

Chapter-6

Status of Under Execution Hydro Electric Projects (above 25 MW) in the Country (as on 30.09.2017)

Sl. No.	Name of Project Executing Agency Date of CEA clearance / Approval Capacity (MW) Broad Features Cost (original/latest) In Rs. Crores.	State Comm. Sch. (original / Now Ant.	Broad Present Status / Critical Area	Remarks/ Critical issues
(i) Projects Commissioned during 2017-18				
Central Sector				
1.	Tuiri NEEPCO Revised CCEA 14.01.2011 2x30= 60 MW Broad Features: Dam: Earthfill, L – 250 M H – 75 M Diversion Tunnel: Partly circular & partly modified horse shoe Diameter Diverted concrete portion 6 M steel liner portion 6M, 5.6 M & 3.6 M Power tunnel: Concrete Portion – 200 M Steel Liner Portion – 140M, 80M & 2.30 M Cost: <u>Original:368.72</u> Latest: 1329.43	<u>Mizoram</u> <u>2006-07</u> 2017-18 (Nov'17)	Dam: Excavation & concreting completed. Spillway: Excavation almost completed. Concreting 125505 cum out of 126030 cum completed. Power House & Switchyard: Excavation almost completed. 25302 cum of Concreting in Power House out of 27010 cum is completed. E&M works: Unit-1 – Commissioned on 25.08.2017. Unit#2 - Assembly of Stator & Rotor is in progress, Installation of spiral casing completed.. H&M works: Erection of steel lining in Penstock completed. Erection of Radial Gate in bay 2 & 3 completed. Critical: E&M works.	- Partially Commissioned
State Sector				
2.	New Umtru MePGCL, 2x20=40 Broad Features: Diversion Structure- Gated structure (FRL- 130.1m, MDDL-123.3m) HRT- 5m dia, 750m long P.House- Deep Set SWYD- 132 kV Cost: <u>Original: 226.40</u> Latest : 599.00	<u>Meghalaya</u> <u>2011-12</u> 2017-18	Unit # 1 : Commissioned on 22.04.2017. Unit # 2 : Commissioned on 30.06.2017.	- Commissioned
3.	Sainj H.P. Power Corpn. Ltd. 2 X50=100 MW 29.12.2010 Cost: Original <u>784.56</u> Latest 784.56	<u>H.P.</u> <u>2014-15</u> 2017-18	Unit # 1: Commissioned on 04.09.2017. Unit # 2: Commissioned on 04.09.2017.	- Commissioned
Private Sector				
4.	Dikchu Sneha Kinetic Power Projects Pvt. Ltd. 21.10.2011 2x48= 96 MW Broad Features : Dam-35m High, Concrete Gravity HRT-4m dia &4.6 km length Circular. Surge Shaft- 65m High	<u>Sikkim</u> <u>2013-14</u> 2017-18	Unit # 1: Commissioned on 11.04.2017. Unit # 2: Commissioned on 12.04.2017.	- Commissioned

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	& 9m dia. P.House-Underground Turbine-Vertical Francis TRT-4m dia & 1000m length Swityard- 60mx30m size Cost : Original :639.57 Latest : 1140.00			
5.	Chanju-I M/s IA Energy 24.04.2010 3x12=36 MW Cost :Original : 295.09 Latest : 295.09	<u>H.P.</u> <u>2014-15</u> 2017-18	Unit#1: Commissioned on 17.02.2017 Unit#2: Commissioned on 01.02.2017. Unit#3: Commissioned on 26.07.2017.	- Commissioned
ii) Hydro Capacity for benefits during 2017-18 & beyond.				
	Central Sector			
1	Kishanganga NHPC 14.01.2009 3x110 = 330 MW Broad Features : Dam – 37m High CFRD, HRT- 6.0m x 24 km long S.Shaft-17.75 dia x 104m Height P.House- Underground 113mx 21m x 45.5m. Turbine- Pelton wheel Swyd.- 220 kV Cost: Original:3642.04 Latest: 5882.01 (01/17 PL)	<u>J&K</u> <u>2015-16</u> 2017-18	Dam & Intake works:- Completed. HRT:- Excavation completed by TBM/ DBM. Lining of TBM portion (14.7 km) completed and 8204m lining of DBM portion completed out of 8437m. Surge Shaft:- Concreting completed. Pressure Shaft liner:- 973.3m liner completed out of 1020m. Power House:- Concreting completed. E&M: - Unit # 1: Boxed up. Unit # 2: Stator & Rotor lowered, Boxing up under progress. Unit # 3: Assembly of Stator & Rotor in Service Bay is in progress. Switchyard - (Total Tower Foundation – 45, Completed- 38), (Equipment Foundation – 166, Completed – 111) Associated Transmission System - There are two D/C lines for evacuation of power from Kishanganga HEP. The first line is Kishanganga - Amargarh 220 kV D/C line which is being executed by PGCIL consists of 85 ckm and having 150 Tower Locations. A total of 125 foundations have been completed and 116 Towers erected. The second line is Kishanganga - Wagoora 220 kV D/C line which is also being executed by PGCIL and consists of 228 ckm & 252 Tower Location. A total of 132 foundations have been completed and 97 Towers erected and 12ckm stringing completed. Critical Area: 1) Completion of HRT. 2). Switchyard and Associated Transmission works. 3) Due to ongoing Kashmir bandh since 9 th July 2016, the construction activities at Dam Site are adversely affected and project works at Power House in Bandipura area are completely closed since July 2016. The work has been partially resumed in January, 2017.	-Completion of Power evacuation arrangement. (PGCIL)
2	Parbati-II NHPC 11.09.2002 4x200 = 800 MW Broad Features : Dam – 85m High, 109. m long at top, concrete gravity type HRT- 6m x 31.23km P.House- Surface 23.5mx 39.7mx 123m. Turbine- Pelton Swyd.- 13.8/400 kV	<u>H.P.</u> <u>2009-10</u> 2019-20	Dam & Intake Structure- Concreting completed. Head Race Tunnel- 27594 m Excavation out of 31525m completed Total Overt lining: 25229 m lining out of 31525 m completed. Power House: Concreting completed. Jiwa Nallah Feeder Tunnel: Completed. E&M Works: Unit # 1 & 2 : Boxed up and spun on 31.3.17 and 9.4.17 respectively using water of Jiwa Nallah. Unit#1 synchronised with grid on 29.07.2017 on partial load. Unit # 3: Boxed up. Unit # 4: Stator and Rotor lowered. Boxing up is in progress.	Poor geology in HRT especially in Face-4 (TBM-Face).

