31st Clean Coal day in Japan : International Symposium
Pathway towards Carbon Neutrality

Session-I: Outlook of Coal in the Energy Market towards Carbon Neutrality

Coal Demand and Supply and Commitment to Climate Action : India

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ENERGY AGRICULTURE ENVIRONMENT HABITAT RESOURCE SECURITY CLIMATE HEALTH & NUTRITION

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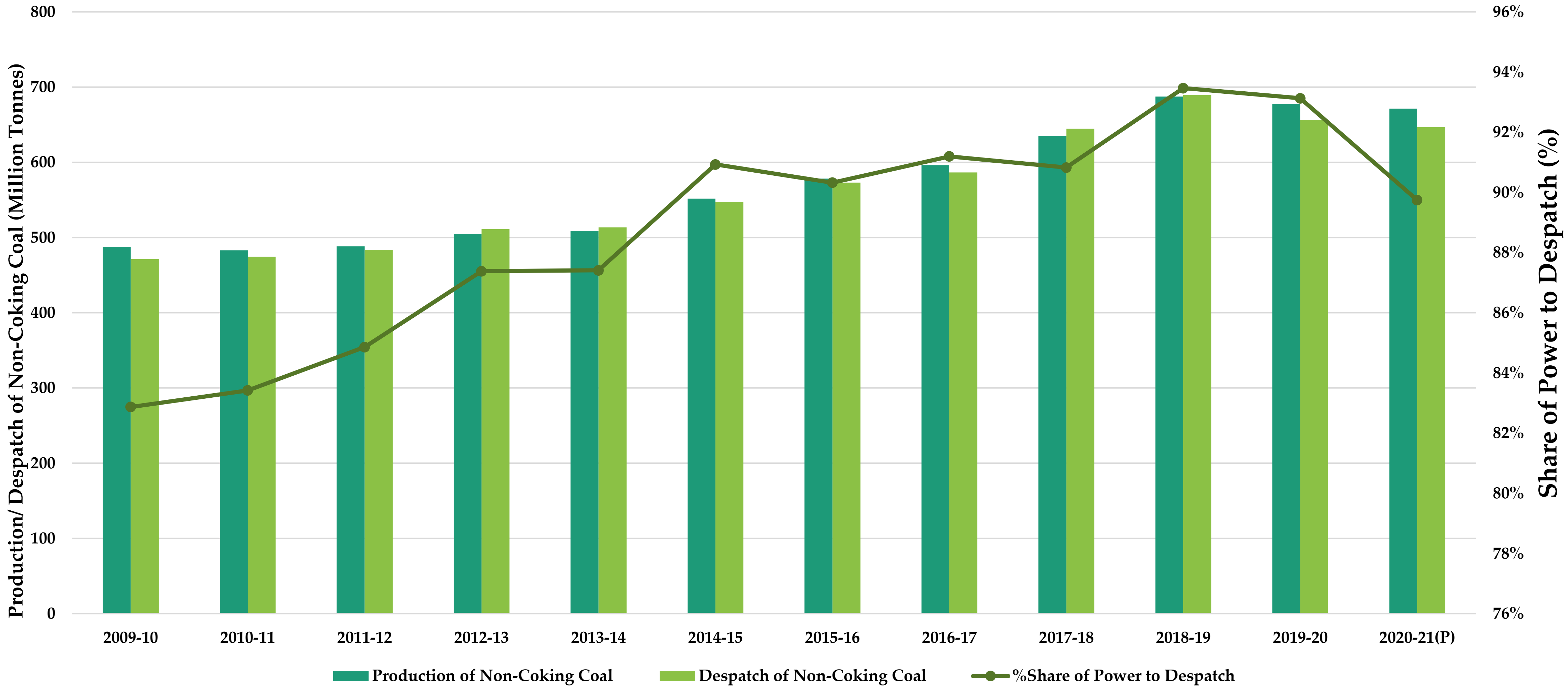
India: Key Facts

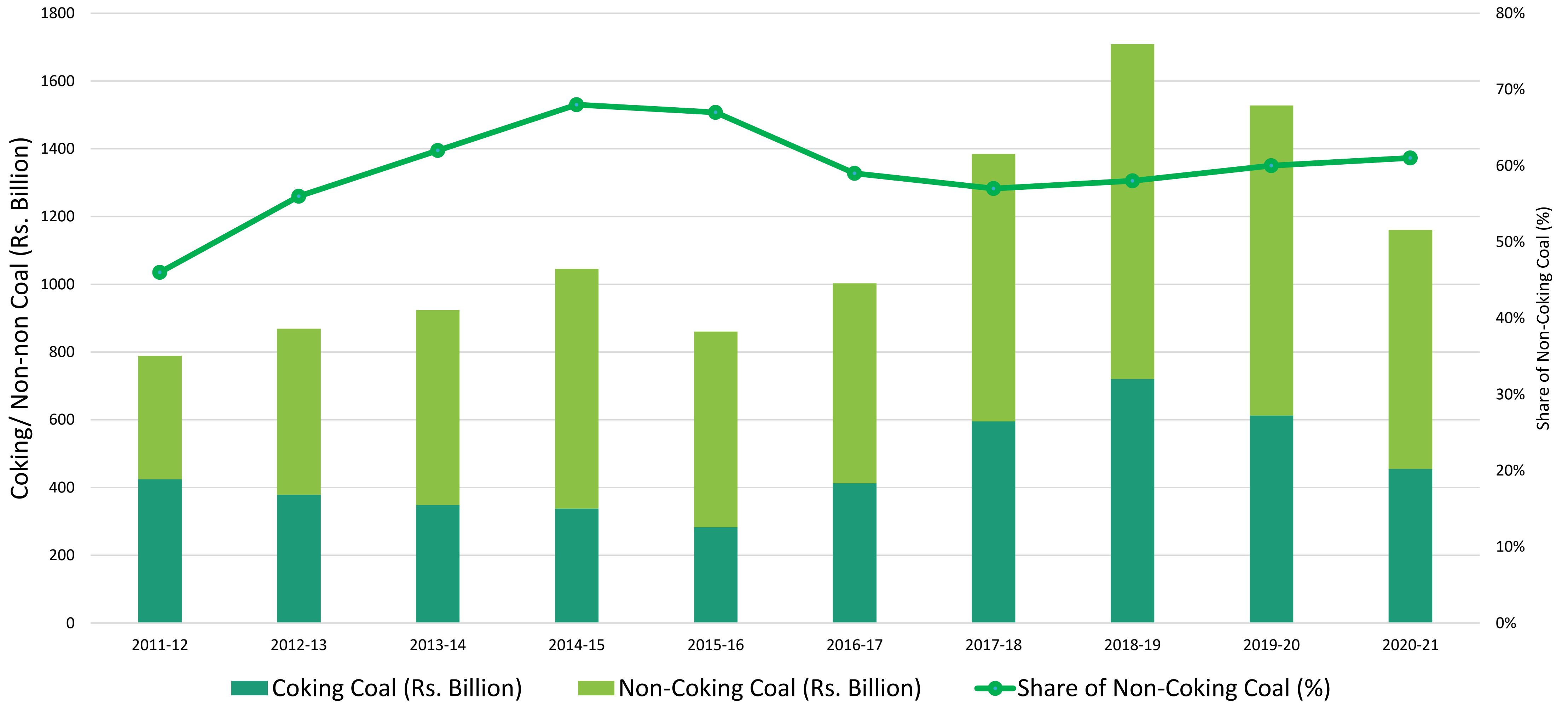
- Largest democracy in the world
- Second most populous country in the World; home to one-sixth world's population
- Growing energy and electricity consumption : ~ 5% p.a.
- Per-capita energy and electricity consumption ~one-third of world average
- Variety of energy sources; heavily dependent on imports >> energy security concerns
- Human Development Index (HDI): despite an increase of ~ 50% in last 20 years, the country still ranks in the medium HD category

