysis-of-state-RPO-regulations.pdf</p>	<p>Earlier target: In 2008, the National Action Plan on Climate Change (NAPCC) identified 8 core national missions running through 2017. One of the missions require that a minimum renewable purchase standard be set, which is increased each year till a pre-defined cap is reached. It set targets of 5% renewable energy purchase for FY 2009-10, with an increase of 1% in target each year to reach 15% renewable energy</p>	<p>Installed Renewable Energy capacity was 70648.61 MW in August 2018</p> <p>All villages (597464) as per census 2011 has been electrified on 28.04.2018</p>
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⁵ MNRE Annual Report 2016-17 (Source: <https://mnre.gov.in/file-manager/annual-report/2016-2017/EN/pdf/1.pdf>, accessed on 15/10/2018)





	National Mission for Enhanced Energy Efficiency (NMEEE)	<p>NMEEE aims to strengthen the market for energy efficiency by creating conducive regulatory and policy regime and has envisaged fostering innovative and sustainable business models to the energy efficiency sector.</p> <p>NMEEE includes following: A market based mechanism to enhance cost effectiveness of improvements in energy efficiency in energy-intensive large industries and facilities, through certification of energy savings that could be traded. (Perform Achieve and Trade)</p>	2008	http://www.indiaenvironmentportal.org.in/files/National%20Mission%20for%20Enhanced%20Energy.pdf	<p>target by 2020⁷.</p> <p>Revised Target: In order to promote renewable energy and energy security, 21% of electricity consumption, excluding hydro power, shall be from solar and non-solar renewable energy sources by 2022.</p> <p>It seeks to upscale the efforts to unlock the market for energy efficiency and help achieve total avoided capacity addition of 19,598 MW and fuel savings of around 23 million tonnes per year at its full implementation stage. The programmes under this mission have resulted in an avoided generation capacity addition of about 10,000 MW between 2005 and</p>	<p>The primary energy demand in India has grown from about 450 million tons of oil equivalent (toe) in 2000 to about 770 million toe in 2012. This is expected to increase to about 1250 (estimated by International Energy Agency) to 1500 (estimated in the Integrated Energy Policy Report) million toe in 2030 (Ministry of</p>
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⁷ Para 4.2.2 of NAPCC.



	<p>Pradhan Mantri Ujwala Yojana (PMUY)</p>	<p>Accelerating the shift to energy efficient appliances in designated sectors through innovative measures to make the products more affordable. (Market Transformation for Energy Efficiency)</p> <p>Creation of mechanisms that would help finance demand side management programmes in all sectors by capturing future energy savings. (Energy Efficiency Financing Platform)</p> <p>Developing fiscal instruments to promote energy efficiency (Framework for Energy Efficient Economic Development)⁶</p> <p>India is home to more than 24 Crore households out of which about 10 Crore households are still deprived of LPG as cooking fuel and have to rely on firewood, coal, dung – cakes etc. as primary source of cooking. The smoke from burning such fuels causes</p>	<p>2016</p>	<p>http://www.pmujiw.alayojana.com/</p>	<p>2012 with government targeting to save 10% of current energy consumption by the year 2018-19.⁸</p> <p>8 crore Below Povert Line (BPL) households targeted for providing deposit free LPG connections to BPL households by 31st March,2019⁹.</p>	<p>Power)</p> <p>Nearly 304 million people lack access to electricity, and nearly 500 million people are still depend on Biomass for cooking</p> <p>The population of India is predicted to go up to 1.6 billion by 2040. All these developments will result in the energy demand increasing by 2.7-3.2 times between years 2012 and 2040¹².</p>
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⁶ NMEEE Presentation (source: <http://www.moef.nic.in/downloads/others/Mission-SAPCC-NMEEE.pdf>, accessed on 15/10/2018)

⁸ Para 1.1.2 India's INDC document

⁹ Ministry of Petroleum & Natural Gas, Press Release 2018 (Source: <https://www.jagranjosh.com/general-knowledge/what-is-national-mission-for-enhanced-energy-efficiency-1525336782-1>, accessed on 15/10/2018)

¹² Draft National Energy Policy, 2017, Niti Aayog (Source: <http://indiaenergy.gov.in/wp-content/uploads/2017/10/Draft-National-Energy-Policy.pdf>, accessed on 15/10/2018)



