

India and Subnational Climate Change: An Emerging Discourse

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India as an emerging economy

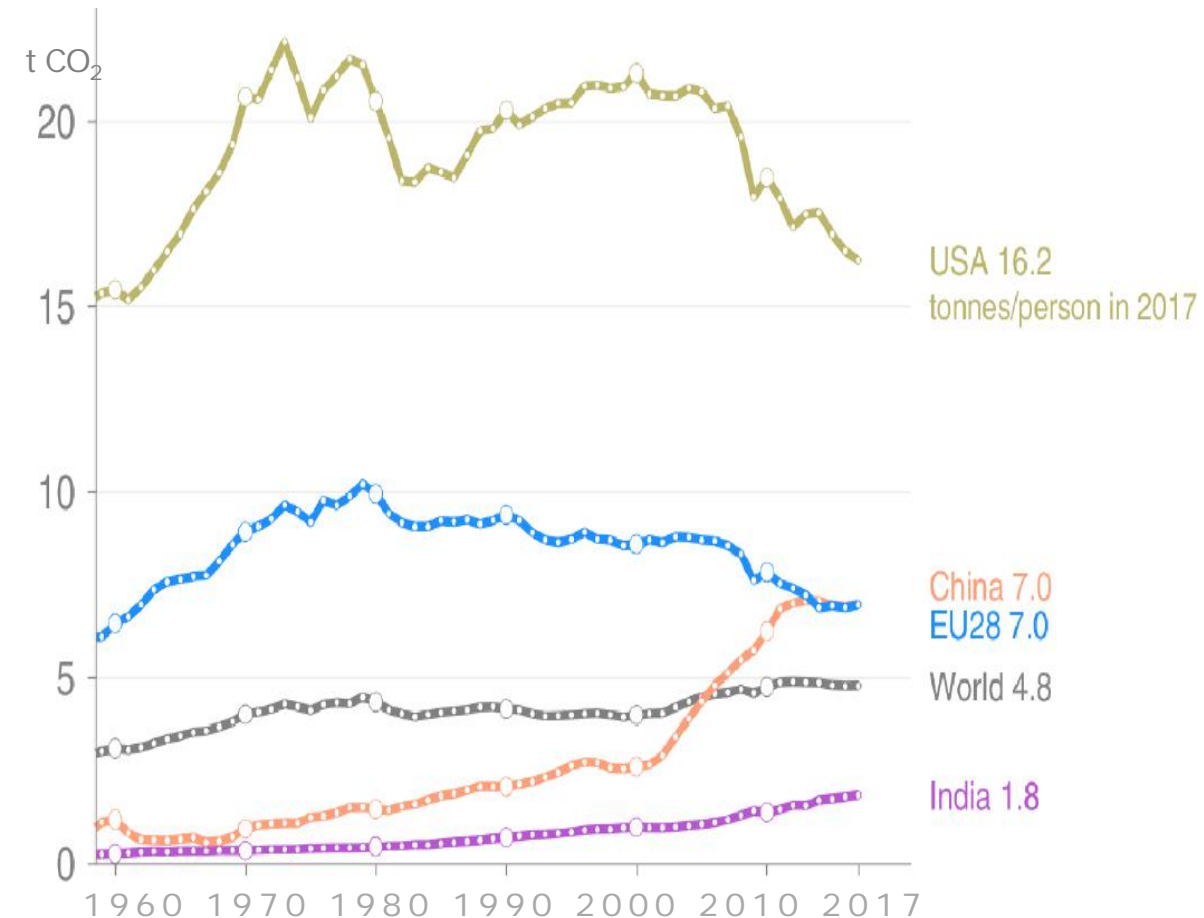
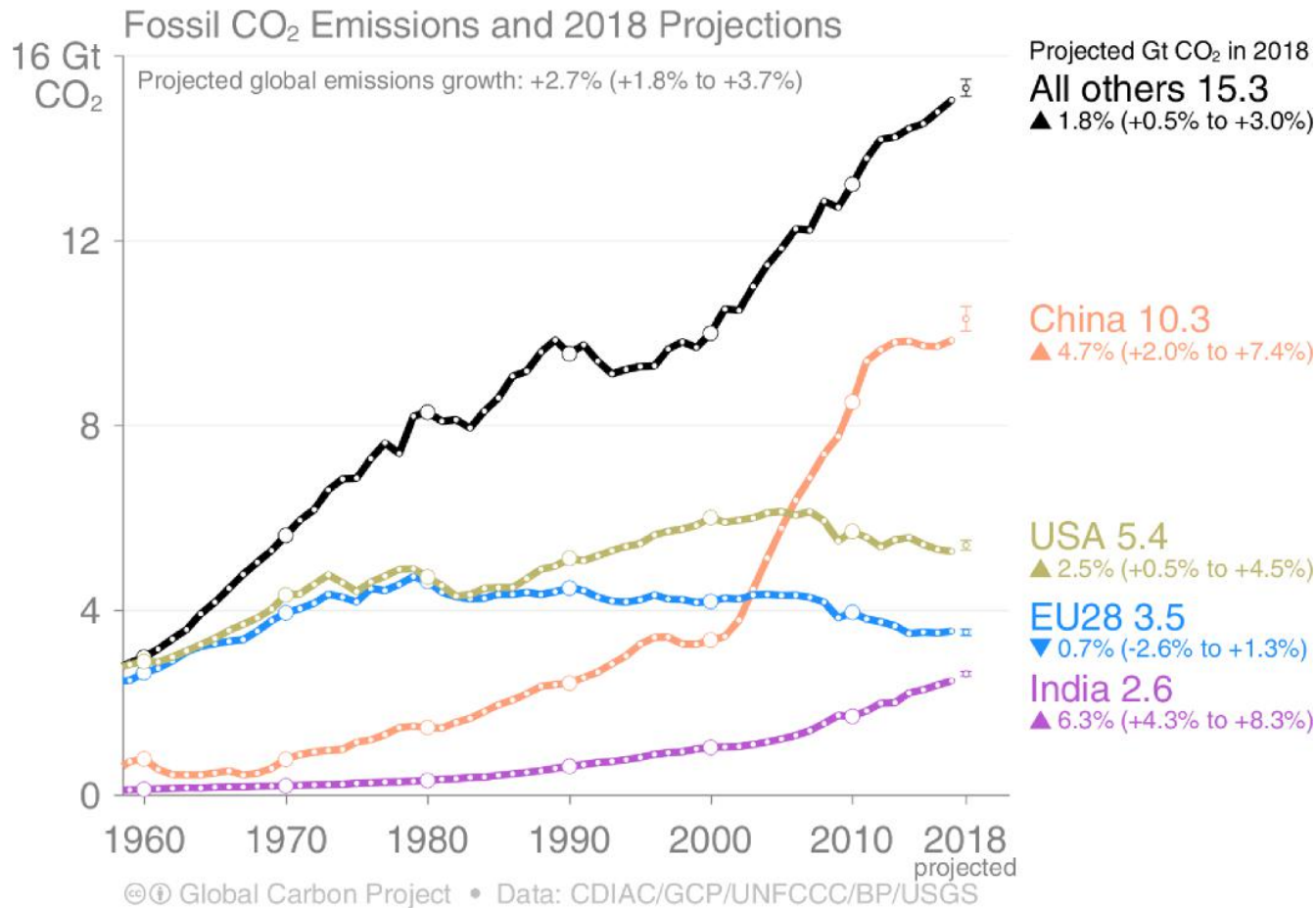
	GDP-PPP (current International \$) 2014 \$ billion	Total GHG Emissions (Mt CO ₂) – 2016
US	17,419	2
EU (28)	18,645	
China	18,017	1
Russia	3,745	4
Germany	3,704	6
India	7,384	3
Brazil	3,263	12
South Africa	704	13
Bangladesh	496	

