

# India's Energy Overview

June 2024

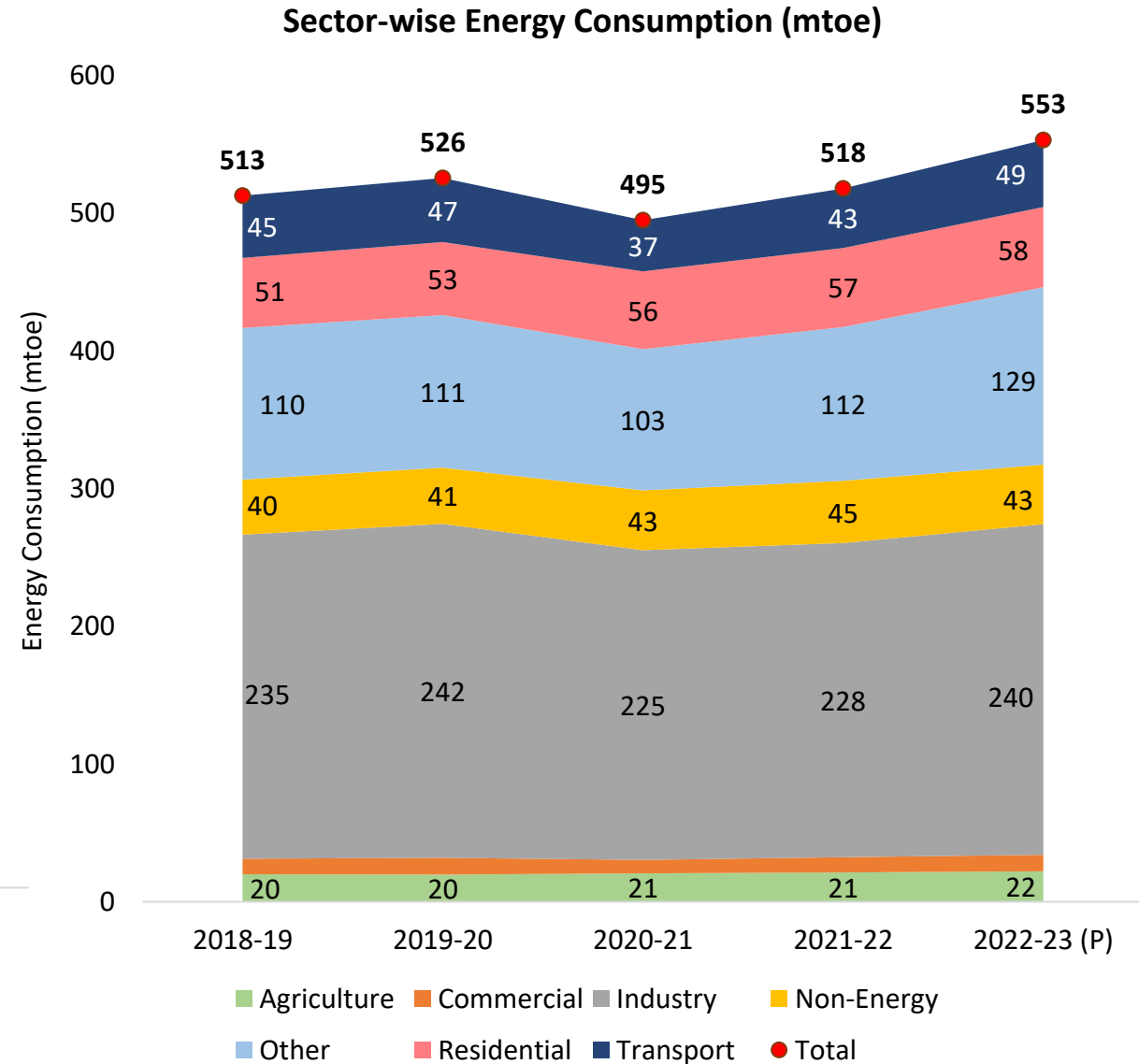
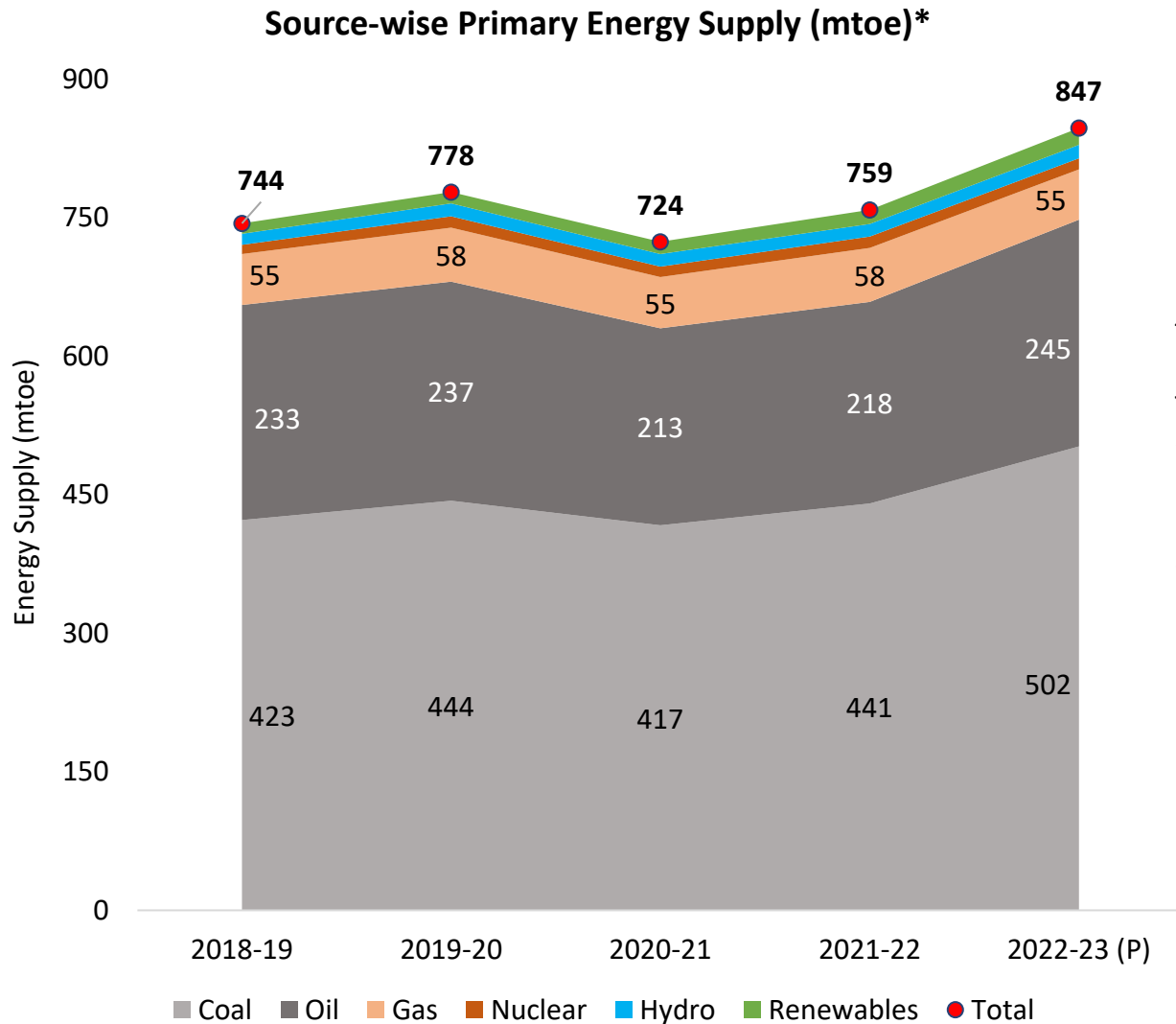


# Contents

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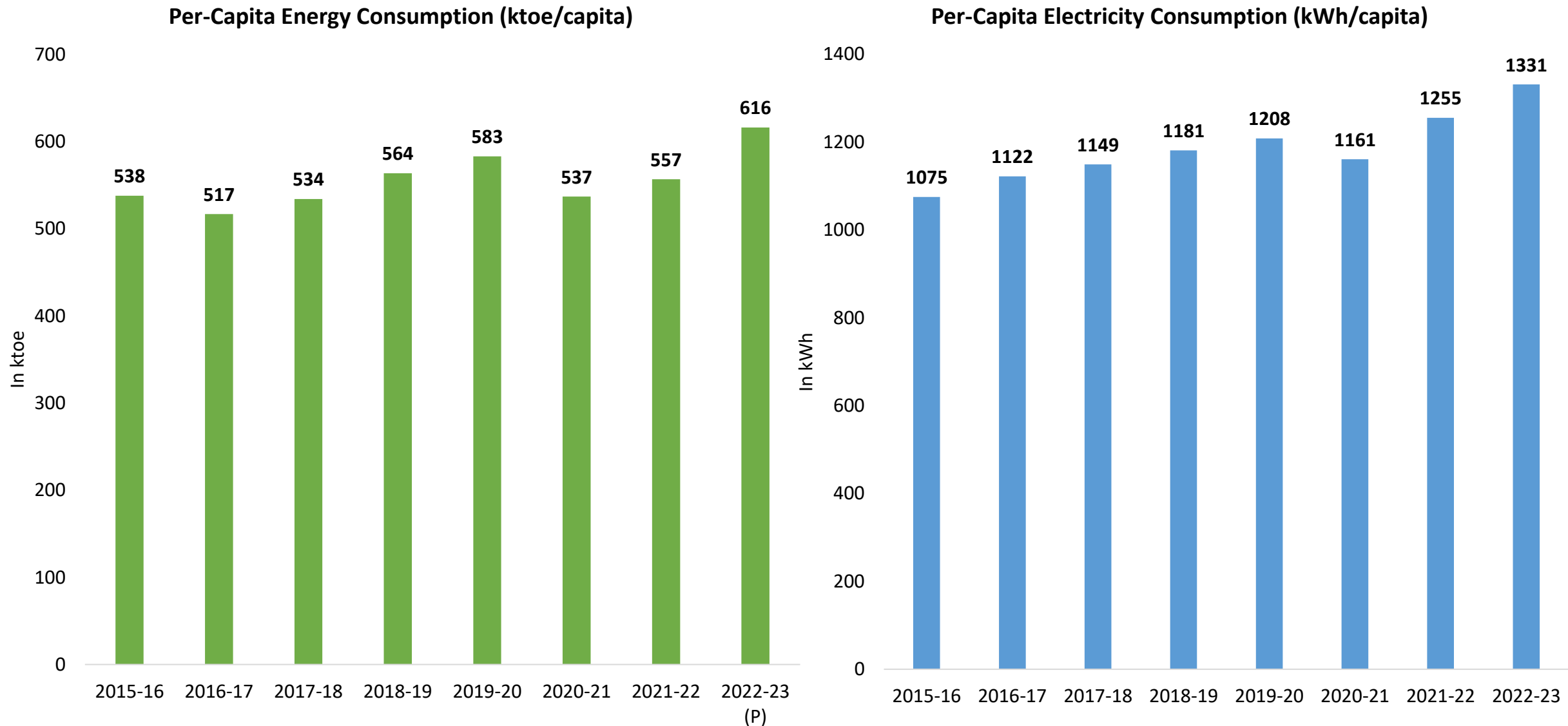
1. Primary Energy Mix in India
2. Per-Capita Energy and Electricity Consumption
3. India's Electricity Capacity Mix (Utility-scale)
4. India's Electricity Addition in last 5 years
5. State-wise Solar Installed Capacity
6. State-wise Wind Installed Capacity
7. RE Potential and Installed Capacity
8. India's Electricity Generation Mix
9. Source-wise PLF/ CUF
10. Thermal Generation Loss and Reasons for Forced Outages
11. Indian Electricity Exchange (IEX) Market Snapshot
12. National and State-level Electricity Demand
13. India's Monthly Electricity Requirement and Supply
14. Monthly Electricity Demand for the top 5 states
15. National and State-level Peak Electricity Demand
16. India's Monthly Peak Electricity Demand and Supply
17. Monthly Peak Electricity Demand for the top 5 states
18. Electricity Consumer-category wise top 5 States
19. Monthly Coal Statistics
20. Petroleum Products Market Scenario
21. Daily Prices of Crude Oil
22. Gas Market Scenario
23. Daily Prices of Gas
24. Status of Electric Mobility in India
25. Recent Interventions to Promote Renewable Energy
26. Key Highlights or Announcements of June 2024

# Primary Energy Mix\* in India



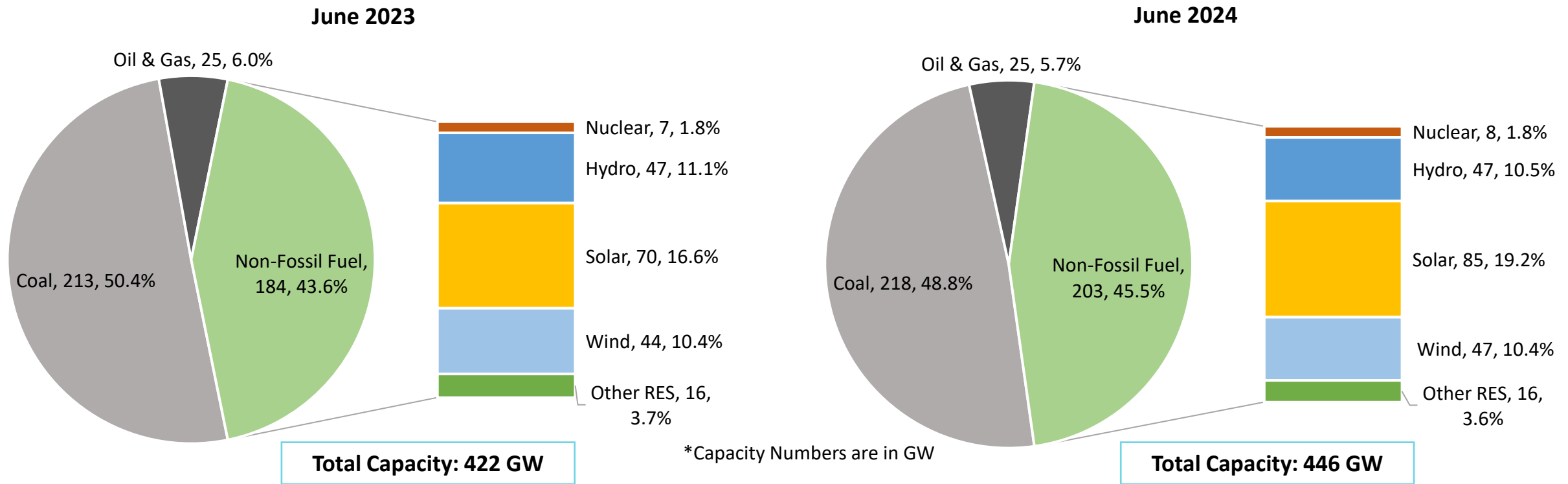
\*Excluding biofuels, waste, and other non-commercial source of energy

# Per-Capita Energy and Electricity Consumption



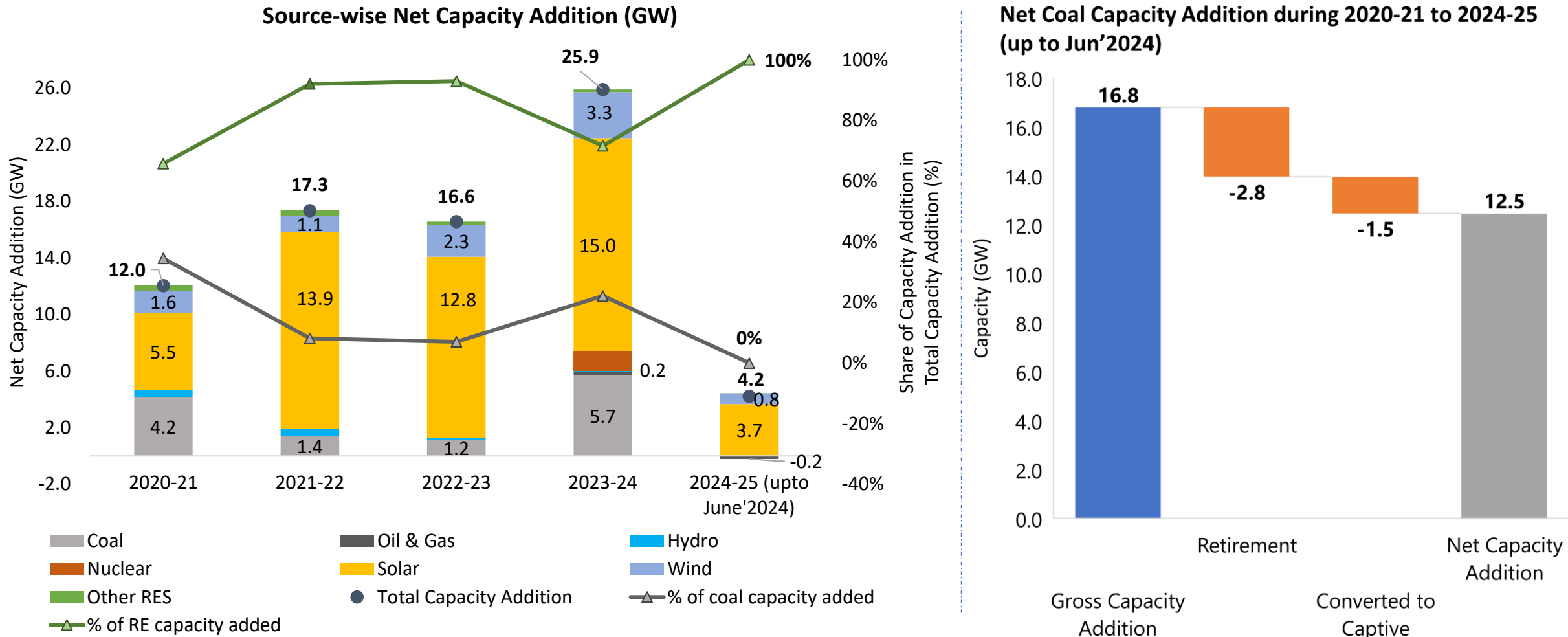
Note: Per Capita energy consumption is calculated on energy supply basis.

