

India's Energy Overview

July 2024

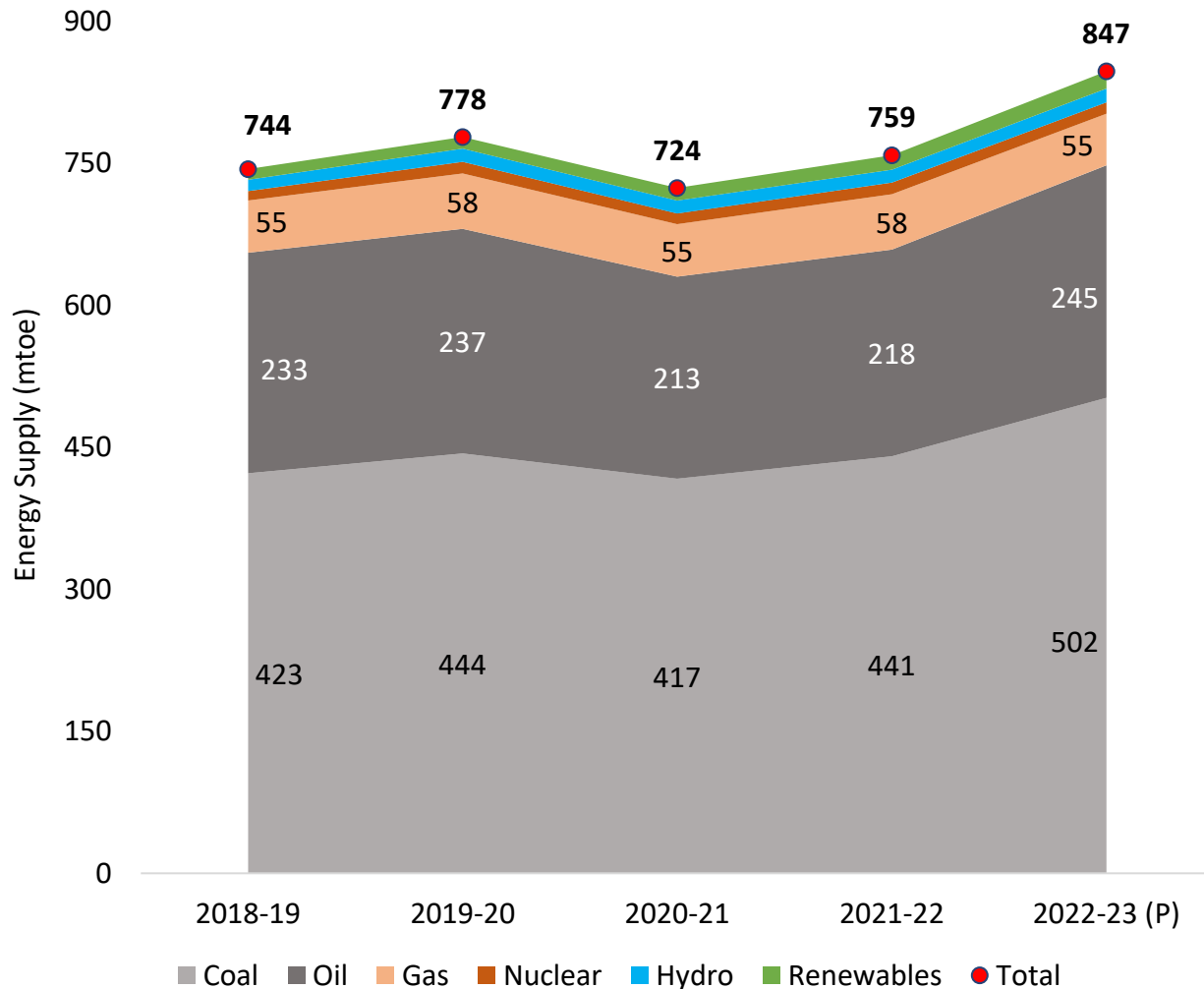


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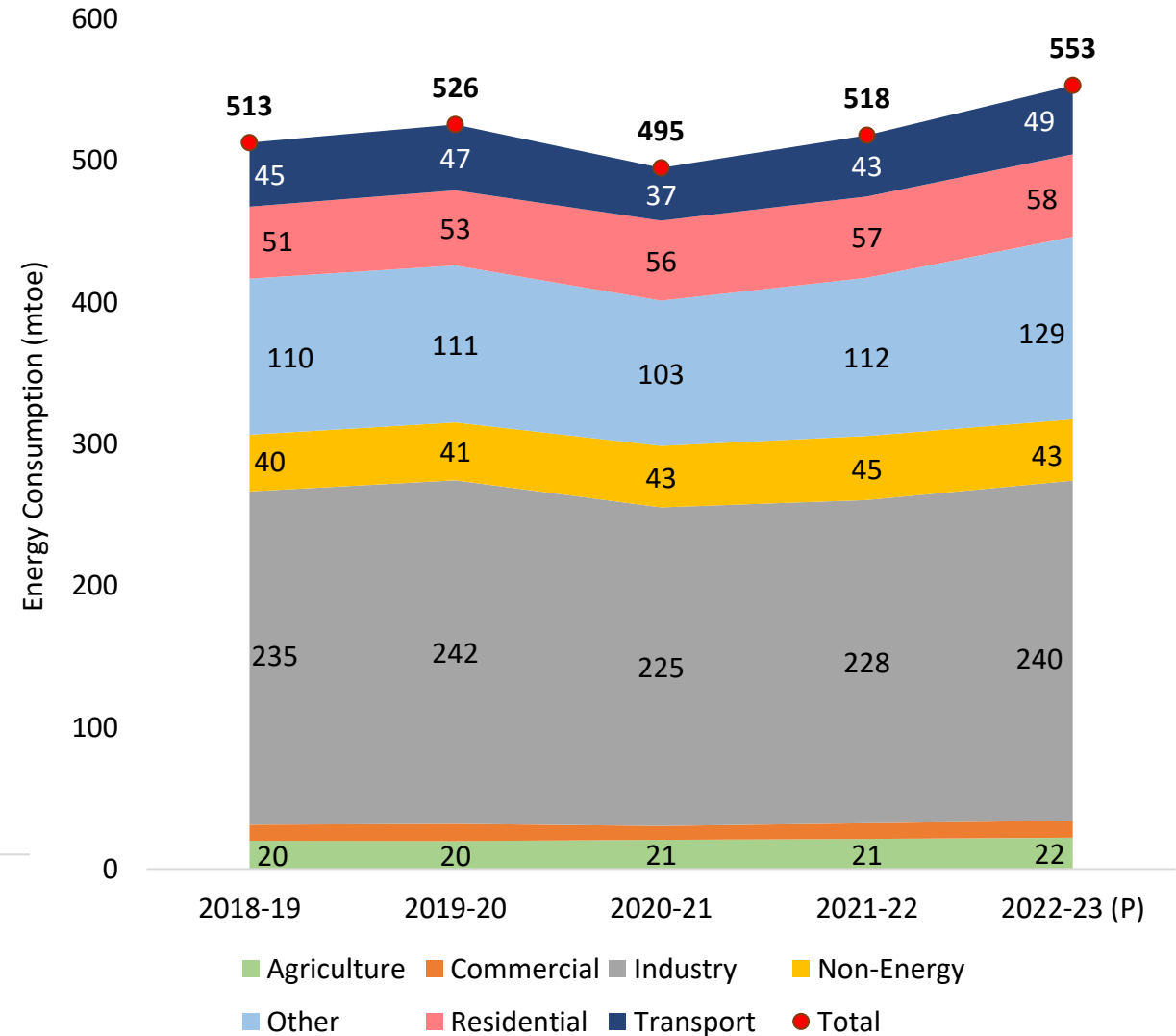
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Primary Energy Mix* in India

Source-wise Primary Energy Supply (mtoe)*

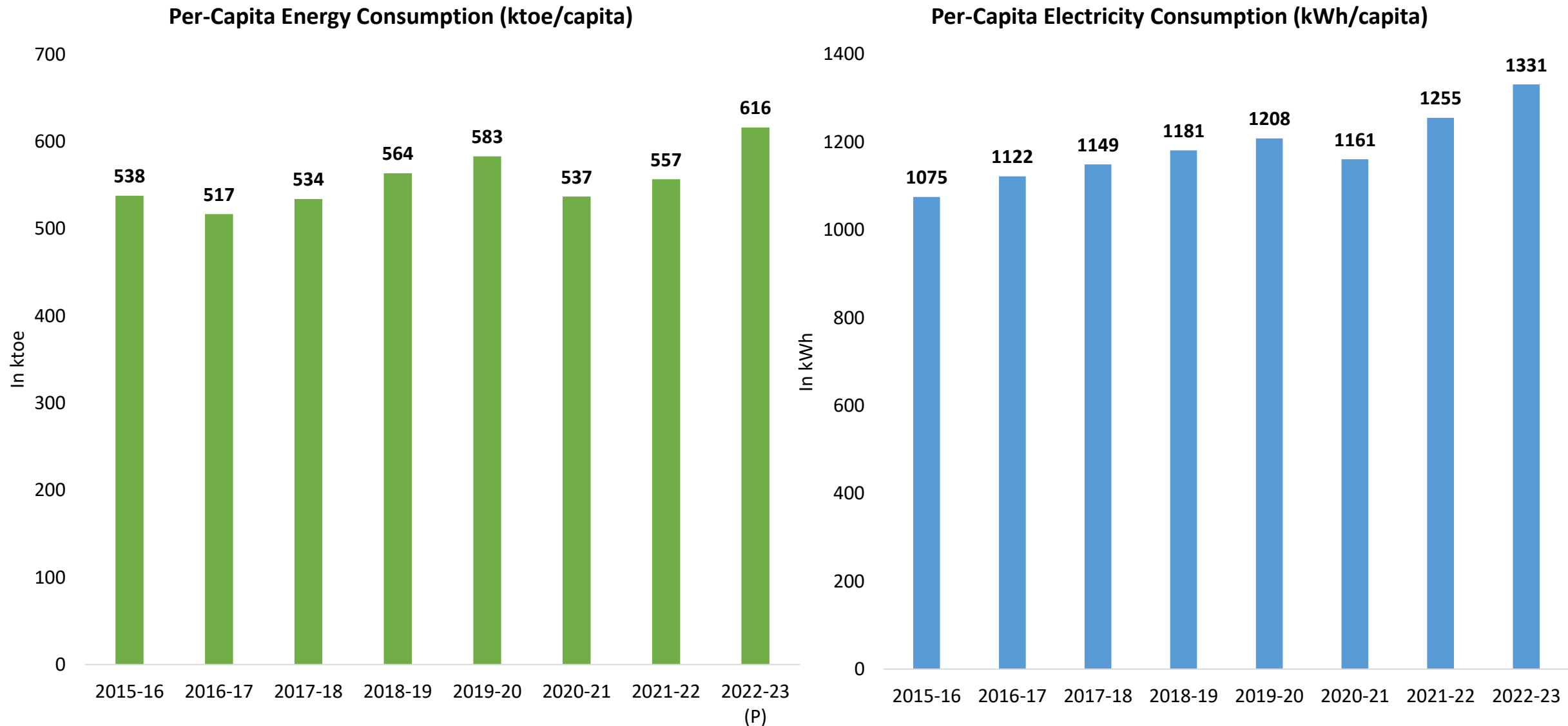


Sector-wise Energy Consumption (mtoe)



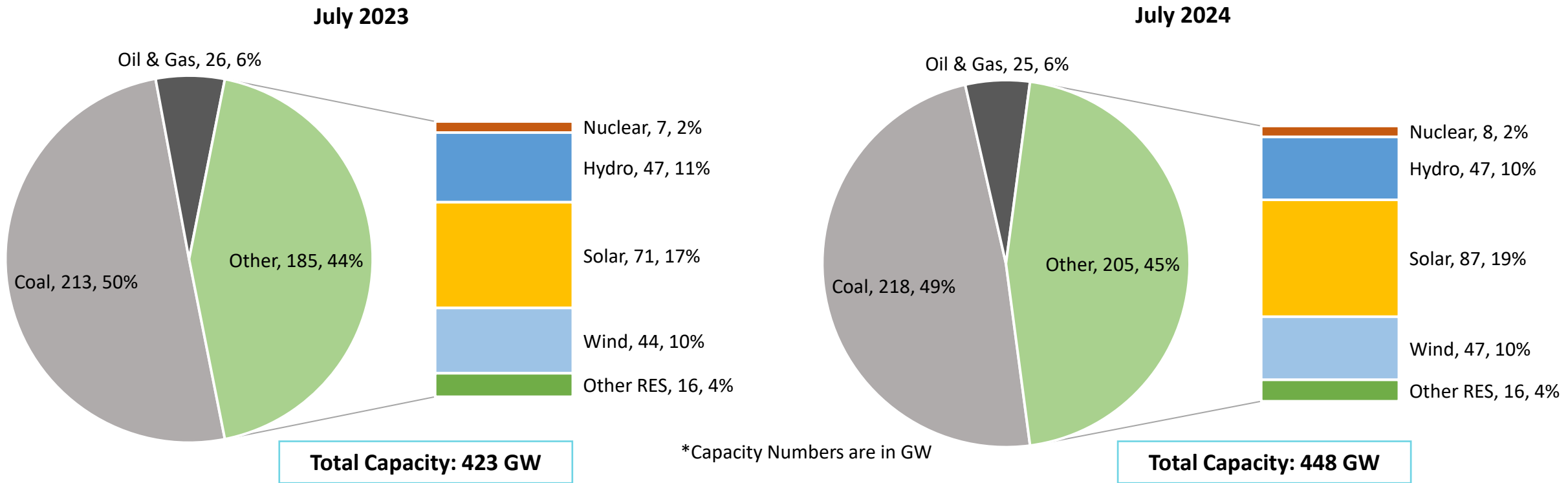
*Excluding biofuels, waste, and other non-commercial source of energy

Per-Capita Energy and Electricity Consumption



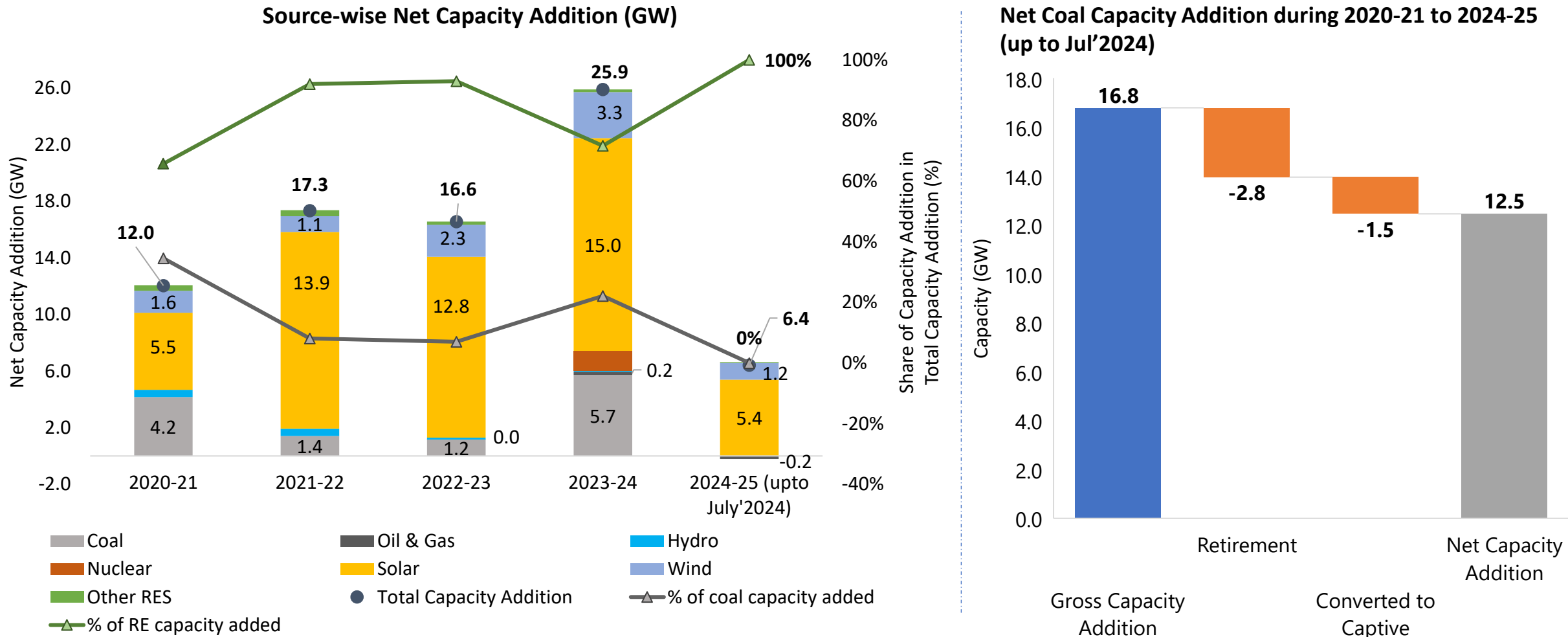
Note: Per Capita energy consumption is calculated on energy supply basis.