Policies framed/modified in accordance with needs of a developing country, resource endowment and emerging requirements

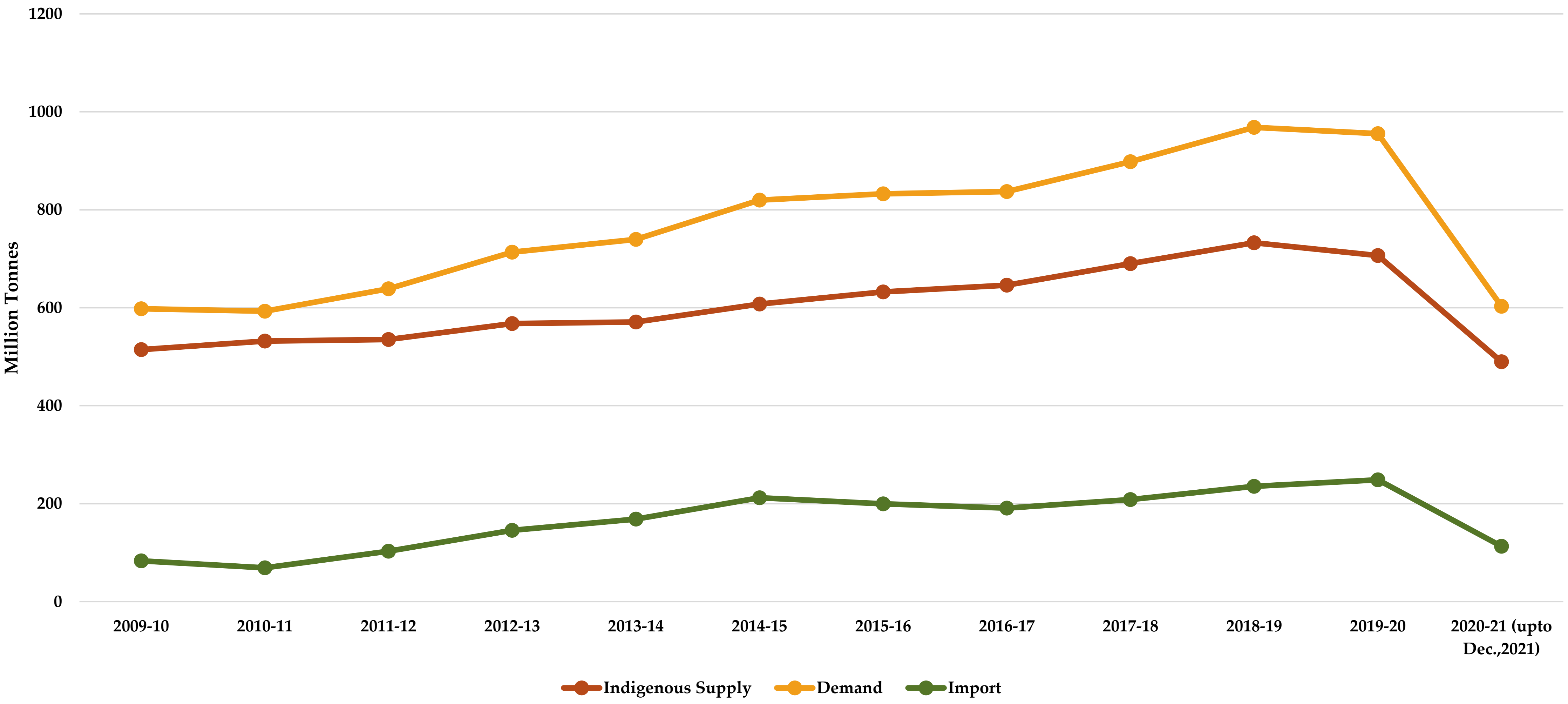
Production & Despatch of Non-Coking Coal and Share of Power



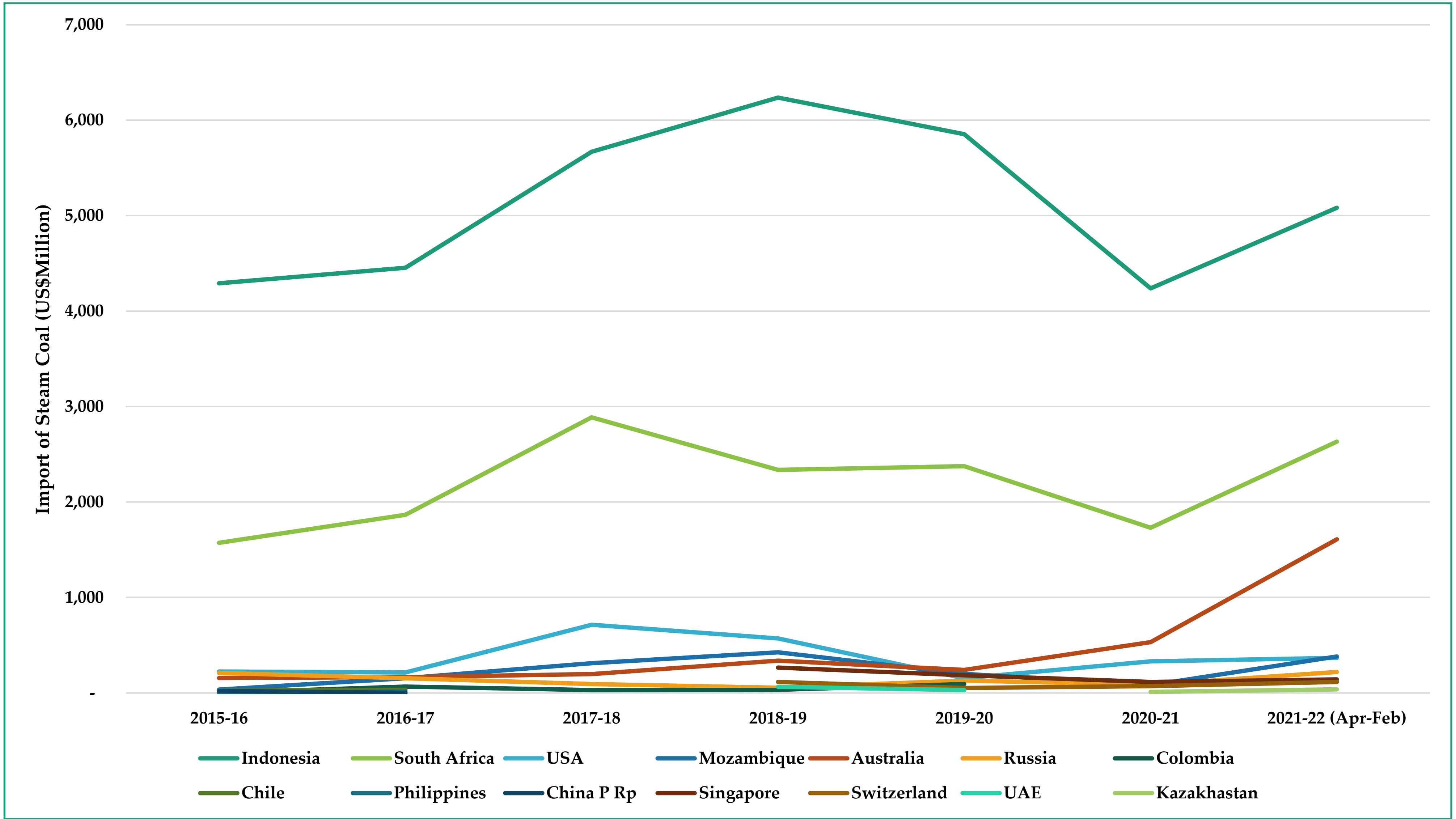
Import of Coking and Non-Coking Coal (2011-12 to 2020-21)



