2 Chapter

Installed Capacity and Capacity Utilization

CHAPTER 2
Installed Capacity and Capacity Utilization

Introduction

In alignment with global sustainability commitments, the world has pledged to expand infrastructure and upgrade technologies to supply modern and sustainable energy services, particularly in developing countries. This aligns with Sustainable Development Goal (SDG) Target 7.B, which focuses on increasing energy access.

In the context of rapidly growing economies, especially in densely populated regions like Asia, there is an urgent need to shift towards cleaner energy sources. The demand for energy is continuously rising, driving the need for larger energy systems that can cater to the energy requirements of emerging economies.

In India, the focus has been on expanding the installed capacity of power generation while reducing reliance on primary fossil fuels. The goal is to provide reliable and affordable power through the optimized use of various energy resources, incorporating innovative and eco-friendly technologies. Furthermore, environmental and health concerns associated with the use of hydrocarbons have prompted the global community to adopt energy-efficient and clean energy systems.

It is essential to understand that not all potential energy resources can be converted into capacity, and generating capacity does not directly equate to actual generation due to factors like production losses, plant downtime for maintenance, and refuelling.

This chapter presents a comprehensive overview of the installed capacity for coal washeries, oil refineries, and electricity generation in India.

Chapter 2: Installed capacity and capacity utilization

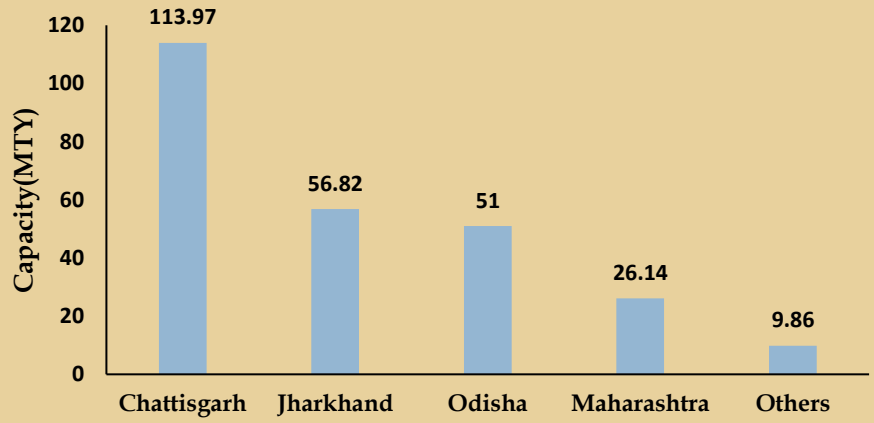
Highlights of installed capacity and capacity utilisation

2.1 Installed Capacity of Coal Washeries

As of 31-03-2024, the total installed capacity of coal washeries in India stood at **257.79 million Tons per Year (MTY)** (Table 2.1). This capacity plays a critical role in enhancing the quality of coal, ensuring its efficient use in power plants and industrial applications.

The State wise Installed Capacity of Coal washeries shown in **figure 2.1**.

Fig. 2.1 State wise Installed Capacity of Coal washeries



Others states include Uttar Pradesh, West Bengal, Madhya Pradesh and Telangana

2.2 Refinery and Oil Refining Capacity in India

As of **March 31, 2024**, India has 23 refineries in total—19 in the public sector and 4 in the private sector/joint ventures. India's total refining capacity reached **2,56,816** thousand Metric Tonnes per Annum (TMTPA), an increase of **2,900** TMTPA from the previous year. Public sector refineries still lead, making up over 61% of the refining capacity, with major players like **IOC**, **BPCL**, and **HPCL** at the forefront. Crude throughput increased from 2,55,233 TMT in 2022-23 to 2,61,545 TMT in 2023-24, a **2.47**% rise, which reflects the growing demand for petroleum products.

Fig. 2.2: Refinery wise capacity utilisation(in%)

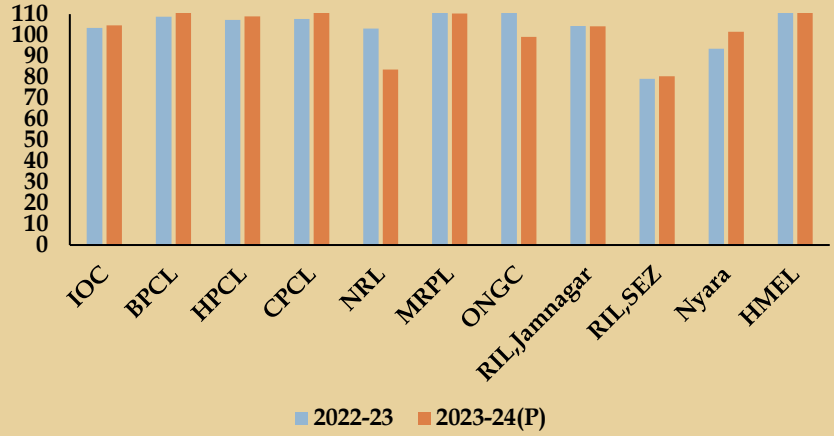
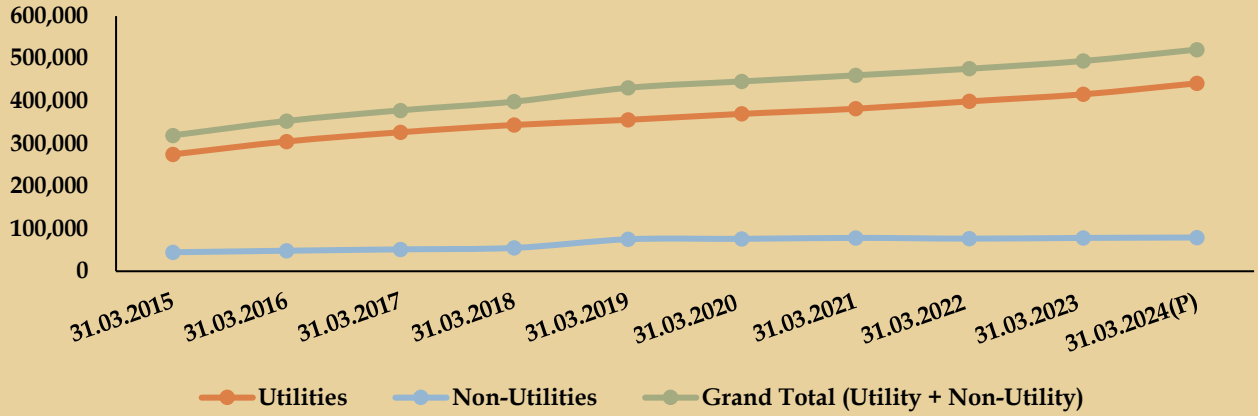


Figure 2.2 shows all the refineries have improved their utilization or maintained a solid performance over the previous year except NRL and ONGC.

