

# India's Energy Overview

January 2025



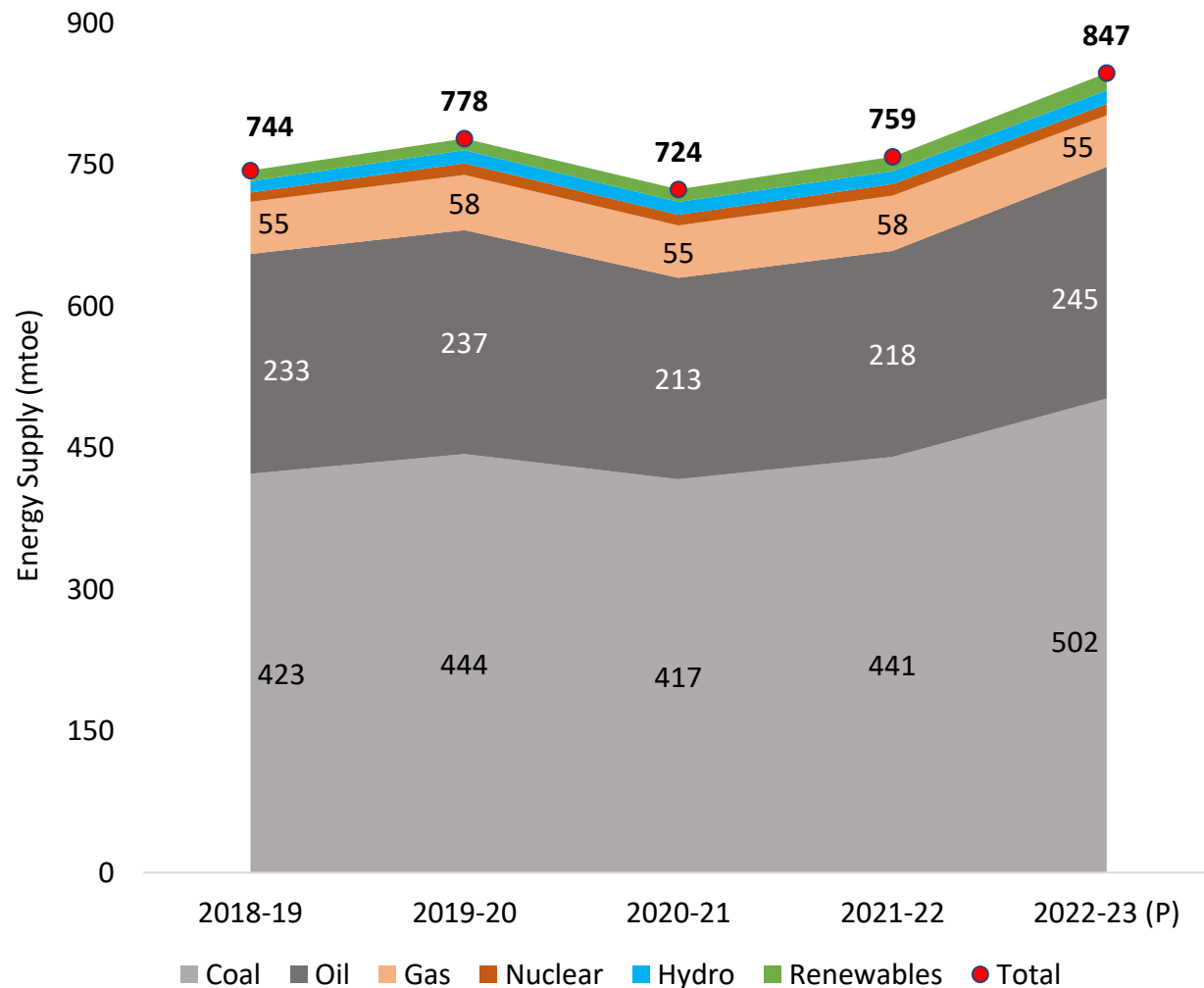
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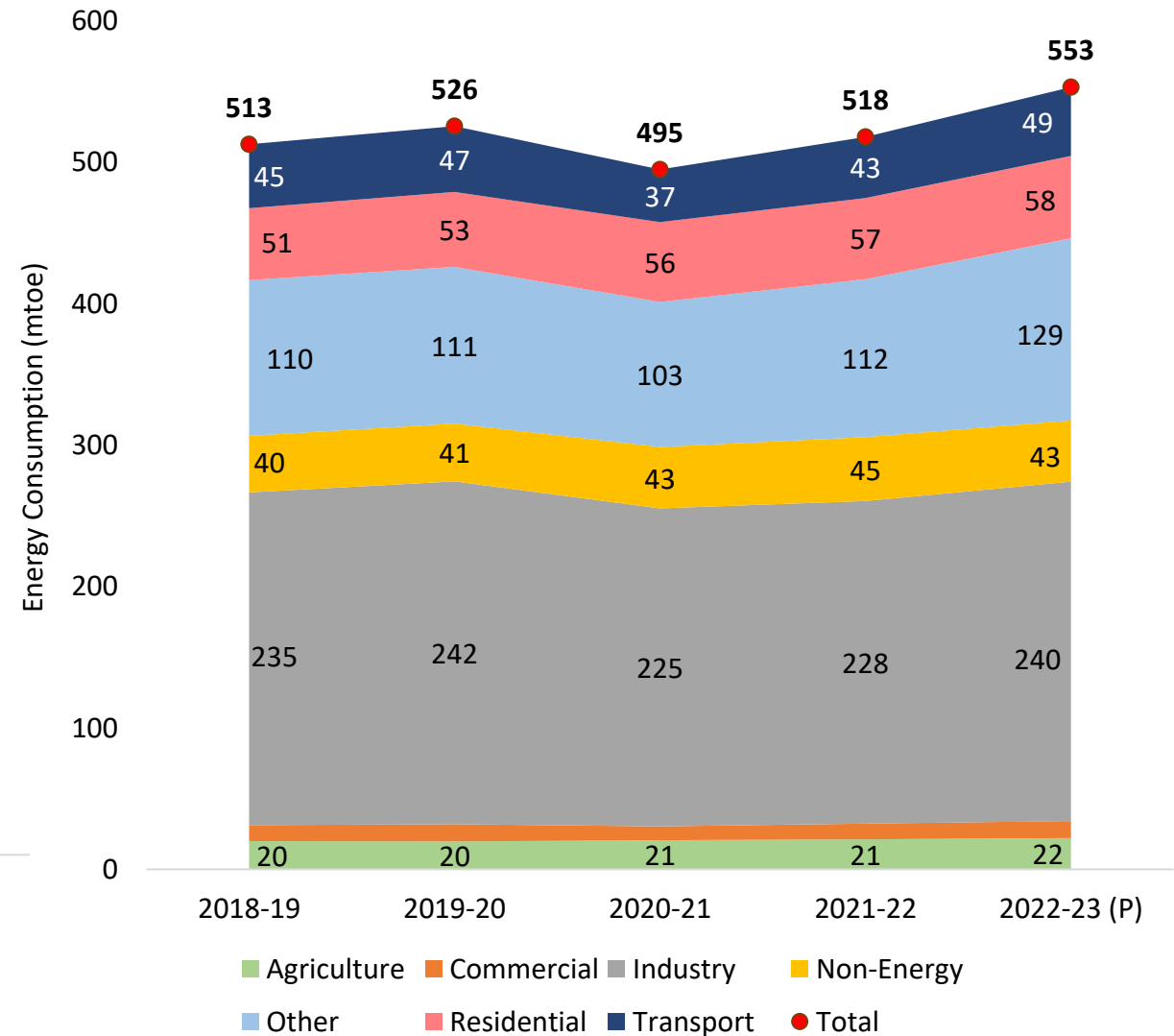
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# Primary\* and Final Energy Mix in India

### Source-wise Primary Energy Supply (mtoe)\*

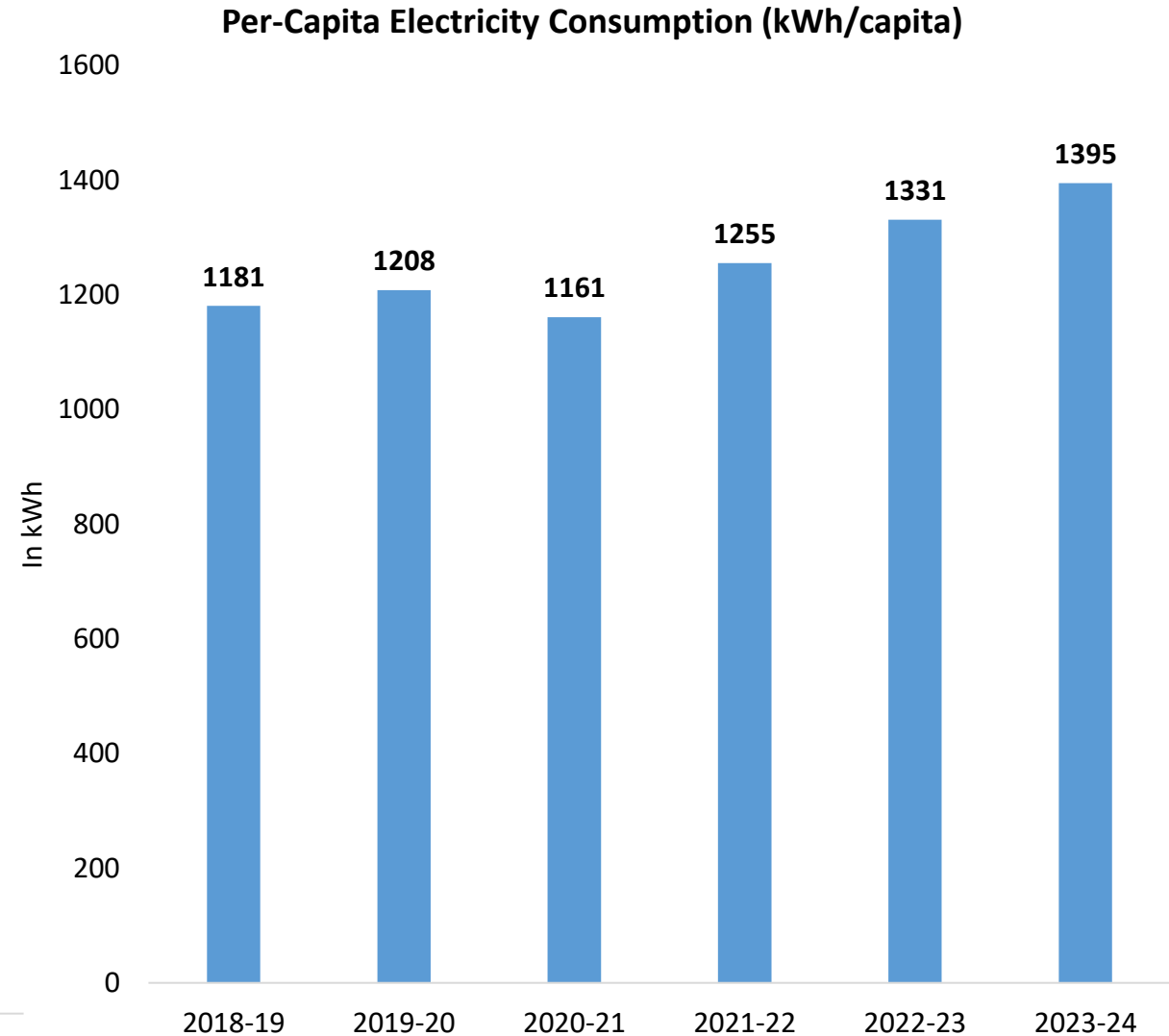
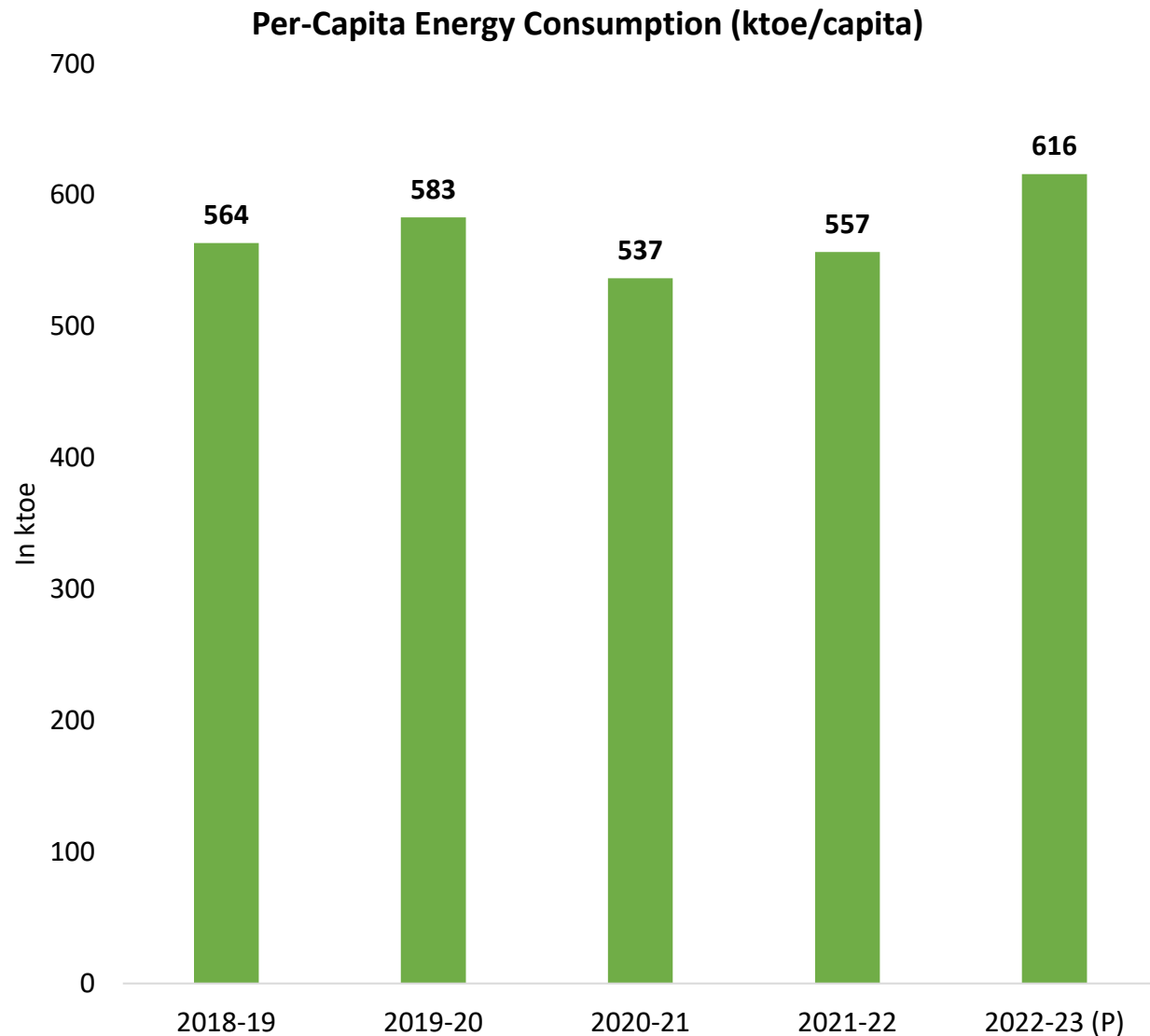


### Sector-wise Energy Consumption (mtoe)



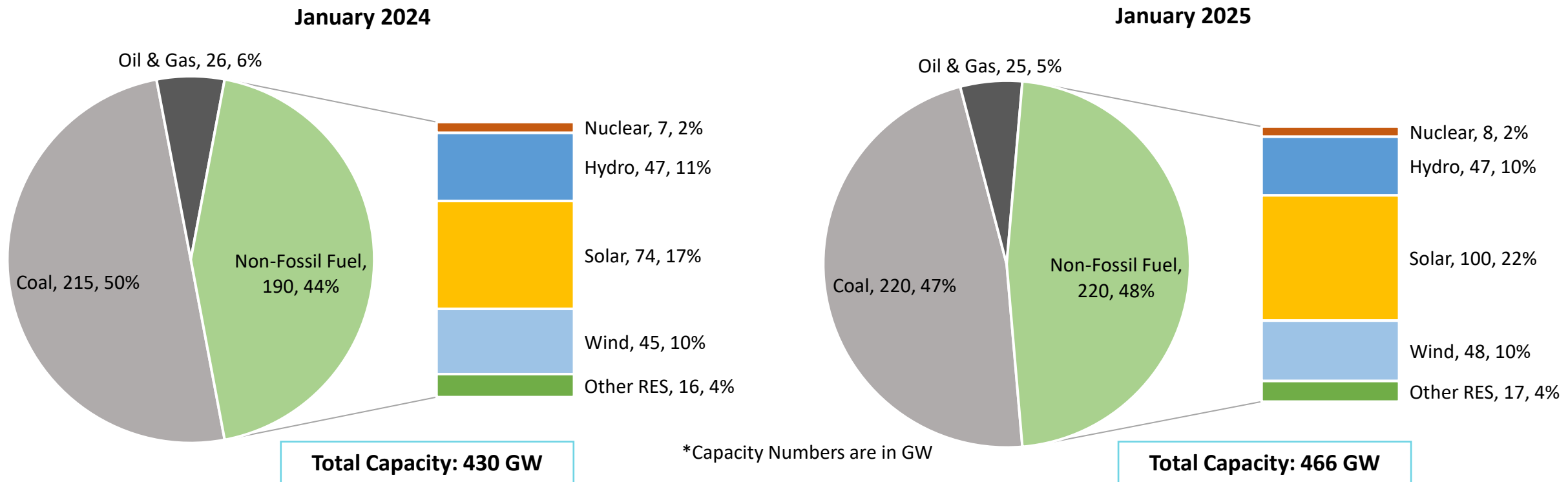
\*Excluding biofuels, waste, and other non-commercial source of energy

# Per-Capita Energy and Electricity Consumption



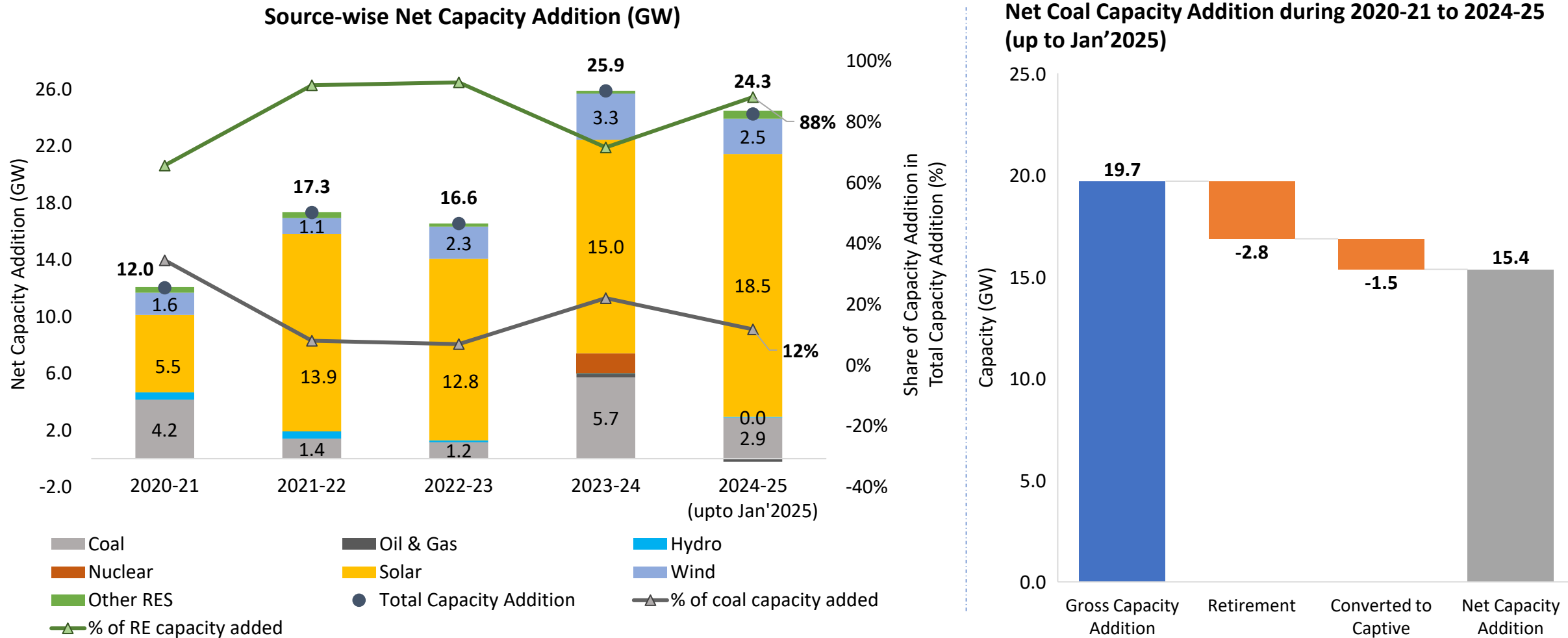
Note: Per Capita energy consumption is calculated on energy supply basis.

