|| Chapter - 2 ||

Installed Capacity and Capacity Utilization

CHAPTER 2
Installed capacity and capacity utilization

Installed capacity

The world in its commitment to sustainability has pledged to expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries (SDG Target 7.B).

Development of an Energy systems which is capable of delivering to the ever growing and emerging needs of developing economies, is the need of the hour. Growing energy demands world over and in the densely populated regions of Asia including India have driven the need to shift to cleaner fuels and lager energy systems.

Thus, in India, there has been a thrust to increase installed generating capacity of power and to decrease the reliance on primary fossil fuels to cater to these needs. Generating and providing reliable power at competitive prices in a sustainable manner by optimising the use of multiple energy resource with innovative eco-friendly technologies has been at the core of policy planning in India. Also, the environmental and health burdens arising out of the use of hydrocarbons force the world towards adopting energy efficiency and clean energy systems.

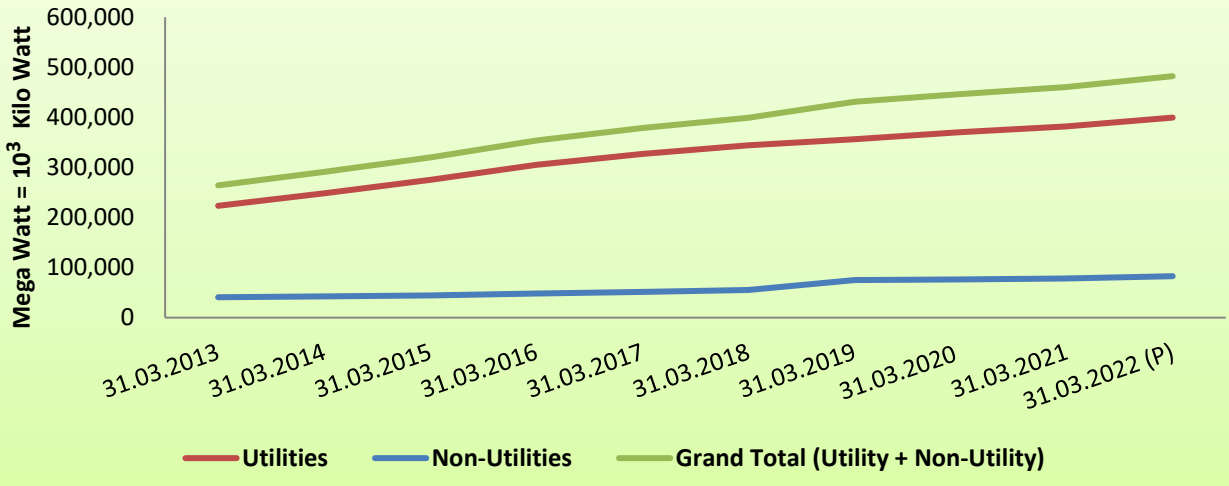
It is worthy to note here that not all potential is viable to be transformed into capacity, and overall capacity does not lead to an equal amount of generation due to production losses etc. Power plants have a capacity to produce a certain amount of power during a given time, but if they are taken offline (i.e. for maintenance or refuelling) then they are not actually generating power.

This chapter presents the capacity of coal washeries, oil refineries and electricity.

Highlights

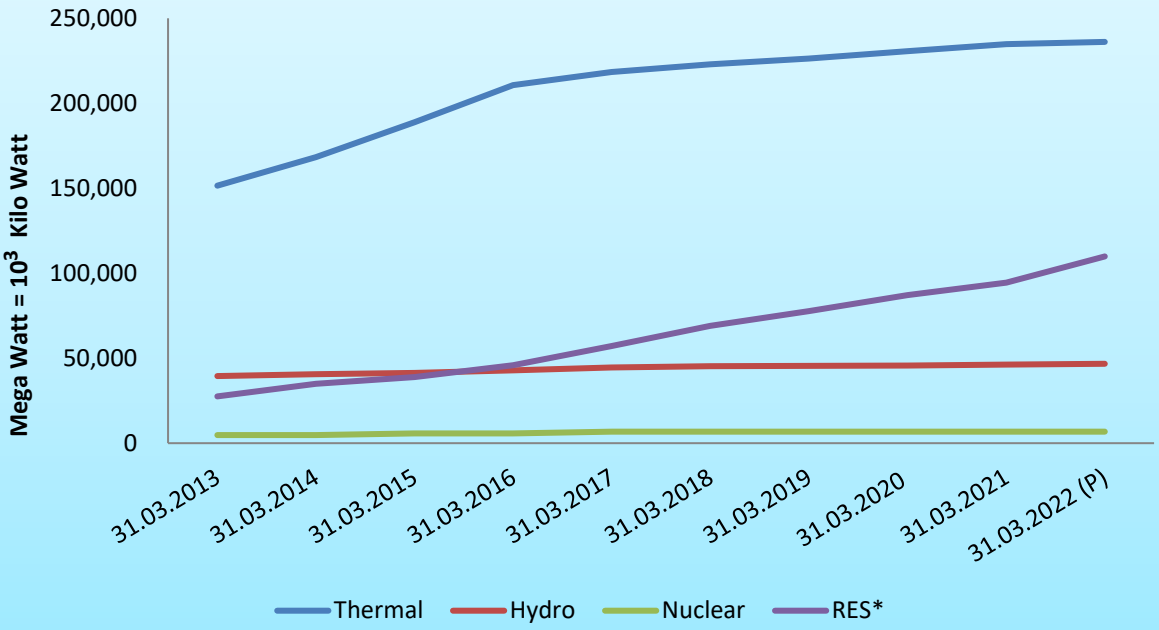
- Total installed capacity of coal washeries in India is 152.31 Million Tonne per year (MTY) as on 31.03.2022 (P). This comprises of 37.18 MTY in coking and 115.13 MTY in Non-Coking Coal Washeries (Table 2.1).
- Similarly, as on 31.03.2022, there were a total of 23 refineries in the country, 19 in the Public Sector, 4 in the Private sector and Joint Venture (Table 2.2).
- The refining capacity of the country is 2,51,216 TMTPA on 31.03.2021 which is 2000 TMTPA more than from the last year. Public sector refineries have the dominance of over 60% of the total capacity in India.
- The Refinery production (crude throughput) achievement was 2,21,773 TMT during 2020-21 which has increased to 2,41,703 TMT during 2021-22 i.e. a net increase of 9% over 2020-21.
- Hence, the overall Capacity utilization of the refineries which was 88.76% during 2020-21 has increased to 96.99% in 2021-22. In the Public Sector, Indian Oil Corporation (IOC) increased its capacity utilization from 89.46% in 2020-21 to 96.60% in 2021-22. The Private and Joint venture, have also experienced positive growth rate of 8.17% during FY:2021-22 over the previous year.
- In absolute terms, the installed capacity of electricity generation increased by 4.68% to 4,82,232 MW in 2021-22 over 4,60,659 MW in 2020-21 with the major share of installed capacity existing with utilities i.e. 82.84% (Table 2.3).