2.3 Installed Electricity Generation Capacity

India's electricity generation capacity has continued to grow significantly, driven by both traditional and renewable energy sources. The total installed capacity in the FY 2023-24 reached **5,21,310 MW**, marking a **5.43** % increase from the previous year, where it stood at **4,94,459 MW**. This robust growth highlights the country's commitment to meeting the rising demand for electricity driven by industrialization, urbanization, and population growth. The year wise growth of installed electricity generation capacity over the last 10 years is shown in **figure 2.3**.

Fig 2.3:Trends in Installed Electricity Generation Capacity (MW) in India



2.3.1 Capacity by Source and Utility Distribution

A significant portion of the total installed capacity comes from utility-owned generation, which accounts for 84.78% of the total. This dominance is largely due to the substantial contributions of large public-sector utilities in the country, which play a major role in energy generation.

Fig 2.4: Trends in Installed Electricity Generation Capacity from Utilities (MW) in India - Sourcewise

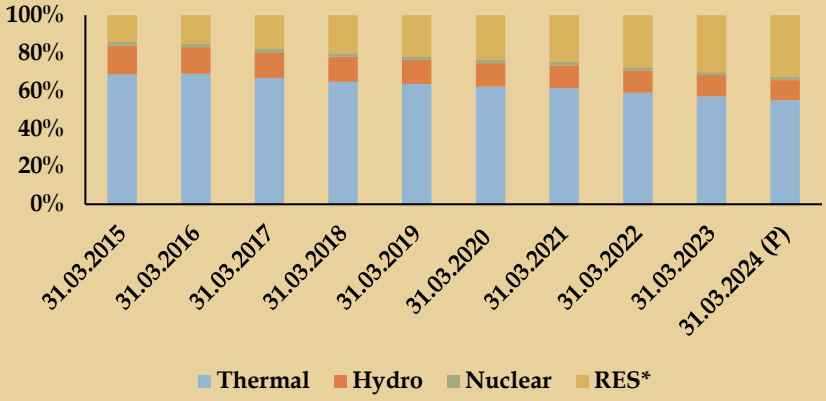


Figure 2.4 shows the installed capacity by energy source, such as thermal, nuclear, renewable, and hydro, over the last decade.

2.3.2 Growth in Renewable Energy

The evolution of India's energy mix is increasingly shifting towards renewable energy sources, reflecting global trends toward sustainability. In 2023-24(P), the installed capacity of renewable energy sources (excluding large hydro-capacity>25 MW) grew by 14.77%, showcasing the strong momentum towards cleaner energy. This growth aligns with India's national renewable energy targets and the country's commitment to reducing its carbon footprint.

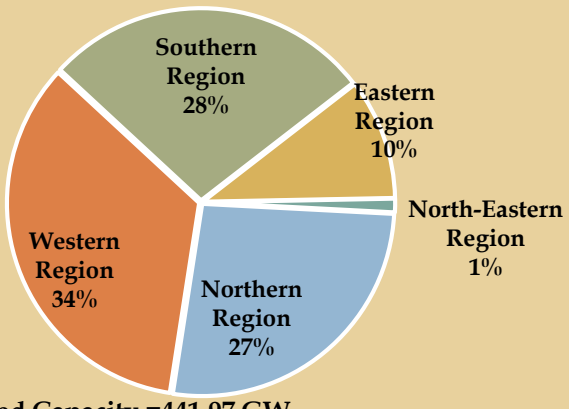
2.3.3 Thermal Energy Growth (Utility and Non-utility)

While renewable sources are growing rapidly, thermal energy generation—largely powered by coal and natural gas—continues to form the backbone of India's energy infrastructure. However, the growth rate of thermal energy capacity was more modest at **2.08%** in **2023-24(P)** compared to previous year. This slower growth rate reflects a broader strategic shift towards diversifying the energy mix and decreasing dependency on fossil fuels.

2.4 Geographical Distribution of Installed Electricity Capacity (As of 31.03.2024)

As shown in **figure 2.5**, the geographical distribution of India's installed electricity generation capacity shows the **Western Region** leading with **34%**, followed by the **Southern Region** at **28%** and the **Northern Region** with **27%**.

Fig 2.5: Regionwise Installed Generation Capacity of Electricity (Utilities)



Total Installed Capacity =441.97 GW

Additionally, Table 2.4 indicates that the **Northern Region** also holds the largest share of the country's hydropower capacity, while **Karnataka** leading in hydroelectric power at **3.63 GW** among states and Rajasthan leads in other renewable resources with **26.35 GW**.

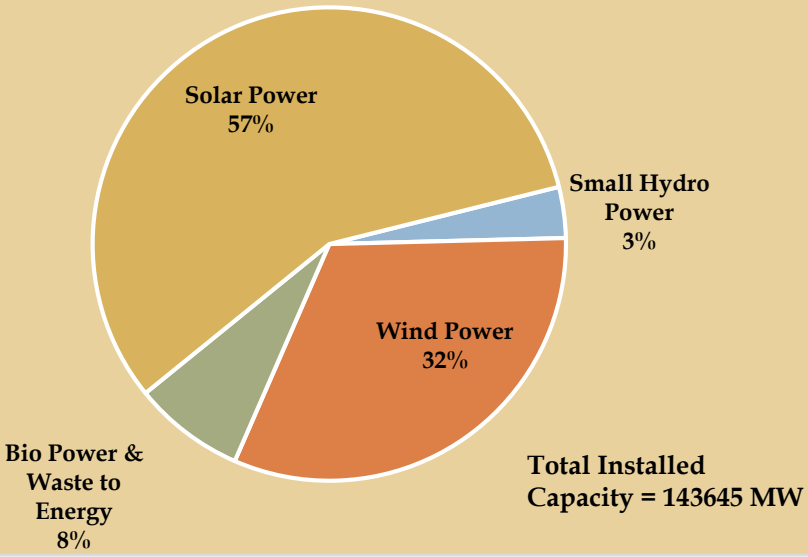
In terms of regional growth during 2023-24(P), the **Western Region** experienced the highest increase in installed capacity, registering a **7.66%** growth overall, alongside a significant **23.40%** rise in the installed capacity for renewable energy sources (RES), underscoring the region's increasing focus on clean energy. This trend highlights the ongoing shift towards renewable energy while meeting the rising demand for electricity across the country.