# India's Electricity Capacity Mix (Utility-scale)



- India's electricity generating capacity is 466 GW as on Jan'2025 [coal 220 GW (47%), solar 100 GW (22%), wind 48 GW (10%), and hydro 47 (10%)].
- As on Jan'2025, the share of non-fossil-based electricity capacity is 48% against the set target of 50% non-fossil capacity by 2030.
- As on Jan'2025, India's renewable energy capacity (including large hydro) stood at 212 GW out of 466 GW.

# India's Electricity Capacity Addition in last 5 years



- A total of 79.4 GW of generation capacity has been added in RE (Hydro, solar, wind, and other RES) over the past 5 years (2020-21 to 2024-25), whereas the net coal capacity addition during the same period was 15.4 GW, mostly in the central sector.

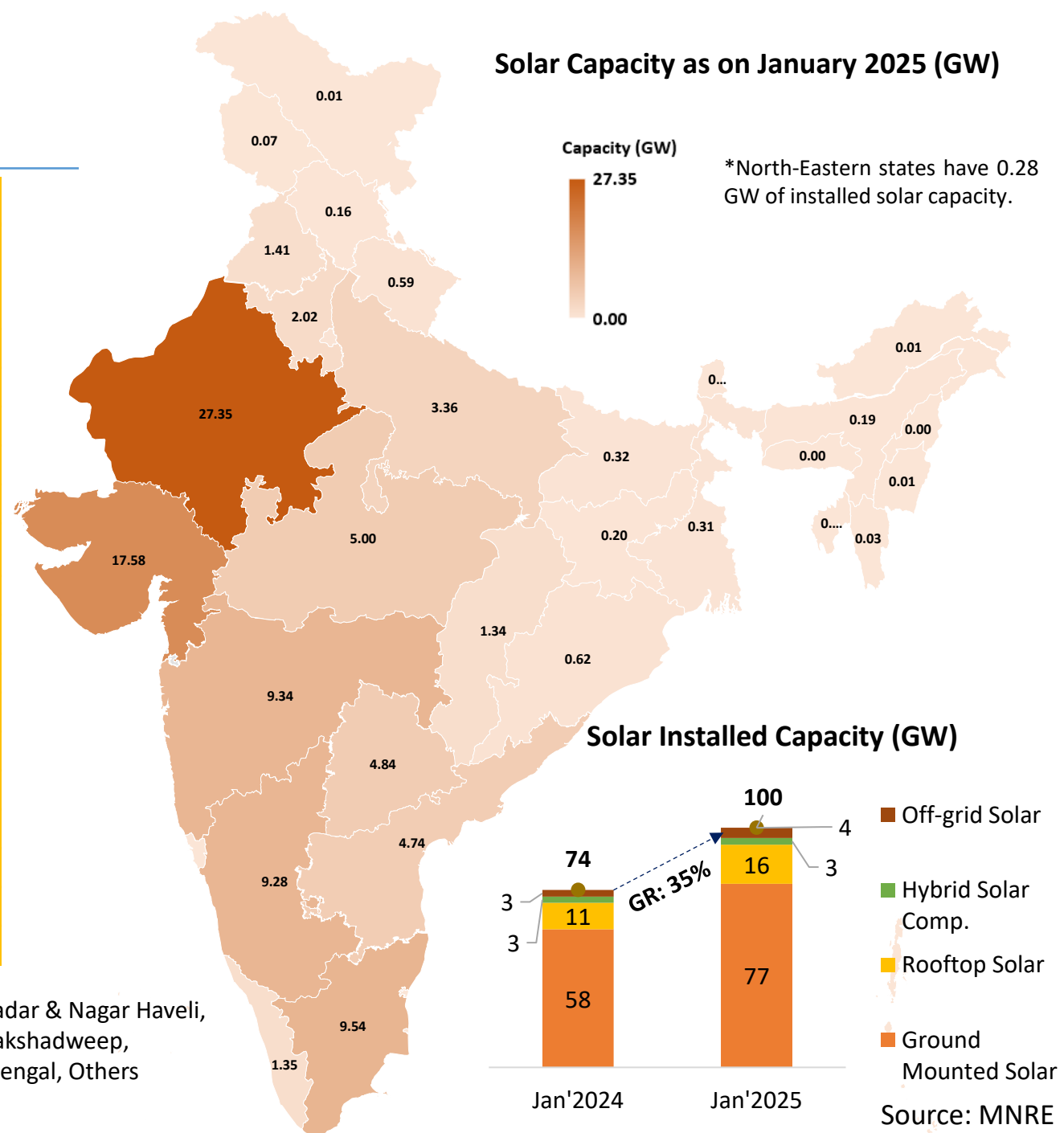
# State-wise Solar Capacity

as on January 2025

State-wise installed capacity of Solar Power (GW)					
States	Ground Mounted	Rooftop	Solar Component in Hybrid	Off Grid	Total Solar Power
Rajasthan	23.08	1.48	1.98	0.81	27.35
Gujarat	11.71	4.98	0.79	0.10	17.58
Tamil Nadu	8.57	0.90	0.00	0.07	9.54
Maharashtra	5.38	3.03	0.00	0.93	9.34
Karnataka	8.48	0.68	0.08	0.04	9.28
Madhya Pradesh	4.40	0.50	0.00	0.10	5.00
Telangana	4.36	0.47	0.00	0.01	4.84
Andhra Pradesh	4.36	0.29	0.00	0.09	4.74
Uttar Pradesh	2.71	0.32	0.00	0.32	3.36
Haryana	0.27	0.80	0.00	0.94	2.02
Punjab	0.89	0.44	0.00	0.08	1.41
Kerala	0.32	1.00	0.00	0.02	1.35
Chhattisgarh	0.84	0.11	0.00	0.39	1.34
Odisha	0.51	0.07	0.00	0.04	0.62
Others	1.07	1.19	0.00	0.31	2.57
<b>All India</b>	<b>76.95</b>	<b>16.28</b>	<b>2.85</b>	<b>4.25</b>	<b>100.33</b>

Others include- Andaman & Nicobar, Arunachal Pradesh, Assam, Bihar, Chandigarh, Dadar & Nagar Haveli, Daman & Diu, Delhi, Goa, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Ladakh, Lakshadweep, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Puducherry, Sikkim, Tripura, West Bengal, Others

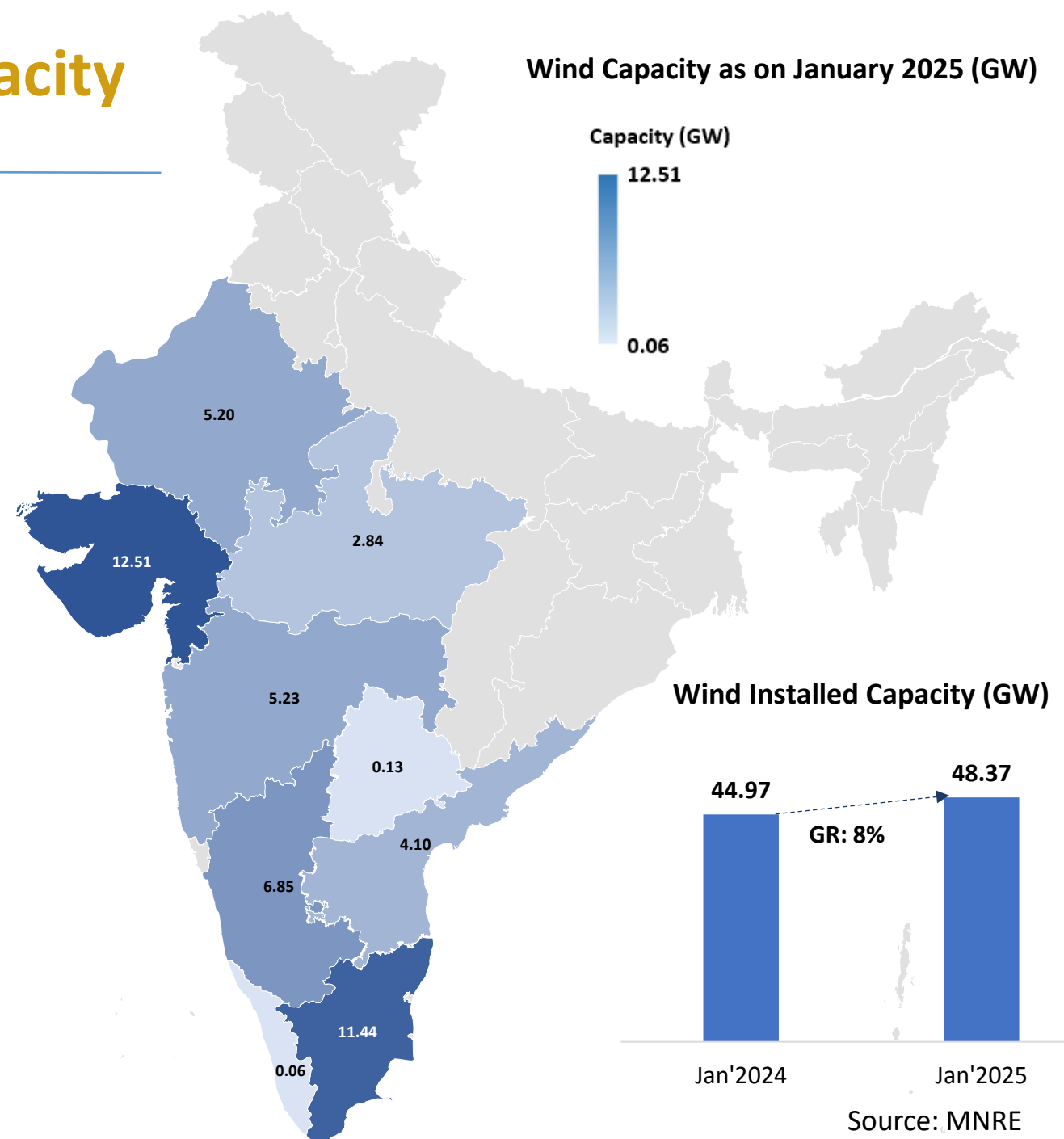
## Solar Capacity as on January 2025 (GW)



# State-wise Wind Onshore Capacity

as on January 2025

State-wise installed capacity of Wind (Onshore) Power	
States	Installed Capacity (GW)
Gujarat	12.51
Tamil Nadu	11.44
Karnataka	6.85
Maharashtra	5.23
Rajasthan	5.20
Andhra Pradesh	4.10
Madhya Pradesh	2.84
Telangana	0.13
Kerala	0.06
<b>India Total</b>	<b>48.37</b>







# RE Potential and Installed Capacity (1/2)

## RE potential in the state


Wind Onshore (at 150m agl) and Offshore Potential

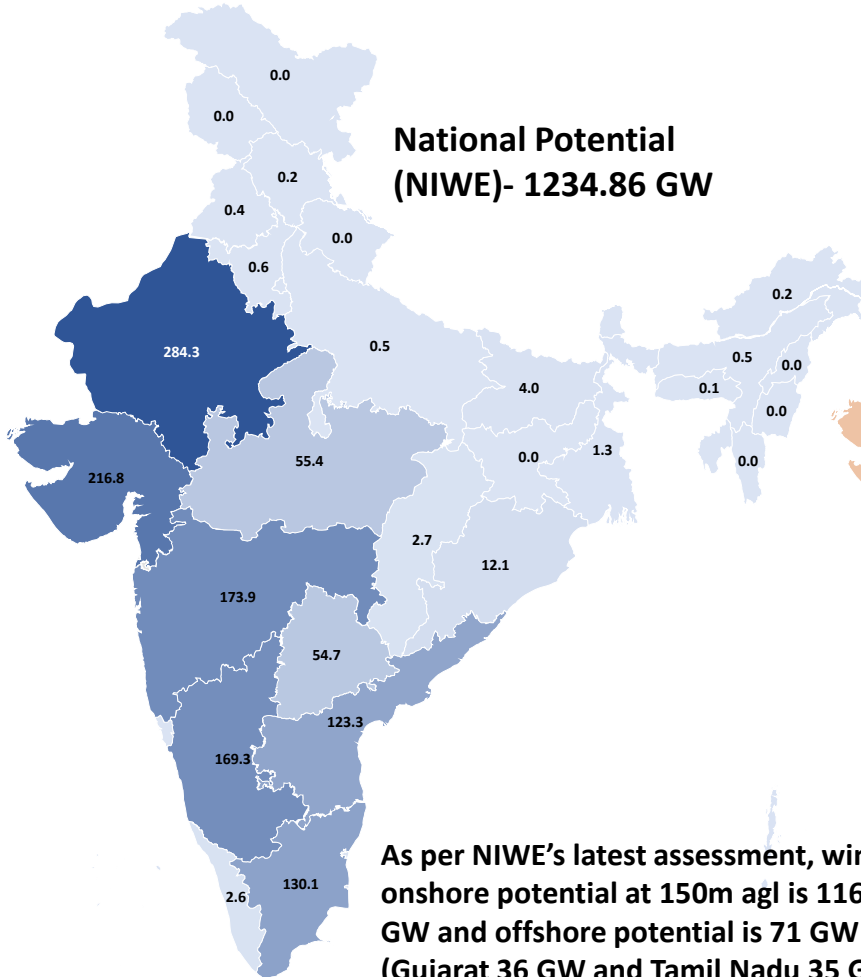
State Potential (GW)  0.0 284.3

Solar Potential

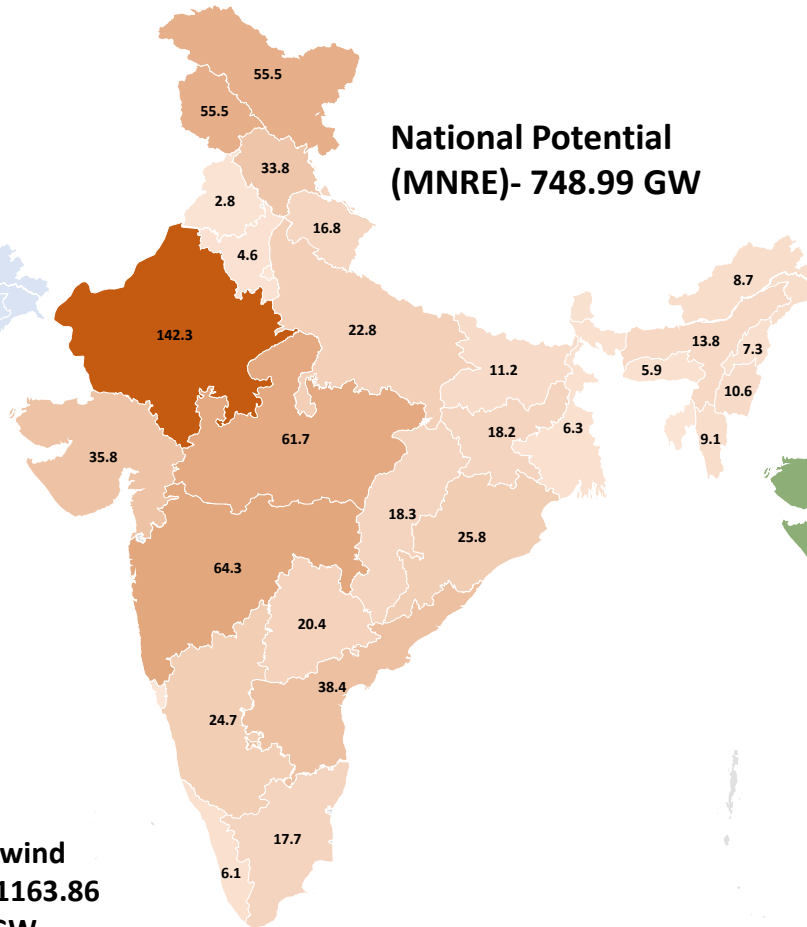
State Potential (GW)  0.9 142.3

Renewable Energy Potential (all sources incl. large Hydro)

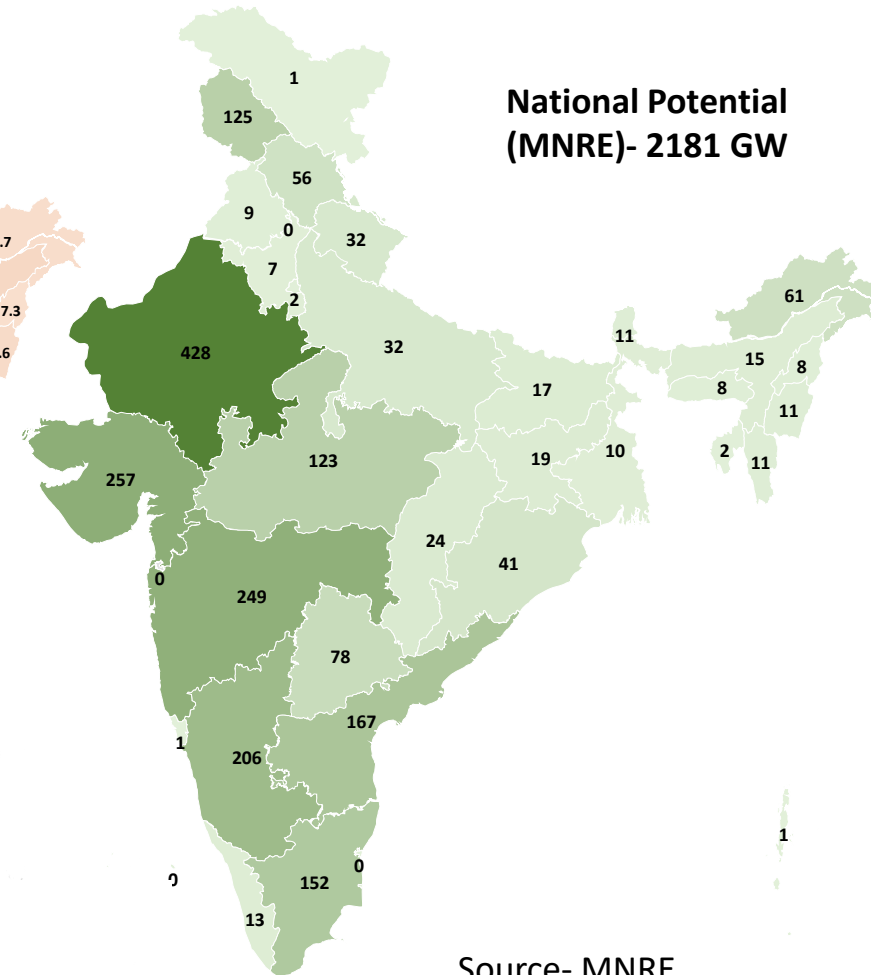
Potential (GW)  0 428



As per NIWE's latest assessment, wind onshore potential at 150m agl is 1163.86 GW and offshore potential is 71 GW (Gujarat 36 GW and Tamil Nadu 35 GW).



