

GOVERNMENT OF INDIA
MINISTRY OF NEW AND RENEWABLE ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO. 451
ANSWERED ON 06/02/2024

ENERGY GENERATED BY RENEWABLE SOURCES

451. SHRI S. KALYANASUNDARAM

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

- (a) the amount of energy generated by renewable sources, State-wise and source-wise from the year 2019;
- (b) the amount of funds allocated by Government for the promotion of new and renewable energy, from the year 2019 State-wise; and
- (c) the basis for fixation of cost per unit of renewable energy with complete details thereof?

ANSWER

THE MINISTER OF NEW & RENEWABLE ENERGY AND POWER
(SHRI R.K. SINGH)

(a) As per information provided by Central Electricity Authority (CEA), All India state and source wise Renewable Energy generation from the year 2019-20 to year 2023-24 (up to December 2023) is attached at **Annexure**.

(b) No state-wise allocation of funds are made as the Ministry is implementing various schemes and programmes for development and deployment of renewable energy, under which funds are released in accordance with respective scheme guidelines. From the year 2019-20 upto 2023-24 (Jan 2024), details of fund allocated and utilized by the Ministry for the promotion of New and Renewable Energy in the Country are given below:-

(Rs. In Crores)

Year	Funds Allocated (Revised Estimates)	Expenditure
2019-20	3891.74	3562.71
2020-21	3591.00	3096.73
2021-22	7681.80	6792.83
2022-23	7033.00	5745.86
2023-24 (Upto Jan 2024)	7848.00	5846.03

(c) Cost per unit of RE is composed of 5 components (in accordance with CERC Tariff Order issued by the regulator from time to time) - 1. Depreciation 2. Interest on Long Term Debt 3. Interest on Working Capital 4. O &M Expenses. 5. Return on Equity. The levellised tariff is calculated for the life of the project (considering the technology, for eg. 25 years for solar and wind projects as per current industry practice) considering a discount factor i.e. the weighted average cost of capital. The project cost is financed through a mix of debt and equity (70:30 as per tariff order).

Generators estimate the cost of RE as per the above. Competitive price(s) are then discovered through a transparent bidding process carried out by designated implementing agencies.

Annexure

Annexure referred to in reply to part (a) of Rajya Sabha Unstarred Question No. 451 for 06/02/2024 regarding 'Energy generated by renewable sources'

**All India state wise source wise Renewable Energy generation from the year 2019-20 to year 2023-24
(up to December 2023)**