India as a premature power

	GDP-PPP per capita, (current international \$) 2014	GHG Emissions per capita (including LUCF) in 2012 - tCO ₂ e	Multidimensional Poverty Index rank
US	54,629	19	NA
EU (28)	36,326	8	NA
China	13,206	8	5
Russia	25,636	16	NA
Germany	45,802	10	NA
India	5,701	2	55
Brazil	15,838	9	3
South Africa	13,046	9	10
Bangladesh	3,123	1	50

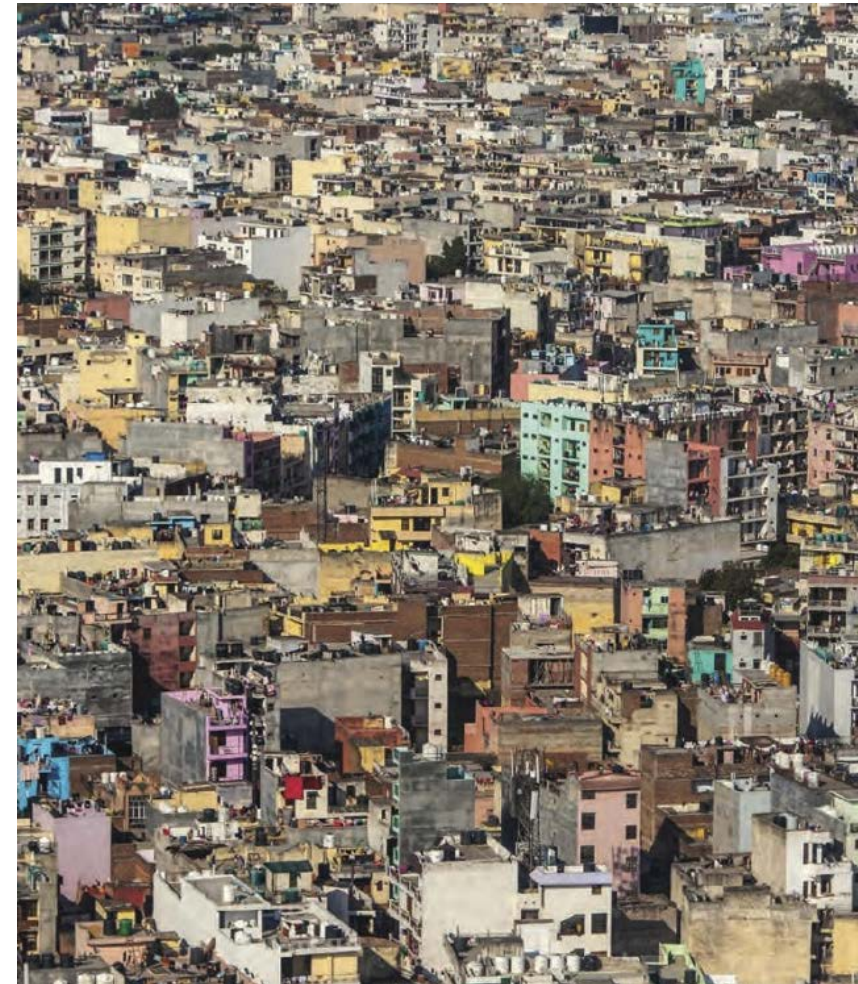
India's energy and climate duality

- Significant emitter of GHG emissions
- Low base of development + high climate impacts vulnerability