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



- India's electricity generating capacity is 446 GW as on Jun'2024 [coal 218 GW (49%), solar 85 GW (19%), hydro 47 GW (11%), and wind 47 (10%)].
- As on Jun'2024, the share of non-fossil-based electricity capacity is 46% against the set target of 50% non-fossil capacity by 2030.
- As on Jun'2024, India's renewable energy capacity (including large hydro) stood at 195 GW out of 446 GW.

# India's Electricity Capacity Addition in last 5 years



- A total of 62.3 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

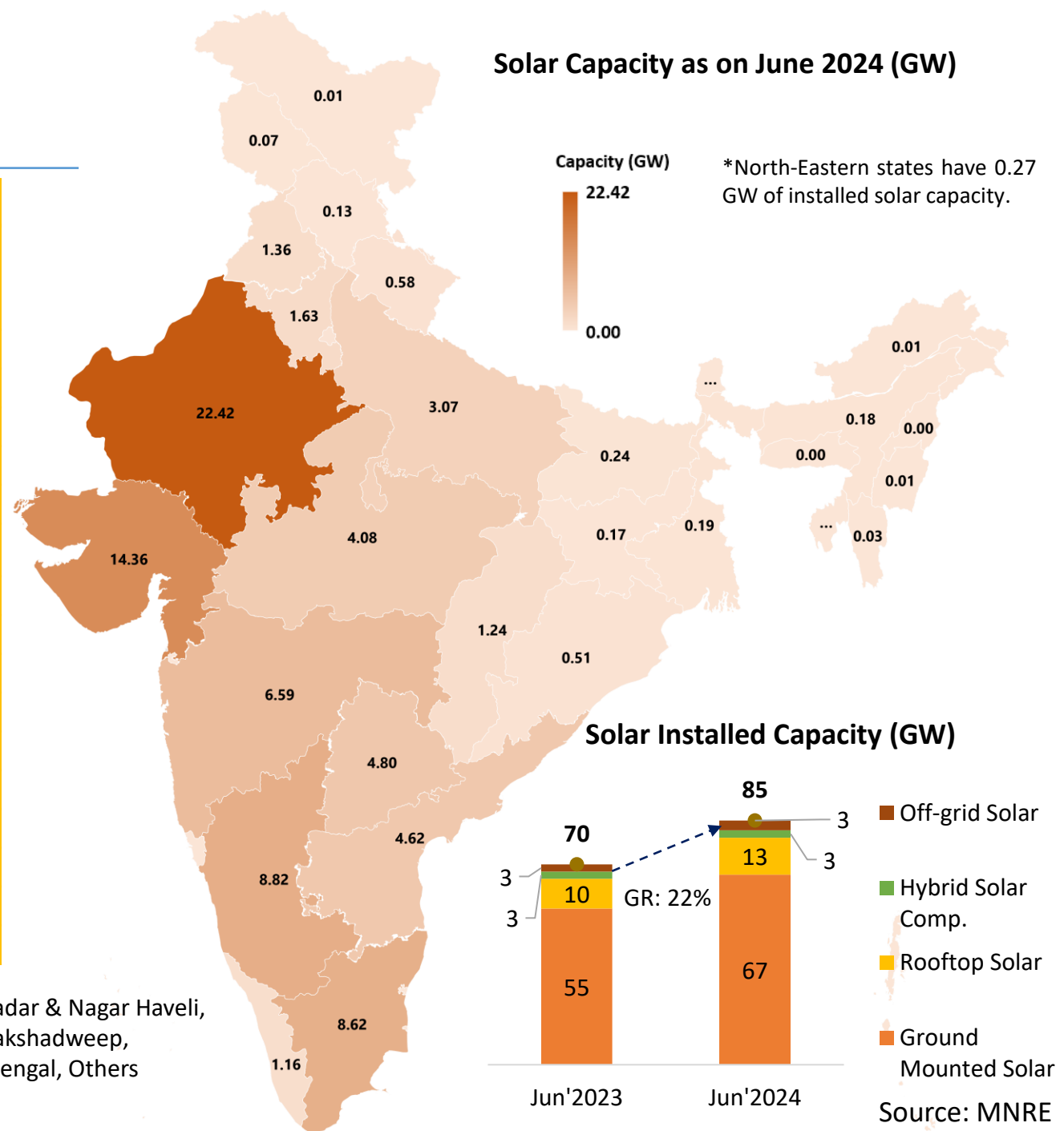
as on June 2024

State-wise installed capacity of Solar Power (GW)

States	Ground Mounted	Rooftop	Solar Component in Hybrid	Off Grid	Total Solar Power
Rajasthan	18.42	1.23	1.98	0.79	22.42
Gujarat	9.85	3.82	0.61	0.08	14.36
Karnataka	8.19	0.59	0.00	0.04	8.82
Tamil Nadu	7.87	0.68	0.00	0.07	8.62
Maharashtra	3.85	2.27	0.00	0.47	6.59
Telangana	4.36	0.43	0.00	0.01	4.80
Andhra Pradesh	4.32	0.21	0.00	0.09	4.62
Madhya Pradesh	3.60	0.37	0.00	0.10	4.08
Uttar Pradesh	2.53	0.27	0.00	0.28	3.07
Haryana	0.27	0.64	0.00	0.72	1.63
Punjab	0.89	0.39	0.00	0.08	1.36
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	0.26	0.00	0.01	0.58
Others	1.00	0.85	0.00	0.28	2.13
<b>All India</b>	<b>66.52</b>	<b>12.92</b>	<b>2.59</b>	<b>3.44</b>	<b>85.47</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 June 2024 (GW)

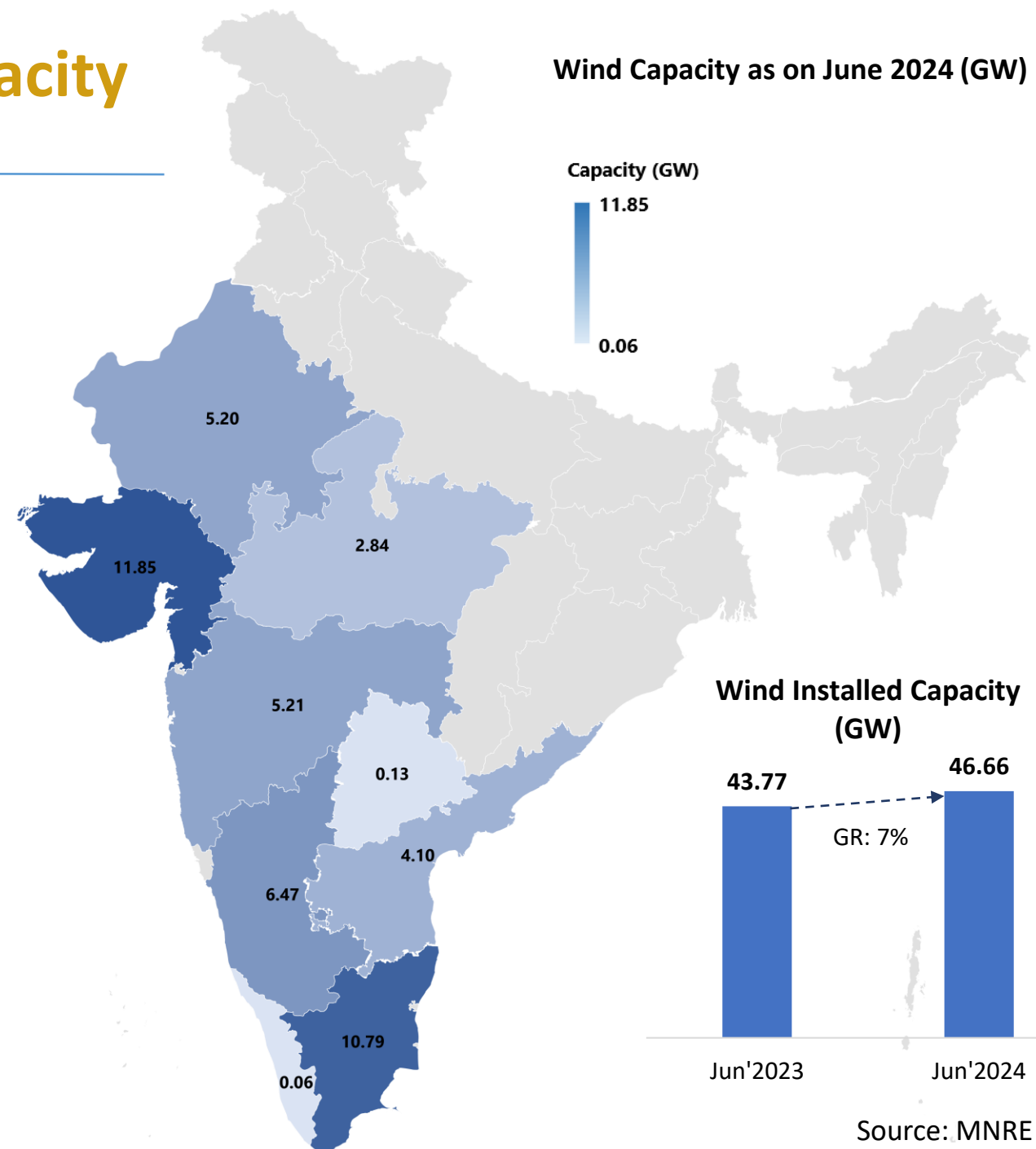




# State-wise Wind Onshore Capacity

as on June 2024

State-wise installed capacity of Wind (Onshore) Power	
States	Installed Capacity (GW)
Gujarat	11.85
Tamil Nadu	10.79
Karnataka	6.47
Maharashtra	5.21
Rajasthan	5.20
Andhra Pradesh	4.10
Madhya Pradesh	2.84
Telangana	0.13
Kerala	0.06
<b>India Total</b>	<b>46.66</b>





# RE Potential and Installed Capacity (1/2)

## RE potential in the state

Wind Onshore (at 150m agl) and Offshore Potential

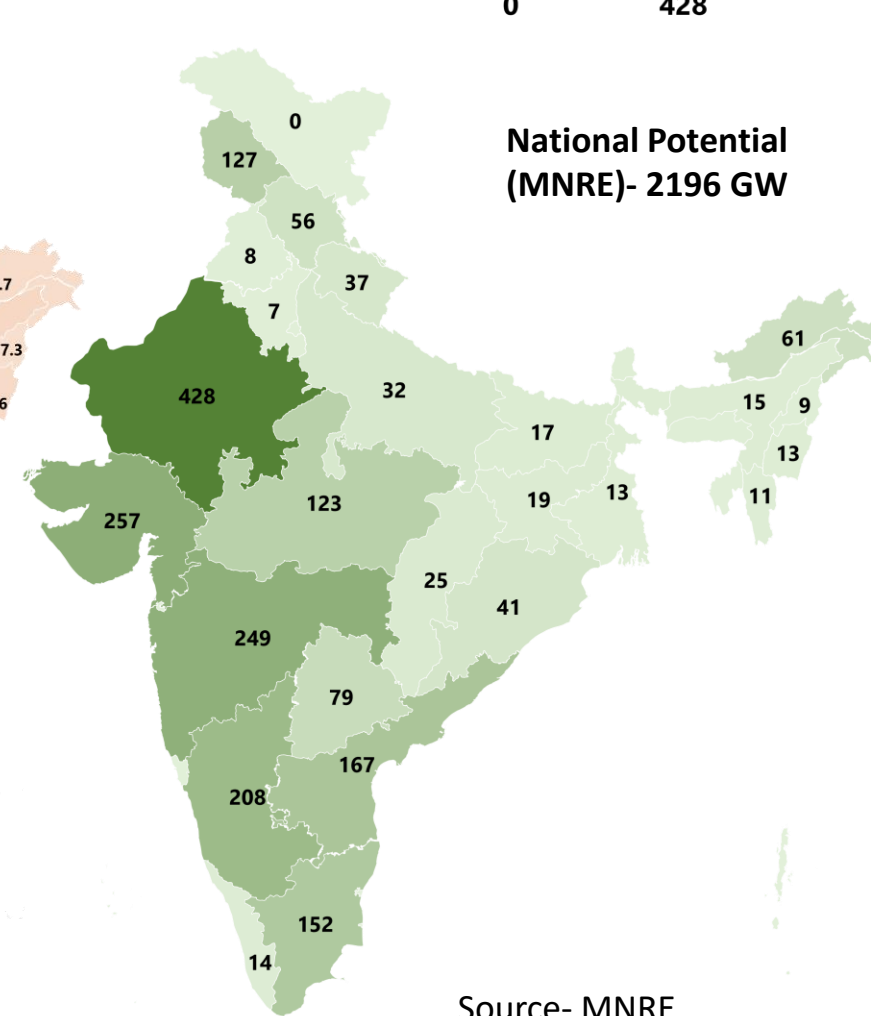
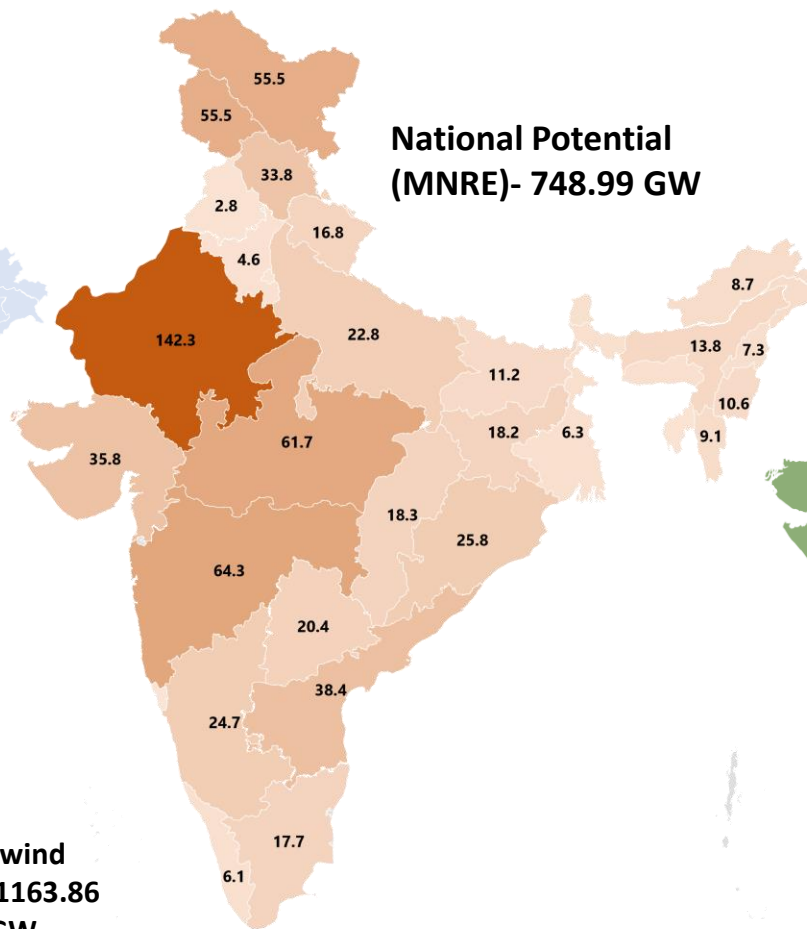
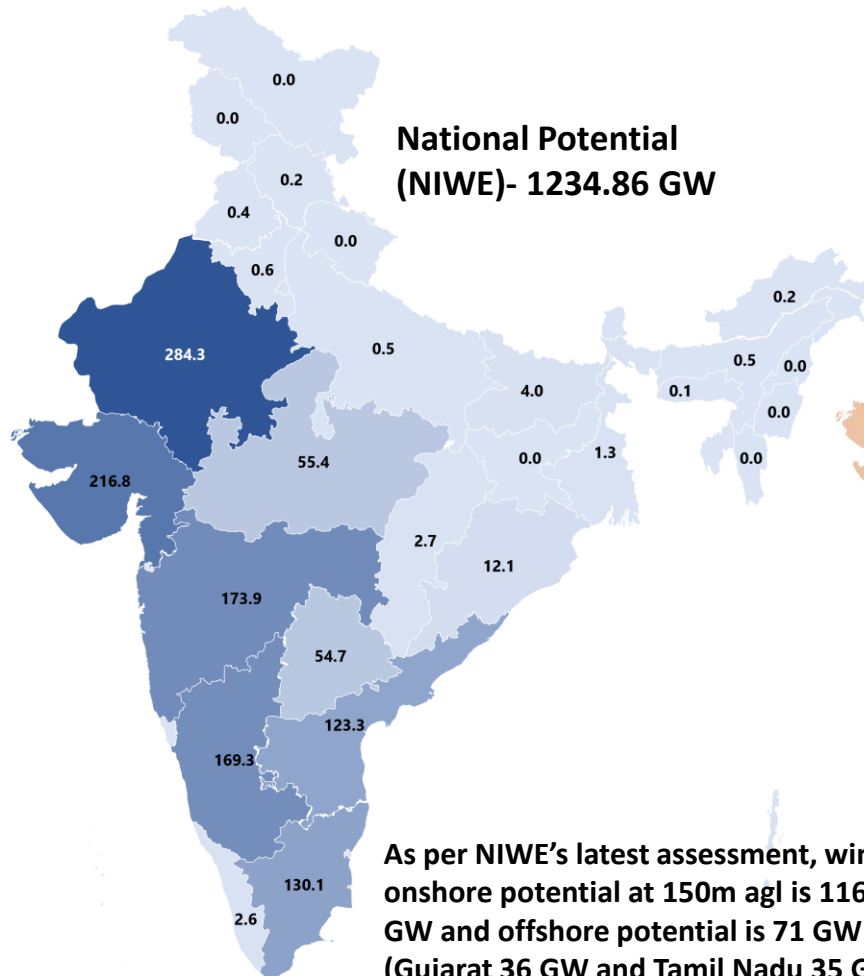
Solar Potential