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	Cost: Original: 3919.59 Latest: 8398.75		HM Works: About 85% works completed. Critical Area: HRT.	
3	Tapovan Vishnugad NTPC 11.08.2004/Nov, 2006 4x130 = 520 MW Broad Features : Barrage-5 bays of 12m HRT- 5.4m x 11.97km P.House- underground Turbine- V.Pelton Cost: Original: 2978.48 Latest: 3846.30	<u>Uttara</u> <u>khand</u> <u>2012-13</u> 2019-20	River diversion achieved on 13.04.2013 Barrage: Excavation completed and Concreting 108457 cum out of 125575 cum completed. HRT: 7651.5 m excavation completed out of 12087.9 m, TBM struck due to cavity (5.5km completed out of 8.8km) PH Cavern: Excavation and concreting completed. Desilting Chamber & Intake: 4.33 lakhs m ³ out of 6.42 lakh m ³ Excavation completed. TRT: Excavation completed. Unit #1 Stator Core building & Rotor poles erection completed. Surge shaft: Excavation & Lining completed. Penstock: Excavation completed and Lining of 794 m out of 1372 m completed. E&M works: Pit liner erection on all 4 units completed. Turbine housing erection of all 4 units completed. Erection of EOT crane in BVC & service bay completed. Unit#1, 2 & 3 - Hydro Test of Distributor Successfully completed, barrel concreting under progress. Critical : HRT	- Completion of HRT. - Associated Transmission system.
4	Tehri PSS, THDC, 18.7.06 Nov-11 (Revised CCEA) 4x250=1000 MW Broad Features : Surge Shaft: U/s – 2 nos. D/s – 2 nos Power House: U/G TRT: 2, Dia 9m and Length 1070m + 1160m Turbine: VF reversible pump turbine Cost: Original: 1657.60 Latest: 2978.86	<u>Uttara</u> <u>khand</u> <u>2010-11</u> 2020-21	EPC contract has been awarded on 23.06.11 with commencement date from 27.07.11. Upstream (Tehri Dam) and Downstream (Koteshwar Dam), intake and Head Race Tunnels (2 Nos.) already completed alongwith Tehri Stage-I works. Surge Shafts upstream (2nos- 140m): After completion of Crown slashing, widening is in progress. Butterfly Valve Chamber (BVC): Crown slashing with steel ribs completed. Benching work and additional stabilization work is nearing completion. Penstock Assembly Chamber (PAC): Crown slashing with steel ribs completed. Excavation of 4 th bench is under progress. PH: Underground excavation of PH 194090 cum out of 230000 cum completed. Surge Shafts downstream (2nos): After completion of excavation of Top Chamber, stabilization work for Shaft widening is in progress. TRT (2 Nos- 1070m & 1160m): In Heading & Benching 1688.90m and 509.0m excavation has been completed respectively. E&M Works: Manufacturing & supplies are in progress.	- Poor Geology in under ground works of BVC, PAC, TRT, PH Cavern etc. - Law and order issues at Asena Quarry. - Diversion of land for dumping area at village chopra. - Slow progress of works - Cash flow crisis with M/s. HCC.
5	Lata Tapovan, NTPC Aug-2012 3x57= 171 MW Broad Features : Barrage-14 bays of 11m each HRT- 7.51 Km, 4.7m dia P.House- underground Turbine- V.Francis Cost: Original: 1527.00 Latest: 1527.00	<u>Uttara</u> <u>khand</u> <u>2017-18</u> 2022-23 (Subject to re-start of works)	Infrastructure works are almost completed. Main works to re-start after clearances from Hon 'ble Supreme Court. EPC contract for Civil & HM works awarded to M/s L&T on 17-08-2012. E&M package awarded to M/s BHEL on 07.12.12.	-Works of barrage & HRT yet to start due to protest by villagers. -Construction work stopped vide Hon'ble Supreme Court order dated 7.5.14.
6	Vishnugad Pipakoti THDC 21.08. 2008 4x111= 444 MW	<u>Uttara</u> <u>khand</u> <u>2013-14</u> 2020-21	Civil and HM works awarded on 17.01.2014. E&M works awarded on 18.11.2014. Heading & Benching excavation for Diversion Tunnel completed. Cut & Cover at inlet & Outlet and Overt Lining is	-Frequent disruption of works by local people. - Slow progress of works - Cash flow crisis with

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	Broad Features : Dam – 65m High, 89.3m long, concrete gravity HRT- 13.4 Km, 8.8m dia Horse shoe shape P. House-Underground 127mx 20.3mx 50m Turbine- Francis SWYD- 13.8/420 kV Cost: Original: 2491.58 Latest: 2491.58		under progress. Excavation for de-silting Chamber 2 no. is under progress. Development for TBM platform excavation 95% has been completed. Main Access Tunnel (MAT) 407m: Excavation completed upto 397.50m. HRT (13400m): 147.50m completed by DBM. Construction of Adits and infrastructure works are under progress.	M/s. HCC.
7	Subansiri Lower NHPC 09.09.2003 8x250= 2000 MW (1000 MW in 12 th Plan) Broad Features : Dam –116m High, concrete gravity HRT- 8 x 9.5m x 1145m Power House- Surface Turbine- Francis SWYD- 16/400 kV Cost: Original: 6285.33 Latest: 17435.15 (02/16 PL)	Arunachal Pradesh Assam 2009-11 2020-21 (4 years from re-start of works)	Dam: Excavation- 169441 cum completed out of 173000 cum. Concreting: 7.6lacs cum completed out of 19.96 lacs cum. Intake Structure: 261377 cum concreting completed out of 279454 cum. Head Race Tunnel (I-VIII): 7050 m heading excavation completed out of 7124m. 4279 m benching excavation completed out of 7124 m. 3199 m concrete overt lining completed out of 7124 m. Surge Tunnels (8 nos.): 3109 m heading excavation completed out of 3545 m. Pressure Shaft- Vertical Pressure Shaft Slashing: 199 m excavation out of 384 m completed. Surface Power House: Concreting: 124887 cum out of 302600 cum completed. E&M Works: Unit #1: Elbow erection (1 to 6) and Turbine stay ring and Spiral case erection completed. Unit #2: Elbow erection (2 to 6) and Turbine stay ring and Spiral case erection completed. HM Works: Erection of diversion tunnel gates 23% completed. Erection of Intake-5: 17% completed. Erection of Intake 7 & 8 – 20% completed each. 201 m pressure shaft steel liner erected out of total 1594 m. Work stopped since 16.12.11 due to agitation launched by various activists against construction of Subansiri Lower HE Project. In this regard, as decided in the tripartite meeting dated 06.12.13, discussions between Expert Group formed at the request of AASU (All Assam Students Union) and Experts of Govt. of India & NHPC was held on 23.12.13. Last meeting between Expert Group of Assam and Experts of Govt. of India was held on 02.06.14 at Guwahati. Thereafter, meetings with Expert Group of Assam on 10.12.2014 and on 21.02.2016 & 22.02.2016 with various Stakeholders of Subansiri Lower Project on 11.12.2014 were held to discuss the issues. The meetings were Co-chaired by Hon'ble MOS (I/C) for Power, Coal and New & Renewable Energy and Hon'ble MOS (I/C) for Skill Development, Entrepreneurship, Youth Affairs & Sports. As decided in stakeholders meeting on 11.12.2014, a Project oversight Committee (POC) was constituted vide MoP's OM dated 13.01.2015. Due to difference in opinion on some issues mainly seismic issues, the Expert Group of Assam has submitted the final report to MoP & members of POC from Government of India have also submitted a separate report to MoP. Matter related to Subansiri Lower HEP is being heard by	- Signing of MoU with State Government of Assam. - Issue of Downstream Impact Assessment & demand for stoppage of works by anti dam activists. -Since 16.12.2011 works stopped due to agitation by various activists of Assam. -Case in NGT.

