

**GOVERNMENT OF INDIA
MINISTRY OF POWER**

**LOK SABHA
STARRED QUESTION NO.77
TO BE ANSWERED ON 07.02.2019**

HYDRO-ELECTRIC PROJECTS

***77. SHRI DEVUSINH CHAUHAN:**

**Will the Minister of POWER
be pleased to state:**

(a) the details of the hydro-electric projects in operation and the quantum of hydro-power generated by each of the projects during the last three years, State-wise;

(b) whether the Government has assessed the potential of the North-Eastern States for generation of hydro-power;

(c) if so, the details thereof along with the steps being taken by the Government to harness the potential;

(d) whether the Central Electricity Authority has assessed the potential of Arunachal Pradesh for generation of hydro energy; and

(e) if so, the details thereof including the projects proposed to tap the hydro-electric potential of the North- Eastern States along with the time by which these projects are likely to be operationalised?

A N S W E R

**THE MINISTER OF STATE (INDEPENDENT CHARGE) FOR POWER
AND
NEW & RENEWABLE ENERGY**

(SHRI R.K. SINGH)

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

STATEMENT REFERRED TO IN REPLY TO PARTS (a) TO (e) OF STARRED QUESTION NO.77 TO BE ANSWERED IN THE LOK SABHA ON 07.02.2019 REGARDING HYDRO-ELECTRIC PROJECTS.

(a) : At present, 204 nos. of Hydro Electric Stations (above 25 MW) with total installed capacity of 45399.22 MW are in operation in the country. The state-wise details of Hydro Electric Stations (above 25 MW) in operation and the quantum of hydro power generated in the last three years and current year up to December, 2018 is enclosed at Annex-I.

(b) & (c) : Yes, Madam.

As per the re-assessment study completed by Central Electricity Authority in 1987, the identified hydropower potential in the country was assessed as 1,48,701 MW [1,45,320 MW from Hydro Electric Projects (HEPs) above 25 MW capacity] which included 62604 MW of hydro potential in NE Region including 4248 MW in the state of Sikkim. The State-wise details of the identified potential in NE Region including Sikkim is given below:

Region/ State	Identified Capacity (MW)		Capacity Developed (in operation)	
	Total	Above 25 MW	(MW)	%
Sikkim	4286	4248	2169	51.06
NORTH EASTERN REGION (NER)				
Meghalaya	2394	2298	322	14.01
Tripura	15	0	0	0.00
Manipur	1784	1761	105	5.96
Assam	680	650	350	53.84
Nagaland	1574	1452	75	5.17
Arunachal Pradesh	50328	50064	515	1.03
Mizoram	2196	2131	60	2.82
Sub Total (NER)	58971	58356	1427	2.45
NER + Sikkim	63257	62604	3596	5.74

Out of the identified hydro potential, 3596 MW have been developed and 9 H.E. Projects with aggregate capacity of 3877 MW are presently under construction in NE Region and Sikkim (Annex-II). Remaining HEPs are at various stages of allotment by State Governments, clearance and survey & investigation.

Steps taken by Govt. to harness the potential include the following:

I) Hydro Power Policy- 2008 (including subsequent changes):

- **Transparent selection procedure/ criteria to be followed by the States for awarding sites to private developers.**
- **12 % free power given to the host State to ensure the support of State Government in execution of the project, viz, land acquisition, Rehabilitation & Resettlement, maintenance of law & order.**
- **To enable the project developer (public as well as private sector hydro developers) to recover the costs incurred by him in obtaining the project site, the policy allows a special incentive to the developer by way of merchant sale of upto a maximum of 40% of the saleable energy.**
- **An additional 1% free power from the project (over and above 12% free power earmarked for the host State) would be provided and earmarked for a Local Area Development Fund, aimed at providing a regular stream of revenue for income generation and welfare schemes, creation of additional infrastructure and common facilities etc. on a sustained and continued basis over the life of the project.**
- **Developer to provide 100 units of electricity per month to each Project Affected Family - in cash or kind or a combination of both for 10 years from the COD.**

II) Tariff Policy, 2016 (Portions relevant to Hydropower)

Intent of Government for promotion of HEP emphasized in the objective of the Policy - "To promote HEP generation including PSP to provide adequate peaking reserves, reliable grid operation and integration of variable Renewable Energy (RE) sources".