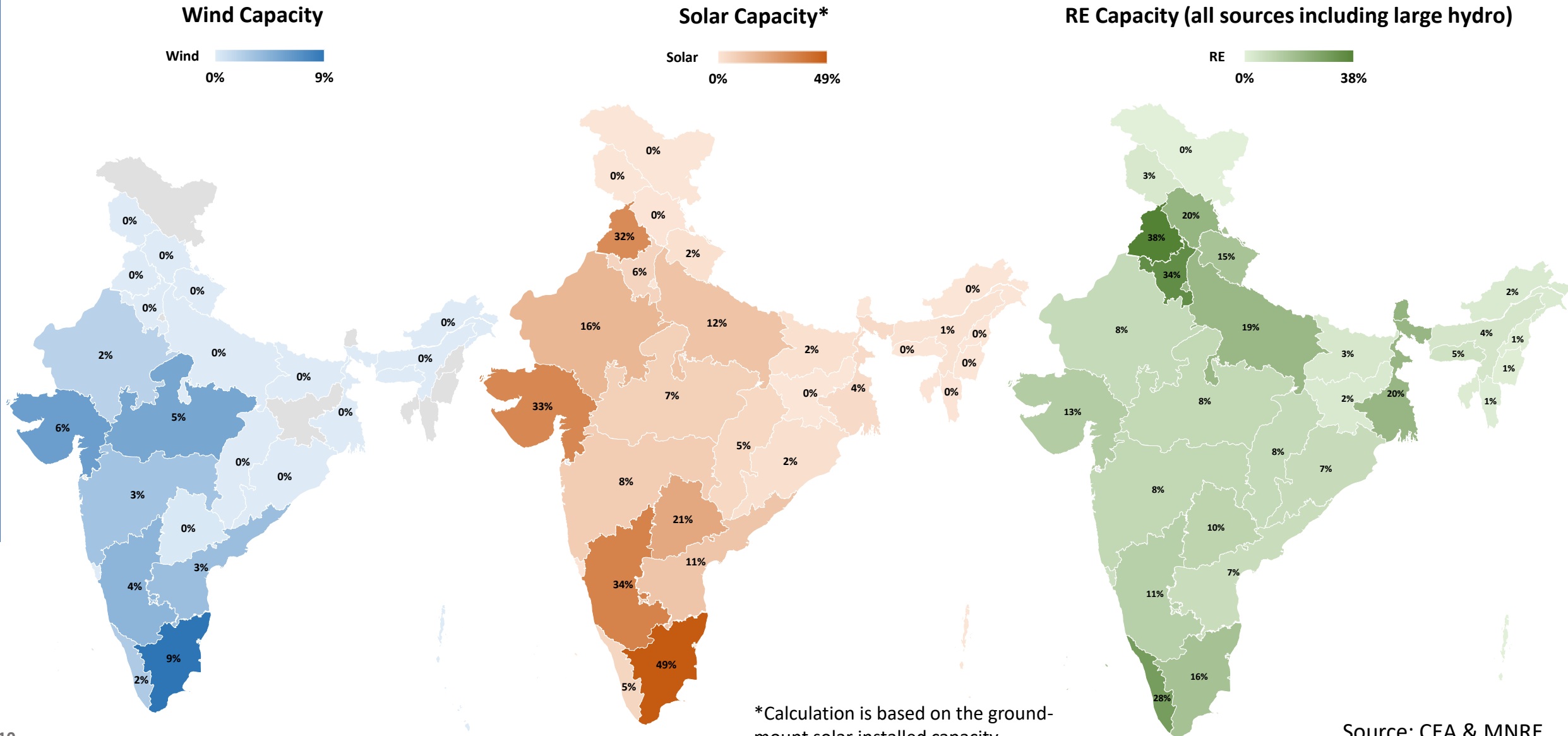
Market potential for SPV rooftop is 124 GW.



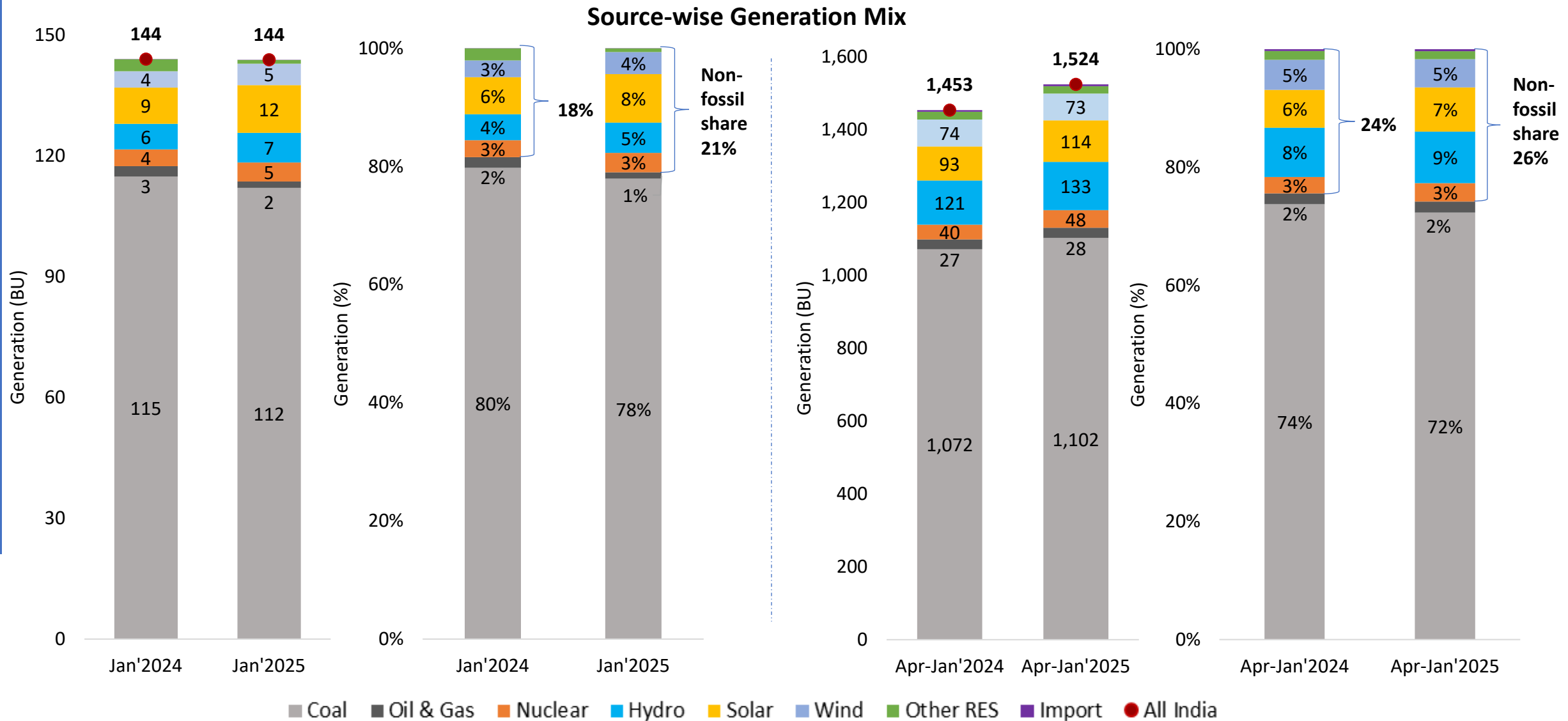
Source- MNRE

# Renewable Energy (RE) Potential and Installed Capacity (2/2)

RE Installed capacity as a Percentage of the total resource potential in the state as on January 2025



# India's Electricity Generation Mix

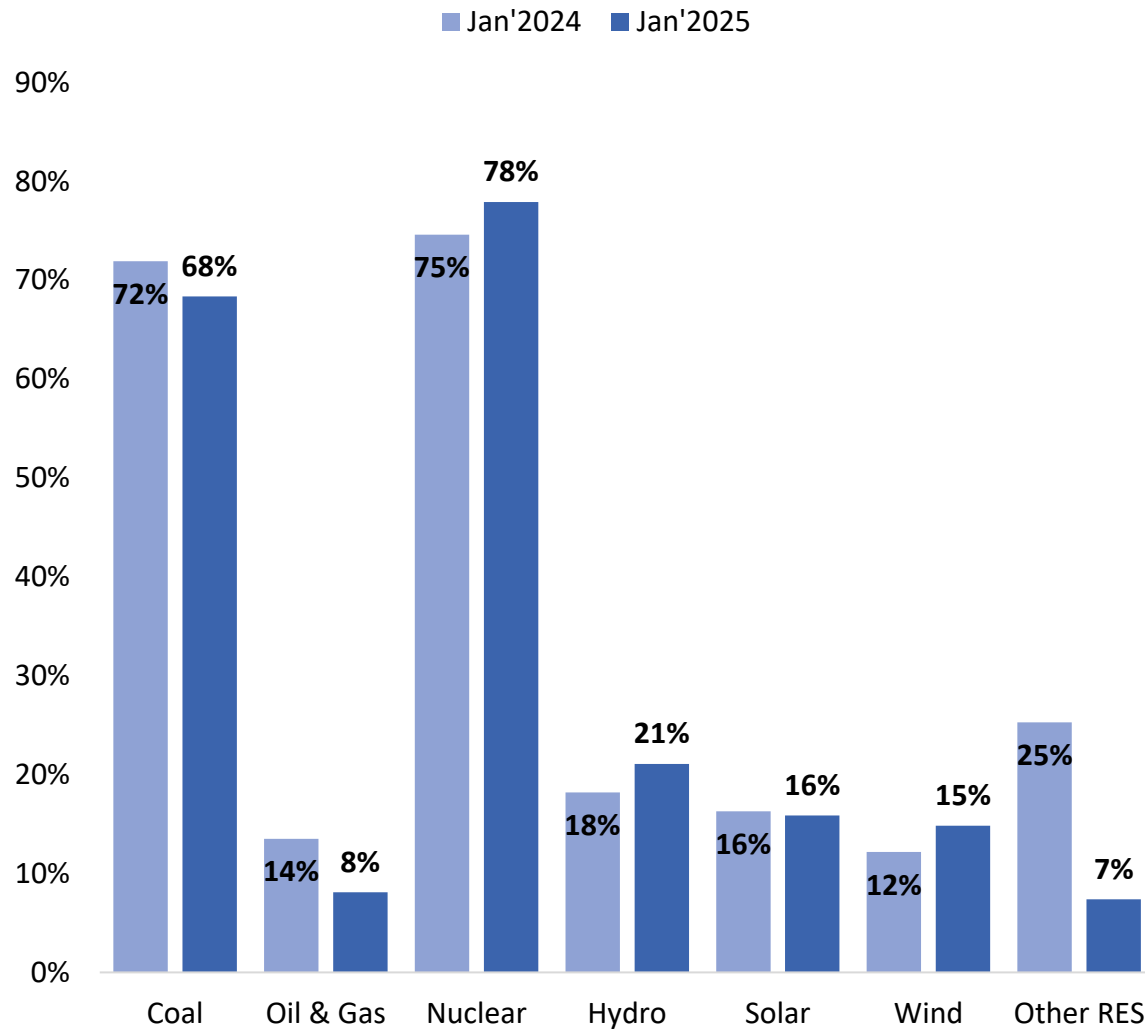


NOTE: The generation data for January'2025 is provisional.

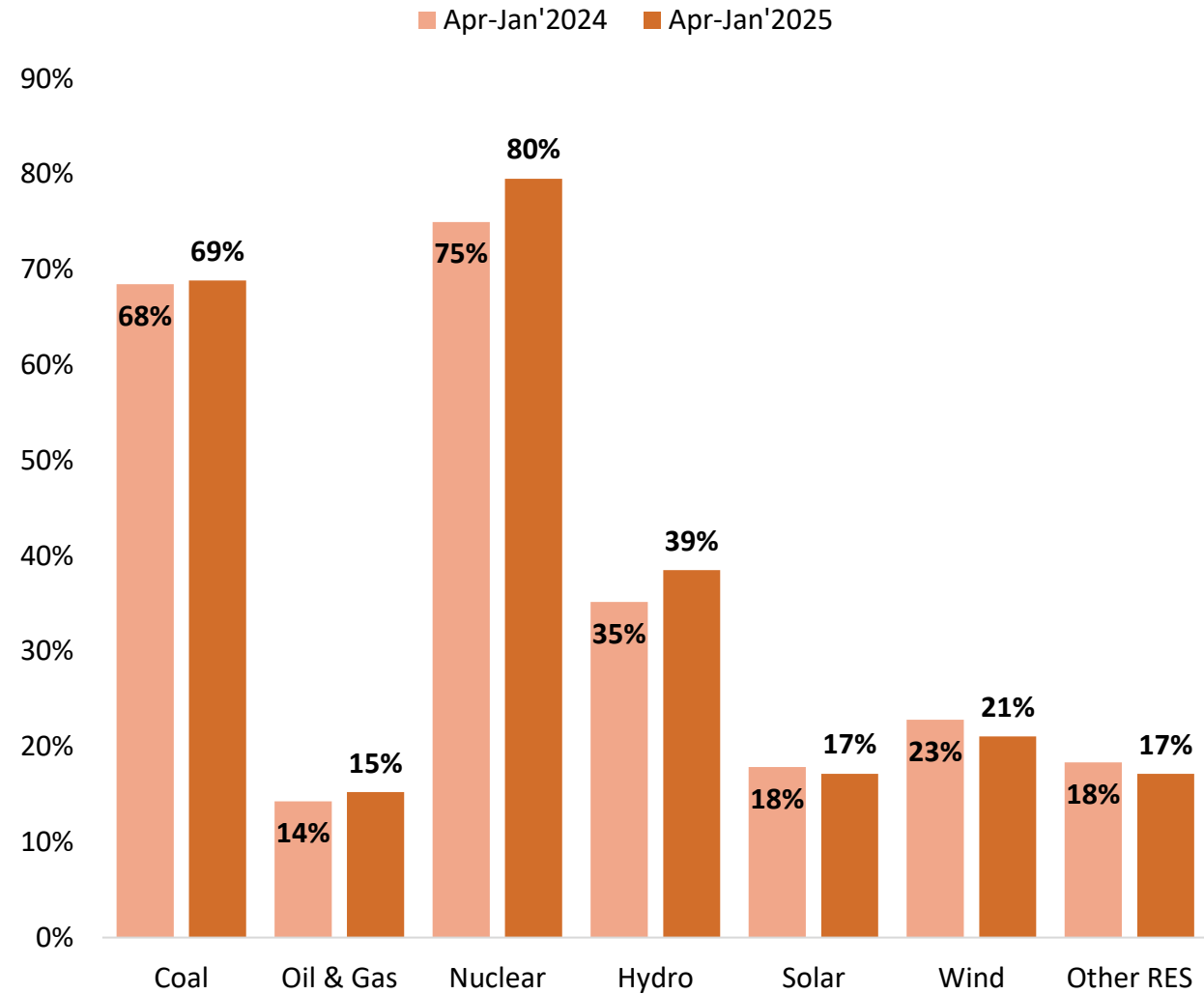
Source: CEA

# Source-wise PLF/CUF

Source-wise PLF/ CUF in January (%)



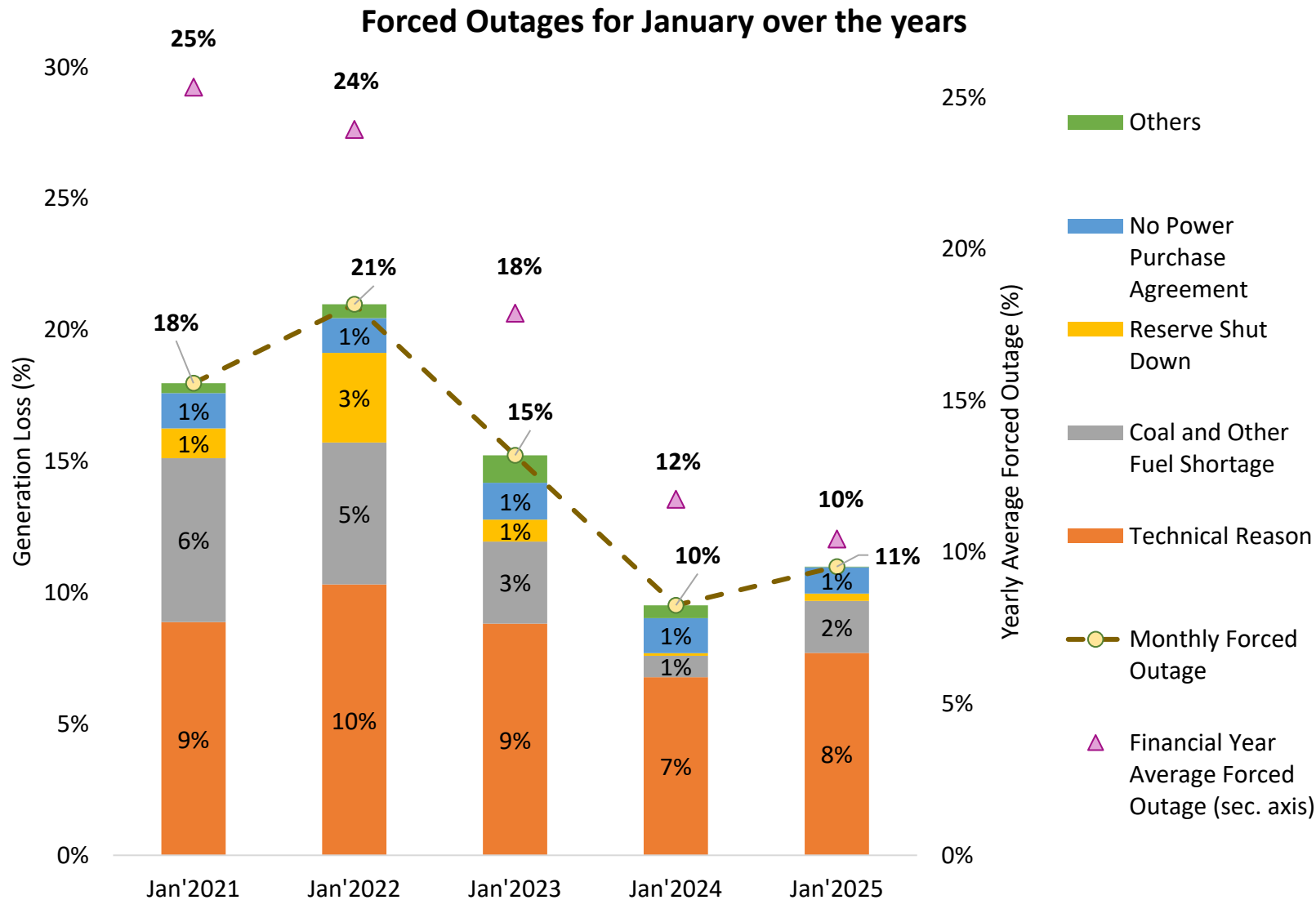
Source-wise PLF/ CUF Comparison (%)



NOTE: The PLF/CUF data is based on provisional generation for January'2025.

