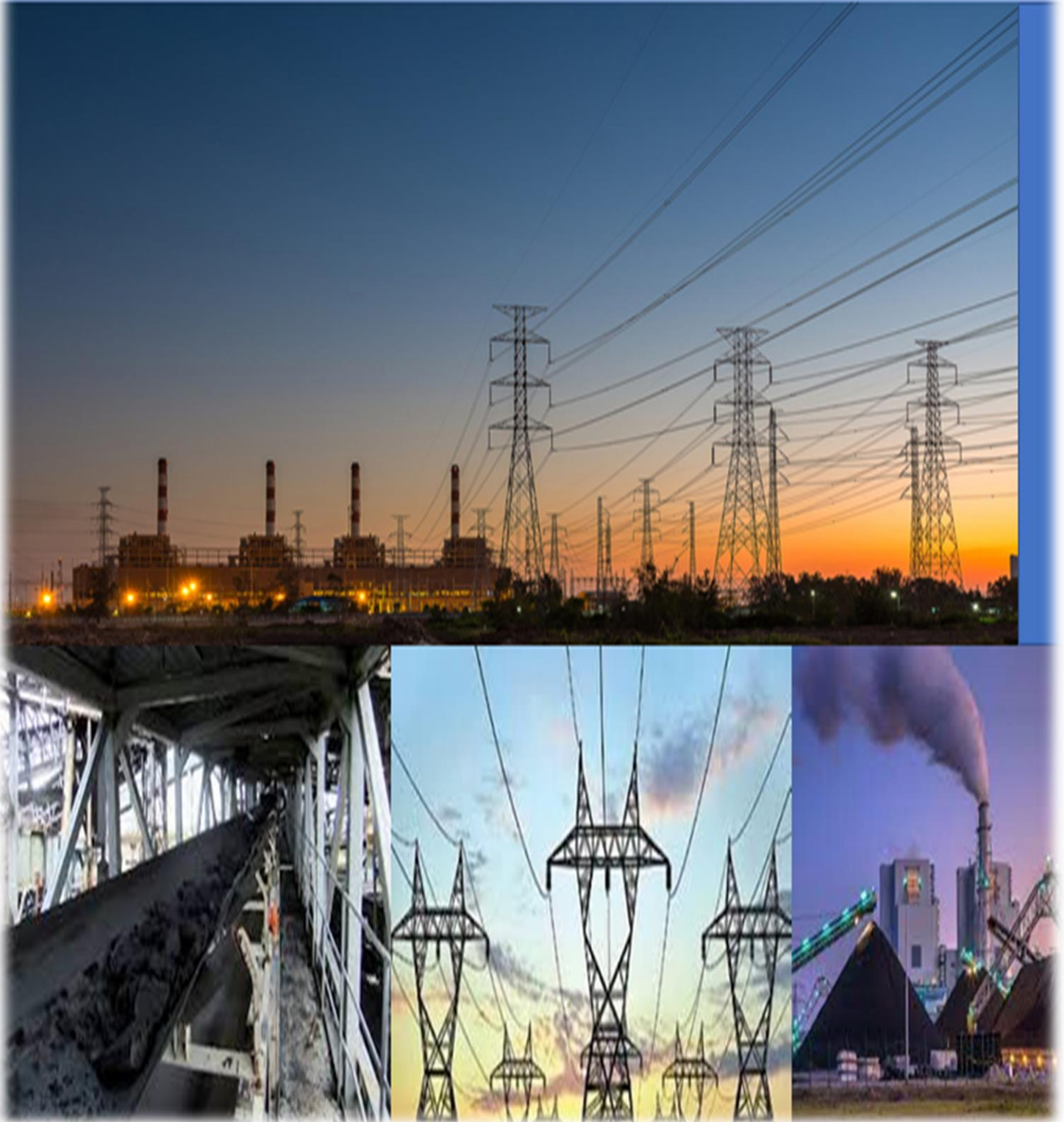


|| Chapter - 2 ||

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).

Energy systems 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 larger energy systems.

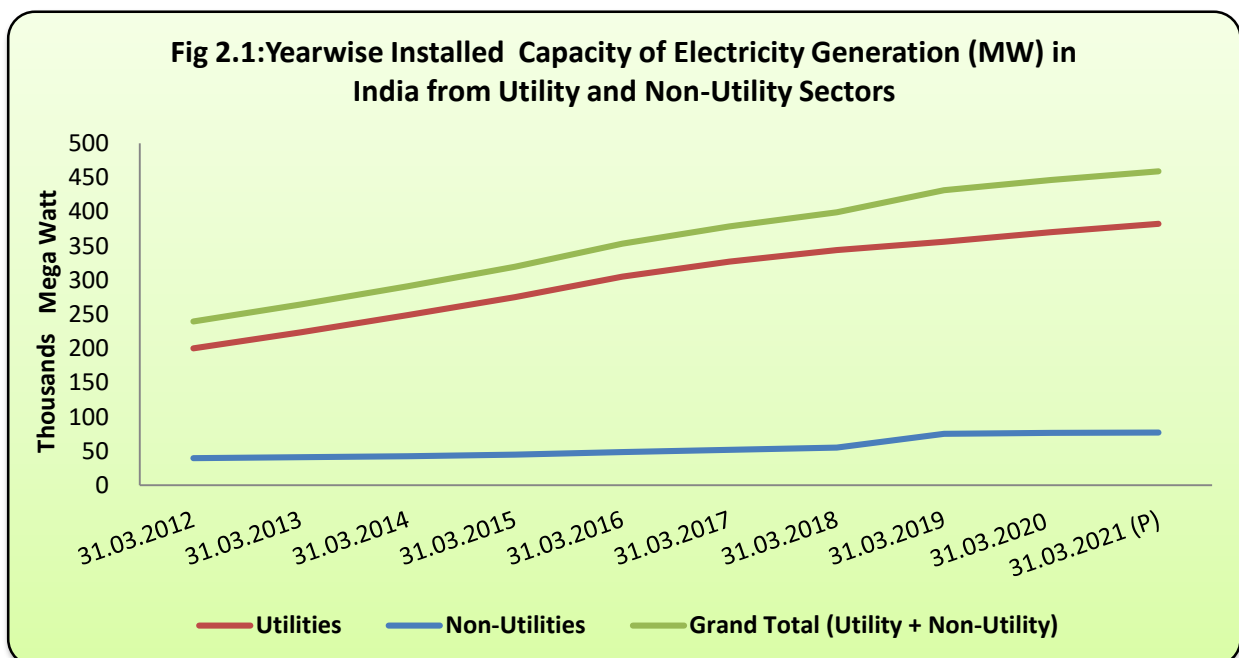
Thus, in India, there has been a thrust to increase installed generating capacity of power and to decrease the reliance on primary fossil fuels to cater to these needs. Generating and providing reliable power at competitive prices in a sustainable manner by optimising the use of multiple energy resource 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.