Renewable Energy Potential (all sources incl. large Hydro)

State Potential (GW) 0.0 284.3

State Potential (GW) 0.9 142.3

State Potential (GW) 0 428



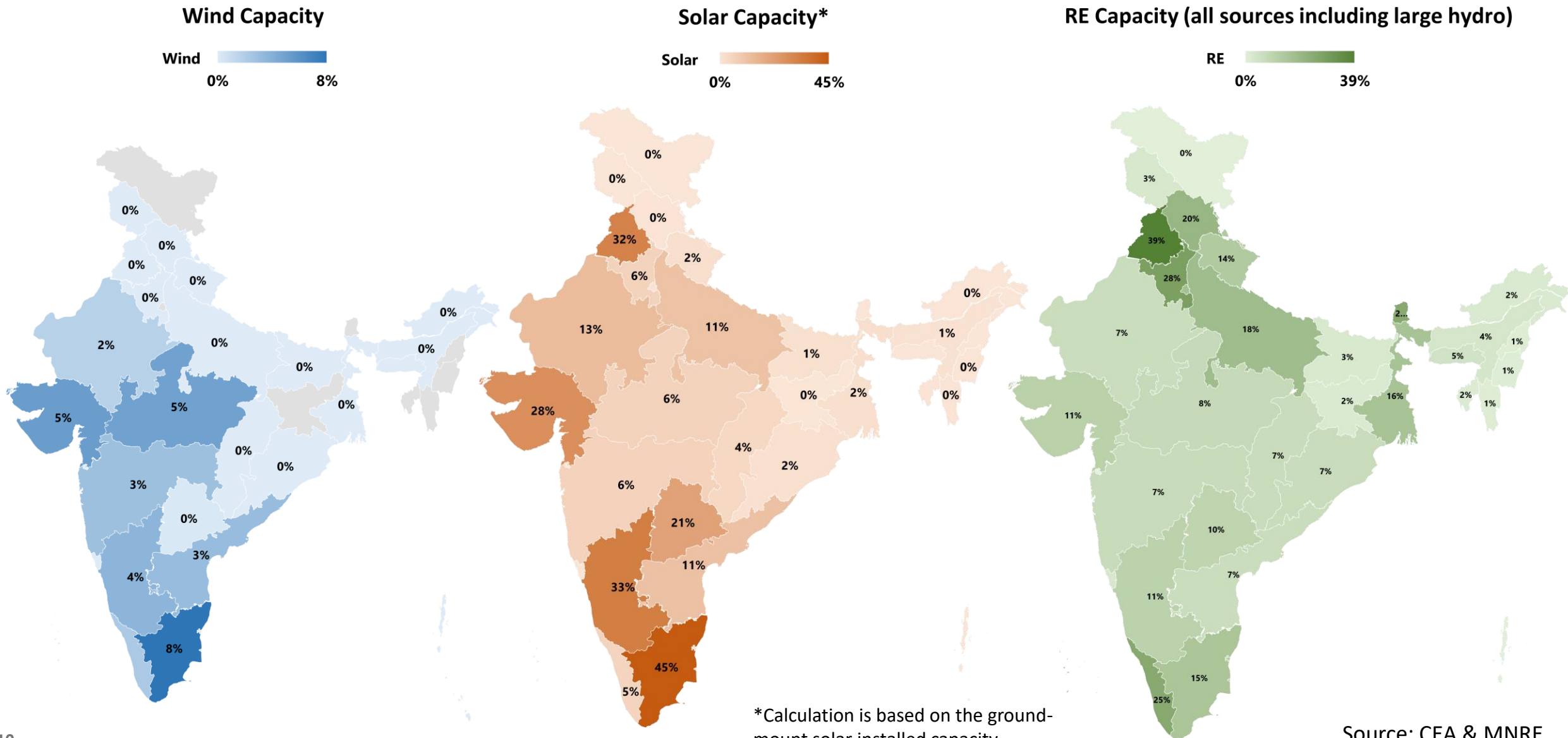
As per NIWE's latest assessment, wind onshore potential at 150m agl is 1163.86 GW and offshore potential is 71 GW (Gujarat 36 GW and Tamil Nadu 35 GW).

Market potential for SPV rooftop is 124 GW.

Source- MNRE

# RE Potential and Installed Capacity (2/2)

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

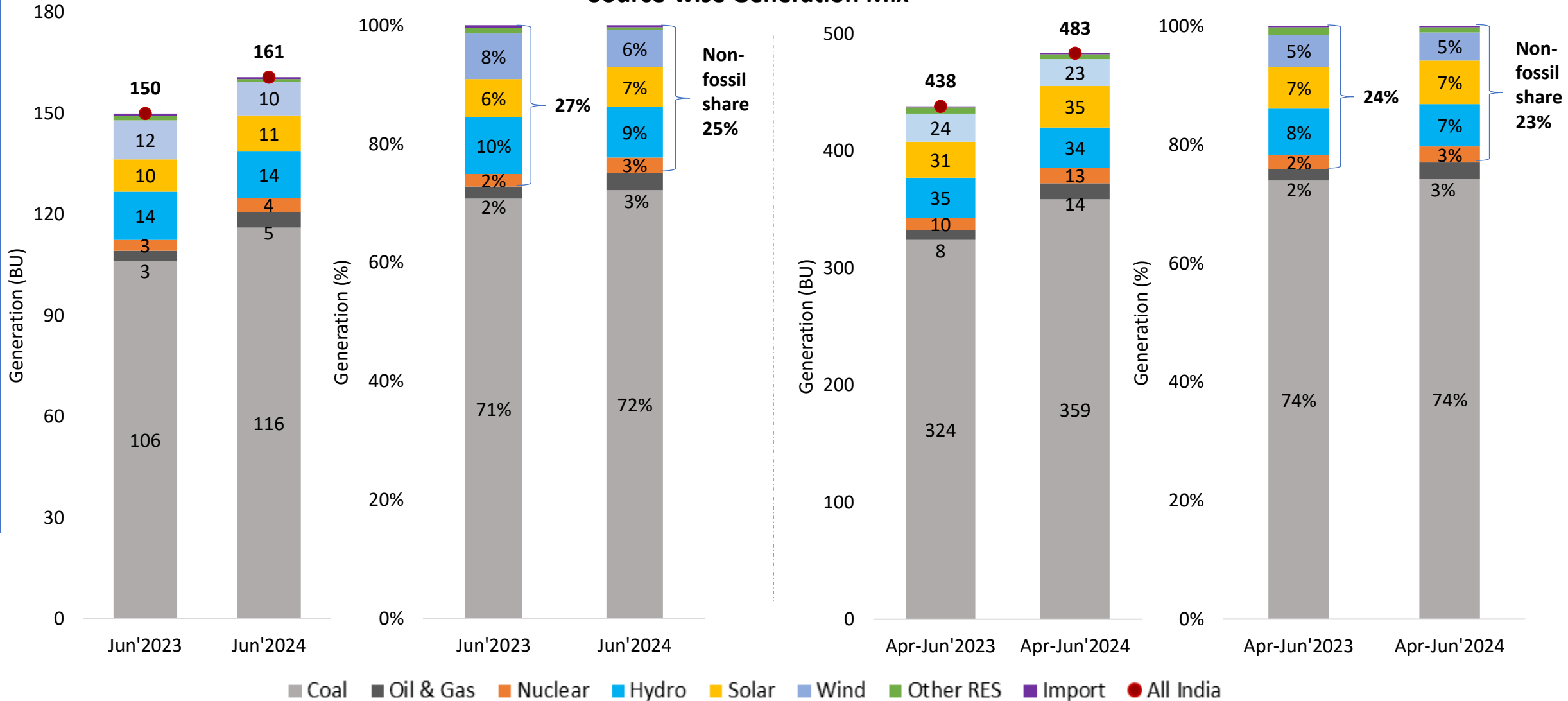


\*Calculation is based on the ground-mount solar installed capacity.

Source: CEA & MNRE

# India's Electricity Generation Mix

## Source-wise Generation Mix

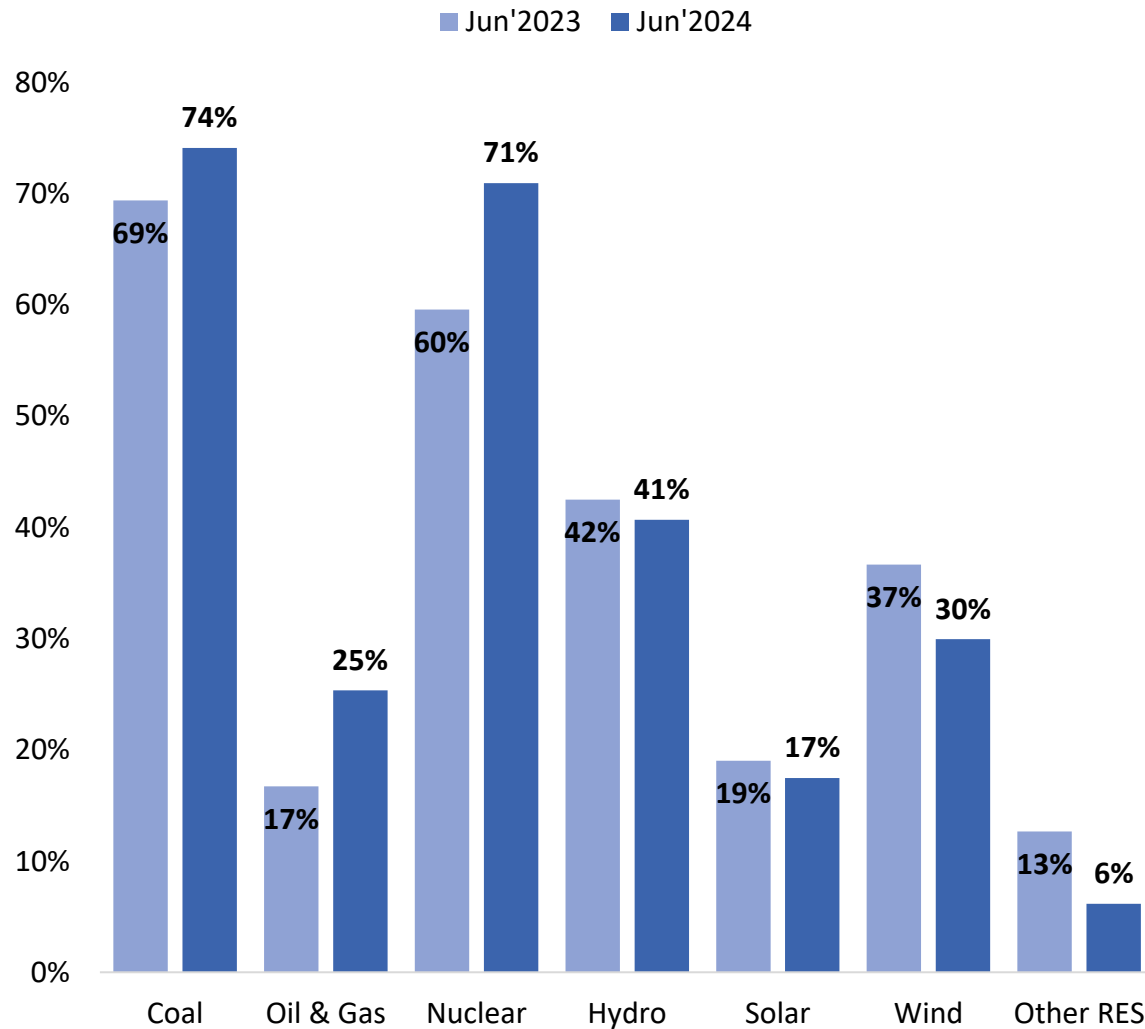


NOTE: The generation data for June'2024 is provisional.