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			<p>Hon'ble National Green Tribunal (NGT), Kolkata. On hearing dated 11th Dec'15, Hon'ble NGT allowed NHPC to undertake emergency maintenance work for safety and protection of the public and the property. However, Hon'ble NGT ordered that no construction work to the project be done. Further, as desired by Hon'ble NGT, both the reports submitted by POC have been submitted to Hon'ble NGT on 5th April, 16 by MoP. In the petition between Aabhijeet Sharma Vs Union of India & Ors at NGT Kolkata, arguments of all parties have been completed by 26th May'17. The applicant submitted 'Alternate Dam Proposal' vide affidavit dated 25.07.17. As per the directions of NGT vide order dated 11.08.2017, NHPC filed additional synopsis of arguments on 'Alternate Dam Proposal' of the applicant on 16.08.2017. Judgment is reserved subject to filing of further additional arguments by the applicant and other parties within two weeks i.e. by 25.08.17. NGT made clear that there will be no further arguments.</p> <p>In another petition between Tularam Gogoi Vs Union of India & Ors, arguments of all parties on the maintainability and limitation of the application have been completed. NGT vide order dated 11.08.2017, directed all the parties to file additional synopsis of arguments within a period of one week i.e. by 18.08.2017. NHPC filed the same on 16.08.2017. Judgment is reserved.</p>	
8	<p>Kameng NEEPCO 02 12 2004 4x150 = 600 MW Broad Features: Dam :Bichom-69m High, 247.3m long. Tenga – 24.4 High, 103m long. HRT- 6.7m dia, 14.45 km. High Pressure Tunnel (HPT)Total length 3.64 km Surge Shaft: 25m dia, 70m Height P.House- semi-U/G Turbine- Francis</p> <p>Cost: Original: 2496.90 Latest: 6179.96</p>	<p>Arunachal Pradesh 2009-10 2017-19</p>	<p>Bichom Dam: Excavation 764383/780000 cum and Concreting 400924/416165 cum completed. Tenga Dam: Excavation 151457 / 152005 cum and Concreting 94223 / 97086 cum completed. HRT: Excavation completed. lining of 14033.85 out of 14328m completed. Surge Shaft: 8.55m concrete lining balance out of 71.35m. HPT: Boring of vertical and horizontal portion completed & Open excavation of Surface Penstock including valve house 443036/462504 cum completed. Power House & Tail Race: Excavation completed. Concreting completed. HM Works: Fabrication of penstocks completed and 95% fabrication & erection of gates done. Unit erection: Unit #1&2: Boxed up. Unit # 3: Rotor & Stator lowered. Unit#4: Assembly of stator and rotor is in progress.</p> <p>Critical: 1. Dam construction & associated HM works.</p>	-Dam and associated HM works are critical.
9	<p>Pare NEEPCO 4.12.2008 2x55 = 110 MW Broad Features: Dam : 63m High, Con. Gravity Spillway – 3 nos. gates Size of gate: 10.4m (w)X 12 m(H) Crest Level: 216 m HRT: Dia – 7.5 M Length– 2810.75M Pressure Shaft: Dia: 6.4 M Length: 220M</p>	<p>Arunachal Pradesh 2013-14 2017-18</p>	<p>Civil Works: Dam: Excavation - 367358 cum out of 398000 cum completed. Concreting – 181686 cum out of 193513 cum completed. Head Race Tunnel: Boring and Lining completed. High Pressure Tunnel : Boring completed. Surge shaft: Open excavation, boring and lining completed. Power House: Excavation in pit completed. Concreting almost completed.</p> <p>Hydro Mechanical Works: Erection of steel liner – 262.75 out of 264.25 m completed. Erection of DT inlet gate completed.</p> <p>Unit erection: Unit-1: Boxed up.</p>	-Dam & associated HM works are critical.

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	Bifucation Penstock Dia: 4.5 M Power House: Surface P.H. Size: 68 mX 25m Type of Turbine: VF TRC: Open channel 60.62 M wide 49M long Cost: Original: 573.99 Latest: 1339.57		Unit-2: Boxed up. Critical: 1. Dam Concreting & Spillway Gates.	
10 ^{TP}	Tuiri NEEPCO Revised CCEA 14.01.2011 2x30= 60 MW Broad Features: Dam: Earthfill, L – 250 M H – 75 M Diversion Tunnel: Partly circular & partly modified horse shoe Diameter Diverted concrete portion 6 M steel liner portion 6M, 5.6 M & 3.6 M Power tunnel: Concrete Portion – 200 M Steel Liner Portion – 140M, 80M & 2.30 M Cost: Original:368.72 Latest: 1441.52	<u>Mizoram</u> <u>2006-07</u> <u>2017-18</u> (Nov'17)	Dam: Excavation & filling completed. Spillway: Excavation almost completed. Concreting 125505 cum out of 126030 cum completed. Power House & Switchyard: Excavation almost completed. 26318 cum of Concreting in Power House out of 27010 cum is completed. E&M works: Unit-1 – Commissioned on 25.08.2017. Unit#2 – Stator lowered Assembly of Rotor is in progress. Installation of spiral casing completed. H&M works: Erection of steel lining in Penstock completed. Erection of Radial Gate in bay 2 & 3 completed. Critical: E&M works.	- Partially Commissioned.
11	Ramam-III NTPC Hydro Ltd. 10.09.14 3x40 = 120 MW Broad Features : Run of the River Scheme Cost : Original: 1381.84 Latest : 1381.84	<u>West Bengal</u> <u>2019-20</u> <u>2020-21</u>	Infrastructure works are in progress. Civil & HM works of Barrage including Part HRT Package awarded to M/s Simplex –Apex JV on 10.09.14. Civil & HM works of Power House including Part HRT awarded to M/s SEW Infrastructure Ltd. on 12.12.2014. Electro-Mechanical (EM) Package awarded to M/s BHEL in Feb-2015. First stage river diversion done on 23.03.2016. Adit-1 Excavation completed. Excavation of other Adits is in progress. Excavation in barrage completed. Excavation of Desilting chamber completed and concrete lining works started.	- Works affected due to GJMM Andolan.
	State Sector			
12	Parnai JKSPDC 21.10.2013 3x12.5= 37.5 MW Broad Features: Barrage: 107m Long, 11.7m High HRT: D Shape, 9236m long, 3.2m dia Surge Shaft: 3.2m Dia Power House- Surface- 60x12x28 Cost: Original: 640.41 Latest 640.41	<u>J&K</u> <u>2018-19</u> <u>2020-21</u>	The implementation of the project has been undertaken by awarding the EPC contract in favour of M/s. Patel Engg. Ltd. in 2013. Barrage:- Excavation 10704cum out of total 62187cum completed. HRT (D-shaped, 3.2m diameter, 9.236km long):- 1583m out of 9236m excavation completed.	- Slow progress of works - Land acquisition issues at Adit-I to HRT & Power House area.
13	Lower Kalnai JKSPDC 16.08.2013	<u>J&K</u> <u>2017-18</u>	EPC contract awarded to M/s. CPL in Sept., 2013. Diversion tunnel has been completed and river diversion made on 30.11.2016.	- Slow progress of works

