

# India's Energy Overview

November 2024



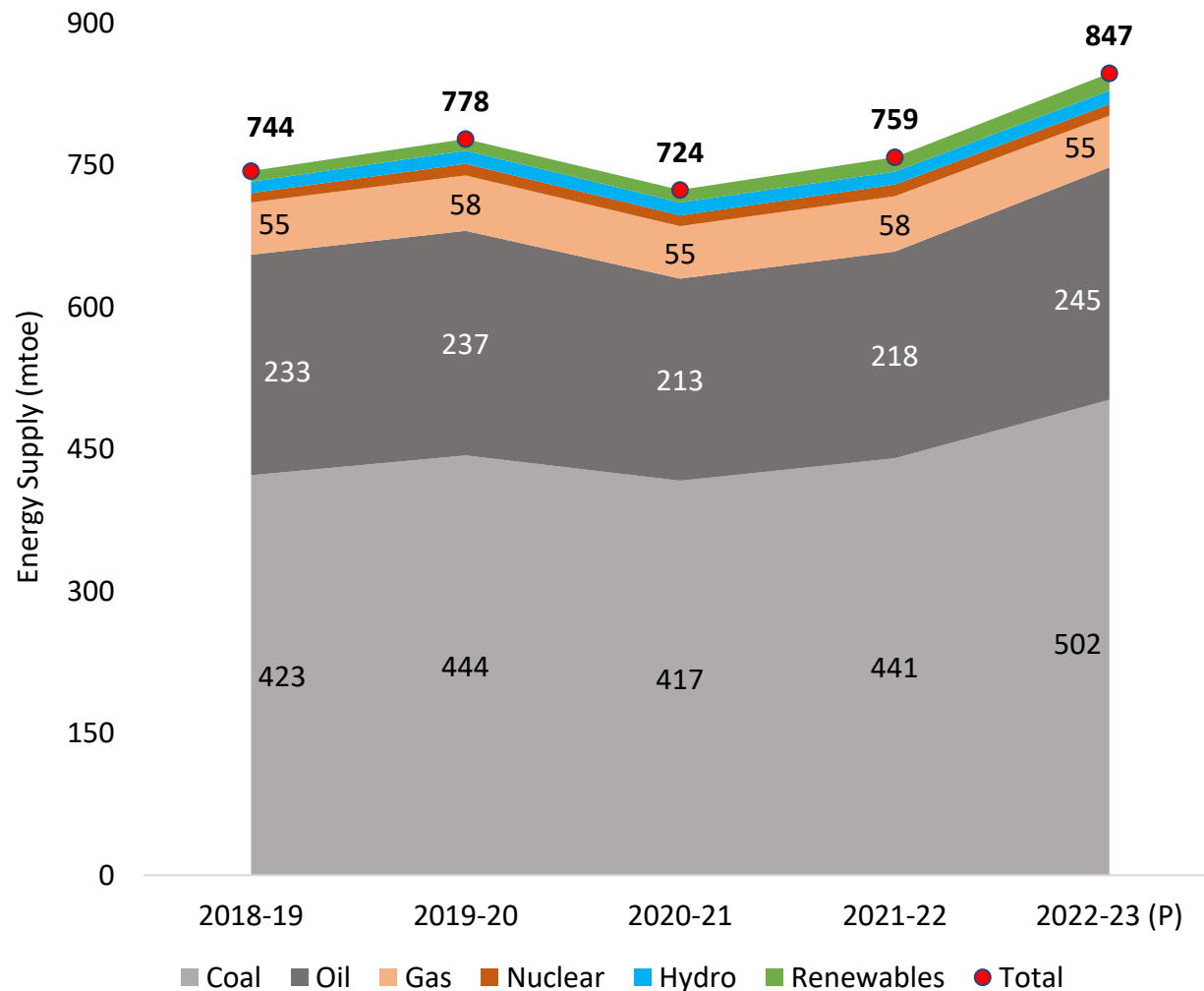
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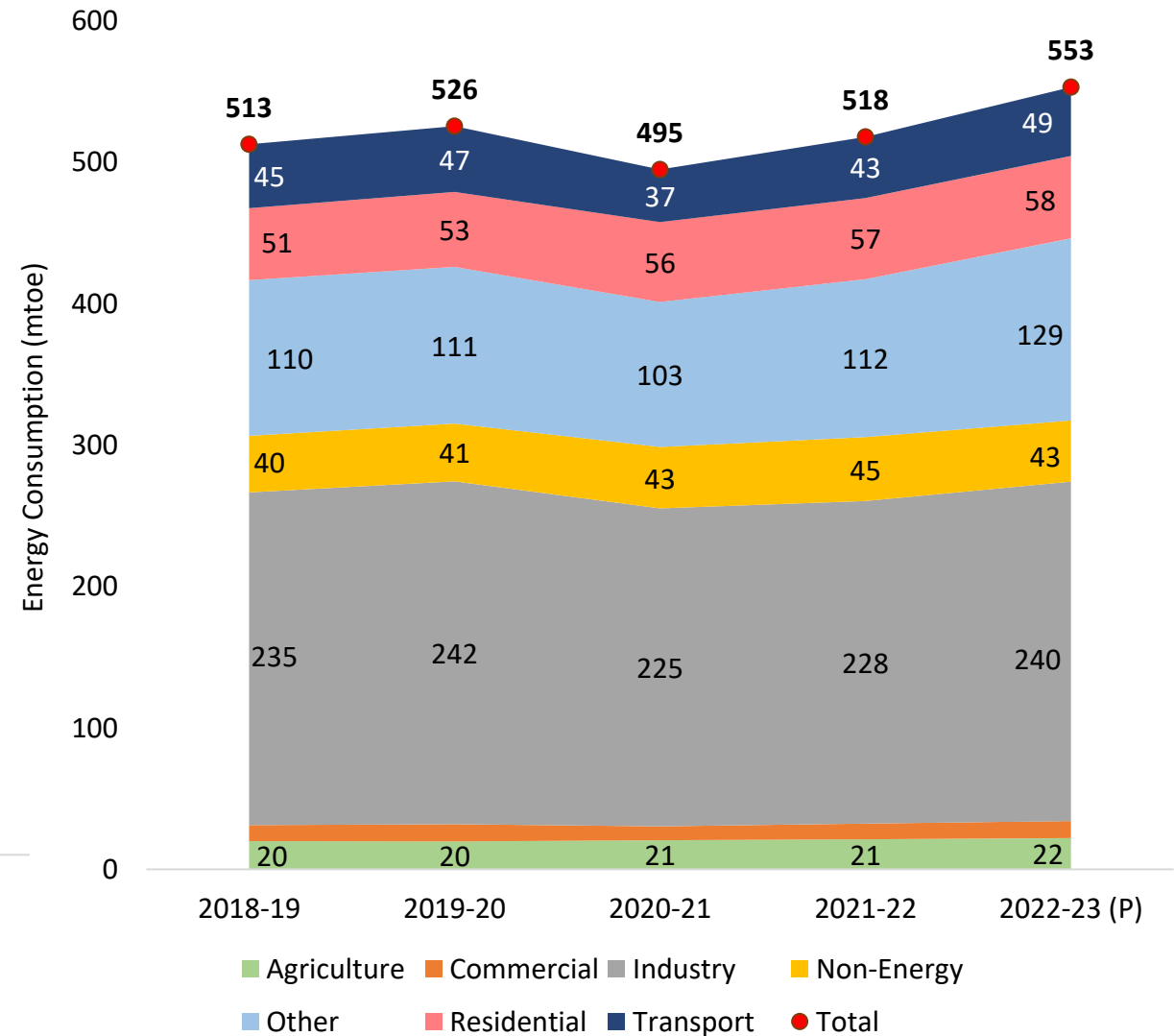
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# Primary Energy Mix\* in India

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

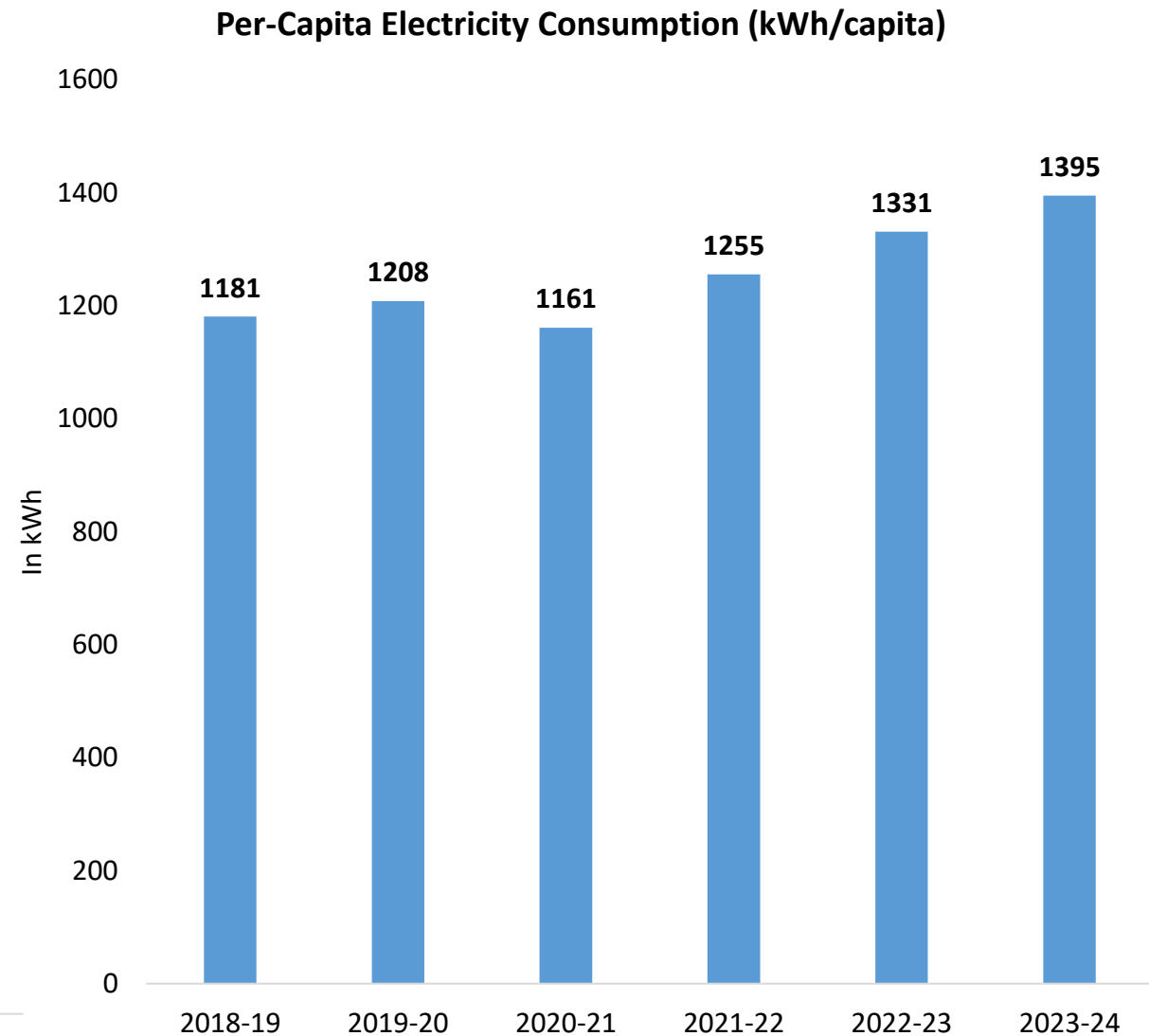
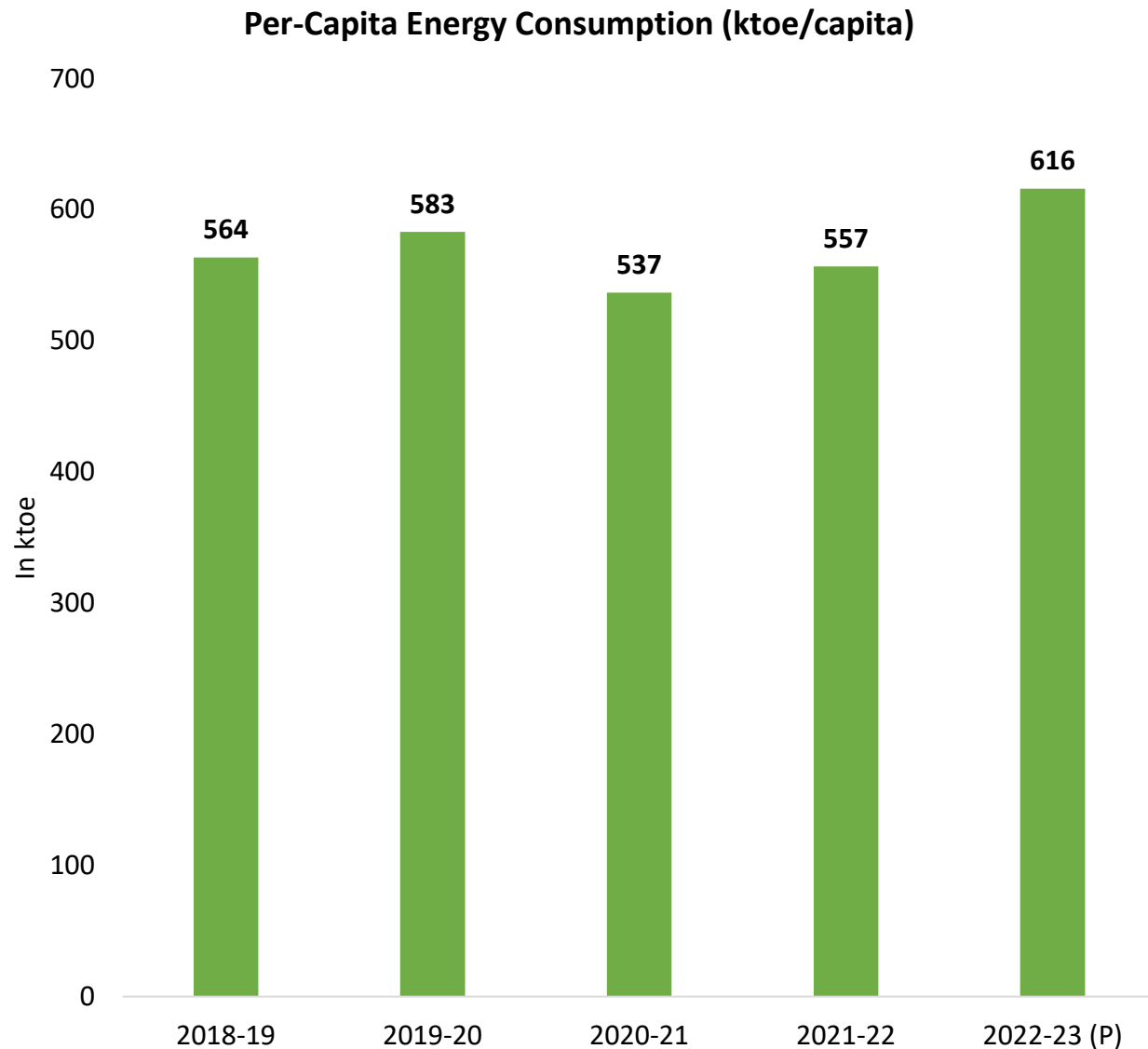