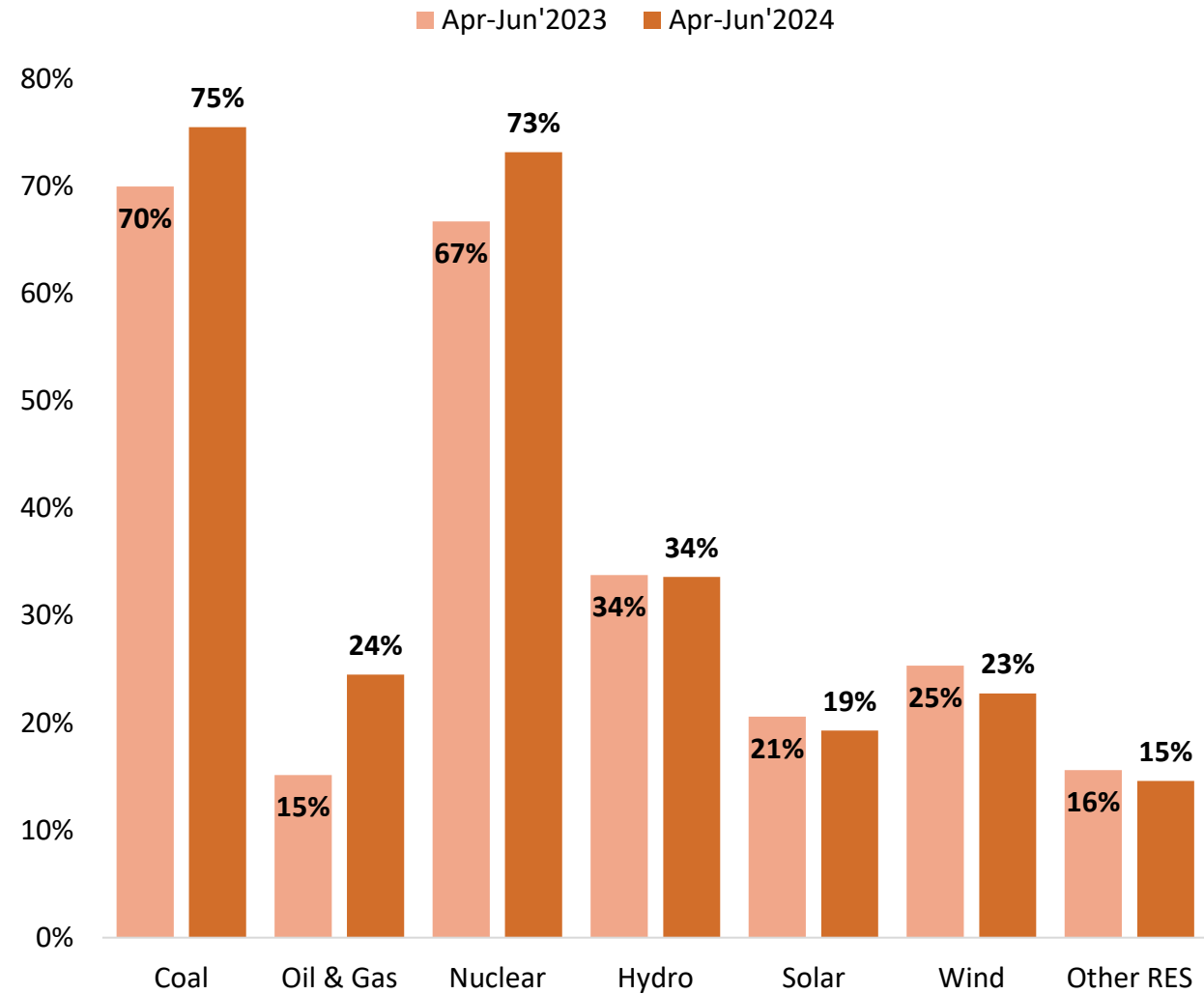
Source: CEA

# Source-wise PLF/CUF

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



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

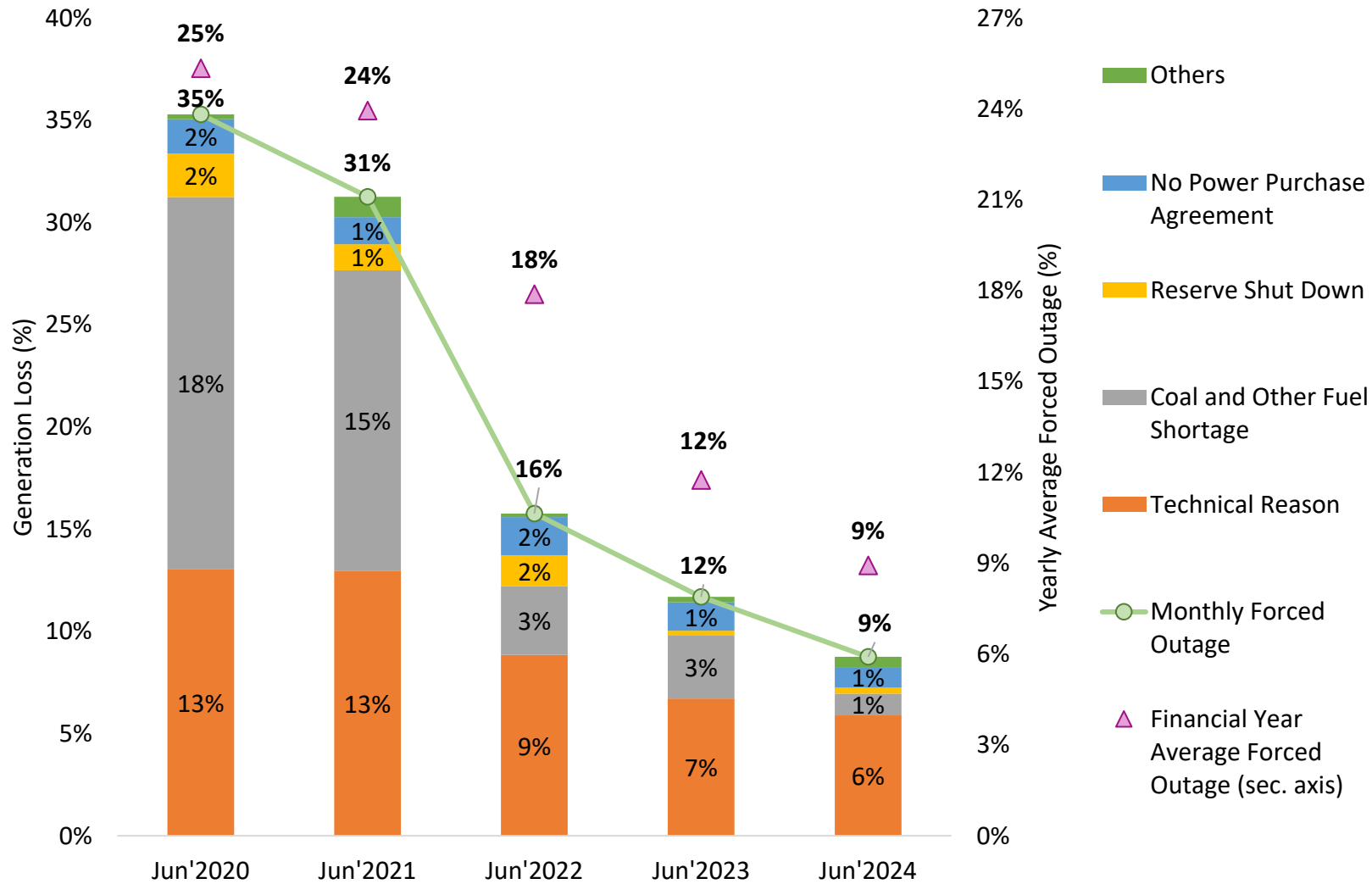


NOTE: The PLF/CUF data is based on provisional generation for June'2024.

Source: CEA & MNRE

# Thermal Generation Loss and Reasons for Forced Outages

Forced Outages for June over the years

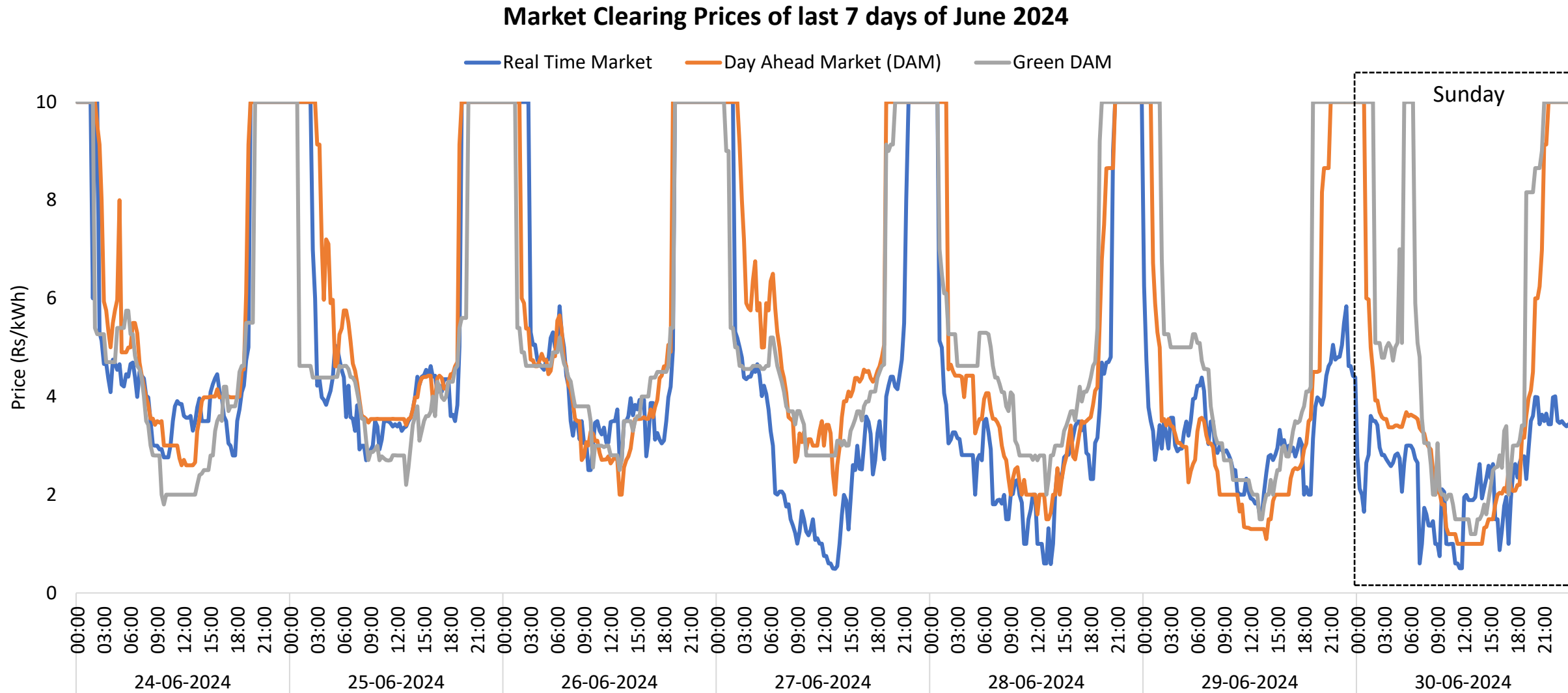


Year/ Month		Average Forced Outage Share
Yearly	FY 2022-23	18%
	FY 2023-24	12%
	FY 2024-25 (up to June'2024)	9%
Monthly	Jun'2022	16%
	Jun'2023	12%
	Jun'2024	9%

Thermal includes only Coal and Lignite Plants.

Source: ICED

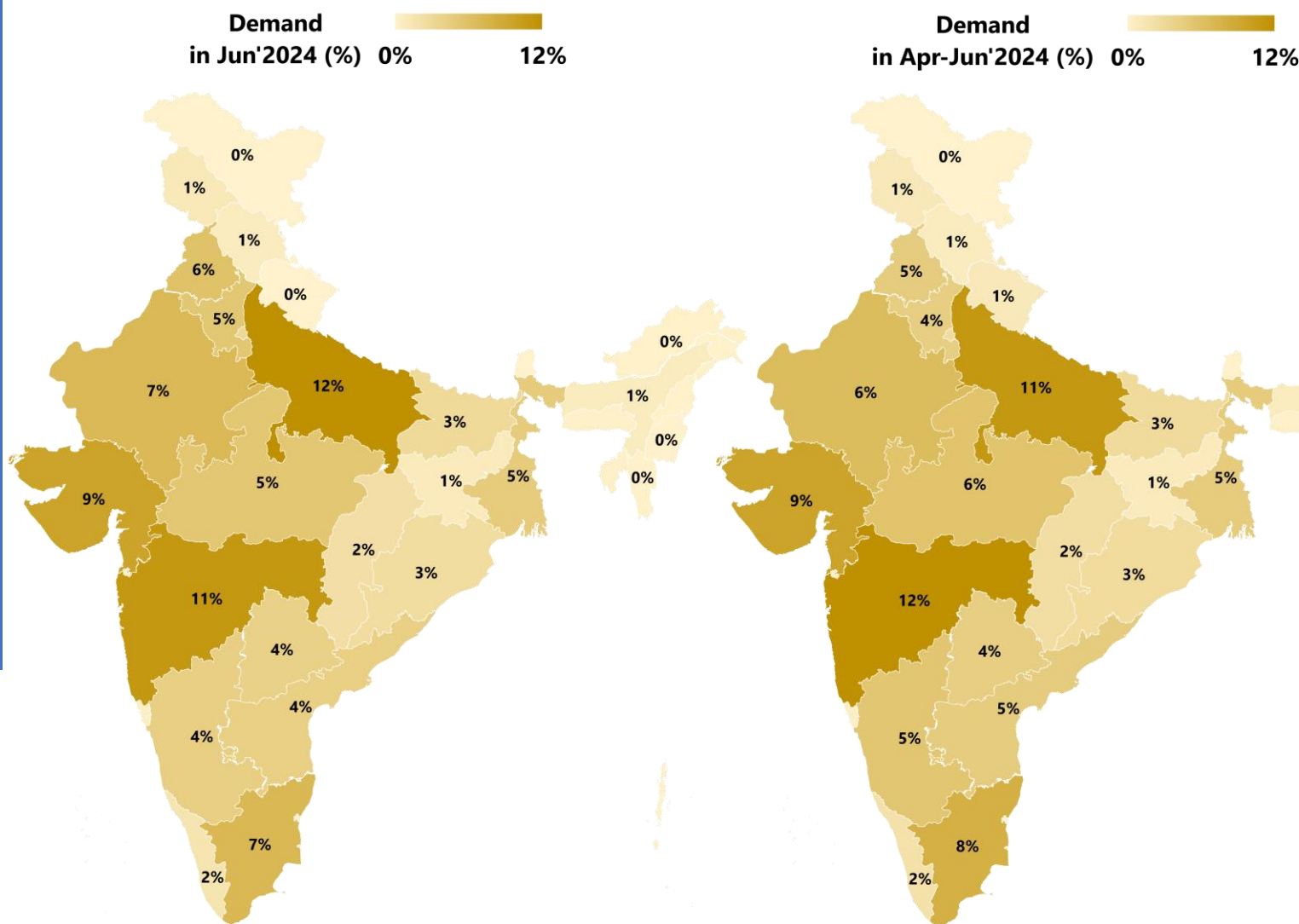
# Indian Electricity Exchange (IEX) Market Snapshot



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) (+/-)
Jun'2022	134	133	0.8
Jun'2023	141	140	0.2
Jun'2024	152	152	0.2

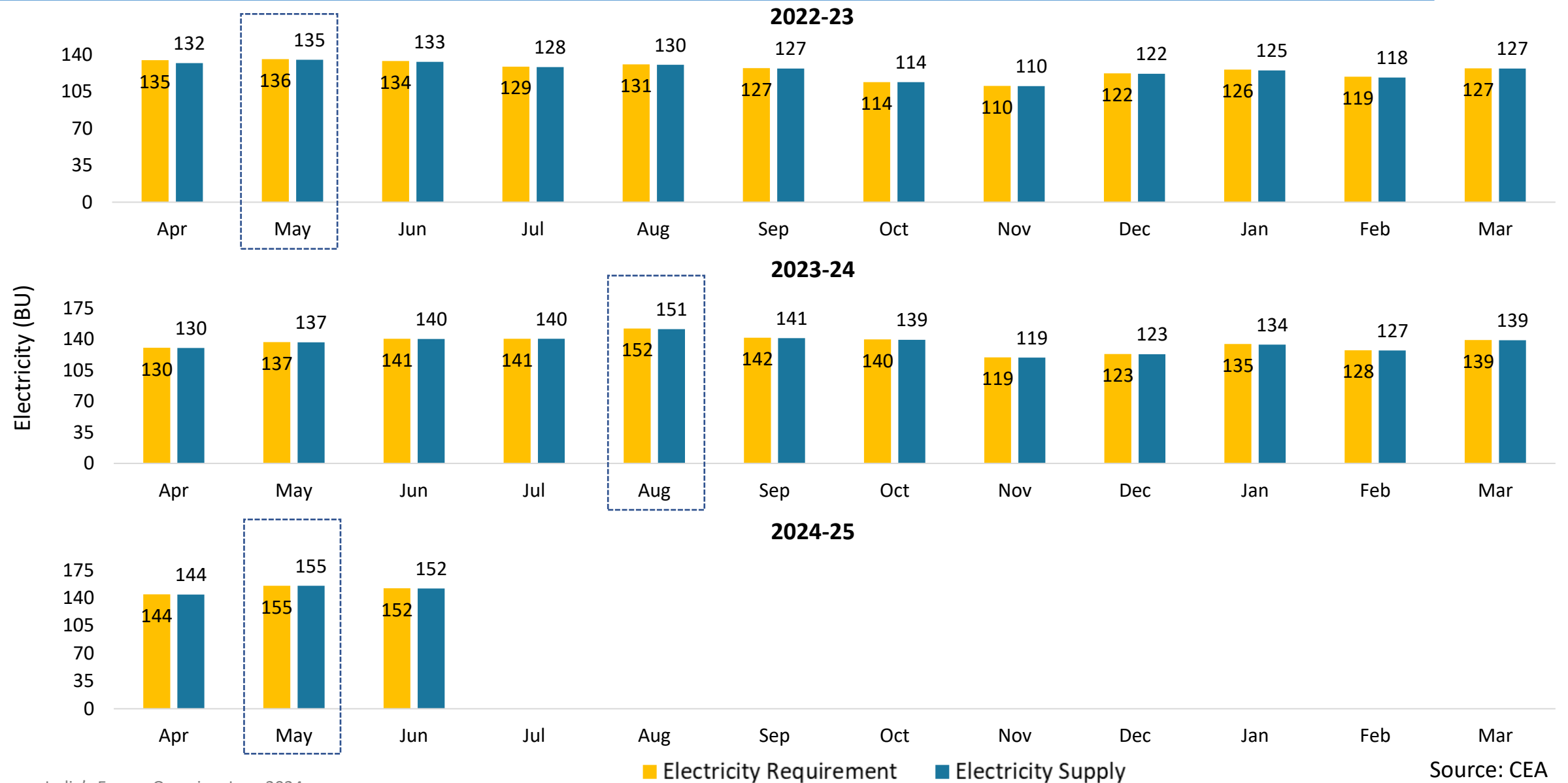
Apr-Jun	Electricity Demand (BU)	Electricity Supply (BU)	Gap (BU) (+/-)
FY 2022-23	405	400	4
FY 2023-24	408	407	1
FY 2024-25	452	451	1