		<p>alarming household pollution and adversely affects the health of Women & children causing several respiratory diseases/ disorders. The scheme is aimed at replacing the unclean cooking fuels used in the most underprivileged households with clean and more efficient LPG (Liquefied Petroleum Gas). Ensuring women's empowerment, especially in rural India. A priority programme by government that focuses on development objectives and has associated GHG emission impacts as well.</p>				
	24X7 Affordable Power for All	<p>The intent of this programme is to provide adequate power supply to all households by 2019. A priority programme by government that focuses on development objectives and has associated GHG emission impacts as well.</p>	2014			<p>Under this programme 1, 25,000 of the six lakh villages in the country will be connected to the grid¹⁰.</p>
	National Energy Policy (NEP) 2018 (Planned)	<p>The National Energy Policy (NEP) is a broad scale policy covering the whole national energy system in India. The policy focuses on two time horizons: near-term to 2022, and medium-term to</p>	2018 (planned)	http://niti.gov.in/writereaddata/files/new_initiatives/NEP-ID_27.06.2017.pdf		<p>Electricity at affordable prices:. The policy aims to provide clean cooking technologies to all within a "reasonable time".</p> <p>Improved security and</p>

¹⁰ Ministry of Power (year end review, 2015), (Source: <http://pib.nic.in/newsite/PrintRelease.aspx?relid=133631>, accessed on 15/10/2018)





		2040.			<p>independence: improve national energy security. This is to be achieved by decreasing the share of imports in the primary energy supply (mainly sources such as oil and gas) and also by diversifying the energy mix.</p> <p>Greater sustainability: the sustainability objective emphasises the need to build up resilience towards natural catastrophies that are likely to increase as a result of climate change. The policy therefore stresses the need for decarbonisation to achieve both energy security and the sustainability objectives.</p> <p>Economic growth: As India continues its rapid economic growth, its energy policy must work to support this growth. This includes for example, securing competitive prices and growth in the</p>	
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					energy sector as a source for foreign investments ¹¹ .	
Mobility	National Electric Mobility Mission Plan (NEMMP) 2020	The plan sets the vision, lays the targets and provides the joint Government – industry vision for realizing the huge potential that exists for full range of efficient and environmentally friendly electric vehicle (including hybrids) technologies by 2020. The NEMMP 2020 projections also indicate that the savings from the decrease in liquid fossil fuel consumption as a result of shift to electric mobility alone will far exceed the support provided thereby making this a highly economically viable proposition.	2013	https://dhi.nic.in/writereaddata/Content/NEMMP2020.pdf	As per these projections, 6-7 million units of new vehicle sales of the full range of electric vehicles, along with resultant liquid fuel savings of 2.2 – 2.5 million tonnes can be achieved in 2020.	The share of public transport in cities with population sizes over 4 million has declined from 69% to 38% between 1994 to 2007 (World Bank)
	National Policy on Biofuels – 2018 ¹³	The Policy aims to increase usage of biofuels in the energy and transportation sectors of the country during the coming decade. The Policy aims to utilize, develop and promote domestic feedstock and its utilization for production of biofuels thereby increasingly substitute fossil fuels while	2018	http://petroleum.nic.in/sites/default/files/biofuelpolicy2018_1.pdf	The Goal of the Policy is to enable availability of biofuels in the market thereby increasing its blending percentage. Currently the ethanol blending percentage in petrol is around 2.0% and biodiesel blending percentage in diesel is	The total number of registered motor vehicles in India 210023289 (as on 2015) (MoSPI 2017)

¹¹ Policies Section, IEA, (Source: <https://www.iea.org/policiesandmeasures/pams/india/name-168042-en.php>, accessed on 15/10/2018)

¹³ National Biofuel Policy 2018 (Source: http://petroleum.nic.in/sites/default/files/biofuelpolicy2018_1.pdf, accessed on 15/10/2018)