Source: CEA & MNRE

# Thermal Generation Loss and Reasons for Forced Outages



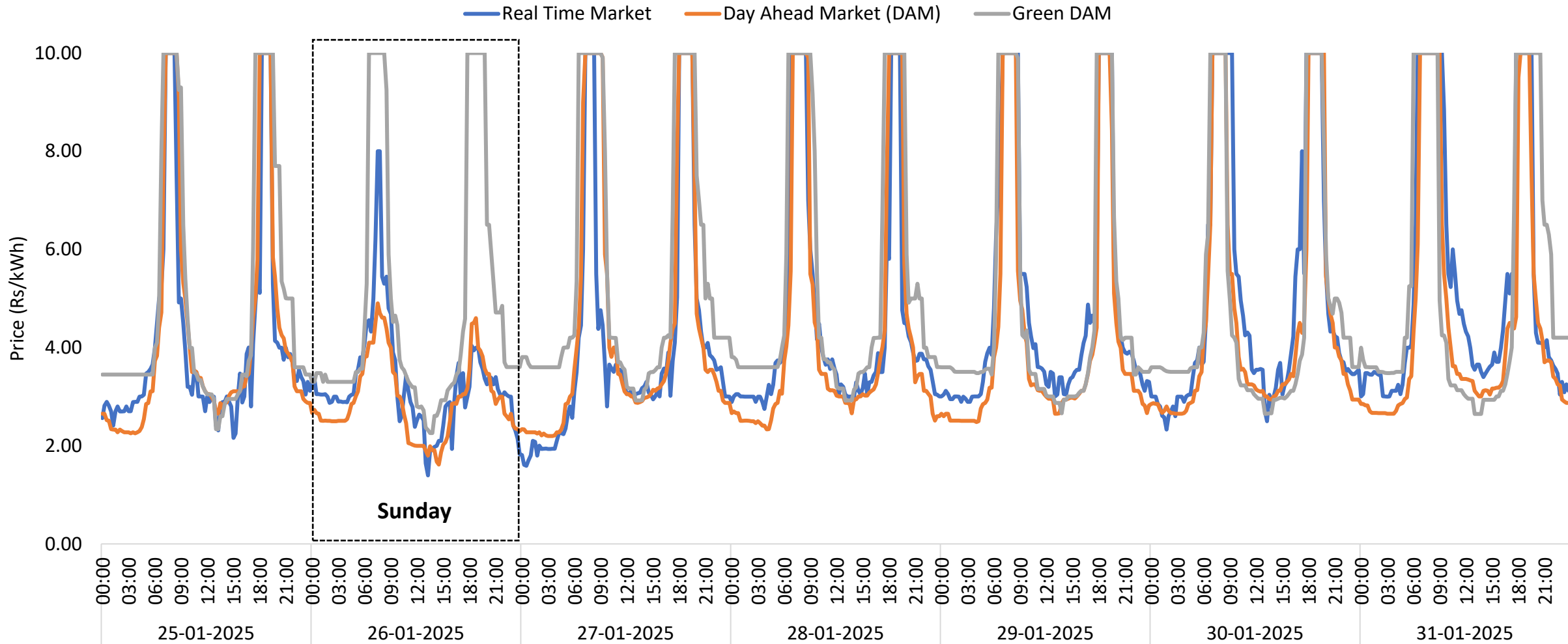
Year/ Month		Average Forced Outage Share
Yearly	FY 2022-23	18%
	FY 2023-24	12%
	FY 2024-25 (up to Jan'2025)	10%
Monthly	Jan'2023	15%
	Jan'2024	10%
	Jan'2025	11%

Thermal includes only Coal and Lignite Plants.

Source: ICED

# Indian Electricity Exchange (IEX) Market Snapshot

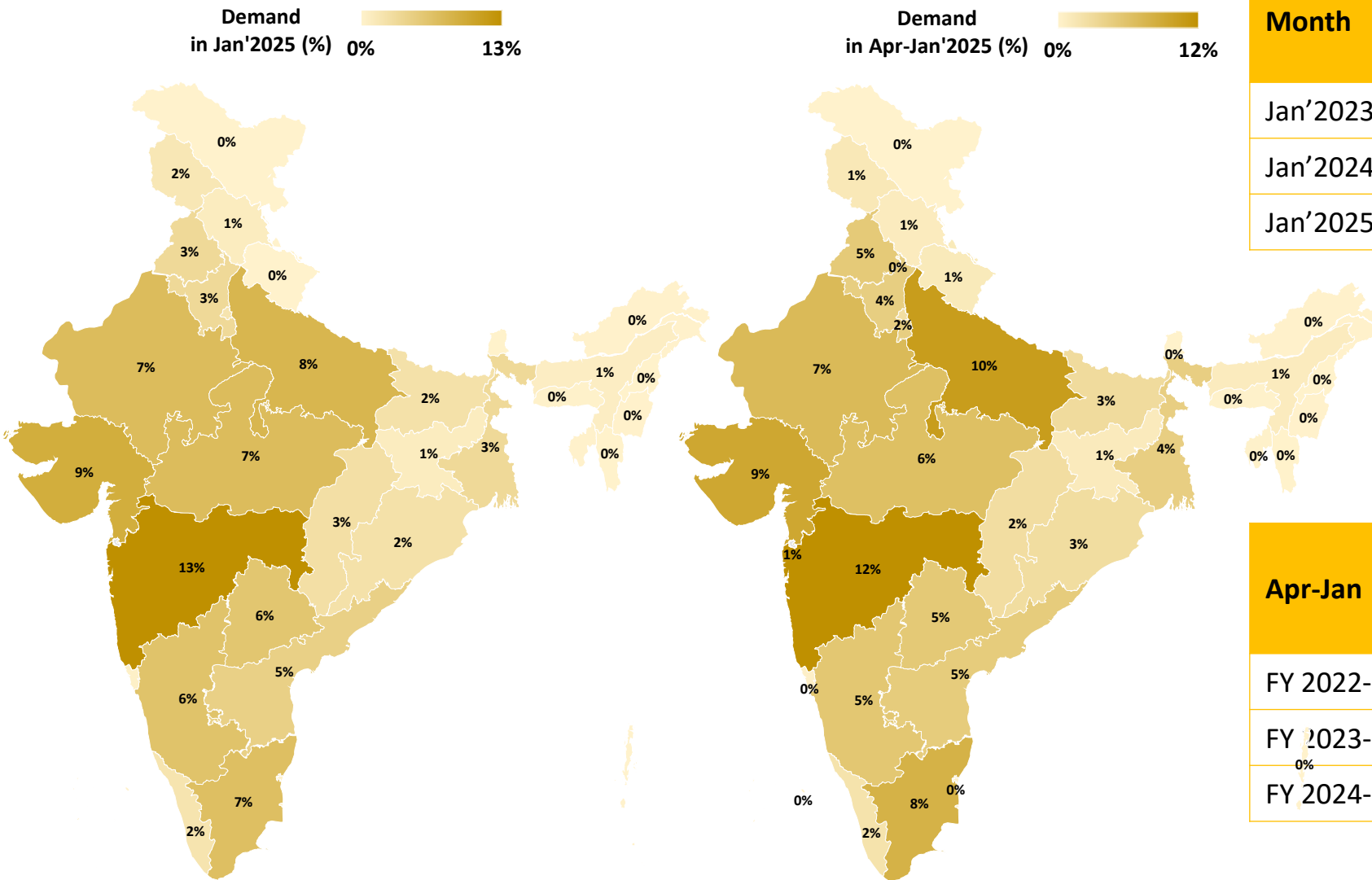
Market Clearing Prices of last 7 days of January 2025



In April 2023, CERC revised the price ceiling from ₹12/kWh to ₹10/kWh in the power exchange market.

# National and State level Electricity Demand

State-level Electricity Demand as a percent of National Demand (%)



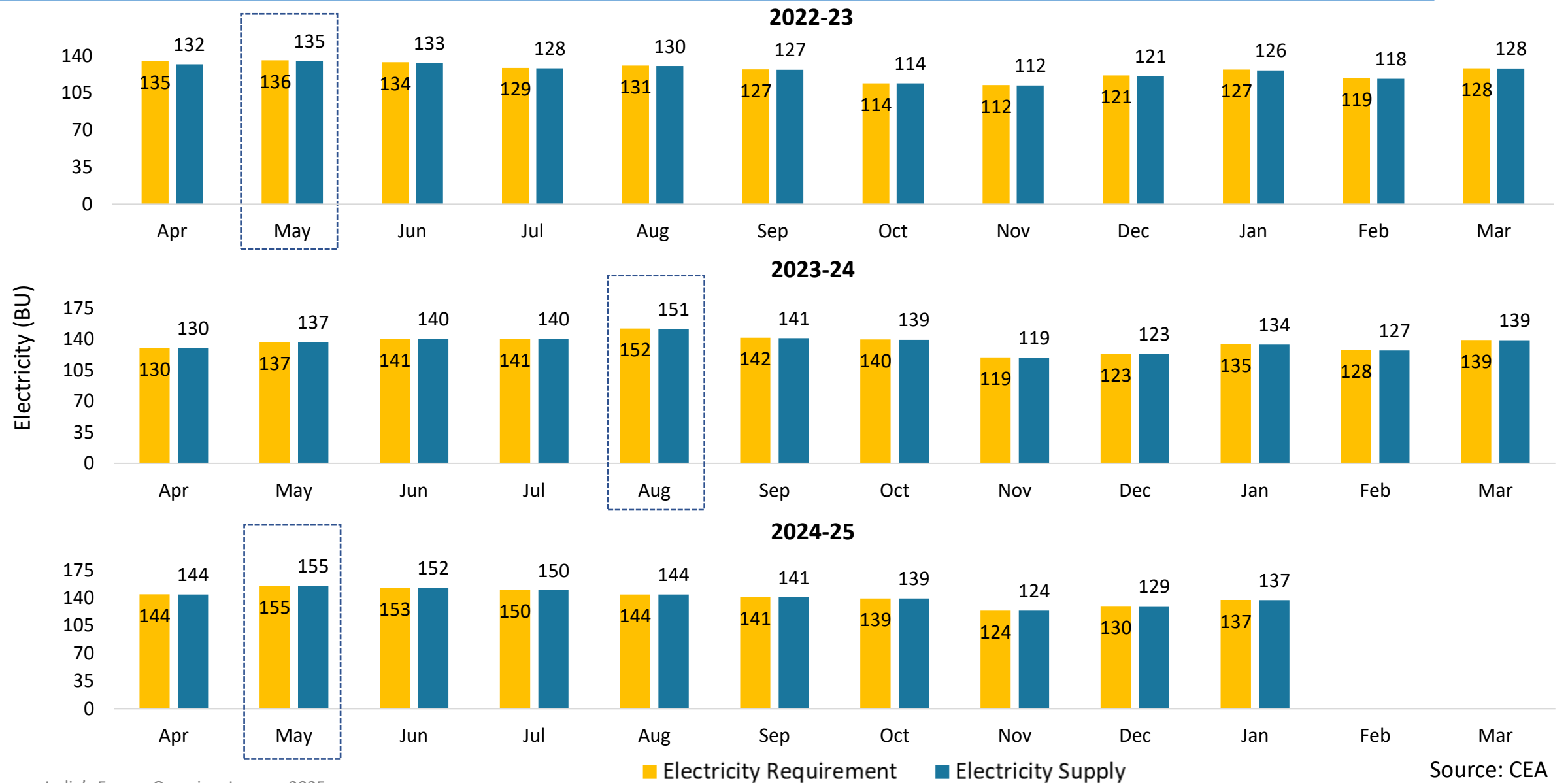
Month	Electricity Demand (BU)	Electricity Supply (BU)	Gap (BU) (+/-)
Jan'2023	127	126	0.8
Jan'2024	135	134	0.6
Jan'2025	137	137	0.0

Apr-Jan	Electricity Demand (BU)	Electricity Supply (BU)	Gap (BU) (+/-)
FY 2022-23	1,266	1,259	7
FY 2023-24	1,359	1,356	4
FY 2024-25	1,417	1,416	2

NOTE: The demand represented above includes intra state T&D losses.

Source: CEA

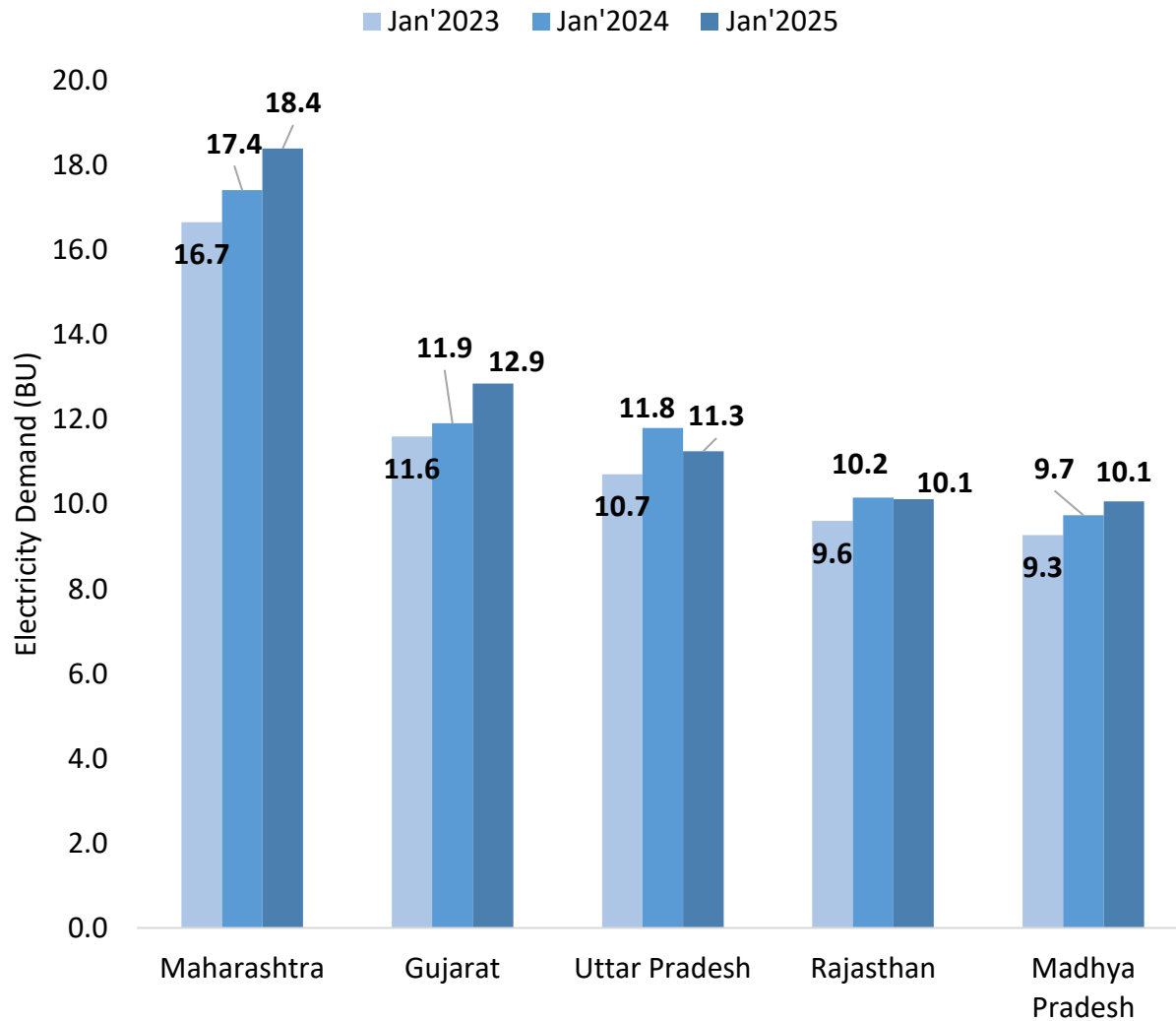
# India's Monthly Electricity Requirement and Supply