(All fig. in MUs)									
All India RE Generation Year 2019-20									
Name of State/UT	Wind	Solar	Biomass	Bagasse	Small Hydro	Others	Renewable Energy Total	Large Hydro*	Total RE including Large Hydro
Chandigarh	0.00	13.33	0.00	0.00	0.00	0.00	13.33	0.00	13.33
Delhi	0.00	136.30	0.00	0.00	0.00	287.37	423.67	0.00	423.67
Haryana	0.00	125.14	186.90	94.57	326.89	0.00	733.50	0.00	733.50
HP	0.00	11.66	0.00	0.00	2155.58	0.00	2167.24	40834.88	43002.12
J & K	0.00	0.00	0.00	0.00	443.13	0.00	443.13	18094.12	18537.25
Ladkh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	270.28	270.28
Punjab	16.90	1358.22	398.37	252.85	712.77	0.32	2739.43	5123.48	7862.91
Rajasthan	6155.80	7776.56	389.94	0.00	9.75	0.00	14332.06	606.18	14938.24
Uttar Pradesh	0.00	1447.05	129.63	3530.10	36.43	0.00	5143.20	1073.48	6216.68
Uttarakhand	0.00	341.51	0.00	110.26	742.19	0.00	1193.95	14554.53	15748.48
Chhattisgarh	0.00	326.42	679.70	0.00	101.75	0.00	1107.87	236.79	1344.66
Gujarat	13748.53	3631.86	107.03	15.95	194.80	18.77	17716.93	5414.68	23131.61
Madhya Pradesh	4425.99	3496.23	1.81	95.66	246.16	32.02	8297.88	6281.74	14579.62
Maharashtra	7984.27	2372.68	411.99	2520.45	695.56	0.84	13985.79	5880.58	19866.37
Dadra and Nagar Haveli	0.00	6.19	0.00	0.00	0.00	0.00	6.19	0.00	6.19
Daman & Diu	0.00	21.83	0.00	0.00	0.00	0.00	21.83	0.00	21.83
Goa	0.00	0.82	0.00	0.00	0.00	0.00	0.82	0.00	0.82
Andhra Pradesh	7626.63	5855.11	147.47	58.49	298.19	7.31	13993.20	3013.43	17006.63
Telangana	238.25	6263.92	124.30	102.23	46.29	19.25	6794.23	4507.04	11301.27
Karnataka	10148.66	11221.20	171.27	2205.38	1901.91	0.00	25648.42	14014.27	39662.69
Kerala	119.76	143.59	0.00	11.03	530.36	0.00	804.74	5454.04	6258.78
Tamil Nadu	14126.93	4946.63	103.78	350.79	235.76	0.00	19763.89	4765.24	24529.13
Lakshadweep	0.00	0.66	0.00	0.00	0.00	0.00	0.66	0.00	0.66
Puducherry	0.00	4.14	0.00	0.00	0.00	0.00	4.14	0.00	4.14
Andaman Nicobar	0.00	11.60	0.00	0.00	5.70	0.00	17.30	0.00	17.30
Bihar	0.00	160.16	19.19	160.35	18.98	0.00	358.68	0.00	358.68
Jharkhand	0.00	17.47	0.00	1.28	5.43	0.00	24.17	150.96	175.13
Orissa	54.66	362.29	66.59	0.00	299.65	0.00	783.20	6728.77	7511.97
Sikkim	0.00	0.00	0.00	0.00	60.62	0.00	60.62	11027.36	11087.98
West Bengal	0.00	64.29	0.00	1295.07	115.68	0.00	1475.04	2916.38	4391.42
Arunachal Pradesh	0.00	1.60	0.00	0.00	0.64	0.00	2.24	1786.46	1788.70
Assam	0.00	6.14	0.00	0.00	52.63	0.00	58.77	1291.68	1350.45
Manipur	0.00	2.63	0.00	0.00	1.57	0.00	4.20	366.59	370.79
Meghalaya	0.00	0.00	0.00	0.00	62.73	0.00	62.73	1018.29	1081.02
Mizoram	0.00	0.44	0.00	0.00	49.56	0.00	50.00	177.02	227.02
Nagaland	0.00	0.00	0.00	0.00	75.87	0.00	75.87	180.85	256.72
Tripura	0.00	3.43	0.00	0.00	24.67	0.00	28.10	0.00	28.10
All India Total	64646.38	50131.09	2937.97	10804.46	9451.24	365.88	138337.02	155769.12	294106.14
All India RE Generation Year 2020-21									
Name of State/UT	Wind	Solar	Biomass	Bagasse	Small Hydro	Others	Renewable Energy Total	Large Hydro*	Total RE including Large Hydro
Chandigarh	0.00	10.16	0.00	0.00	0.00	0.00	10.16	0.00	10.16
Delhi	0.00	189.99	0.00	0.00	0.00	236.71	426.70	0.00	426.70
Haryana	0.00	162.95	178.88	142.34	276.58	0.00	760.75	0.00	760.75