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

Source: CEA

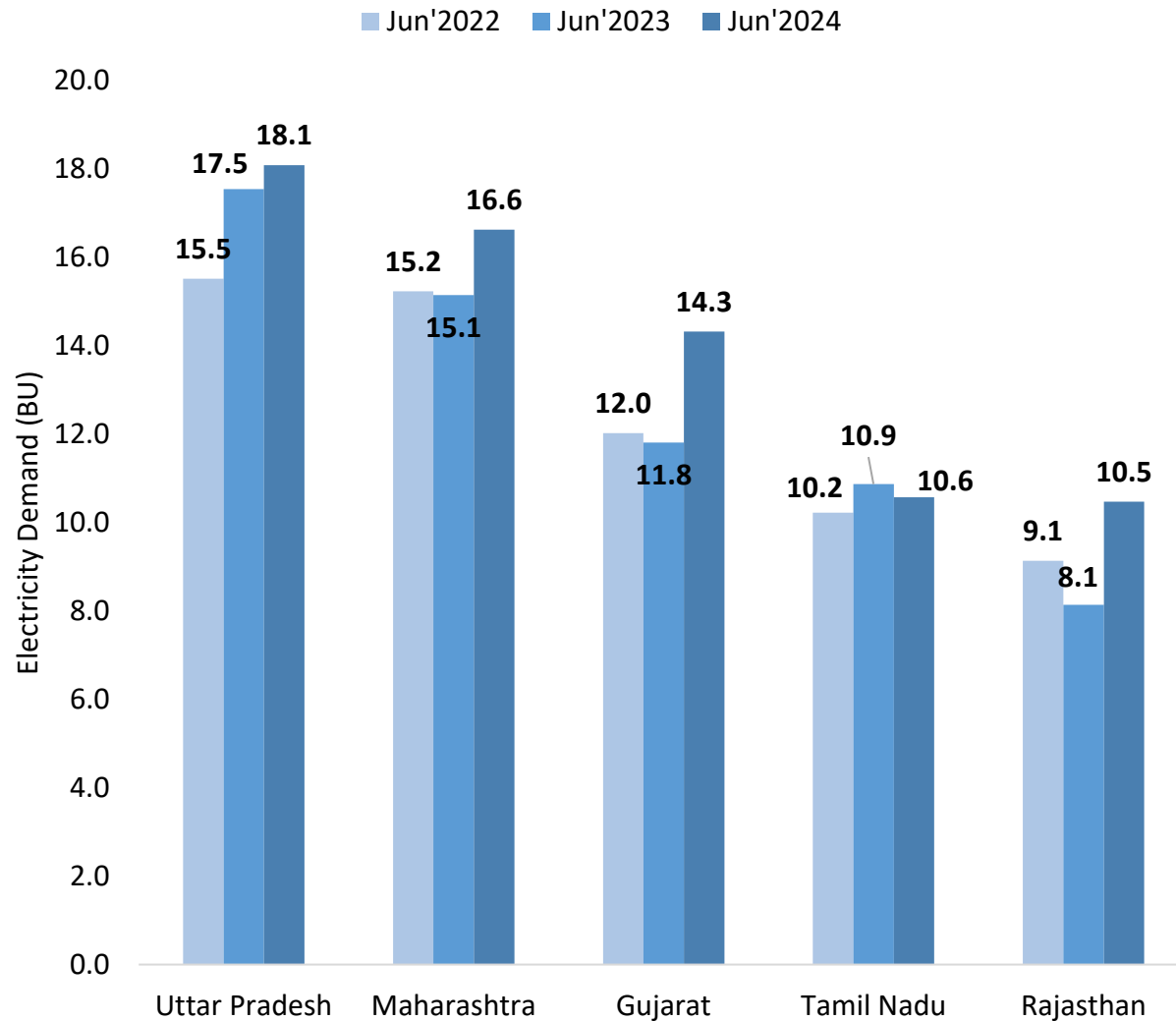


# India's Monthly Electricity Requirement and Supply

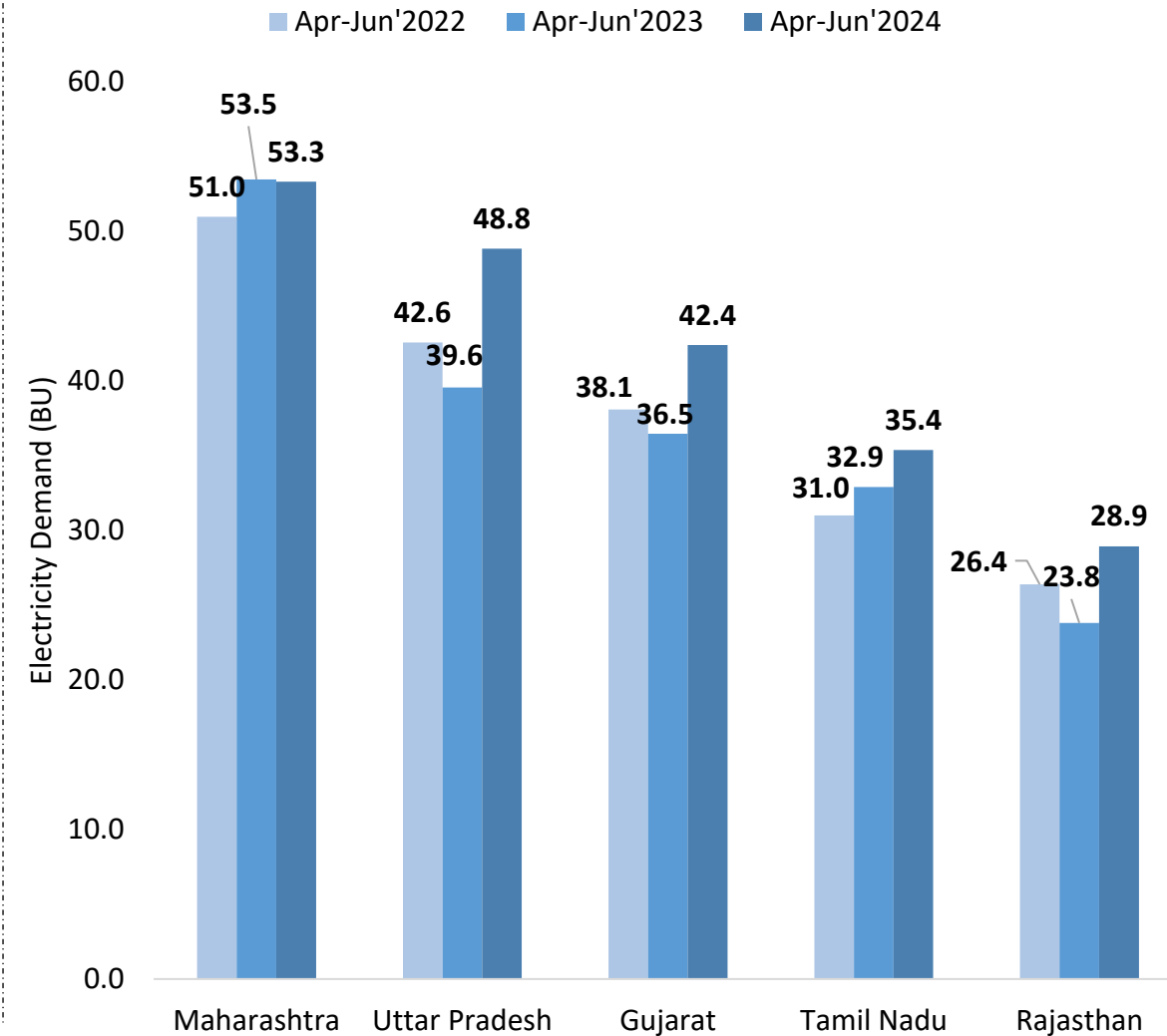


# Monthly Electricity Demand of the top 5 states

States with Highest Electricity Demand in June (BU)



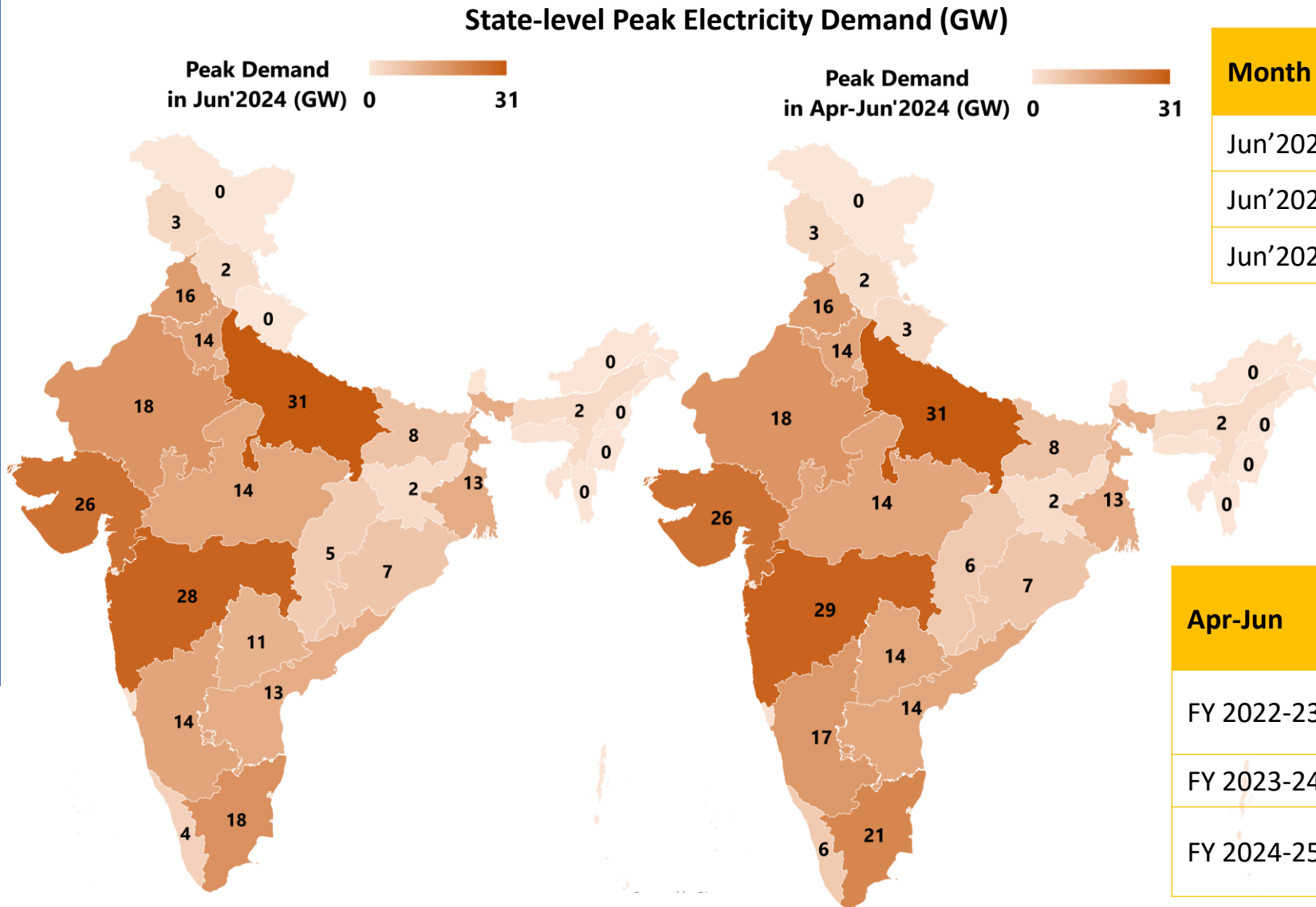
States with Highest Electricity Demand (BU)



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

Source: CEA

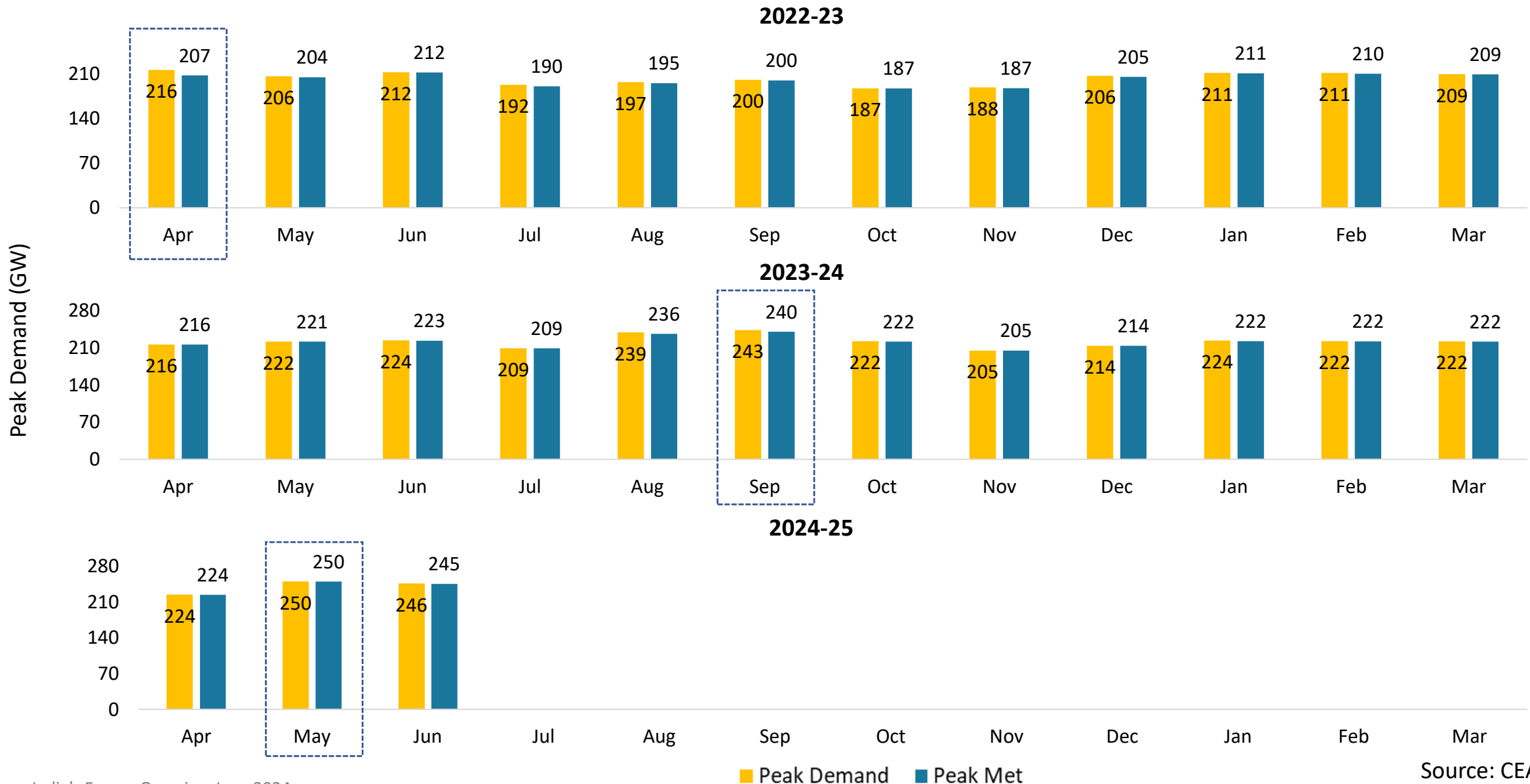
# National and State level Peak Electricity Demand



Month	Peak Demand (GW)	Peak Supply (GW)	Gap(GW) (+/-)
Jun'2022	212	212	0.6
Jun'2023	224	223	0.8
Jun'2024	246	245	0.8

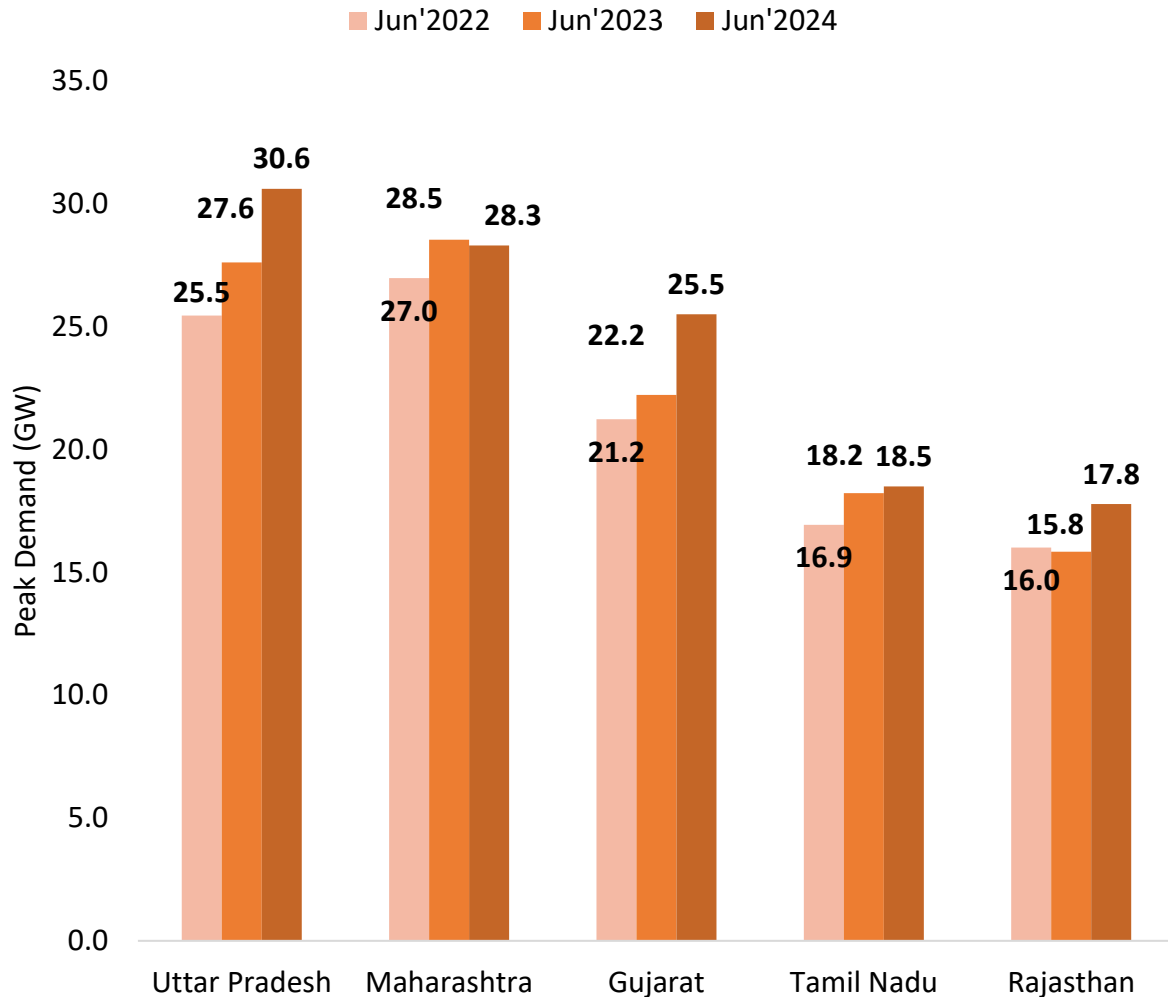
Apr-Jun	Peak Demand (GW)	Peak Supply (GW)	Gap (GW) (+/-)
FY 2022-23	216	207	8.7
FY 2023-24	224	223	0.8
FY 2024-25	250	250	0.0

