

GOVERNMENT OF INDIA
MINISTRY OF NEW AND RENEWABLE ENERGY
LOK SABHA
STARRED QUESTION NO. 36
ANSWERED ON 03.02.2022

POWER GENERATION BY RENEWABLE SOURCES

+*36. **DR. MANOJ RAJORIA:**

Will the Minister of NEW AND RENEWABLE ENERGY be pleased to state:

- (a) the quantum increase in power generation from renewable sources during the last five years;
- (b) the efforts being made by the Government for the development of various renewable energy sources; and
- (c) the details of power generation from renewable energy sources during the last five years, State-wise?

ANSWER

THE MINISTER OF NEW & RENEWABLE ENERGY AND POWER

(SHRI R.K. SINGH)

(a) to (c): A Statement is laid on the Table of the House.

**STATEMENT REFERRED TO IN REPLY TO LOK SABHA STARRED QUESTION No. 36
for ANSWER ON 3-2-2022**

(a) The power generation through various renewable energy sources (including large hydro) has increased from 203925.77 million units (MU) in 2016-17 to 297547.03 million units(MU) in 2020-21.

(b) The Government has taken several steps for promotion of renewable energy in the country. These include:-

- permitting Foreign Direct Investment (FDI) up to 100 percent under the automatic route,
- waiver of Inter State Transmission System (ISTS) charges for inter-state sale of solar and wind power for projects to be commissioned by 30th June 2025,
- declaration of trajectory for Renewable Purchase Obligation (RPO) up to the year 2022,
- setting up of Ultra Mega Renewable Energy Parks to provide land and transmission to RE developers on a plug and play basis,
- schemes such as Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM), Solar Rooftop Phase II, 12000 MW CPSU Scheme Phase II, etc,
- laying of new transmission lines and creating new sub-station capacity under the Green Energy Corridor Scheme for evacuation of renewable power,
- notification of standards for deployment of solar photovoltaic system/devices,
- setting up of Project Development Cell for attracting and facilitating investments,
- Standard Bidding Guidelines for tariff based competitive bidding process for procurement of Power from Grid Connected Solar PV and Wind Projects.
- Government has issued orders that power shall be dispatched against Letter of Credit (LC) or advance payment to ensure timely payment by distribution licensees to RE generators.

(c) The state-wise details of power generation from various renewable energy sources (including large hydro) during the last five years and the current year i.e 2016-17 to 2021-22 (upto November 2021) are given in **Annexure**.

Annexure

Annexure referred to in reply to part (c) of Lok Sabha Starred Question No. 36 for answer on 3-2-2022 regarding 'Power Generation by Renewable Sources'

State-wise and source-wise details of electricity generated from various renewable energy sources (including large hydro) in the country during the last five years & the current year i.e. from 2016-17 to 2021-22 (Up to November 2021)

(All figures in Million Units)