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	2x24= 48 MW Broad Features: Dam: 110m Span, 49m High HRT: D Shape, 3960m long, 4m dia Surge Shaft: 14m Dia Power House- 55x23.45x32.4 Cost: Original: 576.87 Latest 576.87	2020-21	Work on coffer dams has been started Dam:- Excavation work completed for right abutment of the dam bridge. Excavation of left abutment completed upto 50%. HRT:- Adit excavation is in progress. After suspending works in January, 2017, works resumed at site since 12 th April, 2017. Due to poor progress of the contractor, JKSPDC has revoked the advance payment and the performance Bank guarantees aggregating to 79.21 Crores.	
14	Shahpurkandi Irrigation Deptt. &PSPCL 04.05.2011 3x33+3x33+1x8=206 MW Cost: Original: 1835.50 Latest 1835.50 (Power Component)	<u>Punjab</u> <u>2017-18</u> 2020-21 (Subject to re-start of works)	Civil works of Main Dam and Hydel Channel awarded and are under construction Main Dam: 1286552 cum Excavation out of 1981500 cum and 89286 cum concreting out of 1135295 cum completed. Hydel Channel: 2696210 cum excavation out of 3900000 cum and 22153 cum concreting out of 42864 cum completed.	-Works of Dam stopped since 29.08.2014 due to inter-state dispute between states of J&K & Punjab.
15	Uhl-III Beas Valley Power Corporation Ltd. (HPSEB) 19.09.02 / (TEC -2x50 MW) 3x33.3 =100 MW (Revised vide HPSEB letter dt. 19.01.07. Broad Features: HRT-4.15m x 8.47 km S.Shaft- 13m x 57m Penstock- 3.4m x 1860m P.House- Surface Turbine- V. Francis Cost: Original: 431.56 Latest: 1281.52	<u>H.P.</u> <u>2006-07</u> 2017-18	Almost all civil works completed except lining of HRT. Lining 7806m out of 8010m completed. E&M:- All units boxed up. Critical : HRT	- HRT lining critical.
16	Swara Kuddu H.P. Power Corp. Ltd. Clearance: 10.11.2004 3x37= 111 MW Broad Features: Diversion Structure: 10.45m high Piano Key Weir. HRT- D-Shaped, 5m dia, 11.145Km long. Power House- Under ground Turbine- 500 rpm VF. Switchyard: 220 Kv. Cost: Original: 558.53 Latest: 1181.90	<u>H.P.</u> <u>2010-11</u> 2019-20	Barrage: Excavation completed & concreting is under advance stage of completion. HRT: 11349m out of 11364 m from all faces of HRT excavation completed and 6899 m out of 10834 m overt lining completed. Surge Shaft: Excavation & Lining completed. Pressure shaft: Excavation & lining completed. Power House: Excavation completed and concreting almost completed. TRT: lining completed. E&M: All units boxed up. Critical : HRT.	- Works badly suffered due to encounter of poor geology in HRT. - Contractual Issues. -Contract for HRT package terminated on 9.1.14. Re-awarded in Nov' 2014 to M/s. HCC
17	Shongtong Karcham H.P. Power Corp. Ltd. Clearance: 16.08.2012 3x150= 450 MW Broad Features: Intake Tunnel: 4 Nos. Horse shoe 6.4m dia 192 to 280m length	<u>H.P.</u> <u>2017-18</u> 2021-22	River Diversion achieved on 10.02.2017. Barrage: Excavation under progress. HRT: Excavation of HRT 3066 m out of 7712 m completed. Surge shaft: 58m out of 100m pilot hole completed. Power House: Benching of Power House cavity is in progress. Works hampered in some portion of HRT due to re-location	-Issues with Army authorities for shifting of ammunition depot. - Slow progress of works

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	HRT- Circular, 10.5m dia, 8096m long. Power House- Under ground Turbine- VF. Switchyard: 400 Kv. Cost: Original: 2807.83 Latest: 2807.83		of Army ammunition depot. Issue is under resolution between Army, GoHP & HPPCL. Works are stalled since 18.04.2017 due to laying off labour / workmen by M/s. Patel Engg. Ltd. Which was withdrawn on 07.08.2017 and work has partially resumed.	
18	Vyasi UJVNL 25.10.2011 (TEC) 2x60= 120 MW Broad Features: Dam: Conc. Gravity H- 86m L-207.2m HRT- Circular, 7m dia, 2.7Km long. Power House- Surface Turbine- VF. Switchyard: 220 Kv. Cost: Original: 936.23 Latest: 936.23	<u>Uttarakh</u> <u>and</u> <u>2014-15</u> <u>2019-20</u>	Civil Works: Dam: 3.192 lakh cum / 3.200 lakh cum of Excavation completed. 50020 cum out of 4.417 lakh cum of Concreting completed. Diversion Channel : Completed. Head Race Tunnel (2.7 Km): Excavation of HRT completed. 1937m Overt Lining and 1325m Invert Lining out of 2672m has been done. Pressure Shaft: 2391cum out of 5000cum Excavation completed. Surge Shaft : Excavation completed. E & M works : Work has been awarded to BHEL. Power House: 245000 cum out of 270,000cum Excavation completed.	-Dam and E&M works are Critical. -Local issues.
19	Koyna Left Bank PSS WRD, Mah. 20.02.2004 2x40 = 80 MW Broad Features: Water from the existing Shivaji Sagar Lake (Koyna reservoir) is to be utilized for generation. Intake Tunnel: Dia – 7.20 M Length – 235.5 M (including Lake tap) HRT: Dia – 7.20 M Length – 80 M Penstock – 2 nos , Dia – 2.9M Length – 10 M each P.House – Underground Turbine – Reversible Cost: Original: 226.40 Latest: 379.78	<u>Maha</u> <u>rasht</u> <u>2017-18</u> <u>2019-20</u> (Subject to re-start of works)	Civil Works: Excavation of intake structure 4781 cum out of 14105 cum and lining 2485 cum out of 3381 cum completed. Excavation of Switchyard completed. Excavation of Approach tunnel & Ventilation tunnel is in progress. Tail surge shaft : Excavation in soft strata completed. Excavation for inclined / vertical / lateral shafts in hard rock 6448 / 9223 cum completed. TRT : 364 / 24003 cum excavation completed. Machine Hall : Underground Excavation is under progress. 22600 cum excavation out of 55050 cum completed. E&M works: The contract for details engineering manufacturing supply, supervision erection, testing commissioning and putting into commercial use of pump turbine, generator motor and associated equipments is signed with M/s IVRCL Ltd., Pune on 16.12.2010. Further TG set has been ordered as under: Turbine/Pump: M/s Litosroj Power, Slovenia (European Union) Generator/Motor: M/s Koncar Power, Plant & Electric Traction Engineering, Croatia (European Union). EOT Crane :- Works awarded to M/s Pedvak Cranes Private Limited Hyderabad on 12.04.2013.	-Slow progress of works. -Funds constraints due to increase in Project cost. RCE under approval.
20	Polavaram Polavaram Project Authority 21.07.2010/ 25.02.2009 12x80= 960 MW Cost: Original: 4956.39 Latest: 4956.39 (Power Component)	Andhra Pradesh <u>2017-18</u> <u>2021-22</u>	Pre-construction and Infrastructural works are in progress. Civil Works:- Civil works awarded on 01/2012-13, 02.03.2013. ECRF DAM: Earth work of 196.32 L.Cum /833.169L.Cum is completed. SPILLWAY: Earth work of 237.74 L.Cum / 362.95 L.Cum is completed & embankment of 1.1457 L.Cum / 2.4907 L.Cum is also completed. POWER HOUSE: Earth work of 79.98 L.Cum / 108 L.Cum is completed & embankment of 9.59 L.Cum / 10 L.Cum is completed. B) HM & E&M Works:- Technical Bids opened on 15.09.17 & works are likely to be awarded shortly.	- Works under progress, however there is Inter State Issue-Public hearing for construction of protective embankment to be held in Oddisha and Chhattisgarh as desired by MOEF.
21	Pulichintala TSGENCO 120 MW (4x30 MW) 25.04.2007	<u>Telangana</u> <u>2009-11</u> <u>2017-19</u>	Dam: Completed Power House: The excavation of power house completed and 76596 cum concreting done against 89850 cum.. E&M Works:	- Unit #1 Commissioned. - Availability of water.