	Vehicle Fuel Efficiency Program	<p>contributing to National Energy Security, Climate Change mitigation, apart from creating new employment opportunities in a sustainable way. Simultaneously, the policy also aims to encourage the application of advance technologies for generation of biofuels.</p> <p>Government of India in 2014 finalized country's first passenger vehicle fuel-efficiency standards. India successfully introduced the BS-IV grade transportation fuels across the country w.e.f April 1st 2017. Government in consultation with stakeholders has decided to meet international best practices by leapfrogging directly from BS-IV to BS-VI grade by 1st April, 2020, skipping BS-V altogether. In a major step, India has preponed implementation of BS-VI grade auto fuels in NCT of Delhi w.e.f 01.04.2018 instead of 01.04.2020</p>	2014	http://pib.nic.in/newsite/PrintRelease.aspx?relid=173517	<p>less than 0.1%. An indicative target of 20% blending of ethanol in petrol and 5% blending of biodiesel in diesel is proposed by 2030.</p> <p>India aims to improve fuel standards by switching from Bharat Stage IV (BS IV) fuels to Bharat Stage VI (BS VI) across the country by 2020¹⁴.</p>	
Buildings	Energy Conservation Building	ECBC 2017 prescribes the energy performance standards for new commercial buildings to be constructed	2017	https://beeindia.gov.in/sites/default/files/BEE_ECBC%2	In order for a building to be considered ECBC-compliant, it would need	India has doubled its floor space between 2001 to 2005 and

¹⁴ Ministry of Petroleum and Natural Gas Press Release 2018 (Source: <http://pib.nic.in/newsite/PrintRelease.aspx?relid=178253>, accessed 15/10/2018)



	<p>Code (ECBC) 2017</p> <p>National Sustainable Habitat Mission</p>	<p>across India.</p> <p>The scope of ECBC 2017 includes norms and standards for building design, including the envelope, lighting, heating, air-conditioning, and electrical systems. It sets minimum energy standard for new commercial buildings having connected load of 100 kW & above or contract demand of 120kVA & above.</p> <p>With the adoption of ECBC 2017 for new commercial building construction throughout the country, it is estimated to achieve a 50% reduction in energy use by 2030. This will translate to energy savings of about 300 Billion Units by 2030 and peak demand reduction of over 15 GW in a year. This will be equivalent to expenditure savings of Rs 35,000 crore and 250 million tonnes of CO2 reduction.</p> <p>Aims at integrating mitigation and adaptation into the urban planning</p>	<p>2010</p>	<p>02017.pdf</p> <p>http://mohua.gov.in/cms/National-Mission-on-Sustainable-Habitat.php</p>	<p>to demonstrate minimum energy savings of 25%. Additional improvements in energy efficiency performance would enable the new buildings to achieve higher grades like ECBC Plus or Super ECBC status leading to further energy savings of 35% and 50%, respectively¹⁵.</p> <p>Key deliverables of the mission include: a) Development of sustainable habitat standards that lead to robust development strategies while simultaneously addressing climate</p>	<p>expected to add 35 Billion square meter of new buildings by 2050¹⁶</p>
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¹⁵ Ministry of Power Press Release, 2017 (Source: <http://pib.nic.in/newsite/PrintRelease.aspx?relid=165748>, accessed : 15/10/2018)

¹⁶ Global Building Performance Network (2014), Residential Buildings In India: Energy Use Projections And Savings Potentials, (Source: http://www.gbpn.org/sites/default/files/08.%20INDIA%20Baseline_TR_low.pdf, accessed 15/10/2018)





		process with a view to make cities sustainable through improvements in energy efficiency of buildings, management of solid waste and shift to public transport. The Mission however does not contain specific targets.			change-related concerns b) Preparation of city development plans that comprehensively address adaptation and mitigation concerns c) Preparation of comprehensive mobility plans that enable cities to undertake long-term, energy-efficient and cost-effective transport planning d) Capacity building for undertaking activities relevant to the mission	
Waste management	Swachh Bharat Mission	The Swachh Bharat Mission with its two sub-missions namely Swachh Bharat Mission (Gramin) and Swachh Bharat Mission (Urban) aims to eliminate open defecation, eradicate manual scavenging, practice modern and scientific solid waste management techniques and in effect bring a behavioral change in sanitation practices.	2014	http://164.100.228.143/sbm/home/#/SBM?encryptdata=eK991SygGmVKdZiwkz1wqri2w9%2BU6ljj8p9hc3hij6UuAMIN2PSGTz0mUTiBPpGOSIMk4Ew3Q2uHcNgv0eepHMNyrvACLfkYFwp30%2FCp%2FIM%3D	The Swachh Bharat Mission - Urban (SBM-U), launched on 2nd October 2014 aims at making urban India free from open defecation and achieving 100% scientific management of municipal solid waste in 4,041 statutory towns in the country.	





