



BIMSTEC ENERGY CENTRE

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Message from Executive Director, BIMSTEC Energy Centre



Welcome to the 6th Edition (Oct 2026) of the BIMSTEC Energy Centre (BEC) Quarterly E-Newsletter (July–September 2026).

The July–September 2026 quarter witnessed continued progress towards cleaner, smarter, more resilient and increasingly interconnected power systems, with renewable energy, energy storage, digitalisation, cybersecurity and cross-border electricity trade emerging as key themes.

A major highlight of the quarter was the BEC's capacity building programme on "Cybersecurity in Energy Infrastructure", organised on 11 August 2026. The programme emphasised that cybersecurity is integral to the reliability, safety and continuity of essential energy services. Discussions focused on securing Operational Technology (OT), managing IT–OT convergence, protecting legacy systems, strengthening network segmentation and remote access, vulnerability management, incident response and supply-chain security.

BEC organised its first in-person/hybrid Capacity Building Programme on "New & Emerging Technologies in Power Sector (Generation, Transmission, Distribution & End-use)" from 14–18 September 2026 in Bengaluru. The programme brought together power-sector professionals from BIMSTEC Member States through technical sessions, interactive discussions and field visits. Key areas included renewable energy, battery energy storage, smart grids, green hydrogen, CCUS, long-duration energy storage, advanced transmission technologies, emerging nuclear technologies, AI and the impact of data centres on

power systems. The programme also provided field exposure through visits to an HVDC station, a Load Despatch Centre, power testing laboratories, a hydrogen electrolyser manufacturing facility and a hotline training facility.

Across the BIMSTEC region, the quarter witnessed significant developments in renewable energy, power-system infrastructure, grid modernisation and regional electricity cooperation. India crossed 300 GW of non-fossil-fuel installed capacity and approved major investments in renewable-energy transmission and floating solar. Bangladesh advanced utility-scale and rooftop solar development, while Bhutan strengthened hydropower cooperation and expanded domestic renewable-energy development, including small hydropower and solar initiatives. Myanmar progressed with the restoration of critical transmission infrastructure and considered the revival of the 6-GW Myitsone Hydropower Project. Nepal enhanced cross-border power-transfer capacity with India and received additional electricity support following flood-related disruptions to hydropower generation. Sri Lanka advanced transmission-system strengthening and grid-connected solar development, while Thailand focused on grid stability, battery storage, hydrogen and ammonia, and the feasibility of emerging nuclear technologies such as Small Modular Reactors (SMRs).

As we enter the vibrant festive season of the last quarter of 2026, I extend my warmest greetings and best wishes to all citizens of the BIMSTEC Member States. May the celebrations of Durga Puja and Dashain, the colourful Thimphu Tshechu, the light festivals of Deepavali, Thadingyut, and Loy Krathong and Christmas, bring joy, peace, and prosperity, while strengthening the spirit of unity, friendship, and cooperation across our region.

Ghanshyam Prasad
Executive Director

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BEC Programmes (Jul-Sep 2026)

Capacity Building Programme on “Cybersecurity in Energy Infrastructure”



BEC organized an online Capacity Building Programme on Cybersecurity in Energy Infrastructure on 11 August 2026. The programme focused on enhancing awareness, preparedness, institutional capacity and cyber resilience in the energy sector amid increasing digitalization, automation and interconnection of energy infrastructure. Two technical sessions addressed “cybersecurity in power infrastructure” and “cybersecurity in the oil and gas sector”, followed by an interactive discussion on emerging cyber threats and practical challenges.

In his inaugural address, Shri Ghanshyam Prasad, Executive Director, BEC highlighted that robust cybersecurity measures are essential for ensuring the security, reliability and resilience of power systems. Referring to the recently notified cybersecurity regulations in India, he noted that the experience and practices developed in India could provide useful insights for other BIMSTEC Member States. He stressed the importance of awareness, preparedness and timely action in addressing emerging cybersecurity threats.

(The programme materials, including the presentations and video recordings @ <https://bimstecenergycentre.org/programs/cyber-security-in-energy-infrastructure/>)

A key takeaway from the programme was that cybersecurity is integral to the reliability, safety, resilience and continuity of essential energy services. The discussions highlighted the growing importance of securing Operational Technology (OT), managing IT–OT convergence, protecting legacy systems, strengthening network segmentation and controlled remote access, and improving vulnerability management and incident response. Participants also discussed practical measures such as asset identification, risk assessment, role-based access, multi-factor authentication where feasible, secure patch management, continuous monitoring, supply-chain security and cyber incident recovery. The programme provided a valuable platform for BIMSTEC Member States to exchange experiences and strengthen regional cooperation in building secure, resilient and digitally enabled energy infrastructure.