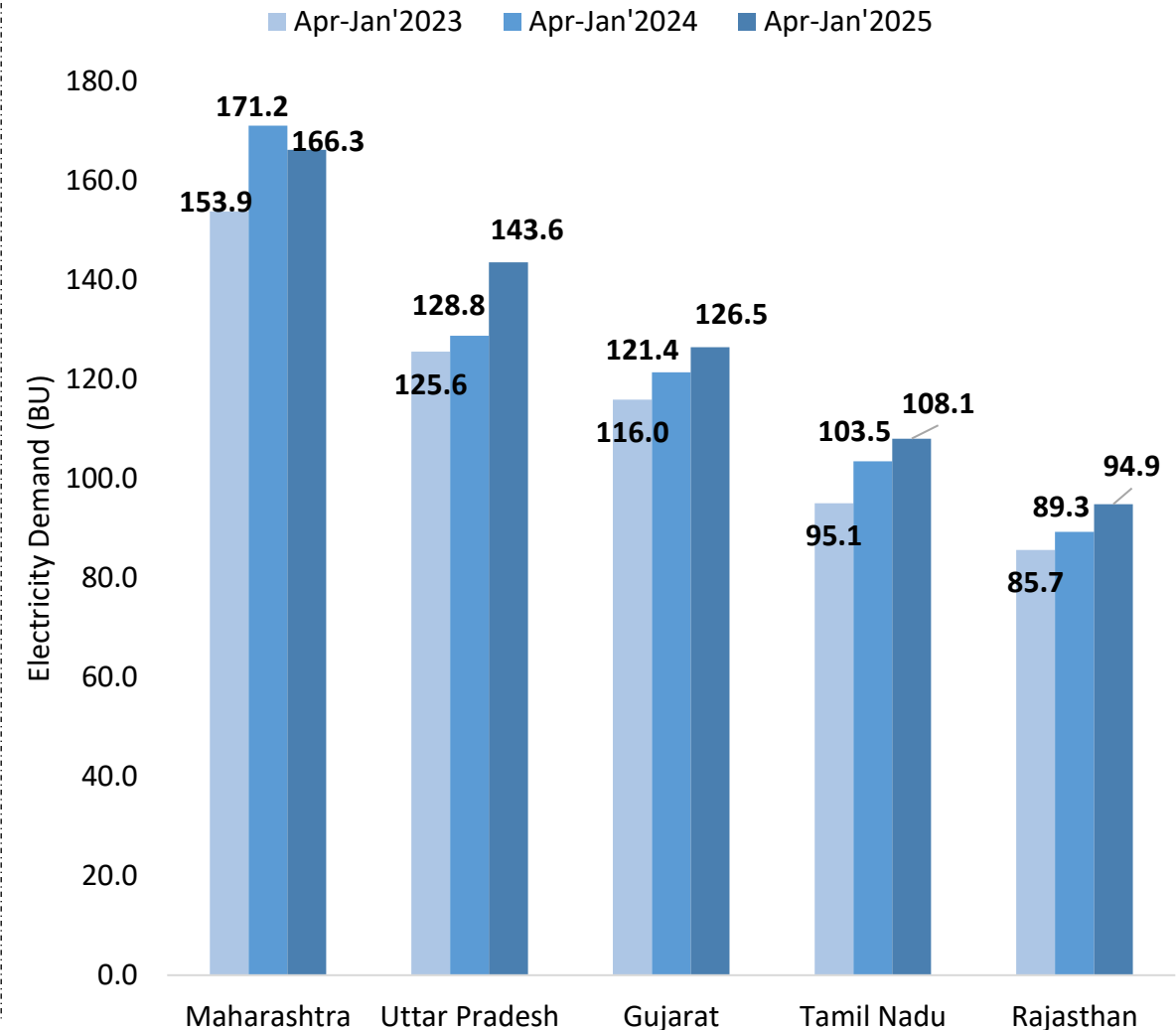


# Monthly Electricity Demand of the top 5 states

States with Highest Electricity Demand in January (BU)



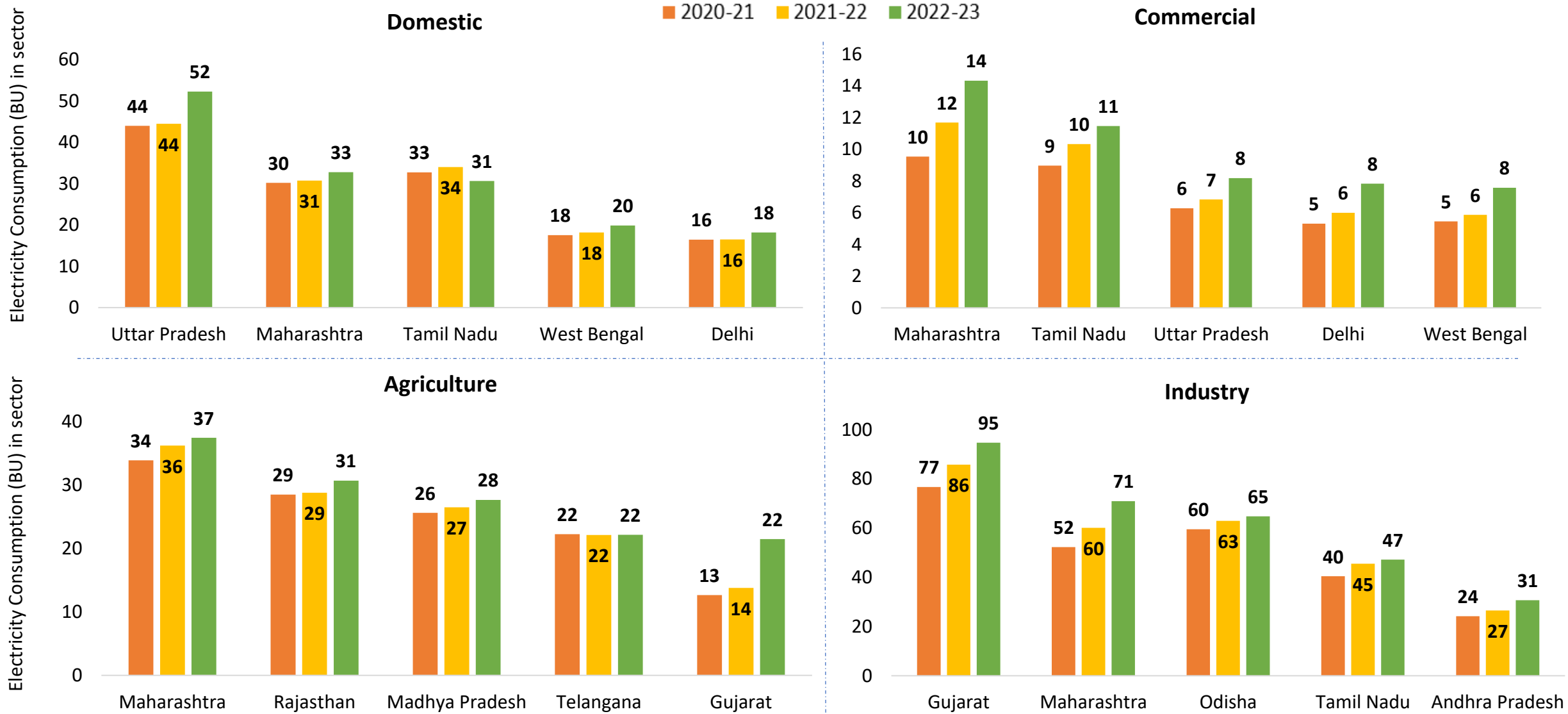
States with Highest Electricity Demand (BU)



Note: The electricity demand data for January'25 is Provisional.

Source: CEA

# Electricity Consumer-category wise top 5 States

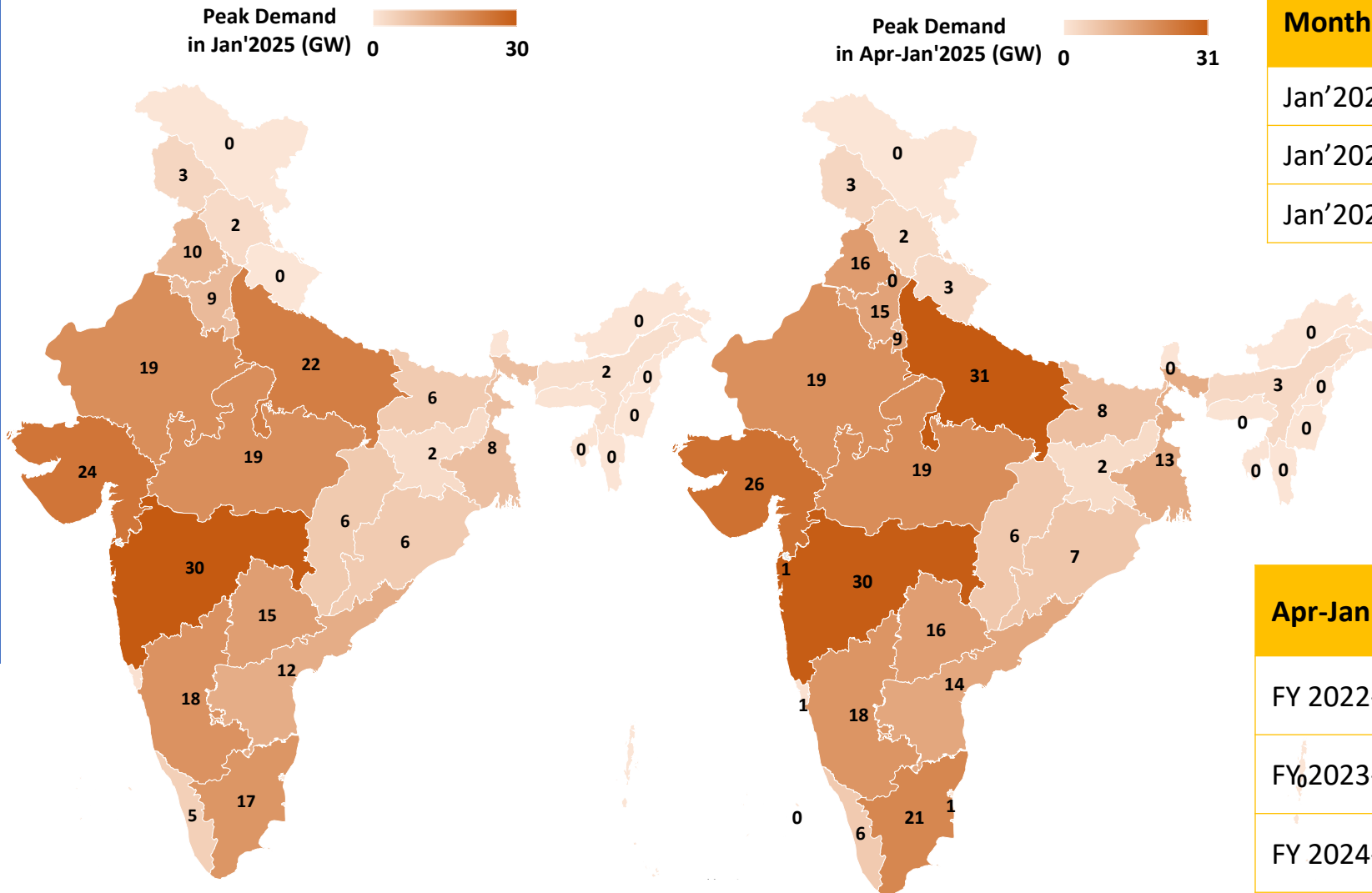


NOTE: Top 5 States under consumer-categories are selected on the basis of 2022-23

Source: CEA

# National and State level Peak Electricity Demand

State-level Peak Electricity Demand (GW)



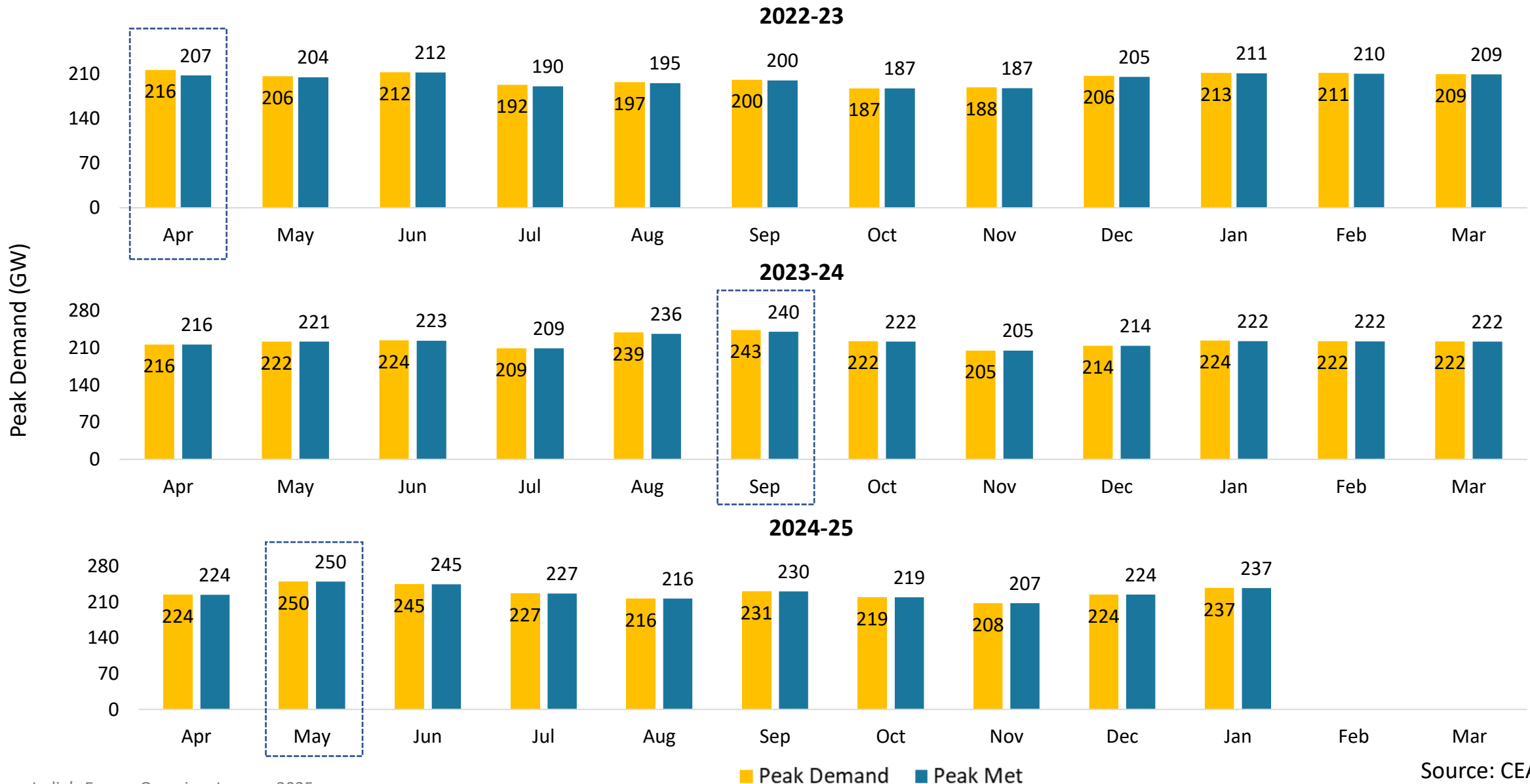
Month	Peak Demand (GW)	Peak Supply (GW)	Gap(GW) (+/-)
Jan'2023	213	211	1.8
Jan'2024	224	222	1.2
Jan'2025	237	237	0.1

Apr-Jan	Peak Demand (GW)	Peak Supply (GW)	Gap (GW) (+/-)
FY 2022-23	216	207	8.7
FY <sub>0</sub> 2023-24	243	240	3.3
FY 2024-25	250	250	0.0

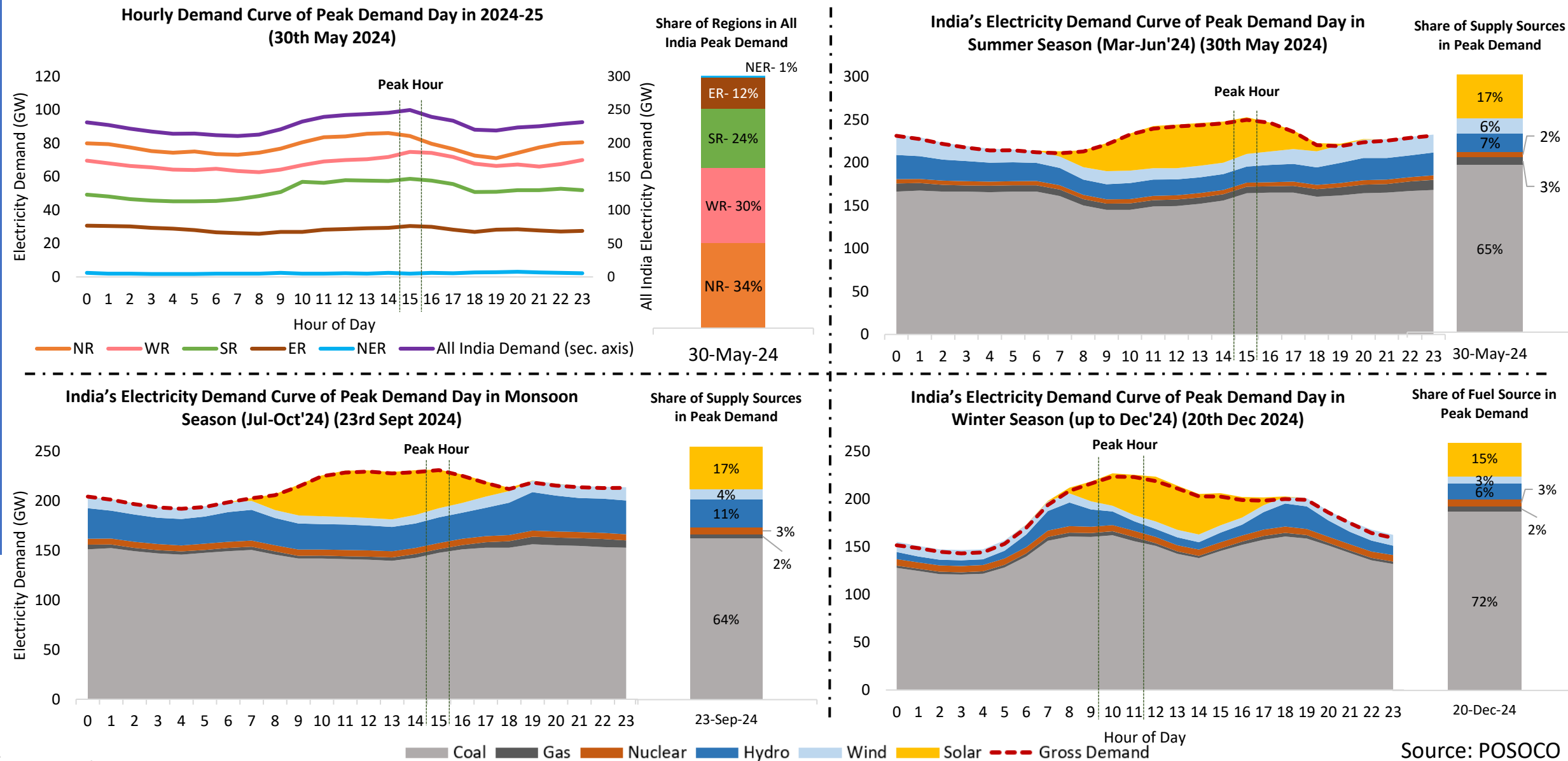
Note: The peak electricity demand data for January'25 is Provisional.

