**Status of Under Execution Hydro Electric Projects (above 25 MW) in the Country**

**(As on 31.03.2022)**

| 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** |
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| A | **Central Sector** |  |  |  |
| 1 | **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  **Cost:**  Original:3919.59  Latest**:** 9897.59  (04/20 PL)  **Contractors**  Civil : Gammon / Valecha  HM : Om Metals  E&M : BHEL | H.P.  2009-10  2023-24  (Sep’23) | **CIVIL WORKS**  **Dam & Intake Structure (83.7m high and 3.7m D-shaped intake structure) -** Completed.  **Head Race Tunnel (6m diameter, 31.545Km long) –**  30.61 km **(97.04%)** excavation out of 31.545 km completed.  TBM excavation resumed since 16.10.2015 and 3052.82 m advancement has been made till 28.02.2022. Progress during the month hampered due to frequent derailment of muck cars & loco. Further, accumulation of muck behind the cutter head due to ingress of ground water also hampered the progress of work. Muck removal is being done manually which requires considerable time resulting in longer cycle time for excavation.  The work at DBM front came to stand still on 12.07.2021 due to heavy ingress of water of about 6000-8000 LPM resulting in flooding of tunnel which could not be controlled with existing dewatering arrangement. Dewatering capacity was augmented by deploying additional resources i.e. high capacity pumps, dewatering pipe lines.  After dewatering of tunnel, ingress of water could be channelized on 28.09.2021. Thereafter, Probe drilling & Face treatment carried out & despite of injection of approx. 3 Ton PU grout, no reduction in ingress water is observed. Tunnel detoured on left side at RD 4980 m i.e. 20 m behind the face i.e. RD 5000 m at an angle of 30 degrees. First blast for detouring the tunnel taken on 31.10.2021.  After, moving ahead cautiously with the help of Pre-grouting (microfine/PU) & probe drilling up to 61 m on detoured alignment, ingress of about 100-300 LPM was observed from a rock joint on right hand side during drilling activity on 29th & 30th Nov’21. Subsequently, flow of fine sand & slush material resulted in choking of pumps. As a result, tunnel was flooded with water upto RD 3570 m.  Tunnel could be dewatered on 09.01.2022 and major ingress water channelized from the face RD ±5002 m to RD ±2700 m through 200 mm dia. MS pipe successfully, where a major pumping station has already been set up comprising of multiple dewatering pumps. Gate valves were connected on either side of the T-joint to regulate the water and major ingress of water.  After Silt removal, cavity treatment, rib erection & necessary face treatment, excavation of HRT re-started on 24.01.2022. Further, weak zone encountered on left side resulting in wedge failure on 28.01.2022 along with continued popping sound which strengthened with additional rock anchors and placing SFRS. Excavation with all safety precautions is in progress. However, progress remained very less during the month due to encountering of weak zone in right side of tunnel resulting in continuous loose fall. Further, intermittent popping sound and rock bursting from left side also hampered the progress of HRT excavation. Weak zone is being negotiated with the help of pre-grouting with Cement/Microfine cement grout, Self-Driving Anchors (SDA), Rib support, wire mesh, rock anchors, forepoles, pipe roofing, cement capsule, SFRS and backfill concreting etc.. Pre-grouting with cement /micro-fine cement was attempted on 24/25.02.2022, however, it was observed that pre-grouting was not found effective as not much micro-fine cement could be injected in these pre-grout holes.  **Total Overt lining:**  27.92 km (**88.5%)** lining out of 31.545 km completed.  **Power House (23.5m x 39.7m x 123m size):** Completed.  **Nallah Works -Completed**  **ELECTROMECHANICAL WORKS:**  All the Units were Synchronized with grid at part load using water from Jiwa Nallah. After fire incident on 29.07.2020, generation got suspended. After restoration works, Unit#1 and Unit#2 synchronized with grid on 17.08.20 & 29.08.20 respectively and generation restored. Restoration works of remaining 02 units are in progress.  **HYDROMECHANICAL WORKS**: All the major HM works completed. | - Completion of 932.90 m balance HRT Excavation. |