Fig 2.1:Trends in Installed Electricity Generation Capacity (MW) in India during the period 2012-13 to 2021-22 (P)



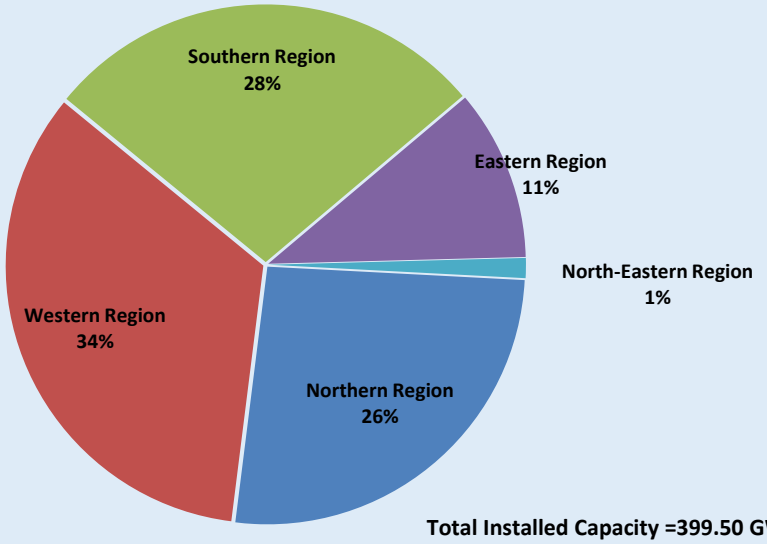
- India's Energy mix has been seeing a shift from more conventional resources of energy to renewable sources. The financial year 2021-22 has witnessed a growth of 16.4% over last year in the installed capacity of RES (Renewable Energy Sources, other than Hydro) under utility; while that of thermal sources grew only at 0.06%.

Fig 2.2: Trends in Installed Electricity Generation Capacity from Utilities (MW) in India - Sourcewise during the period 2012-13 to 2021-22 (P)



- The geographical distribution of installed capacity of electricity generating as on 31.03.2022 indicates that Western Region accounted for the highest share (34%) followed by Southern Region (28%) and Northern Region (26%). Northern Region also accounted for the highest share of hydro energy. Among states, the state of Karnataka has the highest share of hydro installed capacity of 3.63 GW and Rajasthan has the highest share of Other renewable resources of 16.70 GW. (Table 2.4).

Fig 2.3:Regionwise Installed Generation Capacity of Electricity (Utilities) as on 31.03.2022



- Region wise growth in the installed capacity during 2021-22 reveals that North Region (NR) registered highest annual growth of about 10.75%. The NR has also registered a growth of over 45% in the RES (Renewable Energy Sources) sector. Amongst all the major states Rajasthan registered highest annual growth (35.25%) in the installed capacity.
- The total installed capacity of grid interactive renewable power, which was 95,803 MW in 2021 increased to 1,09,885 MW (a growth of 14.70%) during a year (2022) (Table 2.5).
- Out of the total installed generation capacity of renewable sources of power in 2022, installed capacity of Solar power including roof tops accounted for about 49.1%, followed by Wind power (36.7%) and Bio Power & Waste to Energy (9.7%). However, in terms of growth rates year on year, Solar power installed capacity has a growth rate of 30.95% from FY: 2020-21 to FY: 2021-22.
- Rajasthan had the highest installed capacity of grid connected renewable power (17,040.62 MW) in 2022 followed closely by Gujarat (16,587.90 MW) mainly on account of wind and solar power.

Fig 2.4 : Sectorwise percentage distribution of Installed Grid-Interactive Renewable Power Capacity during 2021-22(P)