HP	0.00	36.52	0.00	0.00	2123.78	0.00	2160.30	37473.47	39633.77
J & K	0.00	9.42	0.00	0.00	429.88	0.00	439.29	17002.68	17441.97
Ladkh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	376.21	376.21
Punjab	0.00	1356.48	585.99	231.50	690.33	0.17	2864.47	4747.03	7611.50
Rajasthan	5708.27	10384.24	413.24	0.00	10.64	0.00	16516.38	469.63	16986.01
Uttar Pradesh	0.00	1856.19	135.82	3590.87	164.91	0.00	5747.78	1572.35	7320.13
Uttarakhand	0.00	329.64	0.00	85.33	821.88	0.00	1236.85	13592.49	14829.34
Chhattisgarh	0.00	370.80	1089.32	28.25	145.52	0.00	1633.89	419.19	2053.08
Gujarat	13058.52	4633.81	43.15	19.37	211.94	10.61	17977.39	4233.36	22210.75
Madhya Pradesh	3913.45	4202.03	0.48	82.57	281.76	37.57	8517.86	6477.33	14995.19
Maharashtra	6384.74	3089.46	328.23	3627.43	802.71	0.10	14232.67	5548.46	19781.13
Dadra and Nagar Haveli	0.00	11.96	0.00	0.00	0.00	0.00	11.96	0.00	11.96
Daman & Diu	0.00	29.52	10.53	0.00	0.00	0.00	40.04	0.00	40.04
Goa	0.00	1.46	0.00	0.00	0.00	0.00	1.46	0.00	1.46
Andhra Pradesh	6557.75	6956.10	135.21	67.66	351.23	65.88	14133.83	3280.12	17413.95
Telangana	220.91	6351.04	164.11	61.00	67.27	69.05	6933.37	3645.38	10578.75
Karnataka	9610.91	13238.86	211.79	2589.09	2199.68	0.00	27850.33	12587.35	40437.68
Kerala	130.42	275.44	0.00	45.68	640.58	0.01	1092.12	6628.39	7720.51
Tamil Nadu	14564.99	6115.48	152.23	581.57	244.77	0.00	21659.05	5212.71	26871.76
Lakshadweep	0.00	0.45	0.00	0.00	0.00	0.00	0.45	0.00	0.45
Puducherry	0.00	6.39	0.00	0.00	0.00	0.00	6.39	0.00	6.39
Andaman Nicobar	0.00	24.82	0.00	0.00	14.69	0.00	39.51	0.00	39.51
Bihar	0.00	160.63	21.30	1.48	43.20	0.00	226.61	0.00	226.61
Jharkhand	0.00	17.16	0.00	0.00	9.31	0.00	26.47	223.09	249.56
Orissa	0.00	476.26	42.71	0.00	358.80	0.00	877.77	6859.97	7737.74
Sikkim	0.00	0.00	0.00	0.00	55.96	0.00	55.96	10879.50	10935.46
West Bengal	0.00	73.92	0.00	148.73	107.06	1200.99	1530.70	3212.28	4742.98
Arunachal Pradesh	0.00	1.54	0.00	0.00	0.55	0.00	2.10	3451.34	3453.44
Assam	0.00	13.37	0.00	0.00	38.15	0.00	51.51	270.87	322.38
Manipur	0.00	7.71	0.00	0.00	0.00	0.00	7.71	621.62	629.33
Meghalaya	0.00	0.00	0.00	0.00	56.79	0.00	56.79	1151.99	1208.78
Mizoram	0.00	2.45	0.00	0.00	31.07	0.00	33.52	158.85	192.37
Nagaland	0.00	0.00	0.00	0.00	69.77	0.00	69.77	203.86	273.63
Tripura	0.00	6.04	0.00	0.00	9.58	0.00	15.62	0.00	15.62
All India Total	60149.95	60402.26	3512.98	11302.85	10258.41	1621.06	147247.51	150299.52	297547.03

All India RE Generation Year 2021-22

Name of State/UT	Wind	Solar	Biomass	Bagasse	Small Hydro	Others	Renewable Energy Total	Large Hydro*	Total RE including Large Hydro
Chandigarh	0.00	14.19	0.00	0.00	0.00	0.00	14.19	0.00	14.19
Delhi	0.00	225.84	0.00	0.00	0.00	232.89	458.73	0.00	458.73
Haryana	0.00	572.85	171.60	96.75	270.13	24.09	1135.42	0.00	1135.42
HP	0.00	44.29	0.00	0.00	1999.47	0.00	2043.76	36459.64	38503.40
J & K	0.00	1.71	0.00	0.00	414.10	0.00	415.81	17074.02	17489.83
Ladkh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	405.98	405.98
Punjab	0.00	1473.41	576.83	208.30	983.37	0.24	3242.15	3709.73	6951.88
Rajasthan	6493.19	17219.88	378.40	0.00	7.85	0.00	24099.31	481.84	24581.15
Uttar Pradesh	0.00	2900.41	85.20	3160.39	162.54	20.40	6328.94	1402.68	7731.62
Uttarakhand	0.00	301.60	0.00	244.02	326.70	0.00	872.32	14332.13	15204.45
Chhattisgarh	0.00	436.56	1307.27	8.70	185.67	0.00	1938.21	404.13	2342.34
Gujarat	17854.77	6774.50	0.00	18.16	192.10	0.00	24839.53	2621.51	27461.04
Madhya Pradesh	4346.66	4006.70	25.35	82.20	221.43	34.40	8716.73	4686.72	13403.45