## Sector-wise Energy Consumption (mtoe)



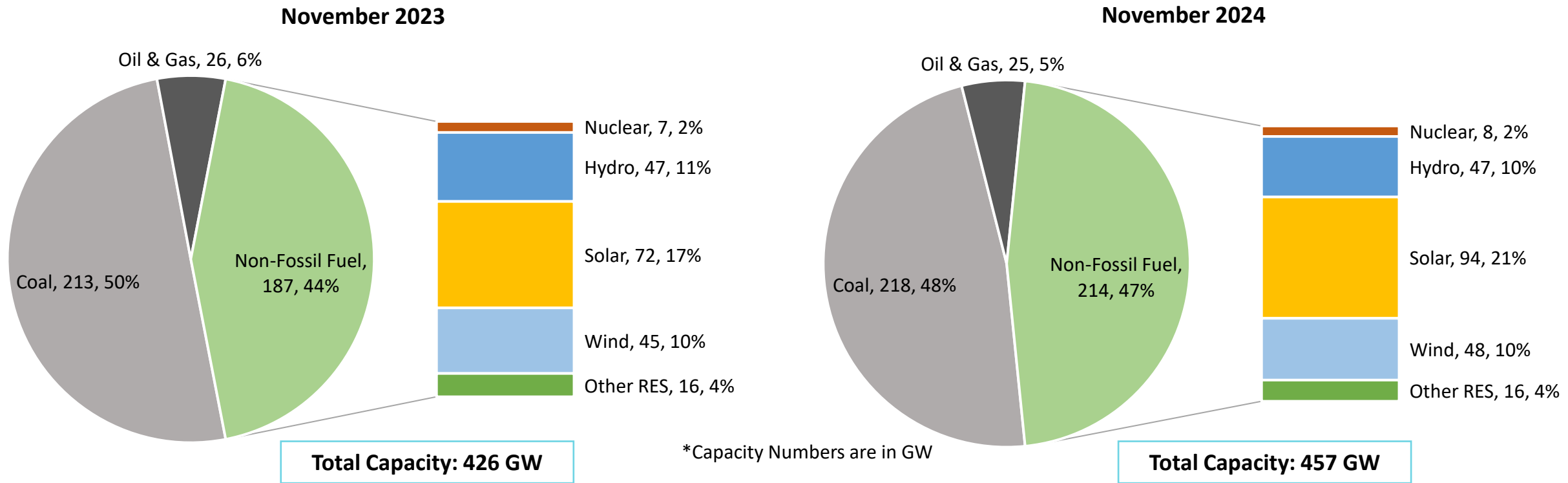
\*Excluding biofuels, waste, and other non-commercial source of energy

# Per-Capita Energy and Electricity Consumption



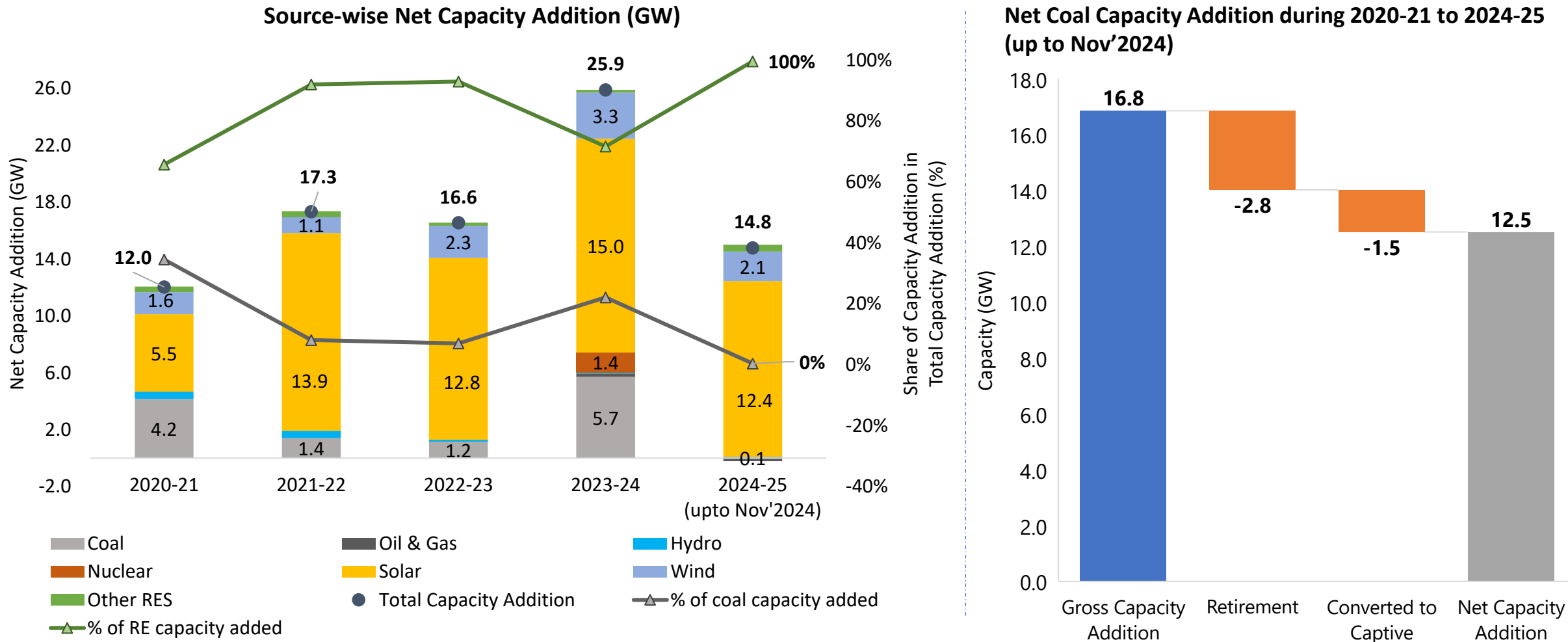
Note: Per Capita energy consumption is calculated on energy supply basis.

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



- India's electricity generating capacity is 457 GW as on Nov'2024 [coal 218 GW (48%), solar 94 GW (21%), wind 48 GW (10%), and hydro 47 (10%)].
- As on Nov'2024, the share of non-fossil-based electricity capacity is 47% against the set target of 50% non-fossil capacity by 2030.
- As on Nov'2024, India's renewable energy capacity (including large hydro) stood at 206 GW out of 457 GW.

# India's Electricity Capacity Addition in last 5 years



- A total of 72.8 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 12.5 GW, mostly in the central sector.

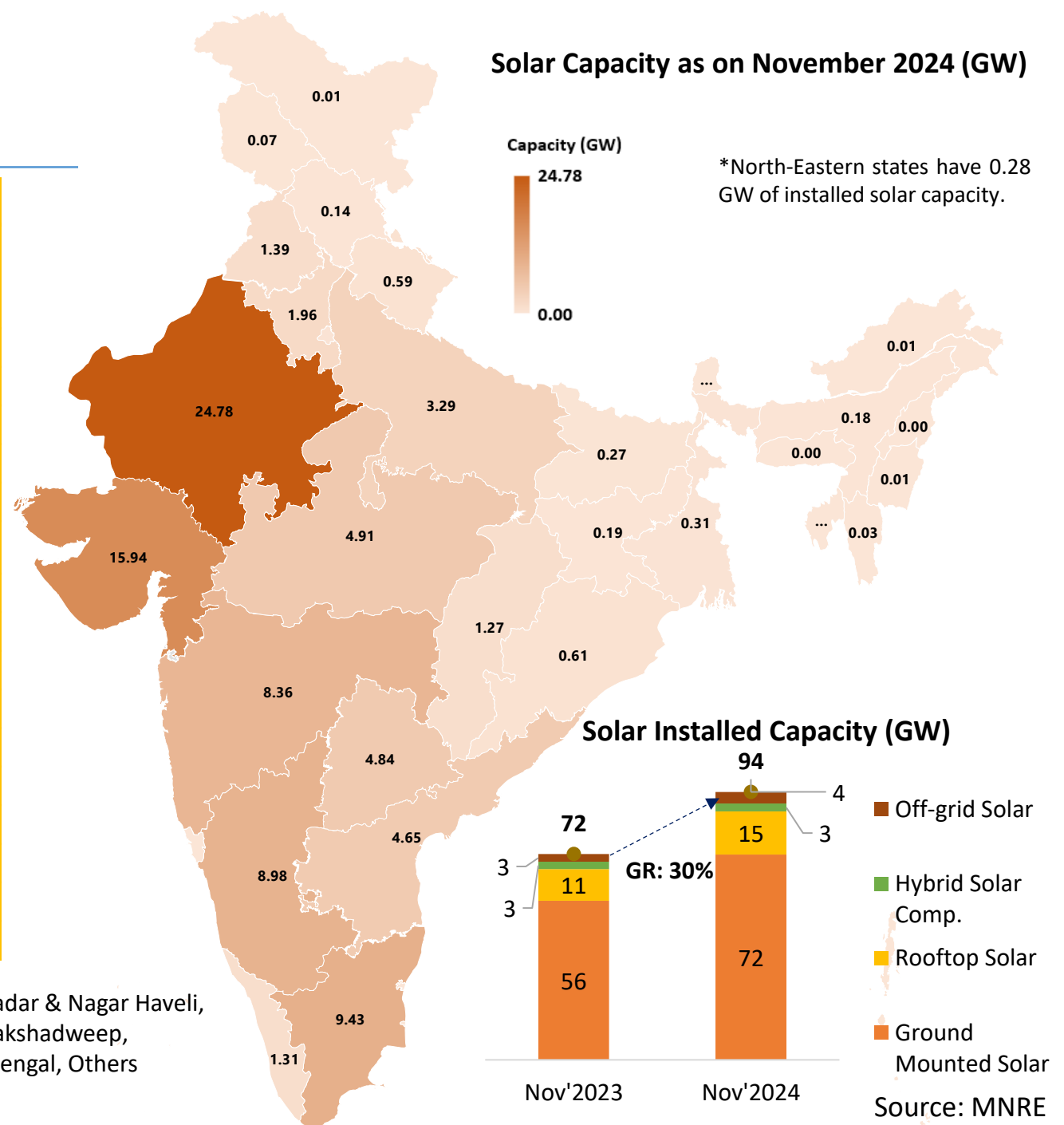
# State-wise Solar Capacity

as on November 2024

State-wise installed capacity of Solar Power (GW)					
States	Ground Mounted	Rooftop	Solar Component in Hybrid	Off Grid	Total Solar Power
Rajasthan	20.61	1.38	1.98	0.81	24.78
Gujarat	10.42	4.65	0.78	0.09	15.94
Tamil Nadu	8.51	0.85	0.00	0.07	9.43
Karnataka	8.29	0.65	0.00	0.04	8.98
Maharashtra	4.80	2.73	0.00	0.83	8.36
Madhya Pradesh	4.36	0.45	0.00	0.10	4.91
Telangana	4.36	0.47	0.00	0.01	4.84
Andhra Pradesh	4.34	0.23	0.00	0.09	4.65
Uttar Pradesh	2.70	0.27	0.00	0.32	3.29
Haryana	0.27	0.77	0.00	0.92	1.96
Punjab	0.89	0.42	0.00	0.08	1.39
Kerala	0.32	0.97	0.00	0.02	1.31
Chhattisgarh	0.78	0.10	0.00	0.39	1.27
Odisha	0.51	0.06	0.00	0.04	0.61
Others	1.00	1.16	0.00	0.29	2.46
<b>All India</b>	<b>72.14</b>	<b>15.16</b>	<b>2.76</b>	<b>4.10</b>	<b>94.17</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 November 2024 (GW)

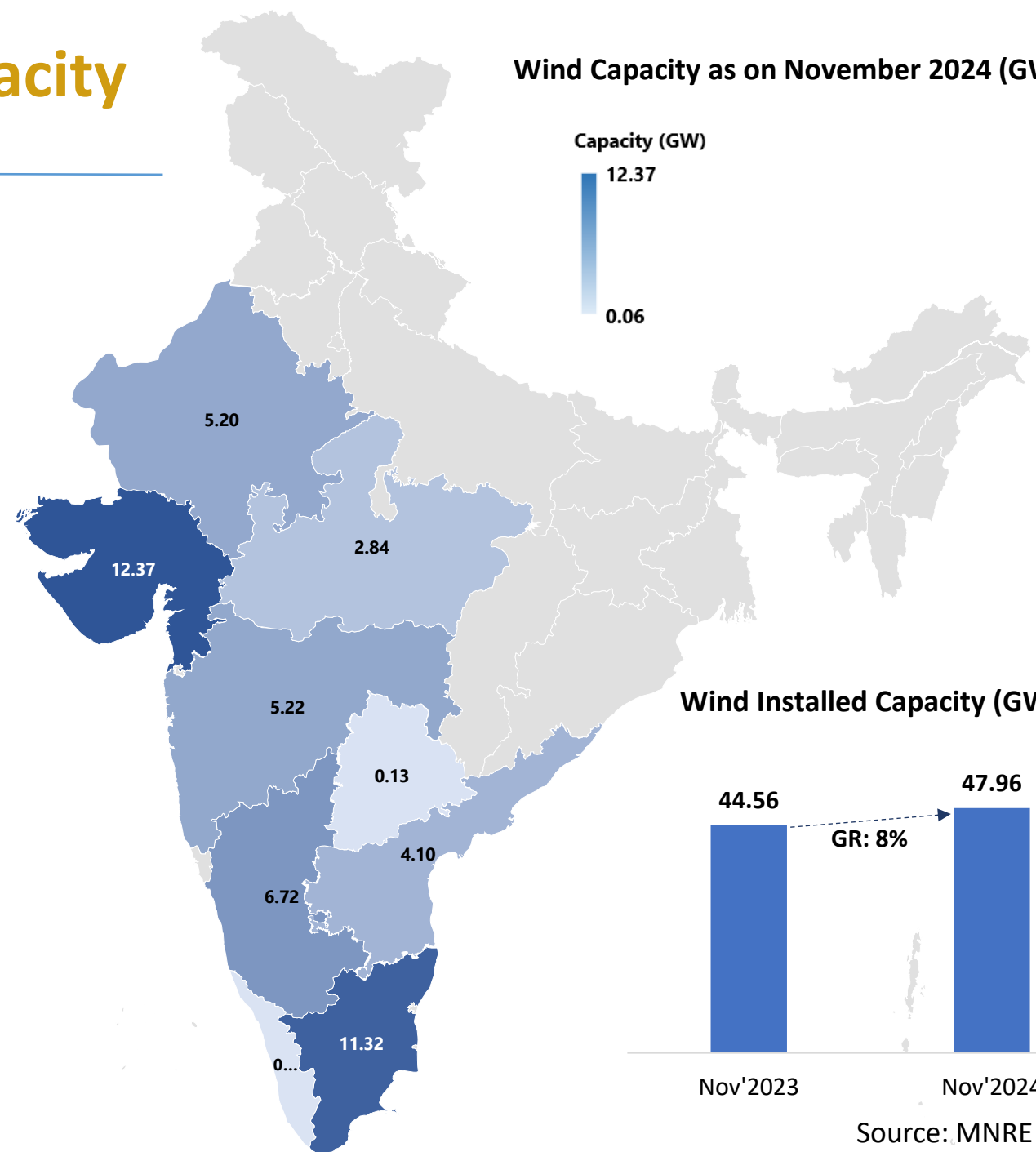


# State-wise Wind Onshore Capacity

as on November 2024

Wind Capacity as on November 2024 (GW)