India's Electricity Capacity Mix (Utility-scale)



- India's electricity generating capacity is 448 GW as on Jul'2024 [coal 218 GW (49%), solar 87 GW (19%), hydro 47 GW (10%), and wind 47 GW (10%)].
- As on July 2024, the share of non-fossil-based electricity capacity is 46% against the set target of 50% non-fossil capacity by 2030.
- As on July 2024, India's renewable energy capacity (including large hydro) stood at 197 GW out of 448 GW.

India's Electricity Capacity Addition in last 5 years



- A total of 64.5 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

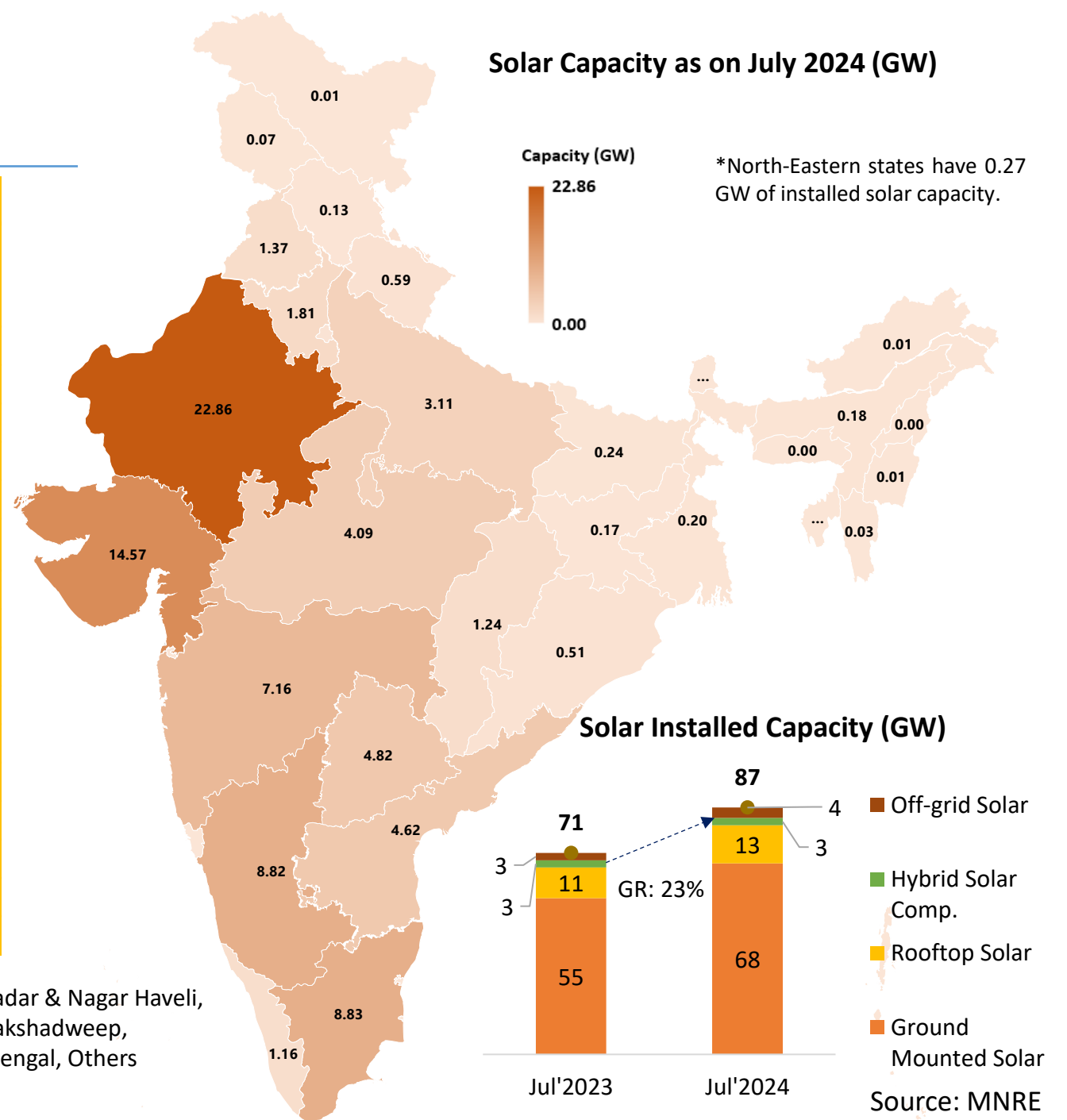
as on July 2024

State-wise installed capacity of Solar Power (GW)

States	Ground Mounted	Rooftop	Solar Component in Hybrid	Off Grid	Total Solar Power
Rajasthan	18.82	1.26	1.98	0.81	22.86
Gujarat	9.85	4.03	0.61	0.09	14.57
Tamil Nadu	8.06	0.70	0.00	0.07	8.83
Karnataka	8.19	0.59	0.00	0.04	8.82
Maharashtra	4.25	2.38	0.00	0.53	7.16
Telangana	4.36	0.45	0.00	0.01	4.82
Andhra Pradesh	4.32	0.21	0.00	0.09	4.62
Madhya Pradesh	3.60	0.38	0.00	0.10	4.09
Uttar Pradesh	2.53	0.27	0.00	0.32	3.11
Haryana	0.27	0.67	0.00	0.86	1.81
Punjab	0.89	0.40	0.00	0.08	1.37
Chhattisgarh	0.77	0.08	0.00	0.39	1.24
Kerala	0.32	0.82	0.00	0.02	1.16
Uttarakhand	0.30	0.27	0.00	0.01	0.59
Others	1.00	0.88	0.00	0.29	2.17
All India	67.52	13.40	2.59	3.70	87.21

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

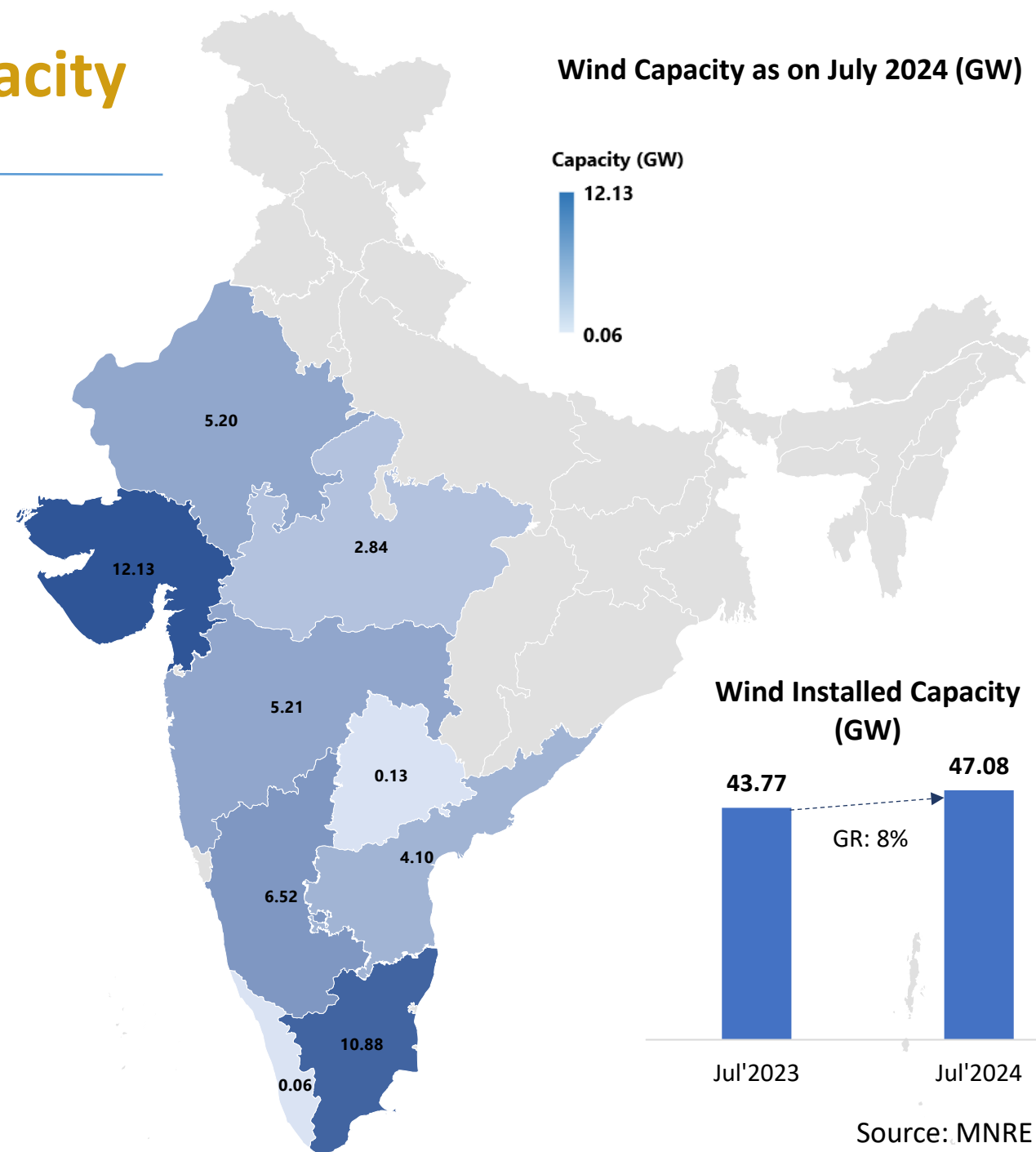
Solar Capacity as on July 2024 (GW)



State-wise Wind Onshore Capacity

as on July 2024

State-wise installed capacity of Wind (Onshore) Power	
States	Installed Capacity (GW)
Gujarat	12.13
Tamil Nadu	10.88
Karnataka	6.52
Maharashtra	5.21
Rajasthan	5.20
Andhra Pradesh	4.10
Madhya Pradesh	2.84
Telangana	0.13
Kerala	0.06
India Total	47.08



Source: MNRE

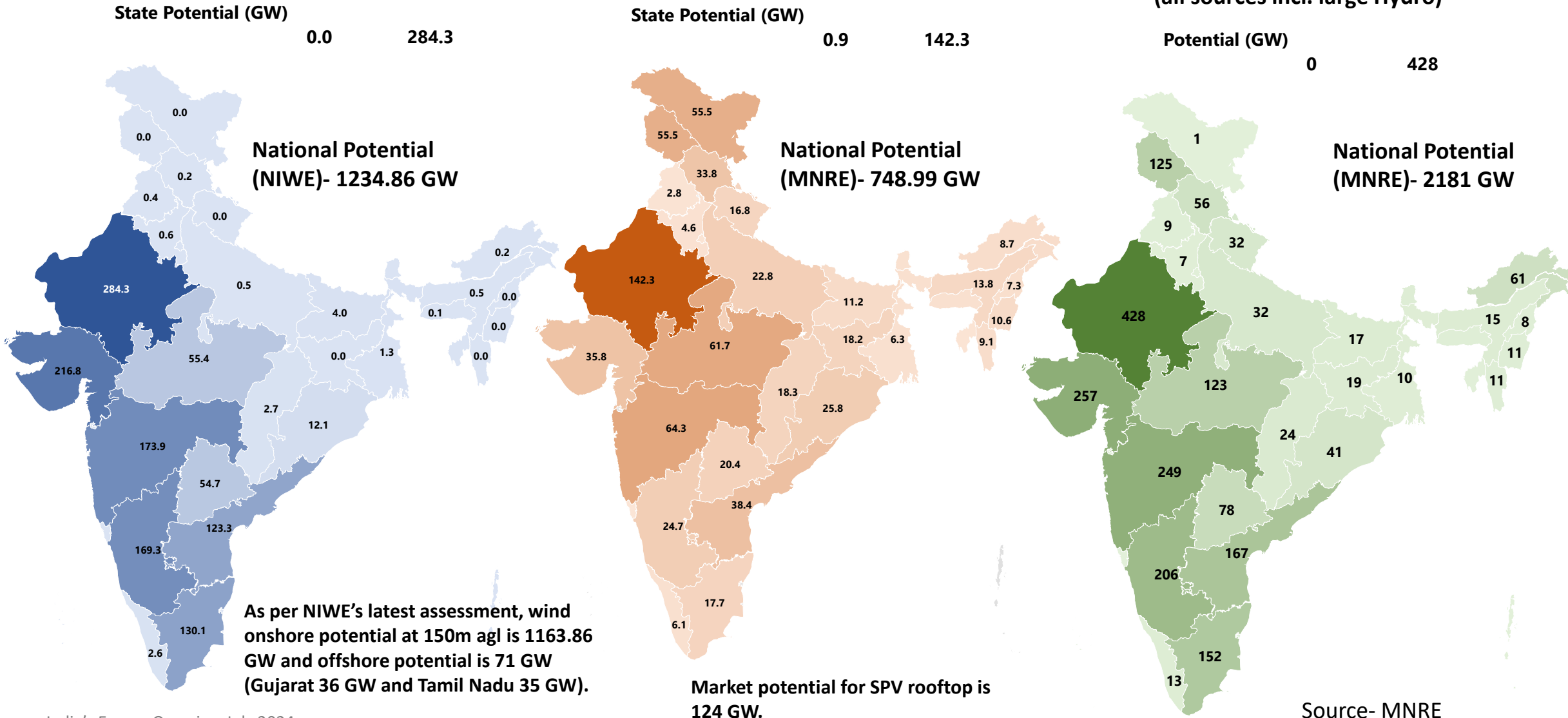
RE Potential and Installed Capacity (1/2)

RE potential in the state

Wind Onshore (at 150m agl) and Offshore Potential

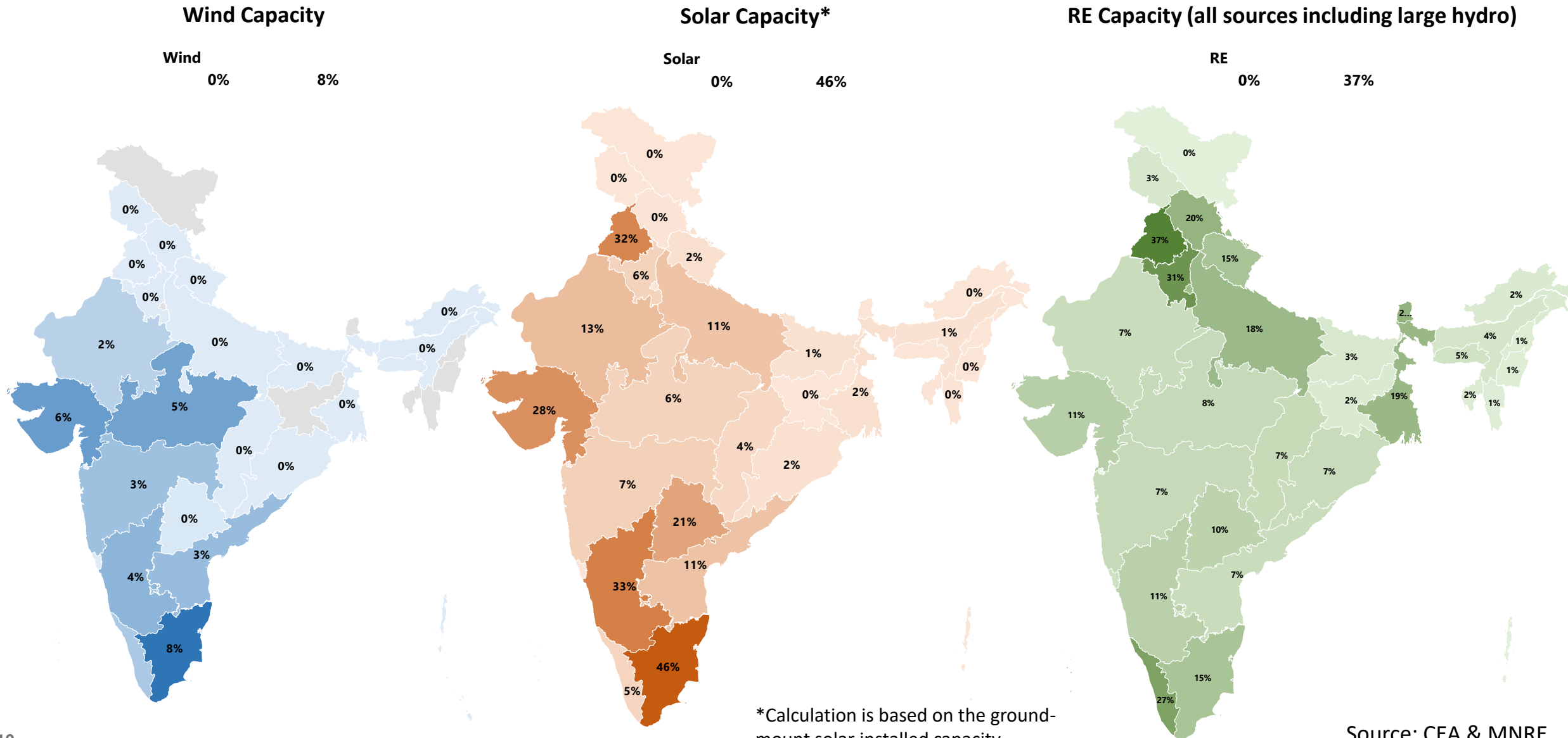
Solar Potential

Renewable Energy Potential (all sources incl. large Hydro)