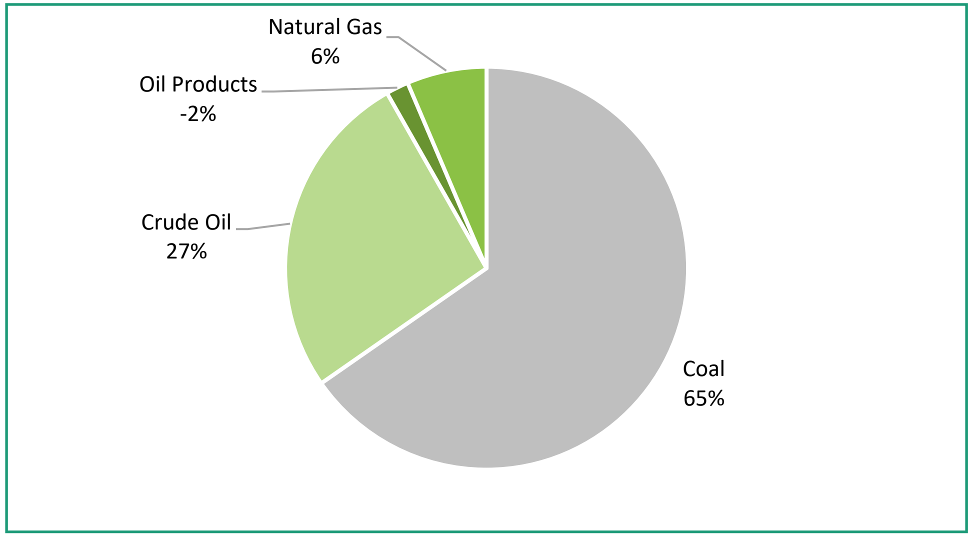
Domestic Coal Supply, Demand and Import of Coal