State-wise installed capacity of Wind (Onshore) Power	
States	Installed Capacity (GW)
Gujarat	12.37
Tamil Nadu	11.32
Karnataka	6.72
Maharashtra	5.22
Rajasthan	5.20
Andhra Pradesh	4.10
Madhya Pradesh	2.84
Telangana	0.13
Kerala	0.06
<b>India Total</b>	<b>47.96</b>

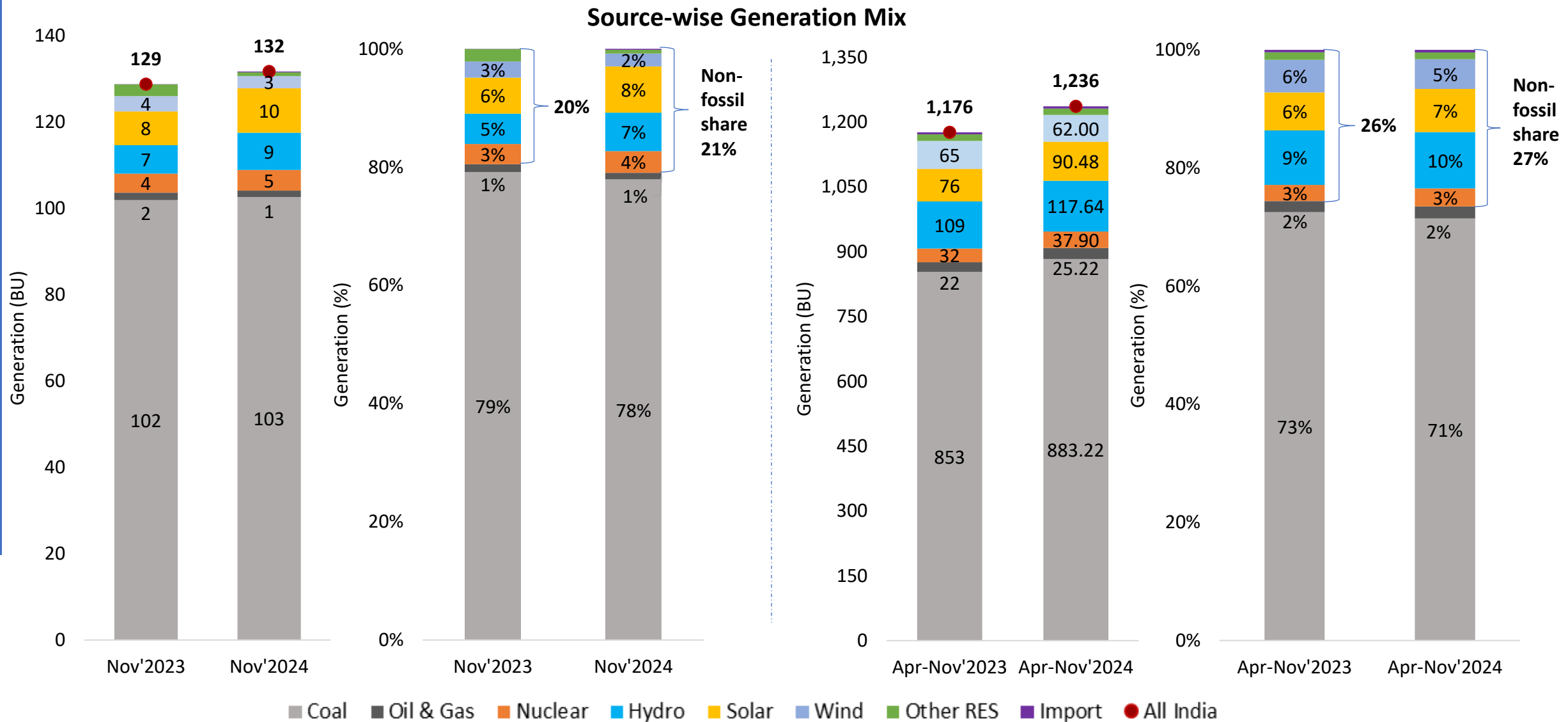








# India's Electricity Generation Mix

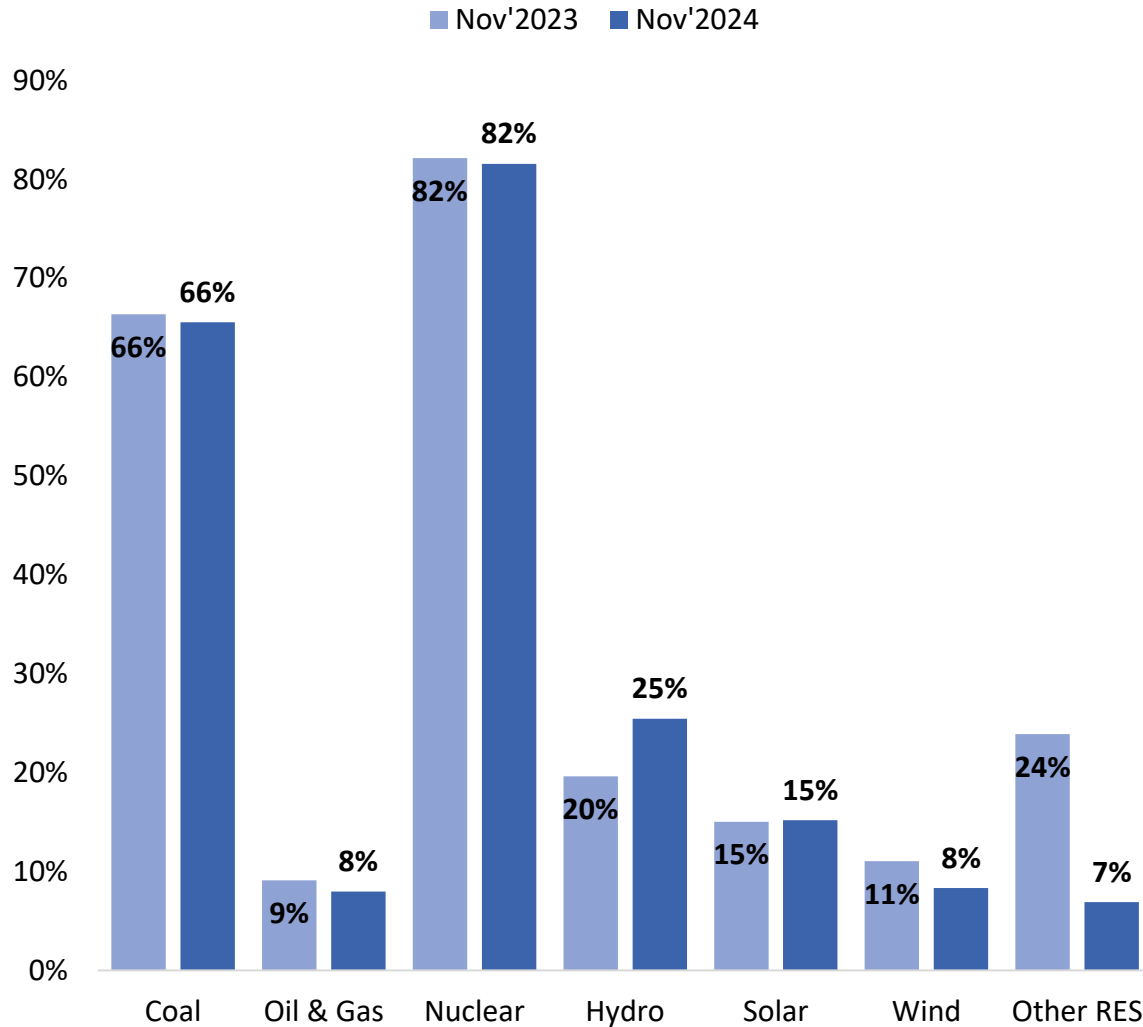


NOTE: The generation data for November'2024 is provisional.