- **Hydropower to be excluded for estimating Solar Purchase Obligation.**
- **Enabling provision for suitable regulatory framework incentivizing the developers of HEPs for using long term financial instruments - in order to reduce tariff burden in the initial years.**
- **Exemption from competitive bidding extended up to 2022.**

III) Time bound appraisal and monitoring :

- **Time bound appraisal norms have been evolved for examination of DPRs in Central Electricity Authority (CEA). Appraisal of DPRs by respective appraising groups including convening of Concurrence/ Appraisal meeting by Secretary, CEA shall be completed in a period of 150 working days**
- **CEA is monitoring the progress of the under construction hydro projects regularly through frequent site visits, interaction with the developers and critical study of monthly progress reports.**
- **Regular review meetings are taken by Ministry of Power/ CEA with equipment manufacturers, State Utilities/ CPSUs/ Project developers, etc. to sort out the critical issues on Quarterly Basis.**

(d) & (e) : Yes, Madam. The hydro-electric potential of Arunachal Pradesh is 50328 MW (50064 MW in respect of HE Scheme above 25MW). Out of the identified capacity, 2 HE projects, namely, Ranganadi (405 MW) and Pare (110 MW) aggregating to 515 MW are in operation in the State. Three HE projects, namely, Kameng (660 MW), Lower Subansiri (2000 MW) and Gongri (144 MW) are presently under construction in Arunachal Pradesh. The State Government has allotted 107 HEPs with aggregate capacity of 49386.5 MW, out of which 17 HEPs of 16952 MW have been cleared by CEA but yet to be taken up for implementation and 7 HEPs of 397 MW have been cleared by the State Government. These HEPs will take about 36 to 114 months' time for completion from the date of start of construction. Further 20 HEPs of capacity 12340.5 MW have been terminated /dropped by the State Government as per Basin study recommendations.

ANNEX-I

ANNEX REFERRED TO IN PART (a) OF THE STATEMENT LAID IN REPLY TO STARRED QUESTION NO. 77 TO BE ANSWERED IN THE LOK SABHA ON 07.02.2019 REGARDING HYDRO-ELECTRIC PROJECTS.

STATE-WISE HYDRO GENERATION (I.C. ABOVE 25 MW) IN THE COUNTRY
FROM 2015-16 TO 2018-19 (UP TO 31.12.2018)

SL. NO.	REGION/ STATE/ UTILITY/STATION	Developer	INSTALLED CAPACITY (AS ON 31.12.2018) (MW)	ACTUAL GENERATION (MU)			
				2015-16	2016-17	2017-18	2018-19 (UP TO 31.12.2018)
HIMACHAL PRADESH							
1	Bhakra L	BBMB	594	5893	5168	5134	3132
2	Bhakra R	BBMB	785				
3	Dehar	BBMB	990				
4	Pong	BBMB	396				
5	BairaSiul	NHPC	180	746	669	642	367
6	Chamera-I	NHPC	540	2624	2224	2344	2042
7	Chamera-II	NHPC	300	1524	1444	1487	1317
8	Chamera-III	NHPC	231	1044	917	1068	941
9	Parbati III	NHPC	520	643	682	711	608
10	NapthaJhakri	SJVN	1500	7314	7051	7208	5914
11	Rampur	SJVN	412	1983	1960	2015	1662
12	Kol Dam	NTPC	800	2309	3225	3314	2737
13	Integrated Kashang I	HPPCL	195		56	197	107
14	Sainj	HPPCL	100			135	379
15	Bassi	HPSEB LTD	66	316	298	315	212
16	Giri Bata	HPSEB LTD	60	189	141	170	169
17	Larji	HPSEB LTD	126	657	612	612	503
18	Sanjay	HPSEB LTD	120	0	187	493	529
19	Shanan	PSPCL	110	533	473	509	411
20	AllainDuhangan	Allain Duhangan Power Power Ltd.	192	725	679	683	548
21	Malana-II	Everest Power Private Ltd.	100	354	367	369	328
22	Baspa-II	JSW ENERGY	300	1305	1343	1337	1187
23	KarchamWangtoo	JSW ENERGY	1000	4726	4372	4570	3657
24	Budhil	GBHPPL	70	288	261	318	268
25	Chanju I	IA Energy Pvt. Ltd.(IAEPL)	36		11	79	124
26	Malana	Malana Power Company Ltd.(MPCL)	86	342	354	346	297
	Total H.P.		9809	38587	37050	38783	31243
JAMMU & KASHMIR							
27	Chutak	NHPC	44	37	44	46	38
28	Dulhasti	NHPC	390	2361	2280	2344	1999
29	NimooBazgo	NHPC	45	91	95	99	74
30	Salal-I & II	NHPC	690	3591	3423	3247	2899