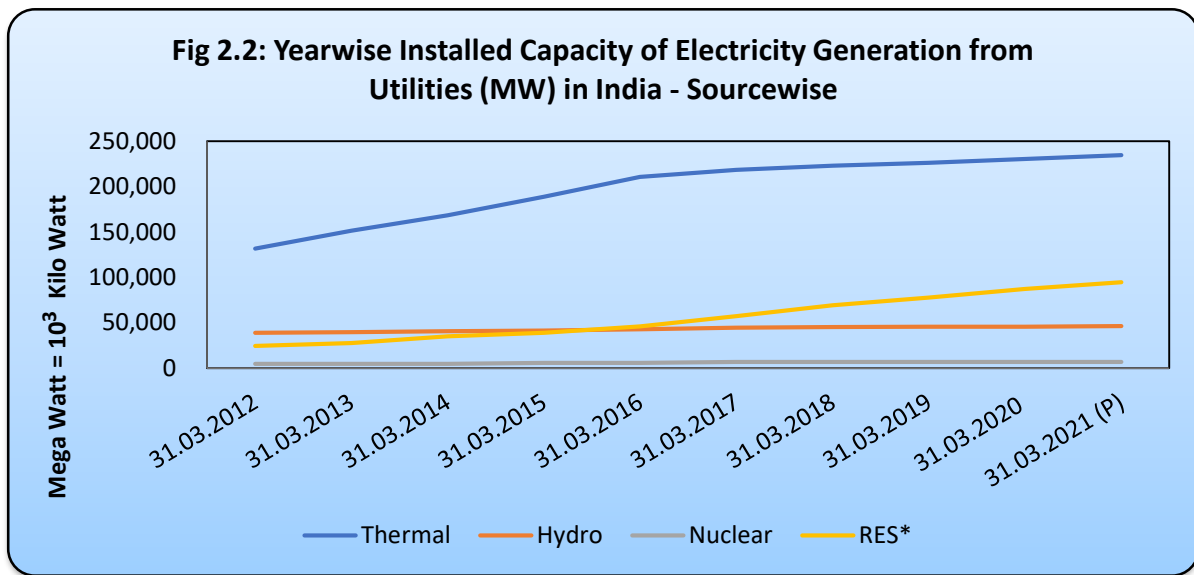
Highlights

- Total installed capacity of coal washeries in India is 138.58 million tonnes per year (MTY) as on 31.03.2021 (P). This comprises of 29.98 MTY in coking and 108.60 MTY in Non-Coking Coal Washeries (Table 2.1).
- Similarly, as on 31.03.2021, there were a total of 23 refineries in the country, 18 in the Public Sector, 3 in the Private sector and 2 in Joint Venture (Table 2.2).
- The refining capacity of the country has remained 2,49,866 TMTPA on 31.03.2021 which is same as that of last year. The dominance of the Public Sector refineries (57%) has remained unchanged.
- The Refinery production (crude throughput) achievement was 2,54,386 TMT during 2019-20 which has decreased to 2,21,773 TMT during 2020-21 i.e., a net decrease of 12.8% over 2019-20.
- Hence, the overall Capacity utilization of the refineries which was over 100 % during 2019-20 had decreased to 88.8% in 2020-21. In the Public Sector, Indian Oil Corporation (IOC) decreased its capacity utilization from 99.6% in 2019-20 to 89.5% in 2020-21. Both, the Private sector and Joint venture, have also experienced negative growth rate of (-)13.05% and (-)20.38% respectively during FY:2020-21 over the previous year.
- In absolute terms, the installed capacity of electricity generation increased by 2.87% to 4,59,151 MW in 2020-21 over 4,46,346 MW in 2019-20 with the major share of installed capacity existing with utilities i.e., 83.23% (Table 2.3).