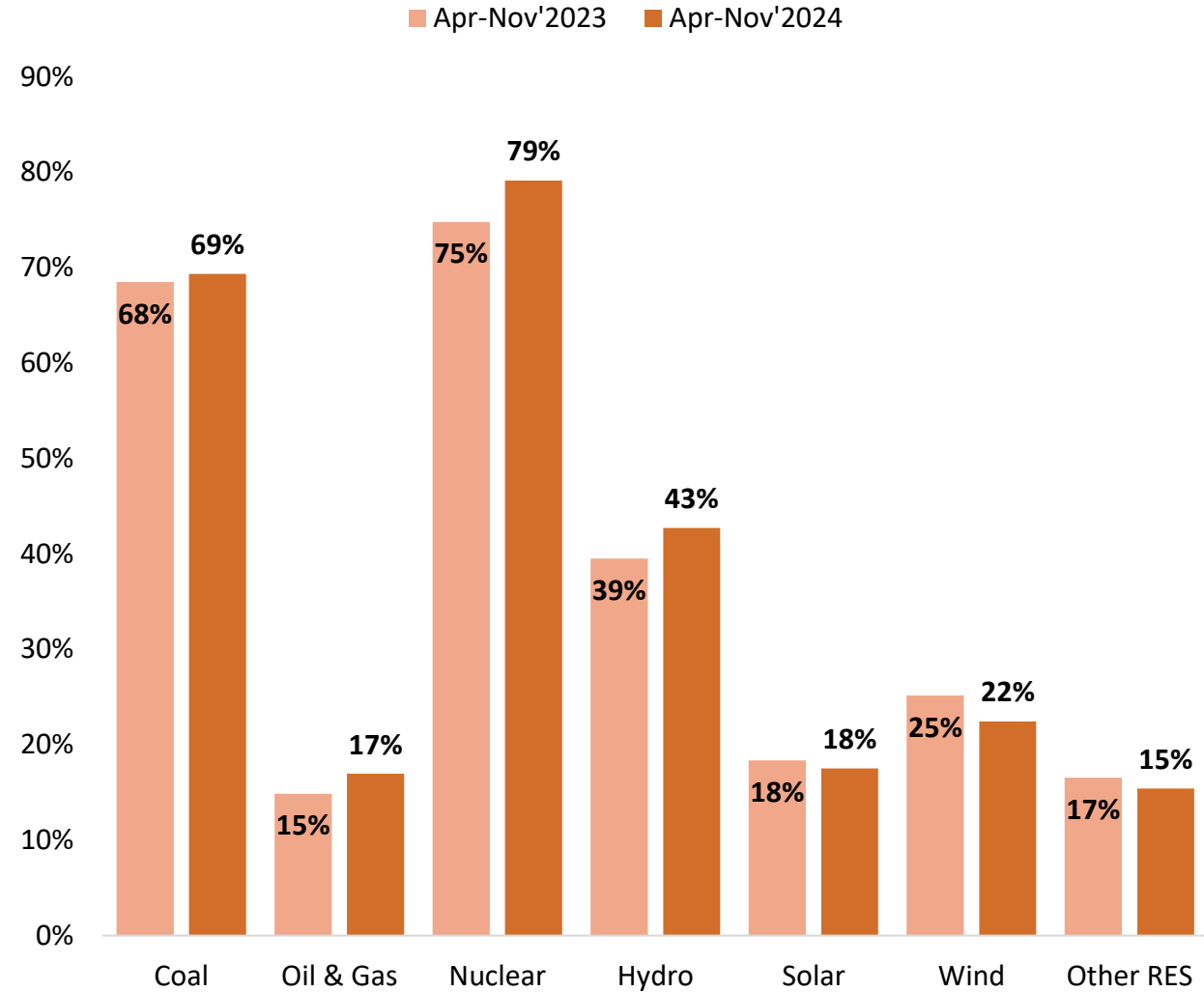
Source: CEA

# Source-wise PLF/CUF

## Source-wise PLF/ CUF in November (%)



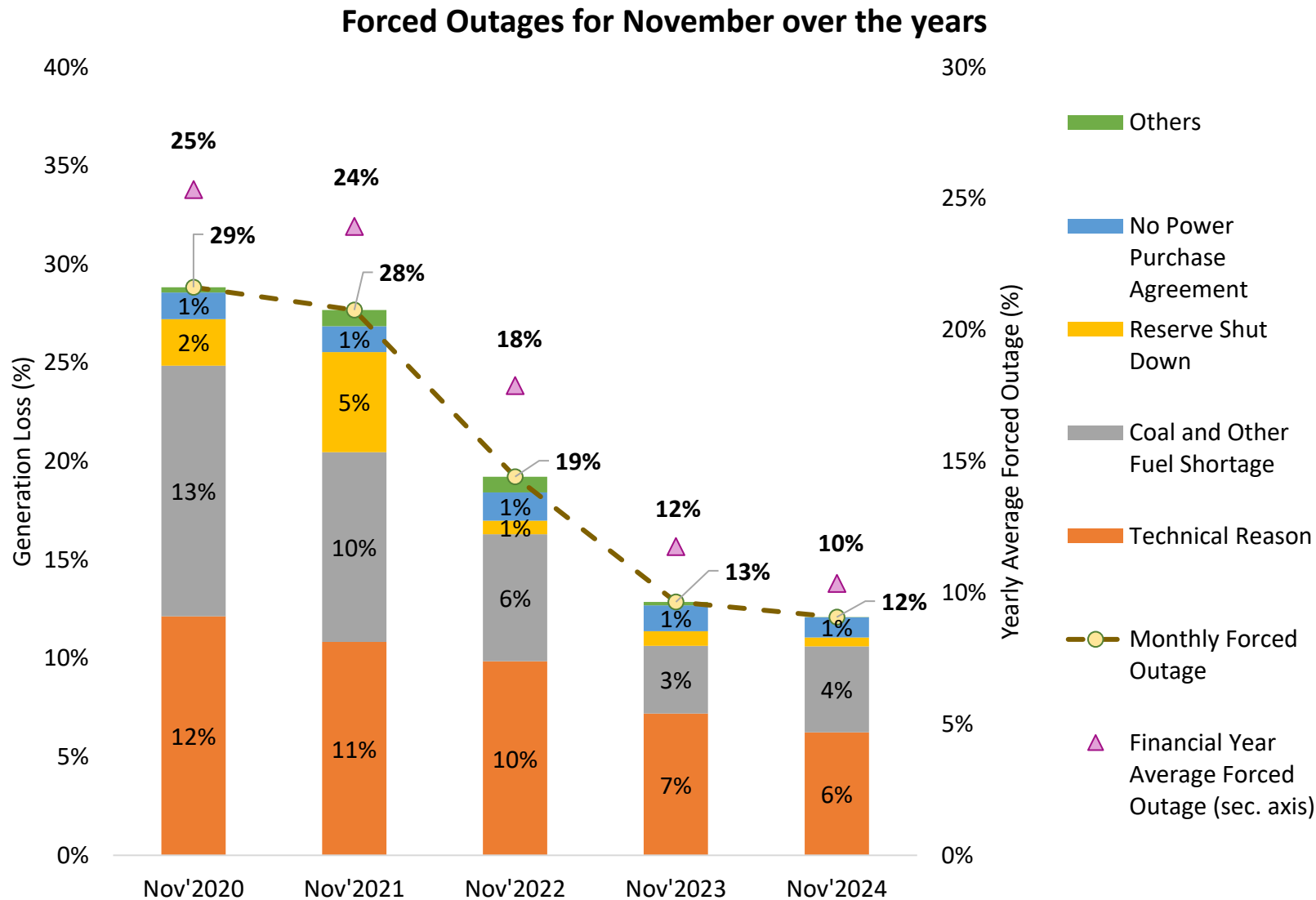
## Source-wise PLF/ CUF Comparison (%)



NOTE: The PLF/CUF data is based on provisional generation for November'2024.

Source: CEA & MNRE

# Thermal Generation Loss and Reasons for Forced Outages



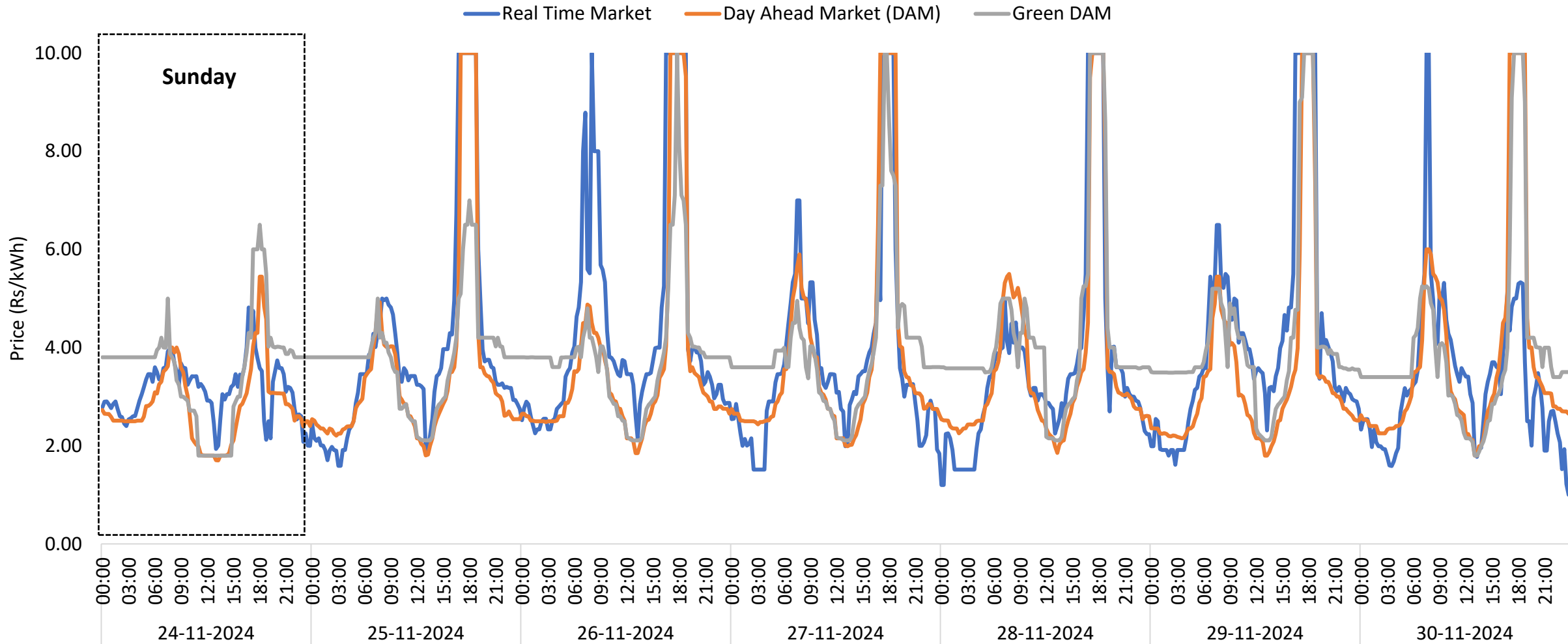
Year/ Month		Average Forced Outage Share
Yearly	FY 2022-23	18%
	FY 2023-24	12%
	FY 2024-25 (up to Nov'2024)	10%
Monthly	Nov'2022	19%
	Nov'2023	13%
	Nov'2024	12%

Thermal includes only Coal and Lignite Plants.

Source: ICED

# Indian Electricity Exchange (IEX) Market Snapshot

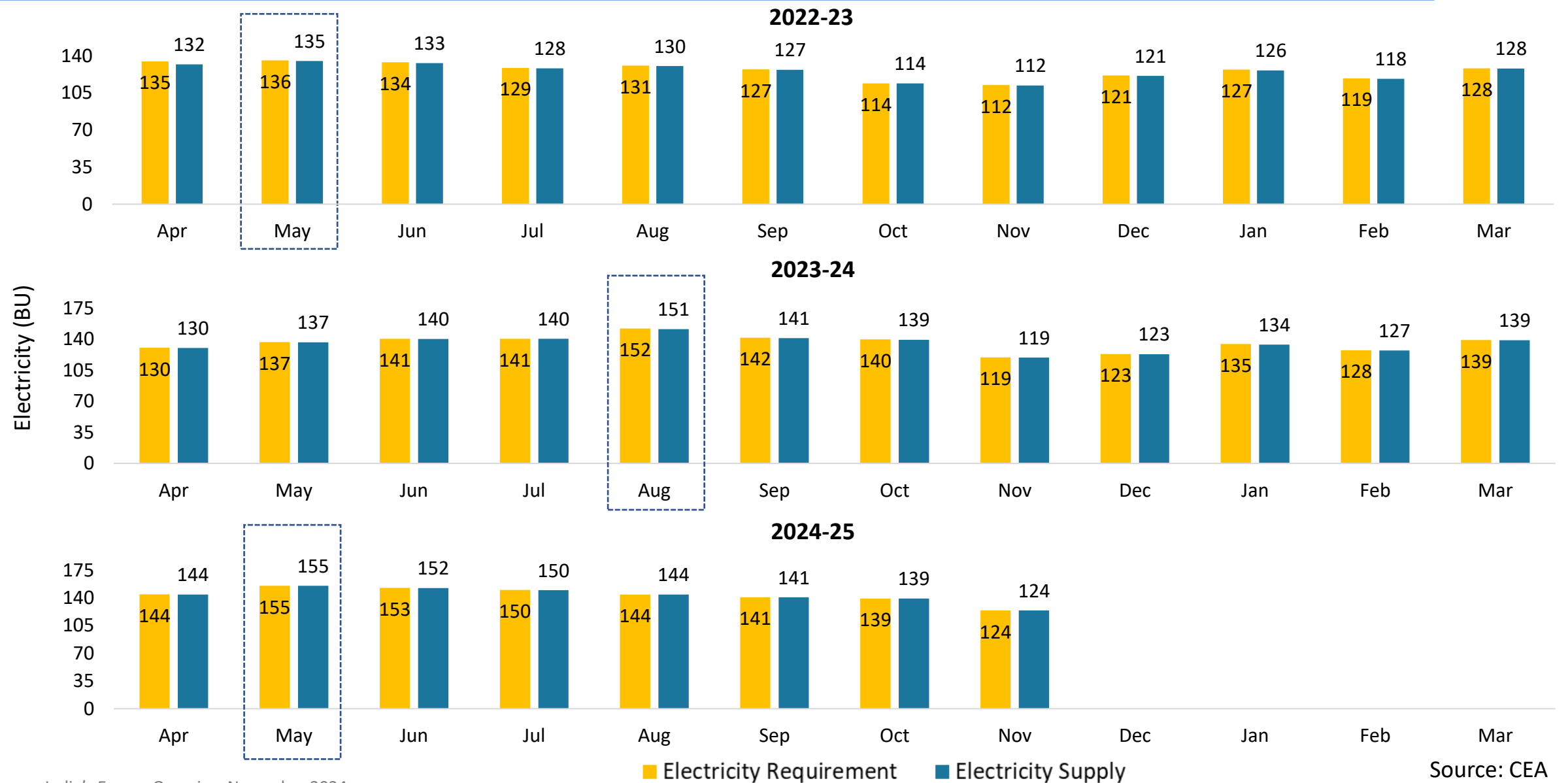
Market Clearing Prices of last 7 days of November 2024



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



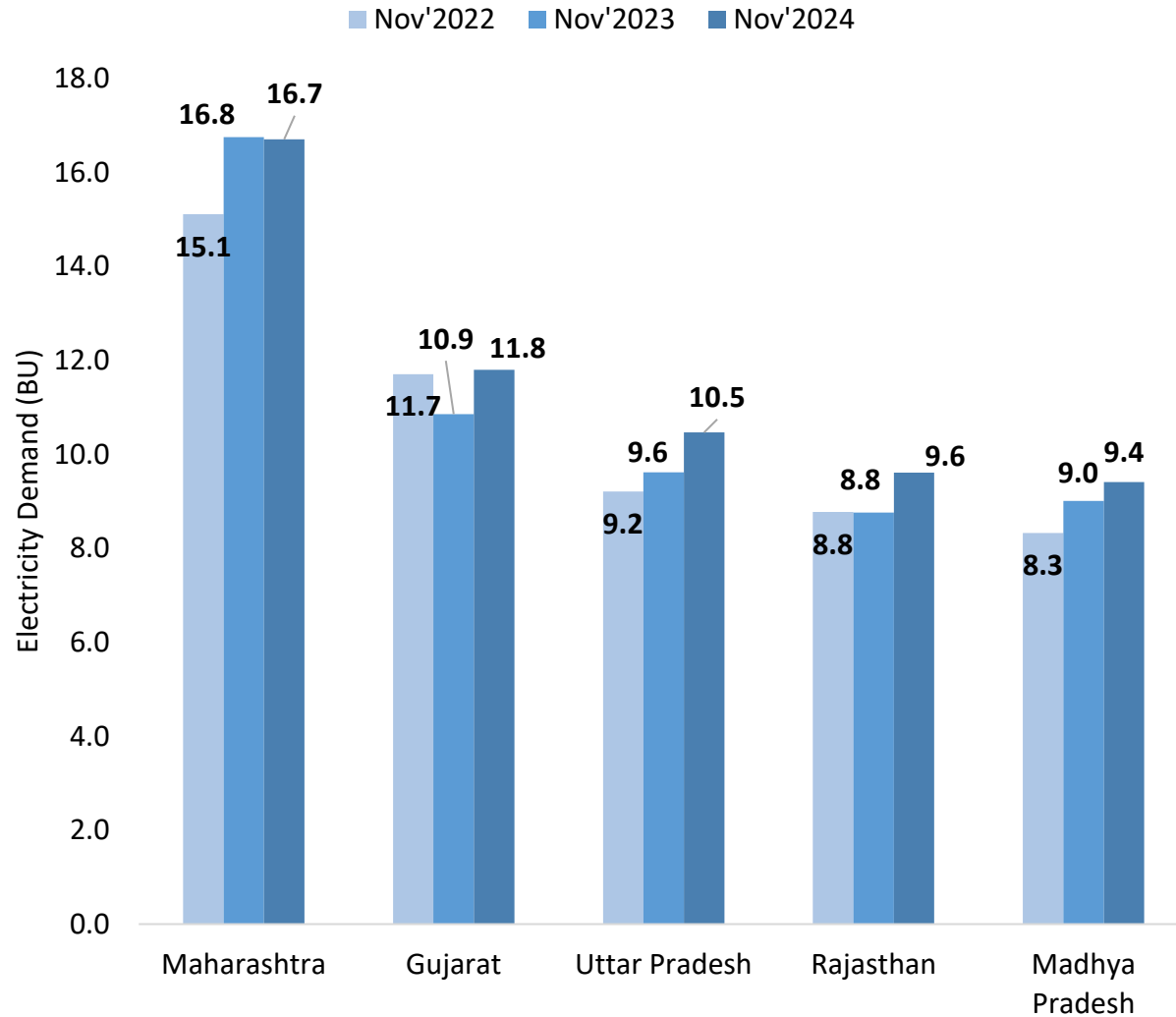
# India's Monthly Electricity Requirement and Supply