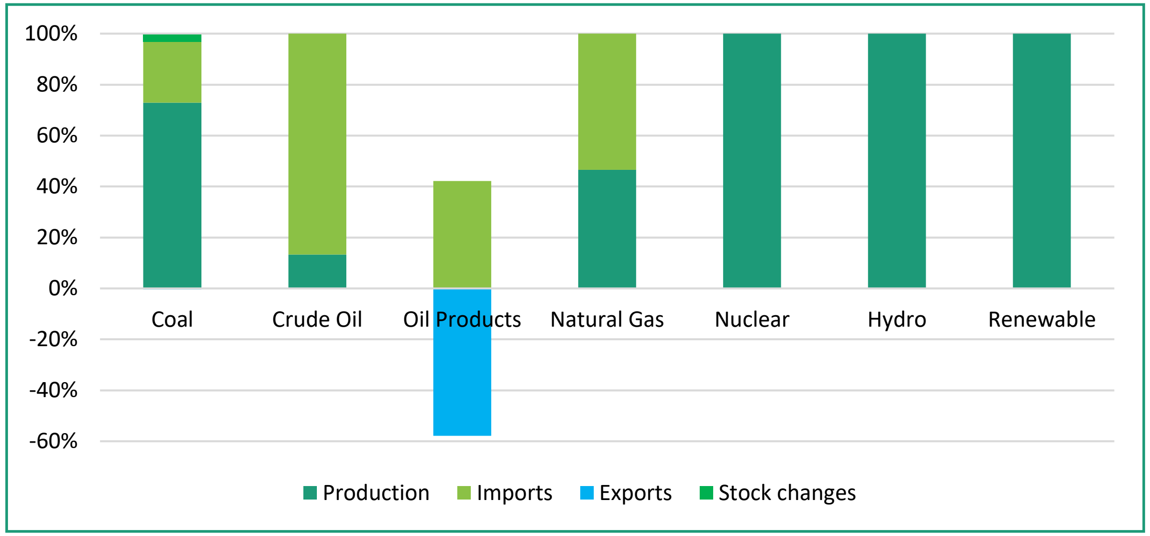


Import of Non-coking Coal by Sources

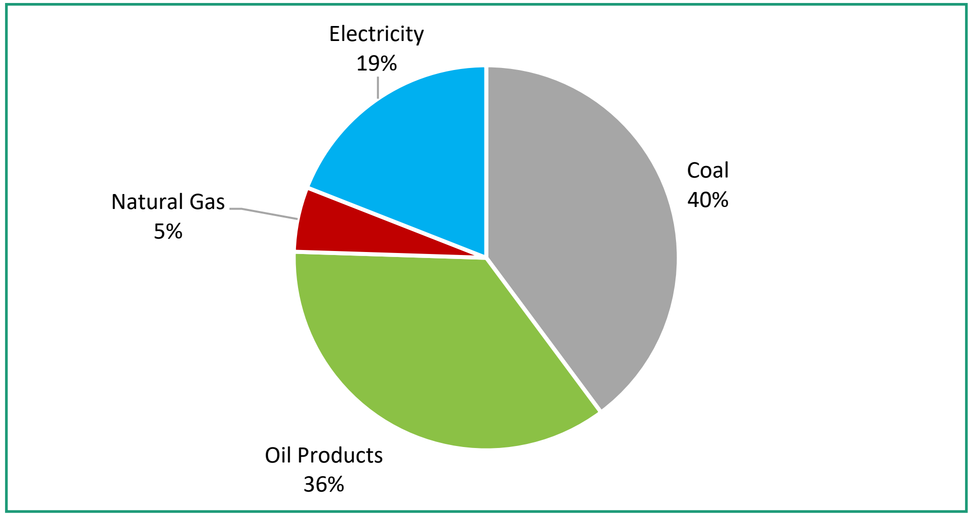


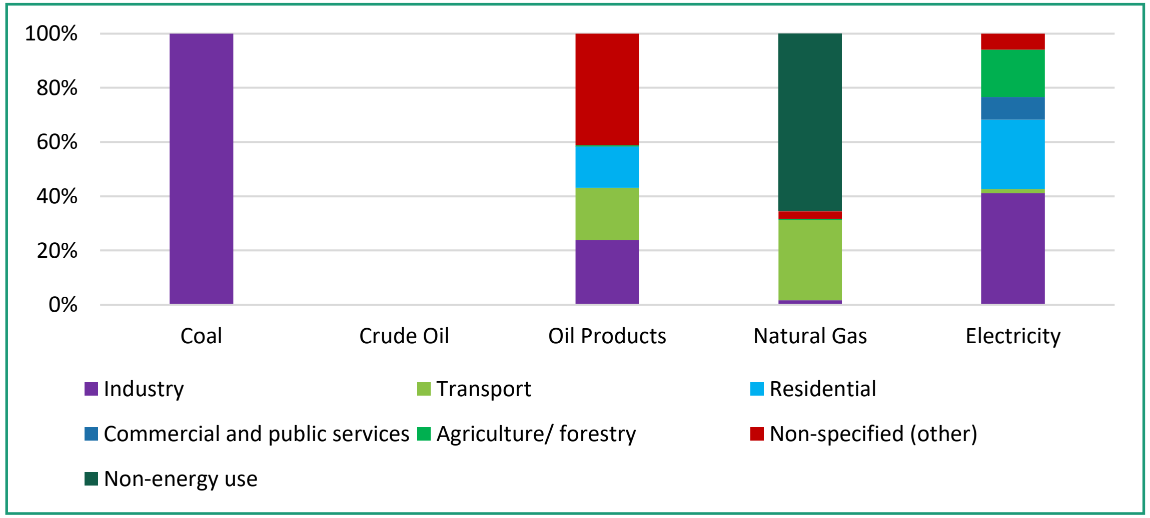
Primary Energy Supply and End-Use Consumption





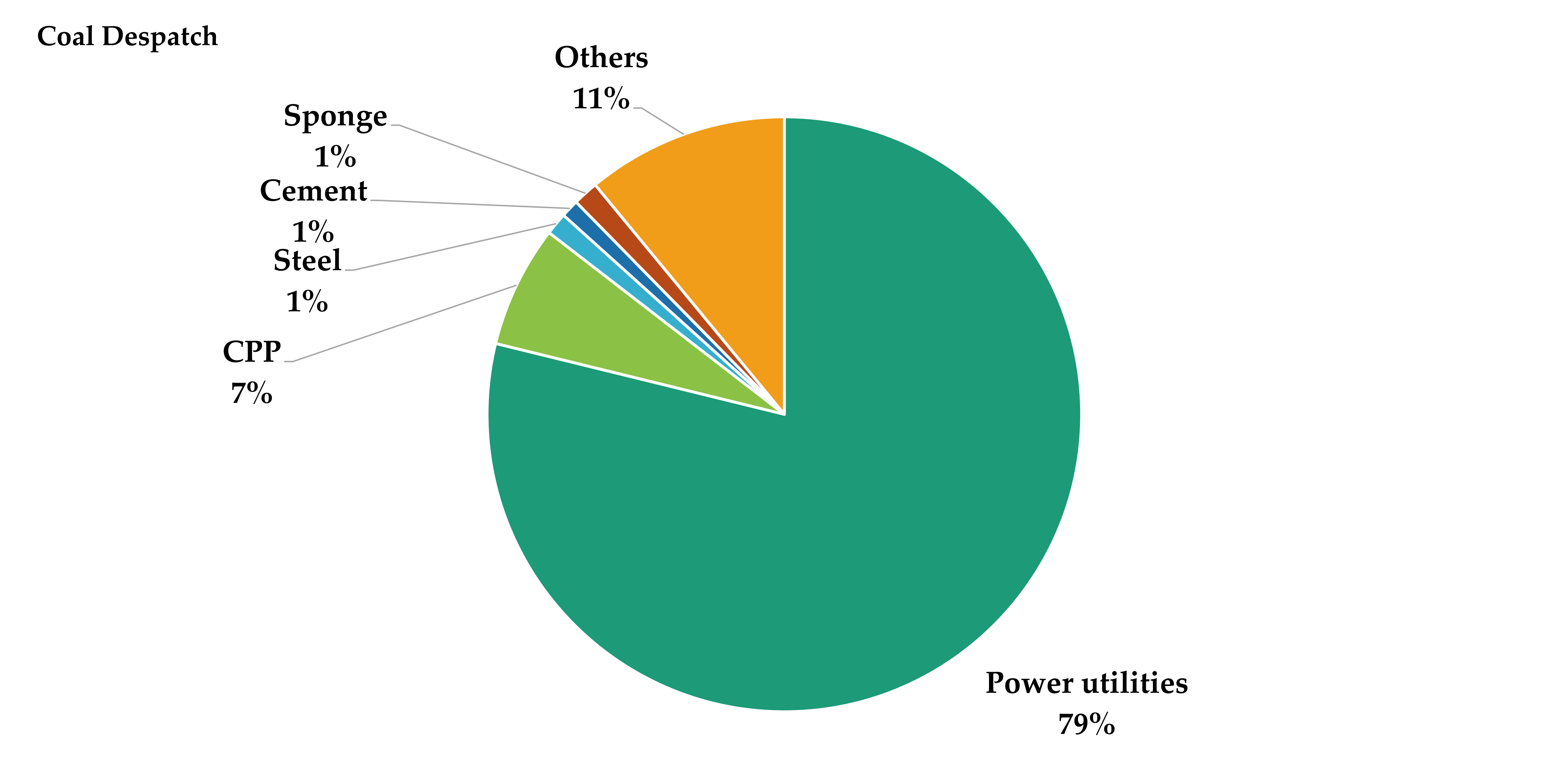
Total primary energy supply (MToE), 2020-21(P)





End-use Energy Consumption (MToE), 2020-21(P)