Source: CEA

# India's Monthly Peak Electricity Demand and Supply

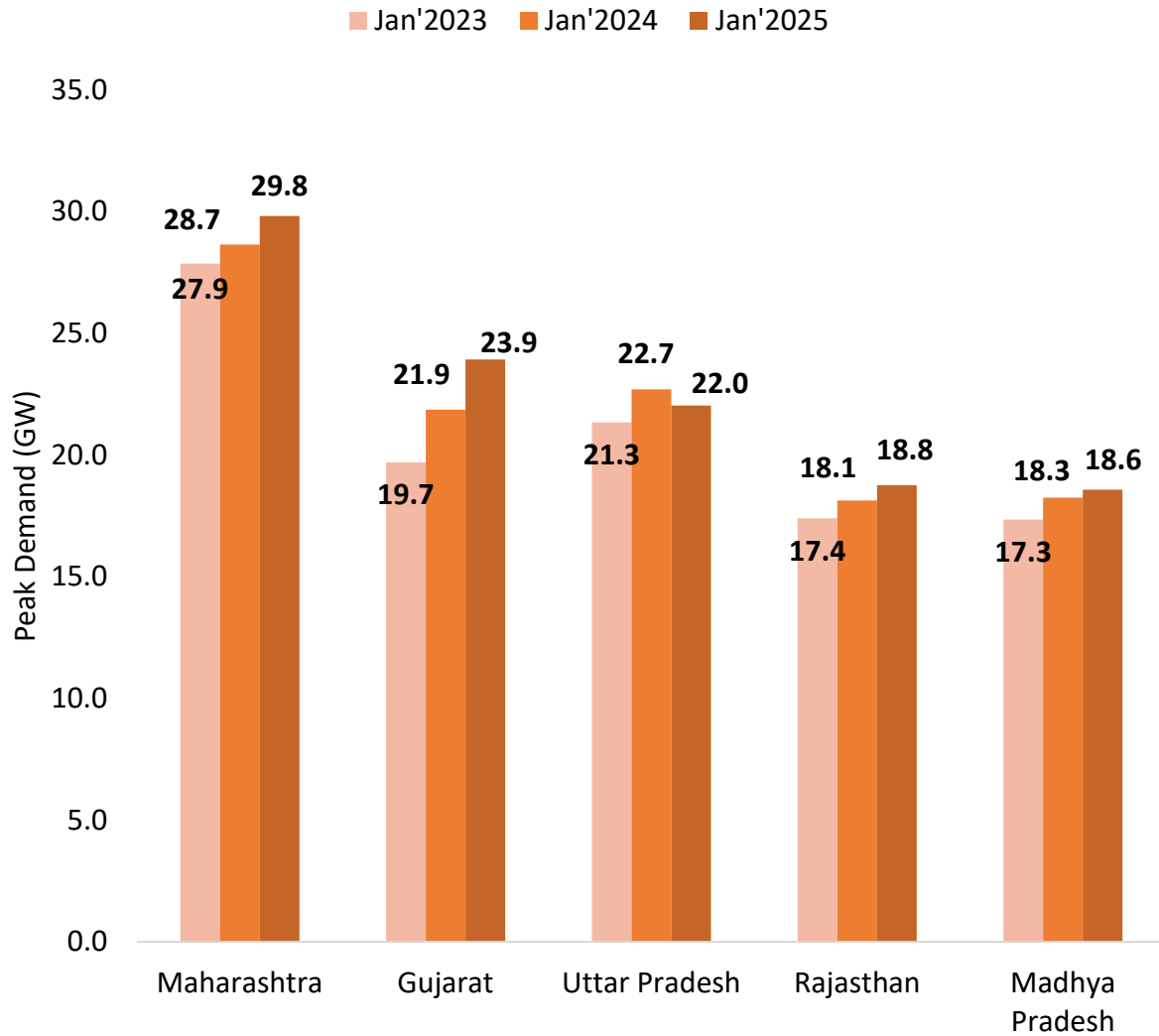


# All India, Regional, and Seasonal Electricity Demand Curve of Peak Demand Day

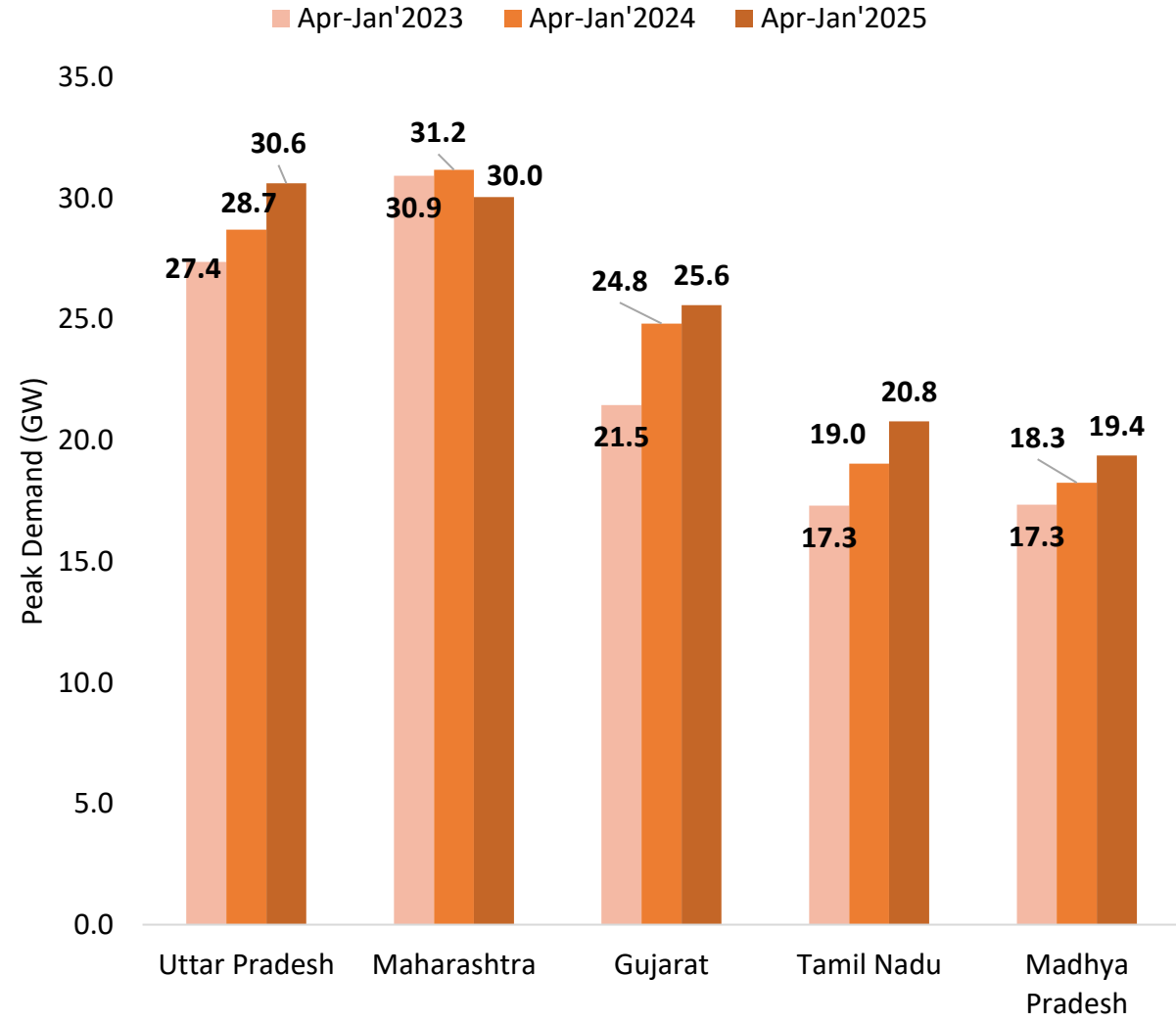


# Monthly Peak Electricity Demand of the top 5 states

## States with Highest Peak Electricity Demand in January (GW)



## States with Highest Peak Electricity Demand (GW)

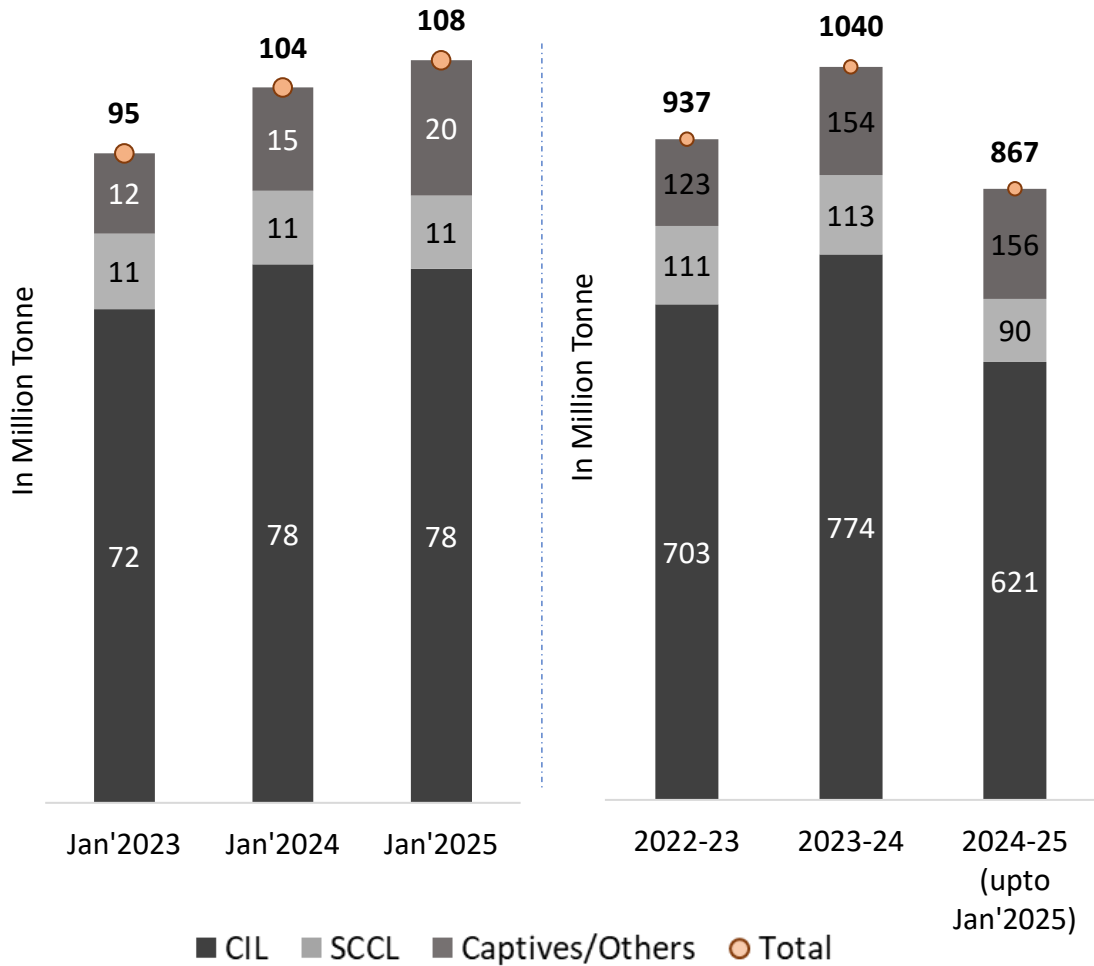


Note: The peak electricity demand data for January'25 is Provisional.

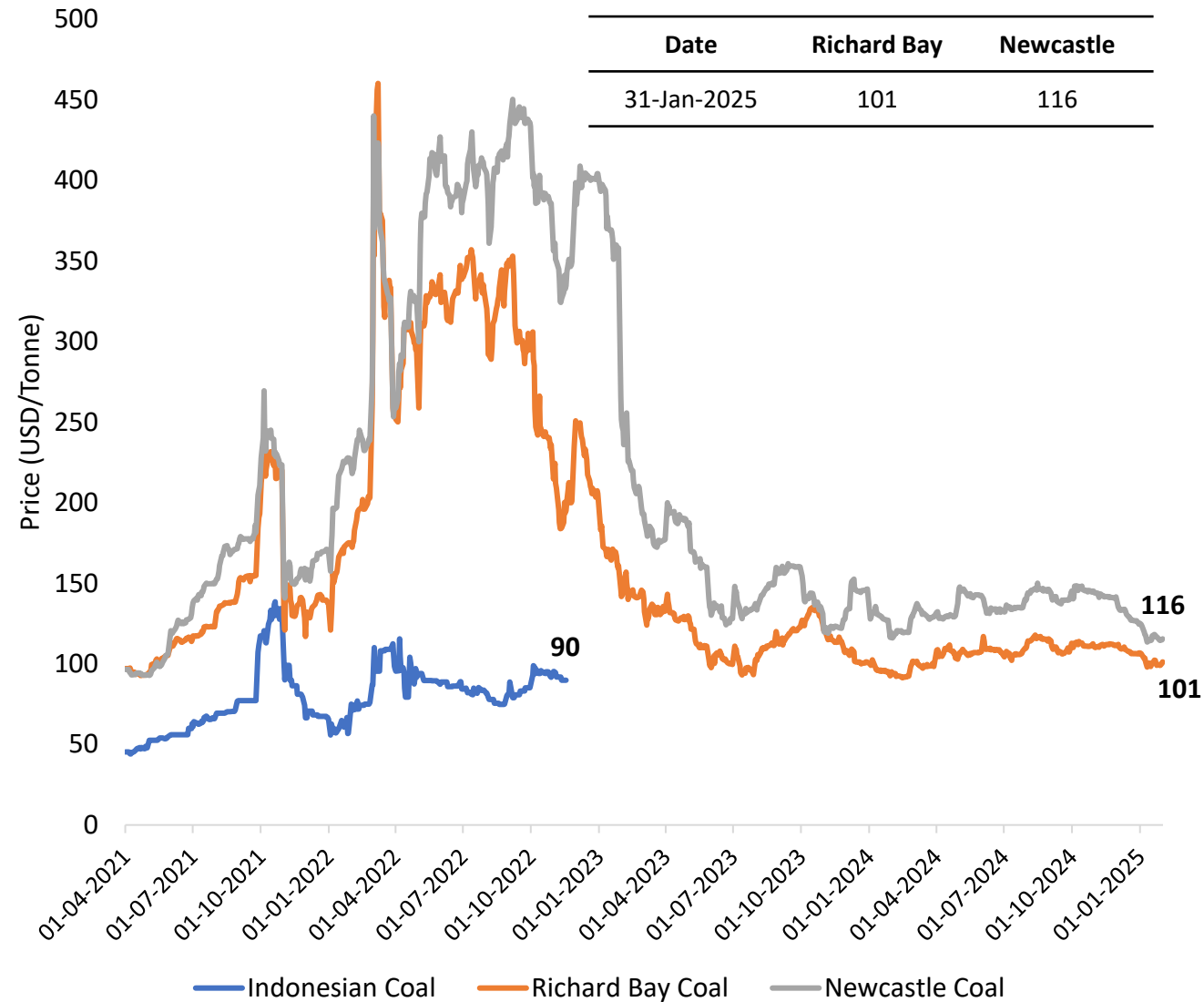
Source: CEA

# Monthly Coal Statistics

Monthly/ Annual Coal (incl. Lignite) Production (in Million Tonnes)



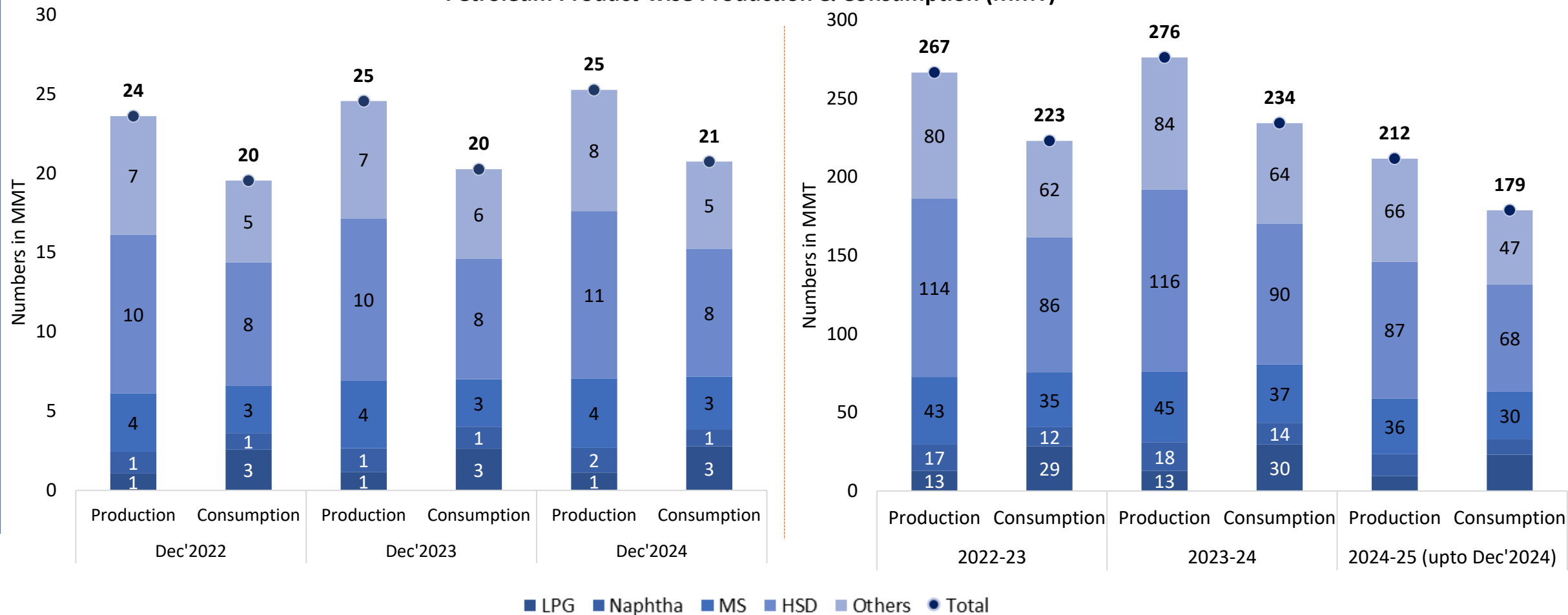
International Coal Prices



Source: Ministry of Coal

# Petroleum Products Market Scenario (1/3)

Petroleum Product-wise Production & Consumption (MMT)



Others include ATF, SKO, LDO, Lubes, FO, LSHS, Bitumen, pet coke, and others.