	Solid Waste Management Rules, 2016	Revised SWM rules after 16 years. Rules are now applicable beyond municipal areas and will extend to urban agglomerations, census towns, notified industrial townships, areas under the control of Indian Railways, airports, airbase, port and harbour, defence establishments, special economic zones, State and Central government organizations, places of pilgrims, religious & historical importance. The Government has also constituted a Central Monitoring Committee under the chairmanship of Secretary, Ministry of Environment, Forest and Climate Change to monitor the overall implementation of the Rules ¹⁷ .	2016	http://www.moef.nic.in/sites/default/files/SWM%202016_0.pdf	Waste processing facilities will have to be set up by all local bodies having 1 million or more population within two years. In case of census towns below 1 million population, setting up common, or stand-alone sanitary landfills by, or for all local bodies having 0.5 million or more population and for setting up common, or regional sanitary landfills by all local bodies and census towns under 0.5 million population will have to be completed in three years. Mandates waste to Energy plant for waste with 1500 Kcal/kg and above for co-incineration in cement and power plants	<ul style="list-style-type: none"> • 62 million tonnes of waste is generated annually in the country at present, out of which 5.6 million tonnes is plastic waste, 0.17 million tonnes is biomedical waste, hazardous waste generation is 7.90 million tonnes per annum and 15 lakh tonne is e-waste. • The per capita waste generation in Indian cities ranges from 200 grams to 600 grams per day. • Waste generation will increase from 62 million
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¹⁷ MoEFCC Press Release 2016 (Source: <http://pib.nic.in/newsite/PrintRelease.aspx?relid=138591>, accessed on 15/10/2018)



						tonnes to about 165 million tonnes in 2030
Water	National Water Mission	To ensure integrated water resource management, conserve water, minimize wastage and ensure equitable distribution of water within states, the National Water Mission (NWM) was approved by the Cabinet in 2011. The mission is run by the Ministry of Water Resources, River Development and Ganga Rejuvenation ¹⁸	2011	http://nwm.gov.in/sites/default/files/nwp20025617515534.pdf	Comprehensive water data base in public domain and assessment of the impact of climate change on water resources; promotion of citizen and state actions for water conservation, augmentation and preservation; focused attention to vulnerable areas including over-exploited areas; increasing water use efficiency by 20%; and promotion of basin level integrated water resources management.	<ul style="list-style-type: none"> • % access to water & sanitation • etc
	Namami Gange Mission/ National Mission for	It is an Integrated River Conservation Mission which aims to clean and rejuvenate river Ganga and its tributaries, comprehensively looking into ensuring unpolluted flow, establishing ecological flow, restoring geological and ecological integrity,	2015	https://nmcg.nic.in/aims_obj.aspx	To ensure effective abatement of pollution and rejuvenation of the river Ganga by adopting a river basin approach to	

¹⁸ Ministry of Water Resources, River Development and Ganga Rejuvenation 2011, Mission Document, available at <http://wrmin.nic.in/writereaddata/nwm28756944786.pdf>, as accessed on 15/10/2018.





	Clean Ganga (NMCG)	community participation, river-front development, etc. The programme has a budget outlay of INR 200 billion for the period 2015–2020 ¹⁹ .			<p>promote inter-sectoral co-ordination for comprehensive planning and management and</p> <p>To maintain minimum ecological flows in the river Ganga with the aim of ensuring water quality and environmentally sustainable development.</p>	
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¹⁹ Ministry of Housing and Urban Poverty Alleviation (2016), India Habitat III National Report (Source: http://habitat3.org/wp-content/uploads/Habitat-III_India-National-Report.pdf, accessed on 15/10/2018)