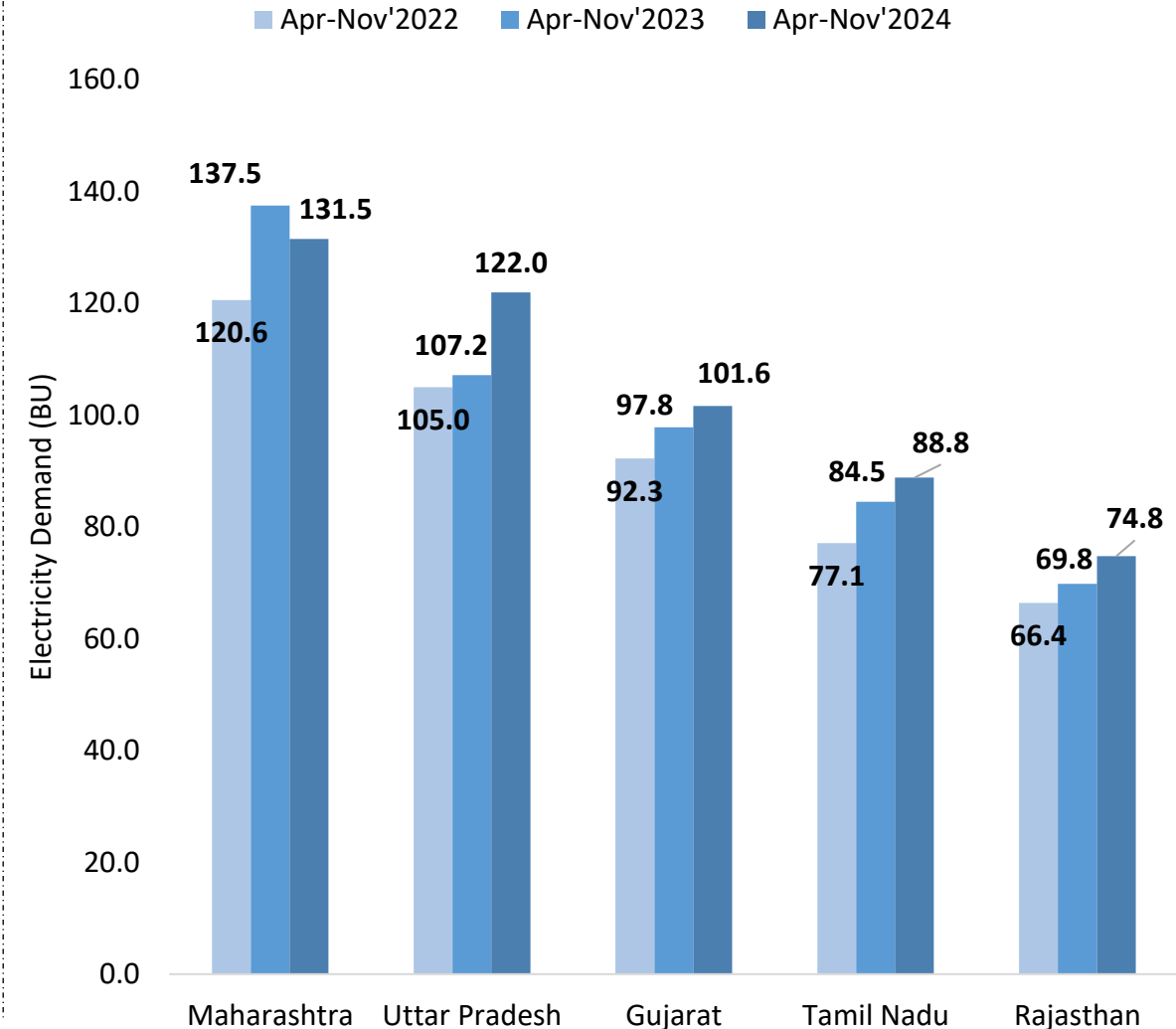


# Monthly Electricity Demand of the top 5 states

States with Highest Electricity Demand in November (BU)



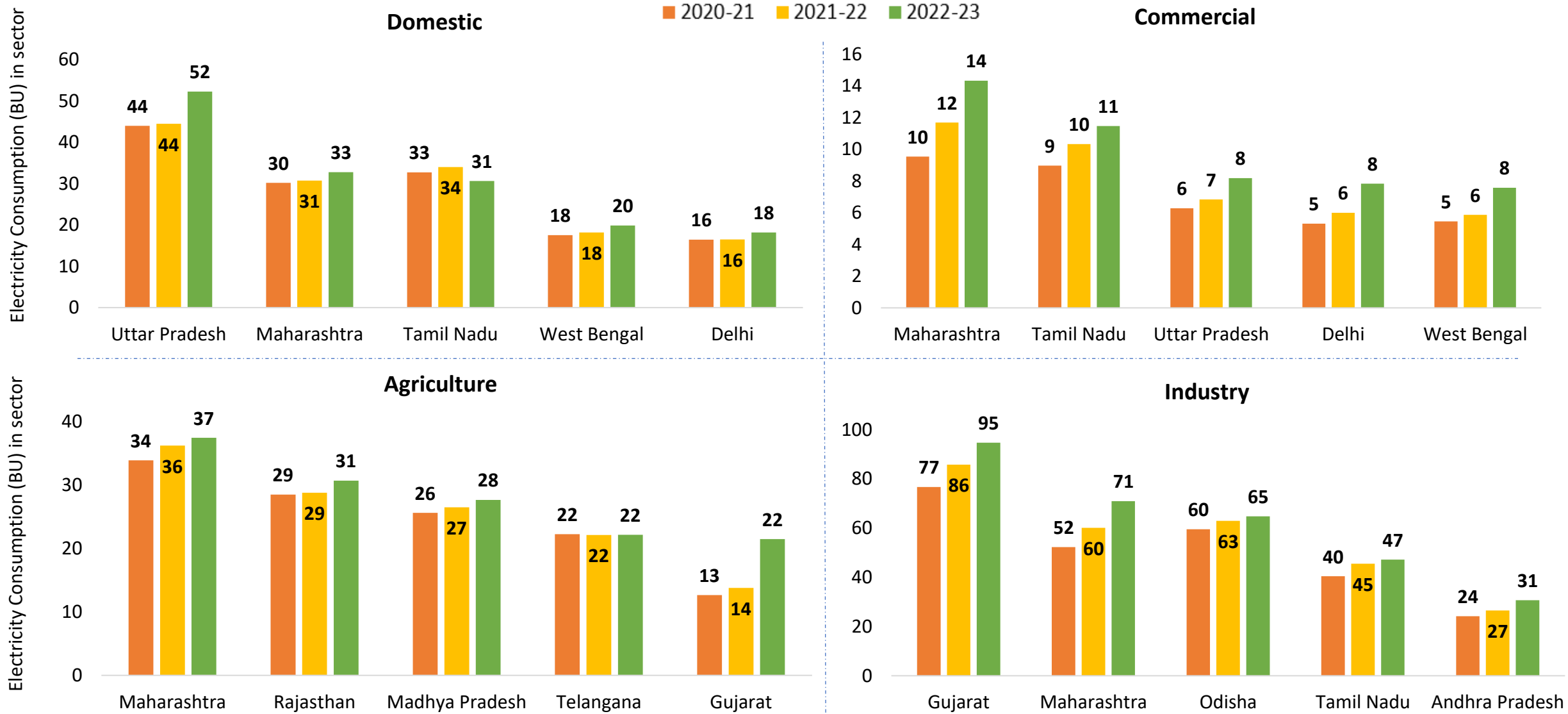
States with Highest Electricity Demand (BU)



Note: The electricity demand data for November'24 is Provisional.

Source: CEA

# Electricity Consumer-category wise top 5 States

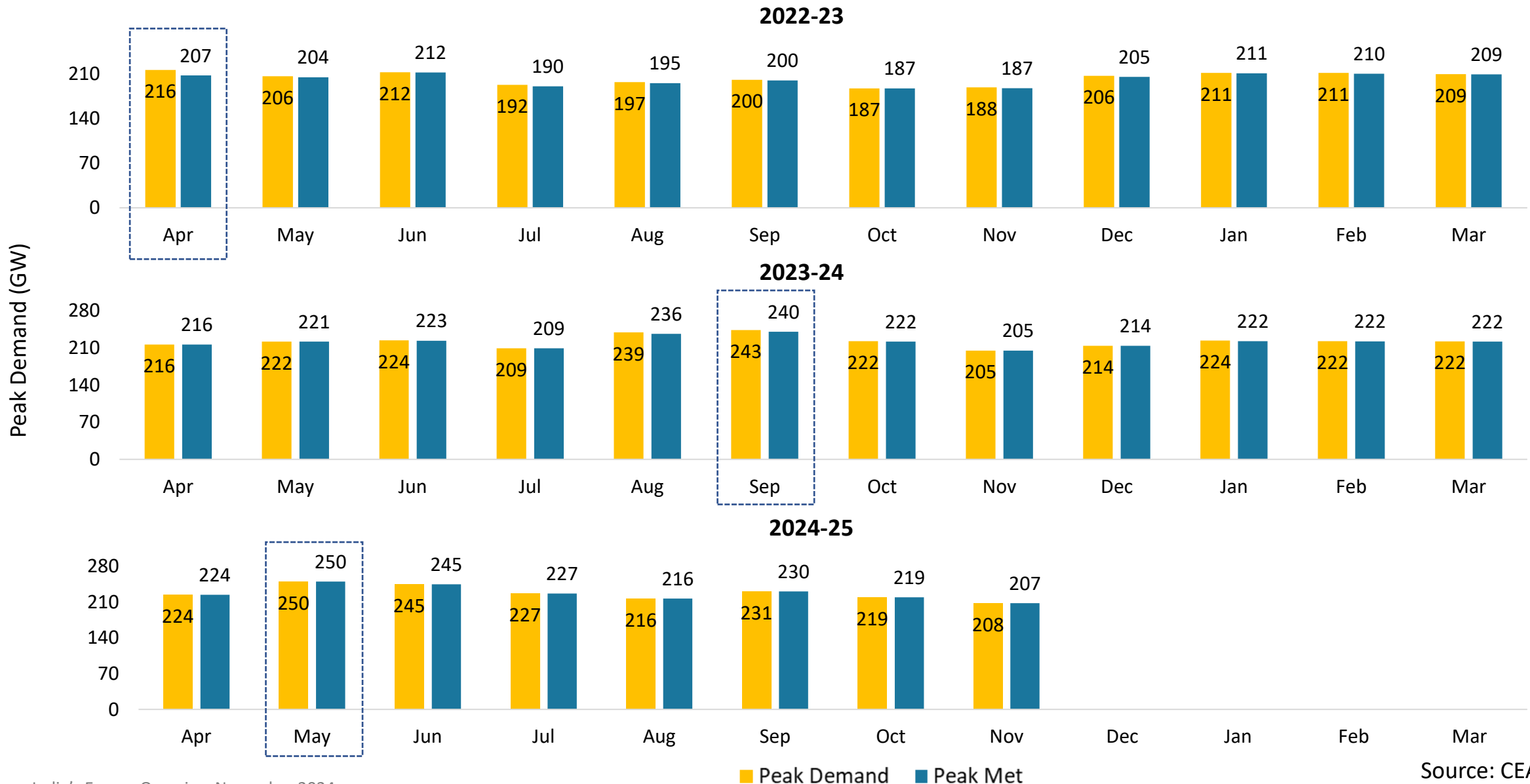


NOTE: Top 5 States under consumer-categories are selected on the basis of 2022-23