All India RE Generation Year 2016-17						
Name of State/UT	Wind	Solar	Small Hydro	Bio-Power	Large Hydro *	Total
Chandigarh	0.00	13.16	0.00	0.00	0	13.16
Delhi	0.00	5.68	0.00	139.05	0	144.73
Haryana	0.00	26.57	238.80	191.04	0	456.41
HP	0.00	0.00	2015.58	0.00	37049.74	39065.32
J & K	0.00	0.77	325.36	0.00	15377.69	15703.82
Ladakh	0.00	0.00	0.00	0.00	0	0.00
Punjab	0.00	909.20	497.99	742.31	3910.58	6060.08
Rajasthan	5658.46	2185.84	6.76	272.97	965.99	9090.01
Uttar Pradesh	0.00	270.44	27.83	3379.48	1175.56	4853.31
Uttarakhand	0.00	37.77	850.50	110.92	13281.53	14280.72
Chhattisgarh	0.00	120.91	44.21	1281.10	153.76	1599.98
Gujarat	7792.79	1738.28	27.54	12.16	3943.88	13514.65
Madhya Pradesh	3596.06	1448.37	224.46	114.94	7156.66	12540.49
Maharashtra	7490.75	577.83	609.58	2614.54	5923.70	17216.40
Dadra and Nagar Haveli	0.00	1.31	0.00	0.00	0.00	1.31
Daman & Diu	0.00	14.43	0.00	0.00	0.00	14.43
Goa	0.00	0.00	0.00	0.00	0.00	0.00
Andhra Pradesh	3187.85	1934.26	168.75	526.88	1824.42	7642.16
Telangana	211.93	1354.02	52.62	397.43	1279.99	3295.99
Karnataka	6058.65	524.67	1294.25	1708.11	6772.35	16358.03
Kerala	72.59	26.52	462.38	1.23	4067.49	4630.21
Tamil Nadu	11935.26	1898.34	93.79	1226.48	2397.12	17550.98
Lakshadweep	0.00	1.59	0.00	0.00	0.00	1.59
Puducherry	0.00	0.34	0.00	0.00	0.00	0.34
Andaman & Nicobar	0.00	12.45	13.86	0.00	0.00	26.31
Bihar	0.00	109.18	21.96	161.38	0.00	292.53
Jharkhand	0.00	38.47	14.08	0.00	163.64	216.19
Odisha	0.00	224.32	239.05	57.85	5113.20	5634.41
Sikkim	0.00	0.00	35.78	0.00	4330.4	4366.18
West Bengal	0.00	14.97	120.86	1433.95	2839.28	4409.05
Arunachal Pradesh	0.00	0.14	27.29	0.00	1249.01	1276.44
Assam	0.00	2.69	11.47	0.00	1681.96	1696.12
Manipur	0.00	0.01	0.00	0.00	741.07	741.08
Meghalaya	0.00	0.00	59.10	0.00	719.60	778.70
Mizoram	0.00	0.00	49.62	0.00	0	49.62
Nagaland	0.00	0.00	92.73	0.00	258.94	351.67
Tripura	0.00	6.89	46.47	0.00	0.00	53.36
All India Total	46004.34	13499.41	7672.66	14371.80	122377.56	203925.77
All India RE Generation Year 2017-18						
Name of State/UT	Wind	Solar	Small Hydro	Bio-Power	Large Hydro *	Total
Chandigarh	0.00	7.87	0.00	0.00	0.00	7.87

Delhi	0.00	13.41	0.00	227.69	0.00	241.10
Haryana	0.00	71.50	210.29	285.76	0.00	567.55
HP	0.00	0.00	1903.05	0.00	38783.00	40686.05
J & K	0.00	0.00	324.37	0.00	14937.56	15261.93
Ladakh	0.00	1432.07	0.00	0.00	0.00	1432.07
Punjab	0.00	0.00	217.62	694.18	4724.30	5636.10
Rajasthan	5752.90	3925.33	8.69	340.84	819.53	10847.29
Uttar Pradesh	0.00	680.71	30.18	3939.09	1486.69	6136.67
Uttarakhand	0.00	291.08	749.61	143.81	13983.61	15168.11
Chhattisgarh	0.00	135.82	22.94	909.73	178.07	1246.56
Gujarat	9736.00	2048.40	42.93	32.65	1551.92	13411.90
Madhya Pradesh	4220.09	2252.07	124.11	117.25	2586.81	9300.33
Maharashtra	6541.15	1100.67	627.12	3767.84	4861.12	16897.90
Dadra and Nagar Haveli	0.00	5.24	0.00	0.00	0.00	5.24
Daman & Diu	0.00	18.53	0.00	0.00	0.00	18.53
Goa		0.00		0.00	0.00	0.00
Andhra Pradesh	6354.00	4070.17	181.69	402.69	2268.80	13277.35
Telangana	195.29	4029.43	51.27	371.93	1491.98	6139.90
Karnataka	7410.20	2391.74	1604.41	2057.56	7142.62	20606.53
Kerala	98.46	55.35	620.52	0.00	5199.26	5973.59
Tamil Nadu	12358.00	2906.01	186.14	729.73	2919.60	19099.48
Lakshadweep	0.00	1.58	0.00	0.00	0.00	1.58
Puducherry	0.00	1.17	0.00	0.00	0.00	1.17
Andaman & Nicobar	0.00	13.16	12.77	0.00	0.00	25.93
Bihar	0.00	145.34	7.95	155.77	0.00	309.06
Jharkhand	0.00	19.47	0.00	0.00	332.32	351.79
Odisha	0.00	218.95	265.57	47.22	6022.99	6554.73
Sikkim	0.00	0.00	30.54	0.00	8887.99	8918.53
West Bengal	0.00	20.55	192.52	1387.01	2278.45	3878.53
Arunachal Pradesh	0.00	0.23	0.47	0.00	1416.74	1417.44
Assam	0.00	8.36	16.13	0.00	1918.58	1943.07
Manipur	0.00	0.15	0.00	0.00	837.74	837.89
Meghalaya	0.00	0.00	70.56	0.00	1140.26	1210.82
Mizoram	0.00	0.00	54.67	0.00	78.37	133.04
Nagaland	0.00	0.00	91.00	0.00	274.39	365.39
Tripura	0.00	6.71	44.46	0.00	0.00	51.17
All India Total	52666.09	25871.07	7691.58	15610.75	126122.70	227962.19