31	Sewa-II	NHPC	120	597	471	506	314
32	Uri -I	NHPC	480	3283	2803	2350	2305
33	Uri -II	NHPC	240	1196	1472	1207	1190
34	Kishenganga	NHPC	330			2	438
35	Baglihar	JKSPDC	450	3000	2185	2507	1909
36	Baglihar II	JKSPDC	450	56	1759	1822	1790
37	Lower Jhelum	JKSPDC	105	666	483	481	462
38	Upper Sindh II	JKSPDC	105	258	363	327	276
	Total Jammu & Kashmir		3449	15136	15378	14938	13694
	PUNJAB						
39	Ganguwal	BBMB	78	852	847	494	445
40	Kotla	BBMB	78			508	452
41	A.P.Sahib I	PSPCL	67	669	674	648	344
42	A.P.Sahib II	PSPCL	67				
43	Mukerian I	PSPCL	45	1169	1084	1271	874
44	Mukerian II	PSPCL	45				
45	Mukerian III	PSPCL	58.50				
46	Mukerian IV	PSPCL	58.50				
47	RanjitSagar	PSPCL	600	1957	1306	1803	1173
	Total Punjab		1096	4648	3911	4724	3287
	RAJASTHAN						
48	JawaharSagar	RRVUNL	99	349	308	261	132
49	Mahi Bajaj I	RRVUNL	50	166	210	180	47
50	Mahi Bajaj II	RRVUNL	90				
51	R.P. Sagar	RRVUNL	172	518	449	378	166
	Total - Rajasthan		411	1034	966	820	345
	UTTAR PRADESH						
52	Khara	UPJVNL	72	321	269	259	221
53	Matatilla	UPJVNL	31	79	123	94	70
54	Obra	UPJVNL	99	160	217	300	152
55	Rihand	UPJVNL	300	375	567	834	371
	Total -UP		502	935	1176	1487	813
	UTTARAKHAND						
56	Dhauliganga	NHPC	280	1090	956	1153	1008
57	Tanakpur	NHPC	94	452	430	460	385
58	Tehri	THDC LTD	1000	3101	3146	3081	2411
59	Koteshwar	THDC LTD	400	1248	1225	1220	930
60	Chibro (Y.St.II)	UJVNL	240	814	714	784	669
61	Chilla	UJVNL	144	754	769	812	480
62	Dhakrani(Y.St.I)	UJVNL	34	137	120	130	119
63	Dhalipur (Y.St.I)	UJVNL	51	205	180	187	178
64	Khatima	UJVNL	41	120	180	213	188
65	Khodri (Y.St.II)	UJVNL	120	376	333	356	302
66	Kulhal (Y.St.IV)	UJVNL	30	139	122	124	117
67	ManeriBhali-I	UJVNL	90	487	349	395	372
68	ManeriBhali-II	UJVNL	304	1229	1252	1277	1166
69	Ram Ganga	UJVNL	198	503	181	251	84
70	Srinagar	AHPC LTD	330	901	1281	1383	1238
71	Vishnu Prayag	Jaiprakash Power Venture Ltd.	400	1211	2042	2161	1779
	Total Uttarakhand		3756	12766	13282	13984	11425