RE Potential and Installed Capacity (2/2)

RE Installed capacity as a Percentage of the total resource potential in the state as on July 2024

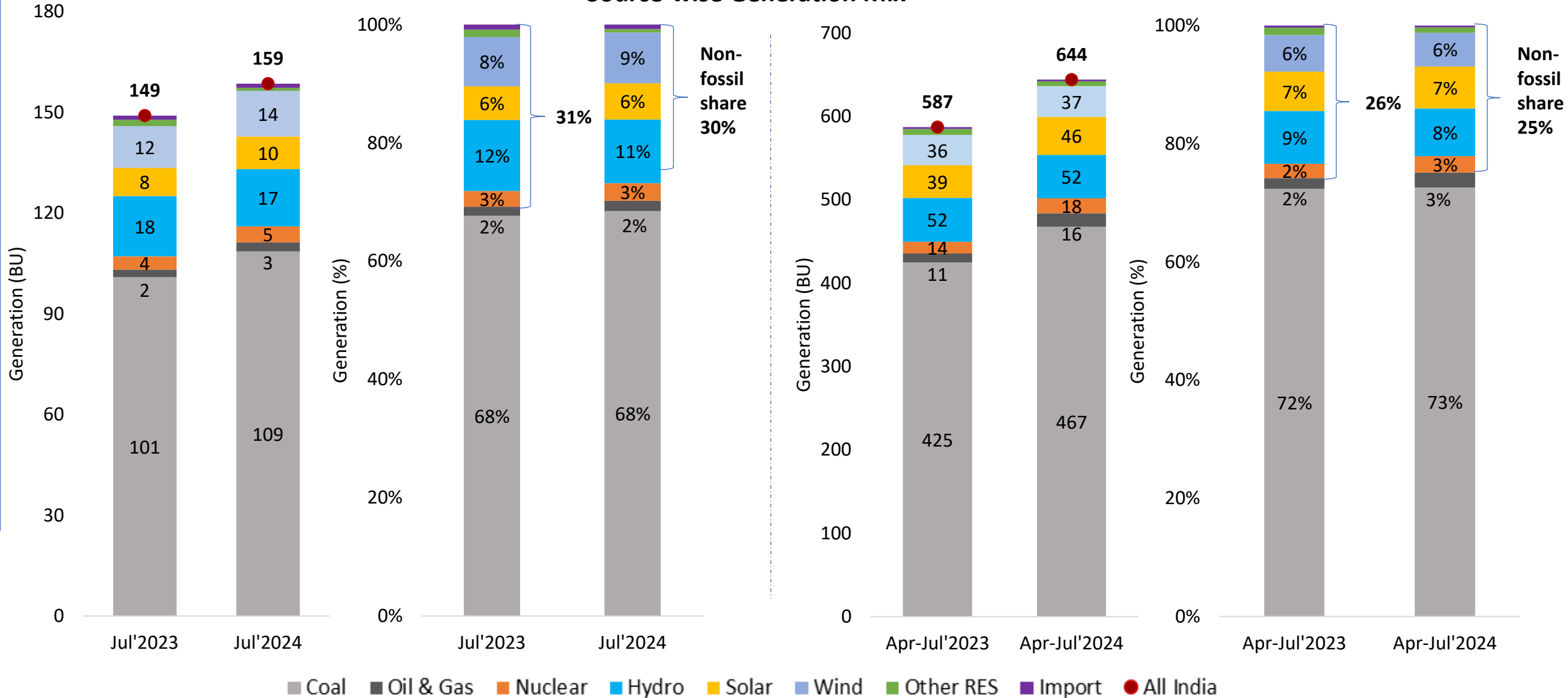


*Calculation is based on the ground-mount solar installed capacity.

Source: CEA & MNRE

India's Electricity Generation Mix

Source-wise Generation Mix

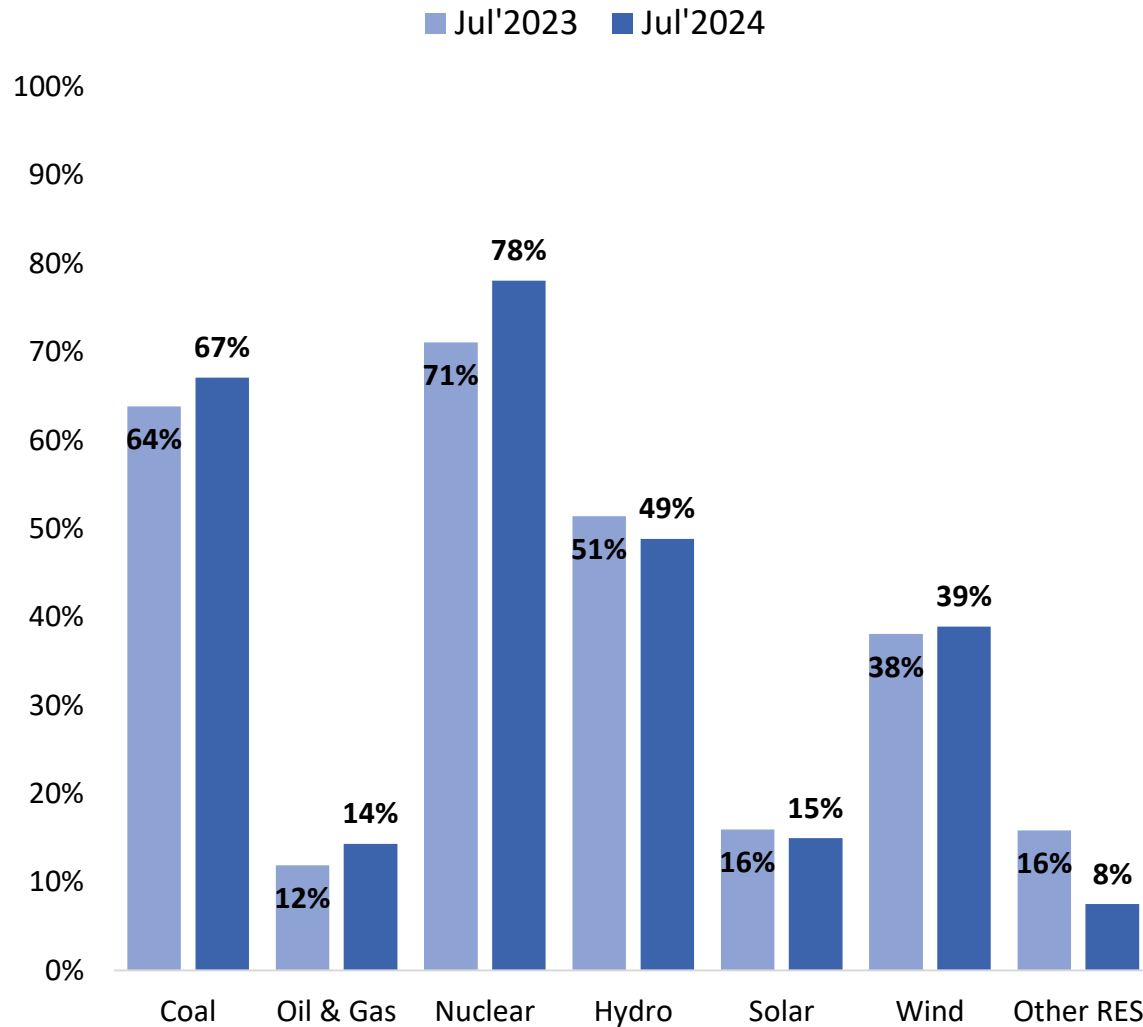


NOTE: The generation data for July'2024 is provisional.

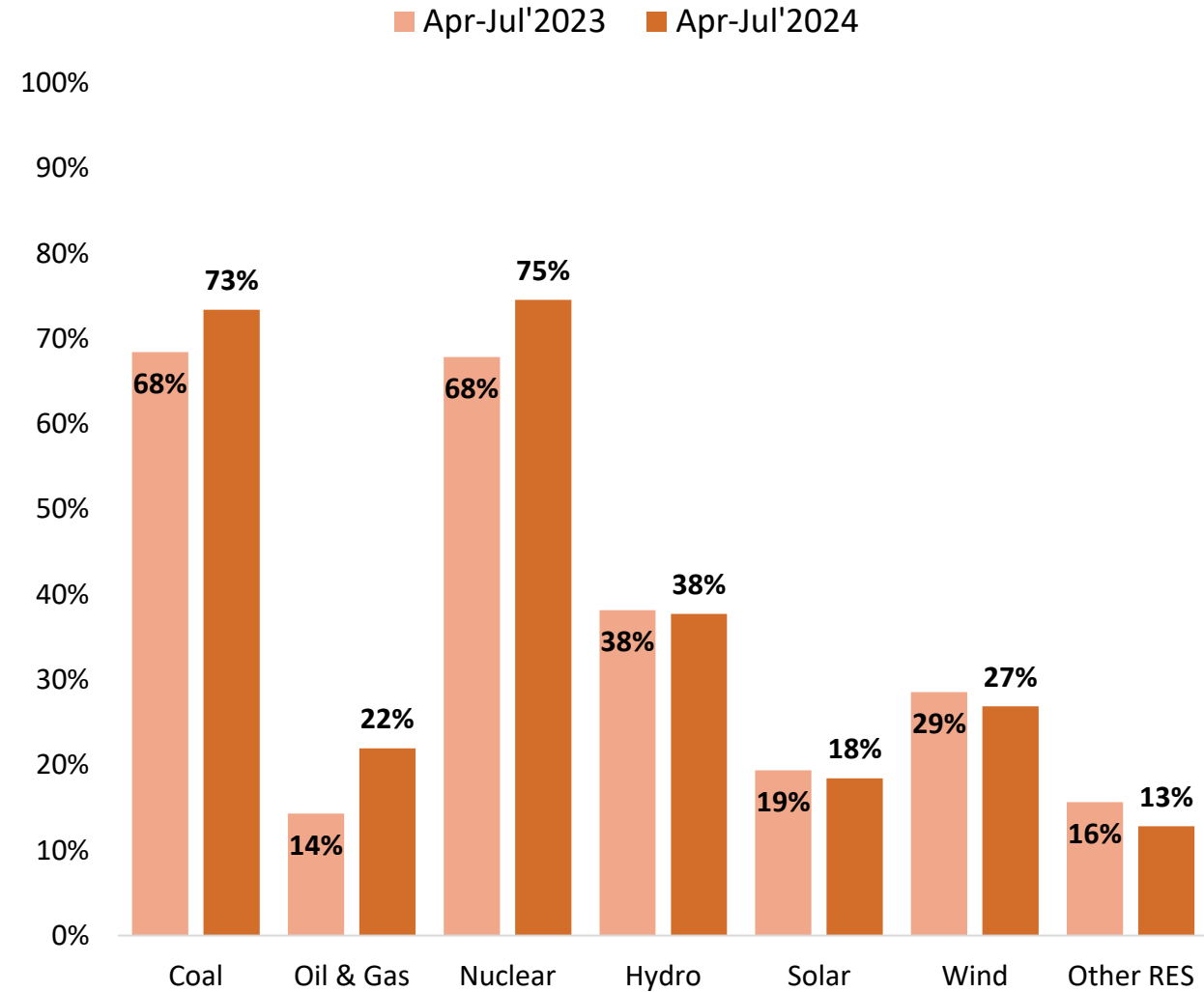
Source: CEA

Source-wise PLF/CUF

Source-wise PLF/ CUF in July (%)



Source-wise PLF/ CUF Comparison (%)

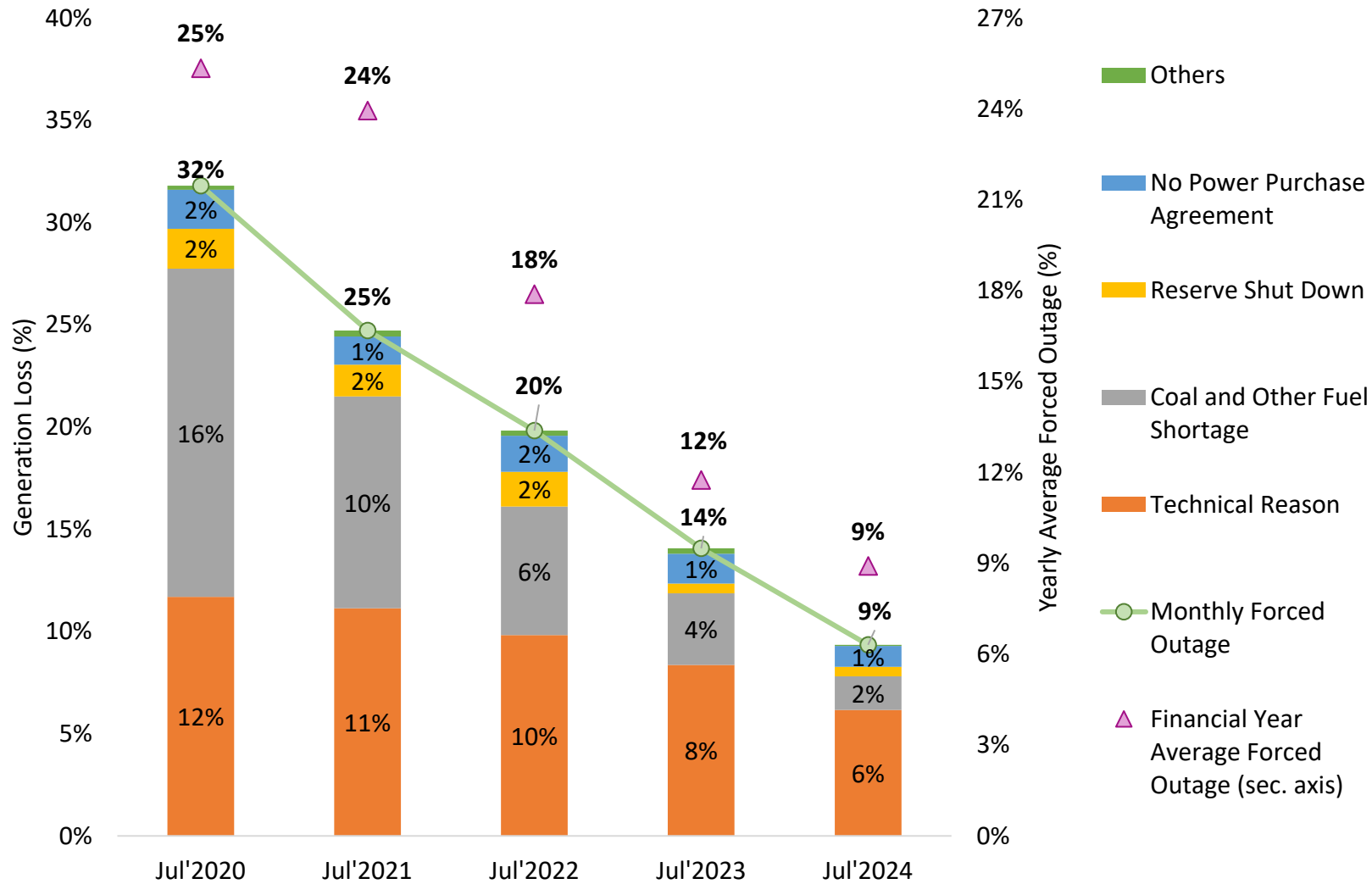


NOTE: The PLF/CUF data is based on provisional generation for July'2024.

