

India's Energy Overview

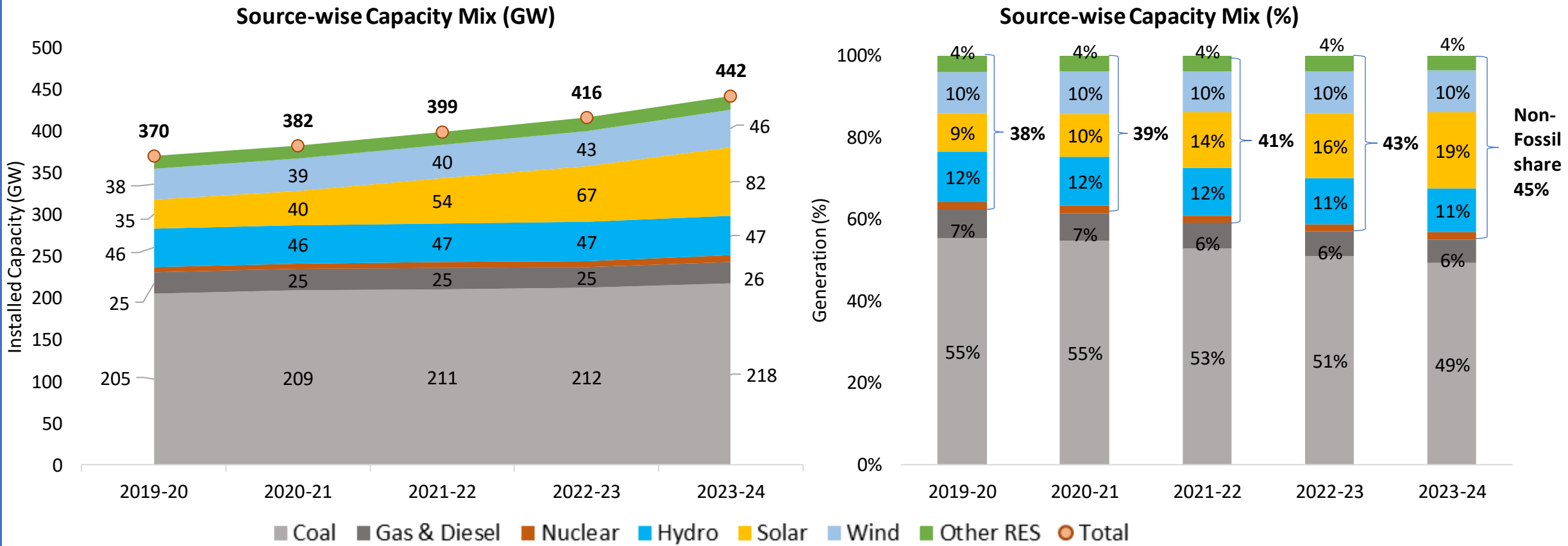
Yearly Highlights of 2023-24



Contents

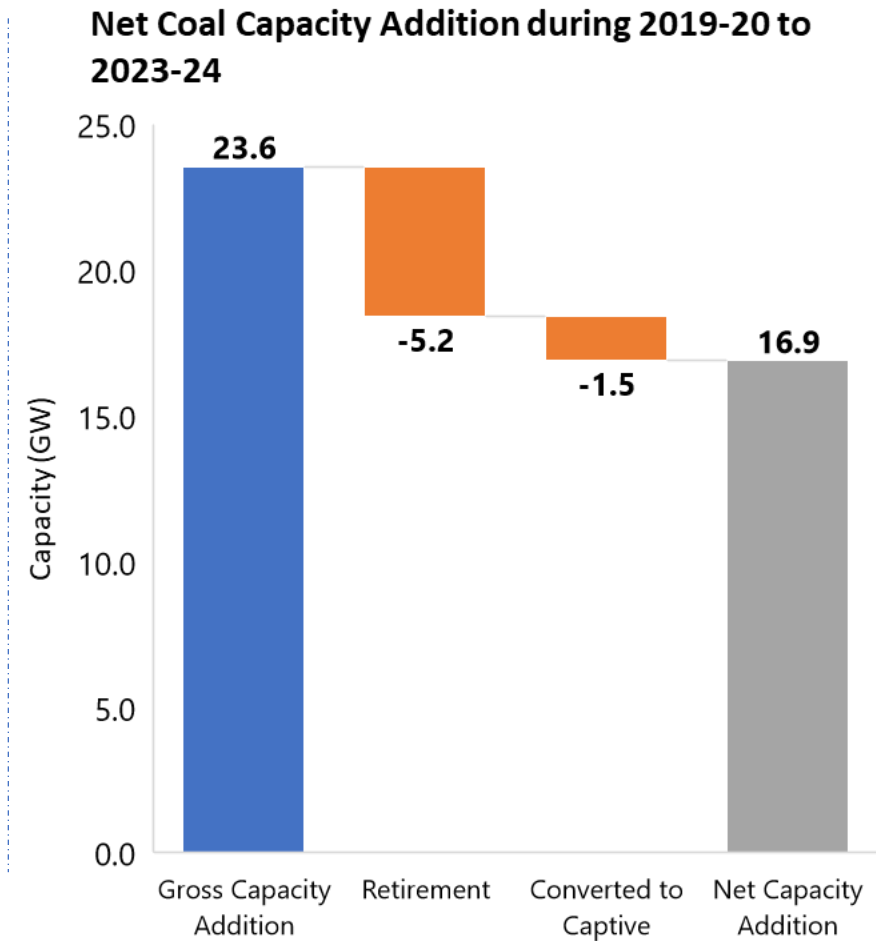
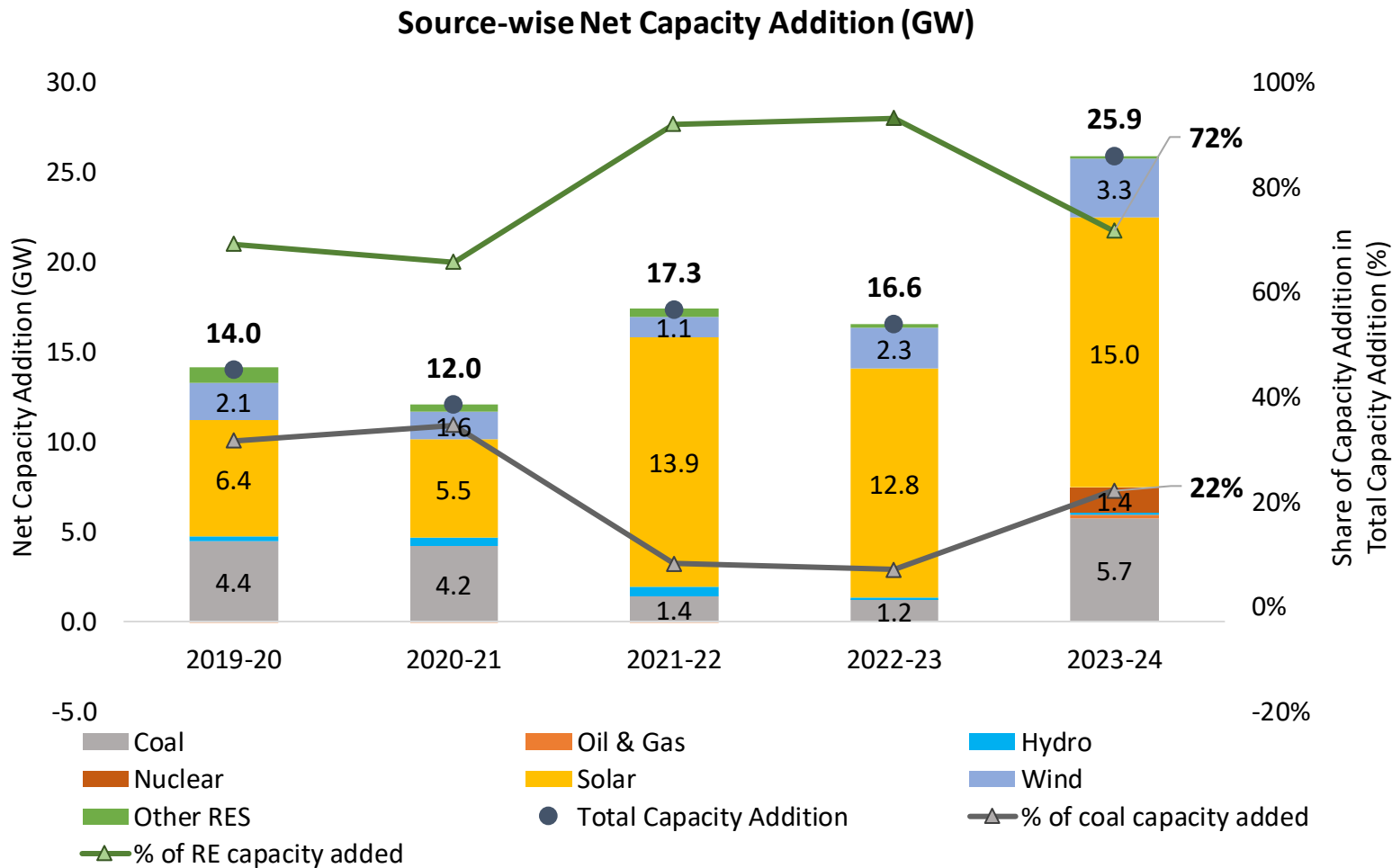
1. India's Electricity Capacity Mix (Utility-scale)
2. India's Electricity Addition in last 5 years
3. State-wise Solar Installed Capacity
4. State-wise Wind Installed Capacity
5. India's Electricity Generation Mix
6. Source-wise PLF/ CUF
7. Thermal Generation Loss and Reasons for Forced Outages
8. India's Electricity Demand and Supply Position
9. Annual Coal Statistics
10. Petroleum Products Market Scenario
11. Gas Market Scenario
12. Status of Electric Mobility in India
13. Policy Highlights or Announcements in 2023-24

India's Electricity Capacity Mix (Utility-scale)



- India's total electricity generating capacity is 442 GW [coal 218 GW (49%), solar 82 GW (19%), hydro 47 GW (11%), and wind 46 GW (10%)].
- Currently, the share of non-fossil-based electricity capacity is 45% as against the set target of 50% non-fossil capacity by 2030.
- India's renewable energy capacity (including large hydro) stood at 191 GW out of total capacity of 442 GW.