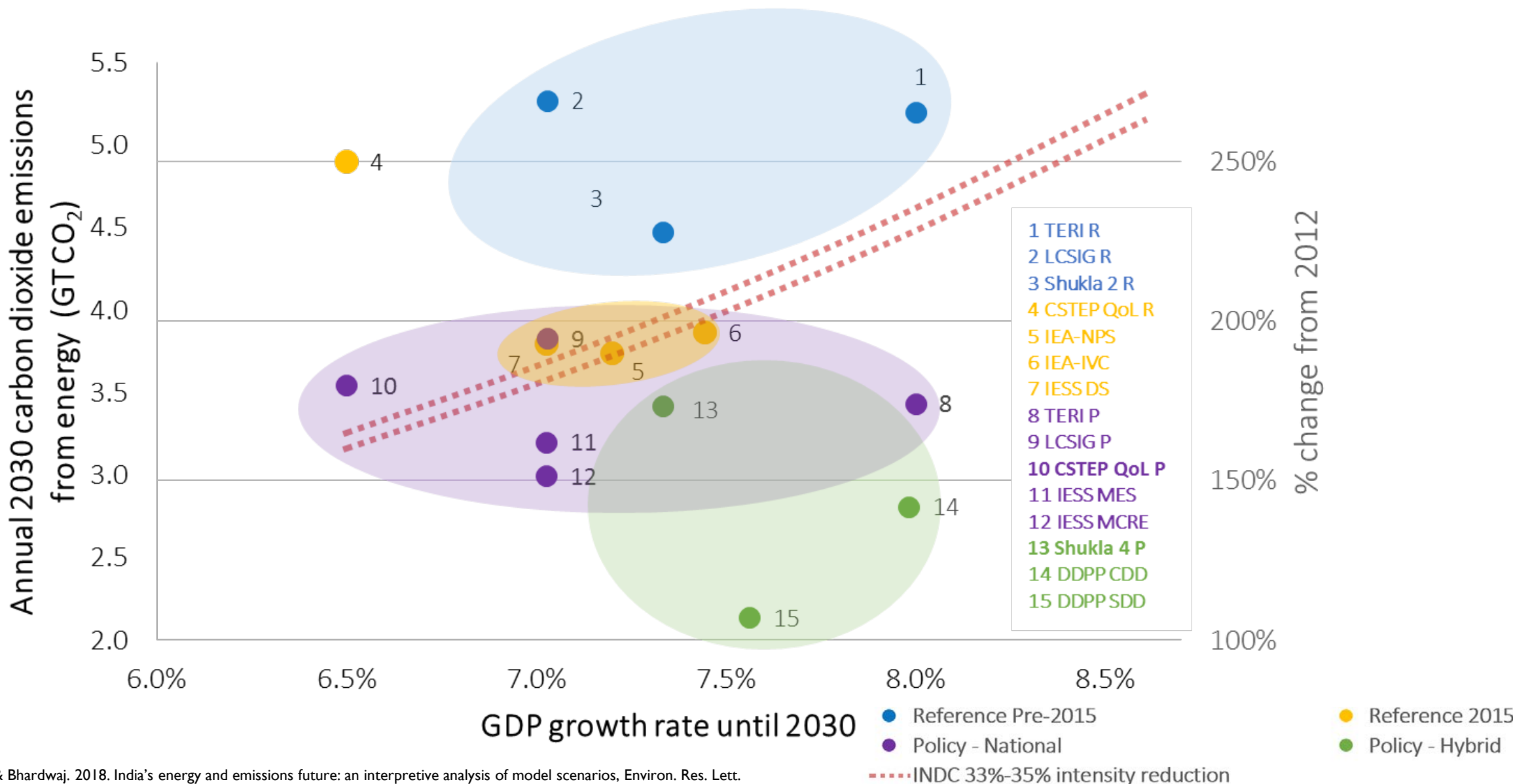


India's impending transitions

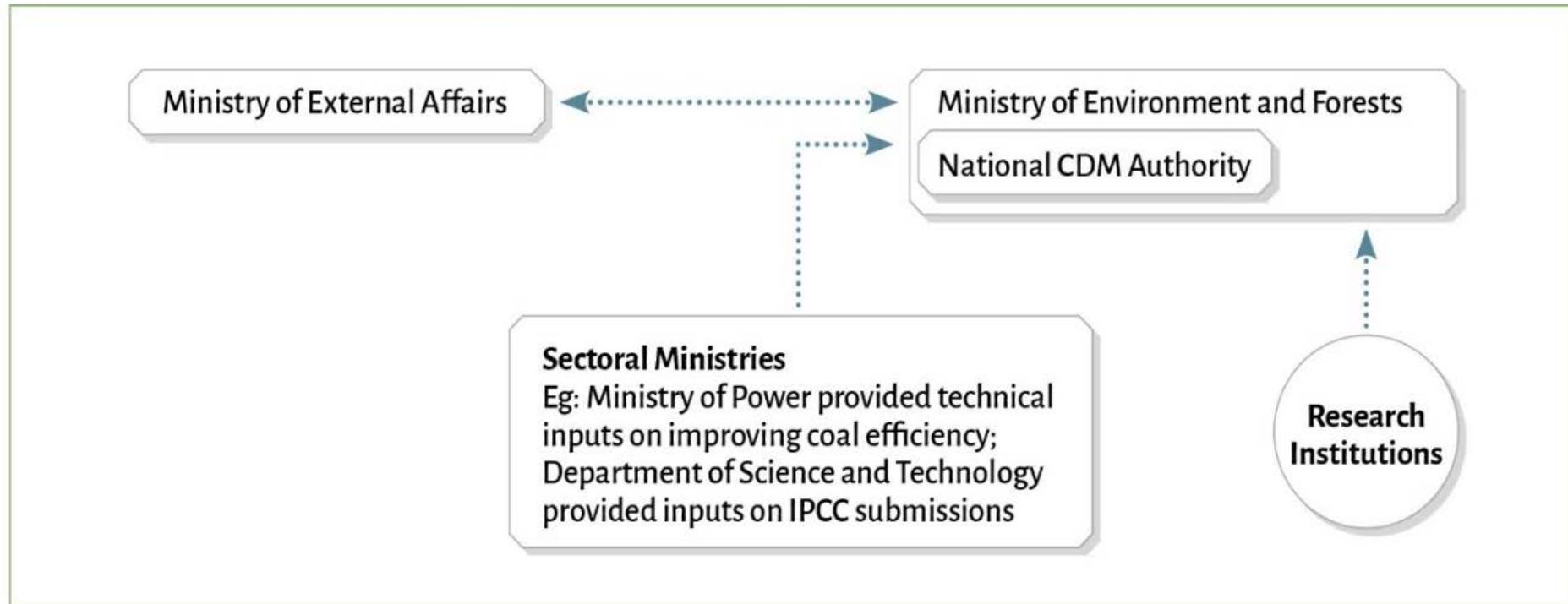
- Urbanisation:
 - Urban population to double between 2014-2050
 - Indian cities will host 200 million more people by 2030
 - Fastest + largest impending urban transition in global history
- Infrastructure:
 - 2/3rd buildings to exist in 2030 to be built 2010-2030
 - Construction of 700 to 900 million sq m of commercial and residential space, or "a new Chicago every year"
- Jobs:
 - 10 m people to enter the job market annually in next two decades
- Access:
 - ~800 m lack clean cooking fuel
 - ~300 m lack access to electricity
- Uncertainties posed by the pace, scale and scope of multiple and simultaneous transitions