Source: CEA & MNRE

Thermal Generation Loss and Reasons for Forced Outages

Forced Outages for July over the years



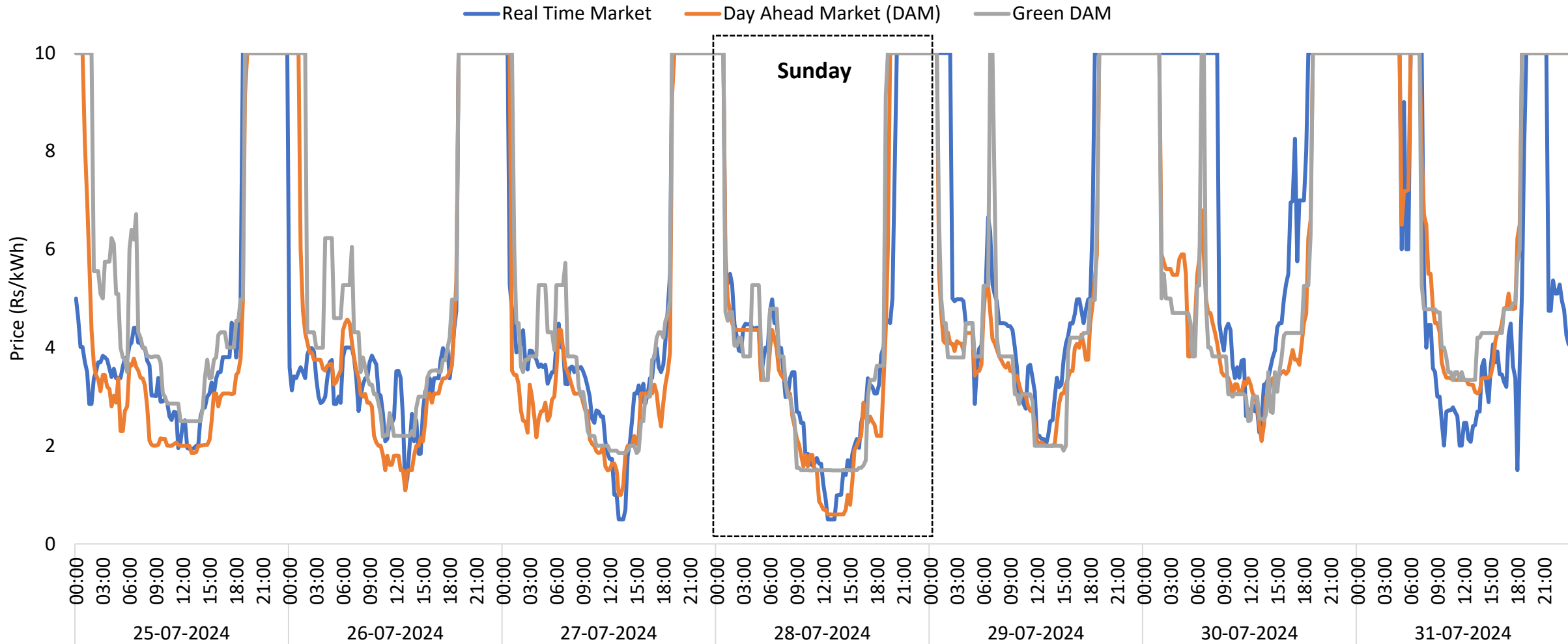
Year/ Month		Average Forced Outage Share
Yearly	FY 2022-23	18%
	FY 2023-24	12%
	FY 2024-25 (up to Jul'2024)	9%
Monthly	Jul'2022	20%
	Jul'2023	14%
	Jul'2024	9%

Thermal includes only Coal and Lignite Plants.

Source: ICED

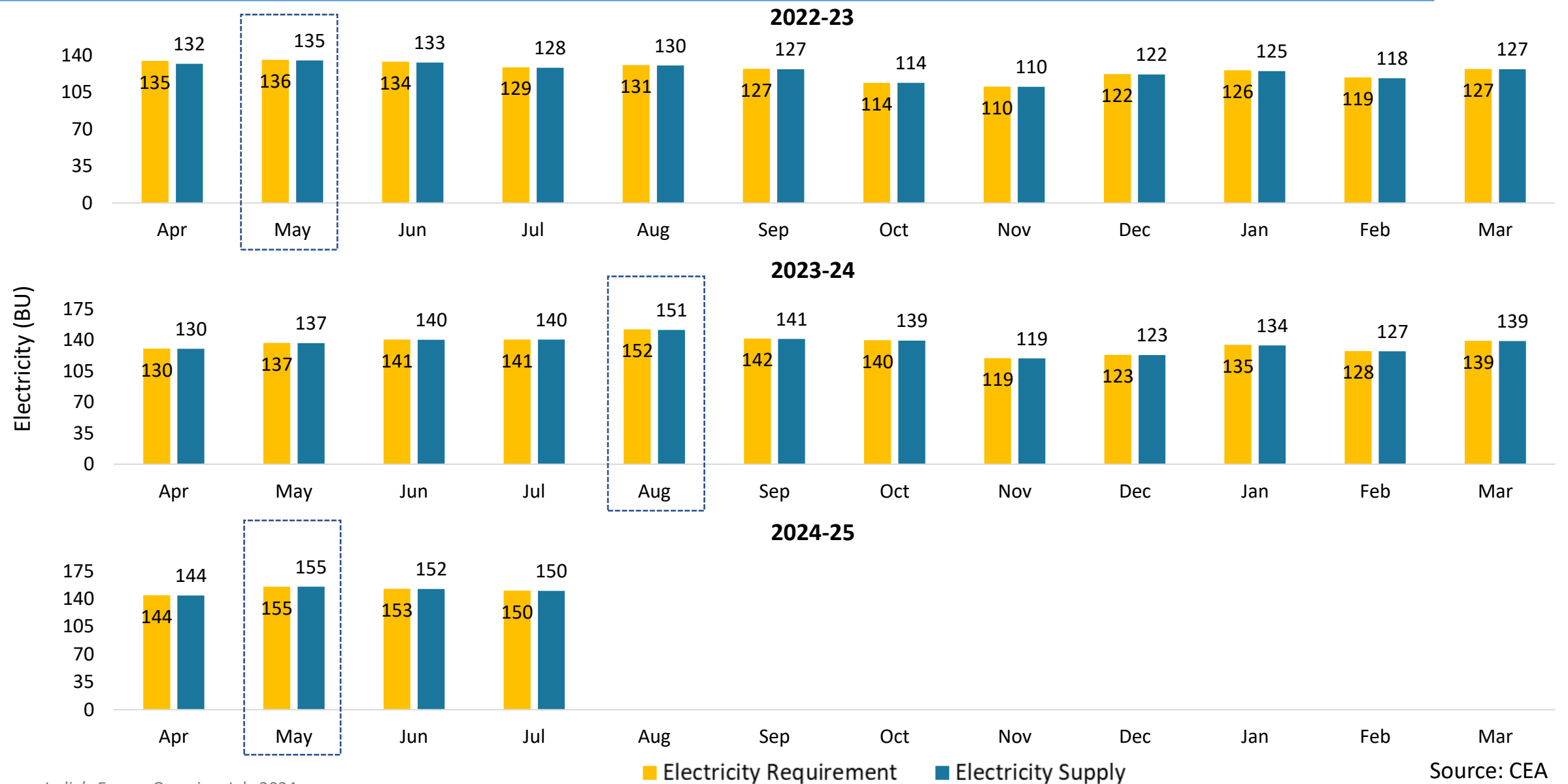
Indian Electricity Exchange (IEX) Market Snapshot

Market Clearing Prices of last 7 days of July 2024



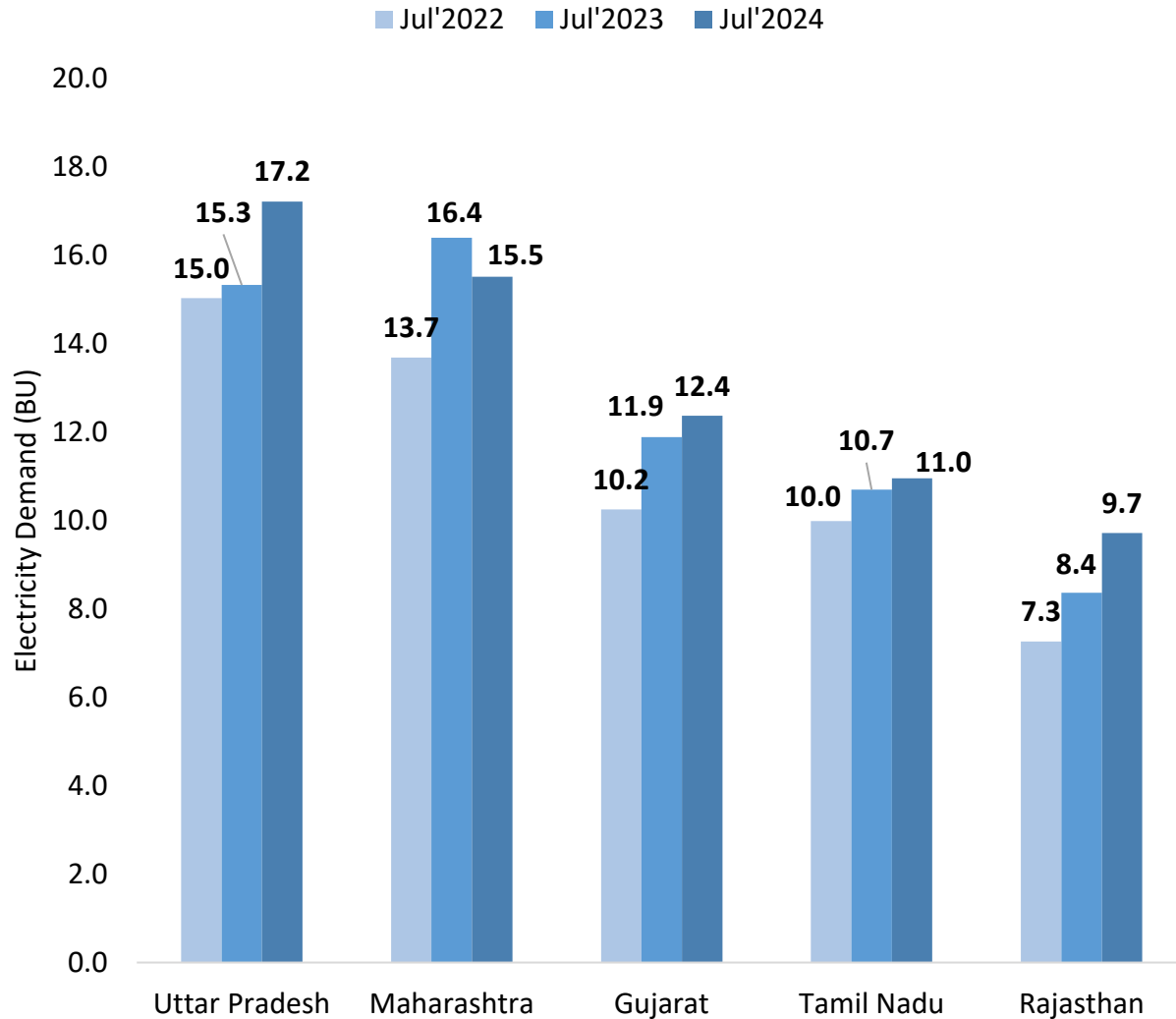
In April 2023, CERC revised the price ceiling from ₹12/kWh to ₹10/kWh in the power exchange market.

India's Monthly Electricity Requirement and Supply

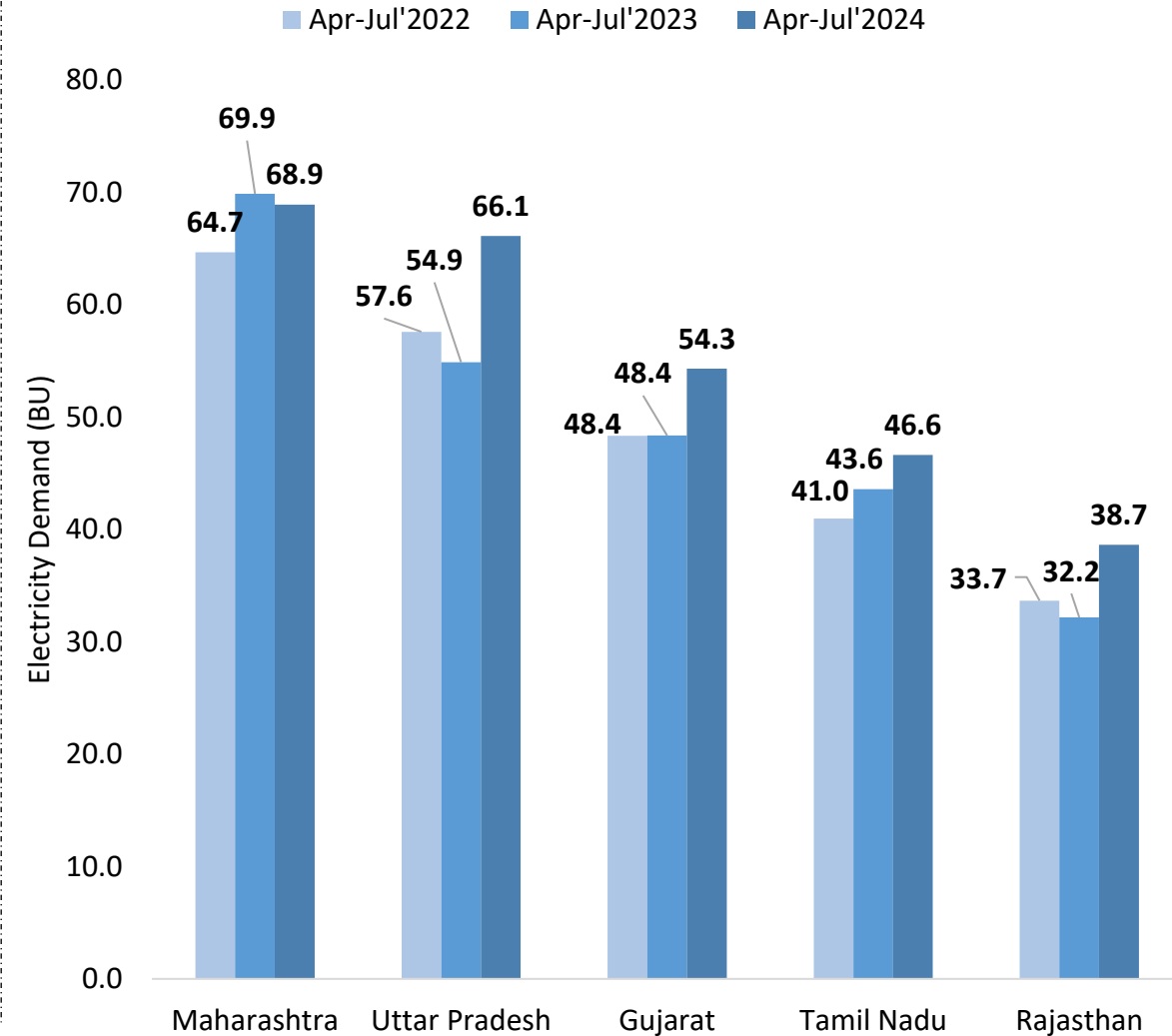


Monthly Electricity Demand of the top 5 states

States with Highest Electricity Demand in July (BU)



States with Highest Electricity Demand (BU)

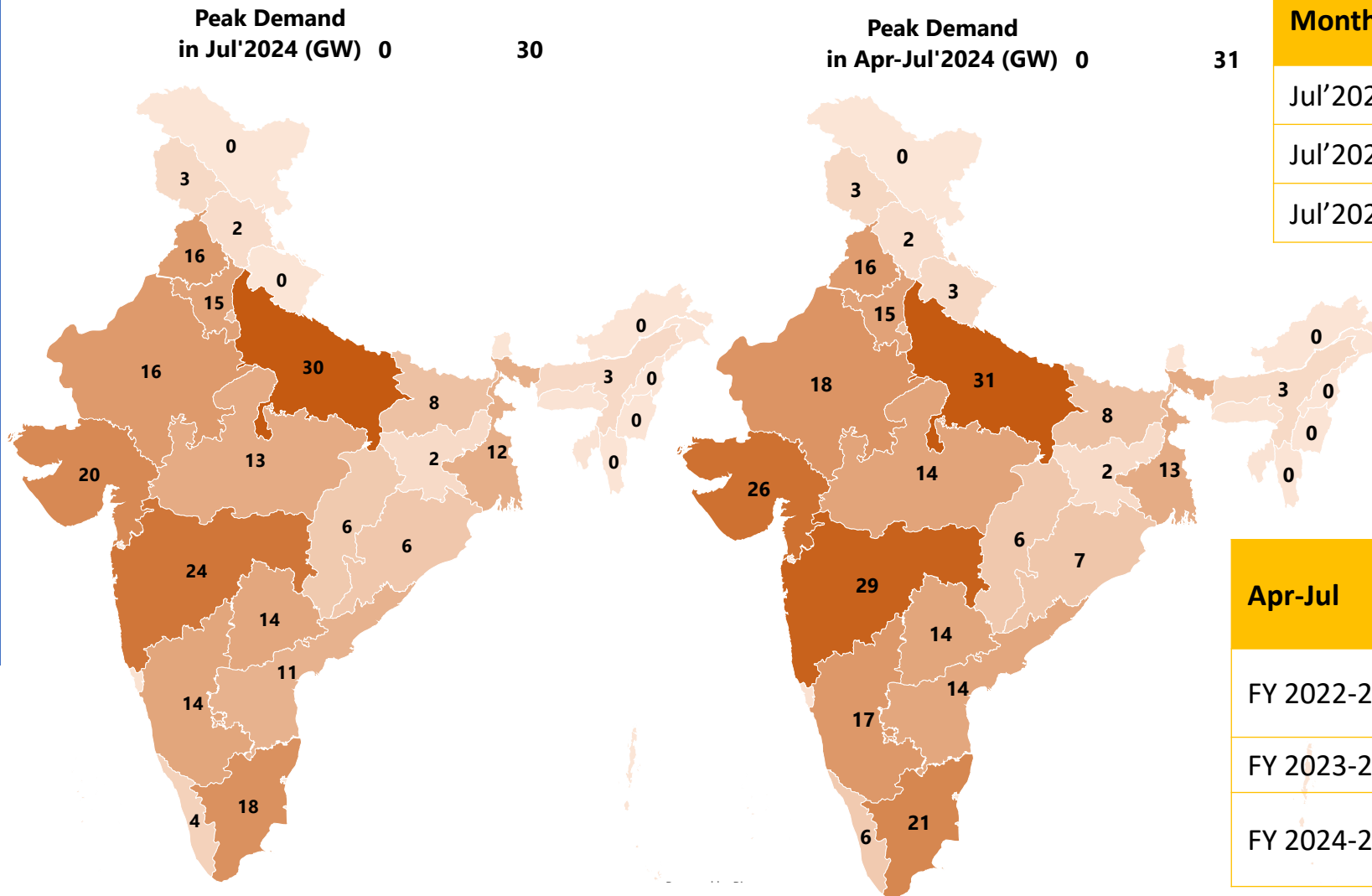


Note: The electricity demand data for July'24 is Provisional.