2.5 Grid-Interactive Renewable Power Capacity

The total installed capacity for **grid-interactive renewable power** grew from **1,25,160 MW** (as on 31.03.2024) to **1,43,645 MW** (as on 31.03.2023), reflecting a **growth of 14.77%** (Table 2.5).

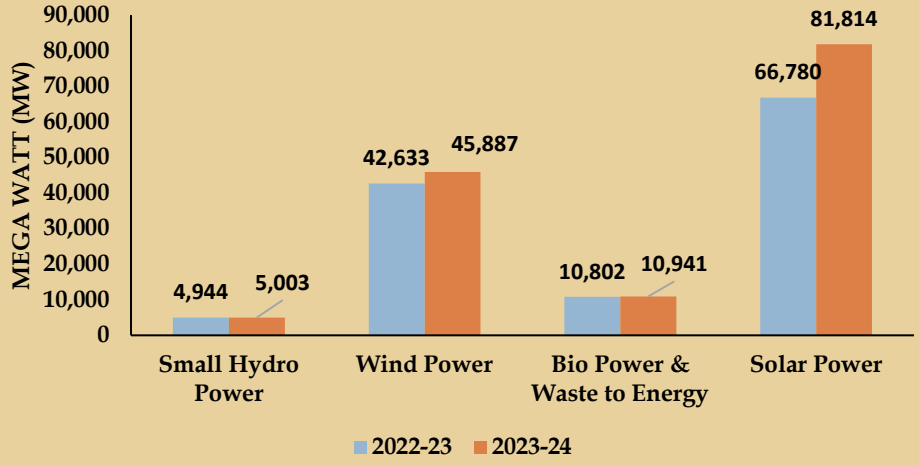
As shown in the **figure 2.6**, the Solar power continued to dominate the renewable energy sector, accounting for **57%** of the total installed capacity followed by wind power (32%) and bio power & waste-to-energy (8%).

Fig 2.6 : Sectorwise percentage distribution of Installed Grid-Interactive Renewable Power Capacity as on 31.03.2024



Among all sector solar power saw a significant growth rate of **22.51%** in installed capacity from **2022-23** to **2023-24(P)** as shown in the **figure 2.7**.

Fig 2.7 : Installed Capacity of Grid-Interactive Renewable Power During 2022-23 and 2023-24(P)



Among all the states, **Rajasthan** and **Gujarat** lead in renewable energy installations, with Rajasthan having the highest installed capacity of **26,693 MW** and Gujarat closely following at **25,472 MW**, largely driven by wind and solar power.

2.6 Off-Grid/Decentralized Renewable Energy Systems

India's off-grid or decentralized renewable energy systems have also shown steady growth. The installation of **solar street lighting systems (SLS)**, **home lighting systems**, and **solar lanterns** remained stable compared to the previous year. However, **solar photovoltaic plants (SPV)** registered a **growth rate of 19.61%** over the previous year, indicating a positive trend in decentralized renewable energy solutions (Figure 2.8).

Fig 2.8 : Installation of Off-grid / Decentralised Renewable Energy Systems/ Devices during last 3 years

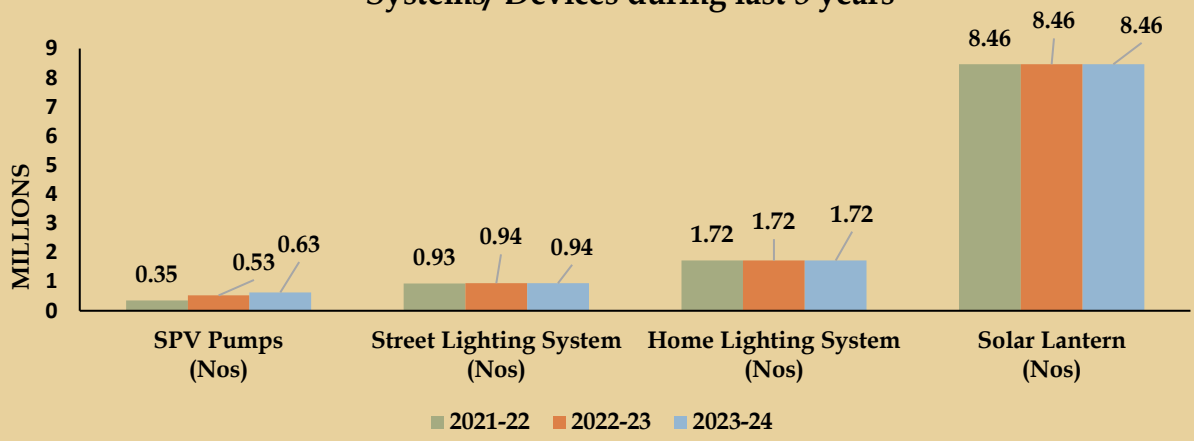


Table 2.1: Installed Capacity of Coal Washeries (as on 31.03.2024)