Maharashtra	7085.98	3187.18	316.79	4468.31	787.16	0.22	15845.64	6007.38	21853.02
Dadra and Nagar Haveli	0.00	49.16	0.00	0.00	0.00	0.00	49.16	0.00	49.16
Daman & Diu	0.00	35.35	12.32	0.00	0.00	0.00	47.67	0.00	47.67
Goa	0.00	15.93	0.00	0.00	0.00	0.89	16.82	0.00	16.82
Andhra Pradesh	7134.58	7832.51	104.85	72.70	384.08	133.88	15662.61	3113.83	18776.44
Telangana	275.69	6536.94	111.13	103.95	91.00	227.20	7345.89	5626.63	12972.52
Karnataka	9491.62	13169.43	174.08	3338.24	2460.91	0.00	28634.28	13936.46	42570.74
Kerala	136.41	496.93	0.00	48.92	932.37	0.00	1614.62	9317.44	10932.06
Tamil Nadu	15821.18	7172.88	116.66	657.40	293.17	0.00	24061.28	5212.07	29273.35
Lakshadweep	0.00	0.30	0.00	0.00	0.00	0.00	0.30	0.00	0.30
Puducherry	0.00	12.24	0.00	0.00	0.00	0.00	12.24	0.00	12.24
Andaman Nicobar	0.00	21.51	0.00	0.00	13.26	0.00	34.77	0.00	34.77
Bihar	0.00	163.08	2.14	65.84	8.77	0.00	239.83	0.00	239.83
Jharkhand	0.00	18.21	0.00	0.00	10.49	0.00	28.71	547.96	576.67
Orissa	0.00	603.71	100.08	0.00	377.32	0.00	1081.10	5230.63	6311.73
Sikkim	0.00	0.00	0.00	0.00	12.35	0.00	12.35	11493.90	11506.25
West Bengal	0.00	98.24	0.00	0.00	152.90	1593.96	1845.09	3189.84	5034.93
Arunachal Pradesh	0.00	1.72	0.00	0.00	0.41	0.00	2.13	4161.28	4163.41
Assam	0.00	81.64	0.00	0.00	40.46	0.00	122.10	676.24	798.34
Manipur	0.00	6.72	0.00	0.00	0.00	0.00	6.72	455.48	462.20
Meghalaya	0.00	0.47	0.00	0.00	44.21	0.00	44.68	841.82	886.50
Mizoram	0.00	1.68	0.00	0.00	26.41	0.00	28.09	137.44	165.53
Nagaland	0.00	0.00	0.00	0.00	63.47	0.00	63.47	100.55	164.02
Tripura	0.00	6.18	0.00	0.00	1.44	0.00	7.62	0.00	7.62
All India Total	68640.07	73483.94	3482.70	12573.88	10463.55	2268.17	170912.30	151627.33	322539.63