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| 2 | **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 Lenghth 1070m & 1160m  Turbine: VF reversible pump turbine  **Cost:** Original: 1657.60  Latest**:**4835.60  (02/2019 PL)  **Contractors**  Turnkey : Alstom, France/ HCC | Uttara khand 2010-11  2022-24  (June’23) | Upstream (Tehri Dam) and Downstream (Koteshwar Dam), intake and Head Race Tunnels (2 Nos.) already completed alongwith Tehri Stage-I works.  **Widening of Upstream Surge Shaft-3&4 (Depth 140m each):** Cumulative widening completed in a depth of 138 m in each.  **Downstream Surge Shaft-3&4 (Depth 80.9 m each):** Widening of DSSS-3 & 4 has been completed.  **Butterfly Valve Chamber (BVC 78X10X26m):** Excavation completed.  **Penstock Assembly Chamber (PAC 95X12X19.30 m):** Excavation completed.  **Upper Horizontal Penstocks (UHP):** Excavation is in progress.  **Vertical Penstocks(4 Nos. each of Dia 6.1 m and 135 m depth):**  Excavation completed.  **Power House (203m x 28.20m x 56m size):** Excavation completed and erection of EM equipment is in progress in all 4 units.  **Control Room:** All 9 slabs have been casted. Further, cleaning work is in progress and architectural works are being taken up.  **Tail Race Tunnels- 3 & 4 (2406 m):**  Excavation: -Heading& Benching: Completed 2123 m & 1680 m respectively.  Lining - Invert& Overt: Completed 1641 m & 1049 m respectively.  **E&M Works:** Both EOT cranes have been commissioned in service bay . | - Poor Geology in under ground works of BVC, PAC, TRT, PH Cavern etc.  - Slow progress of works  - Cash flow crisis with M/s. HCC. |
| **3** | **Subansiri Lower**  NHPC  09.09.2003  8x250= 2000 MW  (1000 MW in 12th 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**:19992.43**  (04/17 PL)  **Contractors**  Civil : BGS-SGS-Soma JV  HM : Texmaco  E&M : Alstom | Arunachal Pradesh  Assam  2009-11  2022-24  (Unit#1&2 in 2022-23 and Unit#3-8 in 2023-24) | **➢ Dam (116m high and 284m long):- Dam concreting 16.05 lac Cum (78%) out of 20.56 lac Cum & Intake concreting 272940 cum (97.7%) out of 279454 cum completed.**  **➢ HRT (Total length-7102 m, 9.5m diameter):-99.5% heading excavation, 93.5% benching excavation, 81.6 % concrete overt lining and 47.2 % Invert lining completed.**  **➢ Surge Tunnel (8 nos., 9.5 M dia, Horse Shoe):-Heading excavation 90.5% & benching excavation 52.5% completed.**  **➢ Pressure Shaft (8 nos. 9.5/8/7 dia.):- PS liner 681 m (43%) out of 1594m completed.**  **➢ Power House (285m x 61m x 64m size):-Cumulative Power house concrete qty achieved 271991 cum out of 512000 cum (53.12% achieved so far).**  **➢ E&M Works:-**  **Unit-1: Stator in pit, Rotor and Turbine assembly is in progress.**  **Stator: Cleaning of winding is in progress.**  **Rotor: Assembly of lower bracket with hub is completed. Assembly of Lower Bracket with Arms completed. Assembly of brake jack on lower bracket arms completed. Preparations and arrangements for Lifting of Generator lower shaft is in progress.**  **Turbine: Fitting of intermediate bushings on wicket gates completed. Installation of Wicket Gate Upper bush is in progress. (Cumulative progress 06/24)**  **MIV: Erection work of MIV of Unit-1 started and in progress.**  **Erection work at GSU transformer started and in progress.