India's Electricity Capacity Addition in last 5 years



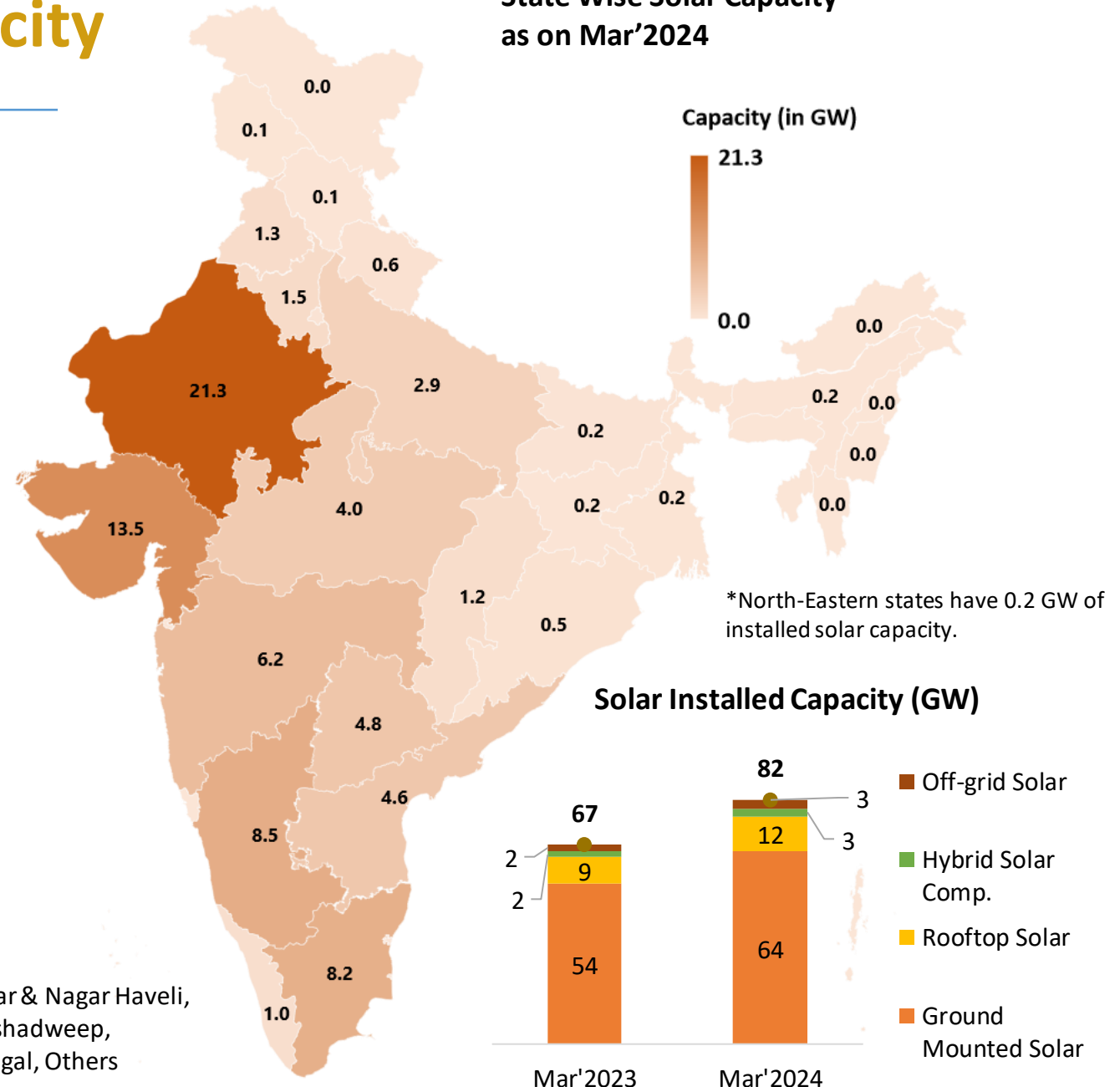
- A total of 68 GW of generation capacity has been added in RE (Hydro, solar, wind, and other RES) over the past 5 years, whereas the net coal capacity addition during the same period was 17 GW, mostly in the central sector.

State-wise Solar Installed Capacity

State-wise installed capacity of Solar Power (GW)			
States	2022-23	2023-24	Change over previous year (%)
Rajasthan	17.06	21.35	25%
Gujarat	9.25	13.54	46%
Karnataka	8.24	8.54	4%
Tamil Nadu	6.74	8.21	22%
Maharashtra	4.72	6.25	32%
Telangana	4.67	4.76	2%
Andhra Pradesh	4.53	4.58	1%
Madhya Pradesh	2.80	4.00	43%
Uttar Pradesh	2.52	2.92	16%
Haryana	1.03	1.48	43%
Punjab	1.17	1.32	13%
Chhattisgarh	0.95	1.21	28%
Kerala	0.76	1.02	34%
Uttarakhand	0.58	0.58	0%
Others	1.77	2.05	16%
All India	66.78	81.81	23%

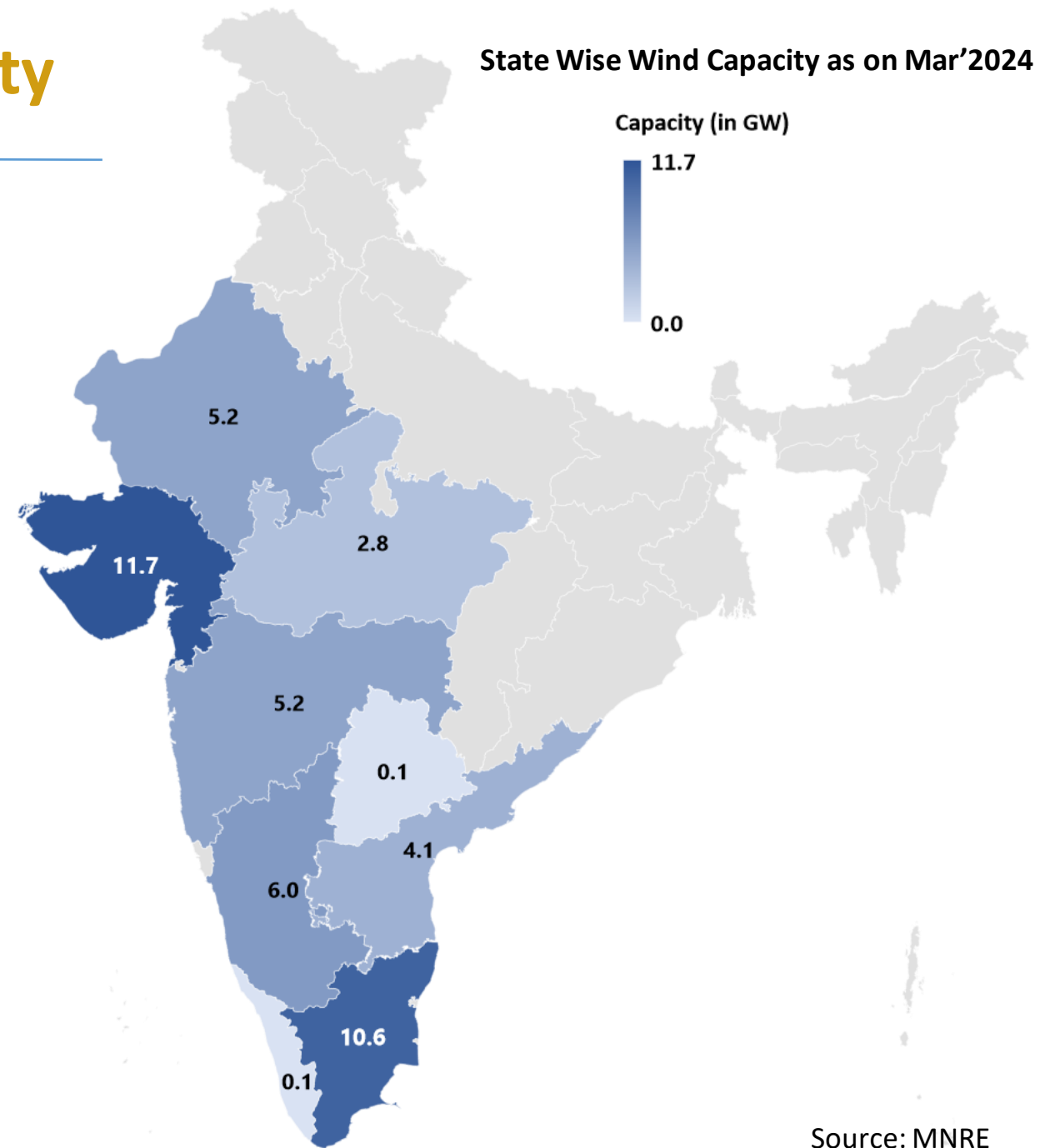
Others include- Andaman & Nicobar, Arunachal Pradesh, Assam, Bihar, Chandigarh, Dadar & Nagar Haveli, Daman & Diu, Delhi, Goa, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Ladakh, Lakshadweep, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Puducherry, Sikkim, Tripura, West Bengal, Others