Source: CEA

National and State level Peak Electricity Demand

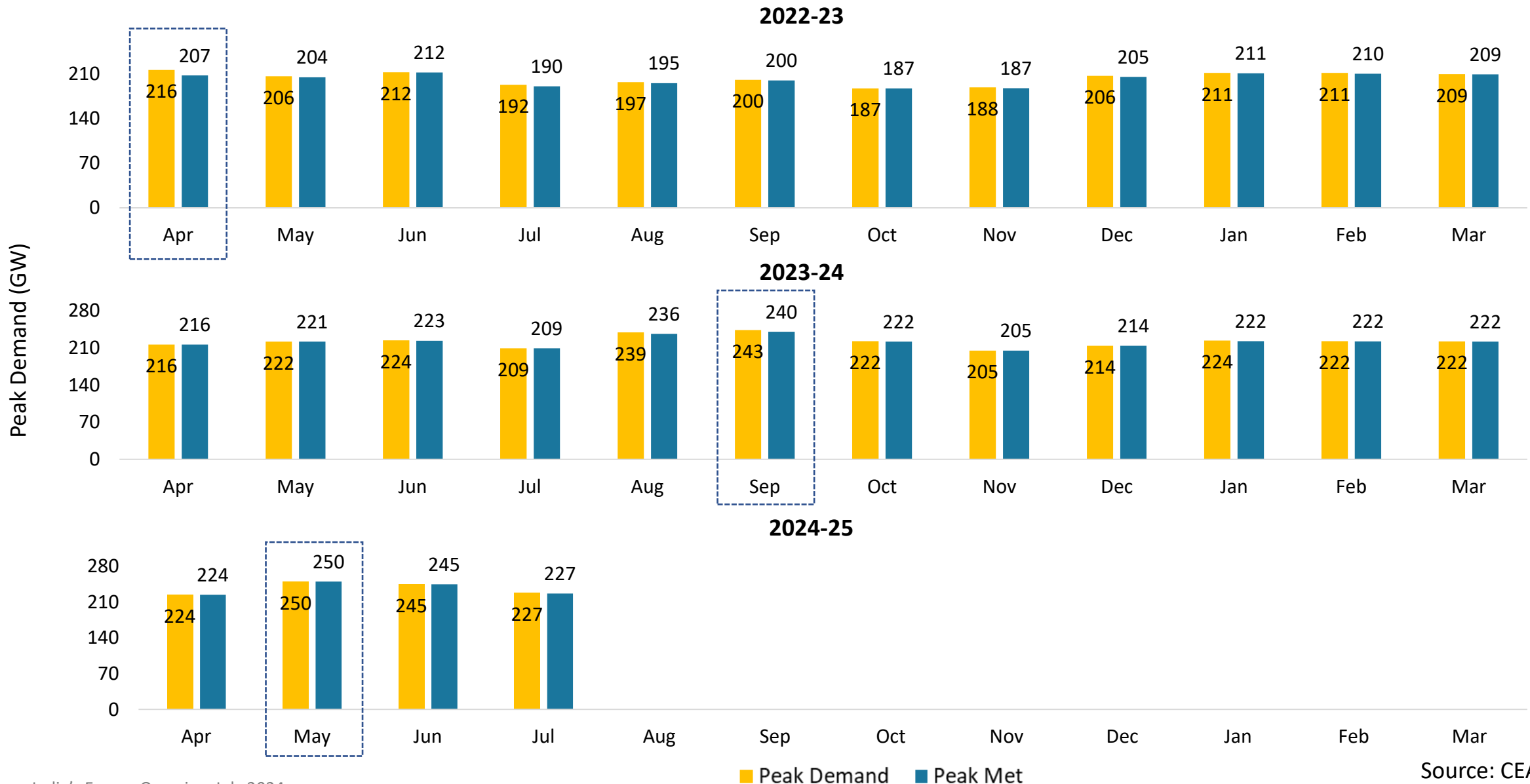
State-level Peak Electricity Demand (GW)



Month	Peak Demand (GW)	Peak Supply (GW)	Gap(GW) (+/-)
Jul'2022	192	190	2.0
Jul'2023	209	209	0.1
Jul'2024	227	227	0.8

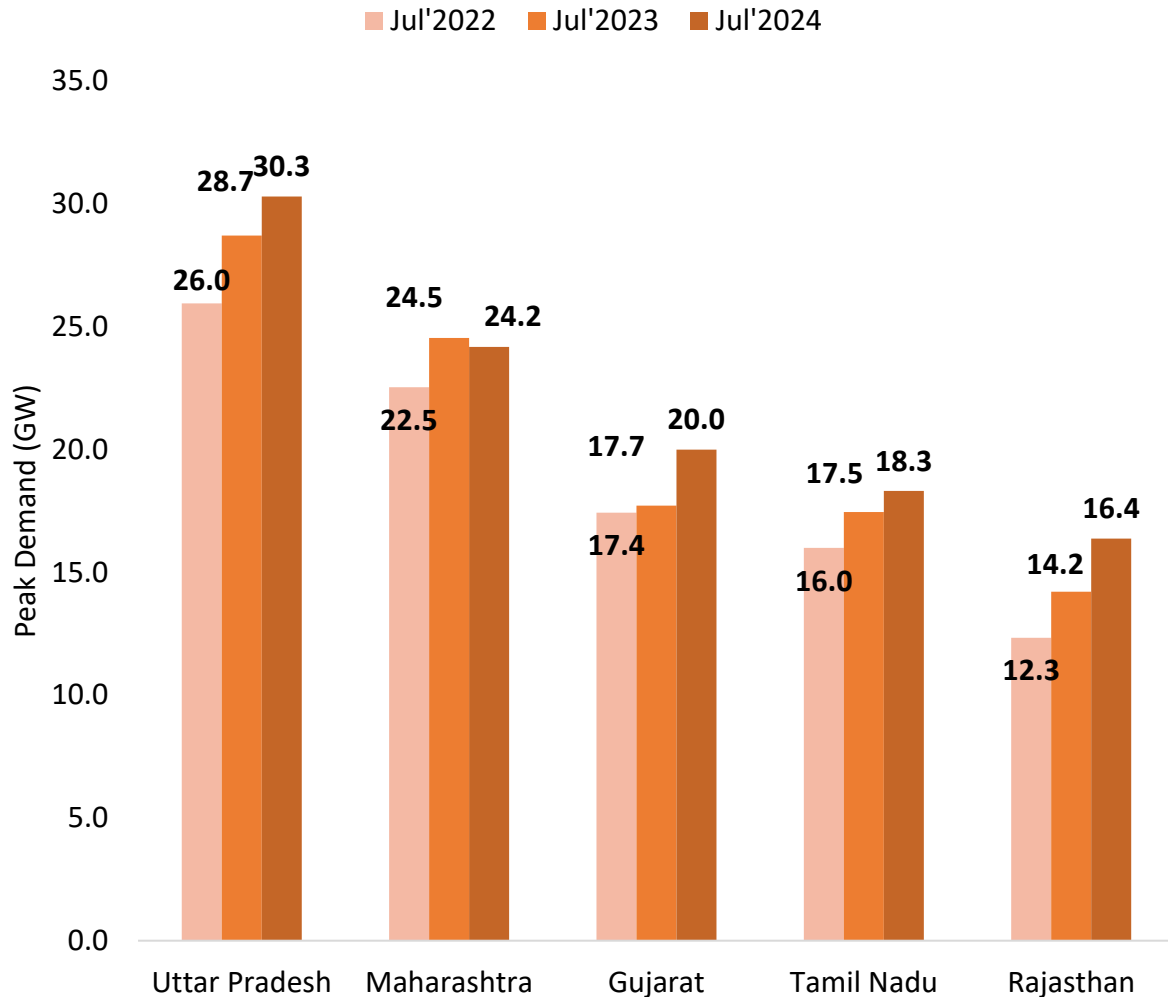
Apr-Jul	Peak Demand (GW)	Peak Supply (GW)	Gap (GW) (+/-)
FY 2022-23	216	207	8.7
FY 2023-24	224	223	0.8
FY 2024-25	250	250	0.0

India's Monthly Peak Electricity Demand and Supply

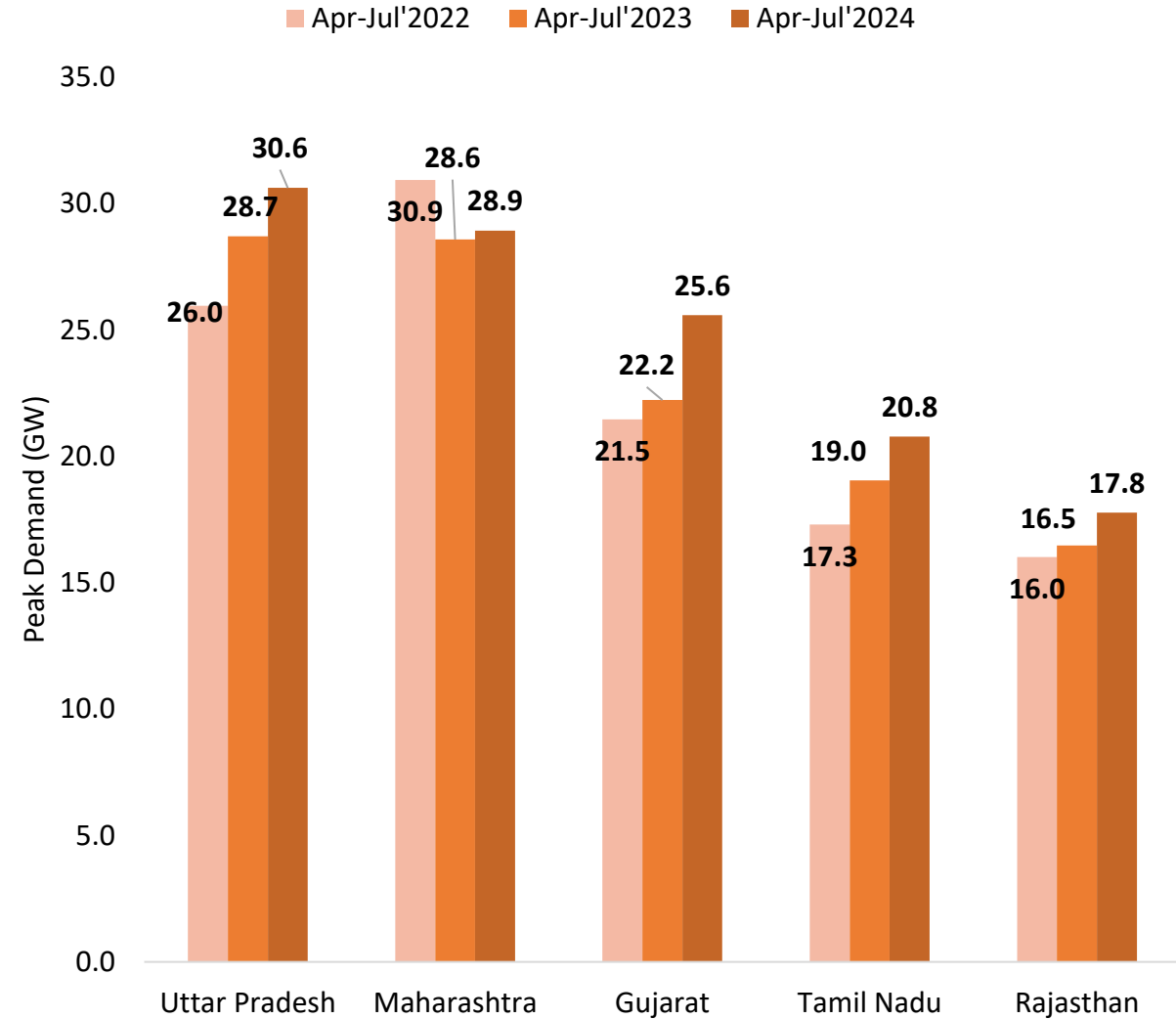


Monthly Peak Electricity Demand of the top 5 states

States with Highest Peak Electricity Demand in July (GW)



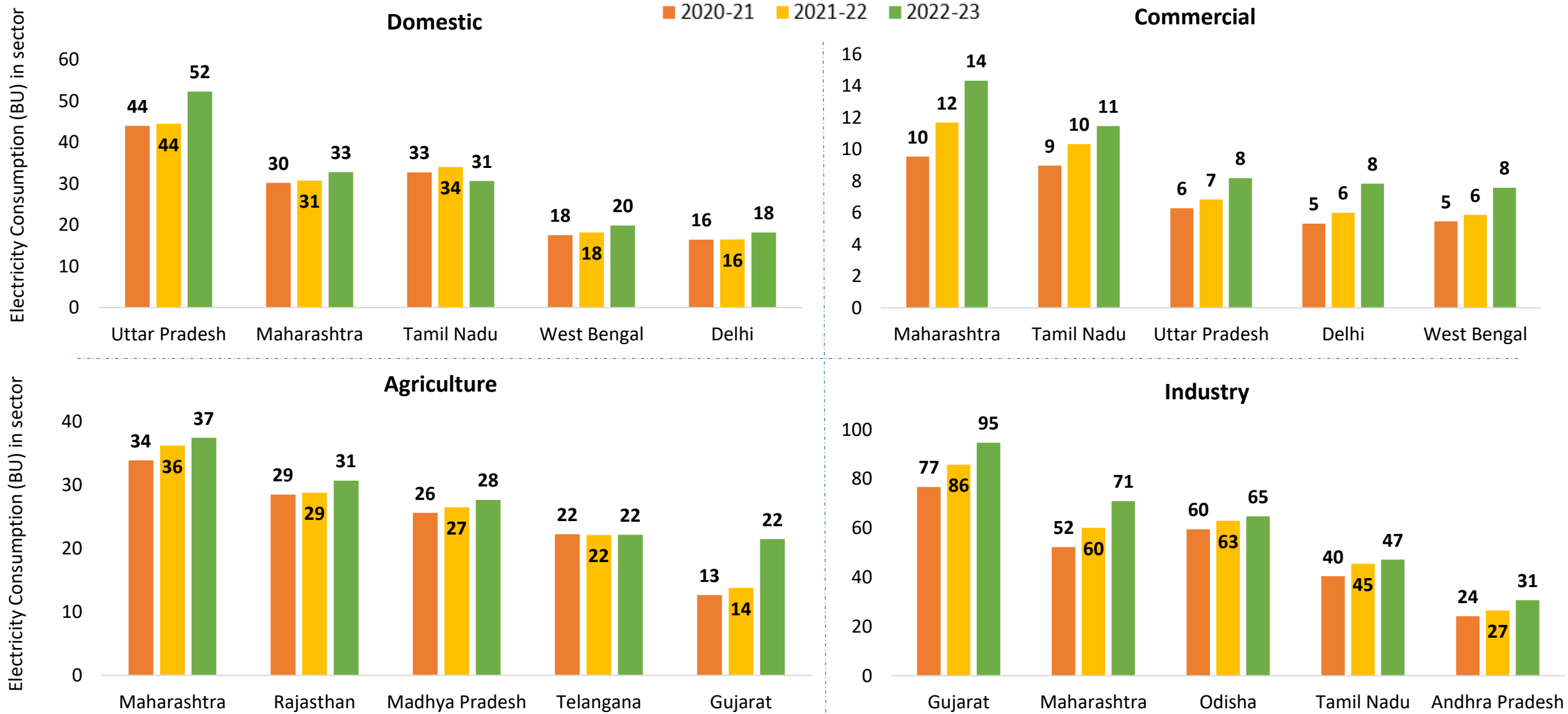
States with Highest Peak Electricity Demand (GW)



