

**GOVERNMENT OF INDIA
MINISTRY OF POWER**

**LOK SABHA
UNSTARRED QUESTION NO.1454
TO BE ANSWERED ON 26.07.2018**

POTENTIAL OF HYDRO POWER PRODUCTION

†1454. DR. RAMESH POKHRIYAL “NISHANK”:

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

- (a) the potential of hydro power production in the country at present;**
- (b) whether different agencies have been entrusted with the work of survey for assessment/study of this potential, if so, the details thereof;**
- (c) the quantum of hydro power being generated in the different States of the country at present;**
- (d) the details of hydro power projects remaining incomplete for different reasons and the amount spent on the projects so far;**
- (e) whether any study has been conducted by the Government to assess the loss due to delay in completion of these projects; and**
- (f) if so, the details thereof, State-wise?**

A N S W E R

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

(SHRI R. K. SINGH)

(a) : As per reassessment studies, carried out by Central Electricity Authority (CEA) during 1978-1987, the hydro power potential from major / medium schemes (above 25 MW capacity) is 145320 MW. The total hydro power generation capacity in the country, including pumped storage scheme (above 25 MW capacity) as on 30.06.2018, is 45315.22 MW.

(b) : The work for reassessment of earlier assessed Hydro Electric Potential has been taken up by CEA in association with WAPCOS Ltd. (a public sector undertaking under Ministry of Water Resources, River Development & Ganga Rejuvenation), in March, 2017.

(c) : The total Hydro Power Generation in the country [from Hydro Electric Projects (HEPs) above 25 MW capacity] during the year 2017-18 is 126122.70 Million Units (MUs) and in 2018-19 (upto 30.06.2018) is 31457.85 MUs. State-wise generation in respect of Hydro Electric Projects above 25 MW capacity is given at Annex-I.

(d) to (f) : As on 30.06.2018, 38 Hydro Electric Projects (above 25 MW) aggregating to 12208.50 MW are under construction in the Country and a total amount of Rs. 56,913.42 crs. has been spent on these projects. Out of these, 35 HEPs aggregating to 11023.50 MW are delayed due to various reasons. The details of these projects are at Annex-II. No specific study has been conducted to assess the loss due to delay in completion of these projects.

ANNEX-I**ANNEX REFERRED TO IN REPLY TO PART (c) OF UNSTARRED QUESTION NO. 1454 TO BE ANSWERED IN THE LOK SABHA ON 26.07.2018.**

State-wise actual generation of H.E. Stations (of stations above 25 MW) in the country

S. No.	State	Installed Capacity (MW) (as on 30.06.2018)	Generation (MU)	
			2017-18	2018-19* (as on 30.06.2018)
1.	Himachal Pradesh	9755.02	38783.19	9172.24
2.	Jammu & Kashmir	3449.00	14937.56	5167.92
3.	Punjab	1096.30	4724.30	812.85
4.	Rajasthan	411.00	819.53	8.49
5.	Uttar Pradesh	501.6	1486.69	132.00
6.	Uttarakhand	3756.35	13983.42	2983.13
7.	Chhattisgarh	120.00	178.07	25.15
8.	Gujarat	1990.00	1551.92	102.55
9.	Madhya Pradesh	2395.00	2746.43	389.80
10.	Maharashtra	2887.00	4701.50	1834.20
11.	Andhra Pradesh	1150.00	1159.03	61.70
12.	Telangana	2835.60	2601.75	132.86
13.	Karnataka	3644.20	7142.62	1981.77
14.	Kerala	1856.50	5199.26	1739.29
15.	Tamil Nadu	2178.20	2919.60	791.53
16.	Jharkhand	273.20	447.78	36.66
17.	Odisha	2142.25	6021.99	1589.75
18.	Sikkim	2169.00	8887.94	2526.10
19.	West Bengal	1278.00	2164.04	674.60
20.	Assam	350.00	1918.58	443.48
21.	Meghalaya	322.00	1140.26	242.00
22.	Nagaland	75.00	274.39	51.66
23.	Arunachal Pradesh	515.00	1416.74	343.05
24.	Manipur	105.00	837.74	172.09
25.	Mizoram	60.00	78.37	42.98
	Total All India	45315.22	126122.70	31457.85

ANNEX REFERRED TO IN REPLY TO PARTS (d) to (f) OF UNSTARRED QUESTION NO. 1454 TO BE ANSWERED IN THE LOK SABHA ON 26.07.2018.