Sl. No.	Name of Project Executing Agency Date of CEA clearance / Approval Capacity (MW) Broad Features Cost (original/latest) In Rs. Crores.	State Comm. Sch. (original / Now Ant.	Broad Present Status / Critical Area	Remarks/ Critical issues
	Broad Features: Design Head: 24 M Power House: Surface Turbine : V. Kaplan Annual Energy: 220 MU Cost: Original: 380.00 Latest: 563.49		EOT Crane: Erection and testing completed for all the units. Unit #1 : Commissioned on 25.09.2016 Unit#2: Mechanical spinning done on 28.12.2016. Commissioning is subject to availability of water. Unit #3: Boxing to be completed by 25.09.2017. Unit#4: Barrel is completed. Assembly of Stator & Rotor in progress.	
22	Pallivasal KSEB 2x30= 60 MW 31.01.2007 Broad Features: HRT: 3.50m X 3396m Surge Shaft: 7.0m X 49m Pressure Shaft: 2.50m X 1019.20m Penstock: 2.nos., 1161.20m each. Power House: Surface Turbine : Pelton S.Yard: 220kV – Single bus Cost: Original: 222.00 Latest : 284.69	<u>Kerala</u> 2010-11 2020-21	Intake structure: Excavation – 28398/33492 cum completed. Leading channel of Water conductor system replaced by cut & cover/soil tunnel and accordingly intake is shifted. HRT: Excavation –2858/3330 m completed. Overt conc. 1634/3330 m completed. Invert Conc.. – 1637/3330 m completed. Surge Tank/Forebay: Exc.–7640/13400 cum. Conc.423/843 cum. Pressure Shaft: Excavation completed. Fabrication of steel liner completed and erection of 96/1096 m completed. Surface penstock: Excavation –105204/122600 cum. Concreting- 11401/12850 cum. Fabrication completed and 1477m out of 2036m erection completed. Power House: Excavation completed. Concreting 3980/11225cum. Tail race Channel (2 Nos.): Excavation & lining completed. E&M Works: 75% supply completed. Erection yet to start.	- Poor Geology. -Contractual Issues. -Works stopped by the civil contractor from 22.07.2015. Now Kerala Government has ordered on 16.01.2017 to exclude the contract from the status of foreclosure. Accordingly, KSEB decided on 27.03.2017 to complete the project with the existing contractor and the contractor expressed their willingness to resume the remaining works of Pallivasal Extension Scheme. The mobilization of balance works of Pallivasal Scheme has been commenced on 11.04.2017.
23	Thottiyar KSEB 1x30 + 1x10= 40 MW 05.06.2008 Broad Features: Weir: 222m Long 11 blocks 7.5m height Tunnel: Circular 2.6m dia 199m long. Power House: Surface Turbine : Vertical Pelton Cost: Original: 136.79 Latest: 150.02	<u>Kerala</u> 2012-13 2020-21 (Subject to re-start of works)	Civil Works: Weir: 3258 cum excavation out of total 5850 cum and 1598 Cum concreting out of 8690 Cum completed. Approach Channel & Intake: 3184 cum out of 9100 cum done. Power Tunnel : Excavation completed. Power House, switchyard & allied works: 31390 cum excavation out of 44500 cum and 2658 cum concreting out of 15675 m done. E&M and HM Works: Supply of equipment in progress. Erection yet to start.	-Works are stand still since 2015 due to Contractual Issues. Accordingly the contractor put forwarded a proposal for foreclosure of the project due to their financial stringency. The detailed note regarding the same was submitted to the Board and the Board has approved and directed to the authority to float the NIT for balance works.
	Private Sector			
24	Ratle Ratle Hydro Electric Project Pvt. Ltd. 19.12.2012 4x205+1x30= 850 MW Broad Features : Dam Height-133m Length-194.8m Spillway-Radia Gate-(5) Size-10.75x1420 m Diversion Tunnel:2 Nos., Circular (Right	<u>J&K</u> 2017-18 2022-23 (Subject to re-start of works)	EPC Contract for Civil & HM works awarded to M/s GVK Projects & Technical Services Limited on 04.07.2013. The infrastructure works of Road & Bridges was under progress and erection of upstream Bridge completed & downstream Bridge was in progress. Works have been suspended at Project site due to frequent local disturbances since 11.07.2014. Power Development Department, GoJK have been requested to resolve the various critical issues including 1) resolving of disturbance at site 2) restoration of congenial atmosphere and 3) IWT issues for resumption of works at site.	- Presently works are under hold. - Local Issues

Sl. No.	Name of Project Executing Agency Date of CEA clearance / Approval Capacity (MW) Broad Features Cost (original/latest) In Rs. Crores.	State Comm. Sch. (original / Now Ant.	Broad Present Status / Critical Area	Remarks/ Critical issues
	back) Pressure Tunnel:11m dia each. Pressure Shaft : 6.6 m each steel lined. P.House-Underground Turbine- Francis Average Gross Head-100.39m Addl. Unit(30MW) Housed in Main P.H. Cavity) Rated Head-98.9m Cost : Org: 5517.02 Latest : 6257 (09/2013)		Excavation of DT1 (298m out of 472m) & DT2 (192m out of 552m) completed. 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 claim and matter is now sub-judice before High Court of J&K and district court of Kishtwar, J&K.	
25	Sorang Himachal Sorang Power corporation Ltd. June, 2006/ 2x50= 100 MW Broad Features: HRT- 1.5 km Trench Weir-59 m P.House- underground Turbine- Pelton Gross Head-626 m SWYD- 11/400 kV (GIS) Cost: Original: 586.00 Latest: 586.00	<u>H.P.</u> 2012-13 2018-19 (Subject to re-start of works)	All Civil Works completed. Both the units are boxed up. During the filling of water conductor system in 1 st week of Nov., 2013, leakage occurred in penstock due to cracks. Rectification work completed in April, 2015. Unit #1 synchronized with grid on 30.10.2015, however, could not be commissioned due to non-availability of rated discharge. On 18-11-2015 when Unit # 2 was under trial run, there was rupture in the surface penstock pipe. The incidence caused loss of lives and property. The compensation package and funds for repair of penstocks pipe is being worked out with the bankers.	Repair of penstock work
26	Tangnu Romai-I M/s Tangnu Romai Power generation 2x22= 44 MW 20.11.2007 (HPSEB) Broad Features: Barrage at EL ± 2555 m HRT-3.1m dia & 7.220 km length Surge Shaft- 5m dia, Top Level 2570 m & Bottom Level 2520 m Penstock- 2 m dia & 609.3 m length P.House- Surface Turbine – Vertical Francis Cost: Original: 255.00 Latest: 255.00	<u>H.P.</u> 2014-15 2020-21 (Subject to re-start of works)	Civil works awarded on 14.06.2010 to M/s Sai Urja Hydel Project (P) Ltd. Barrage and Diversion Cannel: 26211 cum out of 93800 cum excavation completed. Desilting Chambers & SFTPC: Excavation completed. SFT excavation 420 / 450.66 m completed. HRT: 2826m out of 6300m excavation completed. Power House, Switchyard & Misc.: 60275 m ³ out of 72000 m ³ excavation completed. In February-2015, due to land slide the steel bridge on Pabbar River, connecting Project components has been completely damaged. The restoration works are completed.	- Slow progress of works HRT critical, poor geology. - Works are stalled due to finance issues since Jan, 2015.
27	Bajoli Holi M/s GMR Bajoli Holi Hydro Power Pvt. Limited 31.12.2011 3x60= 180 MW Broad Features Dam Height-66 M Dam Length-178 M Desilting Chamber- 2 Nos. 240 Mx14.5 MX 10.8 M HRT- Length-15.538 Km., 5.6 M dia	<u>H.P.</u> 2017-18 2019-20	Civil Works: awarded to M/s Gammon India Ltd. on 29.05.2013. River : diversion achieved. HRT: 9.5km excavation out of 16km completed. Surge Shaft: Excavation 72m out of 117m completed. Pressure shaft: 93% Excavation completed. Powerhouse: Excavation completed. Spiral casing of Unit-1 completed. Unit-2 – Bottom Pit Liner erection completed and Unit-3 – Draft tube erection and concreting completed.	-Slow progress of works -Poor approach roads -Transmission Line DPR clearance by HP Govt.