Uncertainties in 2030 CO₂ emissions projections



Phase I (Pre-2007): Climate Change as a Diplomatic Problem



Source: Authors' representation based on interviews

Key to Lines

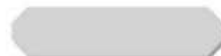


Coordination Relationships

Key to Boxes



Executive Body

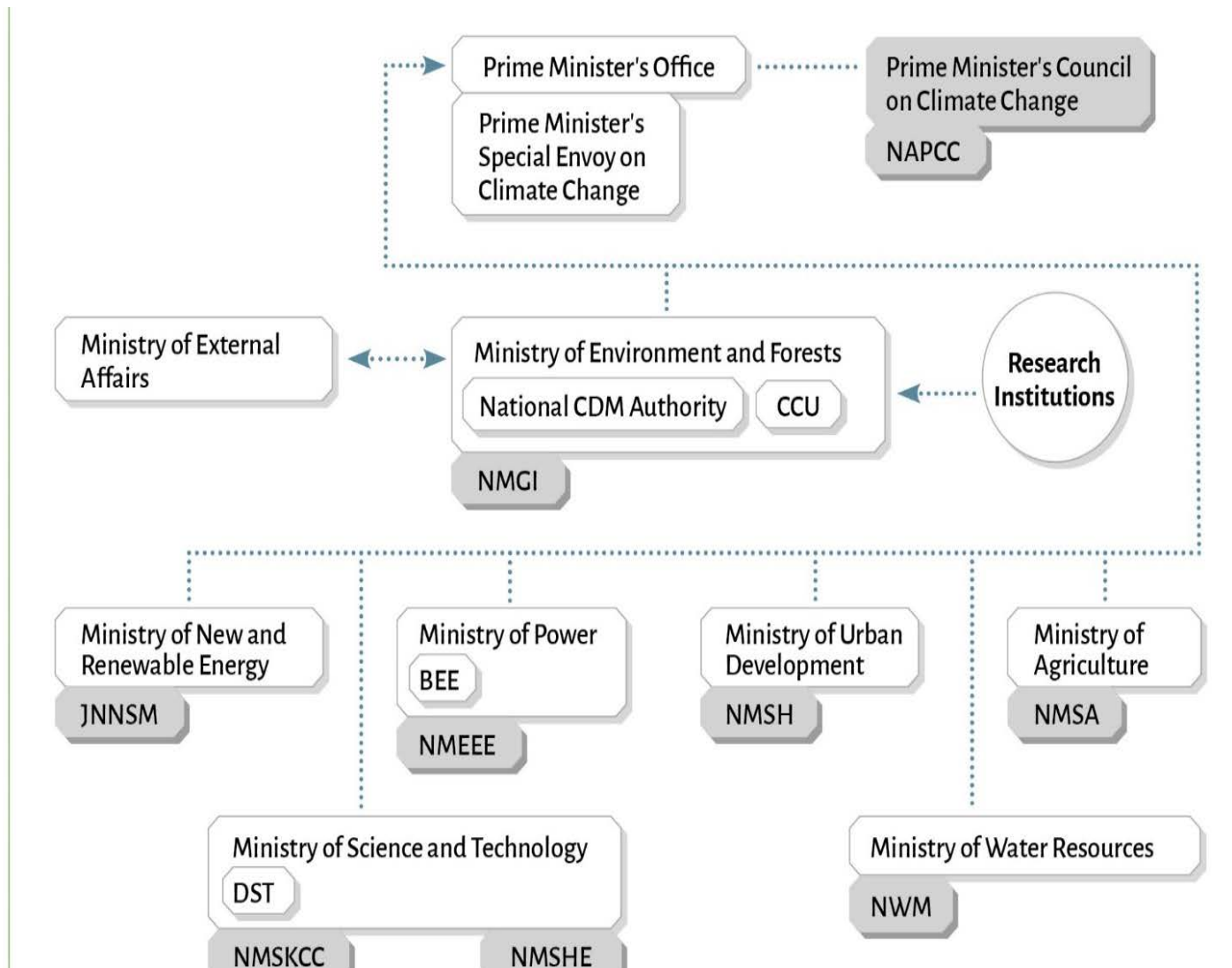


Plans and Processes

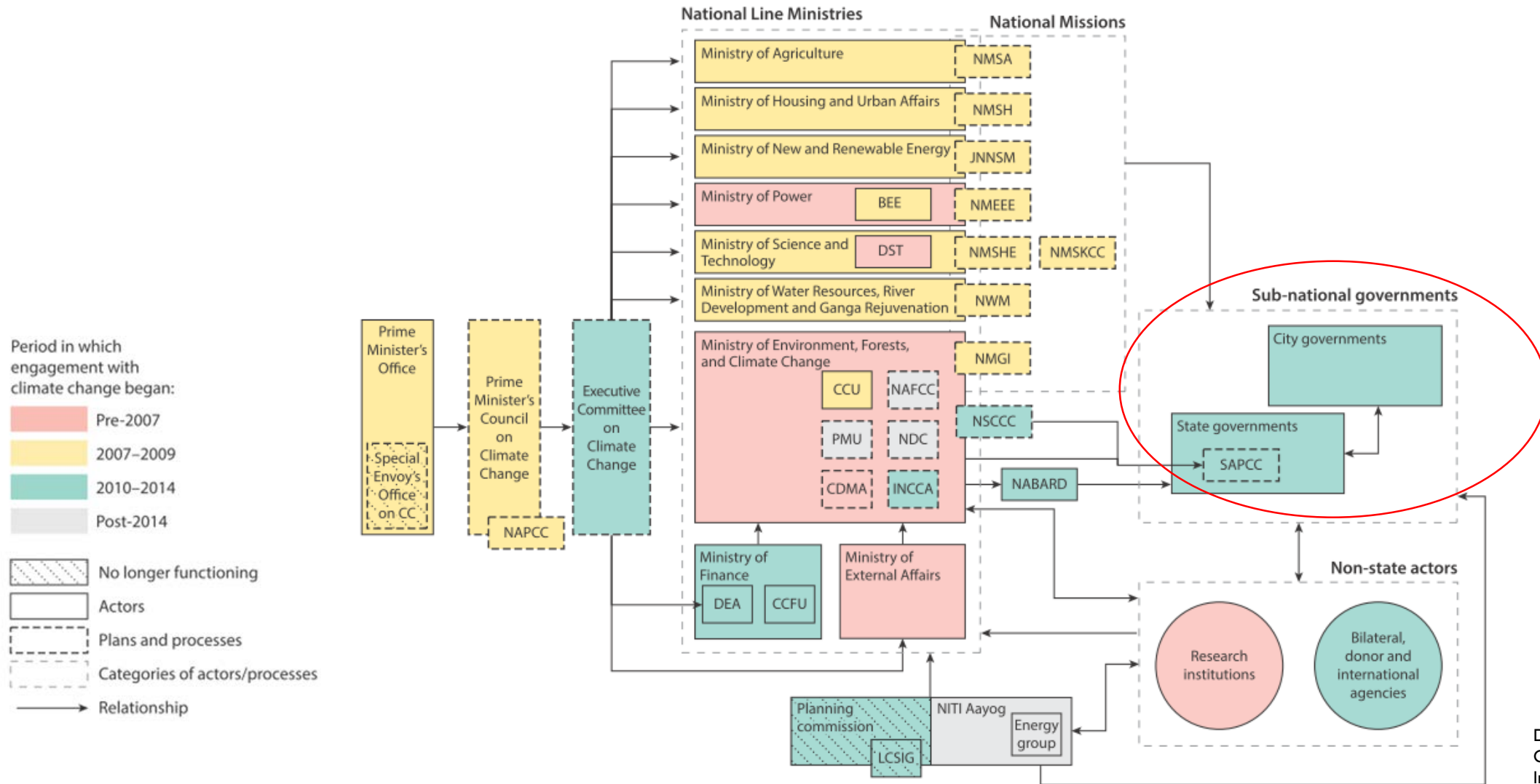


Non-governmental actors, Bilateral Agencies and International Organisations

Phase II (2007-09): Co-benefits as doorway to domestic climate policy



Phase III (2010–2015+): Increasing domestic and policy engagement



Climate Change Personnel in Key National Ministries

	ADMINISTRATIVE LEVELS IN MINISTRIES		
	Special/ Additional/ Joint Secretary/ Scientist (G)	Director/ Deputy Secretary/ Scientist (D,E,F)	Under Secretary/ Scientist C
Ministry of Environment and (Climate change unit) Forests	1	3	1
Ministry of Environment and (Green India Mission) Forests	2	1	1
Ministry of External Affairs	1	1	0
Ministry of Finance	1	1	1
Ministry of New and Renewable Energy	2	2	NA
Bureau of Energy Efficiency (BEE), Ministry of Power	3	8	0
Department of Science and Technology (DST), Ministry of Science and Technology	1	2	NA
Department of Science and Technology (DST), Ministry of Science and Technology	1	2	NA
Ministry of Water Resources	3	2	1
Ministry of Urban Development	NA	NA	NA
Ministry of Agriculture	NA	NA	NA

Subnational climate engagement

- Mutually reinforcing relationship with international pledges
- Internalized into policy making but with a multilevel challenge
 - Integration across scales (intl., national, states, cities) and actors
- Early focus on vulnerability & adaptation – interplay between climate change and existing environmental stresses (water, air pollution, heat) + benefits accrue locally
 - Water logging in Gorakhpur
 - Heat Stress in Ahmedabad
 - Sea level rise and flooding in Surat, Kochi
- Evolution to mitigation and co-benefits based approaches – changing intl. discourse and pledges at COPs + studies on accelerating energy consumption
 - Energy efficiency labels
 - Building energy codes
 - Renewable energy portfolios
 - Industrial EE
 - Smart cities mission

State-level Climate Responses

- States mandated to develop climate action plans in 2009, following NAPCC
- Starting point is the linkage between local development goals and climate change