Sl. No.	Washery & Operator	State	Capacity (MTY)
	COKING COAL :		
1	Dudga-II, CIL	Jharkhand	2.00
2	Patherdih, CIL	Jharkhand	5.00
3	Moonidih, CIL	Jharkhand	1.60
4	Sudamdih, CIL	Jharkhand	1.60
5	Mahuda, CIL	Jharkhand	0.63
6	Madhuban,CIL	Jharkhand	2.50
7	Kathara, CIL	Jharkhand	3.00
8	Swang, CIL	Jharkhand	0.75
9	Rajrappa, CIL	Jharkhand	3.00
10	Kedla, CIL	Jharkhand	2.60
11	Nandan, CIL	Madhya Pradesh	1.20
12	Bhojudih, CIL	West Bengal	1.70
13	DahibarI, CIL	Jharkhand	1.60
14	Patherdih-New (NLW) , CIL	Jharkhand	5.00
15	Madhuband 5MTPA, CIL	Jharkhand	5.00
	(A) CIL		**37.18**
16	Chasnala, IISCO	Jharkhand	2.04
17	Jamadoba, TISCO	Jharkhand	2.00
18	West Bokaro-II, TISCO	Jharkhand	2.50
19	West Boakaro-III,TISCO	Jharkhand	4.50
20	Bhelatand, TISCO	Jharkhand	1.50
	(B) PSU & Private		**12.54**
	TOTAL COKING (A + B)		**49.72**
	NON-COKING COAL		
1	Piparwar,CIL	Jharkhand	6.50
2	Bina (De-Shaling Plant) CIL	Uttar Pradesh	4.50
3	Lakanpur IB Vallley Coal Washery , CIL	Odisha	10.00
	(A) CIL		**21.00**
4	MDCWL, Dakra, Ranchi	Jharkhand	3.50
5	Sarshatali Coal Washery	West Bengal	1.50
6	Dipka, Aryan coal beneficiation pvt. Ltd.	Chattisgarh	14.00
7	Gevra, Aryan coal beneficiation pvt. Ltd.	Chattisgarh	6.25
8	Chakabuwa, Aryan Energy private ltd.	Chattisgarh	7.50
9	Binjhari, Aryan Energy private ltd.	Chattisgarh	4.80
10	Tamnar, Jindal Steel & Power Ltd.(Unit1)	Chattisgarh	4.75
11	Ratija, Spectrum Coal & Power Ltd.	Chattisgarh	11.00
12	Maruti Clean Coal	Chattisgarh	3.30
13	Jindal Power Limited(JPL) (Unit 2)	Chattisgarh	3.20
14	Jindal Power Limited(JPL) (Unit 3)	Chattisgarh	3.60
15	Parsa East and Kanta Basan Coal Washery	Chattisgarh	15.00
16	ACB(India) Ltd,Renki Washery (formerly S.V.Power Pvt Ltd.)	Chattisgarh	2.50
17	Chattisgarh Power & Coal Benefication Ltd.	Chattisgarh	1.25

Contd….

Source: Ministry of Coal

Table 2.1(Contd.): Installed Capacity of Coal Washeries (as on 31.03.2024)

Sl. No.	Washery & Operator	State	Capacity (MTY)
18	Hind Energy & Coal Benefication (India) Ltd, Baloda	Chattisgarh	0.96
19	Hind Energy & Coal Benefication (India) Ltd., Gatora	Chattisgarh	0.96
20	Hind Multi Services Private Limited, Birghani, Janjgir	Chattisgarh	0.96
21	Clean Coal Enterprises Pvt. Ltd.,Gatora (Unit-1,2 &3)	Chattisgarh	4.42
22	Hind Multi Services Private Limited, Hindadih, Bilaspur	Chattisgarh	3.60
23	Sambhavi Coal Benefication Pvt. Ltd., Gatora	Chattisgarh	0.90
24	Bhatia Energy & Minerals Pvt Ltd Coal Washery	Chattisgarh	5.00
25	KJSL Coal & Power Pvt. Ltd.	Chattisgarh	4.10
26	K L Energy & Coal Beneficiation Pvt. Ltd.	Chattisgarh	0.90
27	Mahavir Coal Washeries Pvt. Ltd., Baloda (Unit I)	Chattisgarh	0.95
28	Mahavir Coal Washeries Pvt. Ltd,Baloda. (Unit II)	Chattisgarh	0.96
29	Mahavir Coal Washeries Pvt. Ltd.	Chattisgarh	2.48
30	Mahavir Coal Washeries Pvt. Ltd.,Sakri Belmundi	Chattisgarh	0.95
31	Paras Power & Coal Benefication Ltd., Ghutku	Chattisgarh	0.96
32	Paras Power & Coal Benefication Ltd., Ghutku	Chattisgarh	2.50
33	Phil Coal Benefication Pvt. Ltd, Ghutku Washery	Chattisgarh	2.50
34	Phil Coal Benefication Pvt. Ltd, Tenda Washery	Chattisgarh	0.90
35	Radiant coal beneficiation Pvt Ltd	Chattisgarh	1.86
36	Sarda Energy and Minerals Ltd.	Chattisgarh	0.96
37	Panderpauni, Aryan coal beneficiation pvt. Ltd.	Maharashtra	2.60
38	Wani, Kartikay Coal washeries pvt. ltd.(Aryan)	Maharashtra	2.50
39	Maha Mineral Mining & Beneficiation Pvt Ltd,Gondegaon Washery	Maharashtra	2.40
40	Maha Mineral Mining & Beneficiation Pvt Ltd, Ghugus Washery	Maharashtra	2.40
41	Maha Mineral Mining & Beneficiation Pvt Ltd, Pimpalgaon Washery	Maharashtra	4.80
42	Maha Mineral Mining & Beneficiation Pvt Ltd, Sasti Washery	Maharashtra	2.40
43	Maha Mineral Mining & Beneficiation Pvt Ltd, Wani Washery	Maharashtra	0.45
44	Maha Mineral Mining & Beneficiation Pvt Ltd, Majri Washery	Maharashtra	2.40
45	Rukhmai Coal Washery LLP, Nimbala Washery (Formerly M/s Bhatiya Coal Washery Ltd.)	Maharashtra	3.73
46	Rukhmai infrastructure Pvt. Ltd., Gondegaon	Maharashtra	1.50
47	Rukhmai infrastructure Pvt. Ltd., Pandharpouni (Bhatiya Coal washeries Ltd)	Maharashtra	0.96
48	ALPS Mining Services (Formerly Bhatia Coal Washery)	Odisha	2.00
49	Aryan Energy Pvt. Ltd., Talcher	Odisha	2.34
50	Aryan Ispat and Power Pvt. Ltd.	Odisha	0.70
51	ACB (india) Ltd, Hemgir	Odisha	5.00
52	ACB (india) Ltd,Talcher Unit.	Odisha	11.00
53	Earth Minerals Company Ltd.	Odisha	4.00
54	Global Coal & Mining Pvt. Ltd.,Talcher Unit	Odisha	4.00
55	Global Coal & Mining Pvt. Ltd.,Jharsuguda Unit, IB Valley	Odisha	4.00
56	Jindal Steel & Power Ltd, Angul	Odisha	6.00
57	Shyam Metalics and Energy Ltd, Rengali	Odisha	1.00
58	Utkal Energy Ltd.	Odisha	0.96
59	Manuguru, Global coal Mining (P) Ltd.	Telengana	0.96
	(B) Private		**187.07**
	TOTAL NON-COKING (A+B)		**208.07**
	Gross Total (Coking + Non-Coking)		**257.79**