Sl. No.	Name of Project Executing Agency Date of CEA clearance / Approval Capacity (MW) Broad Features Cost (original/latest) In Rs. Crores.	State Comm. Sch. (original / Now Ant.	Broad Present Status / Critical Area	Remarks/ Critical issues
	P.H. –Surface Cost: Original 1696.93 Latest 1696.93			
28	Tidong-I M/s NSL Tidong Power Gen. Ltd. 2x50 = 100 MW 28.07.2006 Broad Features: HRT–D-3.5m L- 8461 m P.H. Surface Turbine –Vertical Pelton Cost: Original 543.15 Latest 543.15	<u>H.P.</u> <u>2013-14</u> <u>2018-19</u> (Subject to re-start of works)	Barrage & River Diversion Works: Common Excavation completed and 71700.84/73409.00 open cut rock excavation completed. 32349 cum out of 37647 cum concreting done. Head Regulator & Desilting arrangement: Common excavation completed. 8550 cum open cut rock excavation out of 10,000 cum completed. HRT (8526m): Excavation completed and 1879m lining completed. Surge Shaft: open excavation top 38313 cum / 38500 cum completed. Pressure Shaft: Excavation completed Power house and Tail race channel- 87689 cum out of 92500 cum excavation completed. 10925 cum out of 15878 cum concreting completed. Works are stalled since July, 2016 due to fund constraints.	- Slow progress of works. - Transmission Line critical. - Funds constraint.
29	Phata Byung M/s Lanco 06.10.2008 2x38 MW = 76 MW Broad Features: Dam – 26m high HRT- 3.2 m dia & 9.38 km length Turbine – Frances Cost: Original: 520.00 Latest : 1225.53	<u>Uttara khand</u> <u>2013-14</u> <u>2019-20</u>	Dam concreting: 17800/18000 cum concreting completed. P.H.: Excavation completed & Concreting in progress. HRT: Excavation almost (99%) completed. 1250 m Lining has been completed. Excavation and lining of Intake-I & Intake-II completed. Pressure shaft: Excavation completed & lining is under progress. TRT: Excavation 178/235m completed. E&M Works: Pit liner erection of units completed. EOT Crane installed and Commissioned.	- Works severely affected due to flash floods in June, 2013.
30	Singoli Bhatwari M/s L&T 11.07.2008 3x33 MW = 99 MW Broad Features: Barrage-FRL 1017 m, MDDL 1009 m, Barrage Top 1020m HRT- 4.65m dia & 11.870m length Surge Shaft-10 m dia & 102.85 m length Pressure Shaft-One, 3.80m dia & 358m length Penstock- 3 Nos., 2.20 m dia & 34m, 42m, 48m long. P. House-Surface Turbine-Vertical Francis TRT- Open Channel, 650m length Cost : Original : 666.47 Latest : 1577.00	<u>Uttara khand</u> <u>2012-13</u> <u>2019-20</u>	River diversion – Completed. Dam & Dykes/Barrage: Excavation 98983.78 / 90744 cum and concreting 53489 / 70220 cum completed. HRT: Excavation 10216m / 11257m completed. Overt Concrete Lining 3962m / 11257m completed. Invert Lining 3812m / 11257m completed. Pressure Shaft: Excavation 471 / 506 m completed. PH: Excavation completed & concreting 18150/ 17693 cum completed. Surge Tank: Excavation completed. 241.70 / 5349cum of concreting completed.	- Works severely affected due to flash floods in June, 2013.
31	Maheshwar, SMHPCL 30 12 96/ 29.9.2006 (FC) 10x40= 400 MW Broad Features: Dam-35m High, concrete gravity	<u>M. P.</u> <u>2001-02</u> <u>2018-19</u> (Subject to re-start of	Civil & HM Works: All major civil works completed. All 27 nos radial gates commissioned. Unit Erection: Unit-10: Initial spinning achieved on 14.10.2011. Unit-9 & 8: Ready for spinning. Unit-7: Guide apparatus trial assembly in progress. Unit-6: Erection of turbine embedded parts & foundation	- Completion of R&R works and E&M works. - Works held up due to Fund constraints with developer.

Sl. No.	Name of Project Executing Agency Date of CEA clearance / Approval Capacity (MW) Broad Features Cost (original/latest) In Rs. Crores.	State Comm. Sch. (original / Now Ant.	Broad Present Status / Critical Area	Remarks/ Critical issues
	P.Shaft-10x7.82m x 52m P.House - Surface Turbine- Kaplan Cost: <u>Original: 1569.27</u> Latest: 8121.00	works)	parts completed. Unit-5 to 1: Erection of units is in initial stages. Works suspended since Nov-11 due to cash flow problem with developer. In this regard, a high level committee under the chairmanship of Additional Chief Secretary(Finance) GoMP, was formed on 16 th Oct, 2014 to find ways to complete the project. The committee has submitted its report on 2.5.2015. The committee has recommended three scenarios for commissioning the Maheshwar Project. Under the first scenario, another attempt to compete the project with the present private developer has been envisaged. Timeline for first Scenario has elapsed (2nd August 2015) without the promoter complying with its requirements. Lenders as Govt. companies have acquired majority equity i.e. 51% in SMHPCL w.e.f. 1 st June,2016 though partial invocation of pledged shares and partial conversion of PFC's sub-debt into equity. Rs. 600 crores has been sanctioned by PFC in Jan-17 on account of R&R works and past dues of E&M and HM contractors. Regular disbursement to SMHPCL has been affected in view of adverse order of National Company Law Tribunal (NCLT), Ahmedabad inter-alia declaring shareholding of lenders bad in law. An appeal has been filed against this order, in Appellate Tribunal (NCLAT), New Delhi. Matter is now Sub-Judice.	
32	Teesta-VI LANCO 27.12.2006 4x125= 500 MW Broad Features: Barrage: 34.27m high HRT- 2nos,13.7km long Pressure shaft: 4nos. 5.4m dia. 130m av length, TRT: 4nos 250m av length, 8.5m dia. PH- Under ground Turbine- Francis Cost: Original: 3283.08 Latest : 7542.00	<u>Sikkim</u> 2012-13 2021-22 (Subject to re-start of works)	Barrage and Desilting: Excavation completed & concreting 98% of 380003 cum completed. HRT: Heading excavation 10650m and benching excavation 4270 m out of total 27505 m completed. Overt lining 1550 m completed. Surge Tank: Excavation completed & concreting under progress. Pressure Shaft: Underground excavation of 4 no. pressure shaft completed, lining of one no. pressure shaft completed, balance lining under progress. HM works: 2 nos. radial gates erection in bay 1&2 completed. Erection of 1 st stage embedded parts of radial gates in bay 3&4 under progress. Power House: Excavation completed & conc. 21945 / 44578 cum completed. Concreting to Draft Tube Liners for all the 4 nos. Units completed. Erection of spiral casing of Unit #1 completed. Transformer Cavern: Excavation completed & concreting 2539/7101 cum completed. TRT: Excavation & Lining almost completed.	- Works held up due to financial crunch with the developer.
33	Rangit-IV Jal Power corp. Ltd. 06.07.2007 3x40= 120 MW Broad Features: Dam: Concrte 44m high .HRT : D- 6.4m L- 6.5km Power House : Surface Turbine: Francis Cost: Original:726.17 Latest : 1692.60	<u>Sikkim</u> 2011-12 2019-20 (Subject to re-start of works)	Dam & Intake works: Excavation 409184 / 492775 cum completed and concreting 61045 cum out of 173229 cum completed. Excavation of road diversion tunnel has been completed. HRT: Excavation in progress and 3794 m out of 6488 m completed. Surge Shaft: Excavation has been completed & concreting yet to start. Pressure Shaft: Excavation of Horizontal Pressure Shaft completed. Vertical Pressure Shaft 60.5 m out of 84.7m completed. Power House: Excavation in Power House completed. Concreting 8565 cum out of 19900 cum completed. Desilting chamber: Excavation 2143 m out of 3360 m completed.	Financial crunch with the developer. Work held up since Oct, 2013 due to fund constraints. High Power Hydro Sub Committee (HPC), Govt. of Sikkim has taken a meeting on 20.04.2017 wherein they have agreed to enhance their equity to 51% and asked Lenders, i.e. PFC to