All India RE Generation Year 2018-19

Name of State/UT	Wind	Solar	Small Hydro	Bio Power	Large Hydro	Total
Chandigarh	0.00	13.51	0.00	0.00	0.00	13.51
Delhi	0.00	10.83	0.00	276.81	0.00	287.64
Haryana	0.00	72.47	250.84	339.05	0.00	662.36
HP	0.00	0.00	2287.93	0.00	35908.55	38196.48
J & K	0.00	0.00	312.20	0.00	16387.07	16699.27
Ladakh	0.00	0.00	0.00	0.00	154.51	154.51
Punjab	0.00	1492.90	351.22	601.08	4335.40	6780.60
Rajasthan	6403.78	5109.35	5.18	345.09	698.40	12561.80
Uttar Pradesh	0.00	1235.08	31.29	4428.44	1176.36	6871.17
Uttarakhand	0.00	318.29	676.79	109.89	13741.12	14846.09
Chhattisgarh	0.00	335.15	80.05	529.89	243.08	1188.18
Gujarat	11389.29	2410.32	86.19	80.37	1042.81	15008.99
Madhya Pradesh	4965.95	2982.29	145.47	163.45	3396.67	11653.82
Maharashtra	7575.14	2206.62	759.07	4434.06	5076.86	20051.74
Dadra and Nagar	0.00	5.76	0.00	0.00	0.00	5.76

Haveli						
Daman & Diu	0.00	18.94	0.00	0.00	0.00	18.94
Goa	0.00	0.00	0.00	0.00	0.00	0.00
Andhra Pradesh	8869.85	4965.96	193.12	521.58	2272.94	16823.45
Telangana	274.83	6312.26	51.17	407.73	1744.61	8790.60
Karnataka	9778.25	7575.83	1803.09	2500.37	12187.69	33845.23
Kerala	107.94	110.84	551.55	0.00	7320.21	8090.53
Tamil Nadu	12600.85	3554.50	347.97	395.17	5281.59	22180.08
Lakshadweep	0.00	1.11	0.00	0.00	0.00	1.11
Puducherry	0.00	2.58	0.00	0.00	0.00	2.58
Andaman & Nicobar	0.00	13.86	16.57	0.00	0.00	30.43
Bihar	12.28	179.89	27.74	268.23	0.00	488.14
Jharkhand	0.00	19.15	1.76	0.81	180.98	202.70
Odisha	58.23	263.03	266.10	66.08	6777.45	7430.88
Sikkim	0.00	0.00	28.11	0.00	9022.07	9050.18
West Bengal	0.00	40.65	161.85	1283.69	2919.81	4406.00
Arunachal Pradesh	0.00	1.20	0.55	0.00	1399.02	1400.77
Assam	0.00	6.67	14.06	0.00	1694.36	1715.09
Manipur	0.00	1.88	0.00	0.00	602.61	604.49
Meghalaya	0.00	0.00	50.51	0.00	929.53	980.04
Mizoram	0.00	0.12	39.96	0.00	168.44	208.52
Nagaland	0.00	0.00	87.46	0.00	231.47	318.93
Tripura	0.00	7.14	74.94	0.00	0.00	82.08
Total	62036.38	39268.19	8702.75	16751.77	134893.61	261652.70