 - National Climate Missions (EE, solar, RE) taken forward with a local flavour
 - E.g., coal fired power focus in Odisha; desertification in Rajasthan
- Limited understanding of local climate impacts + thin conceptualization of climate-development linkage
- Dominance of strong national guidance and top-down approaches
 - Limited state-led innovation
- New linkages between NGOs and local governments, leading to new governance arrangements + shifting balance of powers across actors

Urban Indian Climate Responses

- No national urban mandate to address climate change
- Federal structure places urban services target making at central, state levels, with limited control for urban local bodies outside of implementation
- Local ‘development’ as an entry point for climate mitigation and adaptation
 - Climate action not under rubric of climate change
 - City governments have low awareness of climate change impacts
 - Align institutional incentives, implement national/state-level schemes with explicit climate focus
- Role of non-state actors in promoting climate outcomes
 - Almost all climate schemes have arisen out of coalitions/intl. networks
 - Non-state actors plugged capacity, data and finance gaps
 - Partnerships with private sector and trust allow city government to bypass usual State approvals, and “steer” local + int’l finance towards climate goals
- Proclivity for project-based activities
 - Sectoral projects –coastal regulations, transport networks, real estate, fisher communities
 - Discrete often ad-hoc projects, to remain implementable, and aligned with city role & capacity

Sub-national institutions and actions: Looking ahead

- National and sub-national climate policy introduces institutional complexities
 - Action at multiple levels of government in a federal system
 - Centre, state, urban/rural local bodies
 - Development-focused, co-benefits based formulation
 - Challenge of mainstreaming and internalization climate concerns
 - Integration across domestic and international policy
- Multiple objectives map to different depts but limited coordination
- Incremental actions but need larger vision and analytical basis for prioritization and tradeoffs between objectives
- Longer term question of how to use institutions to drive domestic discussion with lasting outcomes