List of Under Construction Hydro Electric Projects in the Country (above 25 MW)

(As on 30.06.2018)

Sl. No.	Name of the Projects / Capacity (MW) / Executing Agency	State	Reasons for delay	Expenditure incurred (Rs. in crore)
	CENTRAL SECTOR			
1.	Tapovan Vishnugad (4x130 = 520 MW) NTPC	Uttarakhand	<ul style="list-style-type: none"> ➤ Heavy water ingress due to bad geology in HRT and rock fall on TBM. TBM struck up thrice. ➤ Flash flood in June, 2013 & Aug'12 damaging coffer dam. ➤ Termination of civil contracts for Barrage and HRT. <p>Cash flow issues with civil contractors</p>	3542.00
2.	Lata Tapovan (3x57 = 171 MW) NTPC	Uttarakhand	<ul style="list-style-type: none"> ➤ Flash flood during June, 2013 in Uttarakhand. ➤ Local issues / non-start of works in Barrage area ➤ Hon'ble Supreme court ban on construction works since May-14. 	146.00
3.	Rammam-III (3x40= 120 MW)	West Bengal	<ul style="list-style-type: none"> ➤ Delay in getting permission for tree felling from Govt. of West Bengal for Access road from Adit-1 to Adit-2. ➤ Cash flow issues with civil contractors. ➤ Strike / bandh during Gorkhaland agitation. 	324.00
4.	Kameng (4x150 = 600 MW) NEEPCO	Arunachal Pradesh	<ul style="list-style-type: none"> ➤ Change in dam parameters. ➤ Slow progress in dam & HRT due to bad geology, heavy seepage, inadequate machinery. ➤ Flash flood in Oct. 08 and Sept. 2012. ➤ Ingress of water in HRT. ➤ Poor approach roads. ➤ Contractual issues. ➤ Shortage of aggregate. ➤ Clearance for quarry from State Govt. ➤ Slow Progress of works. ➤ Leakage from penstocks & rectification of defects. ➤ Cash flow issues with civil contractor 	6443.26
5.	Tehri PSS (4x250 = 1000 MW) THDC	Uttarakhand	<ul style="list-style-type: none"> ➤ Approval of RCE as L-1 price bid was more than cost estimate. RCE approved in Nov-2011. ➤ Cash flow problem with contractor. ➤ Litigation by bidders. ➤ Poor geology. ➤ Local agitation at Asena Quarry. ➤ Agitation at muck disposal area. ➤ Poor preparedness of contractor. ➤ Revision of Lay out of machine hall due to poor geology. 	2573.88

6.	Parbati - II (4x200 = 800 MW) NHPC	Himachal Pradesh	<ul style="list-style-type: none"> ➤ Hon'ble High Court of Himachal Pradesh ban on stone crusher operation. ➤ Delay in revised forest clearance. ➤ TBM suffered extensive damage due to heavy ingress of water and slush in TBM face in Nov, 2006. ➤ Slide in Power House area in Apr-04, Jun-06 and Feb-07. ➤ Flash flood in 2004,2005,2010 and 2011. ➤ Jiwa Nallah works affected due to cavity treatment. ➤ Contractual issues. ➤ Poor geology in HRT. ➤ Cash flow issues with civil contractor. 	6715.69
7.	Subansiri Lower (8x250 = 2000 MW) NHPC	Arunachal Pradesh/ Assam	<ul style="list-style-type: none"> ➤ Delay in transfer of forest land. ➤ Disruption of works by locals in Ar. Pradesh side. ➤ Slope failure in Power House in Jan, 2008. ➤ Damage to bridge on Ranganadi river. ➤ Change in design of surge shafts to surge tunnels. ➤ Stoppage of works due to agitation launched by Anti Dam activists in Assam against construction of Project. Work stopped since 16.12.2011. ➤ Issue of D/s impact studies. ➤ Case in NGT. 	10130.33
8.	Vishnugad Pipalkoti (4x111 = 444 MW) THDC	Uttarakhand	<ul style="list-style-type: none"> ➤ CCEA approval in Aug-2008 but works could not be awarded due to Forest clearance/diversion of forest land. Forest land was acquired in January-14 and subsequently works awarded in January-2014. ➤ Disruption of works by local people. ➤ Cash flow problem with contractor. 	1423.40
9.	Naitwar Mori (2x30= 60 MW) SJVN	Uttarakhand	Construction started in 2018.	102.04
10.	Pakaldul (4x250=1000 MW) CVPPL	Jammu & Kashmir	Construction started in 2018.	993.93
	STATE SECTOR			
11.	Parnai (2x12.5=37.5 MW) JKSPDC	Jammu & Kashmir	<ul style="list-style-type: none"> ➤ Slow progress of works. ➤ Delay in Land acquisition. 	138.80
12.	Lower Kalnai (2x24 = 48 MW) JKSPDC	Jammu & Kashmir	<ul style="list-style-type: none"> ➤ Inadequate mobilization of man & machinery by Contractor. ➤ Delay in finalization of R&R Plan. ➤ Slow progress of works. ➤ Funds constraints with contractor. Contractor under CDR. 	87.94
13.	Uhl-III (3x33.33 = 100 MW) BVPCL	Himachal Pradesh	<ul style="list-style-type: none"> ➤ Delay in transfer of forest land. ➤ Delay in acquisition of private land ➤ Delay in transfer of quarry sites. ➤ Delay in award of works. ➤ Contract for construction of HRT rescinded twice i.e. during April, 2008 & July, 2010 due to slow progress and non-performance by the contractor. ➤ Poor geology in HRT. 	1459.21