State Wise Solar Capacity as on Mar'2024

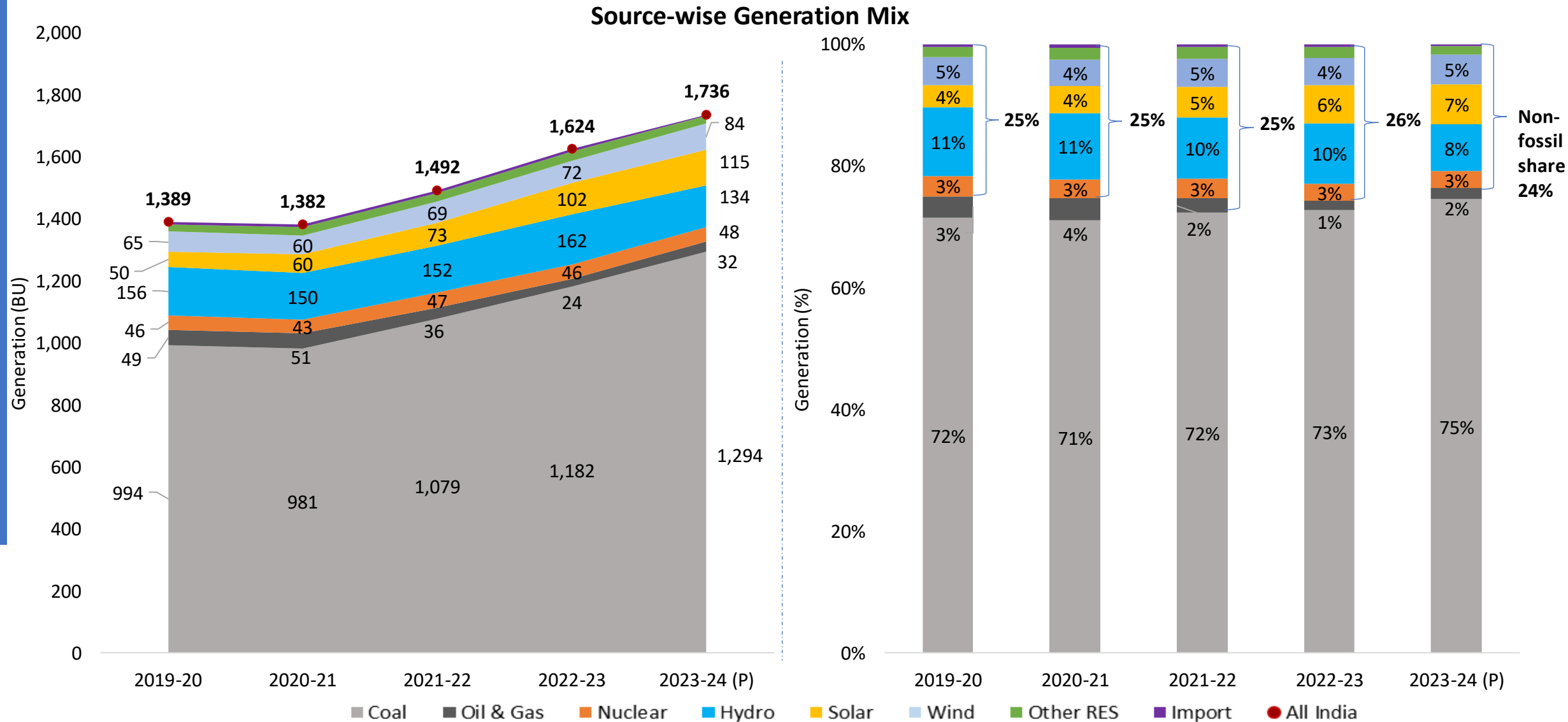


State-wise Wind Installed Capacity

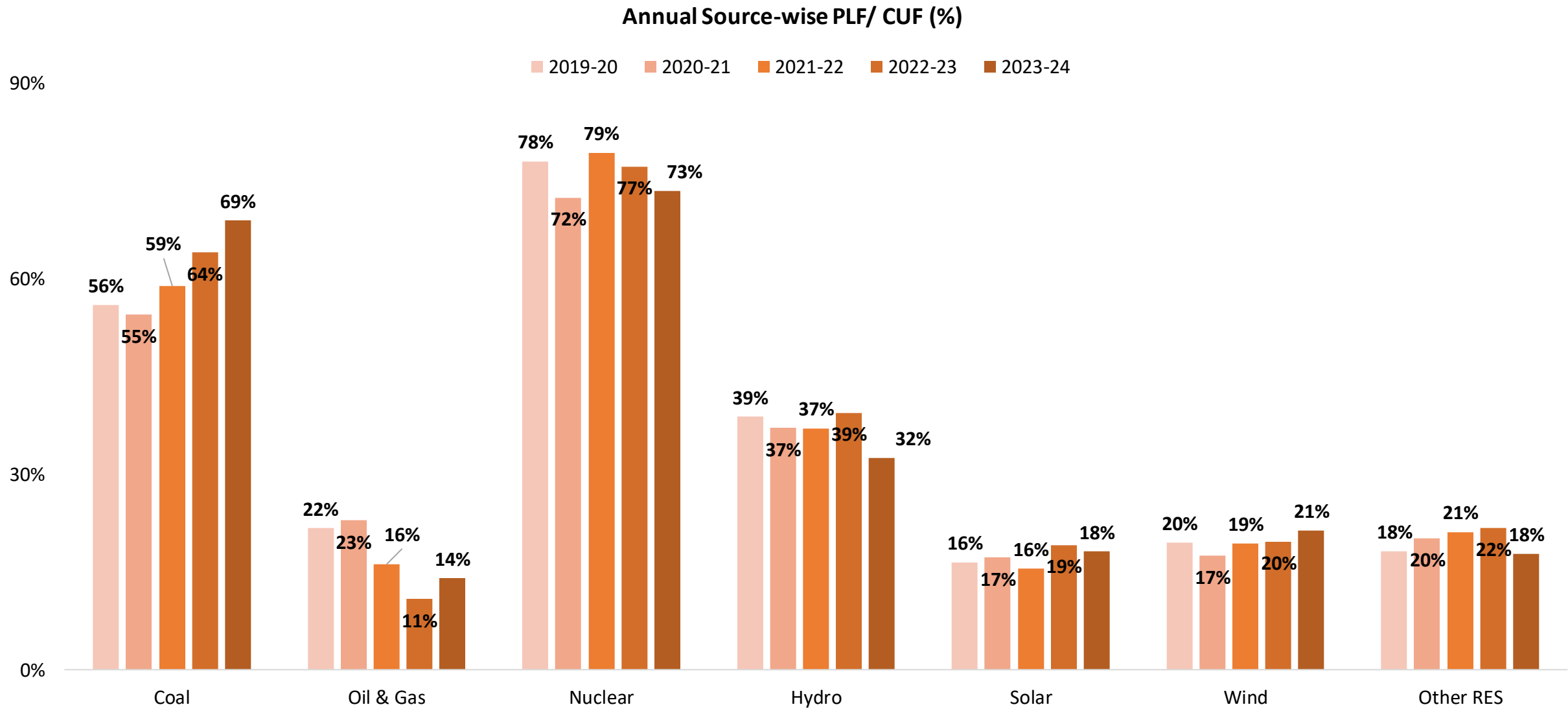
State-wise installed capacity of Wind (Onshore) Power (GW)			
States	2022-23	2023-24	Change over previous year (%)
Gujarat	9.98	11.72	17%
Tamil Nadu	10.02	10.60	6%
Karnataka	5.29	6.02	14%
Maharashtra	5.01	5.21	4%
Rajasthan	5.19	5.20	0%
Andhra Pradesh	4.10	4.10	0%
Madhya Pradesh	2.84	2.84	0%
Telangana	0.13	0.13	0%
Kerala	0.06	0.06	2%
All India	42.63	45.89	8%