Source: Ministry of Coal

Table 2.2: Installed Capacity and Utilization of Refineries of Crude Oil

Sl. No.	Refinery	Refinery Capacity (TMTPA)			Crude Oil Processed (TMT)		Capacity Utilisation (%)		
		31.03.2022	31.03.2023	31.03.2024	2022-23	2023-24 (P)	2022-23	2023-24 (P)	Change in Utilisation
1	2	3	4	5	6	7	8	9	10
(a)	**PUBLIC SECTOR**	**151,716**	**154,416**	**157,316**	**161,500**	**165,885**	**106.45**	**107.43**	**0.98**
	IOCL, Guwahati, Assam	1,000	1,000	1,200	1,080	1,000	107.97	100.05	-7.92
	IOCL, Barauni, Bihar	6,000	6,000	6,000	6,785	6,618	113.09	110.29	-2.79
	IOCL, Koyali, Gujarat	13,700	13,700	13,700	15,567	15,202	113.63	110.96	-2.66
	IOCL, Haldia, West Bengal	8,000	8,000	8,000	8,506	8,060	106.33	100.74	-5.59
	IOCL, Mathura, Uttar Pradesh	8,000	8,000	8,000	9,573	9,191	119.66	114.88	-4.78
	IOCL, Digboi, Assam	650	650	650	713	710	109.68	109.26	-0.42
	IOCL, Panipat, Haryana	15,000	15,000	15,000	13,810	14,305	92.07	95.36	3.30
	IOCL, Bongaigaon, Assam	2,700	2,700	2,700	2,775	3,009	102.78	111.44	8.66
	IOCL, Paradip, Odisha	15,000	15,000	15,000	13,599	15,213	90.66	101.42	10.77
	Total IOC	**70,050**	**70,050**	**70,250**	**72,408**	**73,308**	**103.37**	**104.65**	**1.28**
	BPCL, Mumbai, Maharashtra	12,000	12,000	12,000	14,546	15,052	121.22	125.43	4.21
	BPCL, Kochi, Kerala	15,500	15,500	15,500	16,017	17,314	103.33	111.70	8.37
	BPCL, Bina, Madhya Pradesh	7,800	7,800	7,800	7,841	7,133	100.52	91.45	-9.08
	Total BPCL	**35,300**	**35,300**	**35,300**	**38,404**	**39,499**	**108.79**	**111.89**	**3.10**
	HPCL, Mumbai, Maharashtra	9,500	9,500	9,500	9,804	9,639	103.20	101.46	-1.74
	HPCL, Visakh, Andhra Pradesh	8,300	11,000	13,700	9,287	12,689	111.89	115.35	3.47
	Total HPCL	**17,800**	**20,500**	**23,200**	**19,091**	**22,328**	**107.25**	**108.92**	**1.66**
	CPCL, Manali, Tamil Nadu	10,500	10,500	10,500	11,316	11,642	107.77	110.88	3.11
	CPCL, Narimanam, Tamil Nadu	-	-	-	-	-	-	-	-
	Total CPCL	**10,500**	**10,500**	**10,500**	**11,316**	**11,642**	**107.77**	**110.88**	**3.11**
	NRL, Numaligarh, Assam	3,000	3,000	3,000	3,091	2,510	103.05	83.66	-19.39
	MRPL, Mangalore, Karnataka	15,000	15,000	15,000	17,116	16,533	114.11	110.22	-3.89
	ONGC, Tatipaka, Andhra Pradesh	66	66	66	74	65	111.40	99.10	-12.29
(b)	**PRIVATE SECTOR & JVs SECTOR**	**99,500**	**99,500**	**99,500**	**93,733**	**95,660**	**94.20**	**96.14**	**1.94**
	RIL, Jamnagar, Gujarat	33,000	33,000	33,000	34,433	34,390	104.34	104.21	-0.13
	RIL, SEZ-Jamnagar, Gujarat	35,200	35,200	35,200	27,872	28,300	79.18	80.40	1.22
	Nyara Energy Ltd. Vadinar	20,000	20,000	20,000	18,692	20,322	93.46	101.61	8.15
	HMEL, GGS, Bathinda, Punjab	11,300	11,300	11,300	12,735	12,648	112.70	111.93	-0.77
	Total (a+b)	**251,216**	**253,916**	**256,816**	**255,233**	**261,545**	**101.60**	**103.00**	**1.41**

1.Total may not tally due to rounding off (P): Provisional

2. Crude throughput in terms of crude oil processed.

3. Capacity utilisation is equal to crude oil processsed in during year divided by refineing capacity at the 1st April of initial of year*100

Source: M/o Petroleum & Natural Gas

Table 2.3 (A) : Yearwise Installed Capacity of Electicity Generation in Utilities and Non-Utilities

(in Mega Watt = 10^3 Kilo Watt)

As on	Utilities							
	Thermal				Large Hydro	Nuclear	RES*	Total
	Steam	Diesel	Gas	Total				
1	2	3	4	5	6	7	8	9
31.03.2014	145,273	1,200	21,782	168,255	40,531	4,780	34,988	248,554
31.03.2015	164,636	1,200	23,062	188,898	41,267	5,780	38,959	274,904
31.03.2016	185,173	994	24,509	210,675	42,783	5,780	45,924	305,162
31.03.2017	192,163	838	25,329	218,330	44,478	6,780	57,244	326,833
31.03.2018	197,172	838	24,897	222,907	45,293	6,780	69,022	344,002
31.03.2019	200,705	638	24,937	226,279	45,399	6,780	77,642	356,100
31.03.2020	205,135	510	24,955	230,600	45,699	6,780	87,028	370,106
31.03.2021	209,295	510	24,924	234,728	46,209	6,780	94,434	382,151
31.03.2022	210,700	510	24,900	236,109	46,723	6,780	109,885	399,497
31.03.2023	211,856	589	24,824	237,269	46,850	6,780	125,160	416,059
31.03.2024 (P)	217,589	589	25,038	243,217	46,928	8,180	143,645	441,970
Growth rate of 2023-24 over 2022-23(%)	**2.71**	**0.03**	**0.86**	**2.51**	**0.17**	**20.65**	**14.77**	**6.23**
CAGR 2014-15 to 2023-24(%)	**3.15**	**-7.60**	**0.92**	**2.85**	**1.44**	**3.93**	**15.60**	**5.42**

* RES= Comprising of Solar, Wind, Bio-Power and Small Hydro Power (P): Provisional

Capacity in respect of Self Generating Industries includes units of capacity 1 MW and above.

CAGR: Compound Annual Growth Rate =((Current Value/Base Value)^(1/nos. of years)-1)*100

Source : Central Electricity Authority.