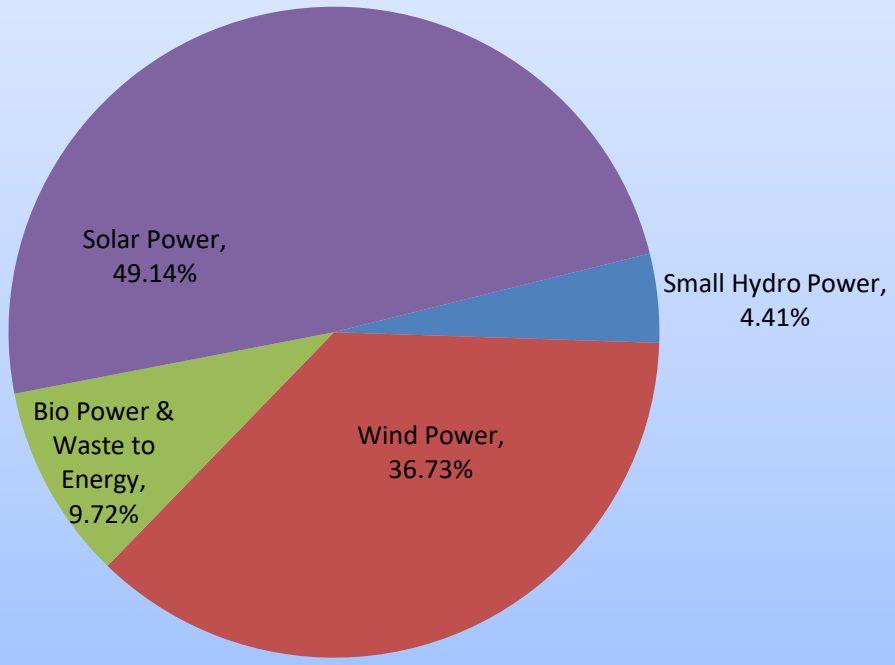
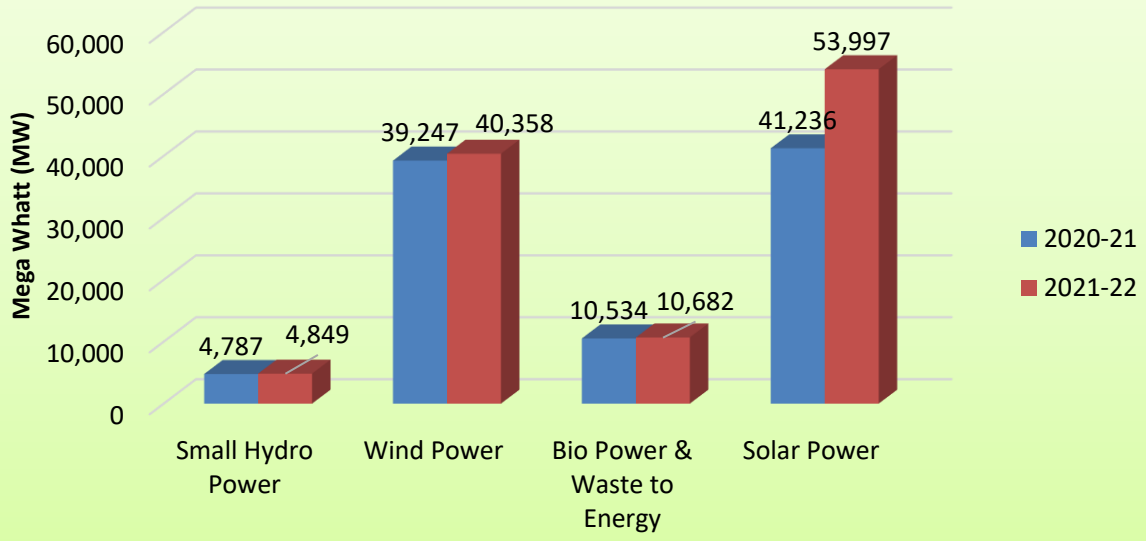


Fig 2.5 : Installed Capacity of Grid-Interactive Renewable Power During 2020-21 and 2021-22(P)



- Again, in case of Off-Grid/De-centralized Renewable Energy System, India has shown a steady growth over periods of time. Installation of solar Street Lightening System (SLS) has experienced a growth of 12.6% over last year. Also, the Solar Photovoltaic Plants (SPV) has registered a growth of 21.9% over last year (Figure 2.6).

Fig 2.6 : Installation of Off-grid / Decentralised Renewable Energy Systems/ Devices during last 3 years