India's Electricity Generation Mix

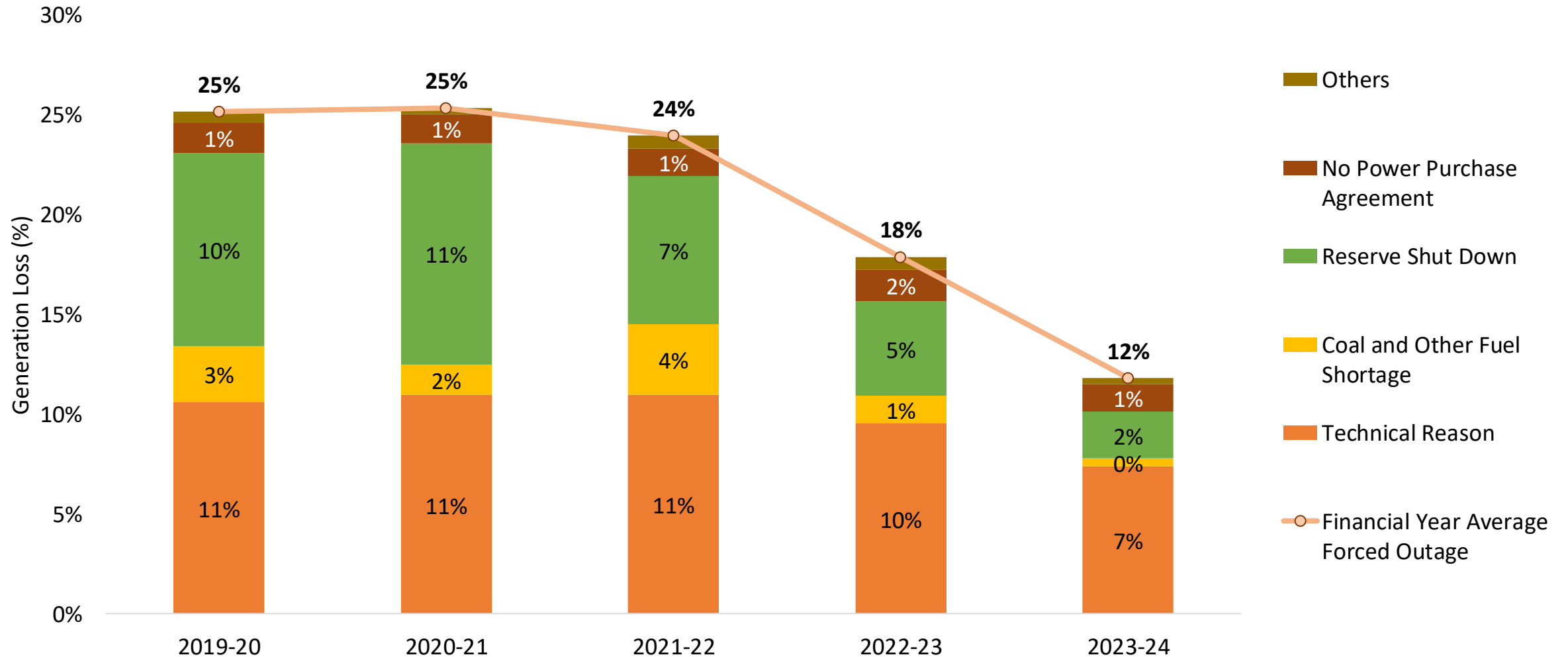


Source-wise PLF/ CUF

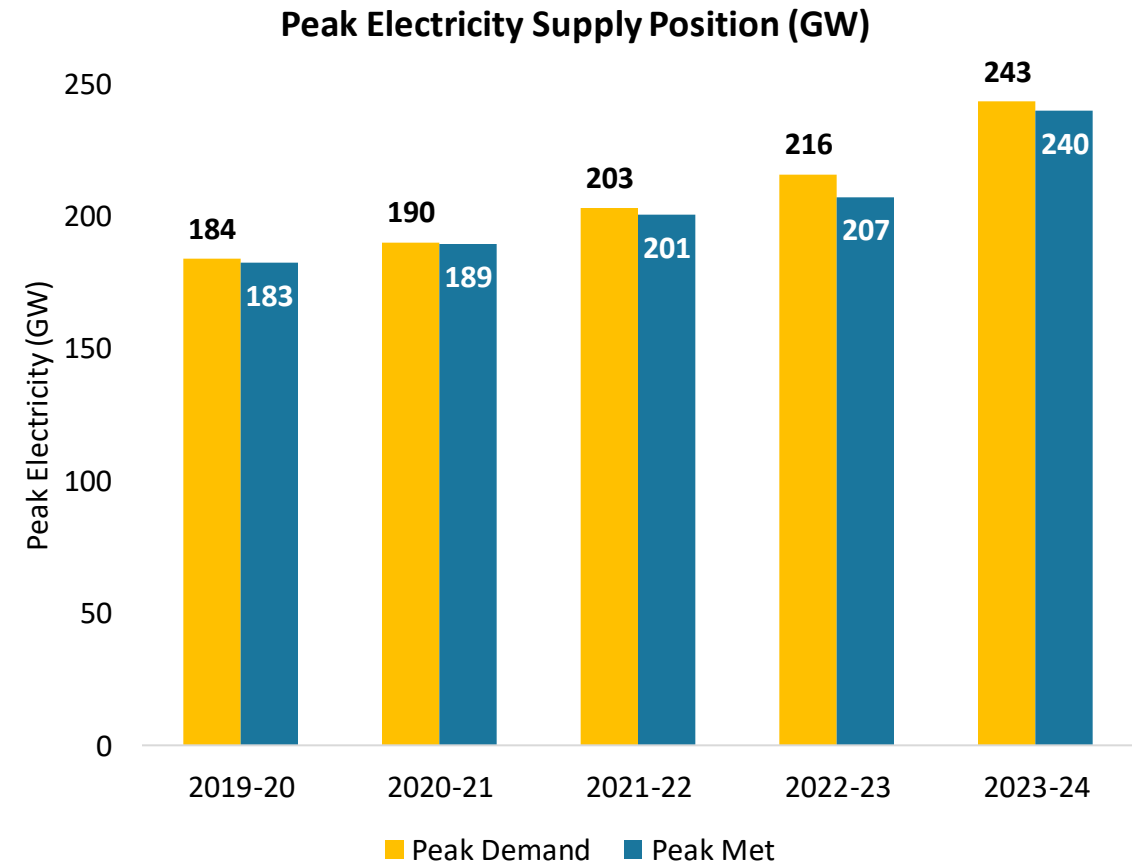
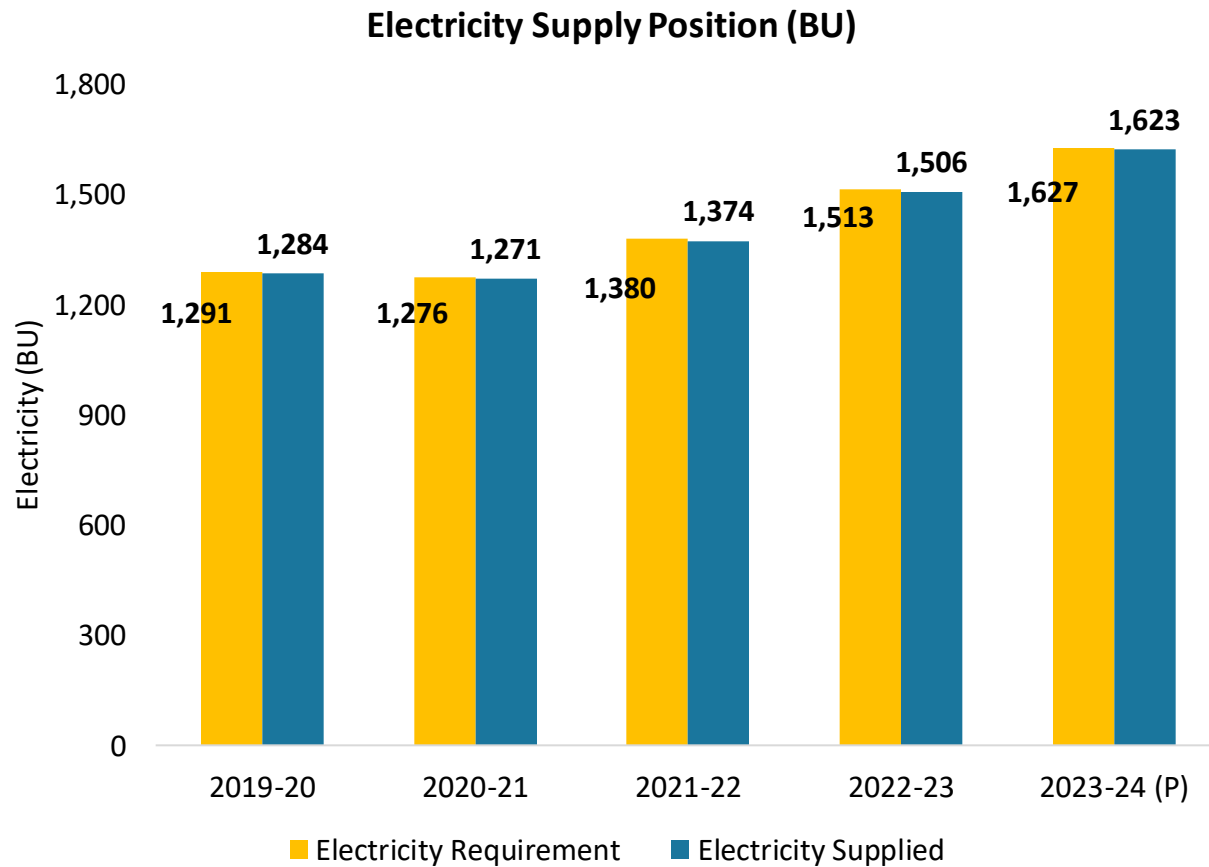


Thermal Generation Loss and Reasons for Forced Outages

Annual Forced Outages



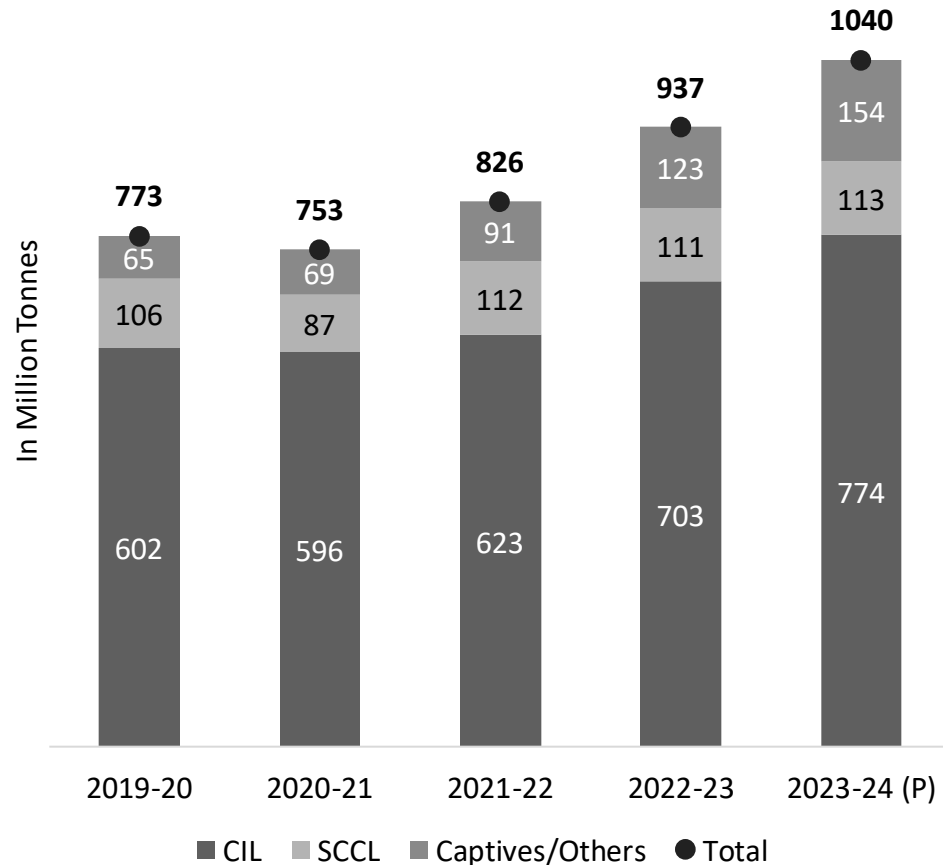
India's Electricity Demand and Supply Position



- National electricity demand in 2023-24 increased by 7% compared to the demand in 2022-23.
- National peak electricity demand in 2023-24 has increased by 13% compared to the peak demand in 2022-23.
- The peak demand deficit has decreased from 4.0% in 2022-23 to 1.4% in 2023-24.

