Foundation stone laid for 2880 MW Dibang project in India ...

India's Prime Minister, Narendra Modi, laid the foundation stone of the 2880 MW Dibang multipurpose hydro storage project in the northeastern state of Arunachal Pradesh on 9 March. The scheme, on the river Dibang in the Lower Dibang Valley District, will be the country's largest capacity hydro plant and will feature the country's highest dam, when commissioned in 2032. The project, which is being developed by National Hydroelectric Power Corporation (NHPC) at a cost of more than INR 318.75 billion (US$ 3.82 billion), will feature a 278 m-high RCC gravity dam, six horseshoe-shaped headrace tunnels varying from 300 m to 600 m in length, an underground powerhouse with twelve 240 MW units and six horseshoe-shaped tailrace tunnels varying from 320 to 470 m.

The construction of access roads and the diversion tunnel, which is being carried out by Larsen and Toubro, began in December 2023.

Bharat Heavy Electricals Limited (BHEL), India's state-controlled power engineering group, is to supply the complete electro-mechanical equipment after winning a tender in September 2023 (see *H&D* Issue 5, 2023). Dibang Power Consortium, comprising Patel Engineering, with an unnamed joint venture partner, was awarded an EPC contract in August 2023 for part of the civil works, including the headrace tunnels, intake, pressure shafts, penstocks, powerhouse and transformer cavern, tailrace tunnel, and adits. A joint venture of Studio Pietrangeli and SMEC India was appointed by NHPC in January 2024 to carry out the design and supervision of construction of the dam (see *H&D* Issue 1, 2024). A tender for construction of the main dam and cofferdams will be launched after finalization of the technical parameters by the design and engineering consultant.

The project is designed to generate 11 223 GWh in a 90 per cent dependable year, harnessing a net head of 222.5 m, as well as to control downstream flooding. For the purpose of flood mitigation, the reservoir, with a full capacity of 1282×10^6 m^3, will be kept below the full reservoir level during the monsoon seasons. It is one of a series of dams planned to control flooding on the rivers which feed the river Brahmaputra and mitigate the perennial damage caused by floods in the northeastern state of Assam, located below Arunachal Pradesh. Dibang is one of the main tributaries of the Brahmaputra. It and the river Lohit merge with the river Dihing in eastern Assam to form the Brahmaputra.

The project will provide 12 per cent free power for the state and an additional one per cent free power for the Local Area Development Fund, according to the Ministry of Power. The project will help the state and the country to progress towards their net zero targets and will lead to employment opportunities and socio-economic development in the region; the project could provide direct employment for up to 500 people during construction, and 300 people when in operation.

Celebration in India as the Dibang multipurpose hydro storage project goes ahead; it will feature the country's highest dam, when commissioned in 2032.

... as large hydro will increase by 50 per cent in the country by 2031-32

Meanwhile, hydropower projects with an aggregate capacity of 15 GW are under construction in India, which will increase the installed capacity of the country's large conventional plants by more than 50 per cent from 42 to 67 GW by 2031-32, the Ministry of Power announced in April. In addition, three pumped-storage projects totalling 2.7 GW are currently under construction while an additional 50 GW is in various stages of development. It is anticipated that pumped-storage capacity will increase from 4.7 GW at present to approximately 55 GW by 2031-32.

Highlighting the pivotal role of hydropower in India's energy landscape, the Ministry of Power has stressed its significance in providing essential peaking power to the grid, enhancing the reliability and resilience of the power system. The Government of India has adopted a proactive approach towards hydro development to accelerate progress towards meeting the country's clean energy targets; and in particular, pumped-storage will provide greater inertia and balancing power to the grid, and will help integrate the significant volumes of intermittent renewable energy that are planned.

The Government has set targets to increase non-fossil fuel power generation capacity to 500 GW by 2030 (including around 280 GW of solar) and to achieve net-zero greenhouse gas emissions by 2070.