All India RE Generation Year 2019-20						
Name of State/UT	Wind	Solar	Small Hydro	Bio Power	Large Hydro	Total
Chandigarh	0.00	13.33	0.00	0.00	0.00	13.33
Delhi	0.00	136.30	0.00	287.37	0.00	423.67
Haryana	0.00	125.14	326.89	281.47	0.00	733.50
HP	0.00	11.66	2155.58	0.00	40834.88	43002.12
J & K	0.00	0.00	443.13	0.00	18094.12	18537.25
Ladakh	0.00	0.00	0.00	0.00	270.28	270.28
Punjab	16.90	1358.22	712.77	651.54	5123.48	7862.91
Rajasthan	6155.80	7776.56	9.75	389.94	606.18	14938.24
Uttar Pradesh	0.00	1447.05	36.43	3659.73	1073.48	6216.68
Uttarakhand	0.00	341.51	742.19	110.26	14554.53	15748.48
Chhattisgarh	0.00	326.42	101.75	679.70	236.79	1344.66
Gujarat	13748.53	3631.86	194.80	141.74	5414.68	23131.61
Madhya Pradesh	4425.99	3496.23	246.16	129.49	6281.74	14579.62
Maharashtra	7984.27	2372.68	695.56	2933.29	5880.58	19866.37
Dadra and Nagar Haveli	0.00	6.19	0.00	0.00	0.00	6.19
Daman & Diu	0.00	21.83	0.00	0.00	0.00	21.83
Goa	0.00	0.82	0.00	0.00	0.00	0.82
Andhra Pradesh	7626.63	5855.11	298.19	213.27	3013.43	17006.63
Telangana	238.25	6263.92	46.29	245.78	4507.04	11301.27
Karnataka	10148.66	11221.20	1901.91	2376.65	14014.27	39662.69
Kerala	119.76	143.59	530.36	11.03	5454.04	6258.78
Tamil Nadu	14126.93	4946.63	235.76	454.57	4765.24	24529.13
Lakshadweep	0.00	0.66	0.00	0.00	0.00	0.66
Puducherry	0.00	4.14	0.00	0.00	0.00	4.14
Andaman & Nicobar	0.00	11.60	5.70	0.00	0.00	17.30

Bihar	0.00	160.16	18.98	179.54	0.00	358.68
Jharkhand	0.00	17.47	5.43	1.28	150.96	175.13
Odisha	54.66	362.29	299.65	66.59	6728.77	7511.97
Sikkim	0.00	0.00	60.62	0.00	11027.36	11087.98
West Bengal	0.00	64.29	115.68	1295.07	2916.38	4391.42
Arunachal Pradesh	0.00	1.60	0.64	0.00	1786.46	1788.70
Assam	0.00	6.14	52.63	0.00	1291.68	1350.45
Manipur	0.00	2.63	1.57	0.00	366.59	370.79
Meghalaya	0.00	0.00	62.73	0.00	1018.29	1081.02
Mizoram	0.00	0.44	49.56	0.00	177.02	227.02
Nagaland	0.00	0.00	75.87	0.00	180.85	256.72
Tripura	0.00	3.43	24.67	0.00	0.00	28.10
All India Total	64646.38	50131.09	9451.24	14108.31	155769.12	294106.14

All India RE Generation Year 2020-21

Name of State/UT	Wind	Solar	Small Hydro	Bio-power	Large Hydro	Total
Chandigarh	0.00	10.16	0.00	0.00	0.00	10.16
Delhi	0.00	189.99	0.00	236.71	0.00	426.70
Haryana	0.00	162.95	276.58	321.22	0.00	760.75
HP	0.00	36.52	2123.78	0.00	37473.47	39633.77
J & K	0.00	9.42	429.88	0.00	17002.68	17441.97
Ladakh	0.00	0.00	0.00	0.00	376.21	376.21
Punjab	0.00	1356.48	690.33	817.65	4747.03	7611.50
Rajasthan	5708.27	10384.24	10.64	413.24	469.63	16986.01
Uttar Pradesh	0.00	1856.19	164.91	3726.69	1572.35	7320.13
Uttarakhand	0.00	329.64	821.88	85.33	13592.49	14829.34
Chhattisgarh	0.00	370.80	145.52	1117.57	419.19	2053.08
Gujarat	13058.52	4633.81	211.94	73.12	4233.36	22210.75
Madhya Pradesh	3913.45	4202.03	281.76	120.62	6477.33	14995.19
Maharashtra	6384.74	3089.46	802.71	3955.76	5548.46	19781.13
Dadra and Nagar Haveli	0.00	11.96	0.00	0.00	0.00	11.96
Daman & Diu	0.00	29.52	0.00	10.53	0.00	40.04
Goa	0.00	1.46	0.00	0.00	0.00	1.46
Andhra Pradesh	6557.75	6956.10	351.23	268.75	3280.12	17413.95
Telangana	220.91	6351.04	67.27	294.15	3645.38	10578.75
Karnataka	9610.91	13238.86	2199.68	2800.88	12587.35	40437.68
Kerala	130.42	275.44	640.58	45.69	6628.39	7720.51
Tamil Nadu	14564.99	6115.48	244.77	733.80	5212.71	26871.76
Lakshadweep	0.00	0.45	0.00	0.00	0.00	0.45
Puducherry	0.00	6.39	0.00	0.00	0.00	6.39
Andaman & Nicobar	0.00	24.82	14.69	0.00	0.00	39.51
Bihar	0.00	160.63	43.20	22.77	0.00	226.61
Jharkhand	0.00	17.16	9.31	0.00	223.09	249.56
Ordisha	0.00	476.26	358.80	42.71	6859.97	7737.74
Sikkim	0.00	0.00	55.96	0.00	10879.50	10935.46
West Bengal	0.00	73.92	107.06	1349.72	3212.28	4742.98
Arunachal Pradesh	0.00	1.54	0.55	0.00	3451.34	3453.44
Assam	0.00	13.37	38.15	0.00	270.87	322.38
Manipur	0.00	7.71	0.00	0.00	621.62	629.33
Meghalaya	0.00	0.00	56.79	0.00	1151.99	1208.78
Mizoram	0.00	2.45	31.07	0.00	158.85	192.37
Nagaland	0.00	0.00	69.77	0.00	203.86	273.63
Tripura	0.00	6.04	9.58	0.00	0.00	15.62
All India Total	60149.95	60402.26	10258.41	16436.89	150299.52	297547.03