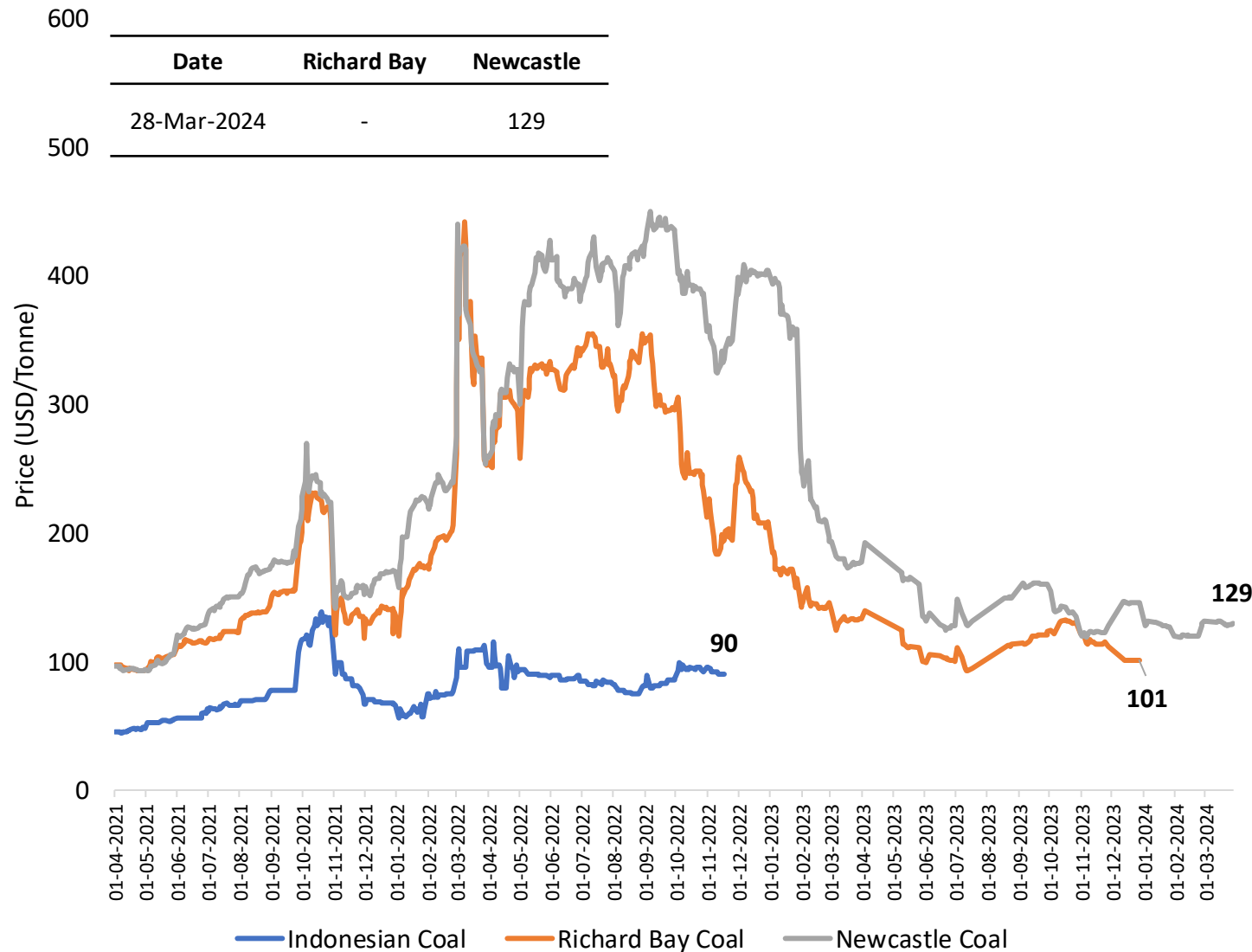
Annual Coal Statistics

Annual Coal Production (in Million Tonnes)

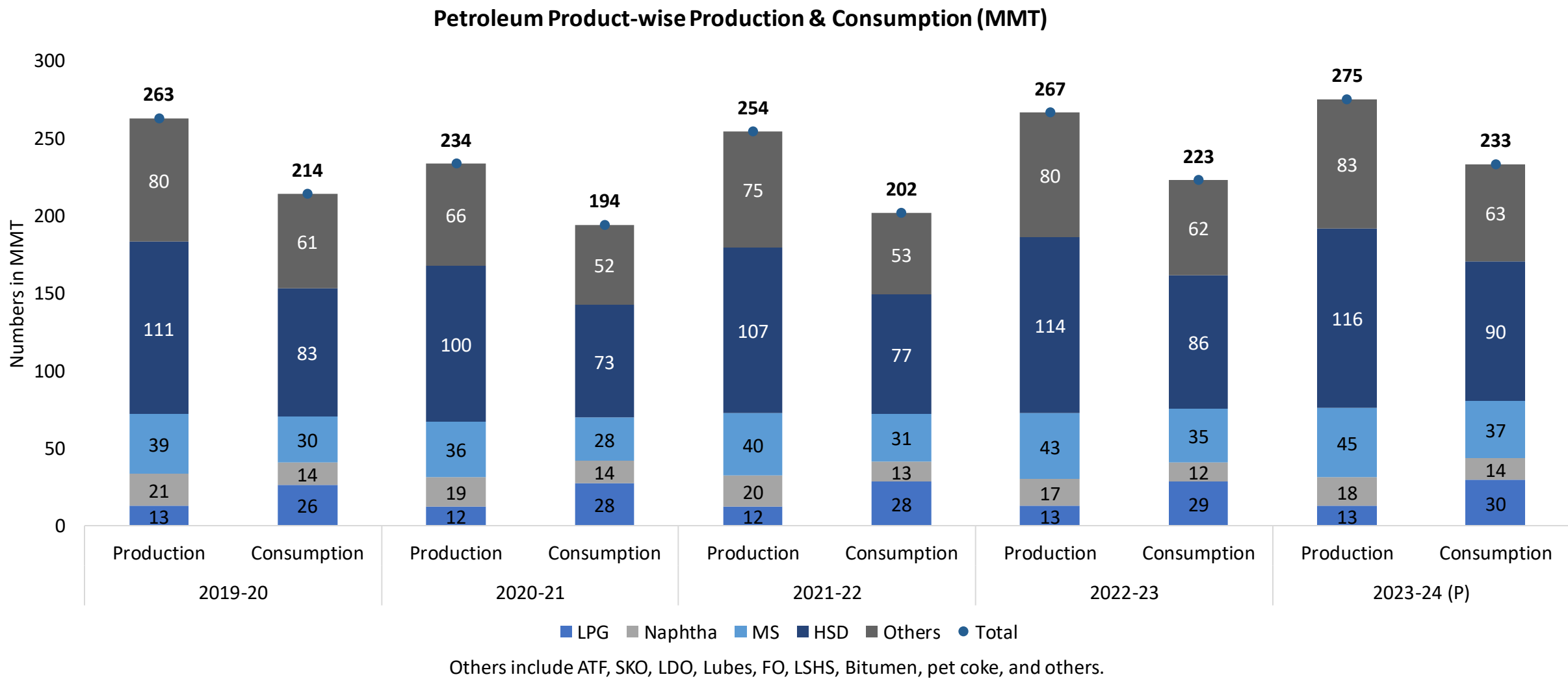


India's coal (incl. lignite) production reached 1.04 billion tonne in 2023-24, marking an 11% increase compared to the previous year (0.94 BT).