All India RE Generation Year 2022-23

Name of State/UT	Wind	Solar	Biomass	Bagasse	Small Hydro	Others	Renewable Energy Total	Large Hydro*	Total RE including Large Hydro
Chandigarh	0.00	12.61	0.00	0.00	0.00	0.00	12.61	0.00	12.61
Delhi	0.00	236.11	0.00	0.00	0.00	294.09	530.20	0.00	530.20
Haryana	0.00	555.20	356.07	203.01	241.90	63.55	1419.73	0.00	1419.73
HP	0.00	58.76	0.00	0.00	2854.19	0.00	2912.95	38666.98	41579.93
J & K	0.00	0.00	0.00	0.00	393.20	0.00	393.20	16777.42	17170.62
Ladkh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	402.78	402.78
Punjab	0.00	2778.66	497.68	210.76	682.48	0.00	4169.59	4399.65	8569.24
Rajasthan	6111.41	34474.43	397.05	0.00	7.17	0.00	40990.05	967.43	41957.48
Uttar Pradesh	0.00	3674.02	66.35	3183.67	234.69	58.45	7217.18	974.04	8191.22
Uttarakhand	0.00	331.80	0.00	248.52	353.40	0.00	933.72	15435.77	16369.49
Chhattisgarh	0.00	635.42	1194.60	17.10	155.92	0.00	2003.05	237.37	2240.42
Gujarat	19206.22	10335.32	0.00	5.76	213.10	2.24	29762.63	6133.14	35895.77
Madhya Pradesh	4486.72	3839.30	38.76	113.05	357.97	36.93	8872.72	7309.07	16181.79
Maharashtra	7243.06	4387.85	236.48	4572.03	766.73	0.44	17206.59	5894.29	23100.88
Dadra and Nagar Haveli and Daman and Diu	0.00	27.40	3.22	0.00	0.00	0.00	30.62	0.00	30.62
Goa	0.00	14.87	0.00	0.00	0.00	5.09	19.96	0.00	19.96
Andhra Pradesh	7426.46	8140.72	54.86	99.93	410.90	279.04	16411.91	3747.58	20159.49
Telangana	279.23	6745.46	21.48	132.94	91.71	159.08	7429.89	6010.07	13439.96
Karnataka	9967.89	14153.79	106.90	3037.31	2309.55	0.00	29575.44	13157.34	42732.78
Kerala	179.32	879.75	0.00	62.85	824.34	0.00	1946.26	7989.00	9935.26

Tamil Nadu	16913.85	9419.39	126.93	869.56	296.71	0.00	27626.45	5965.77	33592.22
Lakshadweep	0.00	0.10	0.00	0.00	0.00	0.00	0.10	0.00	0.10
Puducherry	0.00	12.24	0.00	0.00	0.00	0.00	12.24	0.00	12.24
Andaman Nicobar	0.00	23.94	0.00	0.00	13.94	0.00	37.88	0.00	37.88
Bihar	0.00	169.53	0.00	106.68	12.63	0.00	288.85	0.00	288.85
Jharkhand	0.00	19.70	0.00	0.00	0.00	0.00	19.70	305.47	325.17
Orissa	0.00	706.24	60.95	0.00	424.92	0.00	1192.10	5462.81	6654.91
Sikkim	0.00	0.00	0.00	0.00	12.35	0.00	12.35	11696.79	11709.14
West Bengal	0.00	125.04	0.00	0.00	204.44	1629.64	1959.12	3423.73	5382.85
Arunachal Pradesh	0.00	22.27	0.00	0.00	2.55	0.03	24.85	4820.94	4845.79
Assam	0.00	216.35	0.00	0.00	62.66	0.00	279.01	481.60	760.61
Manipur	0.00	8.17	0.00	0.00	0.00	0.63	8.79	477.98	486.77
Meghalaya	0.00	0.00	0.00	0.00	72.16	0.00	72.16	980.25	1052.41
Mizoram	0.00	3.21	0.00	0.00	59.06	0.00	62.27	204.13	266.40
Nagaland	0.00	0.00	0.00	0.00	111.95	0.00	111.95	177.37	289.32
Tripura	0.00	6.58	0.00	0.00	0.00	0.00	6.58	0.00	6.58
All India Total	71814.16	102014.24	3161.32	12863.16	11170.62	2529.18	203552.68	162098.77	365651.45

All India RE Generation Year 2023-24 (Upto Dec 2023)