Table 2.3 (B) : Yearwise Installed Capacity of Electicity Generation in Utilities and Non-Utilities

(in Mega Watt = 10^3 x Kilo Watt)

As on	Non-Utilities							Grand Total (Utility + Non-Utility)
	Thermal				Large Hydro	RES*	Total	
	Steam	Diesel	Gas	Total				
	10	11	12	13	14	15	16	17= 9+16
31.03.2014	24,752	11,432	4,751	40,935	64	1,259	42,258	290,812
31.03.2015	26,089	12,009	5,193	43,291	65	1,301	44,657	319,561
31.03.2016	28,688	12,347	5,819	46,853	59	1,368	48,279	353,442
31.03.2017	30,572	13,350	6,109	50,031	65	1,433	51,529	378,362
31.03.2018	32,854	13,145	7,156	53,155	51	1,726	54,933	398,935
31.03.2019	47,679	15,571	8,787	72,037	103	3,067	75,207	431,307
31.03.2020	51,543	12,775	7,316	71,633	131	4,475	76,239	446,346
31.03.2021	47,760	17,563	7,361	72,683	131	5,694	78,508	460,659
31.03.2022	45,303	18,649	5,685	69,637	135	6,961	76,732	476,229
31.03.2023	46,782	18,078	6,360	71,220	132	7,047	78,400	494,459
31.03.2024(P)	46,900	18,300	6,500	71,700	140	7,500	79,340	521,310
Growth rate of 2023-24 over 2022-23(%)	**0.25**	**1.23**	**2.20**	**0.67**	**5.85**	**6.42**	**1.20**	**5.43**
CAGR 2014-15 to 2023-24(%)	**6.73**	**4.79**	**2.52**	**5.77**	**8.88**	**21.49**	**6.59**	**5.59**

* RES=Comprising of Solar, Wind, Bio-Power and Small Hydro Power (P): Provisional

Capacity in respect of Self Generating Industries includes units of capacity 1 MW and above.

CAGR: Compound Annual Growth Rate =((Current Value/Base Value)^(1/nos. of years)-1))*100

Source : Central Electricity Authority.

Chapter 2: Installed capacity and capacity utilization

Table 2.4 : Regionwise and Statewise Installed Capacity of Electricity Generation (Utilities)

(in GW)

States/UTs	Large Hydro		Thermal		Nuclear		RES*		Total		Growth Rate (2022-23 to 2023-24) (%)
	31.03.2023	31.03.2024	31.03.2023	31.03.2024	31.03.2023	31.03.2024	31.03.2023	31.03.2024	31.03.2023	31.03.2024	
Chandigarh	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.07	0.06	0.07	**11.64**
Delhi	0.00	0.00	2.36	2.36	0.00	0.00	0.30	0.34	2.66	2.70	**1.44**
Haryana	0.20	0.20	4.82	4.82	0.00	0.00	1.36	1.83	6.38	6.85	**7.38**
Himachal Pradesh	2.91	2.91	0.00	0.00	0.00	0.00	1.07	1.08	3.98	3.99	**0.19**
Jammu & Kashmir	1.23	1.23	0.18	0.18	0.00	0.00	0.24	0.29	1.65	1.69	**2.50**
Punjab	1.24	1.24	6.92	6.92	0.00	0.00	1.87	2.07	10.03	10.24	**2.01**
Rajasthan	0.43	0.43	11.63	11.93	0.00	0.00	22.05	26.35	34.12	38.71	**13.47**
Uttar Pradesh	0.72	0.72	13.34	14.44	0.00	0.00	4.75	5.17	18.82	20.33	**8.05**
Uttarakhand	2.20	2.20	0.55	0.76	0.00	0.00	0.93	0.94	3.68	3.90	**5.89**
Central Sector NR	11.53	11.61	15.54	15.54	1.62	1.62	0.38	0.38	29.08	29.16	**0.27**
Sub-Total (NR)	**20.48**	**20.56**	**55.34**	**56.95**	**1.62**	**1.62**	**33.01**	**38.49**	**110.46**	**117.63**	**6.49**
Chhattisgarh	0.12	0.12	16.01	16.01	0.00	0.00	1.30	1.56	17.43	17.69	**1.51**
Gujarat	0.77	0.77	20.23	20.23	0.00	0.00	19.19	25.23	40.19	46.23	**15.02**
Madhya Pradesh	1.70	1.70	11.20	11.25	0.00	0.00	5.61	6.80	18.51	19.75	**6.69**
Maharashtra	3.33	3.33	22.26	22.41	0.00	0.00	12.63	14.36	38.22	40.10	**4.91**
Daman & Diu	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.05	0.04	0.05	**13.31**
D. & N. Haveli	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	-
Goa	0.00	0.00	0.05	0.05	0.00	0.00	0.03	0.05	0.07	0.09	**24.83**
Central Sector WR	1.52	1.52	22.88	22.88	1.84	3.24	0.67	0.67	26.91	28.31	**5.21**
Sub-Total (WR)	**7.45**	**7.45**	**92.62**	**92.82**	**1.84**	**3.24**	**39.47**	**48.71**	**141.38**	**152.21**	**7.66**
Andhra Pradesh	1.67	1.67	13.10	13.90	0.00	0.00	9.11	9.17	23.89	24.75	**3.60**
Telangana	2.48	2.48	7.46	7.46	0.00	0.00	5.10	5.19	15.04	15.13	**0.62**
Karnataka	3.63	3.63	7.11	7.11	0.00	0.00	16.72	17.75	27.46	28.49	**3.76**
Kerala	1.86	1.86	0.33	0.33	0.00	0.00	1.04	1.32	3.24	3.51	**8.40**
Tamil Nadu	2.18	2.18	9.03	9.45	0.00	0.00	17.74	19.80	28.95	31.43	**8.56**
Puducherry	0.00	0.00	0.03	0.03	0.00	0.00	0.04	0.05	0.07	0.08	**21.14**
Lakshadweep	0.00	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.03	0.03	**5.65**
Central Sector SR #	0.00	0.00	13.25	14.85	3.32	3.32	0.54	0.54	17.11	18.71	**9.35**
Sub-Total (SR)	**11.83**	**11.83**	**50.35**	**53.16**	**3.32**	**3.32**	**50.29**	**53.82**	**115.78**	**122.14**	**5.49**
Bihar	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.45	0.39	0.45	**15.54**
Jharkhand	0.13	0.13	2.25	2.25	0.00	0.00	0.11	0.19	2.49	2.57	**2.86**
Odisha	2.07	2.07	4.94	4.94	0.00	0.00	0.62	0.66	7.63	7.67	**0.56**
West Bengal	0.99	0.99	6.93	6.93	0.00	0.00	0.62	0.64	8.53	8.55	**0.23**
Sikkim	0.87	0.87	0.00	0.00	0.00	0.00	0.06	0.06	0.93	0.93	**0.25**
A. & N. Islands	0.00	0.00	0.09	0.09	0.00	0.00	0.03	0.03	0.12	0.12	**0.00**
Central Sector ER $	1.01	1.01	22.30	23.62	0.00	0.00	0.02	0.01	23.32	24.64	**5.64**
Sub-Total (ER)	**5.07**	**5.07**	**36.51**	**37.83**	**0.00**	**0.00**	**1.85**	**2.04**	**43.43**	**44.94**	**3.48**
Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.14	0.14	0.14	**0.10**
Assam	0.10	0.10	0.31	0.31	0.00	0.00	0.16	0.17	0.57	0.57	**1.46**
Manipur	0.00	0.00	0.04	0.04	0.00	0.00	0.02	0.02	0.05	0.05	**1.41**
Meghalaya	0.32	0.32	0.00	0.00	0.00	0.00	0.05	0.07	0.37	0.40	**6.06**
Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.08	0.07	0.08	**3.12**
Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.04	0.04	**0.36**
Tripura	0.00	0.00	0.11	0.11	0.00	0.00	0.03	0.03	0.13	0.13	**0.64**
Central Sector NER	1.61	1.61	2.00	2.00	0.00	0.00	0.03	0.04	3.64	3.64	**0.14**
Sub-Total (NER)	**2.03**	**2.03**	**2.45**	**2.45**	**0.00**	**0.00**	**0.54**	**0.58**	**5.02**	**5.06**	**0.80**
Total States	**31.19**	**31.19**	**161.30**	**164.32**	**0.00**	**0.00**	**123.53**	**142.01**	**316.01**	**337.52**	**6.81**
Total Central	**15.66**	**15.74**	**75.98**	**78.90**	**6.78**	**8.18**	**1.63**	**1.63**	**100.05**	**104.45**	**4.40**
Total All India	**46.85**	**46.93**	**237.27**	**243.22**	**6.78**	**8.18**	**125.16**	**143.64**	**416.06**	**441.97**	**6.23**