Five-day Capacity Building Programme “New & Emerging Technologies in Power Sector (Generation, Transmission, Distribution & End-Use)”



BEC organized a five-day Capacity Building Programme on “New & Emerging Technologies in Power Sector (Generation, Transmission, Distribution & End-use)” from 14–18 September 2026 in hybrid mode. The programme brought together officials and energy-sector professionals from BIMSTEC Member States through a combination of technical presentations, interactive discussions and field visits to leading Indian power-sector institutions and facilities. Participants from Bhutan, India, Sri Lanka and Thailand attended in person, while officials from Bangladesh, Myanmar and the BIMSTEC Secretariat joined virtually.

The programme focused on technologies that are expected to shape the future of electricity systems—including renewable energy, battery storage, green hydrogen, CCUS, long-duration energy storage, smart grids, advanced transmission, artificial intelligence, emerging nuclear technologies and the growing impact of data centres on power systems. The programme also included technical and industrial visits to POWERGRID’s Kolar HVDC Terminal Station, Ohmium’s Green Hydrogen Electrolyzer Gigafactory, POWERGRID’s Regional Transmission Asset Management Centre, SRLDC/REMC, CPRI laboratories and the Hot-Line Training Centre of NPTI.

The programme was inaugurated on 14 September 2026 by Shri Ghanshyam Prasad, Executive Director, BEC & Chairperson, CEA, along with Shri Pankaj Kumar, Joint Secretary (Transmission), Ministry of Power, Government of India. In his inaugural address, Shri Ghanshyam Prasad highlighted BEC's continuing efforts towards knowledge sharing and exchange of best practices and encouraged participants to use the programme as a platform for mutual learning. Shri Pankaj Kumar drew attention to the transformation of power systems through distributed renewable energy, bidirectional power flows, prosumers and smart grids, emphasising that technological advancement must be accompanied by adequate human capacity and skills.

The BIMSTEC Secretariat highlighted the importance of revitalising regional energy cooperation and identified the BIMSTEC Grid Interconnection Initiative as an important avenue for strengthening energy security, resource utilisation and regional connectivity.

The collage features a prominent banner at the top center titled "NEW & EMERGING TECHNOLOGIES IN POWER SECTOR" under the heading "CAPACITY BUILDING PROGRAMME ON". The banner lists participants: India, Nepal, Sri Lanka, Mauritius, Bangladesh, and Bhutan. Below the banner, a group of seven men are seated at a long conference table during a panel discussion. To the right, a row of national flags is displayed. Other images include individual portraits of participants, a man speaking at a podium, and wider shots of the audience seated at long tables in a hall.

- Rapid technological developments are reshaping the power sector across generation, transmission, distribution and end-use.
- Increasing renewable energy penetration requires enhanced grid flexibility, forecasting, storage and advanced system operation capabilities.
- Energy storage is expected to play an increasingly important role in balancing variable renewable generation and improving grid flexibility.
- Green hydrogen and ammonia have significant potential in the future energy transition, subject to technological and economic developments.
- Modern power systems require greater digitalisation, automation and real-time monitoring.
- Advanced transmission technologies, including HVDC and other grid-enhancing technologies, can support large-scale renewable energy integration and long-distance power transfer.
- Distribution networks will increasingly need to accommodate distributed energy resources, electric mobility, storage and flexible demand.
- Capacity building and knowledge sharing among BIMSTEC Member States can support faster adoption of emerging technologies.
- Practical exposure through technical visits significantly enhances the understanding of technologies and operational practices discussed during classroom sessions.

The five-day programme concluded on 18 September 2026 with a Valedictory Session. Shri Bhagwan Sahay Bairwa, Chief Engineer, CEA, emphasised the importance of technology in building reliable, flexible and resilient power systems and encouraged participants to continue professional collaboration beyond the programme.