Name of State/UT	Wind	Solar	Biomass	Bagasse	Small Hydro	Others	Renewable Energy Total	Large Hydro*	Total RE including Large Hydro
Chandigarh	0.00	9.99	0.00	0.00	0.00	0.00	9.99	0.00	9.99
Delhi	0.00	154.90	0.00	0.00	0.00	382.05	536.95	0.00	536.95
Haryana	0.00	701.62	218.99	57.46	178.80	44.91	1201.78	0.00	1201.78
HP	0.00	44.94	0.00	0.00	2314.92	0.00	2359.86	32268.80	34628.66
J & K	0.00	0.00	0.00	0.00	347.34	0.00	347.34	13926.66	14274.00
Ladkh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	347.39	347.39
Punjab	0.00	2403.38	440.49	83.69	545.28	0.00	3472.84	3875.17	7348.01
Rajasthan	6861.59	28274.90	279.48	0.00	2.56	0.00	35418.53	609.78	36028.31
Uttar Pradesh	0.00	2966.98	24.39	1486.24	126.03	76.69	4680.33	666.83	5347.16
Uttarakhand	0.00	248.85	0.00	186.39	265.05	0.00	700.29	11884.86	12585.15
Chhattisgarh	0.00	622.30	1038.31	8.85	134.17	0.00	1803.63	257.93	2061.56
Gujarat	19804.55	9499.73	0.00	0.74	145.11	0.00	29450.12	3717.09	33167.21
Madhya Pradesh	3946.61	2696.29	64.85	27.28	355.13	19.86	7110.02	5313.27	12423.29
Maharashtra	7121.00	4130.21	228.17	1561.09	684.92	13.92	13739.31	4293.19	18032.50
Dadra and Nagar Haveli and Daman and Diu	0.00	11.10	9.71	0.00	0.00	0.00	20.81	0.00	20.81
Goa	0.00	45.72	0.00	0.00	0.00	5.92	51.64	0.00	51.64
Andhra Pradesh	7257.52	5990.90	13.38	32.57	95.97	230.68	13621.02	1112.50	14733.52
Telangana	242.92	4988.87	3.88	38.82	50.16	108.33	5432.98	1071.77	6504.75
Karnataka	9216.22	11119.16	44.20	1637.40	1297.11	0.00	23314.08	7262.83	30576.91
Kerala	196.72	840.23	0.00	60.45	612.62	0.03	1710.05	3895.44	5605.49
Tamil Nadu	15177.48	8468.41	95.56	423.43	142.21	0.00	24307.08	2860.98	27168.06
Lakshadweep	0.00	0.07	0.00	0.00	0.00	0.00	0.07	0.00	0.07
Puducherry	0.00	9.18	0.00	0.00	0.00	0.00	9.18	0.00	9.18
Andaman Nicobar	0.00	18.10	0.00	0.00	9.31	0.00	27.41	0.00	27.41
Bihar	0.00	140.65	0.00	72.73	5.51	0.00	218.89	0.00	218.89
Jharkhand	0.00	13.23	0.00	0.00	0.00	0.00	13.23	179.21	192.44
Orissa	0.00	548.77	73.21	0.00	350.59	0.00	972.57	4897.38	5869.95
Sikkim	0.00	0.00	0.00	0.00	9.27	0.00	9.27	8492.36	8501.63
West Bengal	0.00	119.30	0.00	0.00	163.65	1157.18	1440.13	2352.76	3792.89
Arunachal Pradesh	0.00	1.59	0.00	0.00	0.52	0.00	2.11	3752.98	3755.09
Assam	0.00	238.47	0.00	0.00	56.58	0.39	295.44	518.52	813.96
Manipur	0.00	5.79	0.00	0.00	0.00	1.23	7.02	248.72	255.74
Meghalaya	0.00	0.00	0.00	0.00	53.60	0.00	53.60	714.12	767.72
Mizoram	0.00	2.39	0.00	0.00	71.95	0.00	74.34	81.71	156.05

Nagaland	0.00	0.00	0.00	0.00	72.93	0.00	72.93	155.53	228.46
Tripura	0.00	3.58	0.00	0.00	0.00	0.00	3.58	0.00	3.58
All India Total	69824.59	84319.58	2534.61	5677.13	8091.27	2041.21	172488.40	114757.78	287246.18

* Large hydro generation Excluding Import from Bhutan