	CHHATISGARH						
72	Hasdeo Bango	CSPGC	120	323	154	178	219
	Total Chhattisgarh		120	323	154	178	219
	GUJARAT						
73	Kadana PSS	GSECL	240	290	339	309	179
74	Ukai	GSECL	300	492	396	304	168
75	Sardar Sarovar CHPH	SSNNL	250	705	876	563	410
76	Sardar Sarovar RBPH	SSNNL	1200	1466	2333	377	0
	Total Gujarat		1990	2952	3944	1552	757
	MADHYA PRADESH						
77	Indira Sagar	NHDC	1000	1974	3321	882	958
78	Omkareshwar	NHDC	520	955	1428	444	452
79	Bansagar Tons-I	MPPGCL	315	574	1239	545	484
80	Bansagar Tons-II	MPPGCL	30	107	110	56	24
81	Bansagar Tons-III	MPPGCL	60	40	53	69	85
82	Bargi	MPPGCL	90	328	445	159	305
83	Gandhi Sagar	MPPGCL	115	383	351	351	104
84	Madhikheda	MPPGCL	60	92	147	23	59
85	Rajghat	MPPGCL	45	37	62	58	58
	Total M.P.		2235	4491	7157	2587	2529
	MAHARASHTRA						
86	Bhira Tail Race	MAHAGENCO	80	74	102	97	75
87	Ghatghar PSS	MAHAGENCO	250	302	384	153	89
88	Koyna DPH	MAHAGENCO	36	136	156	135	147
89	KoynaSt.I&II	MAHAGENCO	600	2840	3150	1051	796
90	KoynaSt.III	MAHAGENCO	320			499	411
91	Koyna IV	MAHAGENCO	1000			945	984
92	Tillari	MAHAGENCO	60	44	106	58	78
93	Vaitarna	MAHAGENCO	60	123	154	205	90
94	Pench	MPPGPCL	160	379	360	160	118
95	Bhandardhara- II	(DLHPPL)	34	83	47	43	44
96	Bhira	Tata Power Company Ltd.	150	640	952	341	277
97	Bhira PSS	Tata Power Company Ltd.	150			551	437
98	Bhivpuri	Tata Power Company Ltd.	75	197	207	307	218
99	Khopoli	Tata Power Company Ltd.	72	261	307	316	269
	Total Maharashtra		3047	5079	5924	4861	4032
	ANDHRA PRADESH						
100	N.J.Sagar TPD	APGENCO	50		7	42	42
101	N.J.Sagar RBC	APGENCO	90	0	4	60	91
102	Srisailam RB	APGENCO	770	206	641	575	550
103	Upper sileru I & II	APGENCO	240	465	340	482	306
104	Lower Sileru	APGENCO	460	1233	832	1110	739
	Total Andhra Pradesh		1610	1904	1824	2269	1728