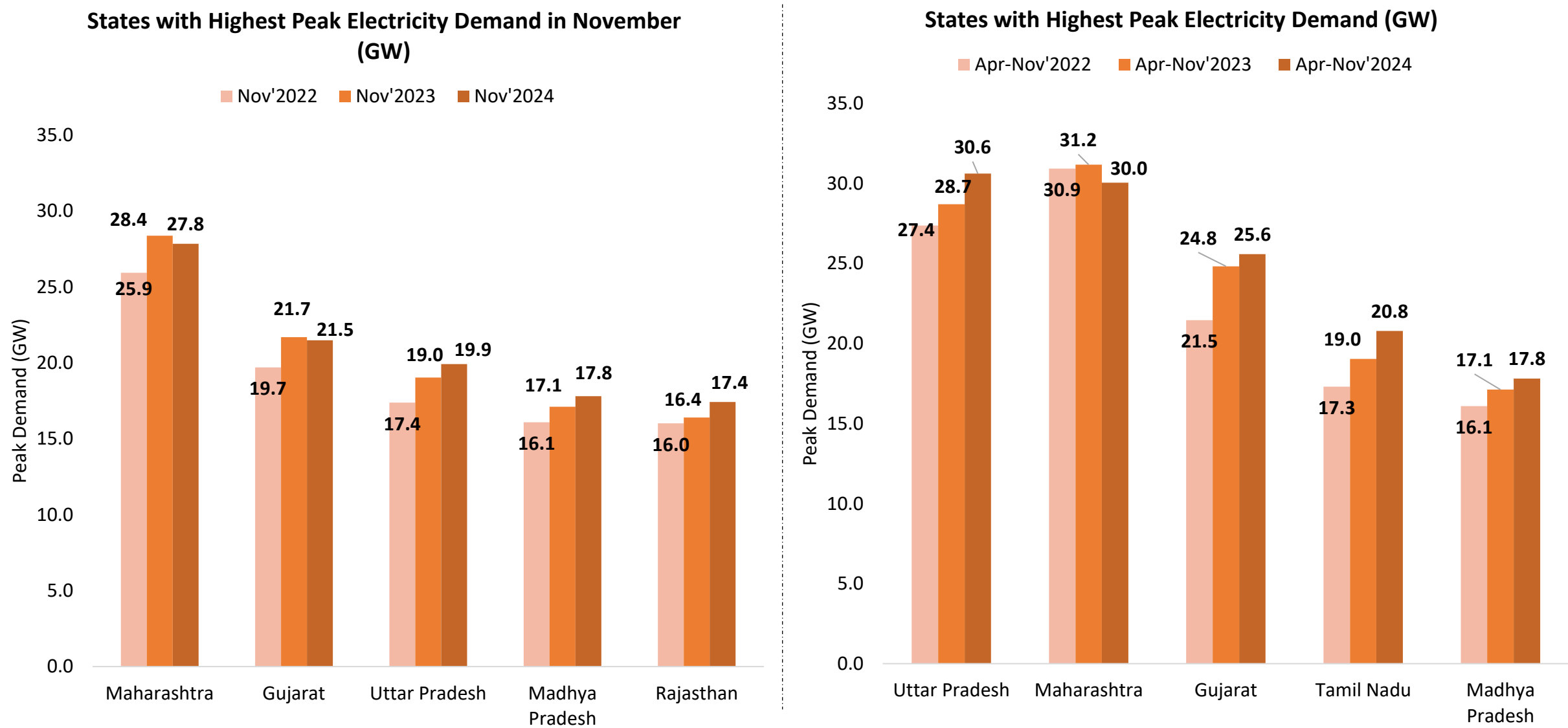
Source: CEA



# India's Monthly Peak Electricity Demand and Supply



# Monthly Peak Electricity Demand of the top 5 states

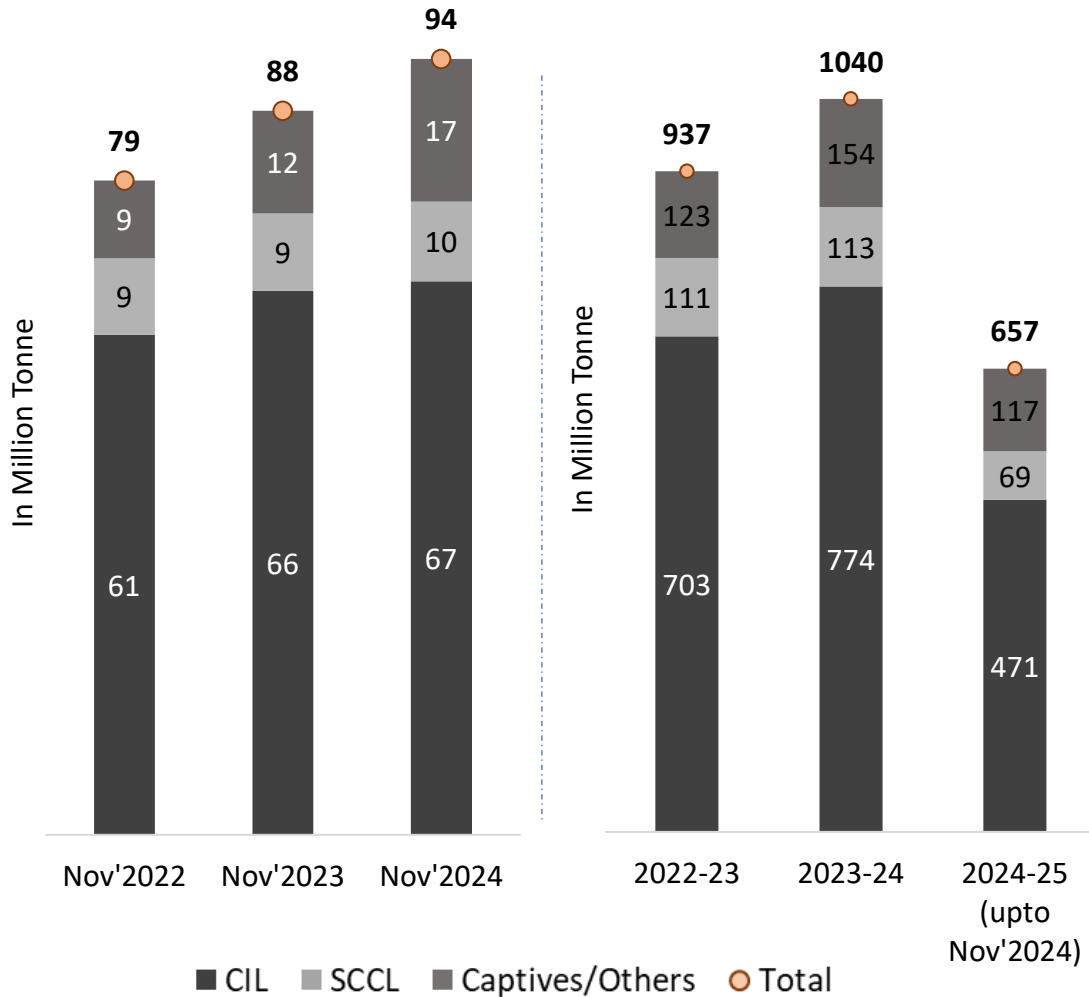


Note: The peak electricity demand data for November'24 is Provisional.

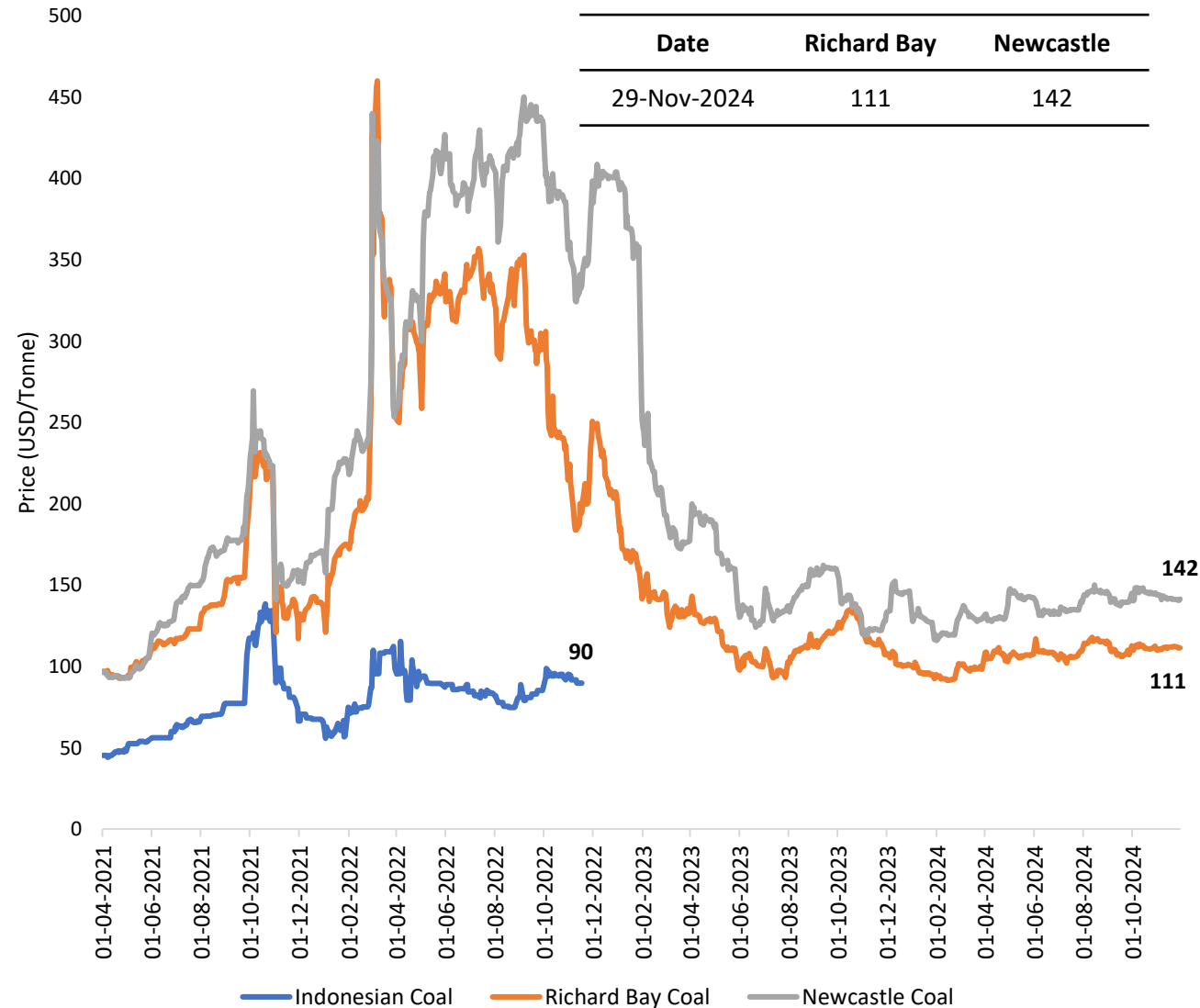
Source: CEA

# Monthly Coal Statistics

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



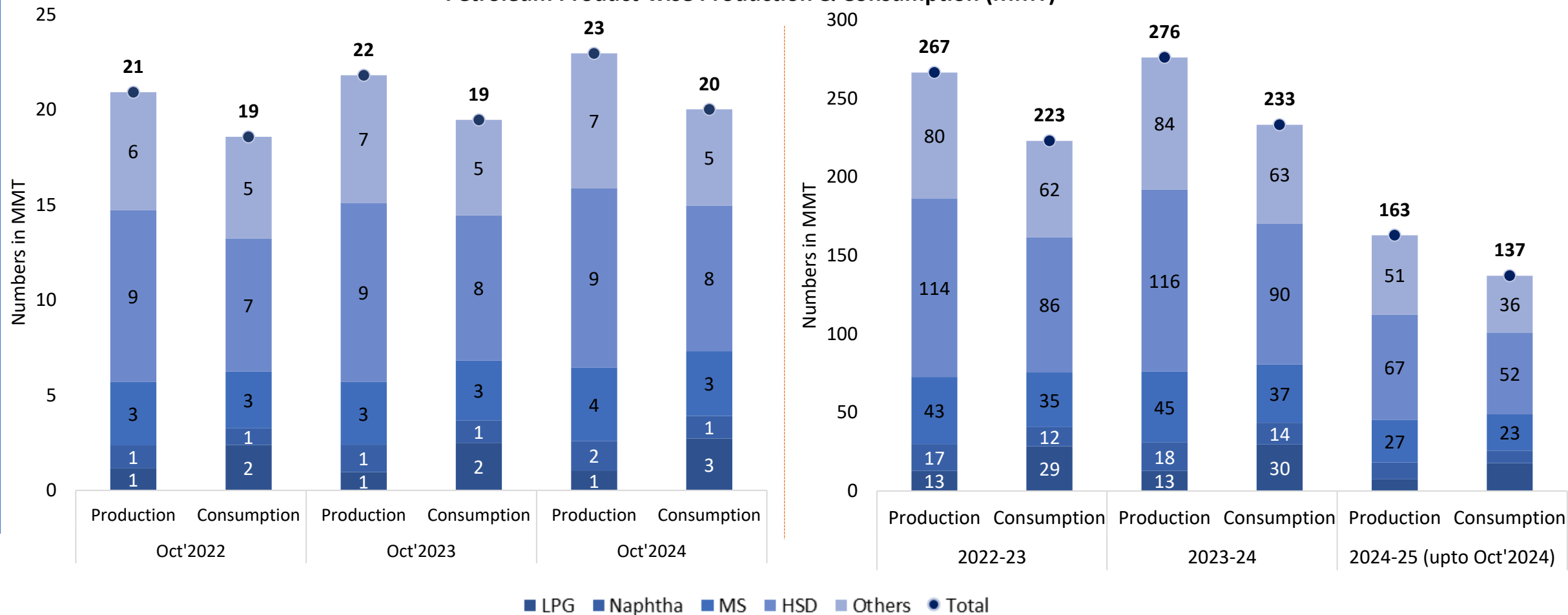
International Coal Prices



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)

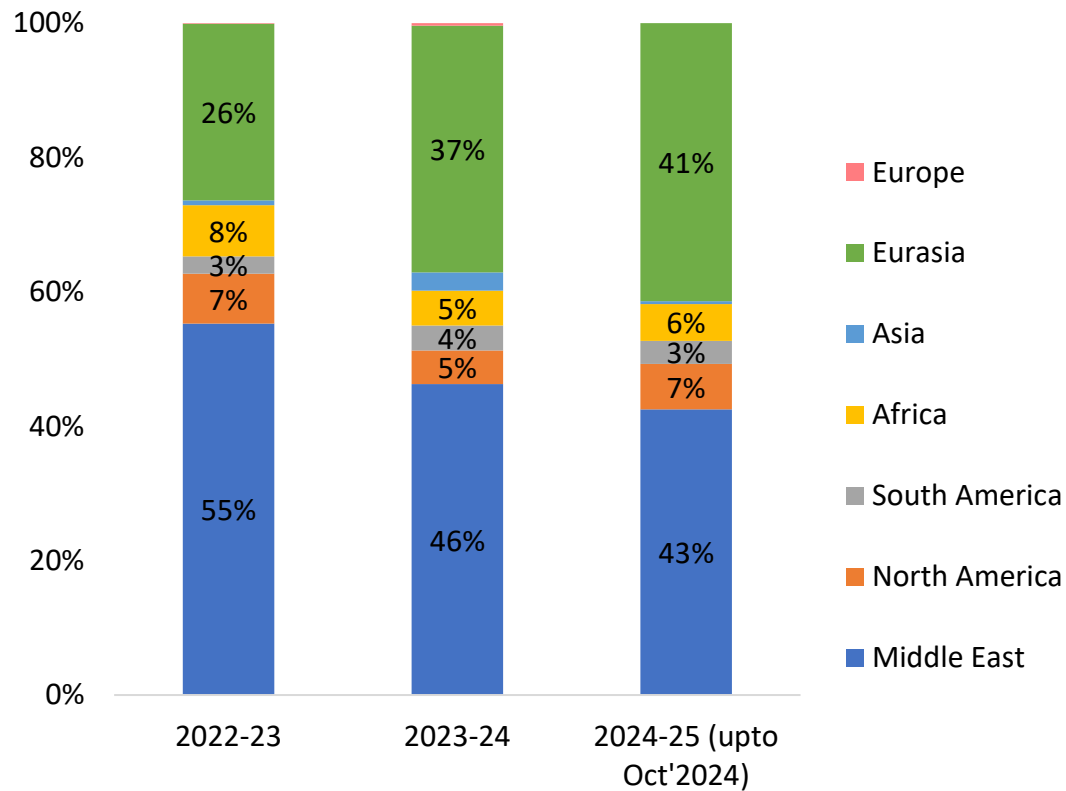
Import/Export of Crude Oil and Petroleum Products ('000 Tonnes)							
Petroleum Products	Import/ Export	Monthly			Yearly		
		Oct'22	Oct'23	Oct'24	2022-23	2023-24	2024-25 (upto Oct'2024)
Crude Oil	Import	18123	18729	19515	232700	234262	140170
	Export	0	0	0	0	0	0
	<b>Net Import</b>	<b>18123</b>	<b>18729</b>	<b>19515</b>	<b>232700</b>	<b>234262</b>	<b>140170</b>
LPG	Import	1421	1916	1993	18335	18514	11821
	Export	43	43	47	540	525	310
	<b>Net Import</b>	<b>1378</b>	<b>1872</b>	<b>1946</b>	<b>17796</b>	<b>17989</b>	<b>11511</b>
Diesel	Import	10	4	4	322	42	23
	Export	2062	2110	2349	28494	28204	15307
	<b>Net Import</b>	<b>-2052</b>	<b>-2106</b>	<b>-2345</b>	<b>-28172</b>	<b>-28162</b>	<b>-15285</b>
Petrol	Import	327	200	0	1069	717	235
	Export	501	671	1118	13127	13472	8300
	<b>Net Import</b>	<b>-173</b>	<b>-472</b>	<b>-1118</b>	<b>-12058</b>	<b>-12755</b>	<b>-8065</b>
Others	Import	2179	2429	1540	24871	29419	17978
	Export	1367	1659	2506	18854	20391	12837
	<b>Net Import</b>	<b>812</b>	<b>770</b>	<b>-966</b>	<b>6017</b>	<b>9029</b>	<b>5141</b>