**  **Unit-2:**  **Rotor: Stacking of rim lamination is in progress. (Cumulative progress 908 mm/2336mm). Preparations for 1st press of rim lamination completed.**  **Stator: All segment of Stator frame lowered in pit and assembly completed. Fixing of intermediate key bars is completed. (Cumulative progress 135/135). Measurement of radius of intermediate key bars is in progress.**  **Turbine: Matching of DT part 1 is in progress.**  **Unit-4: Draft Tube installation is in progress.**  **Unit-5: Installation of bracings inside Draft Tube sections completed.**  **Unit-6: Draft Tube Drainage Box of Uni-6 lowered on 06.02.22 and in progress.**  **Other works like Cable laying, Cable tray installation, cooling water pipeline work at Unit-1 & 2, Fire hydrant pipelines work etc. are in progress.**  **➢ HM Works:**  **Erection of Diversion Tunnel Gates: 96.66 % completed.**  **Erection of Intake Gates: 76.48% completed.**  **Fabrication of ferules and erection work of Pressure shaft liner is in progress**  **Out of total 1594m, 681 m pressure shaft steel liner erected. (43% completed)** | Signing of PPA is pending with Govt. of Delhi. |
| 4 | **Naitwar Mori**  SJVN Limited  16.10.2017  2x30=60 MW  Broad Features :  Barrage: 30.5m height  HRT: 5.6m horse shoe, 4330m long  Pressure shaft: 4m dia, 109m long  Surge shaft: 18m dia, 51.65m height  **Cost :** Original: 648.33 (10/2016 PL)  Latest : 947.89 (12/2020 PL) under apprroval  **Contractors**  Civil : JP Associates  HM : GMW  E&M : Voith | Uttara khand 2021-22  2022-23  (Jan’-23) | * **Barrage (30.5m high above deepest foundation, Length at top 48.9m ):-** Barrage excavation 1,37,875cum (98%) out of 1,40,000cum completed. Concreting:41931 cum (97%) out of 43065 cum completed. Desilting tank excavation completed. Concreting: 54111 cum (92%) out of 59000 cum completed. * **Diversion channel completed.** * **HRT- (5.6m modified Horse Shoe Shape, 4329 m long):-** Excavation of HRT completed, Overt Lining: 3455 m (80%) completed and invert Lining started * **Surge Shaft (18m dia, 50.28m height):**- Excavation completed and Lining in progress. * **Pressure shaft (4.0m dia, 97.50 m long):**-95.50 m (98%) excavation completed. Excavation completed and Lining in progress. * **Power House (Underground 57.70m x 18.60m x 33.07m size):-**Excavation of Power House cavern: 53185 cum (98.04%) out of 54250 cum completed. Concrete works in progress * **Tail Race Tunnel (D-shaped, 8.0m (W) x 8m(H), 235.62m long, TRC-6.0m(W)x5.75m(H), 60.39m long):**- Outfall structure completed. Tail race channel work is in progress. * **E&M works:** Erection of E&M components of both units are in progress. EOT crane is operational. | * Completion of Powerhouse/ Barrage * Completion of transmission line |
| **B** | **State Sector** |  |  |  |

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| 5 | 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**:**1581.01  **Contractors**  Civil : Gammon / MPCC  E&M : BHEL | Uttarakhand 2014-15  2022-23  (May,22) | All civil works have been completed. Now the R&R issues have been resolved. The transmission line is ready. | -Dam and E&M works are Critical.  -Local issues regarding compensation under R&R package. |
| 6 | **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: 550.00  **Contractors**  Single Package (Except Intake & balance Tunneling works)  ESSAR – DEC – CPPL JV  -M/s Bumi-Zillion JV  (for Intake works & balance Tunneling works)  -M/s Anchor structure-PSE-SSIPCJV, M/s. Shri Sarvasana Industries Pvt. Ltd. | Kerala 2010-11  2022-23  (Mar’23) | Contract for Civil &HM works has been terminated w.e.f. 13.09.18. Balance work has been re-tendered on the risk & cost of Contract, Subsequently balance works have been awarded to M/s. Sri Sarvasna Industries Pvt. Ltd. and M/s. DSE Anchor Structure.  **Intake structure:** Excavationcompleted.  