KARNATAKA							
105	Almatti Dam	KPCL	290	145	404	442	399
106	Bhadra	KPCL	26	40	27	16	37
107	Gerusoppa	KPCL	240	303	277	281	386
108	Ghatprabha	KPCL	32	32	49	48	59
109	Jog	KPCL	139	318	288	191	149
110	Kadra	KPCL	150	220	176	193	299
111	Kalinadi	KPCL	855	1948	1345	1537	1879
112	Supa DPH	KPCL	100	325	239	291	396
113	Kodasali	KPCL	120	203	154	171	252
114	Lingnamakki	KPCL	55	119	106	126	171
115	Munirabad	KPCL	28	62	31	51	85
116	Sharavathy	KPCL	1035	2665	2709	2722	3328
117	Shivasamudram	KPCL	42	216	145	177	254
118	Varahi	KPCL	460	752	741	762	889
119	T.B.Dam	APGENCO	36	129	81	134	123
120	Hampi	APGENCO	36				13
	Total Karnataka		3644	7479	6772	7143	8718
KERALA							
121	Idamalayar	KSEB Ltd.	75	273	172	256	264
122	Idukki	KSEB Ltd.	780	2372	1380	1611	2252
123	Kakkad	KSEB Ltd.	50	184	132	160	192
124	Kuttiadi	KSEB Ltd.	75	578	479	601	610
125	Kuttiadi Extn.	KSEB Ltd.	50				
126	Kuttiady Additional Extn.	KSEB Ltd.	100				
127	Lower Periyar	KSEB Ltd.	180	511	307	508	478
128	Neriamangalam	KSEB Ltd.	45	351	197	311	333
129	Pallivasal	KSEB Ltd.	38	219	166	188	151
130	Panniar	KSEB Ltd.	30	174	62	129	87
131	Poringalkuthu	KSEB Ltd.	32	160	91	117	86
132	Sabarigiri	KSEB Ltd.	300	1171	799	968	1296
133	Sengulam	KSEB Ltd.	48	161	116	145	94
134	Sholayar	KSEB Ltd.	54	210	167	205	143
	Total -Kerala		1857	6364	4067	5199	5986
TAMIL NADU							
135	Aliyar	TANGEDCO	60	153	62	90	16.11
136	Bhawani K Barrage-III	TANGEDCO	30	157	21	0	27.68
137	Bhawani K Barrage-II	TANGEDCO	30	7	20	38	69.13
138	Bhawani K Barrage-I	TANGEDCO	30	6	17	17	62.22
139	Kadamparai PSS	TANGEDCO	400	413	289	384	359.95
140	Kodayar I	TANGEDCO	60	279	169	124	159
141	Kodayar II	TANGEDCO	40				
142	Kundah I	TANGEDCO	60	1372	816	806	1306
143	Kundah II	TANGEDCO	175				
144	Kundah III	TANGEDCO	180				
145	Kundah IV	TANGEDCO	100				
146	Kundah V	TANGEDCO	40				
147	Lower Mettur I	TANGEDCO	30	223	92	132	189
148	Lower Mettur II	TANGEDCO	30				

149	Lower Mettur III	TANGEDCO	30				
150	Lower Mettur IV	TANGEDCO	30				
151	Mettur Dam	TANGEDCO	50	341	125	52	129
152	Mettur Tunnel	TANGEDCO	200			163	416
153	Moyar	TANGEDCO	36	104	62	94	134
154	Papanasam	TANGEDCO	32	117	67	115	87
155	Parson's Valley	TANGEDCO	30	26	24	27	44
156	Periyar	TANGEDCO	161	505	94	287	648
157	Pykara	TANGEDCO	59	57	13	1	22
158	Pykara Ultimate	TANGEDCO	150	281	193	274	427
159	Sarkarpathy	TANGEDCO	30	79	63	85	81
160	Sholayar I	TANGEDCO	70	264	228	158	165
161	Suruliyar	TANGEDCO	35	93	43	71	85
	Total Tamilnadu		2178	4474	2397	2920	4428
	TELANGANA						
162	Lower Jurala	TSGENCO	240	9	176	206	153.1
163	N.J.Sagar PSS	TSGENCO	816	88	186	184	241.8
164	N.J.Sagar LBC	TSGENCO	60	0	0	13	51.7
165	Pochampad	TSGENCO	36	0	75	36	25.9
166	PriyadarshniJurala	TSGENCO	234	30	212	217	165.0
167	Pulichinthala	TSGENCO	120	0	13	7	17.3
168	Srisailam LB	TSGENCO	900	155	617	829	947.5
	Total Telangana		2406	282	1280	1492	1602
	JHARKHAND						
169	Panchet	DVC	80	69	134	142	76
170	Subernarekha I	JUUNL	65	51	30	190	95
171	Subernarekha II	JUUNL	65				
	Total Jharkhand		210	120	164	332	171
	ODISHA						
172	Balimela	OHPC	510	622	1001	1477	1463
173	Hirakud I	OHPC	348	684	717	863	475
174	Hirakud II	OHPC					
175	Rengali	OHPC	250	599	554	763	783
176	Upper Indravati	OHPC	600	1760	1522	1746	1667
177	Upper Kolab	OHPC	320	767	619	707	716
178	Machkund	APGENCO	115	477	700	468	424
	Total -Odisha		2142	4910	5113	6023	5528
	SIKKIM						
179	Rangit	NHPC	60	345	347	346	309
180	Teesta-V	NHPC	510	2710	2773	2819	2411
181	Teesta III	TeestaUrja Ltd. (TUL)	1200		309	4429	3785
182	Jorethang Loop	DANS Energy Pvt. Ltd. (DEPL)	96	75	406	406	382
183	Tashiding	Shiga Energy Pvt. Ltd.(SEPL)	97			73	390
184	Chuzachen HEP	Gati Infrastructure Pvt. Ltd. (GIPL)	110	421	495	445	395
185	Dikchu	Sneha Kinetic	96			370	439
	Total Sikkim		2169	3552	4330	8888	8112