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

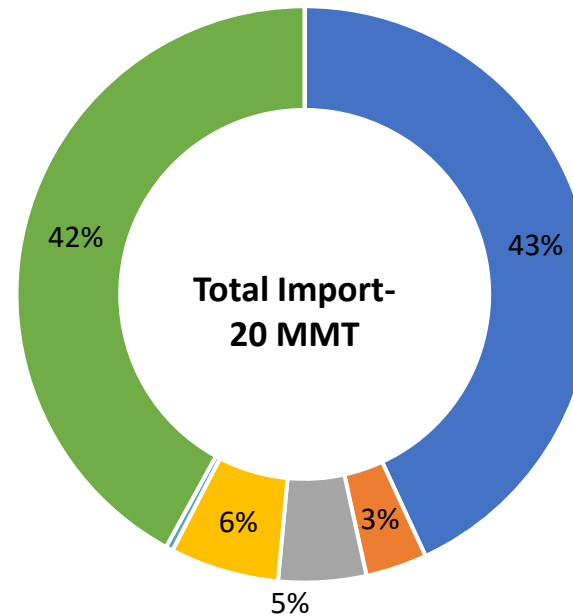


# Petroleum Products Market Scenario (3/3)

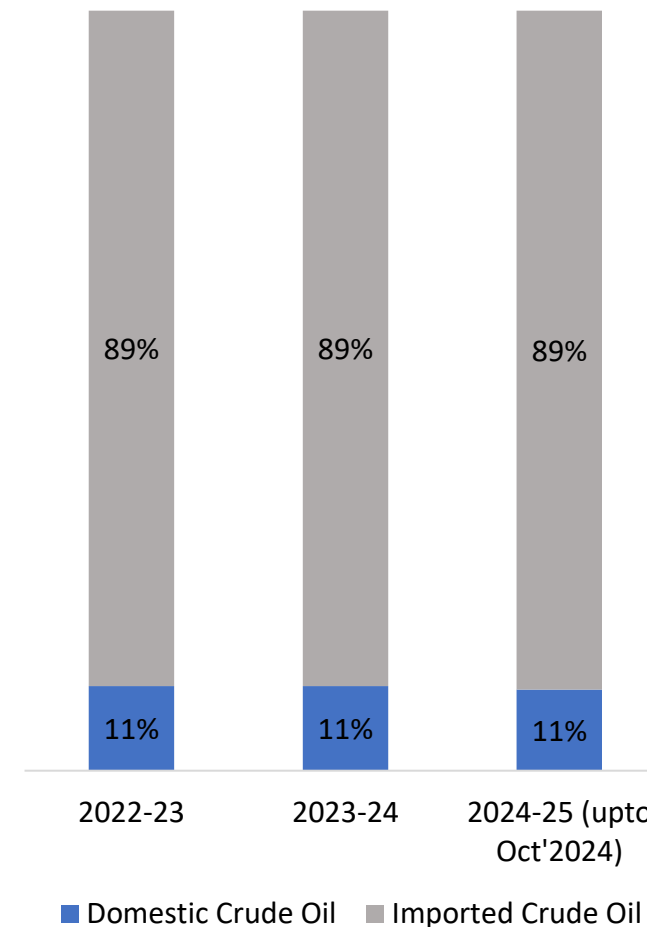
Region-wise Share in Import of Crude Oil (%)



Regional share of Imported Crude oil in October 2024 (P)



Domestic and Imported Crude Oil share in India (%)

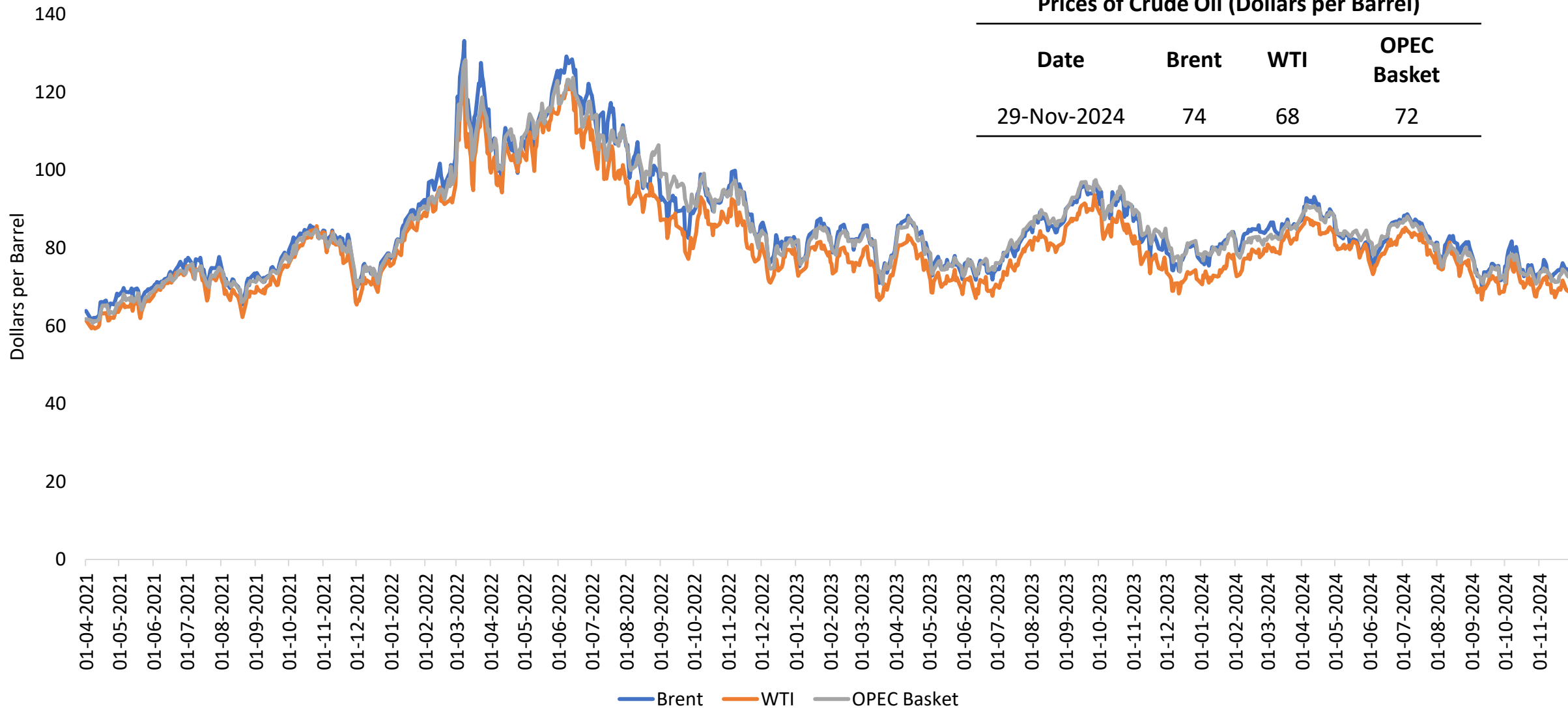


Total Import of Crude Oil (MMT)

Total Import	2022-23	2023-24	2024-25 (up to Oct'2024)
<b>Crude Oil</b>	<b>233</b>	<b>234</b>	<b>140</b>

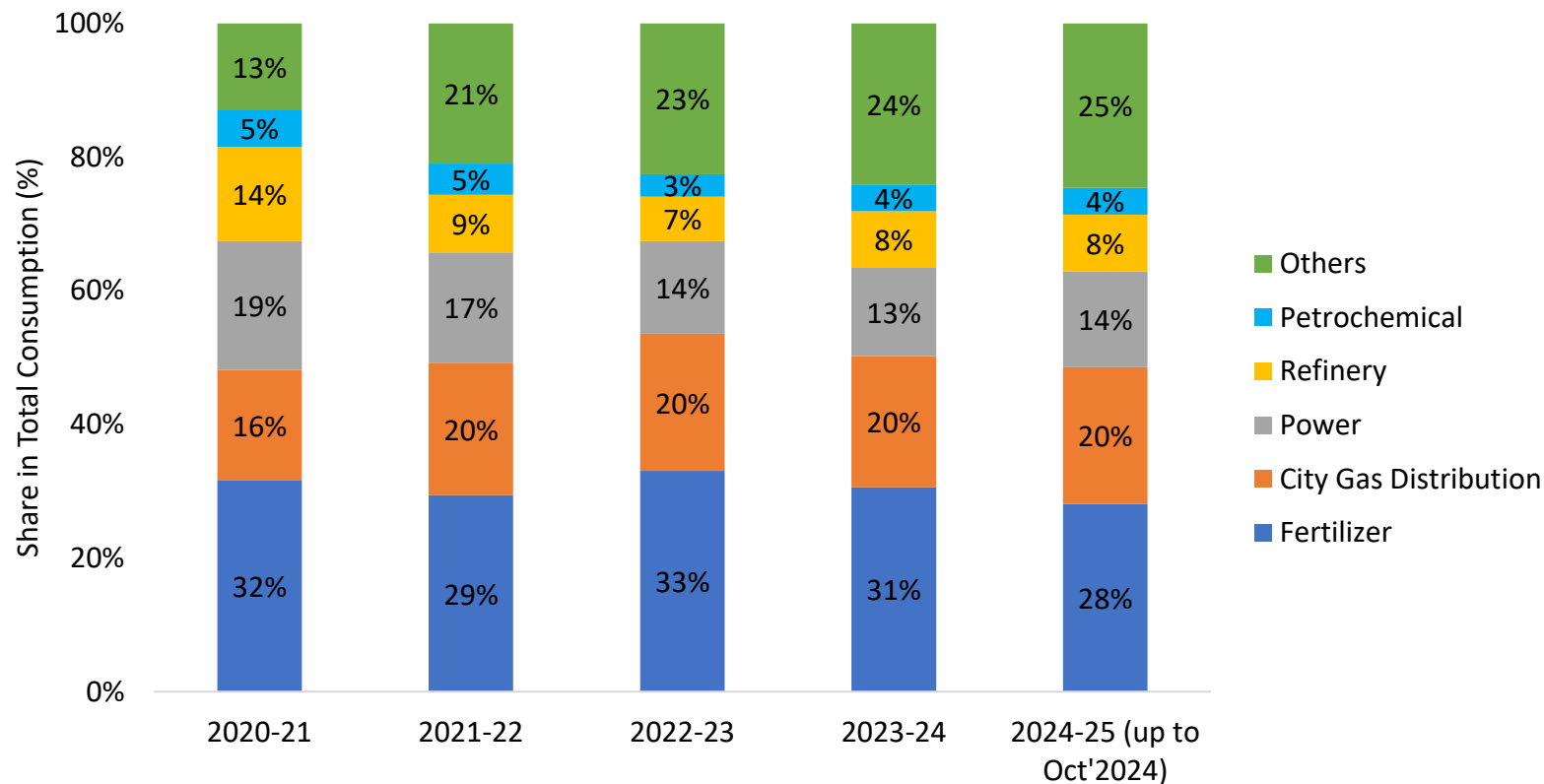
# Daily Prices of Crude Oil

Daily Prices of Crude Oil

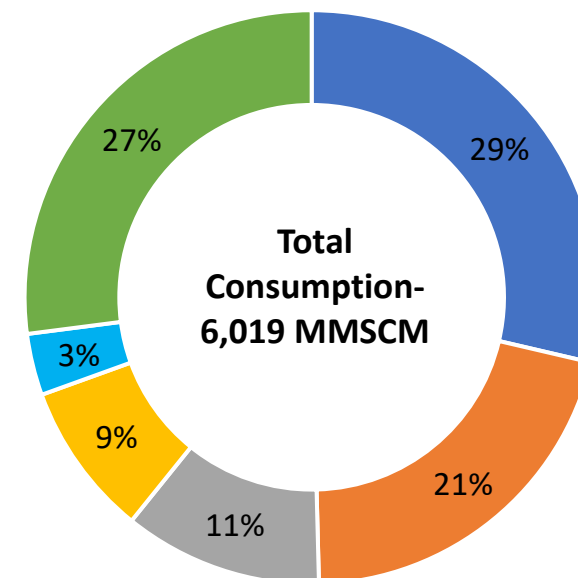


# Gas Market Scenario (1/2)

Sector-wise Share in Natural Gas Consumption



Sector-wise share in Natural Gas Consumption in October 2024



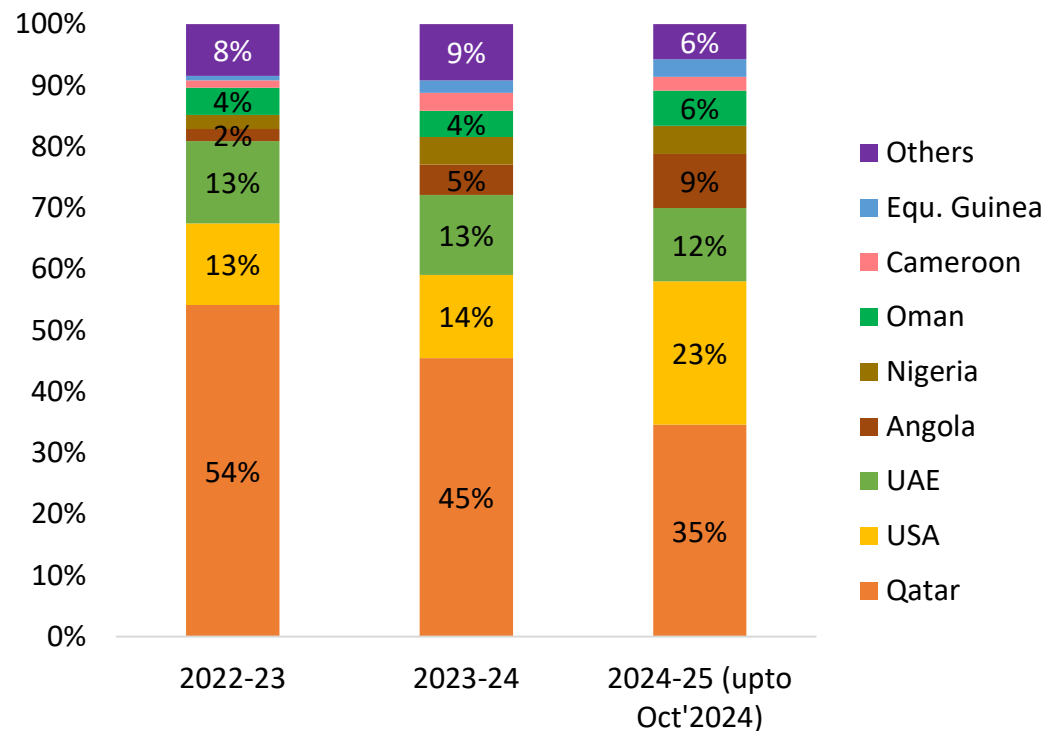
Others include- Internal Combustion of Pipeline System, Industrial, Sponge iron/steel, LPG shrinkage, Manufacturing, Agriculture (tea plantation), Others