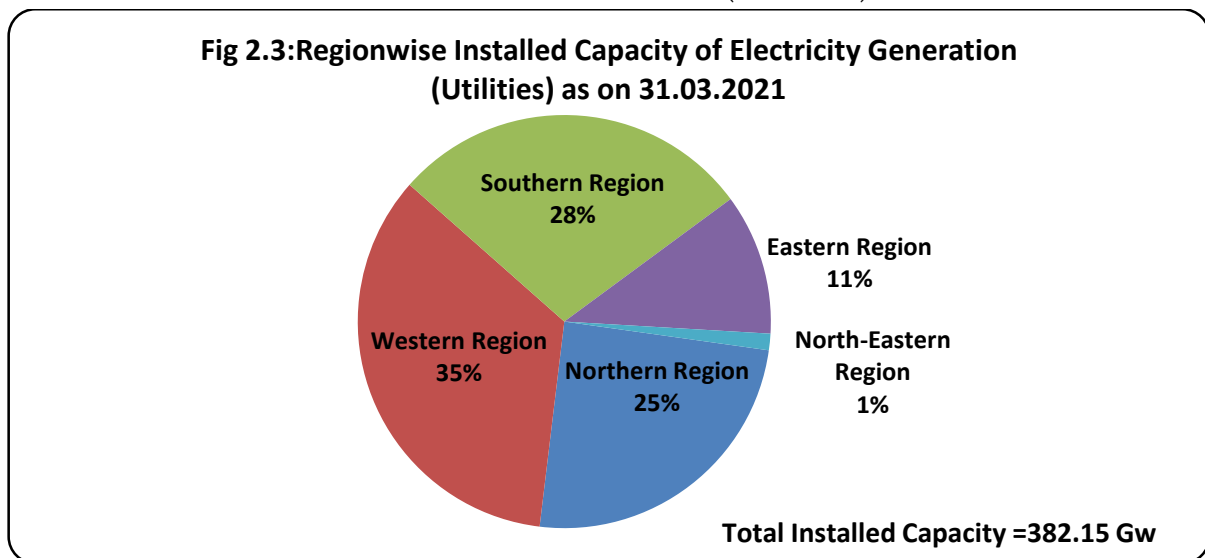


- India's Energy mix has been seeing a shift from more conventional resources of energy to renewable sources. Though during 2020-21, the demand of Energy has witnessed some serious downfall but still during 2020-21, while the installed capacity of renewable sources of electricity generation excluding hydro from utilities grew at

8.51% over the previous year (2021 over 2020), that of thermal sources grew only at 1.79%.



- The geographical distribution of installed capacity of electricity generating as on 31.03.2021 indicates that Western Region accounted for the highest share (35%) followed by Southern Region (28%) and Northern Region (25%). Northern Region also accounted for the highest share of hydro energy. Amongst states, the state of Karnataka has the highest share of hydro installed capacity of 3.59 GW and also the highest share of Other renewable resources as well at 15.46 GW. (Table 2.4).



- Region wise growth in the installed capacity during 2020-21 reveals that North Eastern Region (NER) registered highest annual growth of about 5.88%. Amongst all the major states Telangana registered highest annual growth (9.03%) in the installed capacity.

- The total installed capacity of grid interactive renewable power, which was 87,078 MW in 2020 increased to 94,434 MW (a growth of 8.45%) during a year (2021) (Table 2.5).
- Out of the total installed generation capacity of renewable sources of power in 2021, installed capacity of Solar power including roof tops accounted for about 42.4%, followed by Wind power (41.6%) and Bio Power & Waste to Energy (10.9%). However, in terms of growth rates year on year, Solar power installed capacity has a growth rate of almost 16% just over the last year i.e., from 2020 to 2021.
- Karnataka had the highest installed capacity of grid connected renewable power (15,462.80 MW) in 2021 followed closely by Tamil Nadu (15,225.35 MW) mainly on account of wind and solar power.

Fig 2.4 : Sectorwise distribution of Installed Grid-Interactive Renewable Power Capacity during 2020-21(P)

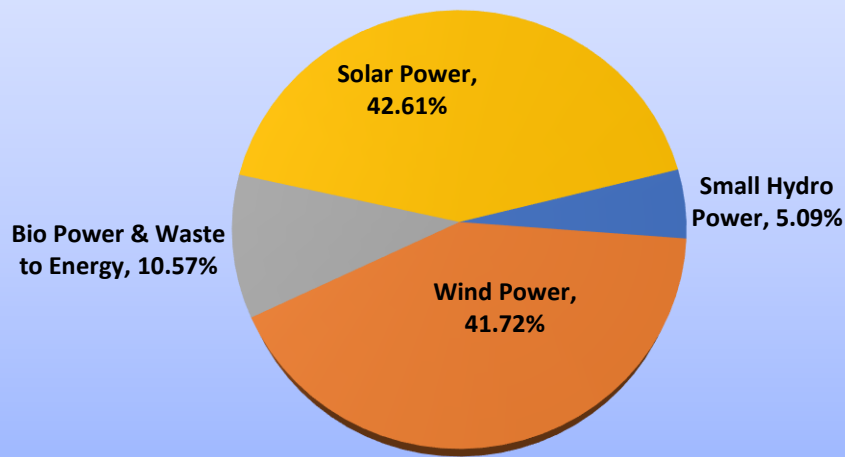
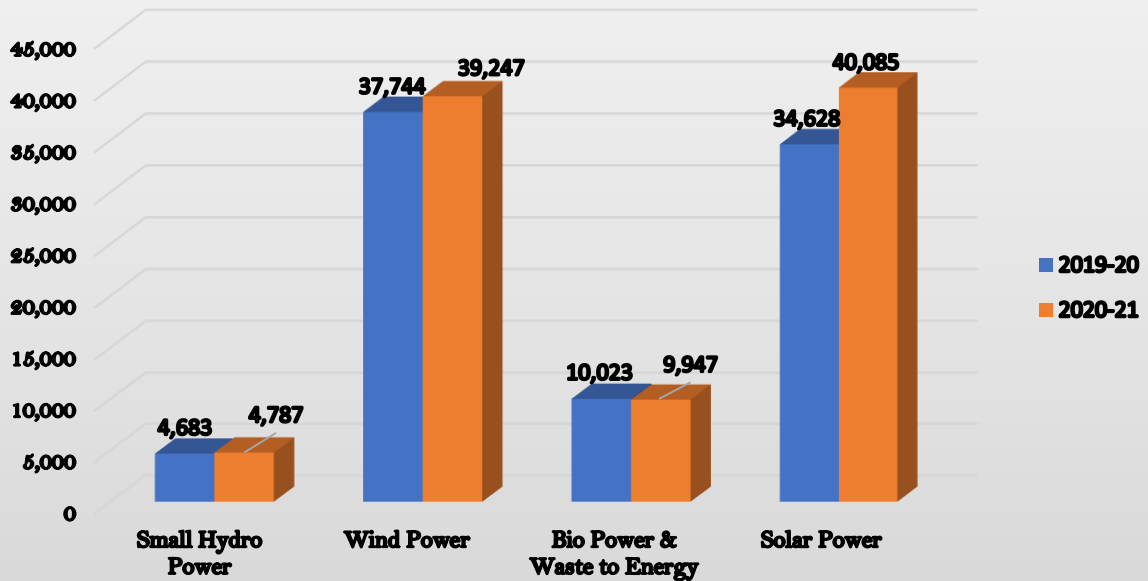