4. Assessment of NDC in relation to sub-national government

Publication date of latest NDC	http://www4.unfccc.int/ndcregistry/PublishedDocuments/India%20First/INDIA%20INDC%20TO%20UNFCCC.pdf
Lead agency/ Ministry	Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India
Governance structures for implementation	<p>MoEFCC is the focal Ministry for NDC implementation in India. MoEFCC also involves other sector ministries, namely, Ministry of Power (MoP), Ministry of Urban Development (MUD), Ministry of New and Renewable Energy (MNRE), Ministry of Water Resources (MWR), Ministry of Agriculture (MoA) and Department of Science and Technology (DST) in NDC implementation.</p> <p>India is presently working on developing a roadmap for implementation of our NDC and have constituted an Implementation committee and six thematic Sub-committees involving key Ministries and Departments. In order to achieve goals of NDC, recently, the Ministry of Environment, Forest and Climate Change has called for a series of studies from agencies and research organizations to develop roadmap for the implementation of these goals in effective and efficient manner. Outcomes of these studies will then be presented to the Sub-committees for finalizing the strategies. Any final decision on NDC implementation has to be approved by the Cabinet.</p>
To what extent are a) Sub-national government b) Urbanisation/urban relevant sectors ²⁰ mentioned in the NDC?	<p>As per the 2017 report by Un Habitat titled 'Sustainable Urbanization in the Paris Agreement', Indian NDC has been categorised as Cluster A i.e. NDCs with urban mentions within text headers, classified as strong urban content.</p> <p>India NDC document includes as section which focuses on developing climate resilient urban centres and lists various domestic initiatives Smart Cities Mission, Atal Mission for Rejuvenation and Urban Transformation (AMRUT) and National Heritage City Development and Augmentation Yojana (HRIDAY).</p> <p>The NDC also prominently highlights role of States and Urban Local Bodies (ULBs) in achieving climate goals.</p>

²⁰ Data for your country may be found in UN-Habitat's recent publication:
<https://unhabitat.org/books/sustainable-urbanization-in-the-paris-agreement/>



<p>Do any urban-related NAMA's or NAP's, or coordinated urban/climate programs, targeted at sub-national government, exist? If so name them here</p>	<p>A NAMA in India's municipal solid waste sector focused on co-processing waste-based fuel, or refused derived fuel, in cement kilns has been approved. Supported by the German development agency (GIZ), the NAMA has the potential to achieve an industry-wide thermal substitution rate that is very close to the country's cement sector's Technology Roadmap, namely 18.8% out of 19% by 2030. Raising the thermal substitution rate from the current 1% to this level would translate into 3.1 million tonnes of fossil fuels replaced per year²¹.</p>
<p>Briefly describe the Monitoring, Reporting and Verification system that exists/being planned for climate action.</p>	<p>MoEFCC is the lead and coordinates actions on NDC implementation and working with a comprehensive MRV system. It is expected that the roadmap for NDC implementation will map the MRV system in accordance with present responsibilities of various ministries and departments. Ongoing efforts of MRV, involve various sector specific nodal agencies for national missions/schemes along with mitigation and adaptation projects. The Central Statistics Office (CSO) under National Statistical Organization (NSO) constituted a Steering Committee on Environment Statistics in 1996 to examine the indicators identified by United Nations Statistics Division (UNSD) and recommend a set of parameters which are relevant in Indian context and applicable to India's needs and requirements. CSO has set indicators for climate change- Mitigation and adaptation. It was also recommended that CSO should be the nodal agency to coordinate with the data source agencies²².</p> <p>Further, in accordance to the convention, Parties have to submit to the Conference of the Parties (COP) national reports on implementation of the Convention to inform on the implementation of activities relating to mitigation. In conformity, India had submitted Initial National Communication in 2004, and Second National Communication in 2012. Government of India has prepared the first Biennial Update Report (BUR) for submission to the UNFCCC as an update to the most recently submitted National Communication i.e. the Second National Communication. The Government of India is undertaking preparation of the Third National Communication and Second Biennial Report, which intends to broaden and consolidate the network of stakeholders, including researchers, industry, non-governmental organizations (NGOs) and the private sector to create a platform for developing policy for key</p>

²¹ IISD, 2017 (Source: <http://sdg.iisd.org/news/nama-update-nama-facility-updates-namas-on-the-cop-23-agenda/>, accessed on 15/10/2018)