International Coal Prices



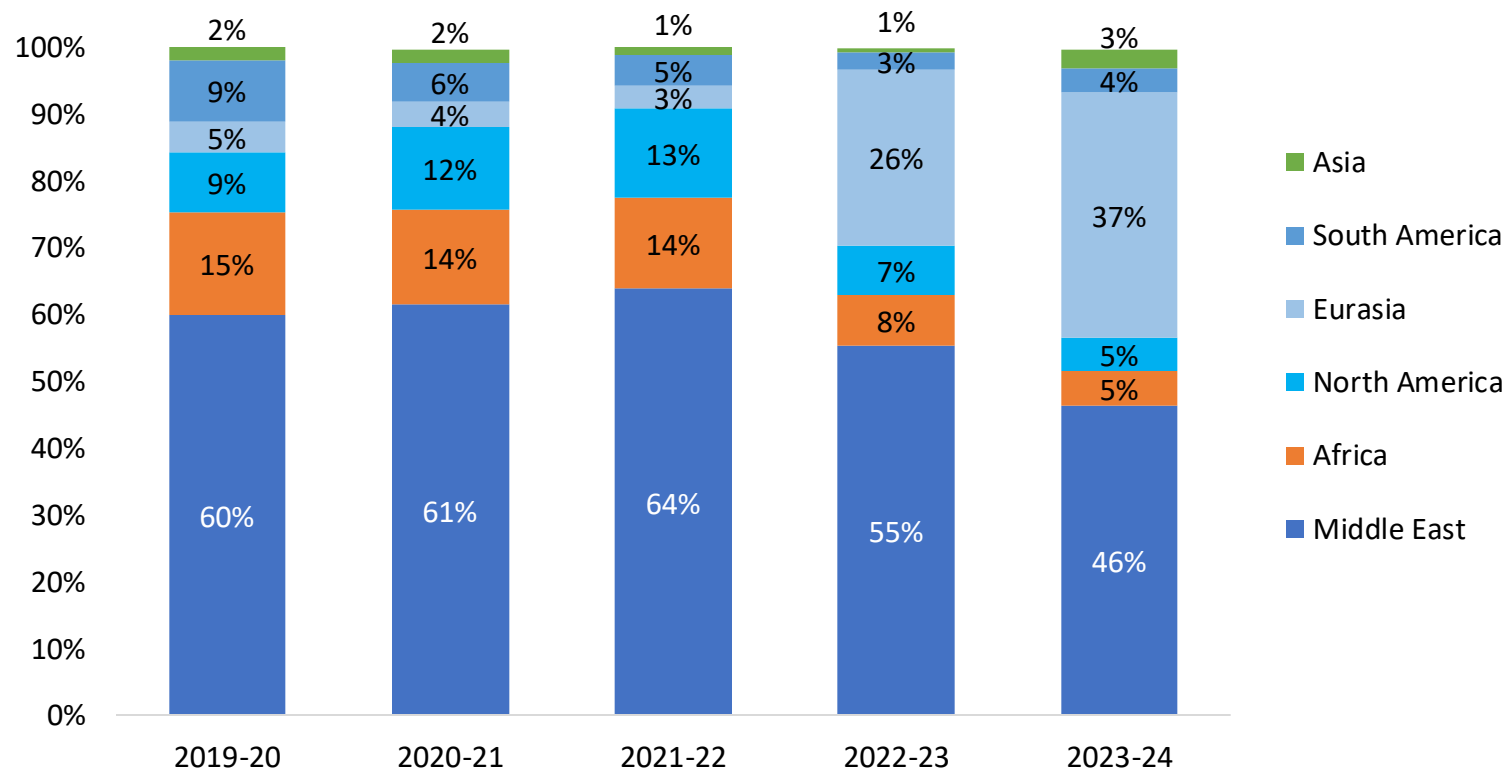
Petroleum Products Market Scenario (1/2)



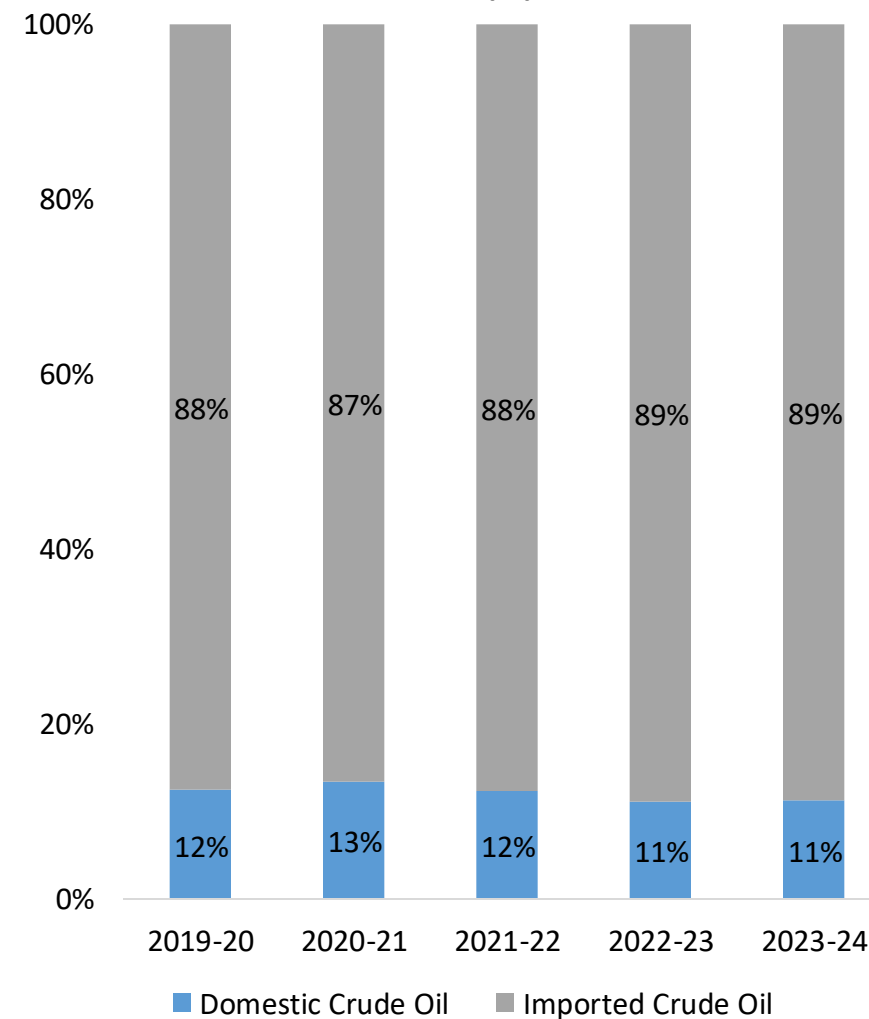
Abbreviations: ATF- Aviation Turbine Fuel, FO- Furnace Oil, HSD- High-Speed Diesel, LDO- Light Diesel Oil, MS- Motor Spirit (Petrol), SKO- Superior Kerosene Oil, LSHS- Low Sulphur Heavy Stock, LPG- Liquefied Petroleum Gas, MMT- Million Metric Tonne

Petroleum Products Market Scenario (2/2)

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



Domestic and Imported Crude Oil share in India (%)



Total Import of Crude Oil (MMT)

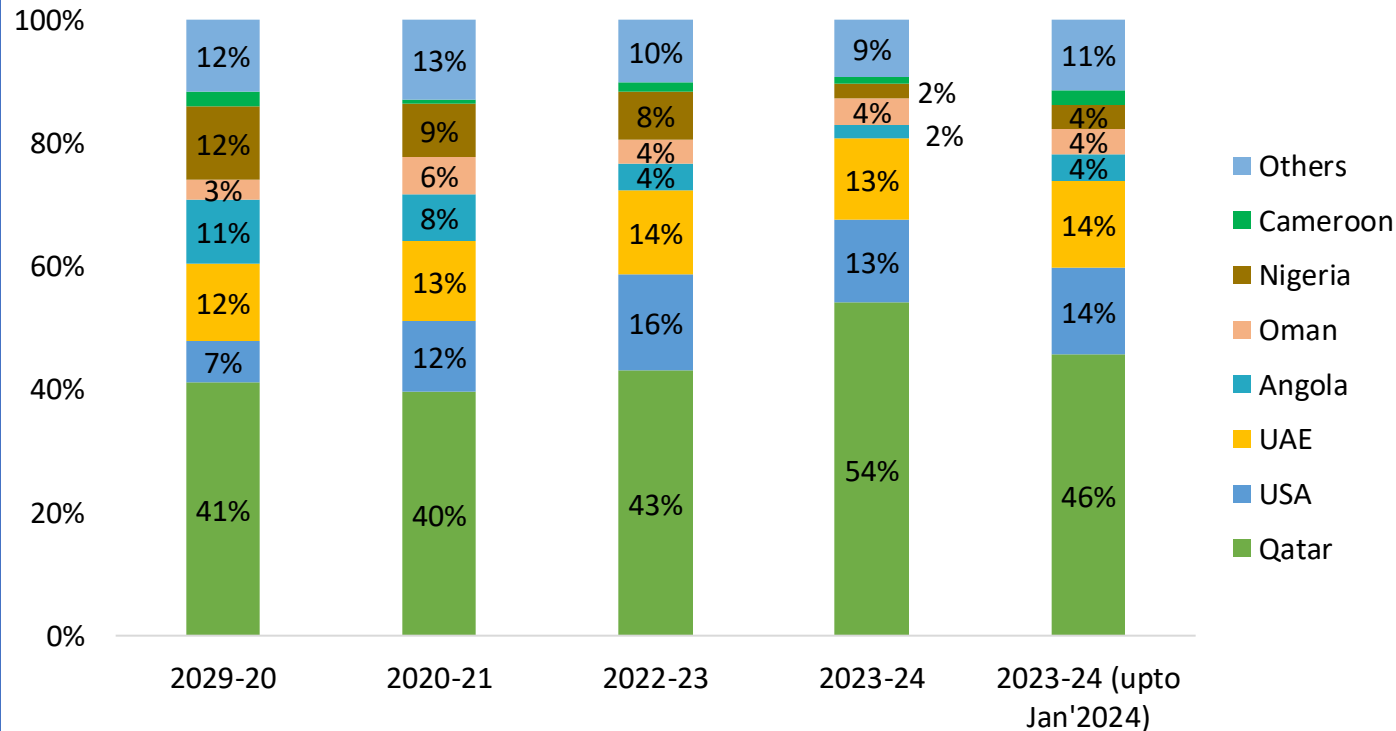
Total Import	2019-20	2020-21	2021-22	2022-23	2023-24
Crude Oil	227	196	212	233	213

Note: Data for 2023-24 are up to Feb'2024.