Fig 2.5 : Installed Capacity of Grid-Interactive Renewable Power During 2019-20 and 2020-21(P)



- 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 16% over last year. Also, the Solar Photovoltaic Plants (SPV) has registered a growth of 12% over last year (Figure 2.6).

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

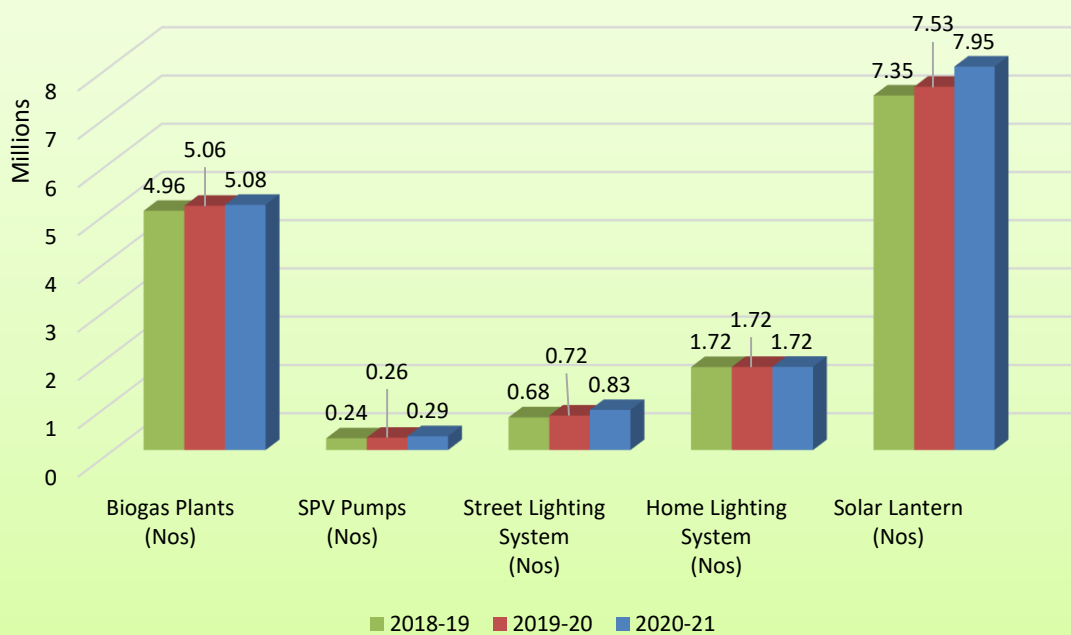


Table 2.1: Installed Capacity of Coal Washeries

Sl. No.	Washery & Operator	State of Location	Capacity (MTY) 31.03.2021*
<u>COKING COAL :</u>			
1	Dudga-II, CIL	Jharkhand	2.00
2	Bhojudih, CIL	West Bengal	1.70
3	Patherdih, CIL	Jharkhand	Closed
4	Moonidih, CIL	Jharkhand	1.60
5	Sudamdih, CIL	Jharkhand	1.60
6	Mahuda, CIL	Jharkhand	0.63
7	Madhuban, CIL	Jharkhand	2.50
8	Kathara, CIL	Jharkhand	3.00
9	Swang, CIL	Jharkhand	0.75
10	Rajrappa, CIL	Jharkhand	3.00
11	Kedla, CIL	Jharkhand	2.60
12	Nandan, CIL	Madhya Pradesh	1.20
(A) CIL			20.58
13	Durgapur, SAIL	West Bengal	Closed
14	DCOP, DPL	West Bengal	Closed
15	Chasnala, IISCO	Jharkhand	1.40
16	Jamadoba, TISCO	Jharkhand	1.30
17	West Bokaro-II, TISCO	Jharkhand	2.50
18	West Boakaro-III, TISCO	Jharkhand	2.70
19	Bhelatand, TISCO	Jharkhand	1.50
(B) PSU & Private			9.40
TOTAL COKING (A + B)			29.98
<u>NON-COKING COAL</u>			
1	Dugda-I, CIL	Jharkhand	Closed
2	Gidi, CIL	Jharkhand	2.50
3	Piparwar, CIL	Jharkhand	6.50
4	Kargali, CIL	Jharkhand	Closed
5	Bina, CIL	Uttar Pradesh	Closed
(A) CIL			9.00
6	Dipka, Aryan coal beneficiation pvt. Ltd.	Chattisgarh	14.00
7	Gevra, Aryan coal beneficiation pvt. Ltd.	Chattisgarh	6.25
8	Panderpauni, Aryan coal beneficiation pvt. Ltd.	Maharashtra	2.62
9	Chakabuwa, Aryan Energy private ltd.	Chattisgarh	7.50
10	Hingir, Aryan Energy private ltd.	Odisha	5.00
11	Binjhari, Aryan Energy private ltd.	Chattisgarh	4.80
12	Indaram, Aryan Coal Benefication Pvt.Ltd.	Andhra Pradesh	Closed
13	Talcher, Aryan Energy Pvt. Ltd.	Odisha	2.34