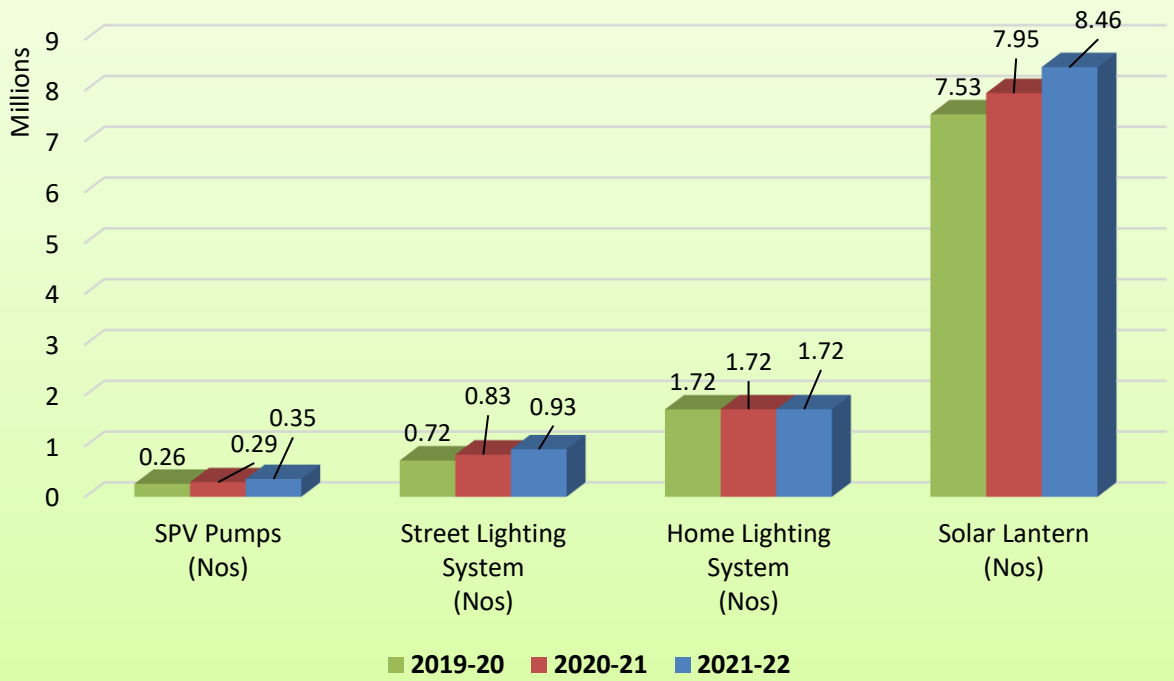


Table 2.1: Installed Capacity of Coal Washeries

Sl. No.	Washery & Operator	State of Location	Capacity (MTY) 31.03.2022*
	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
	(A) CIL		**25.58**
13	Chasnala, IISCO	Jharkhand	1.40
14	Jamadoba, TISCO	Jharkhand	2.00
15	West Bokaro-II, TISCO	Jharkhand	2.50
16	West Boakaro-III,TISCO	Jharkhand	4.50
17	Bhelatand, TISCO	Jharkhand	1.20
18	Durgapur, SAIL	West Bengal	Closed
19	DCOP, DPL	West Bengal	Closed
	(B) PSU & Private		**11.60**
	TOTAL COKING (A + B)		**37.18**
	NON-COKING COAL		
1	Dugda-I,CIL	Jharkhand	2.00
2	Gidi,CIL	Jharkhand	2.50
3	Piparwar,CIL	Jharkhand	6.50
4	Kargali,CIL	Jharkhand	Closed
5	Bina (De-Shaling Plant) CIL	Uttar Pradesh	Closed
	(A) CIL		**11.00**
6	Indaram, Aryan Coal Benefication Pvt.Ltd.	Andhra Pradesh	14.00
7	Ramagundam, Gupta coalfield & washeries ltd.	Andhra Pradesh	6.25
8	Dipka, Aryan coal beneficiation pvt. Ltd.	Chattisgarh	2.62
9	Gevra, Aryan coal beneficiation pvt. Ltd.	Chattisgarh	7.50
10	Chakabuwa, Aryan Energy private ltd.	Chattisgarh	5.00
11	Binjhari, Aryan Energy private ltd.	Chattisgarh	4.80
12	Korba, ST-CLI Coal washeries ltd.	Chattisgarh	Closed
13	Bilaspur, Gupta coalfield & washeries ltd.	Chattisgarh	7.00

* Provisional

Contd….

Source: Office of Coal Controller, Ministry of Coal

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

Sl. No.	Washery & Operator	State of Location	Capacity (MTY) 31.03.2022*
14	Tamnar, Jindal Steel & Power Ltd.	Chattisgarh	2.50
15	Ratija, Spectrum Coal & Power Ltd.	Chattisgarh	closed
25	Maruti Clean Coal	Chattisgarh	4.00
26	AEL,Adani Enterprises Limited	Chattisgarh	4.00
16	Jindal Power Limited(JPL)	Chattisgarh	1.00
17	Dharamsthal, BLA Industries	Madhya Pradesh	closed
18	Panderpauni, Aryan coal beneficiation pvt. Ltd.	Maharashtra	closed
19	Wani, Kartikay Coal washeries pvt. ltd.(Aryan)	Maharashtra	closed
20	Sasti, Gupta coalfield & washeries ltd.	Maharashtra	closed
21	Wani, Gupta coalfield & washeries ltd.	Maharashtra	closed
22	Umrer, Gupta coalfield & washeries ltd.	Maharashtra	closed
23	Bhandara, Gupta coalfield & washeries ltd.	Maharashtra	closed
24	Gondegaon, Gupta coalfield & washeries ltd.	Maharashtra	closed
27	Majri, Gupta coalfield & washeries ltd.	Maharashtra	closed
28	Ghugus, Gupta coalfield & washeries ltd.	Maharashtra	0.96
29	Wani, Bhatia International Ltd.	Maharashtra	closed
30	Ghugus, Bhatia International Ltd.	Maharashtra	closed
31	Wani, Indo Unique Flame Ltd.	Maharashtra	closed
32	Nagpur, Indo Unique Flame Ltd.	Maharashtra	4.75
33	Punwat, Indo Unique Flame Ltd.	Maharashtra	closed
34	Himgir, Aryan Energy private ltd.	Odisha	closed
35	Talcher, Aryan Energy Pvt. Ltd.	Odisha	2.40
36	Talcher, Global coal Mining (P) Ltd.	Odisha	closed
37	Ib Valley, Global coal Mining (P) Ltd.	Odisha	closed
38	Jharsuguda, Bhatia International Ltd.	Odisha	11.00
39	Talcher, Spectrum Coal & Power Ltd.	Odisha	6.60
40	Ramagundam, Global coal Mining (P) Ltd.	Telengana	15.00
41	Manuguru, Global coal Mining (P) Ltd.	Telengana	4.75
	(B) Private		**104.13**
	TOTAL NON-COKING (A+B)		**115.13**
	Gross Total (Coking + Non-Coking)		**152.31**