Sector-wise Coal Use : 2020-21



Clean Energy Transition and Coal Sector Reforms

- Share of non-fossil energy increasing
- Coal continues to remain mainstay
- Measures
  - ✓ Super-critical and Advanced Ultra Super-Critical technology
  - ✓ New Environmental norms for thermal power stations
  - ✓ CCU/S
- National Hydrogen Mission
- Mission Coking Coal launched to augment coking coal production and supply and to meet the demand of steel sector : 12 coking coal washeries of ~30 MTY being constructed.
- Coal gasification mission :
  - ✓ Target to gasify 100 MT by 2030.
  - ✓ Surface Coal/Lignite Gasification projects are being constructed.
- Production CBM gases from Coal bearing areas.
- Roadmap for Coal based hydrogen production – Expert Committee constituted
- Just Transition
- Net Zero target by 2070

Clean Energy Transition and Coal Sector Reforms

- Commercial mining of coal allowed, with 50 blocks to be offered to the private sector.
- Entry norms will be liberalised as it has done away with the regulation requiring power plants to use “washed” coal.
- Coal blocks to be offered to private companies on revenue sharing basis in place of fixed cost.
- Coal gasification/liquefaction to be incentivised through rebate in revenue share.
- Coal bed methane (CBM) extraction rights to be auctioned from Coal India’s coal mines.

Environment (Protection) Rules, 2015

Emission Parameter	Generating Units) Installed		
	Before 31.12.03	**31.12.03 to 31.12.16**	**From 01.01.17**
Particulate Matter (PM)	100 mg/Nm^3	50 mg/Nm^3	30 mg/Nm^3
SO_2	600 mg/Nm^3 (For < 500 MW Unit) 200 mg/Nm^3 (For => 500 MW Unit)		100 mg/Nm^3
NOx	600 mg/Nm^3	300 mg/Nm^3	100 mg/Nm^3
Mercury (Hg)	NIL (< 500 MW Unit) 0.03 mg/Nm^3(=>500MW Unit)	0.03mg/Nm^3	0.03 mg/Nm^3
Water	1. All plants with once through cooling (OTC) shall install cooling tower and achieve specific water consumption up to maximum of 3.5m^3/MWh within a period of 2 years from the date of publication of notification. 2. All CT based plants reduce specific water consumption up to maximum of 3.5 m^3/MWh within a period of 2 years from the date of publication of notification. 3. New plants to be installed after 1st January 2017 shall have to meet SWC up to maximum of 2.5 m^3/MWh and achieve zero waste water discharge.		

Commitment of India to Climate Action

2015: COP-21

1. An economy-wide **emissions intensity** target of **33%–35% below 2005 levels**

2. A electric power **capacity** target of **40%** installed capacity from **non-fossil**-based energy resources by 2030, to be achieve with international support

3. A carbon sink expansion target of creating an additional (cumulative) carbon sink of 2.5–3 GtCO2e through additional forest and tree cover by 2030.

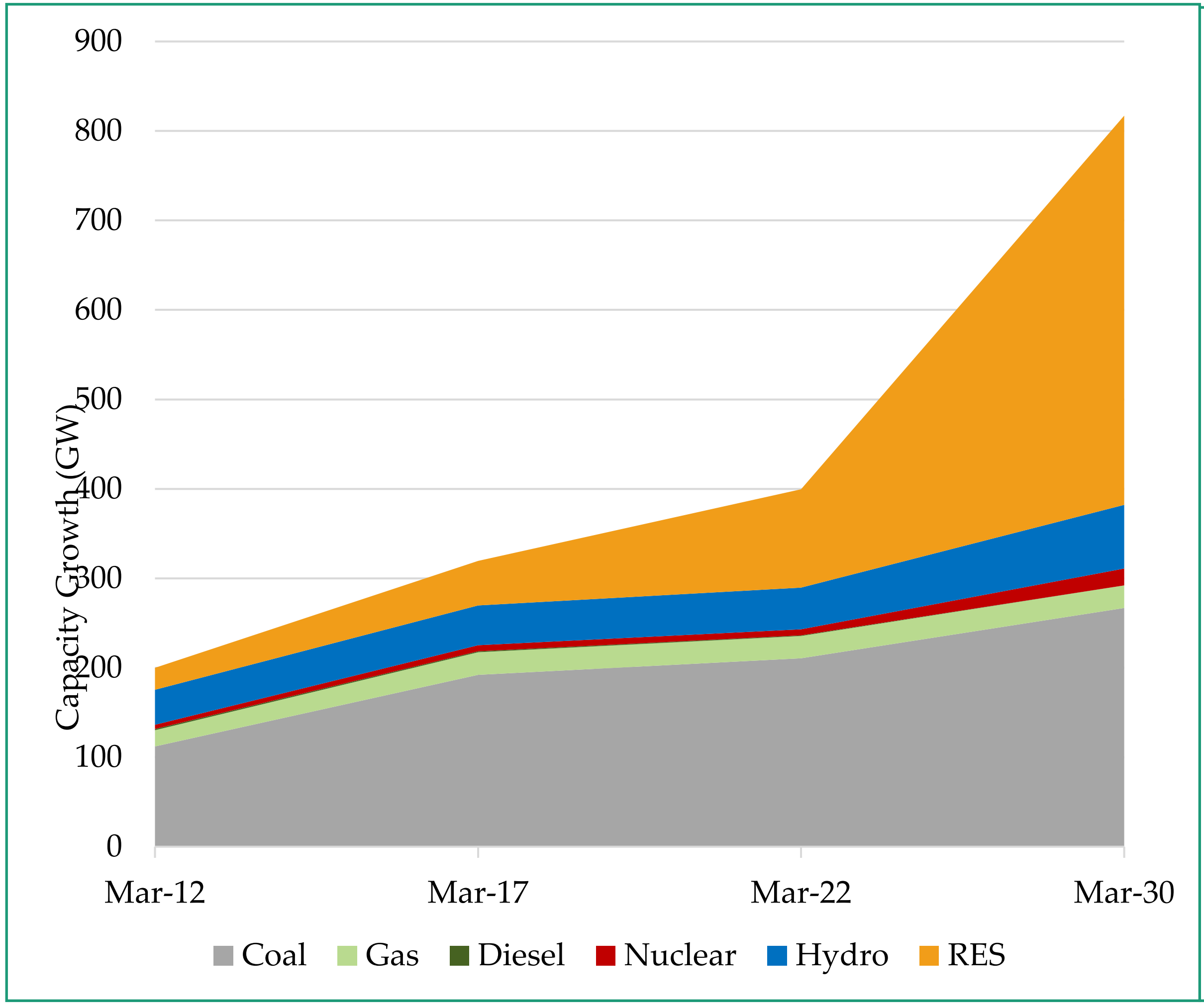
2022: NDCs (2030)