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

Source: CEA

Electricity Consumer-category wise top 5 States

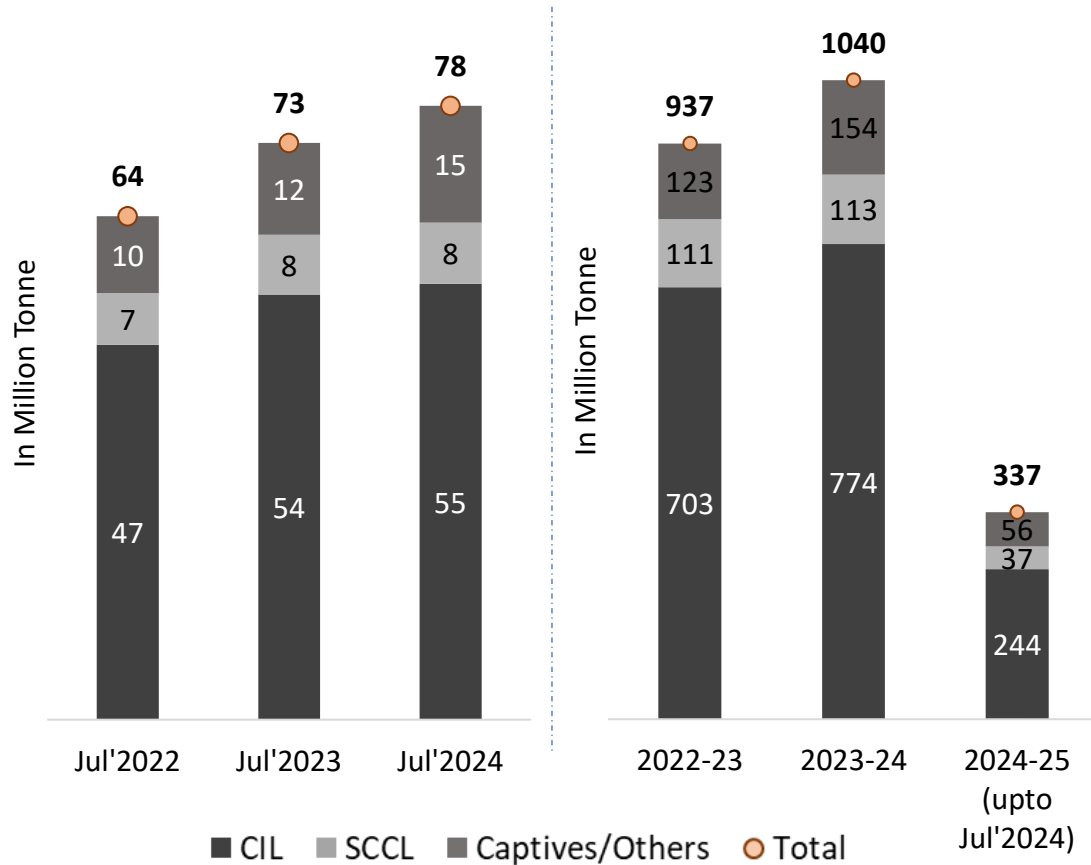


NOTE: Top 5 States under consumer-categories are selected on the basis of 2022-23

Source: CEA

Monthly Coal Statistics

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



India's coal (incl. lignite) production increased in Jul'2024 (73 MT) by 6% as compared to Jul'2023 (78 MT).

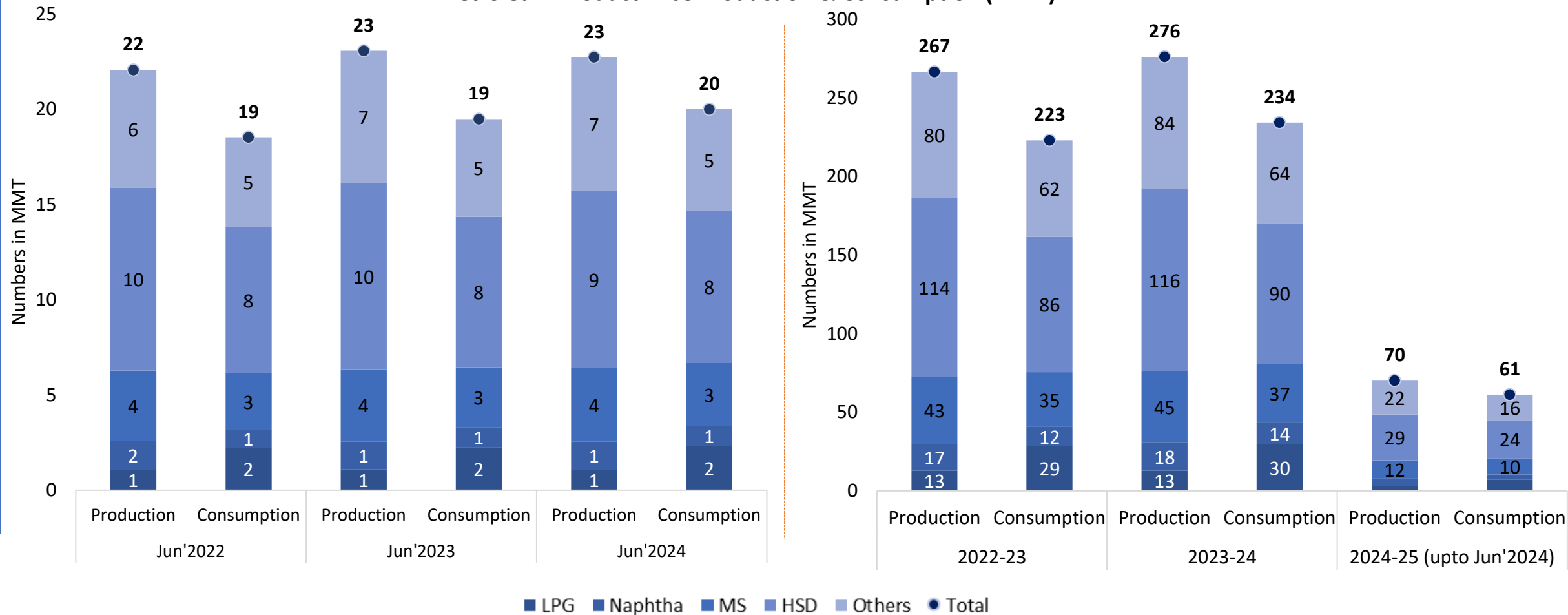
International Coal Prices



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)

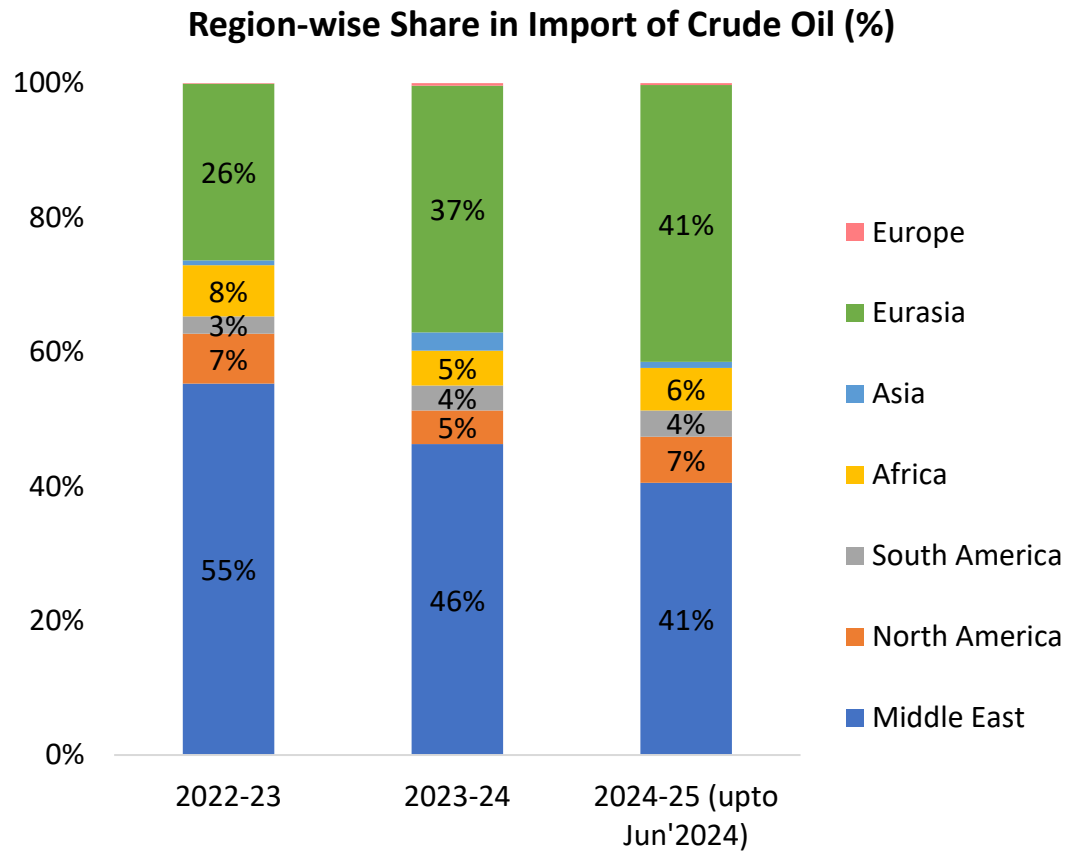
Import/Export of Crude Oil and Petroleum Products ('000 Tonnes)							
Petroleum Products	Import/ Export	Monthly			Yearly		
		Jun'22	Jun'23	Jun'24	2022-23	2023-24	2024-25 (upto Jun'2024)
Crude Oil	Import	19210	19550	18454	232700	233118	61926
	Export	0	0	0	0	0	0
	Net Import	19210	19550	18454	232700	233118	61926
LPG	Import	1252	1320	1312	18335	18475	4566
	Export	50	41	46	540	525	134
	Net Import	1202	1279	1266	17796	17950	4432
Diesel	Import	115	1	4	322	42	9
	Export	2456	1949	1944	28494	28193	6083
	Net Import	-2342	-1948	-1941	-28172	-28150	-6074
Petrol	Import	128	146	0	1069	717	64
	Export	1163	1225	1239	13127	13461	3695
	Net Import	-1035	-1079	-1239	-12058	-12743	-3631
Others	Import	1633	2306	2339	24871	29433	7273
	Export	1839	1797	1754	18854	20258	5088
	Net Import	-205	509	585	6017	9176	2184

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

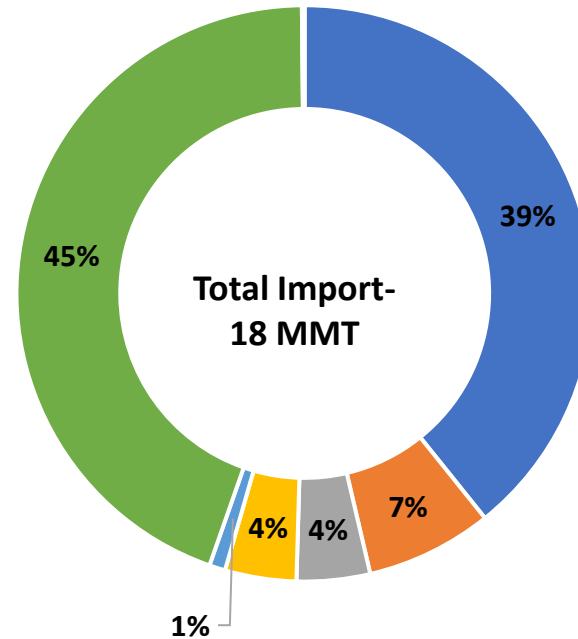
NOTE: The data is available latest up to Jun'2024

Source: PPAC

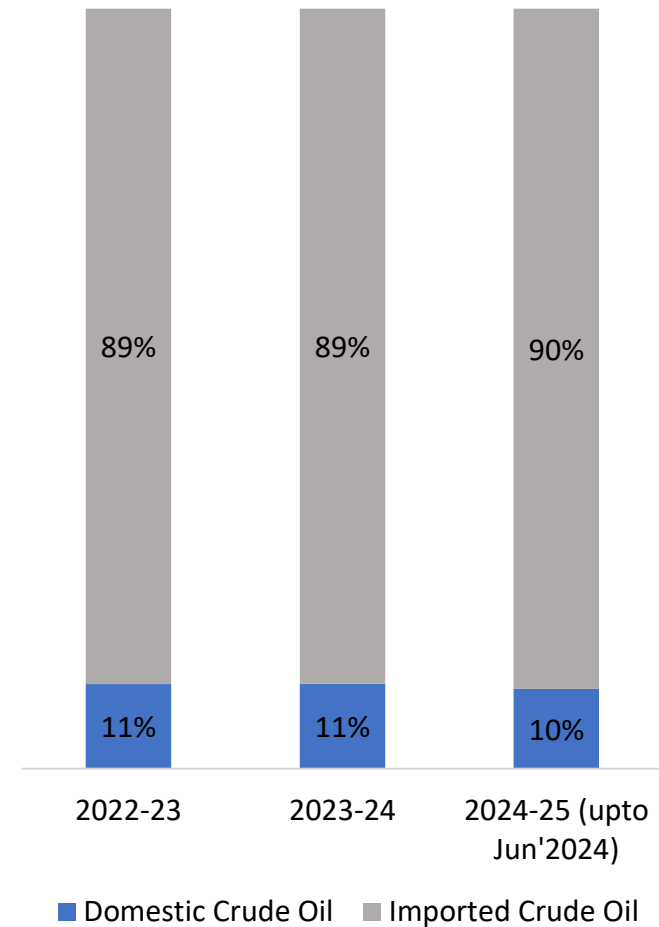
Petroleum Products Market Scenario (3/3)



Regional share of Imported Crude oil in June 2024



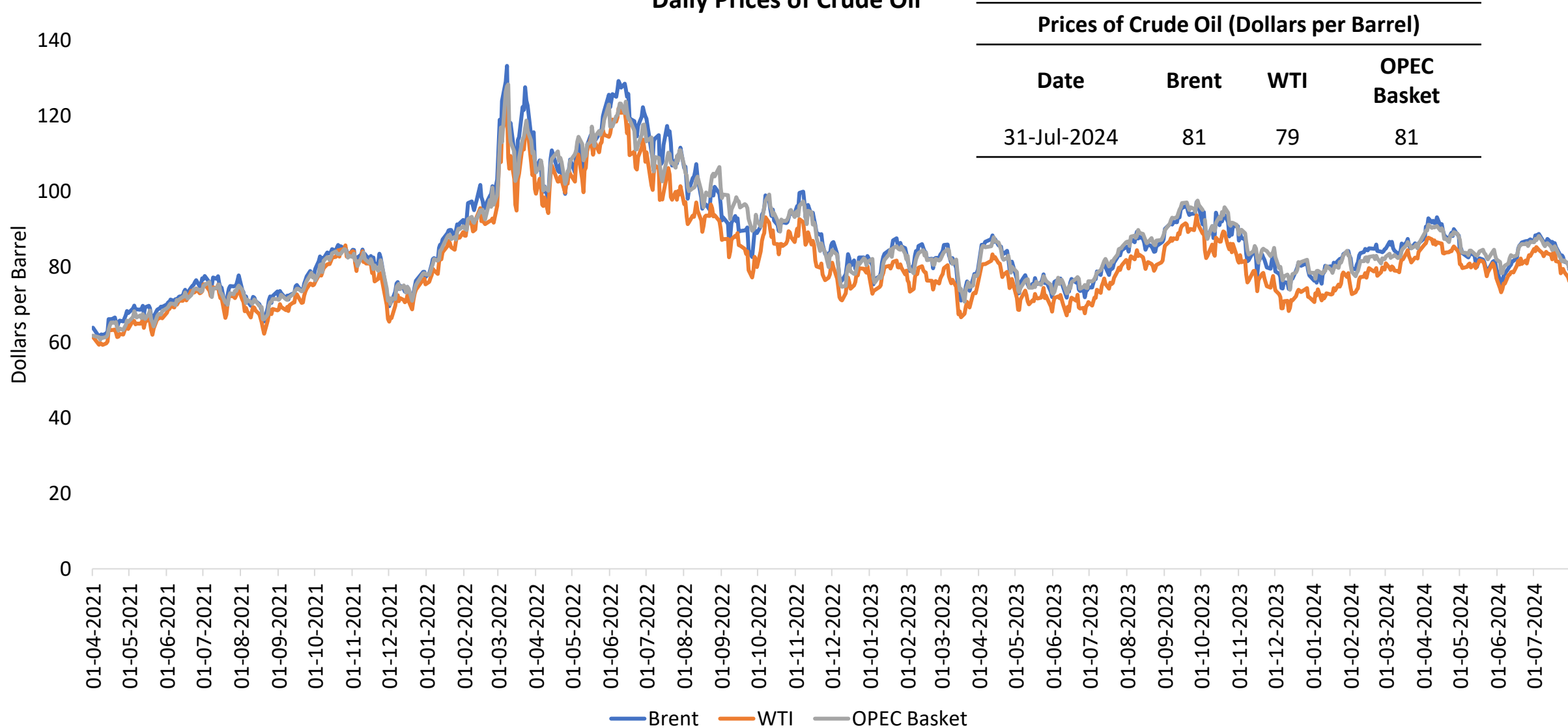
Domestic and Imported Crude Oil share in India (%)