* Provisional

Source: Office of Coal Controller, 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 (%)		
		31.03.2020	31.03.2021	31.03.2022	2020-21	2021-22 (P)	2020-21	2021-22 (P)	Change in Utilisation
1	2	3	4	5	6	7	8	9	10
(a)	**PUBLIC SECTOR**	**1,50,366**	**1,49,716**	**1,51,716**	**1,33,693**	**1,45,491**	**88.91**	**97.18**	**8.27**
	IOCL, Guwahati, Assam	1,000	1,000	1,000	849	730	**84.92**	**73.02**	**-11.90**
	IOCL, Barauni, Bihar	6,000	6,000	6,000	5,469	5,620	**91.15**	**93.66**	**2.51**
	IOCL, Koyali, Gujarat	13,700	13,700	13,700	11,603	13,474	**84.69**	**98.35**	**13.66**
	IOCL, Haldia, West Bengal	8,000	8,000	8,000	6,759	7,305	**84.48**	**91.32**	**6.84**
	IOCL, Mathura, Uttar Pradesh	8,000	8,000	8,000	8,926	9,123	**111.57**	**114.04**	**2.46**
	IOCL, Digboi, Assam	650	650	650	605	708	**93.09**	**108.90**	**15.80**
	IOCL, Panipat, Haryana	15,000	15,000	15,000	13,181	14,849	**87.88**	**98.99**	**11.12**
	IOCL, Bongaigaon, Assam	2,350	2,700	2,700	2,450	2,639	**104.27**	**97.72**	**-6.55**
	IOCL, Paradip, Odisha	15,000	15,000	15,000	12,508	13,217	**83.39**	**88.12**	**4.73**
	Total IOC	**69,700**	**70,050**	**70,050**	**62,351**	**67,665**	**89.46**	**96.60**	**7.14**
	BPCL, Mumbai, Maharashtra	12,000	12,000	12,000	12,941	14,437	**107.84**	**120.30**	**12.47**
	BPCL, Kochi, Kerala	15,500	15,500	15,500	13,282	15,402	**85.69**	**99.36**	**13.68**
	BPCL, Bina, Madhya Pradesh	7,800	7,800	7,800	6,190	7,410	**79.35**	**95.00**	**15.64**
	Total BPCL	**35,300**	**35,300**	**35,300**	**32,412**	**37,248**	**91.82**	**105.52**	**13.70**
	HPCL, Mumbai, Maharashtra	7,500	7,500	9,500	7,374	5,558	**98.32**	**74.10**	**-24.22**
	HPCL, Visakh, Andhra Pradesh	8,300	8,300	8,300	9,050	8,410	**109.04**	**101.32**	**-7.72**
	Total HPCL	**15,800**	**15,800**	**17,800**	**16,425**	**13,968**	**103.95**	**88.40**	**-15.55**
	CPCL, Manali, Tamil Nadu	10,500	10,500	10,500	8,243	9,040	**78.50**	**86.10**	**7.60**
	CPCL, Narimanam, Tamil Nadu	1,000	-	-	-	-	-	-	-
	Total CPCL	**11,500**	**10,500**	**10,500**	**8,243**	**9,040**	**71.68**	**86.10**	**14.42**
	NRL, Numaligarh, Assam	3,000	3,000	3,000	2,707	2,624	**90.25**	**87.48**	**-2.76**
	MRPL, Mangalore, Karnataka	15,000	15,000	15,000	11,475	14,871	**76.50**	**99.14**	**22.64**
	ONGC, Tatipaka, Andhra Pradesh	66	66	66	81	75	**122.71**	**113.84**	**-8.87**
(b)	**PRIVATE SECTOR & JVs SECTOR**	**99,500**	**99,500**	**99,500**	**88,080**	**96,212**	**88.52**	**96.70**	**8.17**
	RIL, Jamnagar, Gujarat	33,000	33,000	33,000	34,100	34,757	**103.33**	**105.32**	**1.99**
	RIL, SEZ-Jamnagar, Gujarat	35,200	35,200	35,200	26,841	28,264	**76.25**	**80.30**	**4.04**
	Nyara Energy Ltd. Vadinar	20,000	20,000	20,000	17,067	20,164	**85.34**	**100.82**	**15.49**
	HMEL, GGS, Bathinda, Punjab	11,300	11,300	11,300	10,072	13,027	**89.13**	**115.28**	**26.15**
	Total (a+b)	**2,49,866**	**2,49,216**	**2,51,216**	**2,21,773**	**2,41,703**	**88.76**	**96.99**	**8.23**

Note: 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 current year divided by refineing capacity at the end of previous 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				Hydro	Nuclear	RES*	Total
	Steam	Diesel	Gas	Total				
1	2	3	4	5	6	7	8	9
31.03.2012	1,12,022	1,200	18,381	1,31,603	38,990	4,780	24,503	1,99,877
31.03.2013	1,30,221	1,200	20,110	1,51,530	39,491	4,780	27,542	2,23,344
31.03.2014	1,45,273	1,200	21,782	1,68,255	40,531	4,780	34,988	2,48,554
31.03.2015	1,64,636	1,200	23,062	1,88,898	41,267	5,780	38,959	2,74,904
31.03.2016	1,85,173	994	24,509	2,10,675	42,783	5,780	45,924	3,05,162
31.03.2017	1,92,163	838	25,329	2,18,330	44,478	6,780	57,244	3,26,833
31.03.2018	1,97,172	838	24,897	2,22,907	45,293	6,780	69,022	3,44,002
31.03.2019	2,00,705	638	24,937	2,26,279	45,399	6,780	77,642	3,56,100
31.03.2020	2,05,135	510	24,955	2,30,600	45,699	6,780	87,028	3,70,106
31.03.2021	2,09,295	510	24,924	2,34,728	46,209	6,780	94,434	3,82,151
31.03.2022 (P)	2,10,700	510	24,900	2,36,109	46,723	6,780	1,09,885	3,99,497
Growth rate of 2021-22 over 2020-21(%)	**0.7%**	**0.0%**	**-0.1%**	**0.6%**	**1.1%**	**0.0%**	**16.4%**	**4.5%**
CAGR 2012-13 to 2021-22 (%)	**5.5%**	**-9.1%**	**2.4%**	**5.1%**	**1.9%**	**4.0%**	**16.6%**	**6.7%**

Note:

* RES= Renewable Energy Sources excluding Hydro

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				Hydro	RES*	Total	
	Steam	Diesel	Gas	Total				
	10	11	12	13	14	15	16	17= 9+16
31.03.2012	22,615	9,955	5,885	38,456	48	872	39,375	2,39,252
31.03.2013	23,890	11,148	4,498	39,535	67	1,124	40,726	2,64,070
31.03.2014	24,752	11,432	4,751	40,935	64	1,259	42,258	2,90,812
31.03.2015	26,089	12,009	5,193	43,291	65	1,301	44,657	3,19,561
31.03.2016	28,688	12,347	5,819	46,853	59	1,368	48,279	3,53,442
31.03.2017	30,572	13,350	6,109	50,031	65	1,433	51,529	3,78,362
31.03.2018	32,854	13,145	7,156	53,155	51	1,726	54,933	3,98,935
31.03.2019	47,679	15,571	8,787	72,037	103	3,067	75,207	4,31,307
31.03.2020	51,543	12,775	7,316	71,633	131	4,475	76,239	4,46,346
31.03.2021	47,760	17,563	7,361	72,683	131	5,694	78,508	4,60,659
31.03.2022 (P)	51,000	17,700	7,400	76,100	135	6,500	82,735	4,82,232
Growth rate of 2021-22 over 2020-21(%)	**6.8%**	**0.8%**	**0.5%**	**4.7%**	**3.3%**	**14.2%**	**5.4%**	**4.7%**
CAGR 2012-13 to 2021-22(%)**	**8.8%**	**5.3%**	**5.7%**	**7.5%**	**8.1%**	**21.5%**	**8.2%**	**6.9%**