14.	Sawra Kuddu (3x37 =111MW) HPPCL,	Himachal Pradesh	<ul style="list-style-type: none"> ➤ Delay in MOEF clearance. ➤ Delay in award of Civil & E&M works. ➤ Poor geology in HRT. ➤ Slow progress of HRT Lining. ➤ Contractual issues. ➤ Contract for HRT package terminated on 9.1.14. Re-awarded in Nov,2014 to M/s. HCC. 	1232.51
15.	Shongtom Karcham (3x150 = 450 MW) HPPCL 16.08.2012	Himachal Pradesh	<ul style="list-style-type: none"> ➤ Shifting of Army Ammunition Depot. ➤ Local Issues. 	658.81
16.	Pulichintala (4x30 = 120 MW) TGENCO	State	<ul style="list-style-type: none"> ➤ Delay in award of E&M works. ➤ Unprecedented floods in Oct.2009 & Sept.2011. ➤ Contractual issues. ➤ Slow progress of Power House works. ➤ Delay in Commission due to non-availability of water. 	486.51
17.	Pallivasal (2x30 = 60 MW) KSEB	Kerala	<ul style="list-style-type: none"> ➤ Slow progress of civil works. ➤ Delay in land acquisition. ➤ Change in alignment of Adit to HRT. ➤ Poor geology strata in HRT. ➤ Heavy Monsoon ➤ Works stopped by contractor since 28.1.15 due to contractual issues. Contractor resumed remaining works in April, 2017 except intake and balance tunnelling works of Phase I which is now not included in his scope of contract. Re-tendering of balance Intake works are in process. 	248.00
18.	Thottiyar (1x30+1x10= 40MW) KSEB	Kerala	<ul style="list-style-type: none"> ➤ Land acquisition issue. ➤ The works of weir and approach channel stopped from 2010 to 2012 by local people. ➤ The work stopped by Court from 12.12.2012 to April-2013. ➤ Contractual issues. ➤ Financial crunch with contractor. ➤ Foreclosure of earlier contract in April,2017 and balance works re-awarded in January, 2018. 	61.08
19.	Shahpurkandi (3x33+3x33+1x8=206 MW), Irrigation Deptt. & PSPCL	Punjab	<ul style="list-style-type: none"> ➤ Works of Dam stopped since 29.08.2014 due to inter-state dispute between states of J&K & Punjab on sharing of waters of river Ravi and Tariff. 	650.00
20.	Koyna Left Bank PSS (2x40 = 80 MW) WRD, Maha	Maharashtra	<ul style="list-style-type: none"> ➤ Slow progress of works. ➤ Fund constraints due to increase in project cost. RCE under approval. 	334.59
21.	Vyasi 2x60=120 MW, UJVNL	Uttarakhand	<ul style="list-style-type: none"> ➤ Delay in award of works. ➤ Local Issues. 	586.46
22.	Polavaram (12x80 = 960 MW) APGENCO / Irr. Deptt., A.P.	Andhra Pradesh	<ul style="list-style-type: none"> ➤ Slow progress of works ➤ Funds constraints ➤ E&M works yet to be awarded 	382.04
23.	Kundah Pumped Storage (1x25 – 25 WM) TANGEDCO	Tamil Nadu	Construction started in 2018.	137.00