Sl. No.	Name of Project Executing Agency Date of CEA clearance / Approval Capacity (MW) Broad Features Cost (original/latest) In Rs. Crores.	State <u>Comm.</u> <u>Sch.</u> (original / Now Ant.	Broad Present Status / Critical Area	Remarks/ Critical issues
				submit their proposal for making the tariff viable by giving incentives viz reducing rate of Interest, increasing payback period of loan etc so that the project work can be started by Oct.,2017 and balance works can be completed in 3.5 years from revival of project.
34	Bhasmey Gati Infrastructure 2x25.5= 51 MW Broad Features : Dam-33.2m High, Symmetrical gravity HRT-5.3m dia & 5.132 km length , Circular. Surge Shaft- 89.8m Height & 14m dia. P.House-Outdoor Turbine-VF TRT-2 Nos, L- 50m Switchyard-132/11 KV Cost :Original : 408.50 Latest : 690.30	<u>Sikkim</u> <u>2012-13</u> <u>2019-20</u> (Subject to re- start of works)	Project is in initial stage of construction. River diversion achieved. Barrage: 61555cum/194600cum excavation completed. HRT: 1670m/4460m excavation completed. PH: 136105 cum/185937cum excavation completed. Surge Shaft : 8567cum / 22000cum Surface excavation completed.	- Slow progress of works - works stalled since Sept., 2016 due to paucity of funds.
35	Tashiding M/s Shiga Energy Pvt. Ltd. 28.03.2011 2x48.5 = 97 MW Broad Features : Barrage-EL 917m HRT-4.5 m dia & 5.437 km length , Surge Shaft- 61.058m Height & 8.5m dia. Penstock- Length upto Bifurcation 441.53 m After bifurcation 25 m & 30 m long P.House-Surface TRT- Open Channal & 78.5 m length. Switchyard- Outdoor, 220 KV Cost :Original : 465.95 Latest : 465.95	<u>Sikkim</u> <u>2015-16</u> <u>2017-18</u>	All major works completed. Dry commissioning completed and ready for spinning.	- Evacuation of power.
36	Rangit-II Sikkim Hydro Power Limited 10.02.2010 2x33= 66 MW Broad Features : Dam-47m High, Concrete Gravity HRT-3.9m dia & 4.745 km length , Surge Shaft- 65.5m High & 10m dia. Underground Pressure	<u>Sikkim</u> <u>2017-18</u> <u>2019-20</u>	EPC contract awarded to M/s Coastal in February, 2012. Diversion Tunnel: River diversion through diversion tunnel has been achieved. Dam : Excavation 53100 cum out of 85000cum completed. HRT: Excavation 512m out of 4745m completed. Surge Shaft: Excavation completed. Concreting 37/1667 cum done. Pressure shaft: Excavation of pressure shaft-I - 15m out of 128m and pressure shaft-II - 154m out of 377m completed Power House: Excavation of surface power house is being taken up.	Works are stalled due to non releasing of funds by lenders because of Power evacuation and land acquisition issues. Works restarted. A meeting with financiers were held on 23.09.2016 for release of funds. The developer was asked to submit certain document for release of funds.

Sl. No.	Name of Project Executing Agency Date of CEA clearance / Approval Capacity (MW) Broad Features Cost (original/latest) In Rs. Crores.	State Comm. Sch. (original / Now Ant.	Broad Present Status / Critical Area	Remarks/ Critical issues
	Shaft : 1.7 m dia & 2.5 km length. P.House-Outdoor Turbine- Pelton Vertical Swityard- GIS, 132/11KV Cost : <u>Original</u> : 496.44 Latest : 496.44			
37	Rongnichu Madhya Bharat Power Corporation Ltd. 01.10.2008 2x48= 96 MW Cost : <u>Original</u> : 491.32 Latest : 1187.00	<u>Sikkim</u> <u>2015-16</u> 2019-20	The civil works have been awarded to M/s SEW Infrastructure Ltd. and E&M works to M/s Voith Hydro Power Pvt. Ltd. Barrage : Excavation completed & 25208/40674 cum concreting completed. HRT : 73% Civil Works completed. Surge shaft : 49m excavation out of 88m completed. Pressure Shaft : 97% Civil works LHPS & 48% Civil works of VPS completed. Power House : 14302 out of 29626.54cum of Excavation completed. 5459/22429 cum Concreting has been completed.	- Land acquisition. - Poor geology.
38	Panan Himagiri Hydro Energy Pvt. Ltd. 07.03.2011 4x75= 300 MW Broad Features : Dam-115m from deepest foundation level Desilting Chambers : Underground, 2 Size (14Lx22Wx2.5H) HRT- modified horse shoe, 6 m dia & 9549m length , Surge Shaft- 102 m High & 15m dia. Pressure Shaft : 2/4, 3.4/2.4m dia, 707.4 m-Height P.House-Surface Turbine-Vertical Francis Cost : <u>Original</u> : 1833.05 Latest :2491.00	<u>Sikkim</u> <u>2018-19</u> 2022-23 (Subject to re-start of works)	Civil works awarded on 22.02.2014. Infrastructural works and geological investigations are in progress. Starting of civil construction works in full swing was earlier held up for want of the National Board of Wild Life (NBWL) clearance. NBWL clearance obtained in December, 2015. However, there is a case challenging the Eco-Sensitive zone notification of MoEF & Climate Change in NGT. The case is disposed on 21.8.2017. The developer applied for issuance of clearance from Forest, Environment & Wild Life Management Dept., Govt. of Sikkim.	- NBWL clearance.
39	Gongri Dirang Energy Pvt. Ltd. 04.02.13 2x72= 144 MW Broad Features : Barrage-H-29m, L- 216.5m MDDL- EL 1447m Spillway-2nos. Radial Gates; 2 Nos. 10.5m x 13m Intake: EL1438m Desilting Chambers : 2 nos. (260Lx13Wx16H) HRT- modified horse shoe, 5.8 m dia & 7137m length , Surge Shaft- 92 m High	Ar. Pradesh <u>2017-18</u> 2020-21 (Subject to re-start of works)	EPC contract for all works awarded to Patel Engineering Ltd., Mumbai on 22-11-2011. TEC accorded on 04-02-2013 & Financial closure achieved on 15-02-13. The EPC contract for E&M works has been awarded to M/s. Andritz Hydro Pvt. Ltd. Consent to establish from State Pollution Control Board was issued on 19-05-2014. Barrage: 23400cum excavation out of 1.185 Lakh cum completed. Power House & Switchyard : Open Excavation 68500cum out of 2.15 Lakh cum completed. Construction work stalled since October, 2016 due to funds constraints with developer.	-Works awarded on 22.11.2011. However, consent to establish from SPCB was issued on 19.05.2014 -Works stopped since October, 2016 due to funds constraints with developer.