Leading channel of Water conductor system replaced by cut & cover/soil tunnel and accordingly intake is shifted.  **HRT:** Excavation **–**3388/3347 m completed.  Overt conc. 2941/3347 m completed.  Invert Conc.. – 2400/3347 m completed.  **SurgeTank / Forebay:** Excavationcompleted. Concreting.650/843 m3 completed.  **Pressure Shaft:** Excavation completed. Fabrication of steel liner completed and erection of 1096/1096 m completed.  **Surface penstock:** Excavation **–**12000/122600 m3. Concreting- 122800/12850 m3 and 1986m out of 2036m erection completed.  **Power House:** Excavation & Concreting completed.Balance work from FACE II tunnel to Power HouseContractor- M/s. Anchor Structurals  **Tail race Channel (2 Nos.):** Excavation & lining completed.  **E&M Works:** 75% supply completed, balance of E&M works –Tendering finalized.  **The overall progress achieved :- 88.67%.** |  |
| 7 | **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**:**  280  **Contractors**  Civil & HM : PRIL- Sri Sarvana Industries | Kerala2012-13 2022-23  (Mar’23) | Original contract for Civil & HM works foreclosed without risk & cost of Contractor M/s. Coastal Project Ltd.  -Civil & HM works re-awarded to M/s PRIL-Sri Sarvana Industries Pvt. Ltd. on 05.01.2018.  KSEB decided to execute E&M works departmentally & tendering was awarded to M/s Fitwell.  **Civil Works**:  **Weir:** 70% completed 9 out of 11 block completed.  **Approach Channel & Intake**: 4011 m3 excavation out of 9584 m3. done.  **Power Tunnel**: Excavation & Concreting completed. Steel line fabrication and erection completed.  **Penstock, Anchor, Rocker support:** - Excavation 32932 m3 out of 37839.37 m,3. concreting 6138 m3 out of 12082 m3 completed, Fabrication of penstock 1953 MT out of 2286.32MT completed and erection 1544 out of 2341 MT completed.  **Power House, switchyard & allied works**: 40283/43690 m3 excavation and 9670 /16209 m3 concreting completed.  **E&M Works:** Tender for erection of supplied Electro/ Hydro Mechanical equipment for power house was awarded to M/s Fitwell. Work commenced on 10.07.2020 and at present 54% work have been completed. | Lok down imposed to prevent spread of Covid-19 pandemic has affected the achievement of the target progress. Due to restriction ,Civil Contractor failed to the arrange the work in separate shift and also the arrangements round the clock and hnce the work at several work fronts was delayed |
| C | **Private Sector** |  |  |  |
| 8 | **Tidong-I**  M/s Statkraft India Pvt. Ltd.  2x50 = 100 MW  28.07.2006  **Broad Features:**  HRT–D-3.5m L- 8461 m  P.H. Surface  Turbine –Vertical Pelton  **Cost:** Original543.15  Latest 1472  **Contractors**  Civil &HM : SCL Infratech / Himalaya  E&M : Alstom | H.P.  2013-14  2022-24  (April-23) | **Barrage& River Diversion Works:** Common Excavation completed and 71700.84/73409.00 open cut rock excavation completed. 32144 cum out of 37159 cum concreting done.  **Head Regulator & Desilting arrangement:** Common excavation completed. 9763 cum open cut rock excavation out of 10,000 cum completed.  **HRT (8409m):** Excavation completed and 7925/8409 m lining concreting has been completed.  **Surge Shaft:** Excavation completed. Full steel lining remaining.  **Pressure Shaft:** Excavation completed. 80% lining remaining.  **Power house and Tail race channel**- 87709 cum out of 92500 cum excavation completed.  11237 cum out of 16156 cum concreting completed.  Overall 92 % of Powerhouse civil works completed.  E&M works Supply 97% completed and erection 90% Mechanical works and 50% Electrical works completed.  The work of transmission line is critical due to forest land clearance for 17 towers out of 54 towers due to realignment of the transmission line.  M/s Statkraft India Pvt Ltd has acquired the 100% equity of the project on 04.09.2018 | * Transmission Line critical. |