Total Import of Crude Oil (MMT)			
Total Import	2022-23	2023-24	2024-25 (up to Jun'2024)
Crude Oil	233	233	62

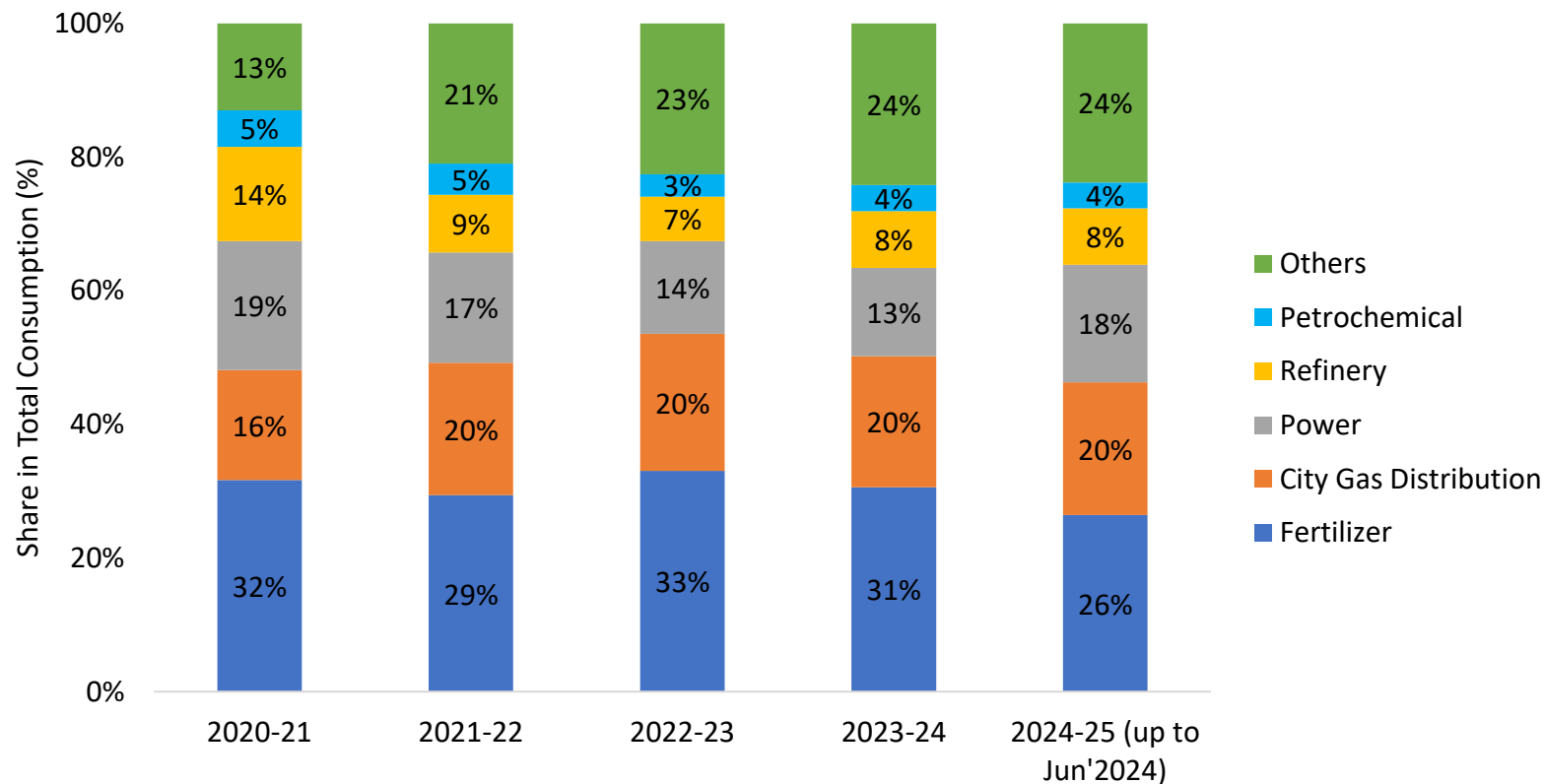
Daily Prices of Crude Oil

Daily Prices of Crude Oil

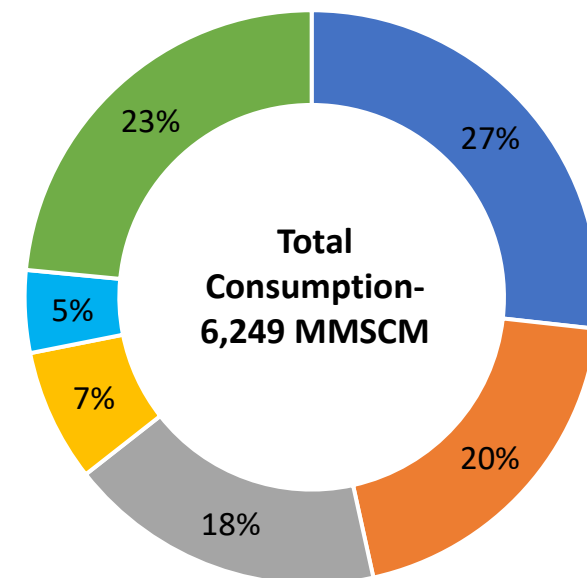


Gas Market Scenario (1/2)

Sector-wise Share in Natural Gas Consumption



Sector-wise share in Natural Gas Consumption in June 2024



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

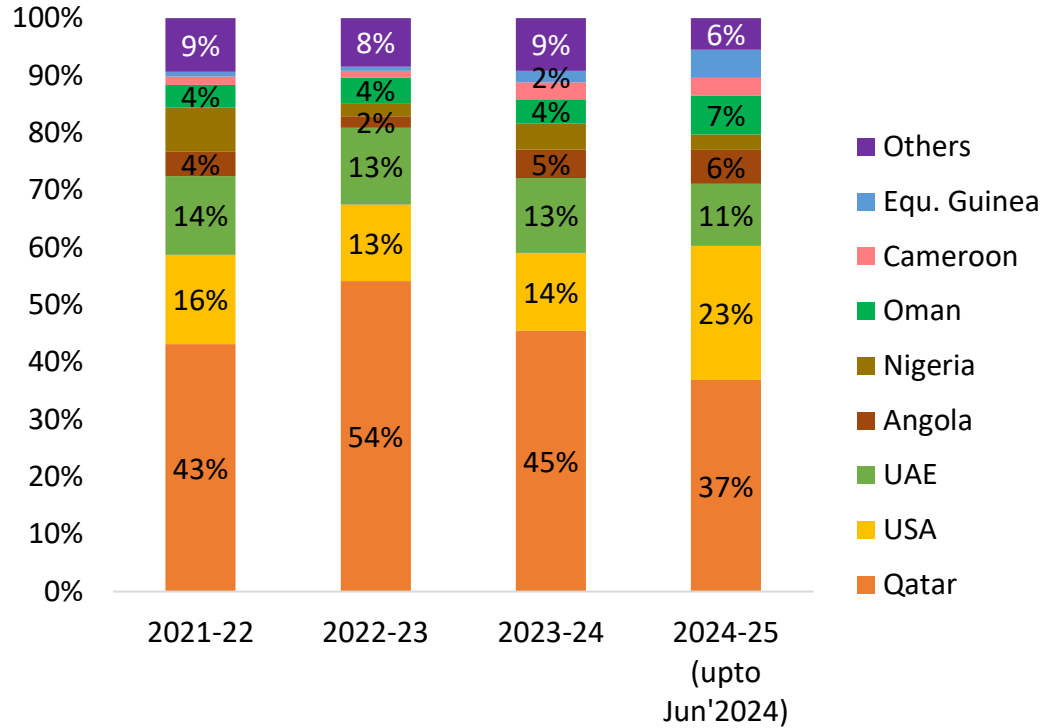
Total Consumption of Natural Gas (NG) (MMSCM)					
Total Consumption	2020-21	2021-22	2022-23	2023-24	2024-25 (up to Jun'2024)
NG	56,116	61,491	58,702	68,759	18,773

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

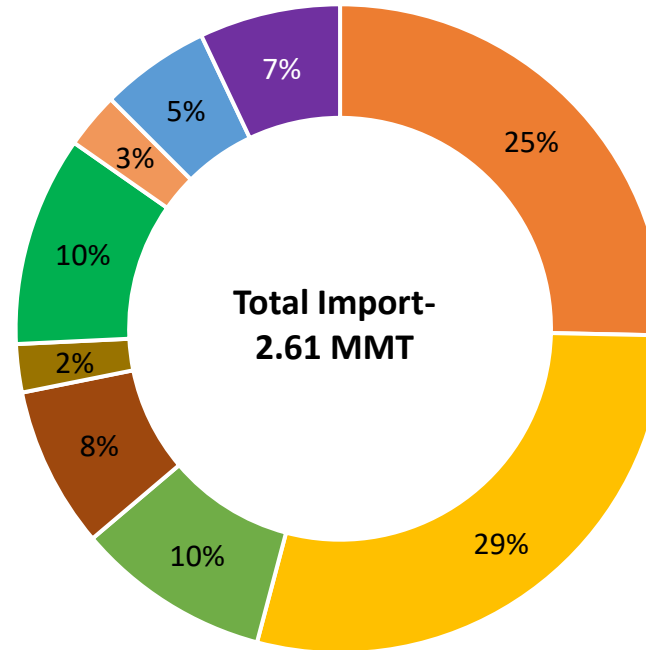
Source: PPAC

Gas Market Scenario (2/2)

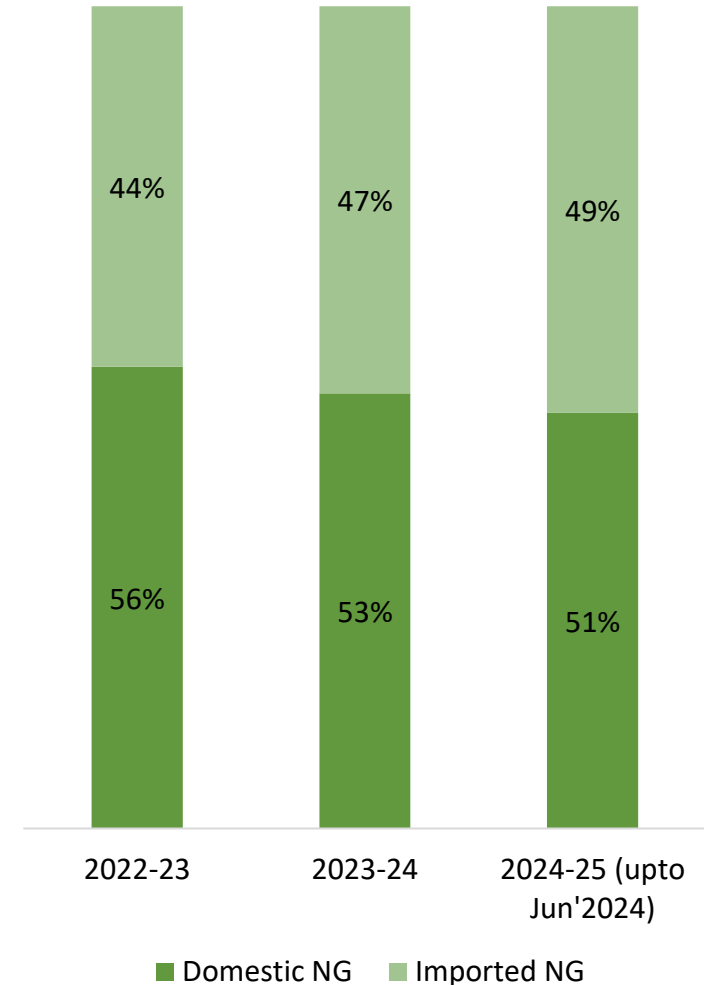
Region-wise Share in Import of LNG (%)



Country Share of Imported LNG in June'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.

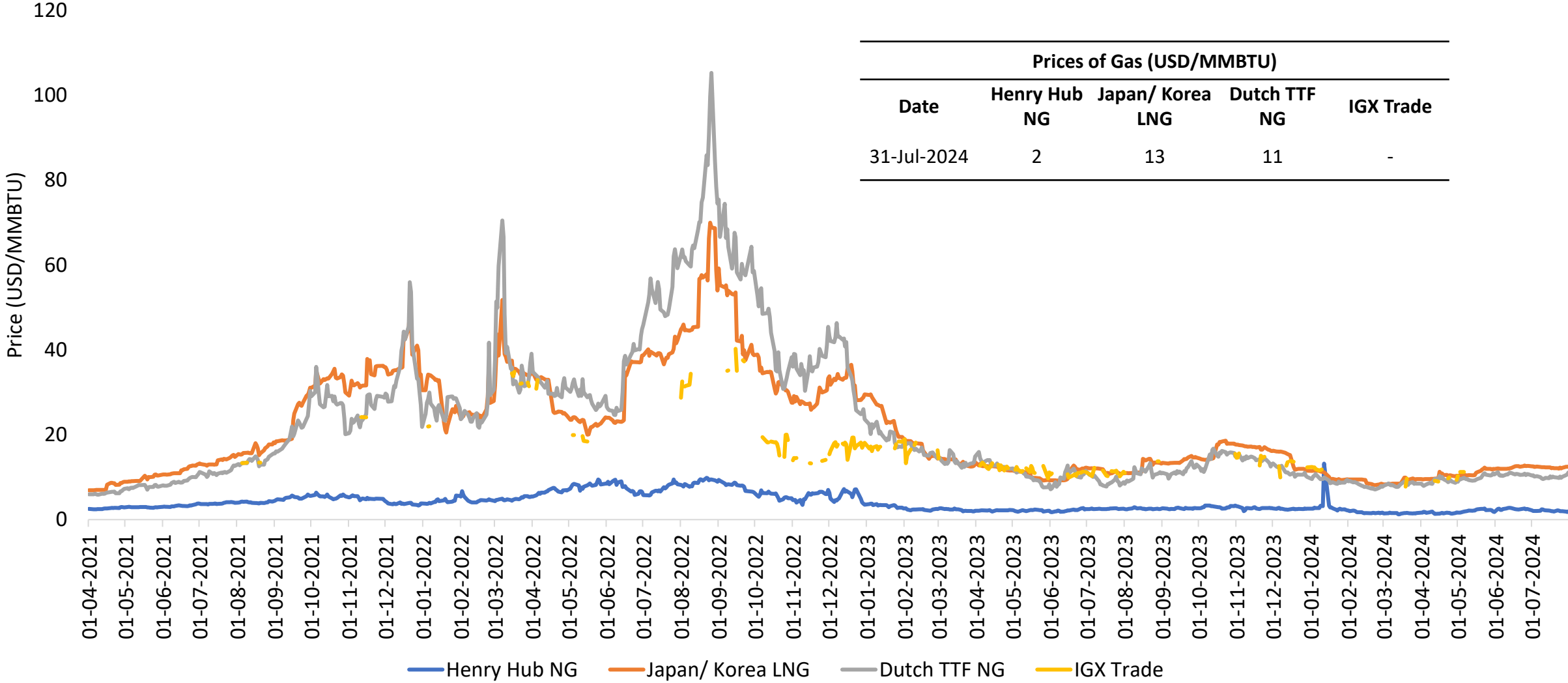
Total Import of Liquefied Natural Gas (LNG) (MMT)			
Total Import	2022-23	2023-24	2024-25 (up to Jun'2024)
LNG	19.85	24.00	7.08