Sl. No.	Name of Project Executing Agency Date of CEA clearance / Approval Capacity (MW) Broad Features Cost (original/latest) In Rs. Crores.	State Comm. Sch. (original / Now Ant.	Broad Present Status / Critical Area	Remarks/ Critical issues
	& 13m dia. Pressure Shaft : 4.4m dia, 647.26m length bifurcating into 3.1m dia & 28.51m & 34.5m length P.House-Surface Turbine- Vertical Francis Cost : Original: 1436.27 Latest :1436.27			

Status of Hydro Electric Projects in Bhutan

Sl. No.	Name of Project / Capacity (MW)/ Executing Agency/Date of CEA clearance / Approval / Broad Features/Commissioning Schedule	Award of works	Broad Present Status
1.	Punatsangchhu-I 6x200=1200 MW PHPA, Bhutan Date of TEA: 27.07.2007 Broad Features : Dam – 136m High, 279.2m long, Concrete gravity (RCC) HRT- 10m x 8.948 km Pressure Shaft: Two nos. 6.0mx482.20m each Surge Shaft: 24.5mx128.5m TRT: 10.0m x1182.20m P.House-Underground Turbine- Vertical Francis SWYD- 400 kV Commissioning Schedule: Nov' 2016 Anticipated commissioning schedule : 2021-22	Civil Works: Package-I : L&T Ltd. on 27.03.2009 Package-II: Gammon India Ltd on 27.03.2009 Package-III:HCC ltd. 27.03.09 E&M Main Works: Package-I : BHEL Ltd. on 04.02.2010 Package-II: BHEL Ltd. on 27.02.2012 Package-III:Hyosung Corporation on 28.02.2012 Package-IV: SudkabelGmbh on 27.05.2011 Package-V: Schneida Electric Ltd. on 21.11.2013. Transmission Works: Joyti Structures & Gammon (India) JV on 12.08.2010 (Ammended on 10.6.2013)	Dam: Excavation 66.55 lac cum out of 70.45 lac cum is completed. Concreting yet to be taken. Excavation of dam pit was hampered due to movement & subsidence at right bank hill. Desiltingchamber: Excavation &concreting completed. HRT: excavation and lining completed. Surge Shaft: Boring & Lining completed. Pressure shaft: Excavation is completed and back fill concreting 1147m completed out of 1460m. Power House: Excavation, Construction of Service Bay and Construction-I at D/T level completed. Construction-II at Auxiliary Bay Level 4525cumec out of 10260 cumec completed. TRT: excavation completed and overt lining completed. E&M works: Assembly & welding of Spiral Casing segments of unit#4 is in progress.Assembly of Stators for Unit #1,#2& # 3 completed . Rotor for Unit #1& #2 is erected. Critical: Movement & subsidence at right bank hill. Completion of dam works.
2.	Punatsangchhu-II 6x170=1020 MW PHPA, Bhutan Date of TEA: 30.04.2010 Broad Features : Dam – 86m High, 213.5m long, concrete gravity HRT- 11m x 8.585 km Pressure Shaft: 3 nos. 5.5mx997m each Surge Shaft:31 m x137m TRT: 11.0m x3163m P.House-Underground Turbine- Vertical Francis SWYD- 400 kV Commissioning Schedule: June' 2017 Anticipated commissioning schedule: 2019-20	Civil Works: Package- CI : JP Associate Ltd. on 25.07.2011 Package-CII: Gammon India Ltd on 25.07.2011 Package-CIII: JP Associate Ltd. on 25.07.2011 E&M Main Works: Package-I: BHEL Ltd. on 18.07.2012 Package-II: BHEL Ltd. on 7.05.2013 Package-III: Hyosung Corporation on 7.05.2013 Package-IV:LS Cables & System Ltd. on 7.05.2013 Transmission Works: Bhutan Power Corp.Ltd on 21.03.2013 (on deposit work basis)	Dam: Excavation completed. Adverse geological situation faced at the left bank of the dam. Conc. 31996 cum completed out of 886000 cum. HRT: heading excavation 5828 m out of 6314m completed. Benching excavation 4054.5 Km out of 6314m completed. Overt lining 3595.56 m and Invert lining 928.81 m completed out of 6314 m. Surge Shaft: Excavation & Lining (Overt) completed. Pressure Shaft: Excavation Completed. Top, Horizontal and Vertical portion Liner completed. 1244m out of 1454m steel lines erected in horizontal portion. Power House: Machine hall excavation Completed. Erection of Draft tubeliners for Unit #2 & #3 is completed, and for Unit #1, #4, #6 are in progress. Transformer Hall excavation completed. Excavation of Down Surge Chamber Gallery completed (60%). On 02-03 March,2016, massive rock fall from the roof

Sl. No.	Name of Project / Capacity (MW)/ Executing Agency/Date of CEA clearance / Approval / Broad Features/Commissioning Schedule	Award of works	Broad Present Status
			<p>of downstream Surge Gallery occurred.</p> <p>TRT: Heading Excavation: 2988m completed & 2394m overt lining also completed.</p> <p>Critical:</p> <ul style="list-style-type: none"> - Dam is critical. Adverse geological situation faced at the left bank of the dam. - Restoration & completion of downstream Surge gallery works.
3.	<p>Mangdechhu HEP 4x180=720 MW MHPA, Bhutan Date of Approval:: 30.04.2010 Broad Features : Dam – 114m High, 141.28m long, Concrete gravity HRT- 6.5m x 13.561 km Pressure Shaft: Two nos. 3.5mx1856m each Surge Shaft:13.5 m x152.0m TRT: 8.0m x1295m Power.House-Underground Turbine- Pelton Vertical axis SWYD- 400 kV Commissioning Schedule: Sep'17 Anticipated commissioning schedule: 2018-19</p>	<p>Civil Works: Package-I : JP Associate Ltd. on 20.03.2012 Package-II: Gammon India Ltd on 20.03.2012 Package-III:JP Associate Ltd. on 20.03.2012 H&M Works: Package-IV: PES Engg.Pvt.Ltd. on 20.03.2012 E&M Works: Package-I: BHEL Ltd. On 07.01.2013 Package-II: Alstom T&D India Ltd. on 20.03.14 Package III: M/s Hyosung Corp. South Korea on 22.04.15 Package IV: M/s LS Cable & Systems Ltd., South Korea on 22.04.2015 Transmission works: Kalpataru Power Trans Ltd. on 1.01.2013</p>	<p>Dam: Excavation is almost completed. Concreting started in May,15 and 3.82 Lakhs cum completed out of 4.68 lakhs cum.</p> <p>HRT: 13.460 Km (99.6%) Excavation and 4.006 Km (30%) Overt lining & 1.894 km Invert lining completed out of 13.52 km.</p> <p>Pressure shaft: Excavation is completed.</p> <p>Surge Shaft: Lining completed (97%).</p> <p>Power House: 15900 cum completed out of 18000 cum.</p> <p>Tail Race Tunnel : Completed.</p> <p>H&M Works: Fabrication (91.7%) and erection (55.7%) completed.</p> <p>E&M works: Stator dry out completed. Assembly of 1 & 2 Rotor completed.</p> <p>Critical: HRT & Pressure Shaft are critical.</p>