	PRIVATE SECTOR			
24.	Tidong-I (2x50 =100 MW) NSL Tidong	Himachal Pradesh	<ul style="list-style-type: none"> ➤ Delay in NOC by Projects affected Panchayats. ➤ Suspension of works by Govt.for one year. ➤ Funds constraints with the developer 	727.57
25.	Tangnu Romai-I (2x22 = 44 MW) TRPGPL	Himachal Pradesh	<ul style="list-style-type: none"> ➤ Slow progress of civil works. ➤ Poor geology. ➤ Difficult area. ➤ Weather conditions & accessibility. ➤ Financial constraints with the developer. 	329.36
26.	Sorang (2x50 = 100 MW), HSPPL	Himachal Pradesh	<ul style="list-style-type: none"> ➤ Poor geology. ➤ Poor weather conditions, difficult & poor accessibility. ➤ Penstock cracks / leakage during filling of Water conductor System in Nov '13. ➤ Rupture in surface penstock in Nov-15 during trial run. ➤ Funds constraints with developer. 	1380.00
27.	Singoli Bhatwari (3x33 = 99 MW) L&T	Uttarakhand	<ul style="list-style-type: none"> ➤ Poor geology in HRT. ➤ Agitation by local people. ➤ Flash flood in June,2013. 	1474.00
28.	Phata Byung (2x38 = 76 MW), LANCO	Uttarakhand	<ul style="list-style-type: none"> ➤ Flash flood in June,2013. ➤ Poor geology in HRT. 	1135.00
29.	Maheshwar (10x40 = 400 MW) SMHPCL	Madhya Pradesh	<ul style="list-style-type: none"> ➤ R&R issues ➤ Cash flow problem with developer ➤ PFC as lead lender have acquired majority equity i.e. 51% in the SMHPCL w.e.f. 1st June, 2016. Matter Sub-judice. 	3135.00
30.	Teesta Stage VI (4x125 = 500 MW) Lanco Energy Pvt. Ltd.	Sikkim	<ul style="list-style-type: none"> ➤ Poor geology. ➤ Land acquisition. ➤ Contractual issues ➤ Funds constraints with developer 	3621.00
31.	Rangit-IV HE Project (3X40 = 120 MW) JPCL	Sikkim	<ul style="list-style-type: none"> ➤ Slow progress of HRT & Surge Shaft works due to poor geology. ➤ Works hampered due to earthquake in September, 2011. ➤ Financial constraints with developer 	818.44
32.	Bhasmey (2x25.5 =51 MW) Gati Infrastructure	Sikkim	<ul style="list-style-type: none"> ➤ Forest clearance ➤ Financial constraints with developer 	353.00
33.	Rongnichu (2x48 =96 MW) Madhya Bharat Pvt. Ltd.	Sikkim	<ul style="list-style-type: none"> ➤ Land Acquisition ➤ Poor geology. 	873.18
34.	Ratle (4x205+1x30) = 850 MW Ratle HEP Pvt. Ltd.	J&K	<ul style="list-style-type: none"> ➤ Slow progress of works. ➤ Works suspended since 11.7.14 due to frequent local disturbance. ➤ Developer wants to surrender the Project to State Govt. Govt. of J&K, PDD have terminated PPA on 09.02.2017 and directed JKSPDC to take over the project. ➤ The parties namely, GVKRHEPPL and JKPDD have contested their respective claims and matter is now Sub-judice. 	1451.00
35.	Gongri (2x72= 144 MW) Dirang Energy (P)Ltd	Ar. Pradesh	<ul style="list-style-type: none"> ➤ Works awarded on 22.11.2011. However, consent to establish from State Pollution Control Board was issued on 19-5-14. ➤ Financial constraints with the developer. ➤ State Govt. terminated the agreement with developer for execution of project 	599.56

36.	Bajoli Holi (3x60= 180 MW) M/s GMR Bajoli Holi	H.P.	➤ Slow progress of works.	1864.00
37.	Rangit-II (2x33= 66 MW) Sikkim Hydro Power Ltd.	Sikkim	➤ Slow progress of works. ➤ Financial constraints with the developer.	126.83
38.	Panan (4x75= 300 MW) Himagiri Hydro Energy Pvt. Ltd.	Sikkim	➤ Clearance from NWLB received in December, 2015. ➤ Clearance from NGT obtained ➤ Applied for NoC from Govt. of Sikkim in NWLB angle	168.00
	Total			56913.42