Total Consumption of Natural Gas (NG) (MMSCM)

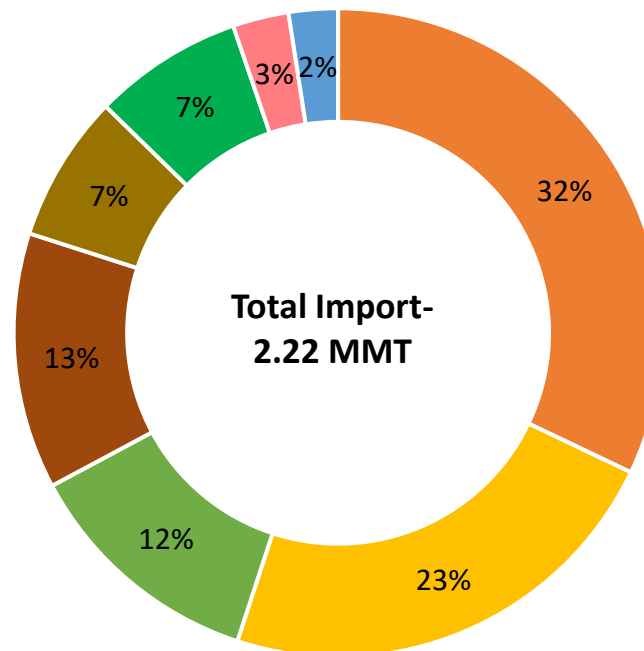
Total Consumption	2020-21	2021-22	2022-23	2023-24	2024-25 (up to Oct'2024)
<b>NG</b>	<b>56,116</b>	<b>61,491</b>	<b>58,702</b>	<b>68,759</b>	<b>42,654</b>

# Gas Market Scenario (2/2)

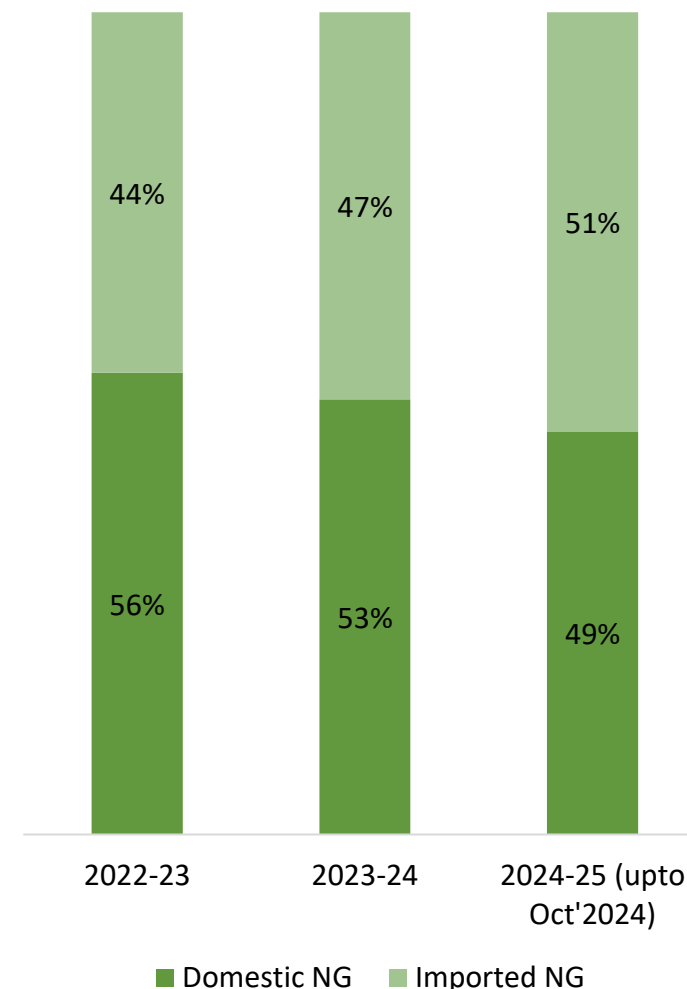
### Region-wise Share in Import of LNG (%)



### Country Share of Imported LNG in October'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.

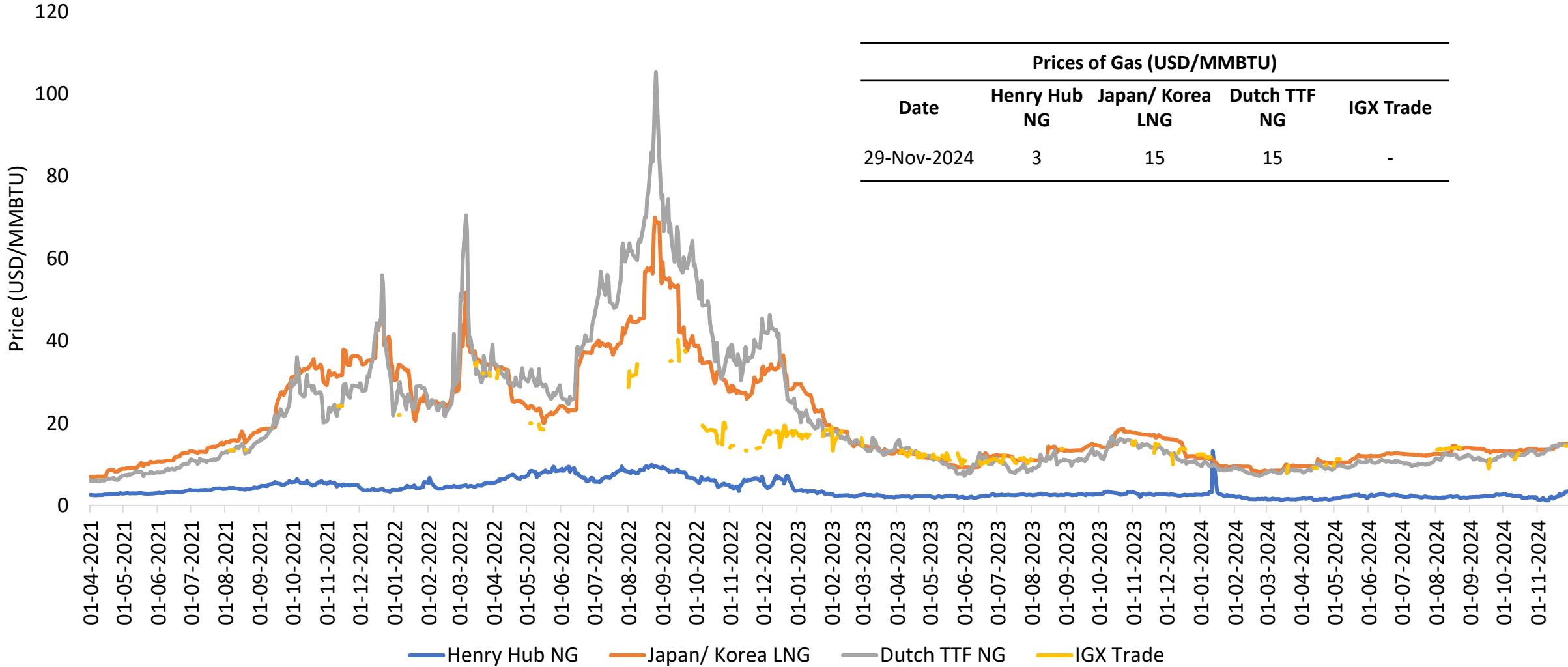
Total Import of Liquefied Natural Gas (LNG) (MMT)			
Total Import	2022-23	2023-24	2024-25 (up to Oct'2024)
<b>LNG</b>	<b>19.85</b>	<b>24.00</b>	<b>16.50</b>

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

Source: MoCI and PPAC

# Daily Prices of Gas

Gas Daily Market Price

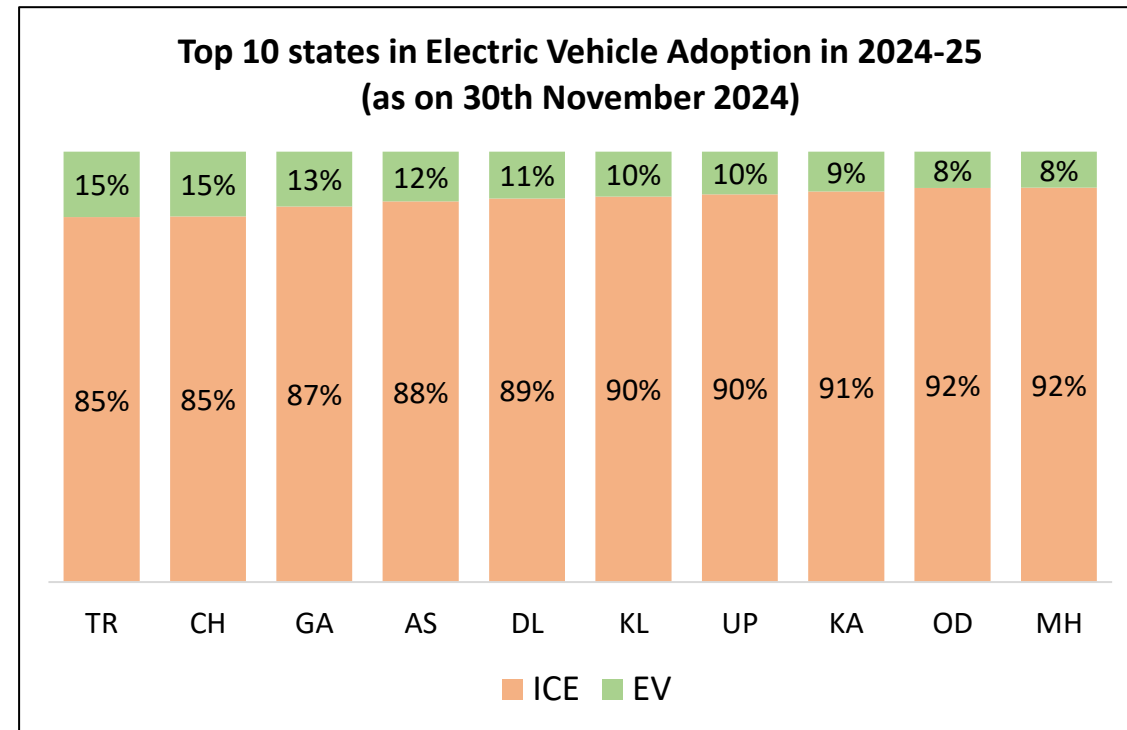
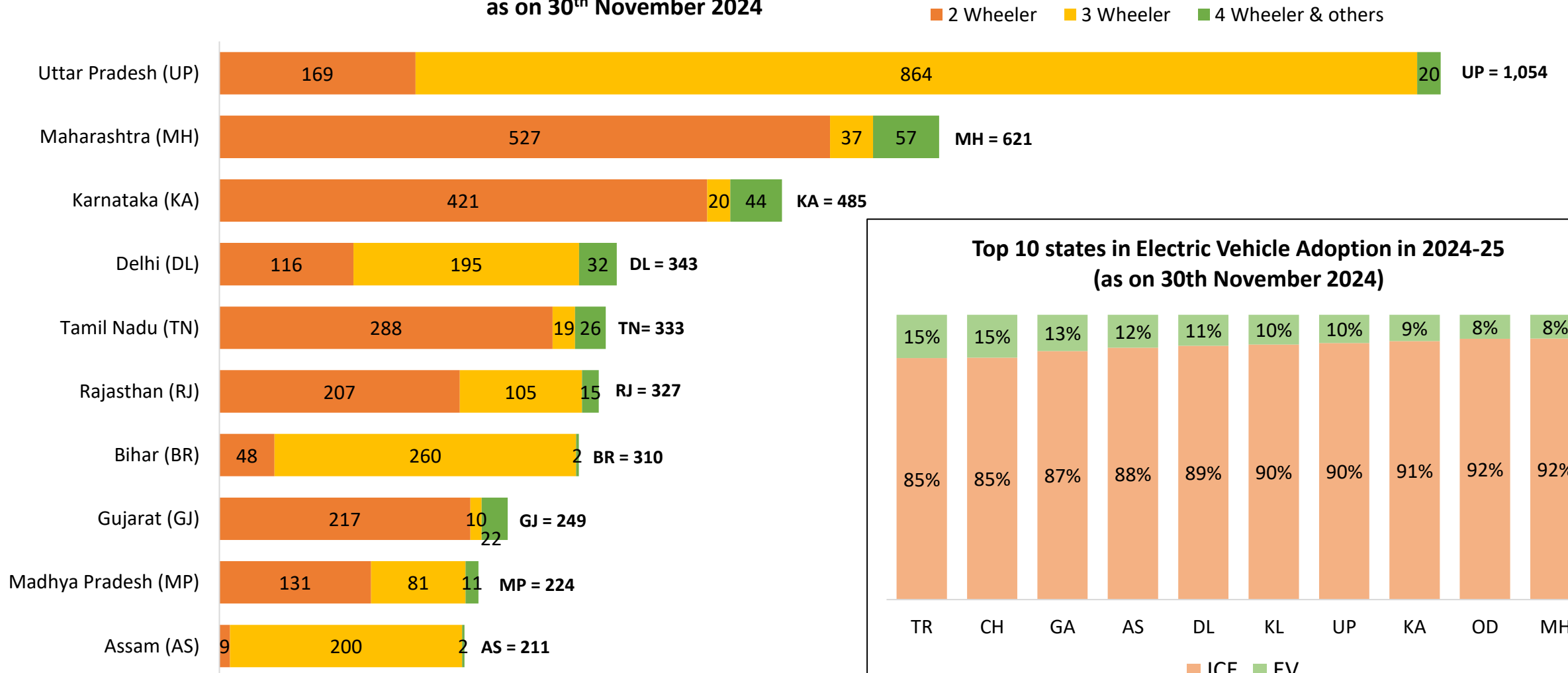


Prices of Gas (USD/MMBTU)				
Date	Henry Hub NG	Japan/ Korea LNG	Dutch TTF NG	IGX Trade
29-Nov-2024	3	15	15	-



# Status of Electric Mobility in India

**Top 10 States for Electric Vehicles (in Thousands)  
as on 30<sup>th</sup> November 2024**



# 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.





VASUDHA  
FOUNDATION  
Green ways for a good earth!

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