The vast majority of new large hydro (larger than 25 MW) is being developed in the northern states by central public-owned utilities, including NHPC, either alone or through CVPPL, and SJVNL. In Arunachal Pradesh, two projects totalling 4880 MW, are under construction. NHPC expects to commission the 2000 MW Subansiri Lower run-of-river scheme before the end of next year, and the 2880 MW Dibang multipurpose project by 2032. Five large projects totalling 3051.5 MW are being built in the Indus river basin, in the state of Jammu and Kashmir including the 1000 MW Pakal Dul, 624 MW Kiru, ands 540 MW Kwar projects by CVPPL for commissioning during 2026, the 850 MW Ratle project by RHEPPL and NHPC for commissioning in 2026 and the 37.5 MW Parnai plant by JKSPDC in June 2024.

Meanwhile, nine run-of-river projects totalling 2446 MW are under construction in Himachal Pradesh (800 MW Parbati Stage II by NHPC for commissioning in 2024-25, 100 MW Uhl III by Beas Valley Power Corporation (BVPC) for operation in 2024-25, 150 MW Tidong-I by NSL Tidong for operation in 2024-2025, 450 MW Shontong Karcham by HPPCL for operation in 2026-27 (November 2026), 240 MW Kutehr by JSW Energy (Kutehr) Power (JSWEPL) by 2025-26 (November 2025), 210 MW Luhri Stage I by SJVNL for commissioning in 2025-26, 66 MW Dhaulasidh by SJVNL for operation in 2025-26 (November 2025), 382 MW Sunni dam by SJVNL for operation in 2027-28 and 48 MW Chanju-III by HPPCL in 2027-28.

In Punjab, there is a single run-of-river project under construction, 206

MW Shahpurkandi Ravi, which is scheduled to be commissioned in October 2025, and three conventional projects totalling 1264 MW are under construction in the state of Uttarakhand (444 MW Vishnugad Pipalkoti by THDC, 520 MW Tapovan Vishnugad by NTPC and the 300 MW Lakhwar multipurpose project by UJVNL, for commissioning in June 2026, December 2025 and October 2028, respectively).

In Kerala there are three conventional projects totalling 140 MW under construction by KSEB (60 MW Pallivasal Extension and 40 MW Thottiyar run-of-river projects, which are planned for commissioning in 2024, and the 40 MW Mankulam storage project, which is scheduled for completion in May 2026).

In West Bengal, NTPC is building the 120 MW Rammam-III run-of-river station in Darjeeling, which is set to be commissioned in July 2025. Two projects totalling 620 MW are under construction in Sikkim. NHPC expects to complete the 120 MW Rangit-IV project in August 2024, while commissioning of the 500 MW Teesta St. VI project in South Sikkim is scheduled for 2026. In Assam APGCL is constructing the 120 MW Lower Kopili run-of-river project for commissioning in Q1 2025.

Three pumped-storage projects totalling 2700 MW are also under construction and scheduled to be commissioned this year: Tehri (1000 MW) in Uttarakhand by THDC, Kundah (500 MW) in Tamil Nadu by TANGEDCO, and Pinnapuram (1200 MW) in Andhra Pradesh by Greenko. Greenko has also launched pre-construction work on the 1440 MW Gandhi Sagar project in Madhya Pradesh. Construction of the Koyna Left Bank (80 MW) scheme is on hold, with commissioning expected in 2027-28. A further 27 projects totalling 29.9 GW have been allotted by states and are at various stages of development.

Repower Energy signs deal with NIA for mini hydro projects

The renewable energy developer Repower Energy Development Corporation (REDC) of the Philippines has signed an agreement with the National Irrigation Administration (NIA) for the development of several mini hydro plants. The wholly owned subsidiary of Pure Energy Holdings Corporation had requested NIA's permission to conduct studies on the economic, financial, and technical viability of the projects in three areas where the agency has existing infrastructure, the company announced on 9 April.

These projects cover river irrigation systems in Tayabas, in the province of Quezon, and in Santa Justina in Iriga City, in the province of Camarines Sur, both on the Island of Luzon; and in Pilar on the island of Bohol in the country's Central Visayas region. The studies, which will be conducted for a limited period of one year, is planned to be financed by REDC. This run-of-river hydropower developer, has a portfolio of 124 MW of mini hydro projects under development in Laguna, Quezon, Camarines Sur, Bukidnon, and other provinces across the archipelago.

The company is currently constructing a 4.5 MW hydro plant in Quezon and a 20 MW plant in Bukidnon. Both are scheduled to begin operation by late 2025.