* RES= Renewable Energy Sources excluding Hydro

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

(in GW)

States/UTs	Hydro		Thermal		Nuclear		RES*		Total		Growth Rate (2020-21 to 2021-22) (%)
	31.03.2021	31.03.2022	31.03.2021	31.03.2022	31.03.2021	31.03.2022	31.03.2021	31.03.2022	31.03.2021	31.03.2022	
Chandigarh	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.06	0.05	0.06	**22.17**
Delhi	0.00	0.00	2.36	2.36	0.00	0.00	0.24	0.27	2.60	2.63	**0.97**
Haryana	0.20	0.20	4.82	4.82	0.00	0.00	0.69	1.24	5.71	6.26	**9.61**
Himachal Pradesh	2.59	2.91	0.00	0.00	0.00	0.00	0.99	1.04	3.58	3.96	**10.55**
Jammu & Kashmir	1.23	1.23	0.18	0.18	0.00	0.00	0.21	0.24	1.61	1.64	**2.01**
Punjab	1.24	1.24	6.92	6.92	0.00	0.00	1.62	1.77	9.78	9.94	**1.54**
Rajasthan	0.43	0.43	10.97	11.63	0.00	0.00	9.86	16.70	21.26	28.76	**35.25**
Uttar Pradesh	0.72	0.72	12.77	13.43	0.00	0.00	3.85	4.45	17.35	18.61	**7.29**
Uttarakhand	2.08	2.08	0.55	0.55	0.00	0.00	0.71	0.93	3.34	3.56	**6.55**
Central Sector NR	11.52	11.53	15.54	15.54	1.62	1.62	0.38	0.38	29.06	29.08	**0.06**
Sub-Total (NR)	**20.02**	**20.36**	**54.12**	**55.44**	**1.62**	**1.62**	**18.59**	**27.07**	**94.34**	**104.49**	**10.75**
Chhattisgarh	0.12	0.12	16.01	16.01	0.00	0.00	0.57	0.87	16.70	17.00	**1.77**
Gujarat	0.77	0.77	20.23	20.23	0.00	0.00	12.91	16.34	33.91	37.35	**10.13**
Madhya Pradesh	1.70	1.70	11.80	11.80	0.00	0.00	4.91	5.17	18.40	18.67	**1.43**
Maharashtra	3.33	3.33	23.37	22.26	0.00	0.00	10.14	10.53	36.84	36.12	**-1.95**
Daman & Diu	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.04	0.04	**0.42**
D. & N. Haveli	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	**0.00**
Goa	0.00	0.00	0.05	0.05	0.00	0.00	0.01	0.02	0.06	0.07	**22.41**
Central Sector WR	1.52	1.52	22.28	22.28	1.84	1.84	0.67	0.67	26.31	26.31	**0.00**
Sub-Total (WR)	**7.45**	**7.45**	**93.73**	**92.62**	**1.84**	**1.84**	**29.25**	**33.65**	**132.27**	**135.55**	**2.49**
Andhra Pradesh	1.67	1.67	12.30	12.30	0.00	0.00	8.72	8.96	22.70	22.94	**1.07**
Telangana	2.48	2.48	7.19	7.46	0.00	0.00	4.37	4.95	14.04	14.89	**6.06**
Karnataka	3.59	3.63	7.11	7.11	0.00	0.00	15.46	15.90	26.15	26.64	**1.86**
Kerala	1.86	1.86	0.33	0.33	0.00	0.00	0.50	0.62	2.69	2.81	**4.42**
Tamil Nadu	2.18	2.18	8.51	9.03	0.00	0.00	15.00	15.92	25.68	27.13	**5.62**
Puducherry	0.00	0.00	0.03	0.03	0.00	0.00	0.01	0.01	0.04	0.05	**10.42**
Lakshadweep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**336.00**
Central Sector SR #	0.00	0.00	13.25	13.25	3.32	3.32	0.54	0.54	17.11	17.11	**0.00**
Sub-Total (SR)	**11.77**	**11.82**	**48.73**	**49.52**	**3.32**	**3.32**	**44.60**	**46.91**	**108.42**	**111.57**	**2.91**
Bihar	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.39	0.35	0.39	**9.14**
Jharkhand	0.13	0.13	2.25	2.25	0.00	0.00	0.06	0.10	2.44	2.48	**1.51**
Odisha	2.06	2.07	5.54	4.94	0.00	0.00	0.54	0.61	8.14	7.62	**-6.39**
West Bengal	0.99	0.99	7.43	6.95	0.00	0.00	0.57	0.59	8.98	8.52	**-5.14**
Sikkim	0.76	0.87	0.00	0.00	0.00	0.00	0.05	0.06	0.81	0.93	**14.50**
A. & N. Islands	0.00	0.00	0.04	0.04	0.00	0.00	0.03	0.03	0.07	0.07	**0.39**
Central Sector ER $	1.01	1.01	20.37	21.85	0.00	0.00	0.02	0.02	21.39	22.87	**6.92**
Sub-Total (ER)	**4.94**	**5.07**	**35.63**	**36.03**	**0.00**	**0.00**	**1.62**	**1.78**	**42.19**	**42.87**	**1.62**
Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.14	0.14	0.14	**4.11**
Assam	0.10	0.10	0.35	0.33	0.00	0.00	0.05	0.13	0.51	0.56	**9.93**
Manipur	0.00	0.00	0.04	0.04	0.00	0.00	0.01	0.02	0.05	0.05	**12.32**
Meghalaya	0.32	0.32	0.00	0.00	0.00	0.00	0.05	0.05	0.37	0.37	**1.09**
Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.04	0.04	**16.76**
Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	**6.44**
Tripura	0.00	0.00	0.14	0.14	0.00	0.00	0.02	0.03	0.16	0.16	**3.48**
Central Sector NER	1.61	1.61	2.00	2.00	0.00	0.00	0.03	0.03	3.64	3.64	**0.00**
Sub-Total (NER)	**2.03**	**2.03**	**2.53**	**2.51**	**0.00**	**0.00**	**0.37**	**0.47**	**4.93**	**5.01**	**1.62**
Total States	**30.56**	**31.06**	**161.28**	**161.18**	**0.00**	**0.00**	**92.80**	**108.25**	**284.64**	**300.49**	**5.57**
Total Central	**15.65**	**15.66**	**73.45**	**74.93**	**6.78**	**6.78**	**1.63**	**1.63**	**97.51**	**99.00**	**1.54**
Total All India	**46.21**	**46.72**	**234.73**	**236.11**	**6.78**	**6.78**	**94.43**	**109.89**	**382.15**	**399.50**	**4.54**