Key Energy & Power Developments across the BIMSTEC Region (Jul-Sep 2026)

Bangladesh:

-  **21 July 2026 - Fire at Moheshkhali LNG Terminal Disrupts Gas Supply to Power Sector:** A fire at an LNG Floating Storage and Regasification Unit (FSRU) off Moheshkhali damaged electrical systems, temporarily reducing gas supplies to the national grid by approximately 450 million cubic feet per day (MMcfd). The disruption affected gas availability for power generation as well as industrial consumers.

The reduced gas availability constrained gas-fired power generation, leading to greater reliance on coal-fired generation. In July 2026, coal-fired generation surpassed gas-fired generation for the first time, highlighting the vulnerability of the power sector to disruptions in LNG and gas supply.
-  **22 July 2026 - BPDB Tenders 590 MW of Solar Projects:** The Bangladesh Power Development Board (BPDB) invited tenders for 12 solar power projects totalling 590 MW under the IPP model, targeted for commissioning by January 2029. BPDB also reported agreements with 11 IPPs for an additional 818 MW of solar capacity.
-  **1 September 2026 - Government Introduces Incentive for Rooftop Solar:** The Government of Bangladesh introduced a scheme offering Tk 10.50/kWh for surplus electricity supplied to the national grid from eligible rooftop solar systems. The scheme aims to facilitate the addition of up to 4,000 MW of rooftop solar capacity within one year and forms part of Bangladesh's broader objective of meeting 20% of electricity demand from renewable sources by 2030 and 30% by 2040.

Bhutan:

-  **12 August 2026 - DGPC and JSW Neo Energy Sign Shareholders' Agreement for Joint Development of 920 MW Punatsangchhu-III Hydroelectric Project:** Druk Green Power Corporation Limited (DGPC), a subsidiary of Druk Holding and Investments Limited (DHI), and JSW Neo Energy Limited, a wholly owned subsidiary of JSW Energy Limited, signed a Shareholders' Agreement (SHA) for the joint development of the 920 MW Punatsangchhu-III Hydroelectric Project in Wangdue Phodrang Dzongkhag, Bhutan. The agreement was signed in the presence of the Hon'ble Prime Minister of Bhutan.
-  **19 August 2026 - DGPC and Hira Power & Steel Limited Sign MoU to Explore Solar Power Development in Bhutan:** Druk Green Power Corporation Limited (DGPC) and Hira Power & Steel Limited (HPSL), India, signed a Memorandum of Understanding (MoU) to explore opportunities for the joint development of solar power projects in Bhutan.
-  **August 2026 - The Department of Energy and ICIMOD inaugurated two solar-powered lift irrigation systems in Punakha.** The pilot projects demonstrate the use of renewable energy for climate-resilient agriculture and rural livelihoods, while also supporting community-level clean-energy applications beyond grid-connected electricity generation.

India:

-  **31 July 2026 - India Crosses 300 GW of Non-Fossil Fuel Installed Capacity:** India crossed the landmark 300 GW of non-fossil fuel-based installed electricity generation capacity as of 31 July 2026, reaching 300.50 GW. The capacity comprised 164.59 GW solar, 58.14 GW wind, 57.24 GW hydro, 11.75 GW bio-power and 8.78 GW nuclear, taking non-fossil sources to more than 54% of the country's total installed generation capacity.

-  **30 September 2026 - India Approves ₹1.86 lakh Crore Green Energy Corridor Phase-III(GEC-II):** The Cabinet approved GEC-III with an outlay of ₹1.86 lakh crore to strengthen renewable-energy infrastructure. The programme includes transmission investments to facilitate evacuation of up to 135 GW of renewable energy and incentives for 50 GWh of battery energy storage systems. The initiative is expected to strengthen renewable integration and grid flexibility.
-  **31 July 2026 - India Approves ₹5,070 Crore Scheme for 5,000 MW of Floating Solar:** The Union Cabinet approved the Pradhan Mantri Surya Sarovar Yojana (PM-SSY) with a total outlay of ₹5,070 crore. The scheme envisages development of 5,000 MW of floating solar photovoltaic (FSPV) projects with co-located energy storage systems having a minimum storage capacity of two hours (10,000 MWh).