Source: MoPNG and PPAC

Gas Market Scenario

Country-wise Share in Import of LNG (%)

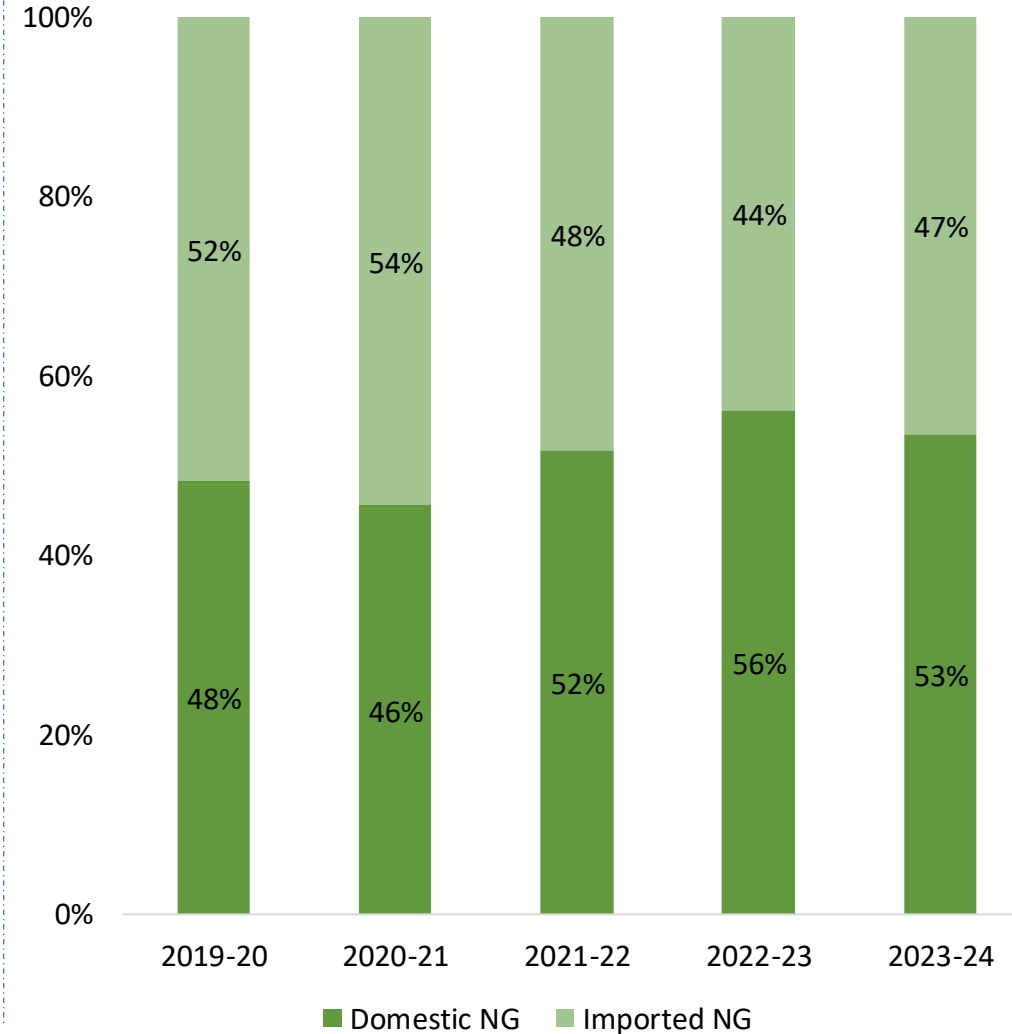


Others include- Egypt, France, Algeria, Belgium, Indonesia, Turkey, Russia, Spain, Malaysia, Brunei, Netherlands, Norway, Singapore, South Africa, Switzerland, UK, and others.

Total Import of Liquefied Natural Gas (LNG) (MMT)

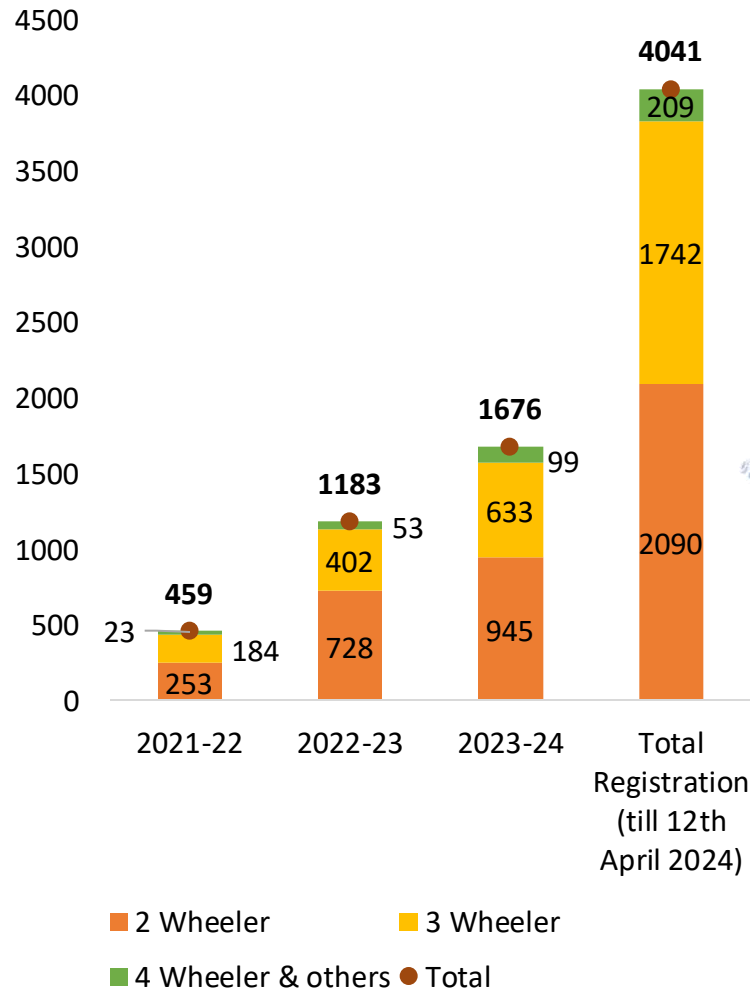
Total Import	2019-20	2020-21	2021-22	2022-23	2023-24
LNG	24.42	25.05	23.42	19.85	21.43

Domestic and Imported Natural Gas share in India (%)

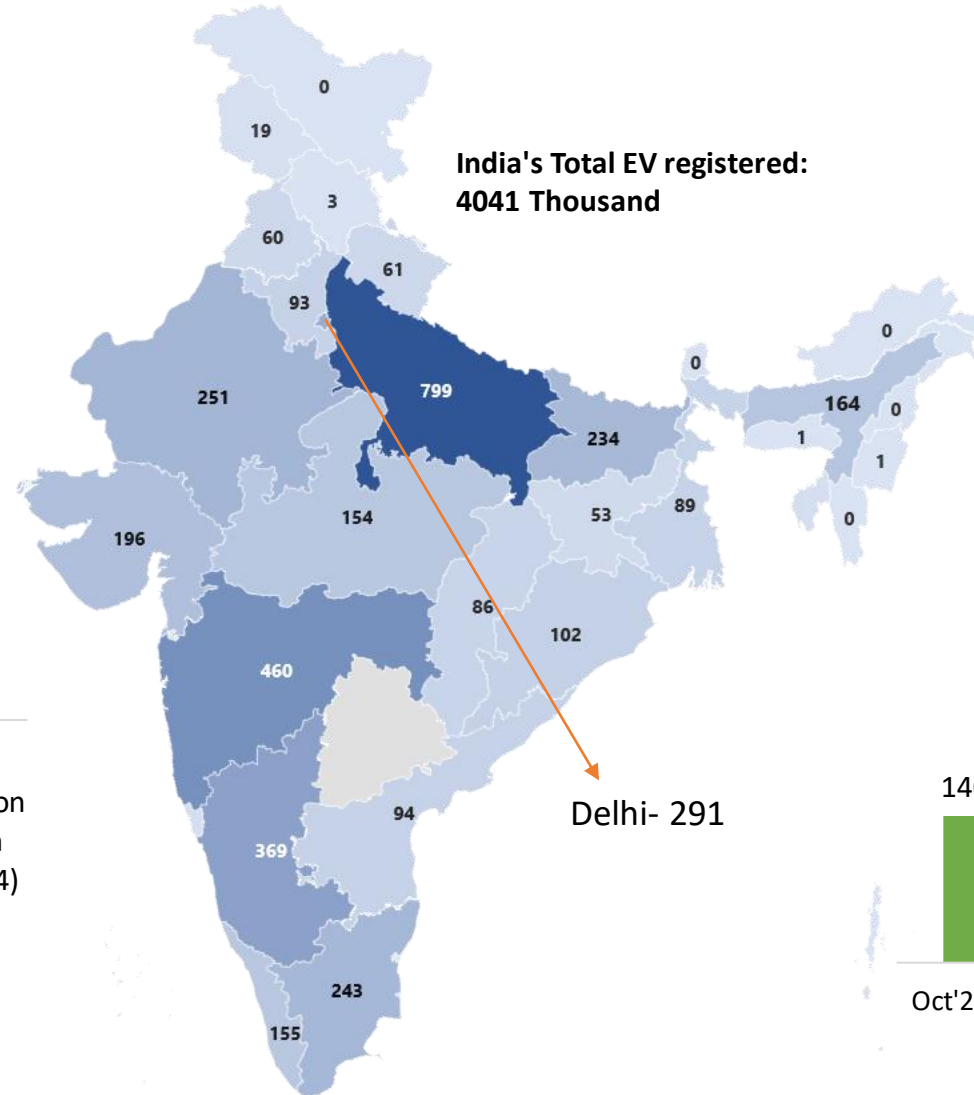


Status of Electric Mobility in India

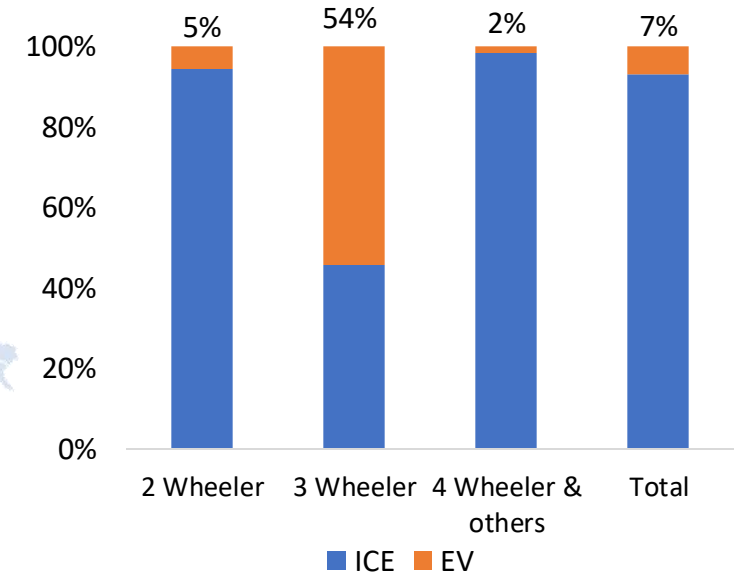
National EV registration (in Thousands)