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

* RES: Renewable Energy Sources excluding hydro

Includes NLC-Central capacity also

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

Source : Central Electricity Authority.

Table 2.5: State-wise cumulative Installed Capacity of Grid Interactive Renewable Power as on 31.03.2022

S. No.	STATES / UTs	Small Hydro Power (MW)		Wind Power (MW)		Bio-Power-BM Power/Cogen (MW)		Waste to Energy (MW)		Solar Power (MW)		Total Capacity (MW)		Growth Rate(2020-21 to 2021-22)
		2020-21	2021-22	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22	
1	Andhra Pradesh	162.11	162.11	4096.65	4096.65	483.67	483.67	52.37	82.37	4291.34	4386.76	**9086.14**	**9211.56**	**1.38%**
2	Arunachal Pradesh	131.11	131.11			0.00	0.00	0.00	0.00	10.16	11.23	**141.27**	**142.34**	**0.76%**
3	Assam	34.11	34.11			2.00	2.00	0.00	0.00	51.56	117.94	**87.67**	**154.05**	**75.72%**
4	Bihar	70.70	70.70			124.70	124.70	1.00	1.32	180.23	190.63	**376.63**	**387.35**	**2.85%**
5	Chhatisgarh	76.00	76.00			244.90	274.59	0.41	0.41	445.21	518.08	**766.52**	**869.08**	**13.38%**
6	Goa	0.05	0.05			0.00	0.00	0.34	0.34	7.56	19.95	**7.95**	**20.34**	**155.85%**
7	Gujarat	82.69	89.39	8561.82	9209.22	77.30	77.30	22.57	31.96	4469.87	7180.03	**13214.25**	**16587.90**	**25.53%**
8	Haryana	73.50	73.50			210.66	240.66	6.09	17.34	472.26	910.63	**762.51**	**1242.13**	**62.90%**
9	Himachal Pradesh	936.11	954.11			9.20	9.20	1.00	1.00	50.28	76.16	**996.59**	**1040.47**	**4.40%**
10	Jammu & Kashmir	185.98	184.32			0.00	0.00	0.00	0.00	42.13	54.73	**228.11**	**239.05**	**4.80%**
11	Jharkhand	4.05	4.05			4.30	4.30	0.00	0.00	69.86	88.79	**78.21**	**97.14**	**24.20%**
12	Karnataka	1280.73	1280.73	4938.60	5130.90	1887.30	1887.30	14.62	14.85	7383.88	7590.81	**15505.13**	**15904.59**	**2.58%**
13	Kerala	230.02	242.52	62.50	62.50	2.27	2.27	0.23	0.23	277.40	363.18	**572.42**	**670.70**	**17.17%**
14	Madhya Pradesh	99.71	99.71	2519.89	2519.89	107.35	107.35	20.31	23.98	2544.71	2717.95	**5291.97**	**5468.88**	**3.34%**
15	Maharashtra	379.58	381.08	5000.33	5012.83	2584.40	2584.40	47.75	47.75	2323.79	2631.02	**10335.85**	**10657.08**	**3.11%**
16	Manipur	5.45	5.45			0.00	0.00	0.00	0.00	11.39	12.25	**16.84**	**17.70**	**5.11%**
17	Meghalaya	32.53	32.53			13.80	13.80	0.00	0.00	3.85	4.15	**50.18**	**50.48**	**0.60%**
18	Mizoram	36.47	36.47			0.00	0.00	0.00	0.00	6.98	7.90	**43.45**	**44.37**	**2.12%**
19	Nagaland	30.67	30.67			0.00	0.00	0.00	0.00	2.91	3.04	**33.58**	**33.71**	**0.39%**
20	Odisha	88.63	106.63			59.22	59.22	0.00	0.00	425.53	451.24	**573.38**	**617.09**	**7.62%**
21	Punjab	173.55	176.10			473.45	473.45	18.20	18.20	982.30	1100.07	**1647.50**	**1767.82**	**7.30%**
22	Rajasthan	23.85	23.85	4326.82	4326.82	121.25	121.25	3.83	3.83	5925.60	12564.87	**10401.35**	**17040.62**	**63.83%**
23	Sikkim	52.11	52.11			0.00	0.00	0.00	0.00	1.94	4.68	**54.05**	**56.79**	**5.07%**
24	Tamil Nadu	123.05	123.05	9608.04	9866.37	1012.65	1012.65	27.26	30.05	4527.47	5067.18	**15298.47**	**16099.30**	**5.23%**
25	Telangana	90.87	90.87	128.10	128.10	160.10	160.10	50.38	59.64	3961.54	4520.48	**4390.99**	**4959.19**	**12.94%**
26	Tripura	16.01	16.01			0.00	0.00	0.00	0.00	13.56	14.89	**29.57**	**30.90**	**4.50%**
27	Uttar Pradesh	49.10	49.10			2117.26	2117.26	58.84	72.73	1836.27	2244.43	**4061.47**	**4483.52**	**10.39%**
28	Uttarakhand	214.32	218.82			130.22	130.22	9.22	9.22	380.13	573.54	**733.89**	**931.80**	**26.97%**
29	West Bengal	98.50	98.50			319.92	319.92	1.17	2.53	162.65	166.00	**582.24**	**586.95**	**0.81%**
30	Andaman & Nicobar	5.25	5.25				0.00	0.00	0.00	29.46	29.49	**34.71**	**34.74**	**0.09%**
31	Chandigarh						0.00	0.00	0.00	45.97	55.17	**45.97**	**55.17**	**20.01%**
32	Dadar & Nagar Haveli						0.00	0.00	0.00	5.46	5.46	**5.46**	**5.46**	**0.00%**
33	Daman & Diu						0.00	0.00	0.00	40.55	40.72	**40.55**	**40.72**	**0.42%**
34	Delhi						0.00	52.00	59.00	194.43	211.12	**246.43**	**270.12**	**9.61%**
35	Lakshwadeep						0.00	0.00	0.00	3.27	3.27	**3.27**	**3.27**	**0.00%**
36	Puducherry						0.00	0.00	0.00	9.51	13.69	**9.51**	**13.69**	**43.95%**
37	Others			4.30	4.30		0.00	0.00	0.00	45.01	45.01	**49.31**	**49.31**	**0.00%**
Total (MW)		**4786.81**	**4848.90**	**39247.05**	**40357.58**	**10145.92**	**10205.61**	**387.59**	**476.75**	**41236.02**	**53996.54**	**95803.39**	**109885.38**	**14.70%**
% Distribution		**5.0%**	**4.4%**	**41.0%**	**36.7%**	**10.6%**	**9.3%**	**0.4%**	**0.4%**	**43.0%**	**49.1%**	**100.0%**	**100.0%**	