Myanmar:

-  **1 July 2026 - Myanmar Considers Revival of 6 GW Myitsone Hydropower Project:** Myanmar indicated plans to revive the long-suspended Myitsone Hydropower Project, a proposed 6 GW hydropower project in Kachin State. The project, which was suspended in 2011, is being considered for revival as Myanmar seeks to expand its electricity-generation capacity.
-  **30 August 2026 - 230-kV Transmission Line Restoration Reconnects Shwegyin Hydropower to National Grid:** Repairs to the damaged 230-kV Shwegyin–Thayagon transmission line, which had been out of service since September 2023, were completed by 30 August 2026, enabling electricity generated by the Shwegyin Hydropower Plant to be transmitted back to Myanmar's national grid. The restoration and reconnection works enabled approximately 80 MW of electricity to be supplied to the grid.

Nepal:

-  **15 July 2026 - Nepal and India Agree to Expand Cross-Border Power Transfer Capacity:** Nepal and India agreed to increase the combined power-transfer capacity through the Dhalkebar–Muzaffarpur and Dhalkebar–Sitamarhi 400 kV transmission corridors. The agreement will raise the export capacity from Nepal to India from 1,100 MW to 1,650 MW, while the import capacity from India to Nepal will increase from 1,000 MW to 1,400 MW.
-  **31 August–14 September 2026 - Floods Disrupt Nepal's Hydropower Generation; India Approves 654 MW Electricity Supply:** Severe flooding in Nepal in late August disrupted several hydropower projects, including the 216 MW Upper Trishuli-1, 60 MW Upper Trishuli-3A and Upper Trishuli-3B projects. The floods subsequently damaged approximately 431 MW of Nepal's electricity-generation capacity, equivalent to around 10% of the country's installed generation capacity, forcing Nepal to suspend electricity exports and seek power from India.

On 14 September 2026, India approved the export of up to 654 MW of electricity to Nepal for 18 hours per day until 31 December 2026, helping to meet Nepal's electricity requirements following the disruption to hydropower generation.

-  Nepal recorded their highest peak electricity demand to date, i.e 2596 MW on 26.08.2026

Sri Lanka:

-  **13 August 2026 - Groundbreaking of Package 1B of Power System Strengthening and Renewable Energy Integration Project:** The Power System Strengthening and Renewable Energy Integration Project – The project reached a major milestone with the groundbreaking ceremony held on 13 August 2026 in Sri Lanka. The project involves the construction of two strategically important 132/33 kV grid substations at Homagama and Negombo being implemented by the National Transmission Network Service Provider (NTNSP).

-  **13 September 2026 - 3 MW Solar PV Project Connected to Sri Lanka's National Grid:** A 3 MW ground-mounted solar photovoltaic (PV) project at Veyangoda was connected to Sri Lanka's national grid. The project is the first to be commissioned under the Government's programme to add 300 MW of land-based renewable energy capacity through private-sector participation.

Thailand:

-  **July 2026 - EGAT Partners with Sinohydro to Enhance Grid Stability at Khlong Ngae Substation:** The Electricity Generating Authority of Thailand (EGAT) partnered with Sinohydro in July 2026 to install a Static Synchronous Compensator (STATCOM) at the Khlong Ngae Substation. The equipment is intended to improve voltage stability and grid flexibility, facilitating greater integration of variable renewable energy generation and supporting increased transmission capacity.
-  **July 2026 - EGAT Strengthens Cooperation on Hydrogen, Ammonia and Low-Carbon Fuels:** EGAT signed cooperation agreements with Tokyo Gas Asia and JERA covering low-carbon fuels, hydrogen and hydrogen derivatives, including development of the hydrogen and ammonia value chain. The cooperation includes exploring the use of ammonia as a hydrogen carrier and as a low-carbon fuel for power generation, supporting Thailand's efforts to develop alternative fuels for the power sector.
-  **14 September 2026 - EGAT Partners with USTDA to Accelerate SMR Power Plant Feasibility Study:** The Electricity Generating Authority of Thailand (EGAT) partnered with the U.S. Trade and Development Agency (USTDA) to accelerate a feasibility study for the development of a Small Modular Reactor (SMR) power plant in Thailand. The cooperation aims to assess the feasibility of SMR technology as part of Thailand's efforts to strengthen clean energy security and diversify its future electricity-generation mix.