²² Statistics Related to Climate Change – India 2015, Government of India, Ministry of Statistics and Programme Implementation Central Statistics Office Social Statistics Division, New Delhi



	climate change sectors. The third communication would develop the national GHG inventory for the year 2014 ²³ .
What are the major barriers identified preventing sub-national involvement in implementation of the NDC and related policies?	<p>The powers of town and city governments vary across states and a significant decentralization of governance has not occurred. Therefore, cities' institutional and financial capacities remain weak to implement climate actions (Beermann et al., 2016)²⁴</p> <p>Difficulty mobilising private funding without the backing of national government.</p> <p>Limited awareness amongst officials on aspects of climate impacts, mitigation and adaptation at city level.</p> <p>Inadequate scope for vertical linkages, i.e., from city level to the national level and horizontal linkages i.e. between municipalities and ULBs at the city level.</p> <p>Lacking skilled and technical human capital to incorporate climate mitigation and adaptation interventions into sub-national planning and implementation.</p>

- How can local and regional governments help national governments (including ministries of climate change and urbanization) to seize the potential of sustainable and integrated urban and territorial development in the implementation of the NDC of your country?

The delivery of India's climate targets relies on effective planning at the national level with full engagement of local and subnational governments. Through the roadmap for NDC implementation quantitative targets could be further divided among sub-national level considering their capabilities and other factors such as socio-economic-environmental potential. Local and regional governments will be able to deliver efficient and cost effective implementation of NDC targets at ground level, since they are pivotal stakeholders for reducing GHG emissions by advancing renewable energy systems, sustainable transportation, spatial development and waste management strategies. Numerous India cities are currently active in bi-lateral and transnational city collaboration for sustainable and low carbon development, thereby leading to climate initiation and learning. Through this peer-to-peer learning as one of the initiative, cities would be able to contribute help in sustainable and integrated urban and territorial development in the implementation of the NDC.

- What are the options to integrate commitments and actions of local and regional governments in to current and future NDCs of this country?

²³ UNDP, Project information factsheet, accessed on 26 September 2018 <http://www.in.undp.org/content/dam/india/docs/tnc.pdf>

²⁴ Jan Beermann, Appukuttan Damodaran, Kirsten Jörgensen & Miranda, A. Schreurs (2016) Climate action in Indian cities: an emerging new research area, Journal of Integrative Environmental Sciences, 13:1, 55-66, DOI: 10.1080/1943815X.2015.1130723



The major entry points for integrating commitments and actions of local and regional governments in to current and future NDCs could be balanced urban planning, low-emission development strategies, innovative and additional finance mechanisms from urban mitigation and adaption, multi-level stakeholder engagement, urban infrastructure/services delivery, etc. In Indian context, key policies with the goal of guiding urban development on an energy efficient and low carbon pathway are already in position such as The National Urban Transport Policy (NUTP), National Mission for Sustainable Habitat (NMSH), etc. further, newly introduced programmes such as Smart Cities Mission, the Swachh Bharat Mission, Atal Mission for Rejuvenation and Urban Transformation (AMRUT) and the Housing for All by 2022 Mission etc. are all entry points for climate action at the city level which if implemented effectively, will directly contribute to achieving India's NDC targets.

- How can your national government collaborate with local and regional governments to mobilize appropriate capacity building, technical, financial resources and policy/legal framework to realize solutions addressed in delivering and raising ambition; in 2018, towards 2020, towards 2050?

Sub-national governments should be involved in capacity building and awareness activities related to global commitments and roadmaps. An advisory committees constituted at ULBs can suggest innovative financing instruments for mitigation and adaptation projects. Technical capacity of ULBs is a matter of concern to implement low emission development strategies. Constitution of nodal department at sub-national governments would coordinate all such mitigation and adaption project and assist nation government to monitor report and verify the targets of NDC. Allocation of budgetary provisions for such departments and incorporating their recommendations for horizontal and vertical coordination would help sub-national governments to become a part of global commitments. Sub-national budgets are also significant in terms of allocating funds for local low carbon development actions. Policy makers have to develop a partnership with business sectors like industrial associations, financial institutions and technical institutes while developing a roadmap. Supplementary task on MRV against NDC goals could be an integral part of the annual reports of all Ministries and agencies of Government. Public disclosure on roadmaps to achieve NDC and progress against NDC targets will add pressure on to deliver with transparency and time bound actions. To achieve the NDC goals, strong vertical and horizontal integrations are required through various ministries, departments and national to sub-national governments.