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

Source: MoCI and PPAC

Daily Prices of Gas

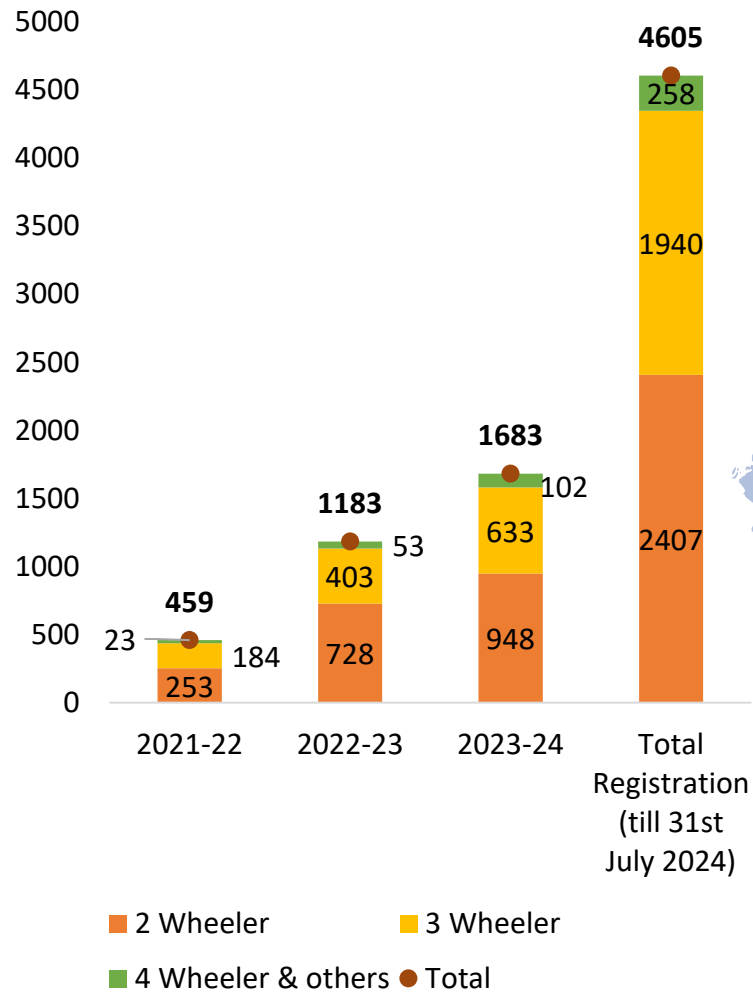
Gas Daily Market Price



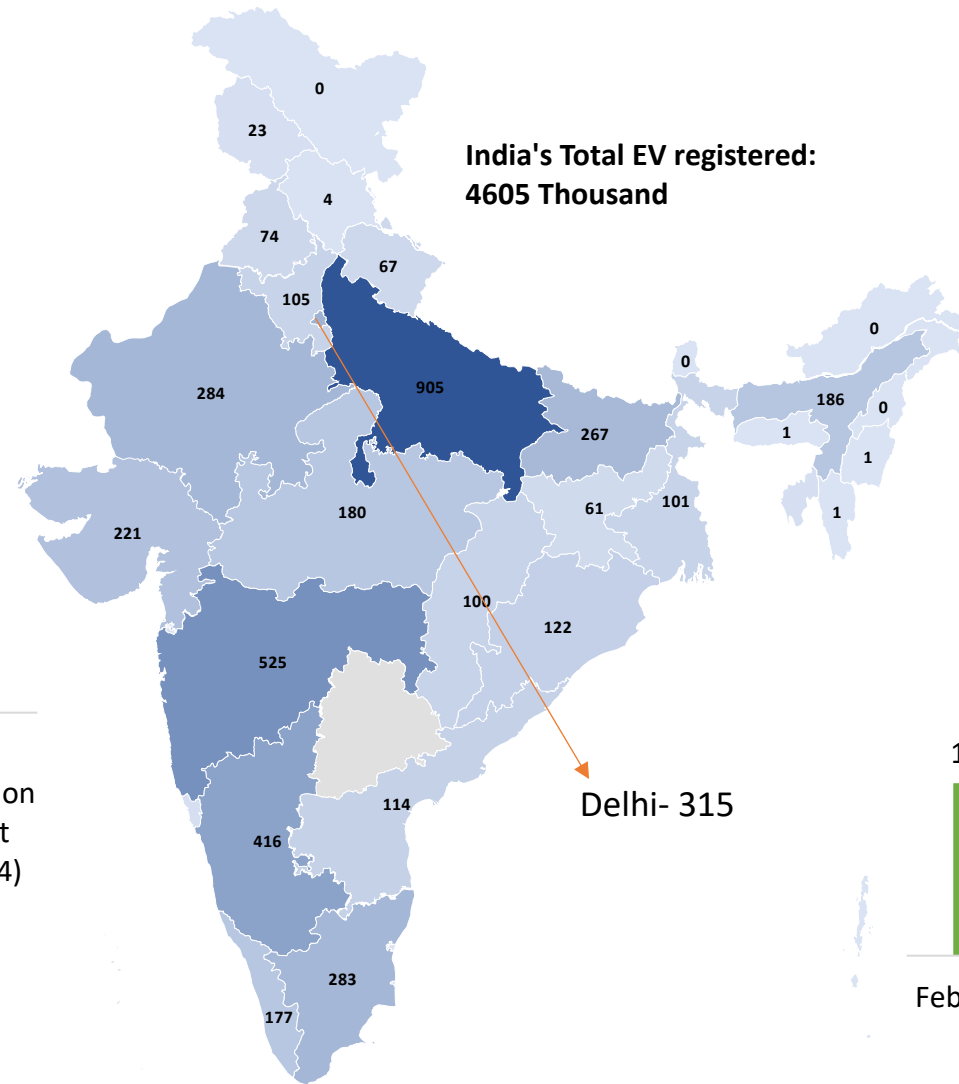
Prices of Gas (USD/MMBTU)				
Date	Henry Hub NG	Japan/ Korea LNG	Dutch TTF NG	IGX Trade
31-Jul-2024	2	13	11	-

Status of Electric Mobility in India

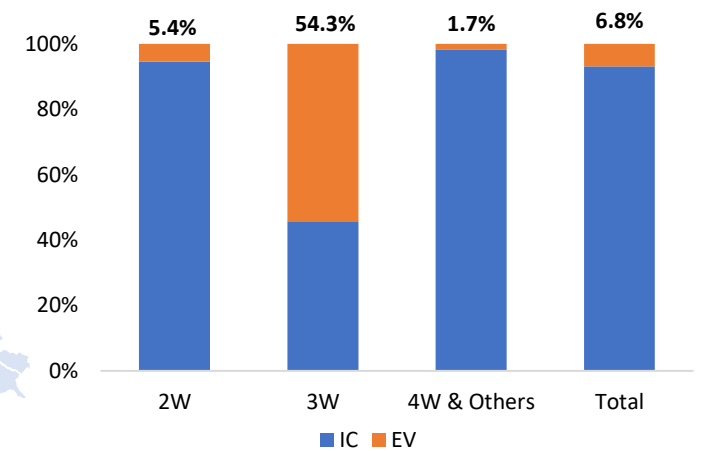
National EV registration (in Thousands)



Cumulative State-wise EV registration as on 31st July 2024 (in Thousands)

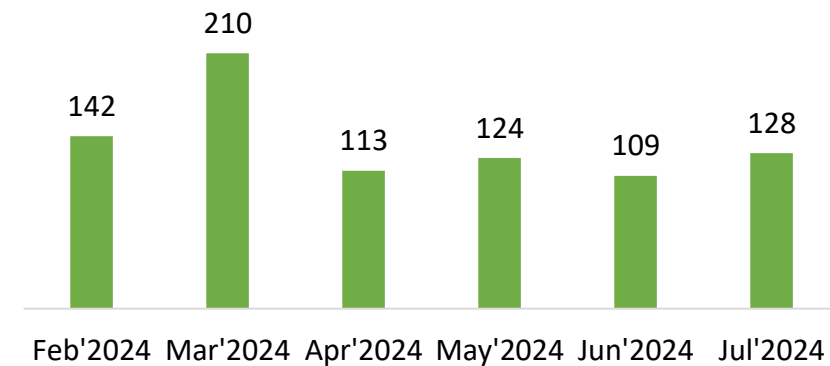


EV and ICE sale composition in 2023-24



Under 3-wheeler (54.3%) EV registration, 45.6% is L3 and 8.7% is L5 vehicles.

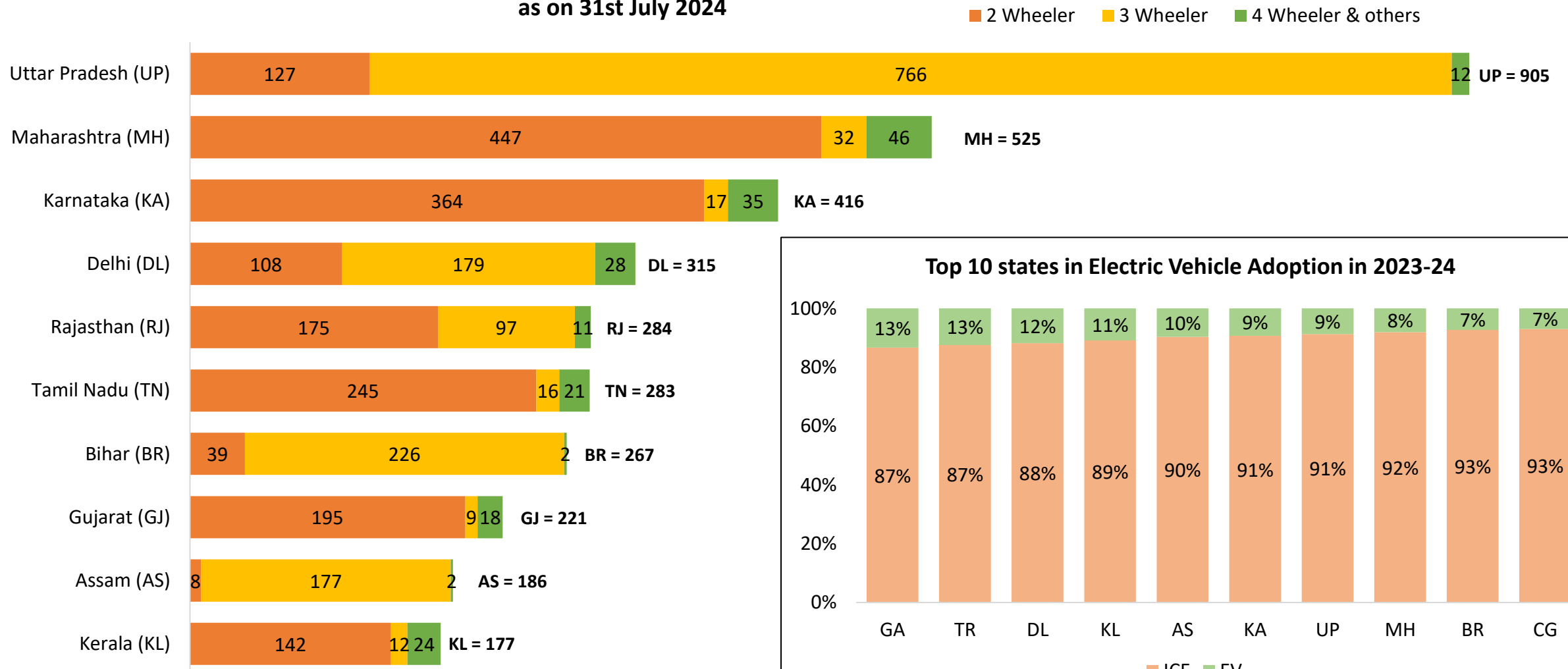
Provisional Monthly EV registered (in Thousands)



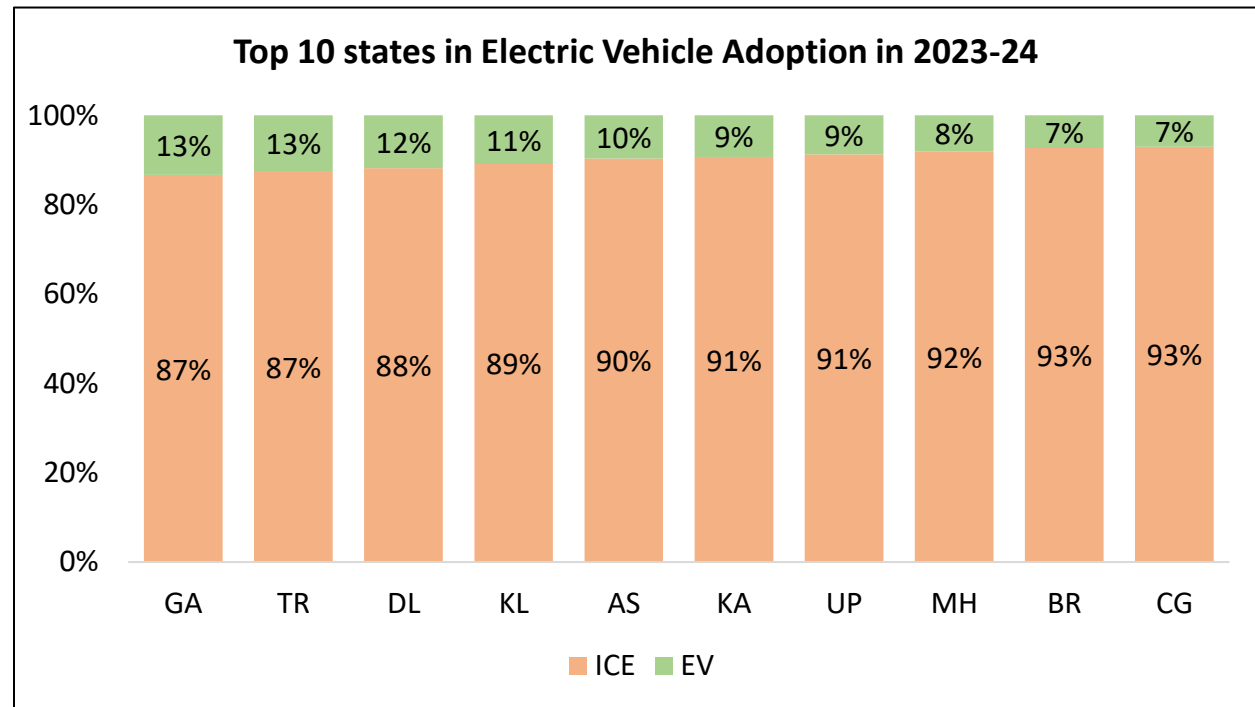
Source: VAHAN Dashboard

Status of Electric Mobility in India

**Top 10 States for Electric Vehicles (in Thousands)
as on 31st July 2024**



Top 10 states in Electric Vehicle Adoption in 2023-24



NOTE: GA- Goa, TR- Tripura, CG- Chhattisgarh Source: VAHAN Dashboard

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 30th 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 30th June 2025 and for [off-shore projects](#) on or before 31st 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 (H₂)

[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 30th June 2025 to 31st 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 1st green hydrogen plant in the stainless steel sector](#) at Hisar, Haryana, which aims to reduce CO₂ emission by 2,700 metric tonnes per annum.

Key Highlights or Announcements of July 2024

- The [Ministry of New and Renewable Energy \(MNRE\) has released an amendment to the guidelines for onshore wind project development, specifically targeting the micrositing of wind turbine generators](#). The guidelines aim to prioritize optimized output over the minimal distance between wind turbines.
- MNRE has unveiled the [guidelines for funding of testing facilities, infrastructure, and institutional support for development of Standards and Regulatory framework under the National Green Hydrogen Mission](#). The Scheme will support creation of new testing facilities and upgradation of existing Testing Facilities to ensure safe and secure operations with a total budgetary outlay of Rs. 200 Crores during the period 2024-26.
- On 3rd July 2024, MNRE has issued a scheme guidelines for implementation of “[Strategic Interventions for Green Hydrogen Transition \(SIGHT\) Programme – Component II: Incentive Scheme for Green Hydrogen Production \(under Mode 1\)- Tranche-II](#)” of the National Green Hydrogen Mission with an outlay of Rs 13050 crores during 2025-26 to 2029-30. The capacity of Tranche-II will be 450,000 TPA of Green Hydrogen, with 40,000 TPA capacity reserved for biomass-based pathways (bucket-II) and the rest for technology agnostic pathways (bucket-I).
- The MNRE has [revised the central financial assistance rates for biomass pellet manufacturing units under the National Biomass Programme](#). The revised rates for non-torrefied and torrefied pellet manufacturing plants are ₹21 and ₹ 42 lakh per MTPH of production capacity or 30% of the capital cost for plant and machinery of a 1 MTPH plant, whichever is lower. The maximum CFA for these projects is now ₹105 and ₹210 lakh respectively.
- Ministry of Power has unveiled the [draft revised guidelines and standards for Electric Vehicle charging infrastructure](#). The main objectives are:
 - to provide at least one charging station per 1 sq. km in urban areas and every 20km on highways and for long distance/ heavy duty EVs fast charging stations in every 100 km on highways.
 - to enable faster adoption of electric vehicles in India by ensuring safe, reliable, and accessible, Charging Infrastructure and ecosystem.
 - to provide rationality in service charges to be charged by owners/operators of Charging Station.
 - to proactively support creation of EV Charging Infrastructure.
 - to facilitate the preparedness of the Electrical Distribution System to adopt EV Charging Infrastructure.



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