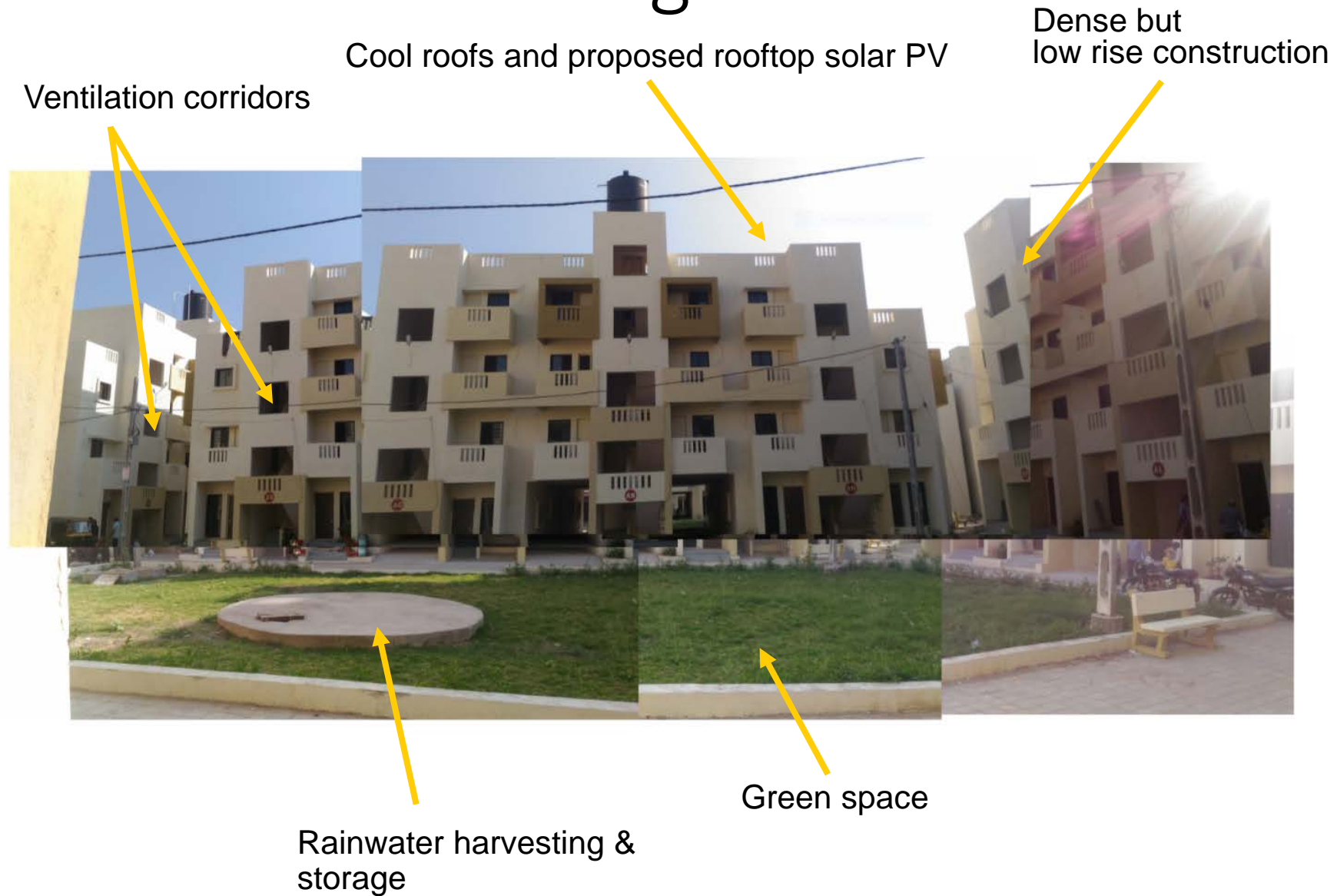
Thank you

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Affordable housing under PMAY



Current policy packaging

ENERGY EFFICIENCY & CLEAN TECHNOLOGY

Perform, Achieve and Trade (PAT) Scheme
Domestic credit trading scheme for Industrial Energy Efficiency (2012)

LED bulbs at subsidized rates
To replace 770 million bulbs by 2019 (2014)

LPG access
Gas connections for Below Poverty Line families, complementing Direct Benefit Transfer (2013)

National Electric Mobility Mission Plan