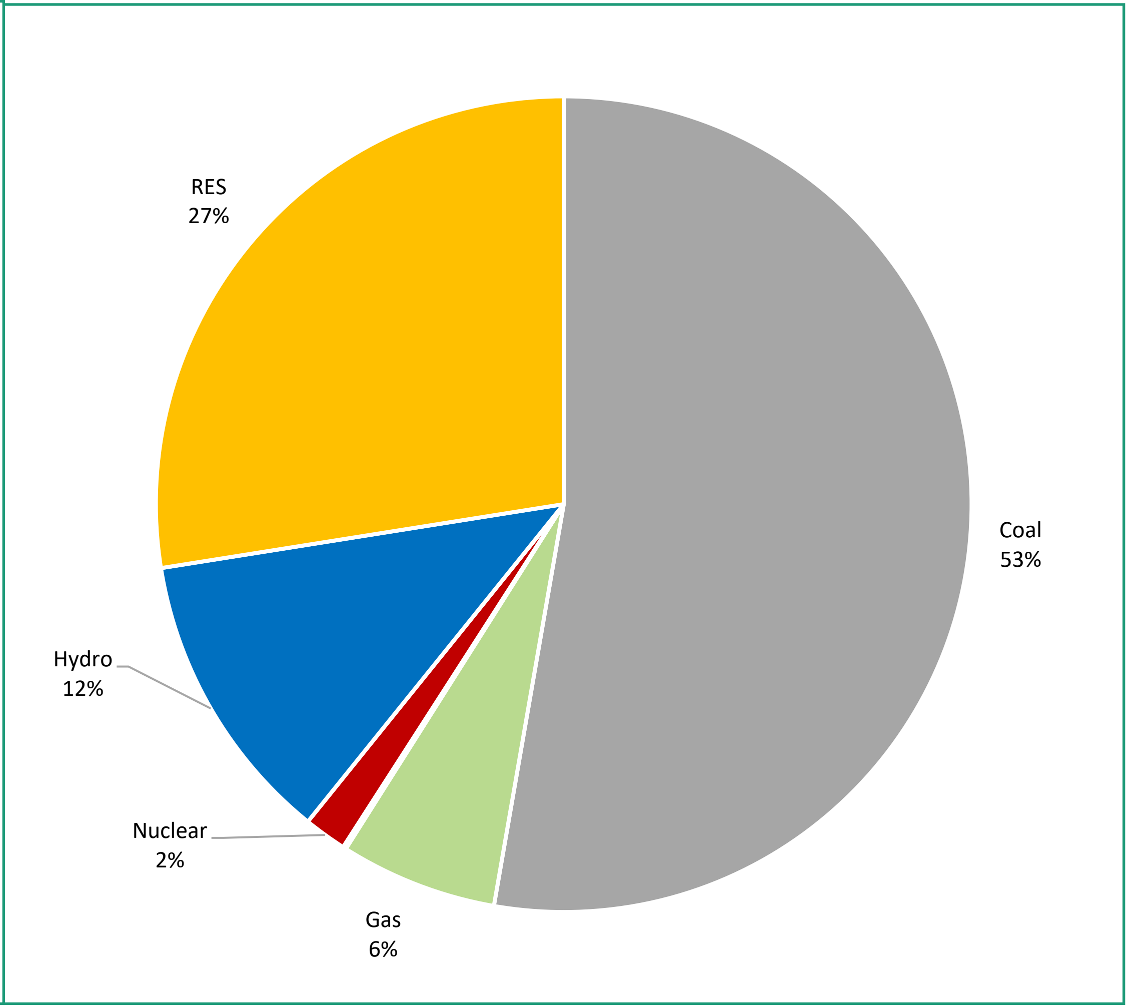
1. **Non-fossil generation capacity**: **50%**

2. **Reduction in emissions Intensity**: **45%** from 2005 level

Citizen centric approach : key to combat climate change: Mass movement for 'LIFE'– 'Lifestyle for Environment'

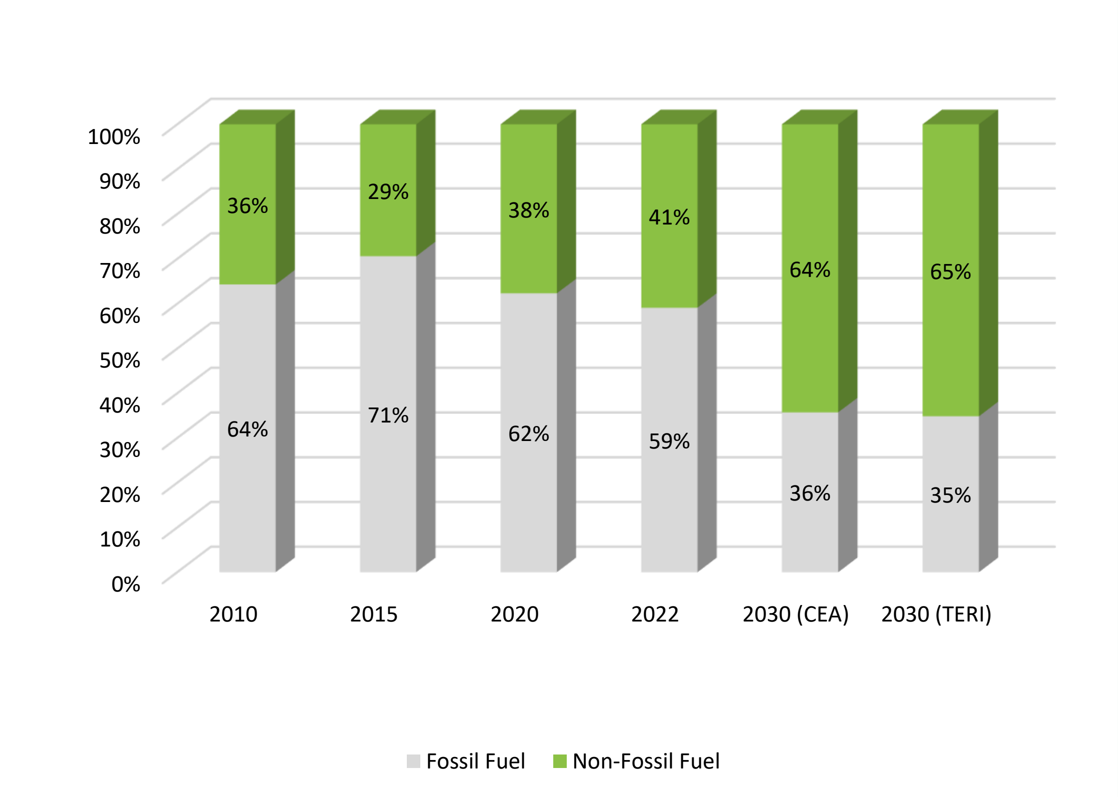
Generation Capacity Growth (2012-2030) and a Snapshot