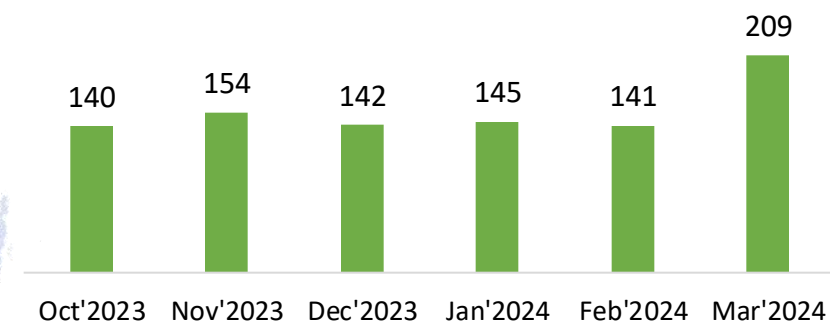
Cumulative State-wise EV registration as on 12th April 2024 (in Thousands)



EV and ICE sale composition in 2023-24



Provisional Monthly EV registered (in Thousands)



Policy Highlights/ Announcements in 2023-24 (1/4)

A. Renewable Energy and New Technologies

- Ministry of New and Renewable Energy has declared a plan to [add 50 GW of renewable energy capacity annually for the next 5 years](#) to achieve the target of 500 GW by 2030.
- MNRE has released the [Strategy for Establishment of Offshore Wind Energy Projects](#) and plans to auction 37 GW of offshore site leases in the next 7 years (until FY30). They have formulated three models for developing offshore wind energy projects, especially along the southern and western shorelines of the country-
 - Model A: (1 GW) PPA award tender to be supported with Viability Gap Funding (VGF)
 - Model B: (14 GW) Exclusive site lease tender without VGF support
 - Model C: (22 GW) Sea-bed allocation bid for project development without VGF support
- On 7th December 2023, the MNRE issued the [National Repowering & Life Extension Policy for Wind Power Projects- 2023](#), superseding the policy for Repowering of the Wind Power Projects- 2016. The updated policy allows the refurbishment of wind turbines to extend their operational life beyond the design life, pending safety and performance assessments adhering to relevant standards, through modifications in components such as gearbox, blades, generator, controller, etc. The policy aims to enhance the utilization of wind energy resources by maximizing energy (kWh) yield per square kilometer of the project area and utilizing the latest state-of-the-art onshore wind energy technologies. According to the National Institute of Wind Energy, the country's estimated repowering potential is 25.41 GW, considering wind turbines with a capacity below 2 MW.
- Prime Minister Shri Narendra Modi approved [PM-Surya Ghar: Muft Bijli Yojana](#) on 13th February 2024 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 Ministry of New and Renewable Energy (MNRE) has unveiled a [New Solar Power Scheme for Particularly Vulnerable Tribal Groups \(PVTG\) under Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan \(JANMAN\)](#) from 2023-24 to 2025-26. The scheme will cover the electrification of 1 lakh un-electrified households in PVTG areas of 18 states. A total outlay of 515 crores is allocated till 2025-26. The funds for implementing the scheme will be met from the development action plan for scheduled tribes allocation of MNRE.

Policy Highlights/ Announcements in 2023-24 (2/4)

- The MNRE has released comprehensive guidelines for the [Pradhan Mantri Kisan Urja Suraksha evem Utthan Mahabhiyan \(PM KUSUM\) scheme](#). All three components of the scheme aim to add solar capacity of about 34,800 MW by March 2026 with a total Central Financial support of Rs 34,422 crore.
- The Ministry of Power, Government of India, has unveiled a comprehensive [National Framework for promoting Energy Storage Systems](#) (ESS). The key objectives are:
 - to ensure a constant supply of renewable energy (Renewable Energy- Round the Clock)
 - to reduce greenhouse gas emissions and lower energy costs by incentivizing ESS deployment while reducing the reliance on fossil fuel power plants
 - to enhance grid stability and reliability through ESS deployment
 - stimulate innovation in energy storage technologies, and ensure equitable access to energy storage for all segments of the population.
- MNRE unveiled the [Green Hydrogen Standards for India](#), which outlines that the greenhouse gas emissions resulting from the production of hydrogen through electrolysis and biomass conversion should not surpass 2 kg of carbon dioxide per kg of hydrogen over the span of a year.
- Ministry of New and Renewable Energy has released the guidelines for implementing Strategic Interventions for Green Hydrogen Transition (SIGHT) Programme of the National Green Hydrogen Mission from 2025-26 to 2029-30. The components of the programme are [Component I: Incentive Scheme for Electrolyser Manufacturing](#) with an outlay of Rs. 4,440 crores under this component and [Component II: Incentive Scheme for Hydrogen Production \(under Mode I\)](#) with an outlay of Rs. 13,050 crores.
- The Ministry of New and Renewable Energy (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 National Green Hydrogen Mission (NGHM).
- The Ministry of New and Renewable Energy has released the [scheme guidelines for setting up Hydrogen Hubs in India under the National Green Hydrogen Mission](#). It's target is to establish at least two green hydrogen hubs by 2025-26 with a budgetary outlay of Rs 200 crores.
- The MNRE has sanctioned the project '[Green Energy Corridor \(GEC\) Phase II](#)' will facilitate the evacuation of power from renewable energy (RE) power project comprising 13 GW capacity along with 12 GWh Battery Energy Storage System (BESS) in Ladakh.

Policy Highlights/ Announcements in 2023-24 (3/4)

- The Ministry of Power notified the minimum [renewable energy consumption obligation](#) for the year 2024-2030. The obligation will have to be met directly, or through the purchase of renewable energy certificates (issued to those surpassing their target).
- Under the FAME-II scheme, [subsidies for electric 2-wheelers have been reduced from Rs 15,000/kWh to Rs 10,000/kWh](#). Also, the maximum subsidy for electric 2-wheelers has been capped from 40% to 15% of the ex-factory price of the vehicles
- The Ministry of Heavy Industries has released the revised [Phased manufacturing program \(PMP\)](#) to promote the domestic manufacturing of EV chargers, its assemblies/ sub-assemblies, and parts/sub-parts thereby increasing the domestic value addition. The main highlights are:
 - The policy outlines the comprehensive list of charger components alongside their respective timelines.
 - EV charger manufacturers must achieve a minimum of 50% domestic value addition by 1st December 2024 to be eligible under the FAME II scheme.
- The Ministry of Heavy Industries has released the [Electric Mobility Promotion Scheme \(EMPS\) 2024](#) with an outlay of Rs 500 crore, proposed to be implemented over a period of 4 months, from 1st April 2024 to 31st July 2024, aimed at fostering the faster adoption of electric 2Ws and e-3Ws.
- On March 15th 2024, the Ministry of Heavy Industries released the scheme to [Promote Manufacturing of Electric Passenger Cars in India \(SPMEPCI\)](#), which aims to attract investments from global EV manufacturers and position India as a manufacturing hub for e-vehicles. The key highlights include:
 - The approved applicants will set up manufacturing facilities in India with a minimum investment of Rs. 4,150 crore for manufacturing of e-4W.
 - Minimum domestic value addition of 25% within 3 years and 50% within 5 years.
 - EV passenger cars (e-4W) can initially be imported with a minimum cost, insurance, and freight value of USD 35,000, at a duty rate of 15% for a period of 5 years. The maximum number of e-4W allowed to be imported at the reduced duty rate shall be capped at 8,000 per year.
- Ministry of Heavy Industries have [extended the tenure of the Production Linked Incentive \(PLI\) scheme for Automobile and Auto Components by one year](#) and incentive will be provided for determined sales for a total of five consecutive financial years, starting from the financial year 2023-24 to 2027-28 and disbursement of incentive will take place in the following financial year.

Policy Highlights/ Announcements in 2023-24 (4/4)

B. Power Sector

- The government has provided [bulk approval for the installation of ten nuclear reactors](#) (each of 700 MW). These reactors are planned to be set up in 'fleet mode' progressively by the year 2031 for Rs 1,05,000 crores.
- The Ministry of Power has issued [Guidelines for Resource Adequacy Planning Framework for India](#), in consultation with Central Electricity Authority (CEA). The guidelines will ensure that sufficient electricity is made available to power the country's growth, by putting in place a framework for advance procurement of resources by DISCOMs to meet the electricity demand in a cost-effective manner.
- The Ministry of Power has [extended its timeline from March 2024 to June 2024 for blending of imported coal to 6%](#) for all the central, state-generating companies, and IPPs to meet the anticipated increase in peak demand during summer season (Apr'24-Jun'24).

C. Carbon Capture and Trading

- Ministry of Power notified the [Carbon Credit Trading Scheme 2023](#) on 28th June 2023. The scheme entails the formation of a National Steering Committee for the Indian carbon market (NSCICM) for the governance and direct oversight of the Indian carbon market. The committee will be chaired by the Secretary, Ministry of Power (MoP); and co-chaired by the Secretary, Ministry of Environment, Forests and Climate Change (MoEF&CC).
- The Ministry of Environment, Forest and Climate Change (MoEFCC) has released the [Green Credit Rules, 2023](#). The program will incentivize environmental positive actions through market-based mechanisms and generate green credit, which will be tradable and made available for trading on a domestic market platform. And will also encourage industries, companies, and other entities to meet their existing obligations, and to undertake voluntary environmental measures by generating or buying green credit.



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