* 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)
			31.03.2021*
14	Wani, Kartikay Coal washeries pvt. ltd.(Aryan)	Maharashtra	2.50
15	Korba, ST-CLI Coal washeries ltd.	Chattisgarh	closed
25	Talcher, Global coal Mining (P) Ltd.	Odisha	4.00
26	Ib Valley, Global coal Mining (P) Ltd.	Odisha	3.50
16	Ramagundam, Gupta coalfield & washeries ltd.	Andhra Pradesh	closed
17	Sasti, Gupta coalfield & washeries ltd.	Maharashtra	closed
18	Wani, Gupta coalfield & washeries ltd.	Maharashtra	closed
19	Umrer, Gupta coalfield & washeries ltd.	Maharashtra	closed
20	Bhandara, Gupta coalfield & washeries ltd.	Maharashtra	closed
21	Gondegaon, Gupta coalfield & washeries ltd.	Maharashtra	closed
22	Majri, Gupta coalfield & washeries ltd.	Maharashtra	closed
23	Bilaspur, Gupta coalfield & washeries ltd.	Chattisgarh	closed
24	Ghugus, Gupta coalfield & washeries ltd.	Maharashtra	closed
27	Ramagundam, Global coal Mining (P) Ltd.	Telangana	closed
28	Manuguru, Global coal Mining (P) Ltd.	Telangana	0.22
29	Wani, Bhatia International Ltd.	Maharashtra	closed
30	Ghugus, Bhatia International Ltd.	Maharashtra	closed
31	Jharsuguda, Bhatia International Ltd.	Odisha	closed
32	Tamnar, Jindal Steel & Power Ltd.	Chattisgarh	closed
33	Wani, Indo Unique Flame Ltd.	Maharashtra	closed
34	Nagpur, Indo Unique Flame Ltd.	Maharashtra	closed
35	Punwat, Indo Unique Flame Ltd.	Maharashtra	closed
36	Dharamsthal, BLA Industries	Madhya Pradesh	closed
37	Talcher, Spectrum Coal & Power Ltd.	Odisha	9.52
38	Ratija, Spectrum Coal & Power Ltd.	Chattisgarh	11.00
39	Maruti Clean Coal	Chattisgarh	6.60
40	AEL,Adani Enterprises Limited	Chattisgarh	15.00
41	Jindal Power Limited(JPL)	Chattisgarh	4.75
	(B) Private		99.60
	TOTAL NON-COKING (A+B)		108.60
	Gross Total (Coking + Non-Coking)		138.58
* 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 (TMIPA)		Crude Oil Processed (TMT)		Capacity Utilisation (%)		
		31.03.2020	31.03.2021	2019-20	2020-21 (P)	2019-20	2020-21 (P)	Change in Utilisation
1	2	3	4	5	6	7	8	9
(a)	PUBLIC SECTOR	142566	142566	144716	127504	106.27	89.43	-16.84
	IOCL, Guwahati, Assam	1000	1000	892	849	89.2%	84.9%	-4.3%
	IOCL, Barauni, Bihar	6000	6000	6516	5469	108.6%	91.2%	-17.4%
	IOCL, Koyali, Gujarat	13700	13700	13075	11603	95.4%	84.7%	-10.7%
	IOCL, Haldia, West Bengal	8000	8000	6463	6759	80.8%	84.5%	3.7%
	IOCL, Mathura, Uttar Pradesh	8000	8000	8948	8926	111.9%	111.6%	-0.3%
	IOCL, Digboi, Assam	650	650	664	605	102.2%	93.1%	-9.1%
	IOCL, Panipat, Haryana	15000	15000	15038	13181	100.3%	87.9%	-12.4%
	IOCL, Bongaigaon, Assam	2350	2350	2045	2450	87.0%	104.3%	17.3%
	IOCL, Paradip, Odisha	15000	15000	15778	12508	105.2%	83.4%	-21.8%
	Total IOC	69700	69700	69419	62351	99.6%	89.5%	-10.1%
	BPCL, Mumbai, Maharashtra	12000	12000	15017	12941	125.1%	107.8%	-17.3%
	BPCL, Kochi, Kerala	15500	15500	16515	13282	106.6%	85.7%	-20.9%
	Total BPCL	27500	27500	31532	26222	114.7%	95.4%	-19.3%
	HPCL, Mumbai, Maharashtra	7500	7500	8065	7374	107.5%	98.3%	-9.2%
	HPCL, Visakh, Andhra Pradesh	8300	8300	9115	9050	109.8%	109.0%	-0.8%
	Total HPCL	15800	15800	17180	16425	108.7%	104.0%	-4.8%
	CPCL, Manali, Tamil Nadu	10500	10500	10161	8243	96.8%	78.5%	-18.3%
	CPCL, Narimanam, Tamil Nadu	1000	1000	0	0	0.0%	0.0%	0.0%
	Total CPCL	11500	11500	10161	8243	88.4%	71.7%	-16.7%
	NRL, Numaligarh, Assam	3000	3000	2383	2707	79.4%	90.2%	10.8%
	ONGC, Tatipaka, Andhra Pradesh	66	66	13953	11475	21141.1%	17385.7%	-3755.4%
	MRPL, Mangalore, Karnataka	15000	15000	87	81	0.6%	0.5%	0.0%
(b)	PRIVATE SECTOR	88200	88200	89515	78008	101.5%	88.4%	-13.0%
	RIL, Jamnagar, Gujarat	33000	33000	33019	34100	100.1%	103.3%	3.3%
	RIL, SEZ-Jamnagar, Gujarat	35200	35200	35876	26841	101.9%	76.3%	-25.7%
	ESSAR Oil Ltd. Vadinar	20000	20000	20620	17067	103.1%	85.3%	-17.8%
(c)	JOINT VENTURE	19100	19100	20155	16262	105.5%	85.1%	-20.4%
	BORL, Bina, M.P.	7800	7800	7913	6190	101.4%	79.4%	-22.1%
	HMEL, GGS, Bathinda, Punjab	11300	11300	12242	10072	108.3%	89.1%	-19.2%
	Total (a+b+c)	249866	249866	254386	221773	101.8%	88.8%	-13.1%