Source: Ministry of New and Renewable Eneergy

Table 2.6 : Installation of Off-grid / Decentralised Renewable Energy Systems/ Devices as on 31.03.2022

Sl. No.	State/UT	Biogas Plants** (Nos)	SPV Pumps (Nos.)	Solar Photovoltaic (SPV) Systems				Waste to Energy (MW)**
				SLS (Nos.)	HLS (Nos.)	SL (Nos.)	PP (KWP)	
1	2	3	4	5	6	7	8	10
1	Andhra Pradesh	2,68,598	34,045	16,460	22,972	77,803	3,816	29.20
2	Arunachal Pradesh	3,621	22	25,008	35,065	2,18,551	963	-
3	Assam	1,39,414	45	29,330	46,879	6,47,761	1,605	-
4	Bihar	1,30,072	2,813	52,431	12,303	17,35,227	6,905	1.00
5	Chhattisgarh	60,250	61,970	4,449	42,232	3,311	31,373	0.41
6	Goa	4,234	45	707	393	1,093	33	-
7	Gujarat	4,35,638	11,981	5,004	9,253	31,603	13,577	22.58
8	Haryana	64,013	33,901	34,625	56,727	93,853	2,321	4.89
9	Himachal Pradesh	47,718	231	98,500	22,592	33,909	1,906	1.00
10	Jammu & Kashmir	3,201	142	38,826	1,44,316	51,224	8,130	-
11	Jharkhand	7,890	11,387	14,344	9,450	7,90,515	3,770	-
12	Karnataka	5,12,755	7,734	5,694	52,638	7,781	7,854	13.62
13	Kerala	1,53,666	818	1,735	41,912	54,367	16,268	0.23
14	Madhya Pradesh	3,79,154	25,047	16,673	7,920	5,29,101	3,654	4.90
15	Maharashtra	9,31,313	13,741	10,420	3,497	2,39,297	3,858	35.16
16	Manipur	2,128	68	32,347	24,583	69,722	1,581	-
17	Meghalaya	11,156	54	5,800	14,874	97,360	2,004	-
18	Mizoram	5,857	37	20,325	12,060	1,55,217	3,895	-
19	Nagaland	7,953	3	16,045	1,045	30,766	1,506	-
20	Odisha	2,71,752	10,308	18,479	5,274	99,843	2,322	-
21	Punjab	1,87,145	11,079	43,508	8,626	17,495	2,066	7.45
22	Rajasthan	72,886	75,748	8,669	1,87,968	2,25,851	30,449	3.83
23	Sikkim	9,044	-	504	15,059	45,200	850	-
24	Tamil Nadu	2,24,037	6,646	41,121	2,98,641	16,818	13,053	20.86
25	Telangana	3,16,727	424	2,458	-	1,42,000.0	7,450	4.59
26	Tripura	3,744	572	15,177	32,723	3,64,012	867	-
27	Uttar Pradesh	4,41,180	35,492	2,97,961	2,35,909	23,51,205	10,638	58.84
28	Uttarakhand	3,65,188	26	43,723	91,595	1,65,071	4,060	9.22
29	West Bengal	1,216	653	17,894	1,45,332	17,662	1,730	1.17
30	Andaman & Nicobar	97	5	1,490	468	6,296	167	-
31	Chandigarh	169	12	901	275	1,675	730	-
32	Dadar & Nagar Haveli	681	-	-	-	-	0	-
33	Daman & Diu	-	-	-	-	-	0	-
34	Delhi	578	90	301	-	4,807	1,269	-
35	Lakshadweep	-	-	4,465	600	5,289	2,190	-
36	Puducherry	17,541	21	417	25	1,637	121	-
37	Others*	-	4,621	9,150	1,40,273	1,25,797	23,885	-
	Total	**50,80,616**	**3,49,781**	**9,34,941**	**17,23,479**	**84,59,119**	**2,16,863**	**219**

* Others includes installations through NGOs/IREDA in different states

** Updated upto 31.03.2021

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