# India's Monthly Peak Electricity Demand and Supply

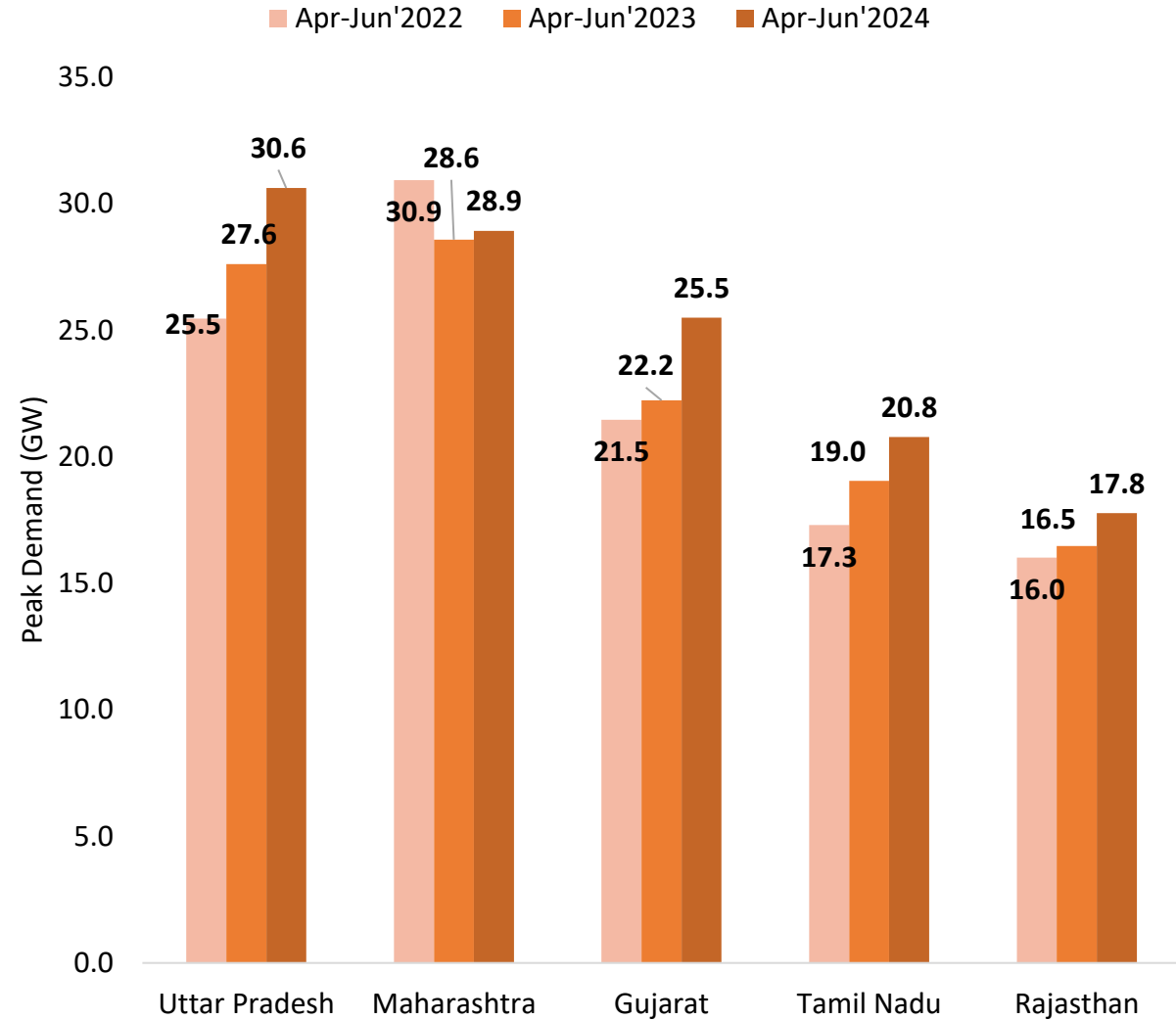


# Monthly Peak Electricity Demand of the top 5 states

States with Highest Peak Electricity Demand in June (GW)



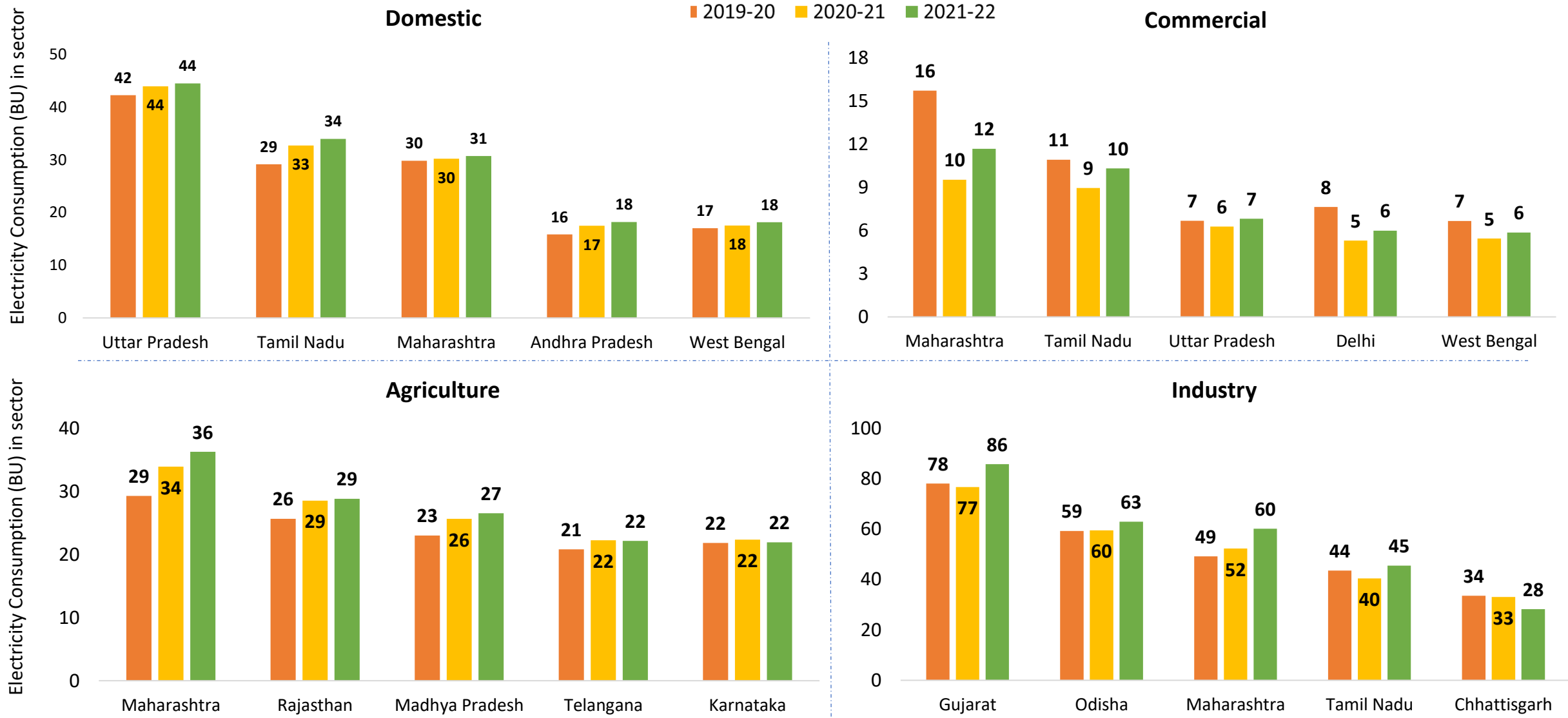
States with Highest Peak Electricity Demand (GW)



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

Source: CEA

# Electricity Consumer-category wise top 5 States

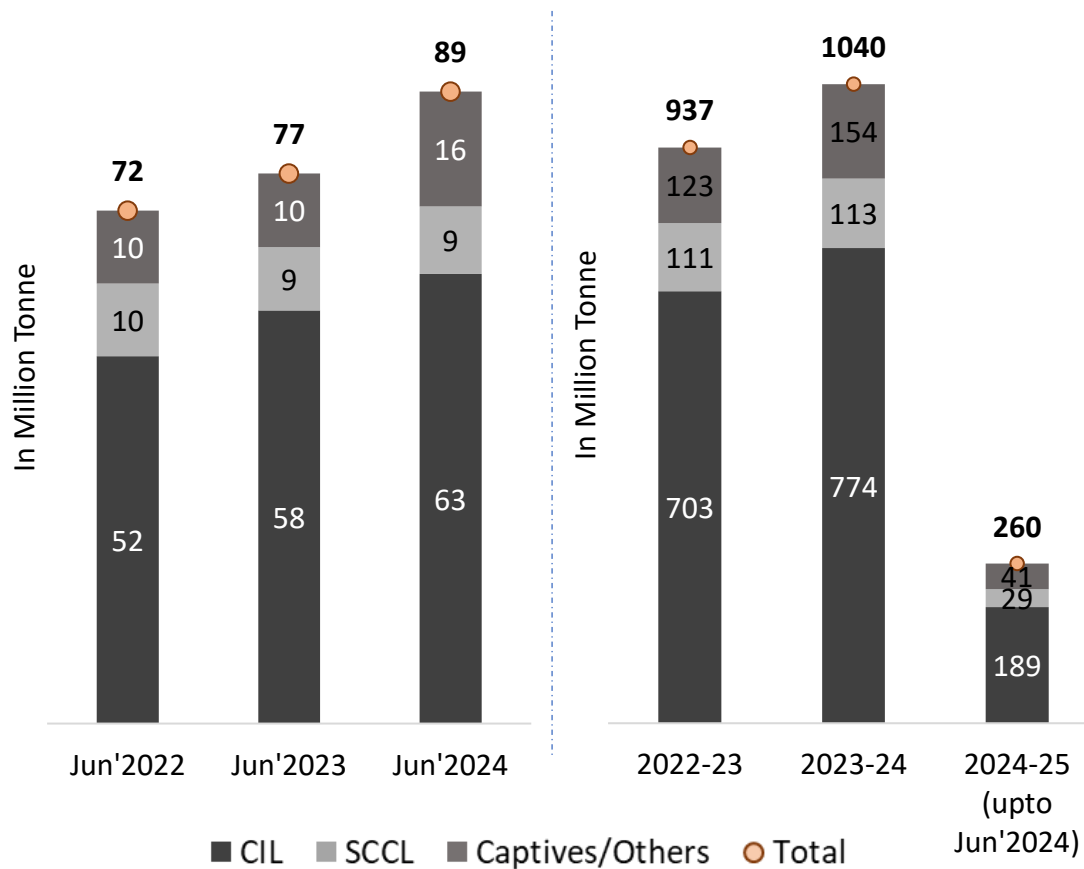


NOTE: Top 5 States under consumer-categories are selected on the basis of 2021-22

Source: CEA

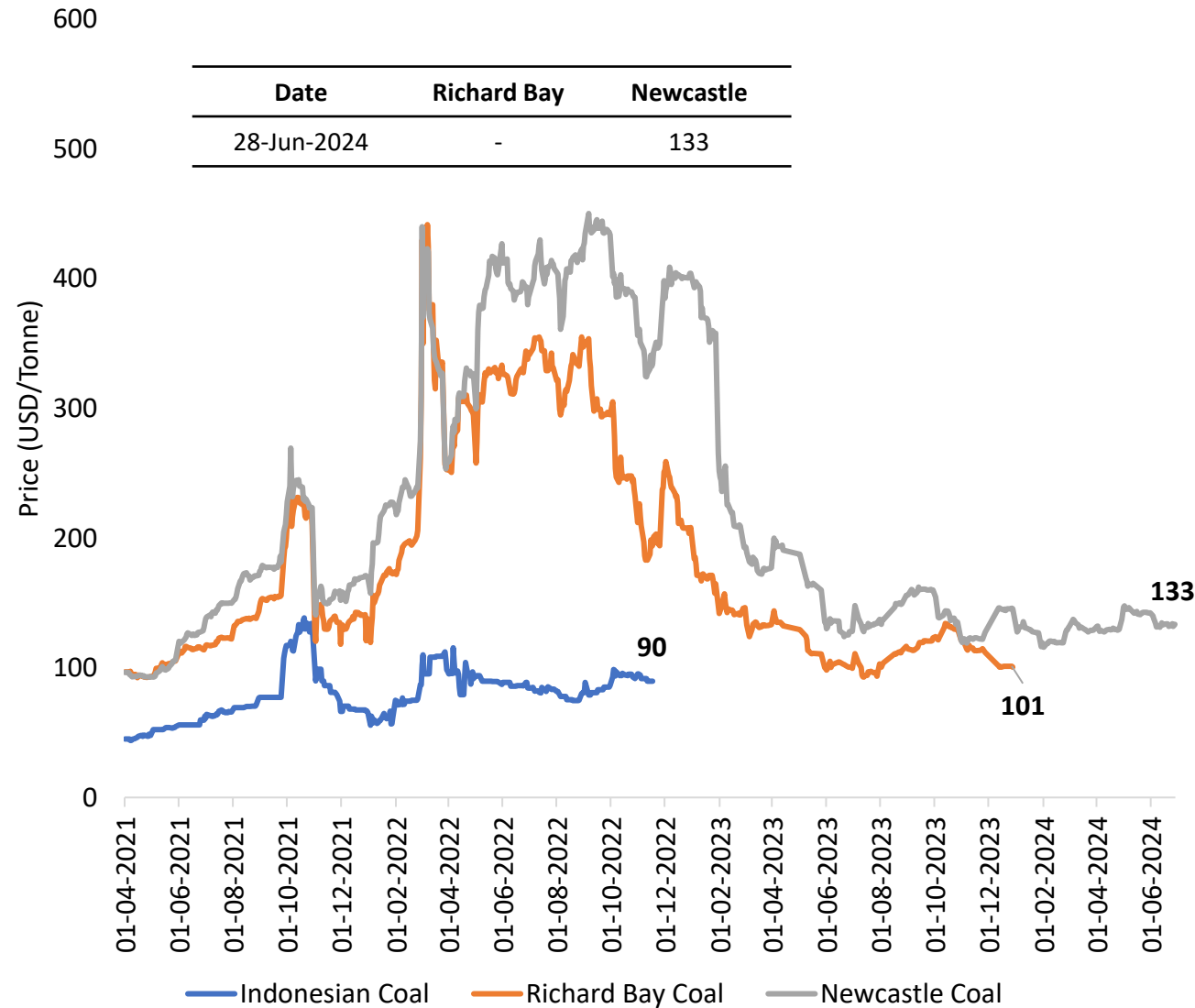
# Monthly Coal Statistics

Monthly/ Annual Coal Production (in Million Tonnes)



India's coal production increased in Jun'2024 (89 MT) by 15% as compared to Jun'2023 (77 MT).