WEST BENGAL							
186	Teesta Low Dam-III	NHPC	132	515	554	387	527
187	Teesta Low Dam-IV	NHPC	160	19	603	495	650
188	Maithon	DVC	63	108	122	114	93
189	Jaldhaka I	WBSEDCL	36	173	205	145	182
190	Purulia PSS	WBSEDCL	900	1065	1107	1014	822
191	Rammam II	WBSEDCL	50	254	248	122	210
	Total West Bengal		1341	2133	2839	2278	2484
ARUNACHAL PRADESH							
192	Ranganadi	NEEPCO	405	1280	1249	1417	1011
193	Pare	NEEPCO	110				329
	Total Arunachal		515	1280	1249	1417	1340
ASSAM							
194	Kopili	NEEPCO	200	782	1088	1173	986
195	Khandong	NEEPCO	50	175	197	261	186
196	KarbiLangpi	APGCL	100	409	397	485	341
	Total Assam		350	1366	1682	1919	1513
NAGALAND							
197	Doyang	NEEPCO	75	163	259	274	222
	Total Nagaland		75	163	259	274	222
MANIPUR							
198	Loktak (Manipur)	NHPC	105	537	741	838	544
	Total Manipur		105	537	741	838	544
MEGHALAYA							
199	Kyrdemkulai	MePGCL	60	118	65	132	113
200	Myntdu	MePGCL	126	444	392	502	354
201	New Umtru	MePGCL	40			160	161
202	UmiumSt.I	MePGCL	36	114	97	129	69
203	UmiumSt.IV	MePGCL	60	185	166	217	143
	Total Meghalaya		322	861	720	1140	840
MIZORAM							
204	Tuirial	NEEPCO	60			78	156
	Total -Mizoram		60	0	0	78	156
	ALL INDIA		45399	121377	122378	126123	111719

ANNEX-II

ANNEX REFERRED TO IN PARTS (b) & (c) OF THE STATEMENT LAID IN REPLY TO STARRED QUESTION NO. 77 TO BE ANSWERED IN THE LOK SABHA ON 07.02.2019 REGARDING HYDRO-ELECTRIC PROJECTS.

**Hydro Electric Projects (above 25 MW) - Under Construction
in the North Eastern States**

Sl.No.	Name of Scheme (Executing Agency)	Sector	I.C. (No. x MW)	Cap. Under Execution (MW)	Latest Commissioning
	Arunachal Pradesh				
1	Kameng (NEEPCO)	Central	4x150	300.00	2018-19
				300.00	2019-20
2	Subansiri Lower (NHPC)	Central	8x250	2000.00	2022-23 *
3	Gongri(Dirang Energy)#	Private	2x72	144.00	2022-23 *
	Sub-total: Arunachal Pradesh			2744.00	
	Sikkim				
4	Bhasmey (Gati Infrastructure)	Private	3x17	51.00	2021-22*
5	Rangit-IV (JAL Power)	Private	3x40	120.00	2021-22 *
6	Rangit-II (Sikkim Hydro)	Private	2x33	66.00	2020-21*
7	Rongnichu (Madhya Bharat)	Private	2x48	96.00	2019-20
8	Teesta St. VI (LANCO)	Private	4x125	500.00	2021-22 *
9	Panan (Himagiri)	Private	4x75	300.00	2022-23*
	Sub-total: Sikkim			1133.00	
	Total:			3877.00	
*	Stalled Projects. Commissioning date is subject to restart of works				
#	Govt. of Arunachal Pradesh has terminated the MOU with the developer				