Increasing fuel efficiency standards (2014)
hybrid and electric vehicles (2013)

ENERGY SUPPLY

175 GW target of RE capacity by 2022
Solar target of 100 GW by 2022

Increasing domestic coal production to 1500 MTPa by 2022 (2015)

Clean energy cess on domestic, imported coal
To finance clean energy (2010), cess doubled annually from INR 50/t (2014) to Rs 400/t (2016)

INFRASTRUCTURE TRANSITIONS

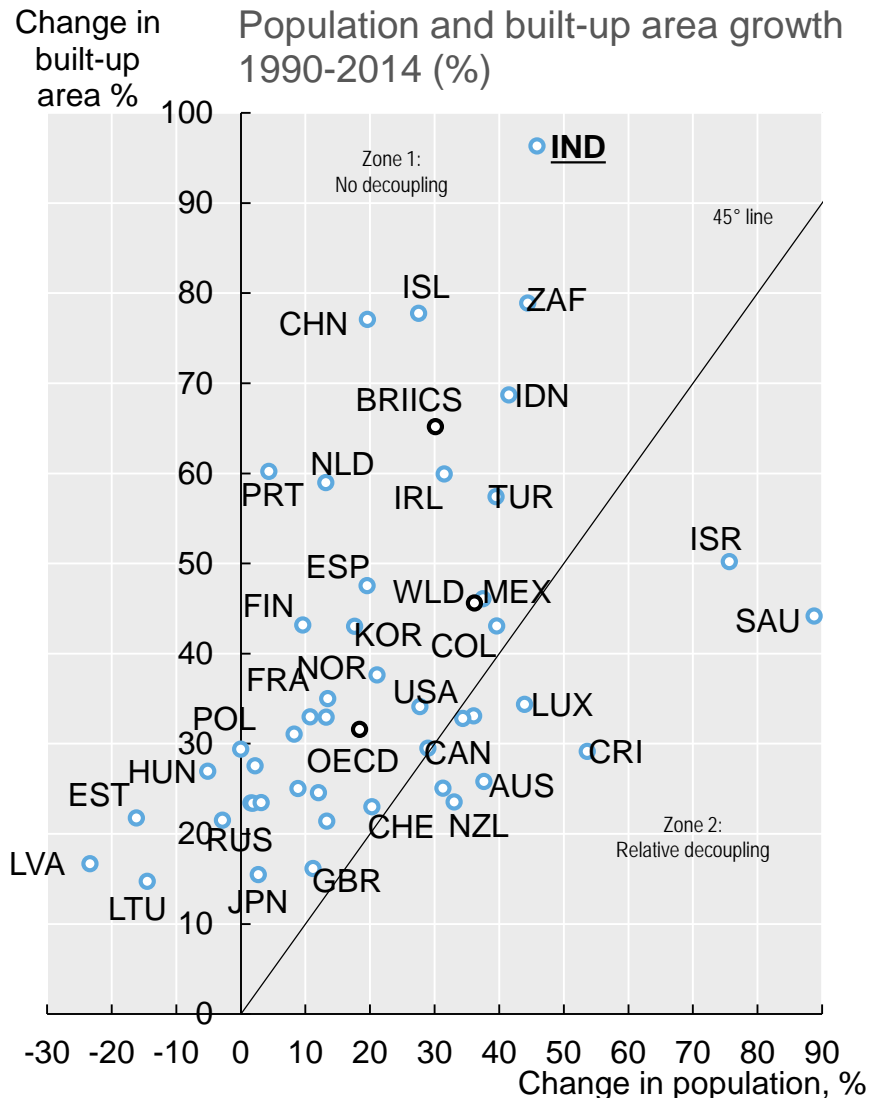
Dedicated freight corridors
Rail freight infrastructure to connect metros