**Abbreviations:** ATF- Aviation Turbine Fuel, FO- Furnace Oil, HSD- High-Speed Diesel, LDO- Light Diesel Oil, MS- Motor Spirit (Petrol), SKO- Superior Kerosene Oil, LSHS- Low Sulphur Heavy Stock, LPG- Liquefied Petroleum Gas, MMT- Million Metric Tonne



# Petroleum Products Market Scenario (2/3)

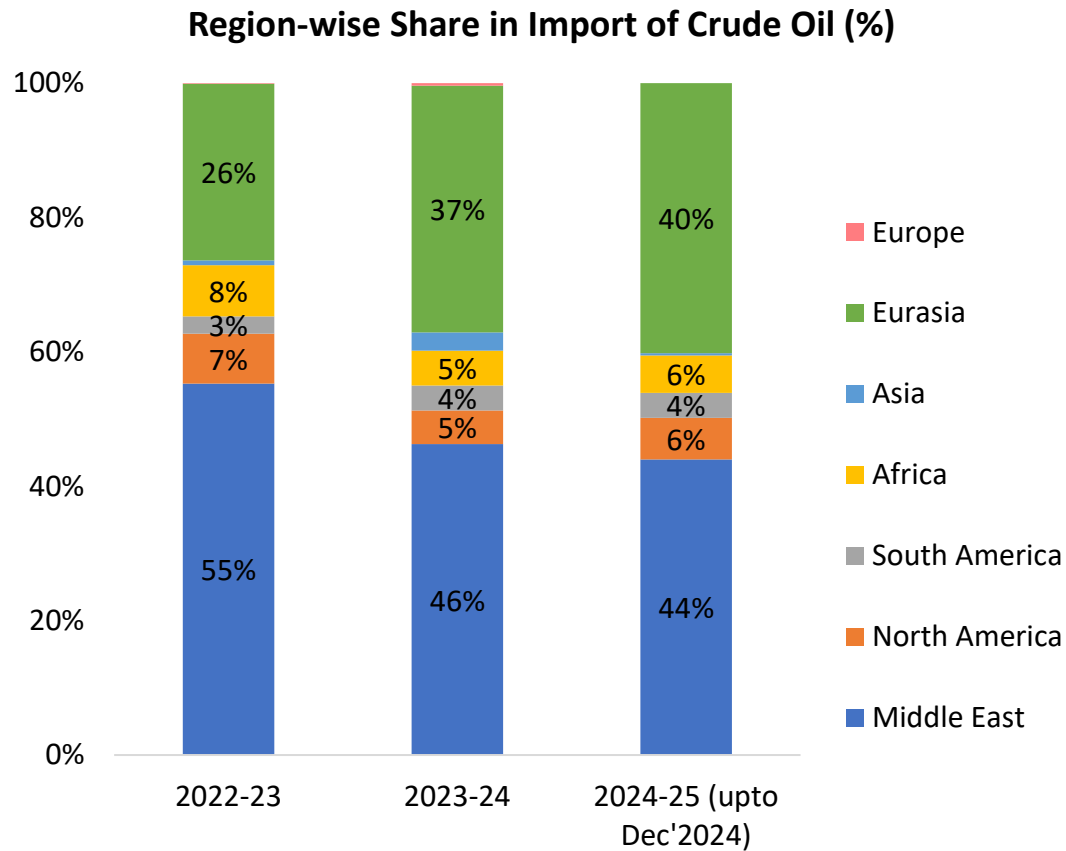
Import/Export of Crude Oil and Petroleum Products ('000 Tonnes)							
Petroleum Products	Import/ Export	Monthly			Yearly		
		Dec'22	Dec'23	Dec'24	2022-23	2023-24	2024-25 (upto Dec'2024)
Crude Oil	Import	19618	19683	19985	232700	234262	179424
	Export	0	0	0	0	0	0
	<b>Net Import</b>	<b>19618</b>	<b>19683</b>	<b>19985</b>	<b>232700</b>	<b>234262</b>	<b>179424</b>
LPG	Import	1718	1565	1863	18335	18514	15656
	Export	45	45	49	540	525	403
	<b>Net Import</b>	<b>1673</b>	<b>1519</b>	<b>1814</b>	<b>17796</b>	<b>17989</b>	<b>15253</b>
Diesel	Import	13	3	4	322	42	32
	Export	2413	2843	2489	28494	28204	20085
	<b>Net Import</b>	<b>-2399</b>	<b>-2840</b>	<b>-2485</b>	<b>-28172</b>	<b>-28162</b>	<b>-20054</b>
Petrol	Import	120	0	0	1069	717	235
	Export	1242	1193	1473	13127	13472	11013
	<b>Net Import</b>	<b>-1122</b>	<b>-1193</b>	<b>-1473</b>	<b>-12058</b>	<b>-12755</b>	<b>-10779</b>
Others	Import	2199	2525	2401	24871	29419	22545
	Export	1998	1760	1744	18854	20391	16350
	<b>Net Import</b>	<b>201</b>	<b>765</b>	<b>657</b>	<b>6017</b>	<b>9029</b>	<b>6195</b>

\*Others include ATF, Naphtha, SKO, LDO, Lubes, FO, LSHS, Bitumen, pet coke, and others.

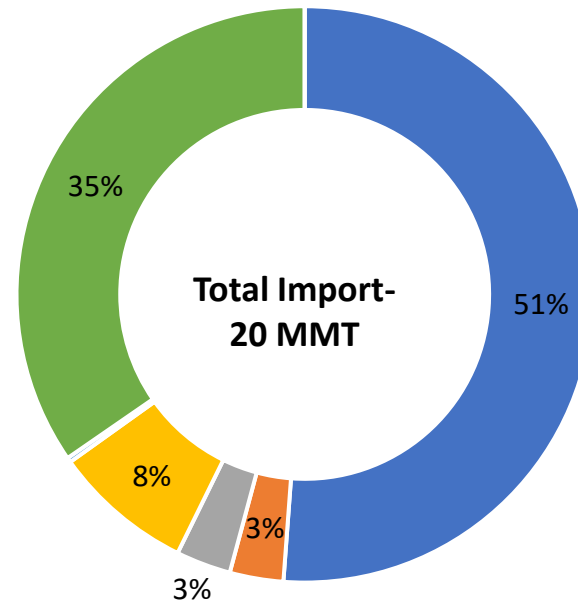
NOTE: The data is available latest up to December'2024

Source: PPAC

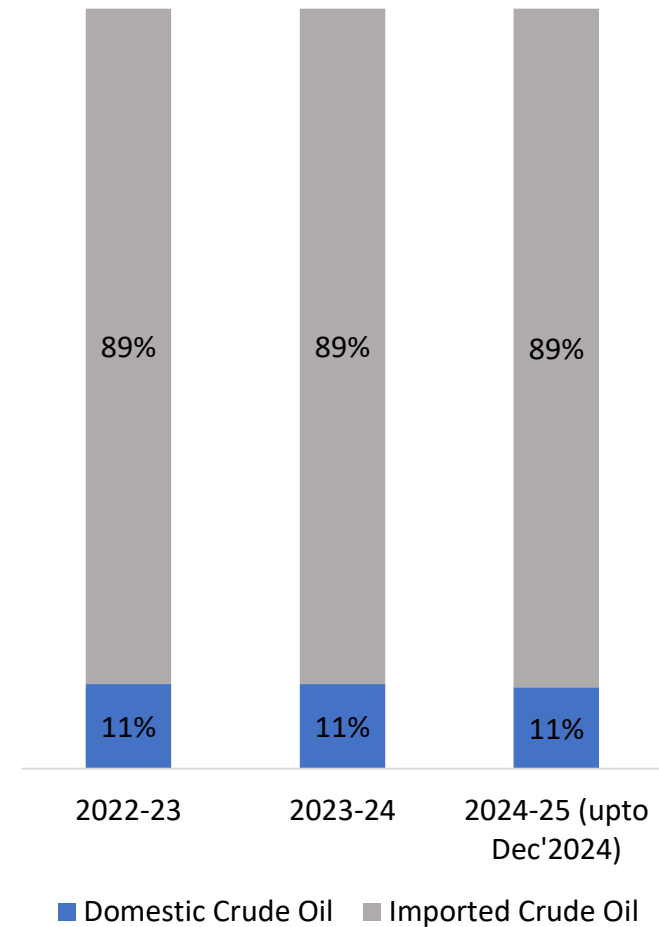
# Petroleum Products Market Scenario (3/3)



### Regional share of Imported Crude oil in December 2024 (P)



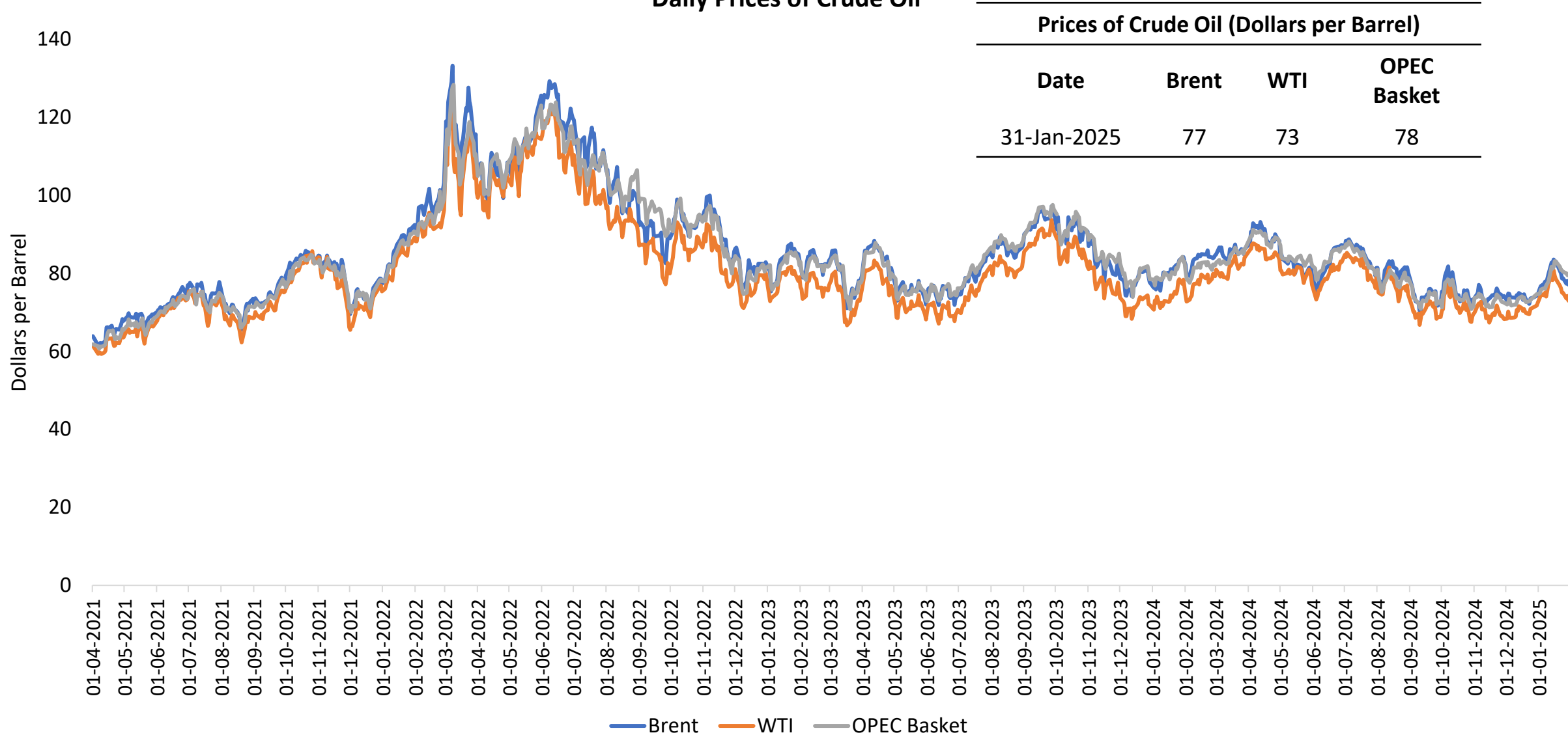
### Domestic and Imported Crude Oil share in India (%)



Total Import of Crude Oil (MMT)			
Total Import	2022-23	2023-24	2024-25 (up to Dec'2024)
<b>Crude Oil</b>	<b>233</b>	<b>234</b>	<b>179</b>

# Daily Prices of Crude Oil

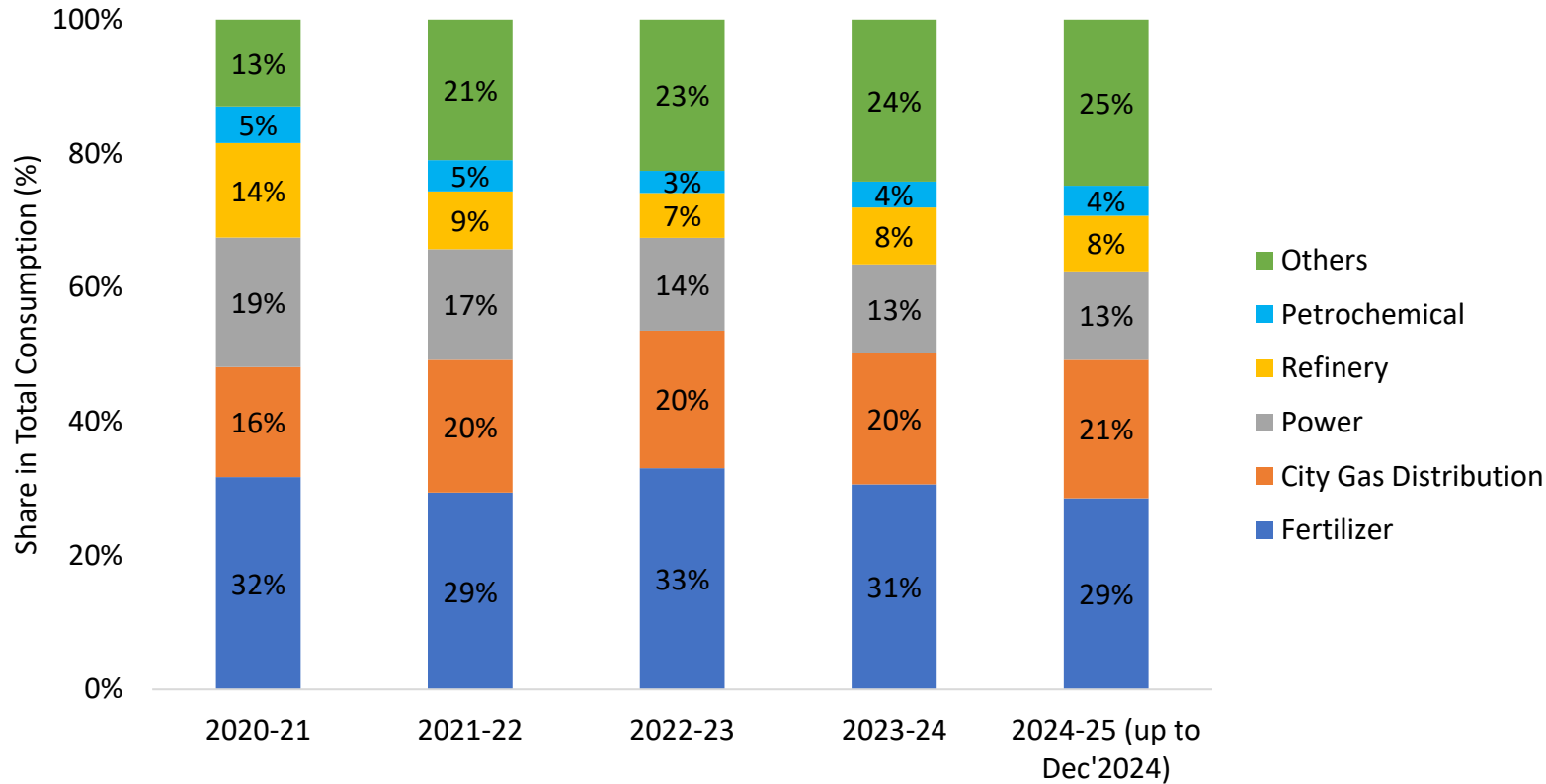
Daily Prices of Crude Oil



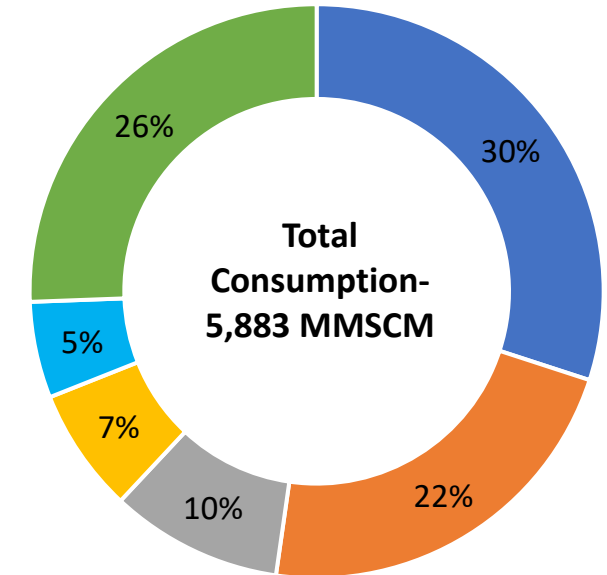
Prices of Crude Oil (Dollars per Barrel)			
Date	Brent	WTI	OPEC Basket
31-Jan-2025	77	73	78

# Gas Market Scenario (1/2)

Sector-wise Share in Natural Gas Consumption



Sector-wise share in Natural Gas Consumption in December 2024

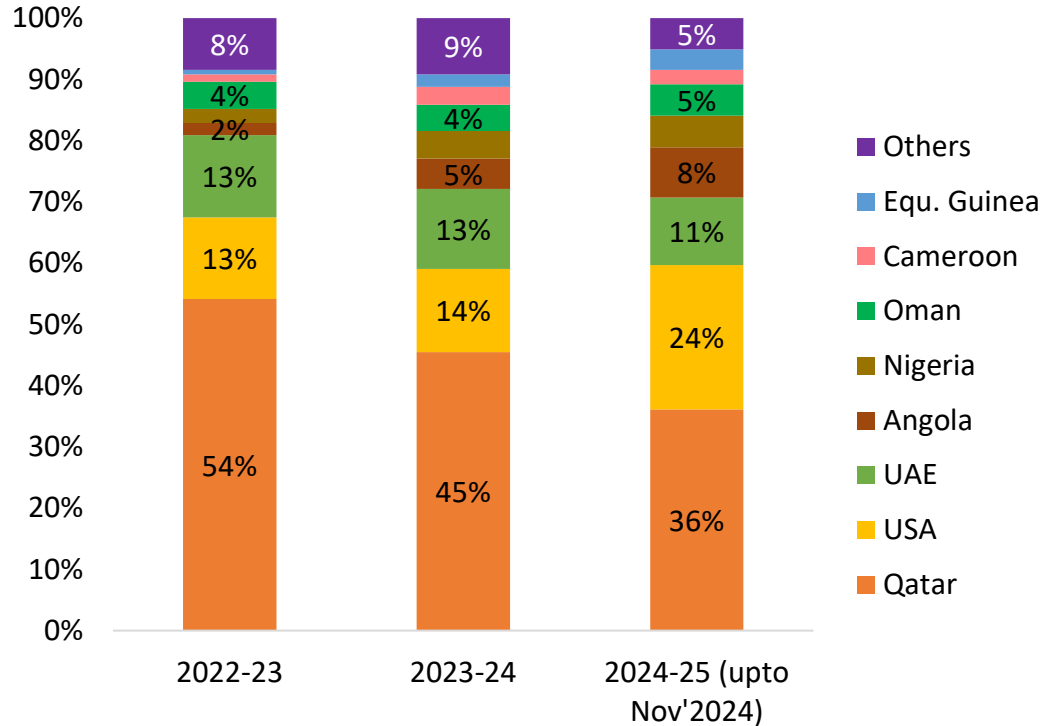


Others include- Internal Combustion of Pipeline System, Industrial, Sponge iron/steel, LPG shrinkage, Manufacturing, Agriculture (tea plantation), Others

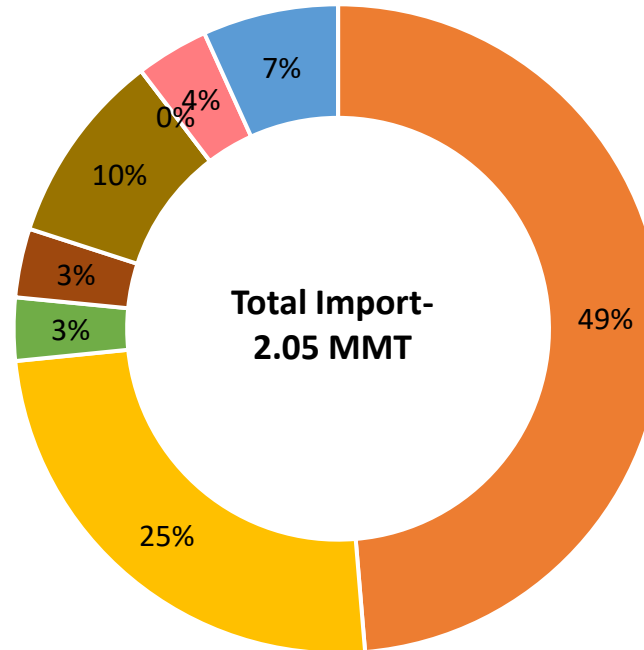
Total Consumption of Natural Gas (NG) (MMSCM)					
Total Consumption	2020-21	2021-22	2022-23	2023-24	2024-25 (up to Dec'2024)
<b>NG</b>	<b>56,116</b>	<b>61,491</b>	<b>58,702</b>	<b>68,759</b>	<b>54,322</b>