International Coal Prices

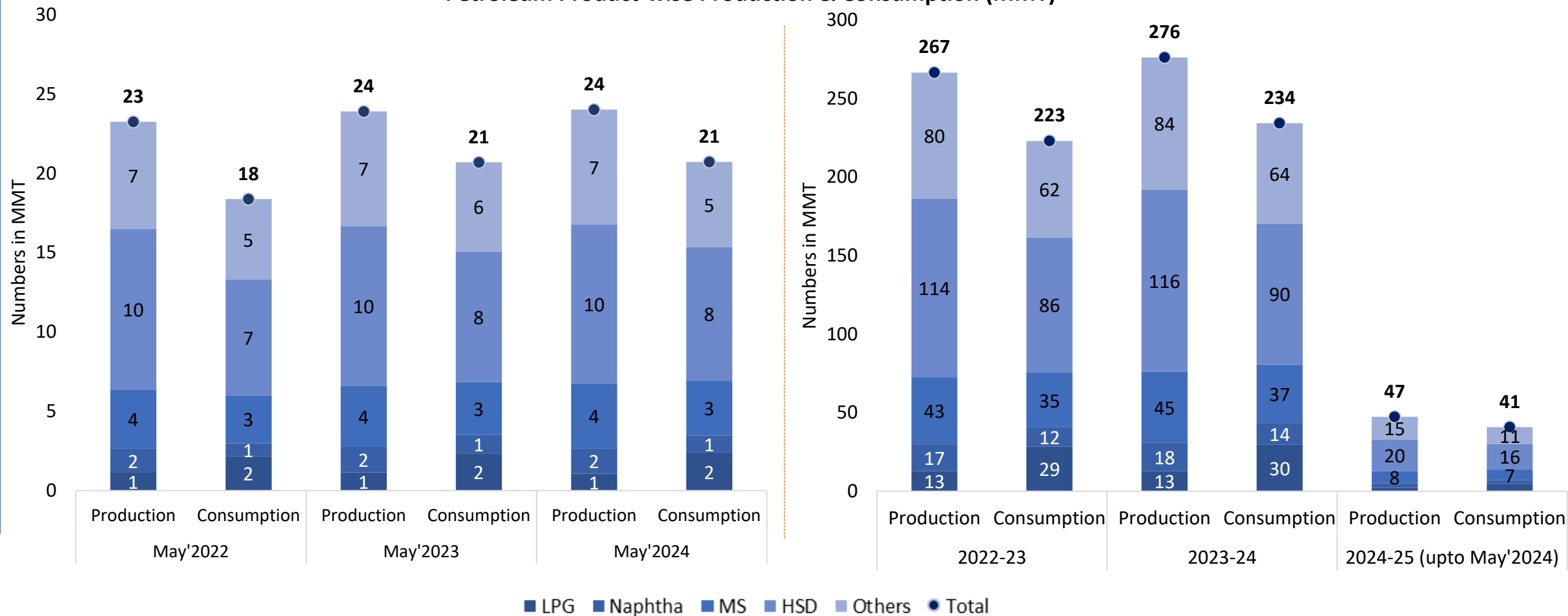


Source: Ministry of Coal



# 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)

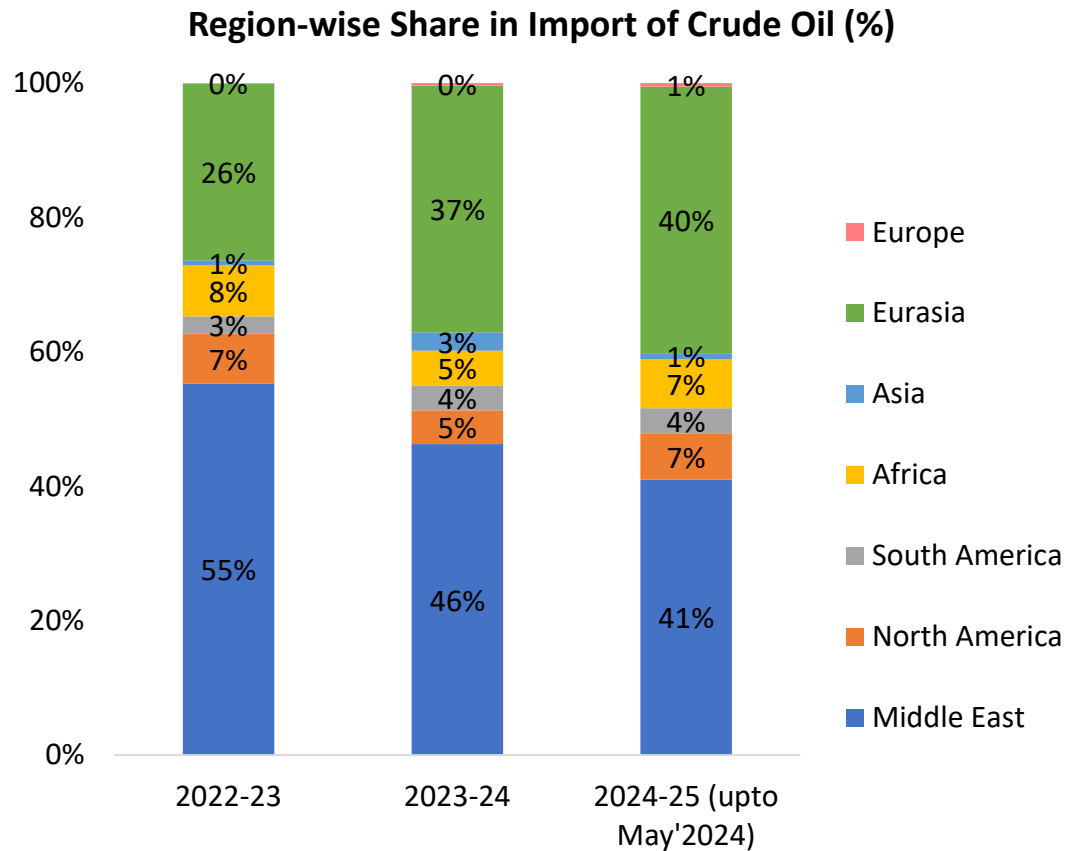
Import/Export of Crude Oil and Petroleum Products ('000 Tonnes)							
Petroleum Products	Import/ Export	Monthly			Yearly		
		May'22	May'23	May'24	2022-23	2023-24	2024-25 (up to May'2024)
Crude Oil	Import	19644	20574	21750	232700	233118	43059
	Export	0	0	0	0	0	0
	<b>Net Import</b>	<b>19644</b>	<b>20574</b>	<b>21750</b>	<b>232700</b>	<b>233118</b>	<b>43059</b>
LPG	Import	1365	1444	1682	18335	18475	3241
	Export	48	46	44	540	525	88
	<b>Net Import</b>	<b>1318</b>	<b>1398</b>	<b>1639</b>	<b>17796</b>	<b>17950</b>	<b>3153</b>
Diesel	Import	9	2	4	322	42	7
	Export	3063	2375	2140	28494	28193	4139
	<b>Net Import</b>	<b>-3054</b>	<b>-2374</b>	<b>-2137</b>	<b>-28172</b>	<b>-28150</b>	<b>-4132</b>
Petrol	Import	30	0	34	1069	717	64
	Export	1158	1251	1277	13127	13461	2455
	<b>Net Import</b>	<b>-1128</b>	<b>-1251</b>	<b>-1244</b>	<b>-12058</b>	<b>-12743</b>	<b>-2392</b>
Others	Import	1887	2810	2189	24871	29433	4618
	Export	1415	1635	1802	18854	20258	3335
	<b>Net Import</b>	<b>471</b>	<b>1174</b>	<b>387</b>	<b>6017</b>	<b>9176</b>	<b>1283</b>

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

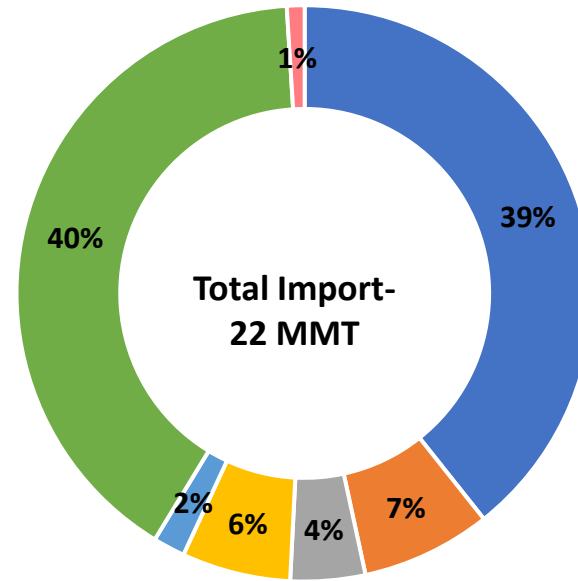
NOTE: The data is available latest up to May'2024

Source: PPAC

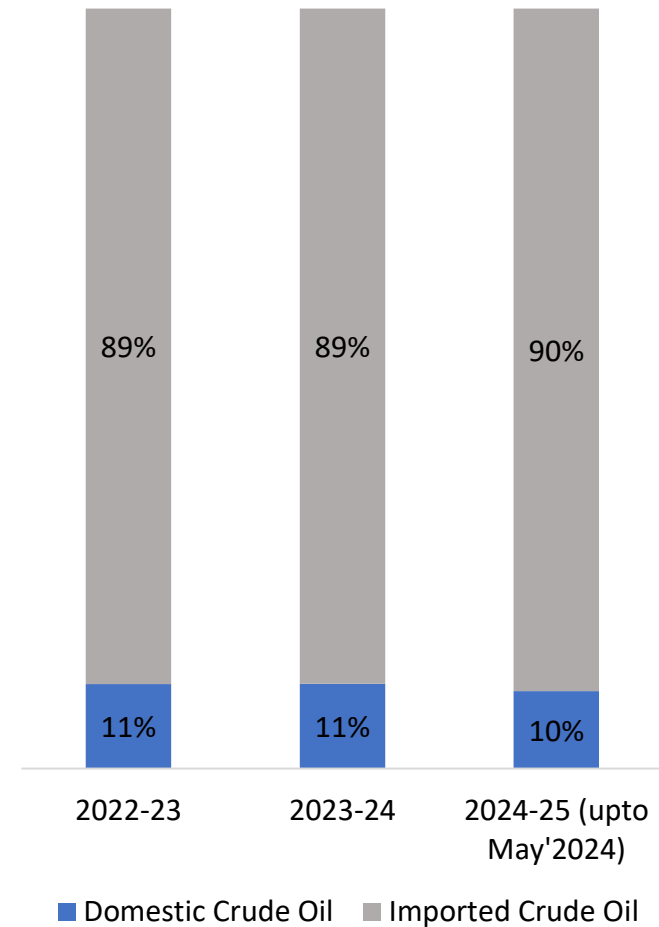
# Petroleum Products Market Scenario (3/3)



### Regional share of Imported Crude oil in May 2024



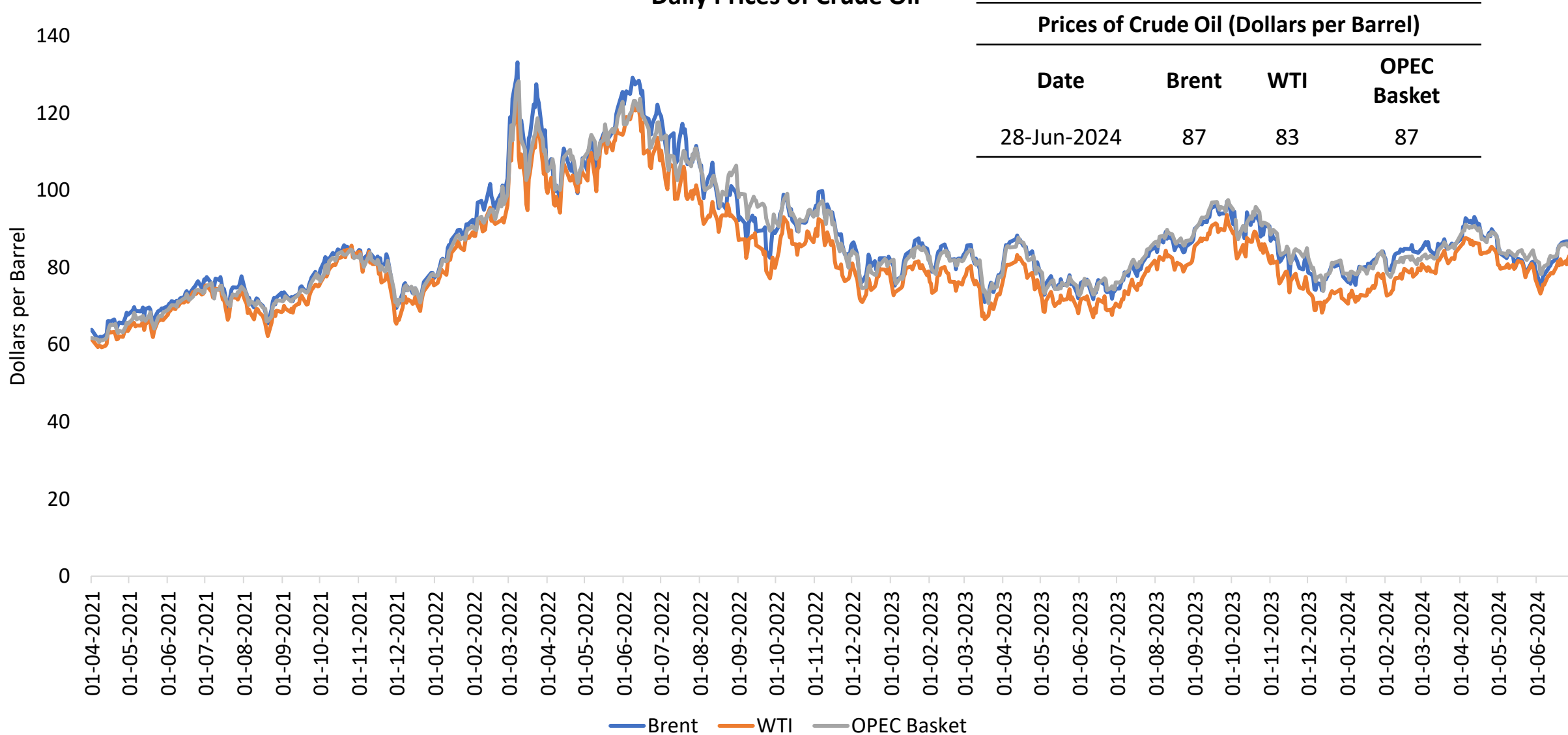
### Domestic and Imported Crude Oil share in India (%)



Total Import of Crude Oil (MMT)			
Total Import	2022-23	2023-24	2024-25 (up to May'2024)
<b>Crude Oil</b>	<b>233</b>	<b>233</b>	<b>43</b>

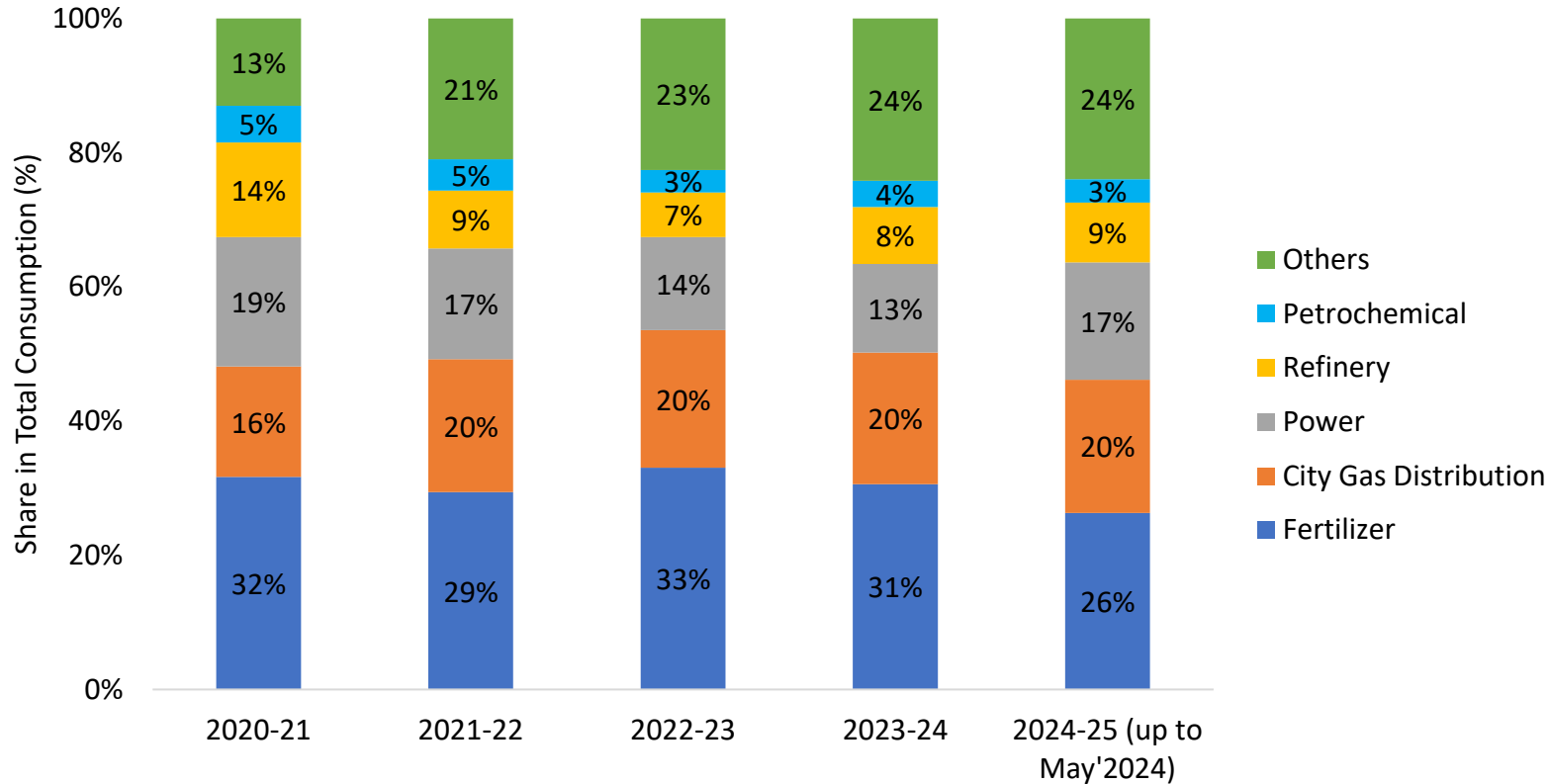
# Daily Prices of Crude Oil

Daily Prices of Crude Oil

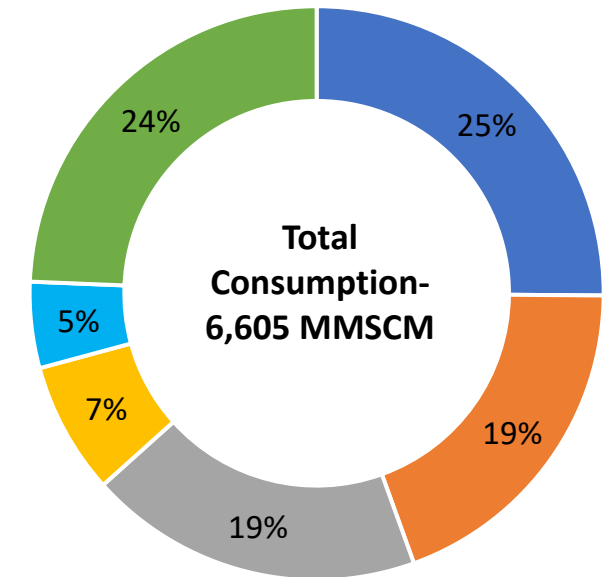


# Gas Market Scenario (1/2)

Sector-wise Share in Natural Gas Consumption



Sector-wise share in Natural Gas Consumption in May 2024

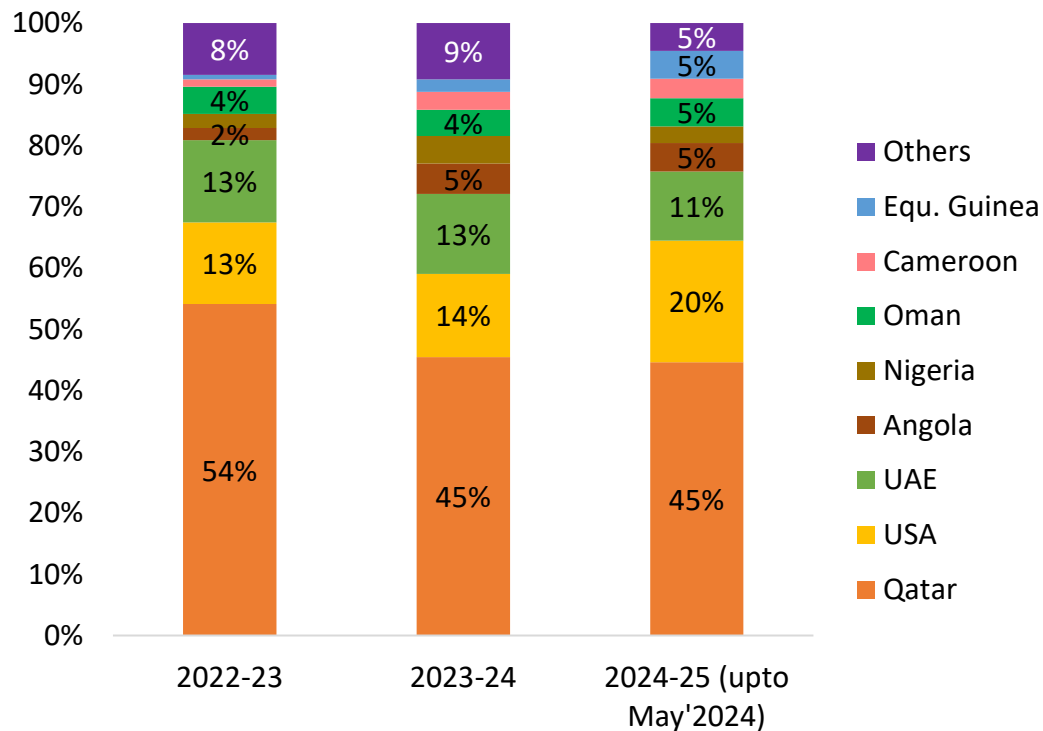


Total Consumption of Natural Gas (NG) (MMSCM)					
Total Consumption	2020-21	2021-22	2022-23	2023-24	2024-25 (up to May'2024)
<b>NG</b>	<b>56,116</b>	<b>61,491</b>	<b>58,702</b>	<b>68,759</b>	<b>12,524</b>