Electricity for All
24/7 supply across by 2022 (2014)

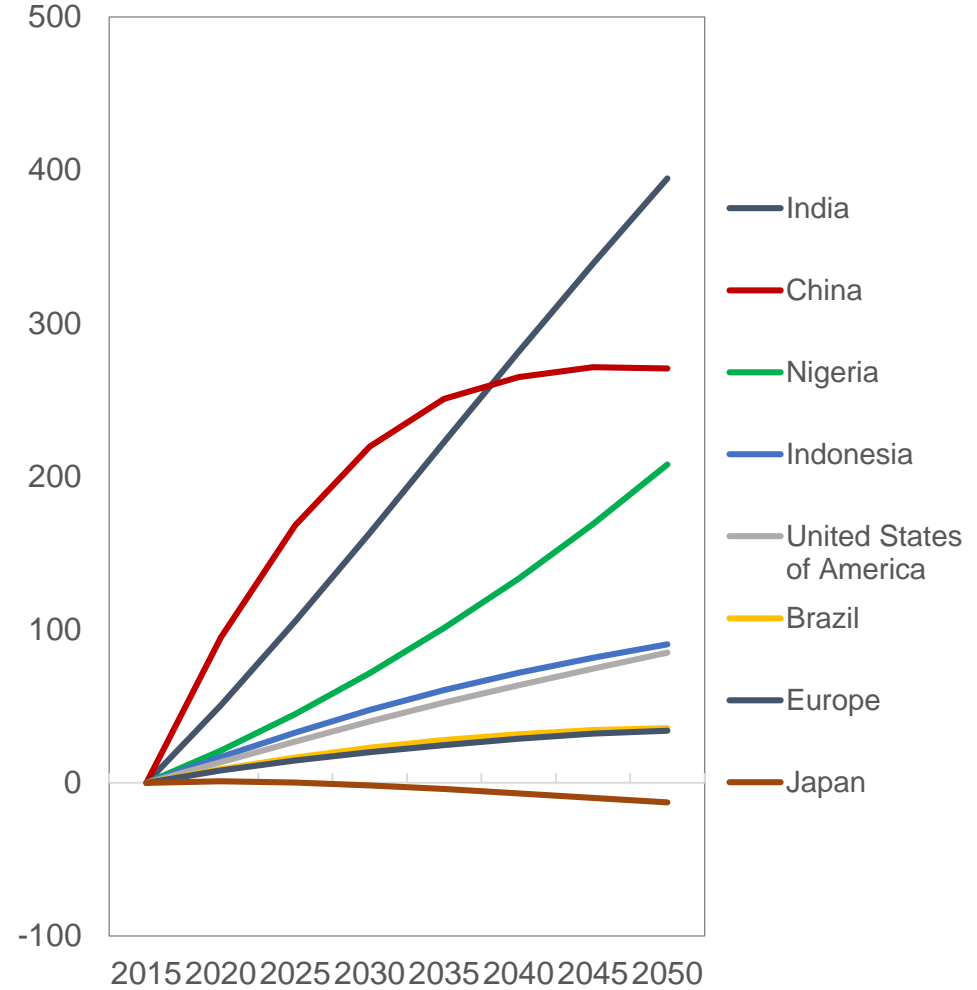
“Make in India” programme for manufacturing

Enhanced urban infrastructure
Smart Cities Mission, AMRUT and Housing for All and building energy codes

India's mega transition



Projected urban population growth from the Paris Agreement (millions)



OECD, Green Growth Indicators (2017). & UN-DESA, World Urbanization Prospects (2014)

Uncertainties in India's energy trajectory

- Multiple energy supply futures
 - Rate of increase of coal growth
 - Rate of decrease in RE prices + RE integration with the grid
 - Solar: 17.91 INR/kWh in 2011 to 2.44 INR/kWh in 2017; Average coal tariff is 3.20 INR/kWh
- Multiple energy demand futures
 - Urbanisation patterns
 - Investments in energy (in)efficient infrastructure
 - Manufacturing vs. service growth
- Trajectory determined by choices about manner in which to transition and provide energy for quality of life
 - Energy future tied to development future
 - Energy demand will grow, but magnitude of growth is amenable to intervention
 - Energy models show uncertainty of 150% for 2030 projections, based on type of development choices