All India RE Generation Year 2021-22 (Upto November 2021)

Name of State/UT	Wind	Solar	Small	Bio-	Large Hydro	Total
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			Hydro	power		
Chandigarh	0.00	9.54	0.00	0.00	0.00	9.54
Delhi	0.00	145.68	0.00	158.91	0.00	463.50
Haryana	0.00	335.40	188.78	133.10	0.00	790.38
Himachal Pradesh	0.00	29.70	1706.15	0.00	30731.10	32466.95
J & K	0.00	1.71	326.39	0.00	14019.86	14347.96
Ladakh	0.00	0.00	0.00	0.00	344.90	344.90
Punjab	0.00	1031.42	853.51	405.77	2690.52	5386.98
Rajasthan	5140.47	9684.87	0.90	250.33	153.98	15480.88
Uttar Pradesh	0.00	1880.74	104.67	988.83	929.80	4892.87
Uttarakhand	0.00	197.04	214.24	162.08	10940.24	11675.68
Chhattisgarh	0.00	269.78	159.56	834.39	326.26	2424.38
Gujarat	12752.91	4097.38	106.42	7.32	1927.16	18898.51
Madhya Pradesh	3278.03	2554.90	147.21	28.81	3165.31	9203.06
Maharashtra	5938.02	2080.17	538.58	1524.86	4119.37	15725.85
Dadra and Nagar Haveli	0.00	30.26	0.00	0.00	0.00	30.26
Daman & Diu	0.00	21.97	0.00	7.89	0.00	37.75
Goa	0.00	0.85	0.00	0.00	0.00	0.85
Andhra Pradesh	5778.51	5012.79	222.67	162.46	2348.82	13687.71
Telangana	199.59	4140.83	64.03	244.58	5090.95	9984.55
Karnataka	7633.96	8329.83	1978.35	1534.25	8878.22	29888.85
Kerala	105.32	303.82	685.93	32.38	6604.64	7764.46
Tamil Nadu	13723.43	4591.90	209.33	398.57	3486.05	22807.85
Lakshadweep	0.00	0.25	0.00	0.00	0.00	0.25
Puducherry	0.00	8.16	0.00	0.00	0.00	8.16
Andaman & Nicobar	0.00	13.47	9.71	0.00	0.00	23.19
Bihar	0.00	106.85	4.27	12.73	0.00	136.58
Jharkhand	0.00	11.70	2.82	0.00	487.36	501.88
Odisha	0.00	380.29	311.13	65.52	4002.65	4825.11
Sikkim	0.00	0.00	8.24	0.00	10047.33	10055.57
West Bengal	0.00	64.11	131.59	1033.01	2524.53	4786.26
Arunachal Pradesh	0.00	1.14	0.23	0.00	3402.00	3403.37
Assam	0.00	45.65	28.79	0.00	601.74	676.18
Manipur	0.00	4.41	0.00	0.00	353.84	358.25
Meghalaya	0.00	0.47	29.16	0.00	706.20	735.83
Mizoram	0.00	1.34	14.23	0.00	80.07	95.64
Nagaland	0.00	0.00	49.63	0.00	83.95	133.58
Tripura	0.00	3.90	1.44	0.00	0.00	5.34
All India Total	54550.25	45392.31	8097.94	7985.78	118046.85	234073.13