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 processed in current year divided by refining capacity at the end of previous year*100

Source: M/o Petroleum & Natural Gas

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

(in Mega Watt = 10³ 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 (P)	2,09,295	510	24,924	2,34,728	46,209	6,780	94,434	3,82,151
Growth rate of 2020-21 over 2019-20(%)	2.0%	0.0%	-0.1%	1.8%	1.1%	0.0%	8.5%	3.3%
CAGR 2011-12 to 2020-21 (%)	7.2%	-9.1%	3.4%	6.6%	1.9%	4.0%	16.2%	7.5%

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 = $((\text{Current Value}/\text{Base Value})^{(1/\text{nos. of years})}-1)*100$

Source : Central Electricity Authority.

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

(in Mega Watt = 10³ 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 (P)	52,057	12,902	7,389	72,348	132	4,520	77,000	4,59,151
Growth rate of 2020-21 over 2019-20(%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	2.9%
CAGR** 2011-12 to 2020-21 (%)	9.7%	2.9%	2.6%	7.3%	12.0%	20.1%	7.7%	7.5%

* 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 2019-20) (%)
	31.03.20	31.03.21	31.03.20	31.03.21	31.03.20	31.03.21	31.03.20	31.03.21	31.03.20	31.03.21	
Chandigarh	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.05	0.04	0.05	11.37
Delhi	0.00	0.00	2.36	2.36	0.00	0.00	0.22	0.24	2.57	2.60	1.08
Haryana	0.20	0.20	4.82	4.82	0.00	0.00	0.53	0.69	5.55	5.71	2.92
Himachal Pradesh	2.48	2.59	0.00	0.00	0.00	0.00	0.95	0.99	3.43	3.58	4.30
Jammu & Kashmir	1.23	1.23	0.18	0.18	0.00	0.00	0.20	0.21	1.60	1.61	0.43
Punjab	1.24	1.24	6.92	6.92	0.00	0.00	1.45	1.62	9.62	9.78	1.75
Rajasthan	0.43	0.43	10.97	10.97	0.00	0.00	9.24	9.86	20.64	21.26	3.01
Uttar Pradesh	0.72	0.72	12.77	12.77	0.00	0.00	3.21	3.85	16.70	17.35	3.85
Uttarakhand	1.98	2.08	0.55	0.55	0.00	0.00	0.66	0.71	3.19	3.34	4.74
Central Sector NR	11.52	11.52	14.22	15.54	1.62	1.62	0.38	0.38	27.74	29.06	4.76
Sub-Total (NR)	19.81	20.02	52.80	54.12	1.62	1.62	16.87	18.59	91.09	94.34	3.57
Chhattisgarh	0.12	0.12	16.25	16.01	0.00	0.00	0.55	0.57	16.92	16.70	-1.29
Gujarat	0.77	0.77	20.37	20.23	0.00	0.00	10.34	12.91	31.48	33.91	7.71
Madhya Pradesh	1.70	1.70	11.80	11.80	0.00	0.00	4.70	4.91	18.19	18.40	1.16
Maharashtra	3.33	3.33	23.37	23.37	0.00	0.00	9.59	10.14	36.29	36.84	1.53
Daman & Diu	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.02	0.04	104.18
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	0.01	0.05	0.06	5.00
Central Sector WR	1.52	1.52	20.68	22.28	1.84	1.84	0.67	0.67	24.71	26.31	6.48
Sub-Total (WR)	7.45	7.45	92.51	93.73	1.84	1.84	25.87	29.25	127.67	132.27	3.60
Andhra Pradesh	1.67	1.67	12.30	12.30	0.00	0.00	8.11	8.72	22.09	22.70	2.73
Telangana	2.48	2.48	6.38	7.19	0.00	0.00	4.01	4.37	12.88	14.04	9.03
Karnataka	3.59	3.59	7.11	7.11	0.00	0.00	15.23	15.46	25.92	26.15	0.89
Kerala	1.86	1.86	0.33	0.33	0.00	0.00	0.38	0.50	2.57	2.69	4.84
Tamil Nadu	2.18	2.18	8.51	8.51	0.00	0.00	14.12	15.00	24.81	25.68	3.54
Puducherry	0.00	0.00	0.03	0.03	0.00	0.00	0.01	0.01	0.04	0.04	10.05
Lakshadweep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Central Sector SR #	0.00	0.00	13.10	13.25	3.32	3.32	0.54	0.54	16.96	17.11	0.88
Sub-Total (SR)	11.77	11.77	47.77	48.73	3.32	3.32	42.41	44.60	105.27	108.42	3.00
Bihar	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.35	0.34	0.35	3.33
Jharkhand	0.13	0.13	2.25	2.25	0.00	0.00	0.05	0.06	2.43	2.44	0.56
Odisha	2.06	2.06	5.54	5.54	0.00	0.00	0.51	0.54	8.11	8.14	0.34
West Bengal	0.99	0.99	7.43	7.43	0.00	0.00	0.53	0.57	8.95	8.98	0.40
Sikkim	0.76	0.76	0.00	0.00	0.00	0.00	0.05	0.05	0.81	0.81	0.00
A. & N. Islands	0.00	0.00	0.04	0.04	0.00	0.00	0.01	0.03	0.05	0.07	32.51
Central Sector ER \$	1.01	1.01	19.71	20.37	0.00	0.00	0.02	0.02	20.73	21.39	3.18
Sub-Total (ER)	4.94	4.94	34.97	35.63	0.00	0.00	1.51	1.62	41.42	42.19	1.85
Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.14	0.14	0.14	0.00
Assam	0.10	0.10	0.35	0.35	0.00	0.00	0.05	0.05	0.50	0.51	0.98
Manipur	0.00	0.00	0.04	0.04	0.00	0.00	0.01	0.01	0.05	0.05	2.57
Meghalaya	0.32	0.32	0.00	0.00	0.00	0.00	0.05	0.05	0.37	0.37	0.00
Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.04	0.04	0.03
Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.00
Tripura	0.00	0.00	0.17	0.14	0.00	0.00	0.02	0.02	0.19	0.16	-17.11
Central Sector NER	1.31	1.61	2.00	2.00	0.00	0.00	0.03	0.03	3.34	3.64	8.99
Sub-Total (NER)	1.73	2.03	2.56	2.53	0.00	0.00	0.36	0.37	4.65	4.93	5.88
Total States	30.35	30.56	160.88	161.28	0.00	0.00	85.40	92.80	276.63	284.64	2.90
Total Central	15.35	15.65	69.72	73.45	6.78	6.78	1.63	1.63	93.48	97.51	4.31
Total All India	45.70	46.21	230.60	234.73	6.78	6.78	87.03	94.43	370.11	382.15	3.25