$ Damodar Valley Corporation (DVC) installed capacity is considered under central sector(ER)

* RES: Comprising of Solar, Wind, Bio-Power and Small Hydro Power

Includes NLC-Central capacity also

Sub-totals/Totals may not tally due to conversion to GW and rounding off.

Source : Central Electricity Authority.

Chapter 2: Installed capacity and capacity utilization

Table 2.5: State-wise cumulative Installed Capacity of Renewable Power

S. No.	STATES / UTs	Small Hydro Power (MW)		Wind Power (MW)		Bio-Power-BM Power/Cogen. Bagasse (MW)		Waste to Energy (MW)		Solar Power (MW)		Total Capacity (MW)		Growth Rate(2022-23 to 2023-24)
		31.03.2023	31.03.2024	31.03.2023	31.03.2024	31.03.2023	31.03.2024	31.03.2023	31.03.2024	31.03.2023	31.03.2024	31.03.2023	31.03.2024	
1	Andhra Pradesh	163.31	163.31	4096.65	4096.65	483.67	491.67	82.36	82.72	4534.19	4584.98	**9360**	**9419**	**0.63**
2	Arunachal Pradesh	133.11	133.11			0.00	0.00	0.00	0.00	11.64	11.79	**145**	**145**	**0.10**
3	Assam	34.11	34.11			2.00	2.00	0.00	0.00	147.93	156.18	**184**	**192**	**4.48**
4	Bihar	70.70	70.70			124.70	138.90	1.32	1.32	192.88	239.23	**390**	**450**	**15.54**
5	Chhatisgarh	76.00	76.00			274.59	274.59	0.41	0.41	948.82	1212.39	**1300**	**1563**	**20.28**
6	Goa	0.05	0.05			0.00	0.00	0.34	1.94	26.49	43.48	**27**	**45**	**69.16**
7	Gujarat	91.64	91.64	9978.92	11722.72	77.30	77.30	33.43	35.18	9254.56	13544.88	**19436**	**25472**	**31.06**
8	Haryana	73.50	73.50			240.66	262.66	18.77	21.04	1029.16	1475.72	**1362**	**1833**	**34.57**
9	Himachal Pradesh	969.71	969.71			9.20	9.20	1.00	1.00	87.49	95.23	**1067**	**1075**	**0.73**
10	Jammu & Kashmir	146.68	169.93			0.00	0.00	0.00	0.00	49.44	65.44	**196**	**235**	**20.01**
11	Jharkhand	4.05	4.05			4.30	19.10	0.00	0.00	105.84	162.40	**114**	**186**	**62.49**
12	Karnataka	1280.73	1280.73	5294.95	6019.61	1887.30	1887.30	14.85	20.42	8241.40	8544.68	**16719**	**17753**	**6.18**
13	Kerala	266.52	276.52	62.50	63.50	2.27	2.27	0.23	0.23	761.43	1022.79	**1093**	**1365**	**24.92**
14	Ladakh	40.99	42.99			0.00	0.00	0.00	0.00	7.80	7.80	**49**	**51**	**4.10**
15	Madhya Pradesh	123.71	123.71	2844.29	2844.29	107.35	107.35	27.59	27.59	2802.14	3995.43	**5905**	**7098**	**20.21**
16	Maharashtra	381.08	382.28	5012.83	5207.98	2584.40	2584.40	56.29	58.79	4722.90	6249.67	**12758**	**14483**	**13.53**
17	Manipur	5.45	5.45			0.00	0.00	0.00	0.00	12.28	13.04	**18**	**18**	**4.29**
18	Meghalaya	32.53	55.03			13.80	13.80	0.00	0.00	4.15	4.24	**50**	**73**	**44.75**
19	Mizoram	45.47	45.47			0.00	0.00	0.00	0.00	28.02	30.31	**73**	**76**	**3.12**
20	Nagaland	32.67	32.67			0.00	0.00	0.00	0.00	3.04	3.17	**36**	**36**	**0.36**
21	Odisha	115.63	115.63			59.22	59.22	0.00	0.00	453.17	495.63	**628**	**670**	**6.76**
22	Punjab	176.10	176.10			496.15	531.29	26.12	35.96	1167.26	1324.27	**1866**	**2068**	**10.83**
23	Rajasthan	23.85	23.85	5193.42	5195.82	121.25	121.25	3.83	4.39	17055.70	21347.58	**22398**	**26693**	**19.18**
24	Sikkim	55.11	55.11			0.00	0.00	0.00	0.00	4.69	7.04	**60**	**62**	**3.93**
25	Tamil Nadu	123.05	123.05	10017.17	10603.54	1012.65	1012.65	31.05	32.80	6736.43	8211.38	**17920**	**19983**	**11.51**
26	Telangana	90.87	90.87	128.10	128.10	160.10	161.40	60.27	60.27	4666.03	4758.16	**5105**	**5199**	**1.83**
27	Tripura	16.01	16.01			0.00	0.00	0.00	0.00	17.60	18.46	**34**	**34**	**2.56**
28	Uttar Pradesh	49.10	49.10			2118.26	2122.76	98.47	103.38	2515.22	2920.33	**4781**	**5196**	**8.67**
29	Uttarakhand	218.82	218.82			130.22	132.72	9.22	9.52	575.53	575.53	**934**	**937**	**0.30**
30	West Bengal	98.50	98.50			338.62	343.52	4.48	4.84	179.97	194.07	**622**	**641**	**3.11**
31	Andaman & Nicobar	5.25	5.25			0.00	0.00	0.00	0.00	29.91	29.91	**35**	**35**	**0.00**
32	Chandigarh					0.00	0.00	0.00	0.00	58.69	65.52	**59**	**66**	**11.64**
32	Dadar & Nagar Haveli					0.00	0.00	0.00	0.00	46.47	46.47	**46**	**46**	**0.00**
34	Daman & Diu											**0**	**0**	**-**
35	Delhi					0.00	0.00	84.00	84.00	218.26	256.51	**302**	**341**	**12.65**
36	Lakshwadeep					0.00	0.00	0.00	0.00	3.27	4.97	**3**	**5**	**51.99**
37	Puducherry					0.00	0.00	0.00	0.00	35.53	49.91	**36**	**50**	**40.47**
38	Others			4.30	4.30	0.00	0.00	0.00	0.00	45.01	45.01	**49**	**49**	**0.00**
Total (MW)		**4944**	**5003**	**42633**	**45887**	**10248**	**10355**	**554**	**586**	**66780**	**81814**	**125160**	**143645**	**14.77**
Percentages Distribution		**4.0**	**3.5**	**34.1**	**31.9**	**8.2**	**7.2**	**0.4**	**0.4**	**53.4**	**57.0**	**100**	**100**	