# Gas Market Scenario (2/2)

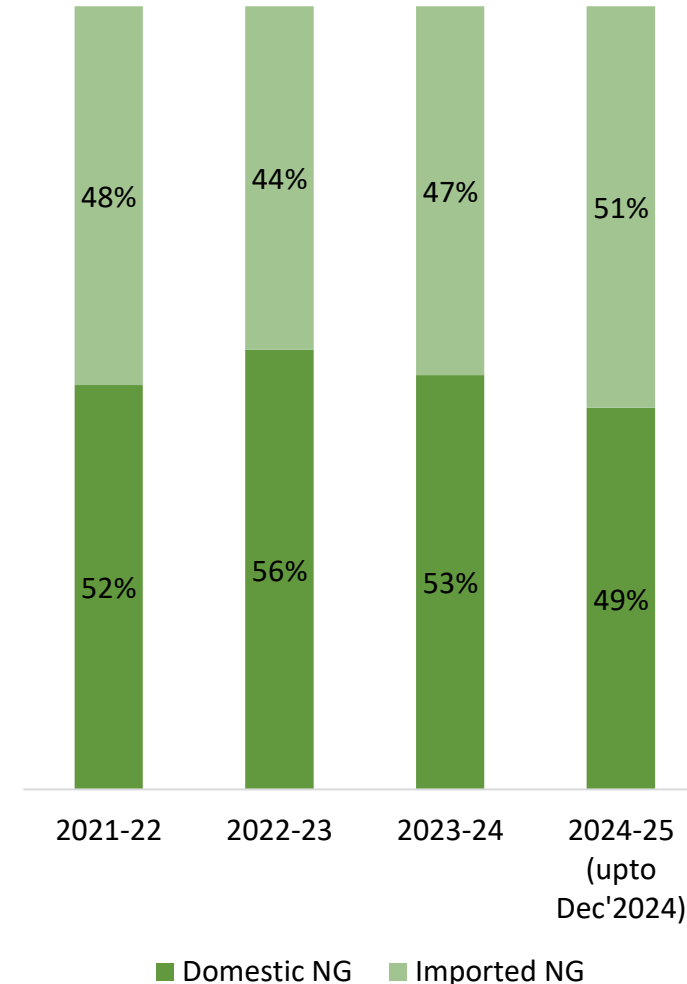
Region-wise Share in Import of LNG (%)



Country Share of Imported LNG in November'2024



Domestic and Imported Natural Gas share in India (%)



Others include- Trinidad, Cameroon, Egypt, France, Algeria, Belgium, Indonesia, Turkey, Russia, Spain, Malaysia, Brunei, Netherlands, Norway, and others.

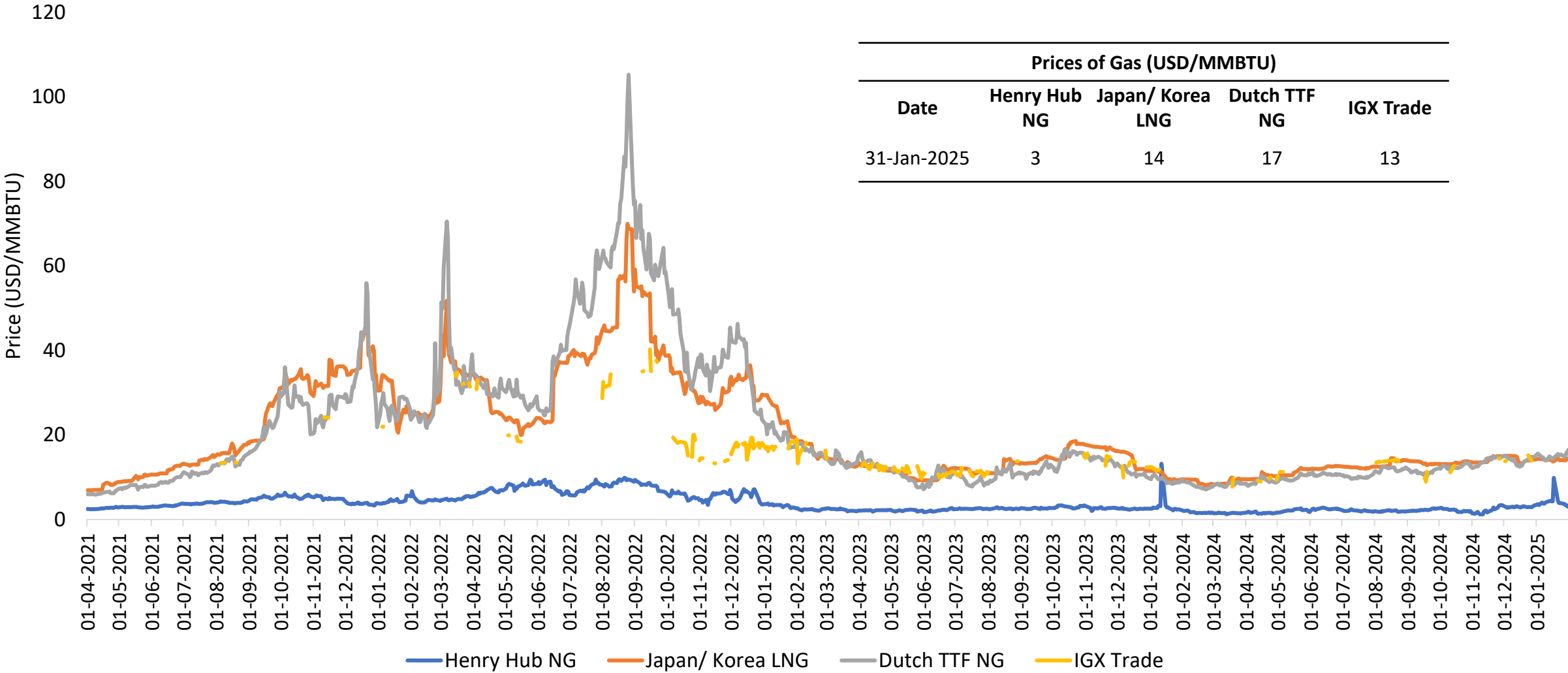
Total Import of Liquefied Natural Gas (LNG) (MMT)			
Total Import	2022-23	2023-24	2024-25 (up to Dec'2024)
<b>LNG</b>	<b>19.85</b>	<b>24.00</b>	<b>21.30</b>

NOTE: The data is based on the latest available information.

Source: MoCI and PPAC

# Daily Prices of Gas

Gas Daily Market Price

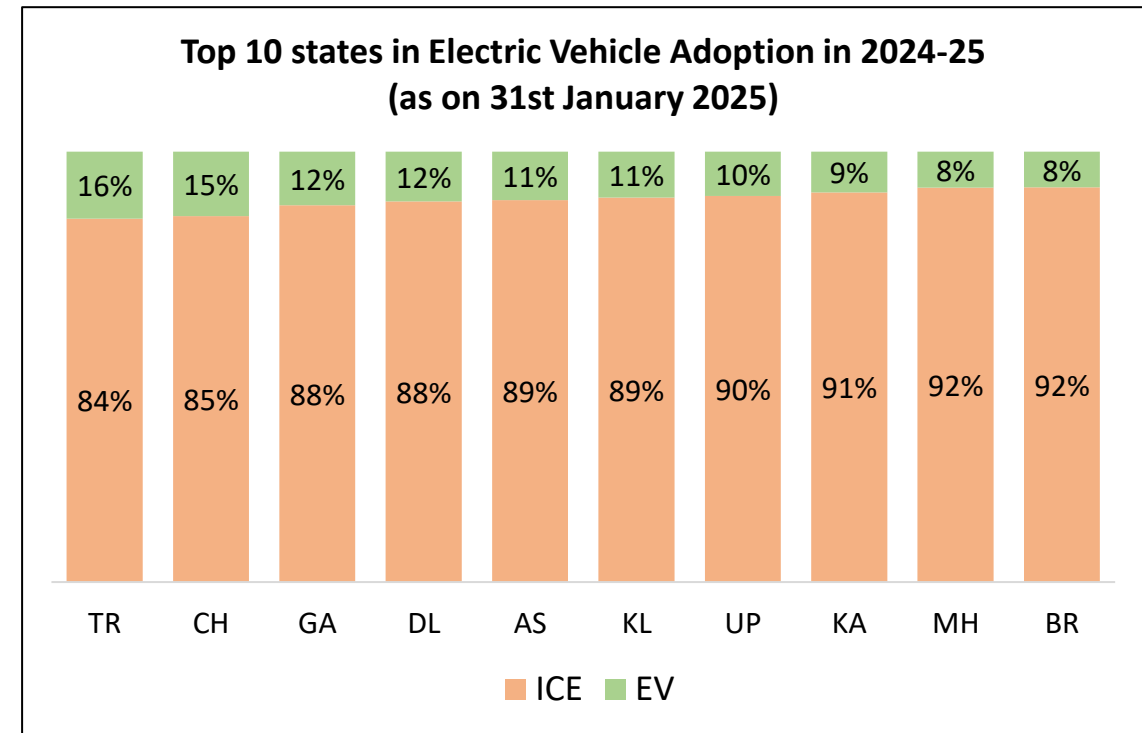
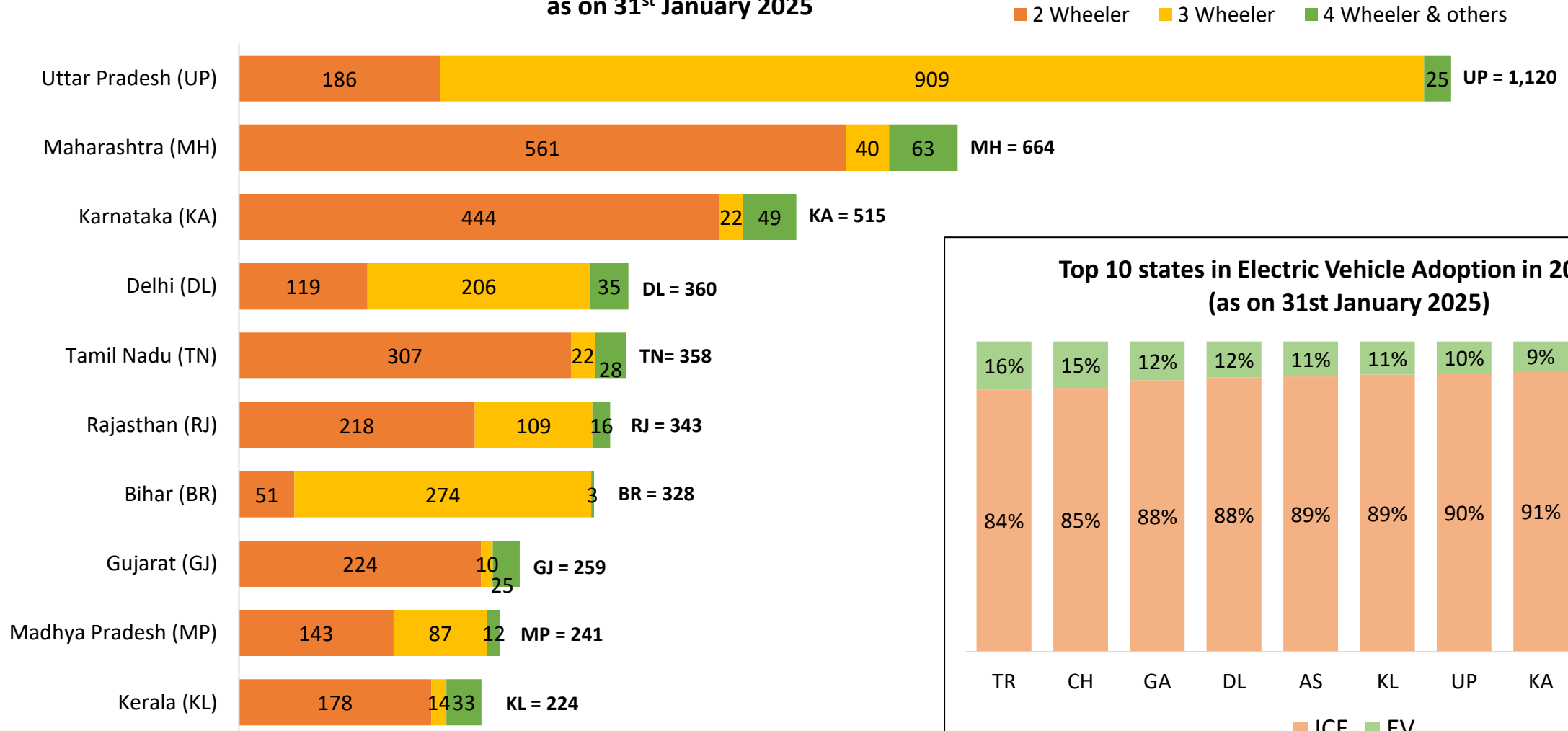


Prices of Gas (USD/MMBTU)				
Date	Henry Hub NG	Japan/ Korea LNG	Dutch TTF NG	IGX Trade
31-Jan-2025	3	14	17	13



# Status of Electric Mobility in India

**Top 10 States for Electric Vehicles (in Thousands)  
as on 31<sup>st</sup> January 2025**





# Recent Interventions to promote Renewable Energy

## Solar

Under the [PLI scheme](#), the GOI has announced INR 19,500 crores to incentivize the manufacturing of domestic solar PV modules.

[PM-Surya Ghar: Muft Bijli Yojana](#) released with a total outlay of Rs. 75,021 crore for installing rooftop solar (RTS) for one crore households. The scheme provides a CFA of Rs 30,000 for a 1 kW RTS system, Rs 60,000 for a 2kW RTS system, and Rs 78,000 for a 3kW RTS system.

The [inter-state transmission charges](#) are waived for 25 years for the projects being commissioned before 30<sup>th</sup> June 2025.

The [updated RPO](#) compliance supports solar integration of up to 33.57% of the electricity purchased by DISCOMs/states till the year 2029-30.

[PM KUSUM scheme](#) has been extended till Mar'26 to install pump sets up to 15 HP in selected areas.

## Wind

[Reverse auctions have been scrapped](#) for wind projects. A traditional two-part (technical and financial) bid system has been put in place.

To support [off-shore wind](#), SECI will invite bids for up to 4GW to set up offshore wind plants off the coast of Tamil Nadu and Gujarat.

The ISTS charges are waived for 25 years for the [onshore projects](#) being commissioned before 30<sup>th</sup> June 2025 and for [off-shore projects](#) on or before 31<sup>st</sup> December 2032.

The [updated RPO](#) compliance supports WIND integration of up to 6.94% of the electricity purchased by DISCOMs/states till the year 2029-30.

The [National Repowering & Life Extension Policy for Wind Power Projects- 2023](#), for wind power projects is released for the optimum utilization of wind energy resources by maximizing energy (kWh) yield per sq. km of the wind project areas.

The GOI has decided to invite bids for 50 GW of RE annually, which includes up to [10 GW of wind](#) capacity.

## Energy Storage

Ministry of Power has released the [guidelines for the development of PSP](#) with the target of 26.7 GW of PSP and 47.2 GW of BESS to integrate with RE capacity till 2032.

[PLI scheme](#) unveiled for setting up 50 GWh ACC battery storage with an outlay of ₹18,100 crores.

Under the [Waste Management Rules 2022](#), the disposal of waste batteries in landfills and incineration is prohibited and the recycling of waste batteries is made mandatory.

[CERC](#), under RRAS regulation, has allowed the use of energy storage in secondary and tertiary ancillary support.

[The Energy Storage Obligation](#) of DISCOMs is pegged at 4.0% up to 2029-30.

Under the aegis of MNRE, SECI has successfully commissioned [India's largest BESS plant, featuring a 40 MW/120 MWh](#) BESS alongside a solar PV plant with a installed capacity of 152 MWh, located in Rajnandgaon, Chhattisgarh.

## Green Hydrogen (H<sub>2</sub>)

[National Green Hydrogen Mission](#) (NGHM) was approved by the Cabinet in January 2023. The mission aims to meet the target of 5 million metric tonnes of green hydrogen production by 2030. The initial outlay for the Mission will be INR 19,744 crores.

MNRE has released the scheme guidelines for the implementation of pilot projects for the use of Green Hydrogen in the [shipping](#), [steel](#), and [transport](#) sectors under the NGHM.

MOP has extended the [waiver of ISTS charges](#) from 30<sup>th</sup> June 2025 to 31<sup>st</sup> December 2030.

Indian Railways to run [35 Hydrogen trains under "Hydrogen for Heritage"](#) at an estimated cost of ₹ 80 crores per train and ground infrastructure of ₹ 70 crores per route on various heritage/hill routes.

Jindal Stainless Ltd., in collaboration with Hygenco commissioned [India's 1<sup>st</sup> green hydrogen plant in the stainless steel sector](#) at Hisar, Haryana, which aims to reduce CO<sub>2</sub> emission by 2,700 metric tonnes per annum.

# Key Highlights or Announcements of January 2025

- Government of Telangana has released the [Telangana Clean and Green Energy Policy, 2025](#), which will remain effective for 10 years, or until superseded by a subsequent policy. The key targets of the state is-

Parameters	Target Capacity by 2029-30	Target Capacity by 2034-35
Solar	19,874 MW	26,374 MW
Wind	2,528 MW	4,528 MW
Energy Storage (BES + PSP)	3, 805 MW	7,917 MW
Distributed Renewable Energy	4,330 MW	8,242 MW
Geothermal	1,000 MW	3,000 MW
EV Charging Stations	6,000 Nos.	12,000 Nos.
Green Hydrogen	418 KTPA	554 KTPA

# Key Highlights or Announcements of January 2025

- Bureau of Energy Efficiency has released a document on [voluntary offset methodologies under the Indian Carbon Credit Trading Scheme \(CCTS\) for 12 sub-sectors in 6 sectors to be adopted](#). These methodologies cover a range of sectors (given in the table below).

Sectors	Methodology
<b>Energy</b>	Grid-connected electricity generation from renewable sources and Hydrogen production from electrolysis of water
<b>Industry</b>	Energy efficiency and fuel switching measures for industrial facilities and Hydrogen production using methane extracted from biogas
<b>Waste Handling and Disposal</b>	Landfill methane recovery Projects, Flaring or use of landfill gas
<b>Agriculture</b>	Production of biofuel, Methane recovery from livestock and manure management at households and small farms.
<b>Forestry</b>	Afforestation and reforestation of lands except wetlands and degraded mangrove habitats
<b>Transport</b>	Modal shift in transportation of cargo from road transportation to water or rail transportation and Emission reductions by electric and hybrid vehicles



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