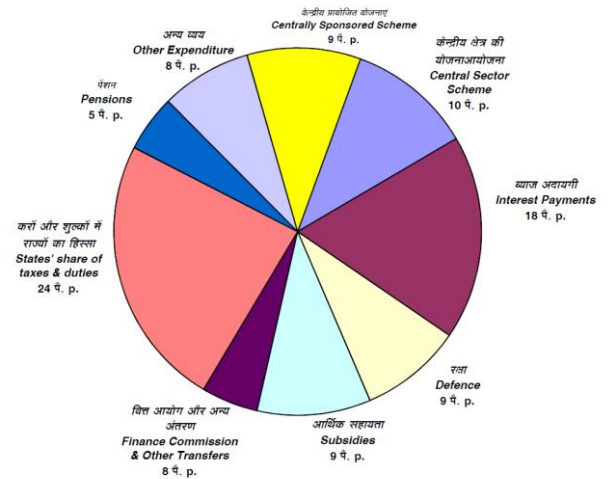
5. List of Project Advisory Group (PAG) members

Annex C - Not available yet.

6. Financial System

- National Budget

The Union Budget for 2018-19 for in Parliament on February 1, 2018. It focuses on uplifting the rural economy and strengthening of the agriculture sector, healthcare for the economically less privileged, infrastructure creation and improvement in the quality of education of the country. The budget reports that investments in excess of INR 50 trillion (USD 786.02 billion) are required in the country's infrastructure to increase the growth of GDP and connect and integrate country's transport network. Further, under the Smart Cities Mission, projects worth INR 23,500 million (USD 369.43 million) have been completed and projects worth 208,520 million (USD 3.82 billion) are under progress. A total of 99 cities have been selected under the mission with an outlay of INR 2.04 trillion (USD 32.07 billion)²⁵.



Source: Union Budget 2018-19, India

- Climate finance

Climate finance is also fundamental to India's efforts to fight climate change. The economic survey of India estimates that more than USD 38 billion are needed to fund the implementation of the National Action Plan on Climate Change (NAPCC)²⁶, a plan created by the government in 2008. In its INDCs under the Paris Agreement, India has submitted that it requires an estimated USD 2.5 trillion by 2030 to meet its targets. The Government of India recognises that efforts to bridge the funding gap in meeting India's low-carbon development needs must be based on an approach that combines public, private and international sources of finance.

²⁵ <https://www.indiabudget.gov.in/vol1.asp>

²⁶ This figure comes from the 2012-2013 Economic Survey, undertaken by the Ministry of Finance.

Climate Finance in India comes from multiple sources; national (domestic budgets and private funds) and international (multilateral and bilateral aid agencies, and multinational private firms). These climate finance funds flow either through the government budgets at the national and subnational level which are managed by the government departments and agencies; or can even be channelled at the project level in form of direct project funding to be managed by the private players and NGOs. The funds channelled are mostly in form of budgetary allocations, taxes, subsidies, generation based incentives, private equity, loans, soft-loans and grants.

Key funds available	Relevant accredited entities	Brief description of fund	Timeline	Amount of funding
Green climate Fund	National Designated Authority (NDA) / Focal Point: MoEFCC Accredited entities: National Bank for Agriculture and Rural Development (NABARD) & Small Industries Development Bank of India (SIDBI)	The GCF aims to support developing countries in achieving a paradigm shift to low-emission pathways and to increase climate-resilient development, by funding transformative projects and programmes on adaptation and/or mitigation to climate change.		Funds pledged to GCF is USD10.3 billion
Adaptation Fund (AF)	National Designated Authority (NDA) / Focal Point: MoEFCC National Implementing Entity: National Bank for Agriculture and Rural Development (NABARD)	The Adaptation Fund finances climate change adaptation and resilience activities in developing countries that are vulnerable to the adverse effects of climate change and are Parties to the Kyoto Protocol. All funding applicants are required to submit project proposals through a National Implementing Entity, a Regional Implementing Entity, or a Multilateral Implementing Entity. Proposals also require endorsement by the Designated Authorities of the country in which the proposed activities would take place.	2018-2020	USD 100 million annual target for 2018-2020