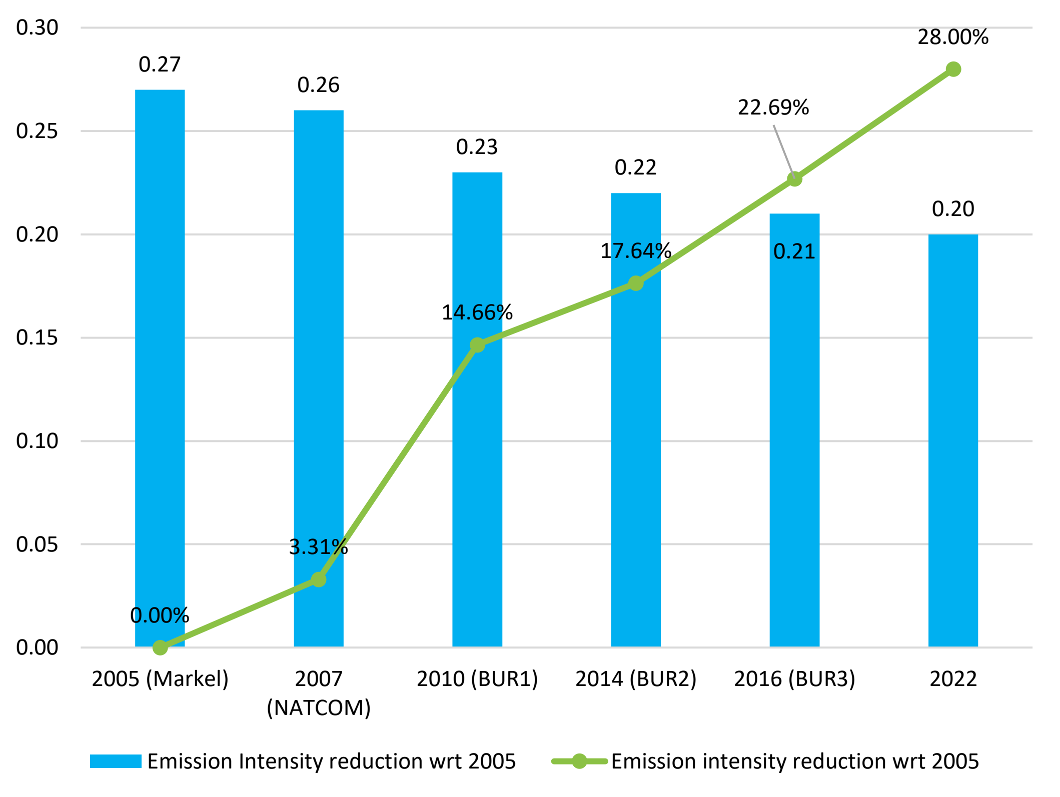




CEA

Generation Capacity Mix : Trend and Outlook





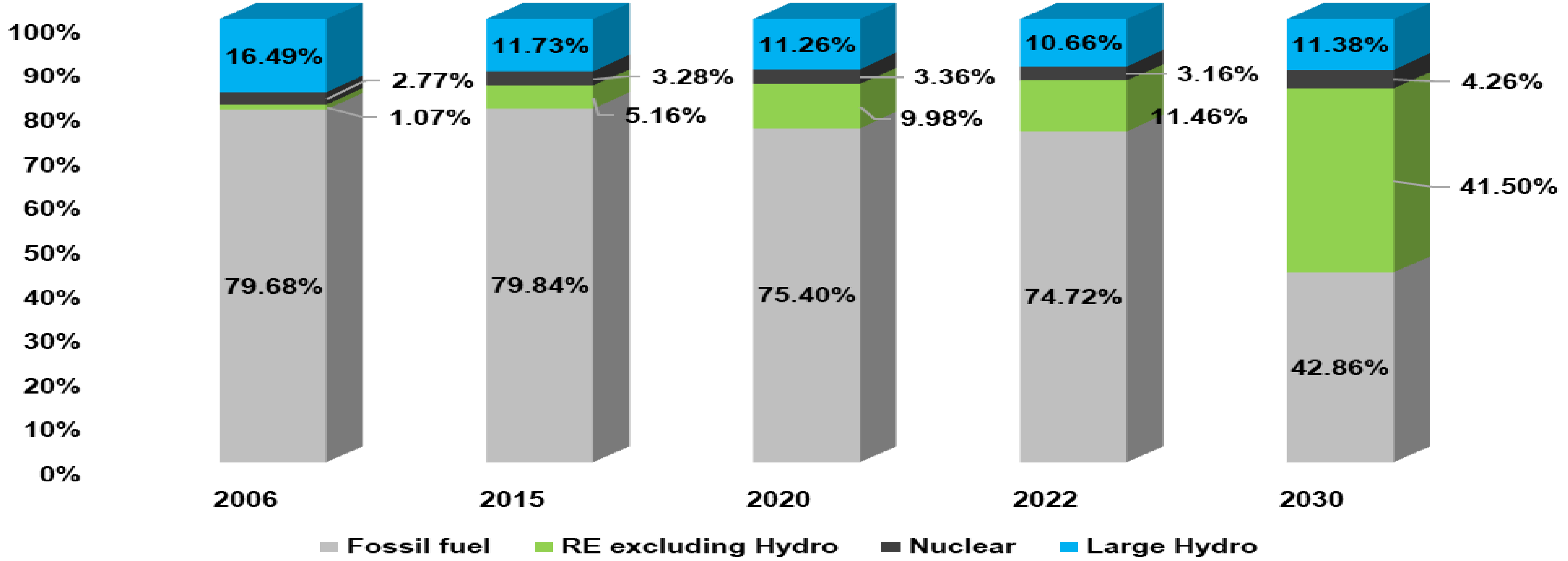
Installed Capacity

Source: CEA and TERI (2030)