\$ 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 31.03.2021

S. No.	STATES / UTs	Small Hydro Power		Wind Power		Bio-Power-BM Power/Cogen		Waste to Energy		Solar Power		Total Capacity		Growth Rate(2019-20 to 2020-21)
		(MW)		(MW)		(MW)		(MW)		(MW)		(MW)		
		2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	
1	Andhra Pradesh	162.11	162.11	4092.45	4096.65	477.18	483.67	23.16	23.16	3610.02	4203.00	8364.92	8968.59	7.2%
2	Arunachal Pradesh	131.11	131.11	-	-	-	0.00	-	-	5.61	5.61	136.72	136.72	0.0%
3	Assam	34.11	34.11	-	-	-	2.00	-	-	41.23	42.99	75.34	79.10	5.0%
4	Bihar	70.70	70.70	-	-	121.20	124.70	-	-	151.57	159.51	343.47	354.91	3.3%
5	Chhatisgarh	76.00	76.00	-	-	244.50	244.90	-	-	231.35	252.48	551.85	573.38	3.9%
6	Goa	0.05	0.05	-	-	-	0.00	0.34	0.34	4.78	7.44	5.17	7.83	51.5%
7	Gujarat	68.95	82.69	7541.52	8561.82	77.30	77.30	-	-	2948.37	4430.82	10636.14	13152.63	23.7%
8	Haryana	73.50	73.50	-	-	205.66	210.66	-	1.20	252.14	407.83	531.30	693.19	30.5%
9	Himachal Pradesh	911.51	936.11	-	-	7.20	9.20	-	-	32.93	42.73	951.64	988.04	3.8%
10	Jammu & Kashmir	180.48	185.98	-	-	-	0.00	-	-	19.30	20.73	199.78	206.71	3.5%
11	Jharkhand	4.05	4.05	-	-	4.30	4.30	-	-	38.40	52.06	46.75	60.41	29.2%
12	Karnataka	1280.73	1280.73	4790.60	4938.60	1881.80	1887.30	1.00	1.00	7277.93	7355.17	15232.06	15462.80	1.5%
13	Kerala	222.02	230.02	62.50	62.50	0.72	2.27	-	-	142.23	257.00	427.47	551.79	29.1%
14	Madhya Pradesh	95.91	99.71	2519.89	2519.89	105.35	107.35	15.40	15.40	2258.46	2463.22	4995.01	5205.57	4.2%
15	Maharashtra	379.58	379.58	5000.33	5000.33	2516.10	2584.40	12.59	12.59	1801.80	2289.97	9710.40	10266.87	5.7%
16	Manipur	5.45	5.45	-	-	-	0.00	-	-	5.16	6.36	10.61	11.81	11.3%
17	Meghalaya	32.53	32.53	-	-	13.80	13.80	-	-	0.12	0.12	46.45	46.45	0.0%
18	Mizoram	36.47	36.47	-	-	-	0.00	-	-	1.52	1.53	37.99	38.00	0.0%
19	Nagaland	30.67	30.67	-	-	-	0.00	-	-	1.00	1.00	31.67	31.67	0.0%
20	Odisha	64.63	88.63	-	-	59.22	59.22	-	-	397.84	401.72	521.69	549.57	5.3%
21	Punjab	173.55	173.55	-	-	317.10	473.45	10.75	10.75	947.10	959.50	1448.50	1617.25	11.6%
22	Rajasthan	23.85	23.85	4299.72	4326.82	121.30	121.25	-	-	5137.91	5732.58	9582.78	10204.50	6.5%
23	Sikkim	52.11	52.11	-	-	-	0.00	-	-	0.07	0.07	52.18	52.18	0.0%
24	Tamil Nadu	123.05	123.05	9304.34	9608.04	997.55	1012.65	6.40	6.40	3915.88	4475.21	14347.22	15225.35	6.1%
25	Telangana	90.87	90.87	128.10	128.10	159.10	160.10	26.00	45.80	3620.75	3953.12	4024.82	4377.99	8.8%
26	Tripura	16.01	16.01	-	-	-	0.00	-	-	9.41	9.41	25.42	25.42	0.0%
27	Uttar Pradesh	25.10	49.10	-	-	2115.51	2117.26	-	-	1095.10	1712.50	3235.71	3878.86	19.9%
28	Uttarakhand	214.32	214.32	-	-	130.50	130.22	-	-	315.90	368.41	660.72	712.95	7.9%
29	West Bengal	98.50	98.50	-	-	319.92	319.92	-	-	114.46	149.84	532.88	568.26	6.6%
30	Andaman & Nicobar	5.25	5.25	-	-	-	-	-	-	12.19	29.22	17.44	34.47	97.6%
31	Chandigarh	-	-	-	-	-	-	-	-	40.55	45.16	40.55	45.16	11.4%
32	Dadar & Nagar Haveli	-	-	-	-	-	-	-	-	5.46	5.46	5.46	5.46	0.0%
33	Daman & Diu	-	-	-	-	-	-	-	-	19.86	40.55	19.86	40.55	104.2%
34	Delhi	-	-	-	-	-	-	52.00	52.00	165.16	192.97	217.16	244.97	12.8%
35	Lakshwadeep	-	-	-	-	-	-	-	-	0.75	0.75	0.75	0.75	0.0%
36	Puducherry	-	-	-	-	-	-	-	-	5.51	9.33	5.51	9.33	69.3%
37	Others	-	-	4.30	4.30	-	-	-	-	-	-	4.30	4.30	0.0%
Total (MW)		4683.16	4786.81	37743.75	39247.05	9875.31	9778.31	147.64	168.64	34627.82	40085.37	87077.68	94433.79	8.4%
% Distribution		5.4%	5.1%	43.3%	41.6%	11.3%	10.4%	0.2%	0.2%	39.8%	42.4%	100.0%	100.0%	