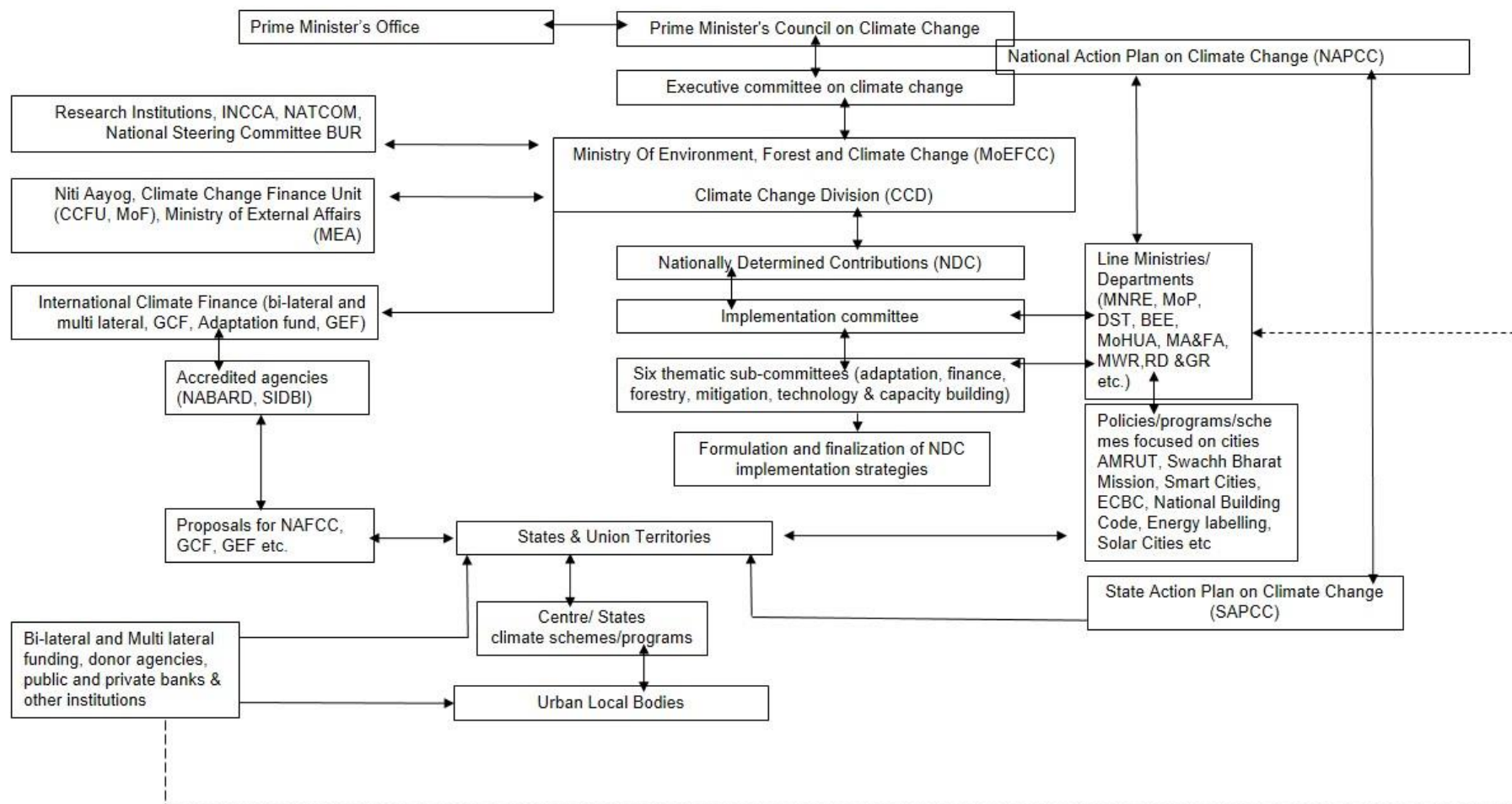


Global Environmental Facility (GEF)	National Designated Authority (NDA) / Focal Point: MoEFCC	<p>GEF funds are available to developing countries and countries with economies in transition to meet the objectives of the international environmental conventions and agreements.</p> <p>GEF support is provided to government agencies, civil society organizations, private sector companies, research institutions, among the broad diversity of potential partners, to implement projects and programs in recipient countries.</p>	GEF 7 cycle (4 years) till 2022	USD 85.61 million for India ²⁷
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²⁷ <https://www.thegef.org/sites/default/files/publications/GEF-C.55-Inf.03-GEF-7-STAR.pdf>



Annex A - Institutional mapping of India



Annex B – Climate hazards and critical assets mapping

Not available yet.

Annex C – National Project Advisory Group (PAG) members

Not available yet.