Emission Intensity of GDP

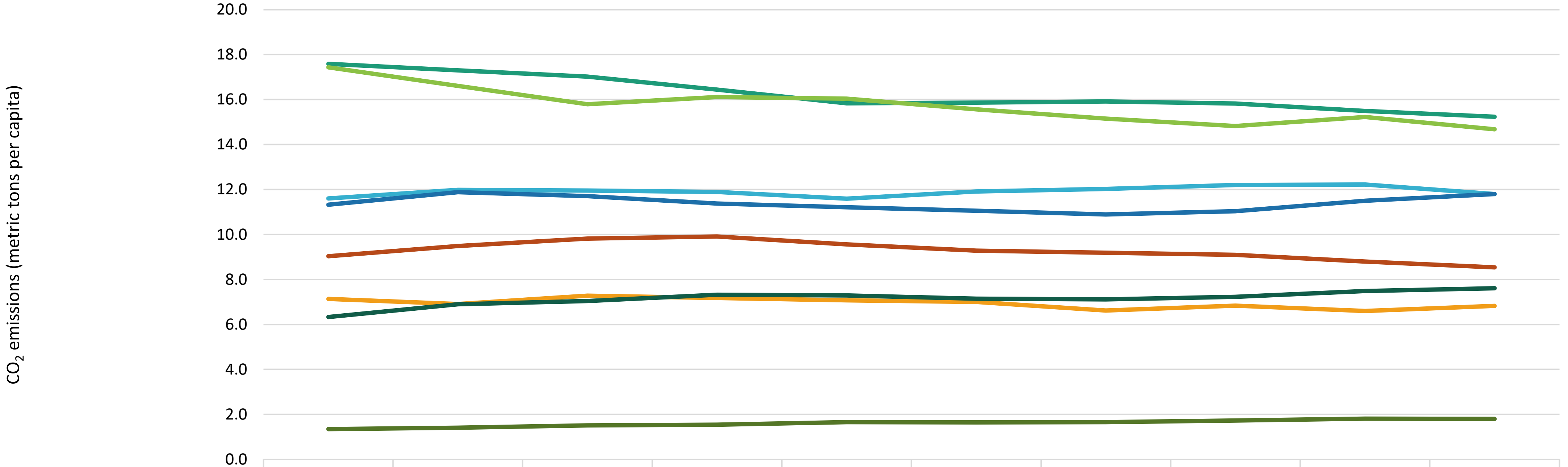
Source: TERI, BUR and NATCOM)

Generation Mix : Trend and Outlook



Electricity Generation

Per-capita CO_2 Emission (2010-2019)



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Australia	17.6	17.3	17.0	16.4	15.8	15.9	15.9	15.8	15.5	15.2
USA	17.4	16.6	15.8	16.1	16.0	15.6	15.1	14.8	15.2	14.7
Korea, Rep.	11.6	12.0	12.0	11.9	11.6	11.9	12.0	12.2	12.2	11.8
Russian Federation	11.3	11.9	11.7	11.4	11.2	11.1	10.9	11.0	11.5	11.8
Japan	9.0	9.5	9.8	9.9	9.6	9.3	9.2	9.1	8.8	8.5
New Zealand	7.1	6.9	7.3	7.2	7.1	7.0	6.6	6.8	6.6	6.8
China	6.3	6.9	7.0	7.3	7.3	7.1	7.1	7.2	7.5	7.6
India	1.3	1.4	1.5	1.5	1.7	1.6	1.7	1.7	1.8	1.8

World Bank Data Bank

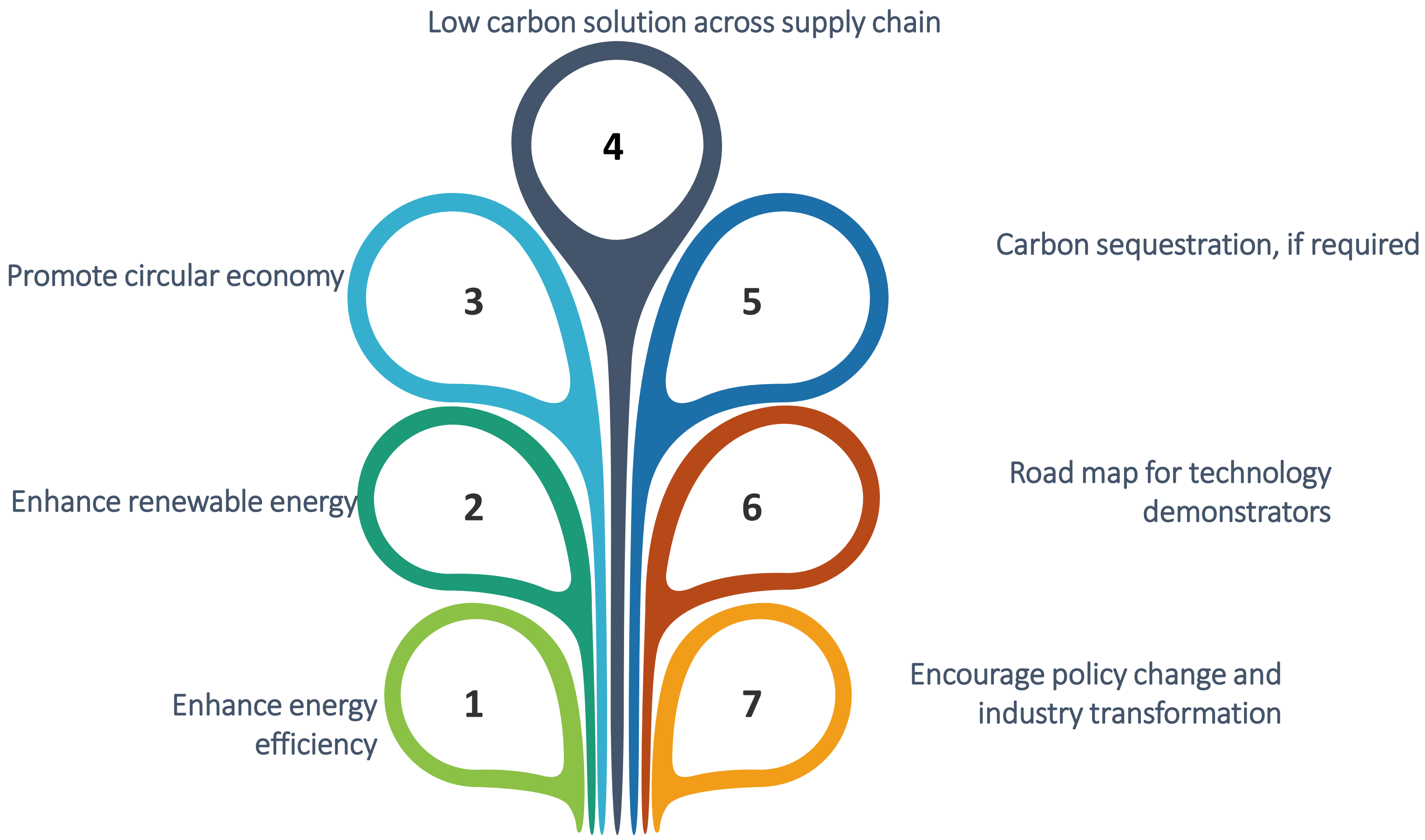
Industry Charter for

Near ZERO Emission by 2050

Near zero emissions in industrial sector: Industry Charter launched marking one year to India Sweden leading track

The founding signatories of the Industry Charter are -

Mr Ashish Bhandari, MD & CEO, Thermax
Mr Amit Sharma, MD & CEO, Tata Consulting Engineers Ltd
Mr Gerd Deusser, CEO, Siemens Energy India
Mr Mahendra Singhi, MD & CEO, Dalmia Cement (Bharat) Ltd
Mr Nitin Prasad, Chairman, Shell Group of Companies, India
Mr Satish Pai, MD & CEO, Hindalco Industries



Thank you

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Image Credit: NASA Earth Observatory Image by Joshua Stevens