Source: Ministry of New and Renewable Energy

Table 2.6 : Installation of Off-grid / Decentralised Renewable Energy Systems/ Devices as on 31.03.2021

Sl. No.	State/UT	Biogas Plants (Nos)	SPV Pumps (Nos.)	Solar Photovoltaic (SPV) Systems				Waste to Energy (MW)
				SLS	HLS	SL	PP	
				(Nos.)	(Nos.)	(Nos.)	(KWP)	
1	2	3	4	5	6	7	8	10
1	Andhra Pradesh	2,68,598	34,045	15,795	22,972	77,803	3,816	29.20
2	Arunachal Pradesh	3,621	22	13,741	35,065	1,25,581	963	-
3	Assam	1,39,414	45	17,384	46,879	6,47,761	1,605	-
4	Bihar	1,30,072	2,813	47,152	12,303	17,35,227	6,800	1.00
5	Chhattisgarh	60,250	61,970	3,730	42,232	3,311	31,373	0.41
6	Goa	4,234	15	707	393	1,093	33	-
7	Gujarat	4,35,638	11,615	5,004	9,253	31,603	13,577	22.58
8	Haryana	64,013	10,103	34,625	56,727	93,853	2,321	4.89
9	Himachal Pradesh	47,718	46	92,500	22,592	33,909	1,906	1.00
10	Jammu & Kashmir	3,201	39	24,904	1,44,316	51,224	8,130	-
11	Jharkhand	7,890	5,051	13,916	9,450	7,90,515	3,770	-
12	Karnataka	5,12,755	7,496	5,069	52,638	7,781	7,854	13.62
13	Kerala	1,53,666	818	1,735	41,912	54,367	16,078	0.23
14	Madhya Pradesh	3,79,154	25,047	14,258	7,920	5,29,101	3,654	4.90
15	Maharashtra	9,31,313	11,315	10,420	3,497	2,39,297	3,858	35.16
16	Manipur	2,128	40	22,367	24,583	9,058	1,581	-
17	Meghalaya	11,156	19	5,800	14,874	40,750	2,004	-
18	Mizoram	5,857	37	10,117	12,060	1,07,217	3,865	-
19	Nagaland	7,953	3	15,125	1,045	6,766	1,506	-
20	Odisha	2,71,752	9,661	17,955	5,274	99,843	2,192	-
21	Punjab	1,87,145	5,689	43,448	8,626	17,495	2,066	7.45
22	Rajasthan	72,886	56,819	7,114	1,87,968	2,25,851	30,449	3.83
23	Sikkim	9,044	-	504	15,059	23,300	850	-
24	Tamil Nadu	2,24,037	6,447	40,324	2,98,641	16,818	13,053	20.86
25	Telangana	3,16,727	424	2,208	-	12,000.0	7,450	4.59
26	Tripura	3,744	214	6,887	32,723	2,88,941	867	-
27	Uttar Pradesh	4,41,180	31,609	2,91,392	2,35,909	23,51,205	10,638	58.84
28	Uttarakhand	3,65,188	26	34,218	91,595	1,63,386	4,060	9.22
29	West Bengal	1,216	653	15,605	1,45,332	17,662	1,730	1.17
30	Andaman & Nicobar	97	5	1,135	468	6,296	167	-
31	Chandigarh	169	12	901	275	1,675	730	-
32	Dadar & Nagar Haveli	681	-	-	-	-	-	-
33	Daman & Diu	-	-	-	-	-	-	-
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	2,86,830	8,30,373	17,23,479	79,48,219	2,16,408	219

* 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