Source: Ministry of New and Renewable Energy

Chapter 2: Installed capacity and capacity utilization

Table 2.6 : Installation of Off-grid / Decentralised Renewable Energy Systems/ Devices as on 31.03.2024

Sl. No.	State/UT	Biogas Plants (Nos)	SPV Pumps (Nos.)	Solar Photovoltaic (SPV) Systems				Waste to Energy (off Grid)(MW)
				SLS (Nos.)	HLS (Nos.)	SL (Nos.)	PP (KWP)	
1	2	3	4	5	6	7	8	9
1	Andhra Pradesh	268,628	34,045	16,460	22,972	77,803	3,816	30
2	Arunachal Pradesh	3,686	221	25,008	35,065	218,551	963	
3	Assam	139,435	45	29,538	46,879	647,761	1,605	
4	Bihar	130,091	2,813	54,147	12,303	1,735,227	6,905	1
5	Chhattisgarh	60,717	119,282	4,538	42,232	3,311	31,373	0
6	Goa	4,245	45	707	393	1,093	33	
7	Gujarat	438,320	14,920	5,004	9,253	31,603	13,577	28
8	Haryana	64,092	88,937	34,625	56,727	93,853	2,321	10
9	Himachal Pradesh	47,718	644	98,800	22,592	33,909	1,906	1
10	Jammu & Kashmir	3,201	877	39,076	144,316	51,224	8,130	
11	Jharkhand	7,890	17,655	14,344	9,450	790,515	3,770	
12	Karnataka	516,091	7,734	5,694	52,638	7,781	7,854	19
13	Kerala	154,879	826	1,735	41,912	54,367	16,268	0
14	Ladakh	-	-	-	-	-	-	
15	Madhya Pradesh	383,347	25,138	16,808	7,920	529,101	3,654	12
16	Maharashtra	939,275	91,408	10,420	3,497	239,297	3,858	46
17	Manipur	2,128	118	32,767	24,583	69,722	1,581	
18	Meghalaya	11,156	101	5,800	14,874	97,360	2,004	
19	Mizoram	5,857	37	20,325	12,060	155,217	3,895	
20	Nagaland	7,954	68	16,045.0	1,045.0	30,766.0	1,506.0	
21	Odisha	271,932	10,962	19,109.0	5,274.0	99,843.0	2,321.5	
22	Punjab	189,148	17,534	43,758	8,626	17,495	2,066	25
23	Rajasthan	73,145	118,784	8,934.0	187,968.0	225,851.0	30,449.0	4.4
24	Sikkim	9,044	-	504	15,059	45,200	850	
25	Tamil Nadu	224,148	8,695	41,419	298,641	16,818	13,053	26
26	Telangana	316,870	424	2,458	-	142,000	7,450	14
27	Tripura	4,132	2,268	15,517	32,723	364,012	867	
28	Uttar Pradesh	441,447	60,862	302,532	235,909	2,351,205	10,638	103
29	Uttarakhand	366,083	344	43,803	91,595	165,071	4,060	10
30	West Bengal	1,216	653	18,203	145,332	17,662	1,730	5
31	Andaman & Nicobar	97	5	1,490	468	6,296	167	
32	Chandigarh	169	12	901	275	1,675	730	
33	Dadar & Nagar Haveli	681.0		-	-	-	-	
34	Daman & Diu	-		-	-	-	-	
35	Delhi	587	90	301	-	4,807	1,269	
36	Lakshadweep	-		4,465	600	5,289	2,190	
37	Puducherry	17,541	21	417	25	1,637	121	
38	Others*	-	4,621	9,150	140,273	125,797	23,885	
	Total	**5,104,950**	**630,189**	**944,802**	**1,723,479**	**8,459,119**	**216,863**	**336**

* Others includes installations through NGOs/IREDA in different states

SLS = Street Lighting System; HLS = Home Lighting System; SL = Solar Lantern; PP = Power Plants; SPV = Solar Photovoltaic;

MW = Mega Watt; KWP = Kilowatt peak

Source : Ministry of New and Renewable Energy