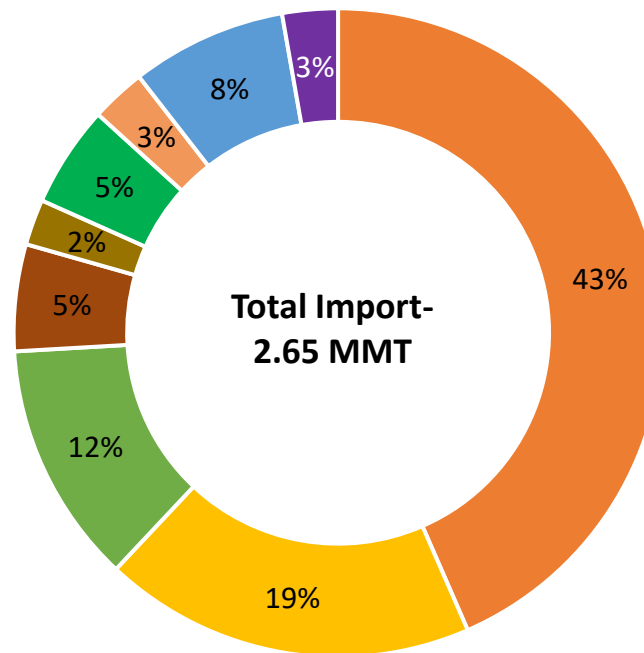
Others include- Internal Combustion of Pipeline System, Industrial, Sponge iron/steel, LPG shrinkage, manufacturing, agriculture (tea plantation), others

# Gas Market Scenario (2/2)

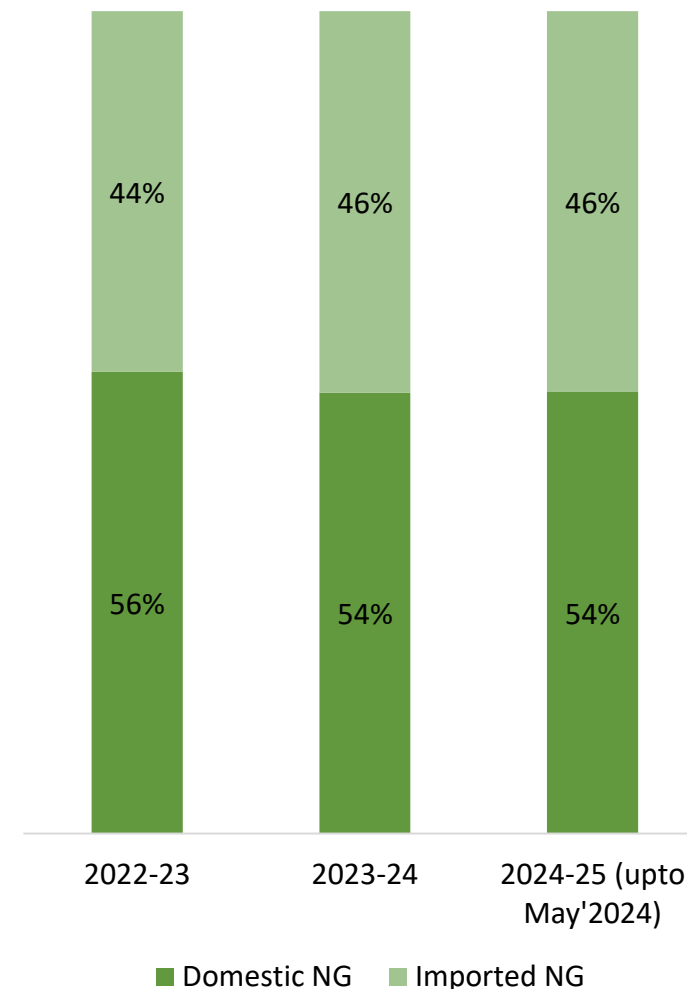
### Region-wise Share in Import of LNG (%)



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

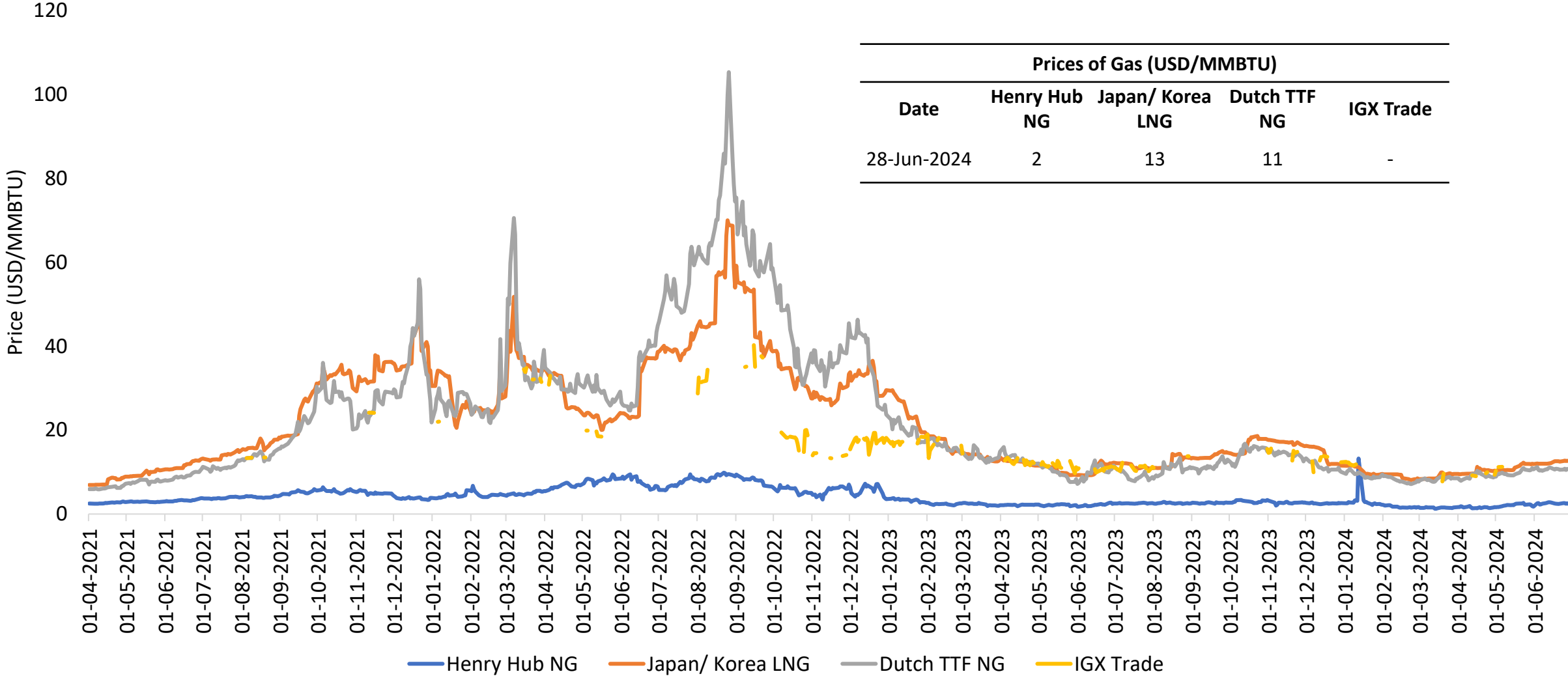
Total Import of Liquefied Natural Gas (LNG) (MMT)			
Total Import	2022-23	2023-24	2024-25 (up to May'2024)
<b>LNG</b>	<b>19.85</b>	<b>24.00</b>	<b>3.89</b>

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

Source: MoCI and PPAC

# Daily Prices of Gas

Gas Daily Market Price

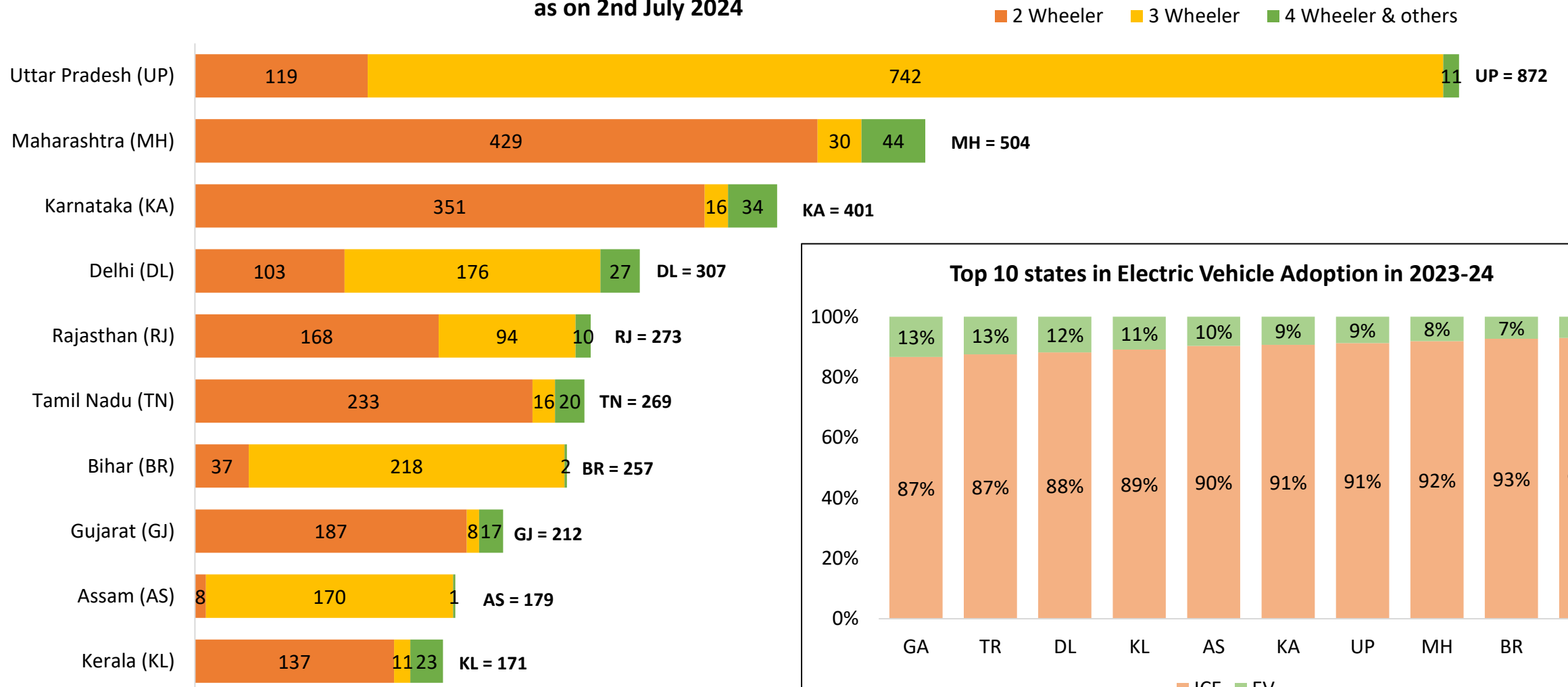




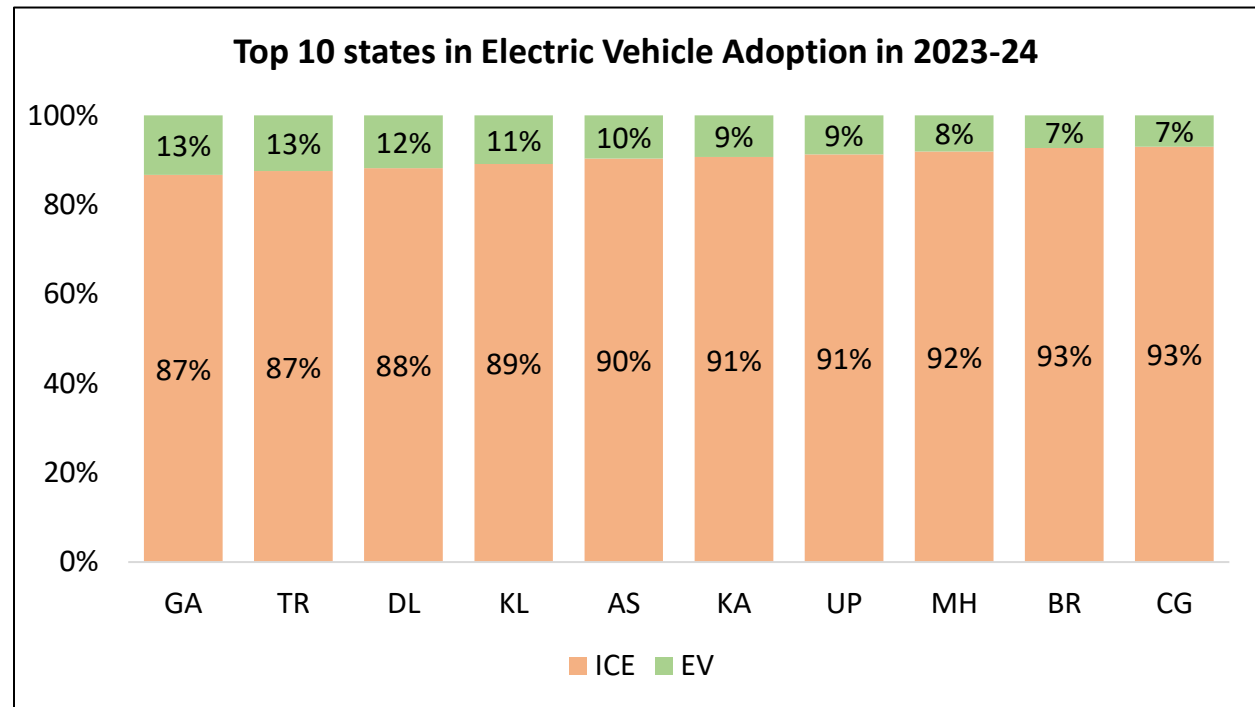


# Status of Electric Mobility in India

**Top 10 States for Electric Vehicles (in Thousands)  
as on 2nd 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 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 June 2024

- Ministry of Power has released the advisory to all the generating companies including IPPs for timely import of coal for blending purposes and maximizing production in captive mines. The key objectives are:
  - The advisory has modified the [blending requirement to 4% \(by weight\) till 15<sup>th</sup> October 2024](#).
  - The blending requirement will not be applicable to domestic coal based (DCB) plants located within a radius of 200 kms from the linked mine/ coal source.
- The Government of India has approved [new Inter State Transmission System schemes worth ₹13,595 to evacuate 9 GW of RE power from Rajasthan and Karnataka](#).
  - The power evacuation scheme for the Rajasthan Renewable Energy Zone will evacuate 4.5 GW of RE power from the state, with a project cost of approximately ₹12,241 crore, expected to be completed within two years.
  - The system strengthening scheme for Karnataka will evacuate 4.5 GW of RE power, with an estimated cost of ₹1,354 crore, scheduled for completion by June 2027.
- On 19<sup>th</sup> June 2024, the Honourable Prime Minister Shri Narendra Modi [approved the Viability Gap Funding \(VGF\) scheme for offshore wind energy projects at a total outlay of Rs.7453 crore](#), including an outlay of Rs.6853 crore for installation and commissioning of 1 GW of offshore wind energy projects (500 MW each off the coast of Gujarat and Tamil Nadu), and grant of Rs.600 crore for upgradation of two ports to meet logistics requirements for offshore wind energy projects.
- The Ministry of New and Renewable Energy has [increased the annual allocation of Green Ammonia in the fertilizer sector from 5.50 lakh tonnes to 7.50 lakh tonnes](#), under the SIGHT Programme of the National Green Hydrogen Mission.



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