Thailand: Energy Policy, Power System Modernization and Regional Power Trade

Courtesy: EGAT, Thailand

1. Energy Policy and Planning

Electricity Generating Authority of Thailand (EGAT), as the nation's energy security provider, is prepared to tackle challenges arising from new innovations and technologies by developing modern and stable power system management approaches that simultaneously address energy security needs. The overall strategy balances three core pillars:

- **Environment:** Increase the proportion of electricity generation from renewable energy, upgrade power plants and systems with new technologies, and promote participation from all sectors in efficient and environmentally friendly energy usage.
- **Energy Security:** Develop the national power grid to ensure stability and resilience, enabling regional electricity trade and exchange while enhancing the stability of renewable energy integration into the system.
- **Economy:** Collaborate with the government to manage fuel resources, optimize electricity production costs, and ensure appropriate investments in the power system to avoid burdening the public with higher electricity bills.

Energy Transition from Fossil Fuels to Renewable Energy (Draft PDP 2024)

The proportion of Renewable Energy (RE) in draft Power Development Plan (PDP) 2024 is more than 50% in 2037 (RE > 50%). Electricity generation from fossil fuels is likely to decrease due to the rapid growth of renewable energy, which is expected to grow 65–80% of electricity production by 2050.

Fuel Source / Technology	PDP 2024 Draft Share	Fuel Source / Technology	PDP 2024 Draft Share
Natural Gas	41%	Solar	16%
Wind + Other RE	16%	Coal & Lignite	7%
Hydro-Floating Solar	1%	Small Modular Reactor	1%
Demand Response	0.04%	Other	1%

2. EGAT's Role Securing Power System to Support Green Energy

EGAT Hydro-Floating Solar Project

Pilot project of future power plant: Securing power system with clean energy, ecology friendly, and leveraging public life quality. EGAT is preparing to implement over 10 GW in 10 potential dams driving Thailand, with a target of 2,725 MW during 2021–2030 according to Draft PDP 2024:



Sirindhorn Dam 1st Pilot Project (45 MW)

- COD: 31 October 2021
- Connected to 115 kV Substation
- Energy Management System (EMS) & Weather Forecast System



Ubolratana Dam 2nd Project (24 MW)

- COD: 05 March 2024
- Integrated with 6 MW/ 6 MWh BESS

Additional Potential Dams

- Bhumibol Dam
- Chulabhorn Dam
- Vajiralongkorn Dam
- Srinagarind Dam
- Nam Phung Dam

Power System Development by Grid-Scale BESS & Pumped Storage Hydropower (PSH)

EGAT’s BESS pilot projects connect to the Transmission System (Grid-Scale) with a total capacity of 37 MWh across Lopburi and Chaiyaphum provinces: Chai Badan High Voltage Substation (21 MWh) and Bamnet Narong High Voltage Substation (16 MWh). Grid-Connected BESS is planned for Northern, Southern, and Northeastern regions under Draft PDP 2024.

Pumped Storage Hydropower (PSH) serves as an ESS solution to stabilize and manage renewable energy integration with key benefits: Fast response, Stabilize system with high Variable RE penetration, Secure grid services (frequency, voltage), Reduce CO2 emissions, Energy shifting between excess Variable RE energy and power demand, Avoided cost of transmission expansion.

Fuel Source / Technology	PDP 2024 Draft Share	Fuel Source / Technology	PDP 2024 Draft Share
Natural Gas	41%	Solar	16%
Wind + Other RE	16%	Coal & Lignite	7%
Hydro-Floating Solar	1%	Small Modular Reactor	1%
Demand Response	0.04%	Other	1%

Grid Modernization & Digital Control Platform:

-  Digital Control Platform & AI: Automatic Operation & Control.
-  Virtual Power Plant (VPP): Data Platform for Load / RE / EV Forecast and Optimization Tools. Integrates multi-type renewable power plants to dispatch according to demand, utilizing strengths of each type for continuous operation.
-  RE Energy Forecast Center: Organize 5 RE Forecast Centers (REFC) countrywide
-  Demand Response Control Center: Pilot project involving a 50 MW load reduction with MEA and PEA serving as Aggregators / Load Aggregators (LAs).
-  Flexible Grid & Power Plant: Smart grid integrated with communication system to monitor grid data, Install STATCOM to enhance power system stability, and dispatch flexible power plants rapidly to support VRE fluctuation.

Transmission Development to accommodate RE and Import (Grid Expansion Data as of December 2024):

Voltage Level	Substation Amount	Total MVA	Transmission Line (cycle-km)
500 kV	27	53,949.21 MVA	9,294.85 cycle-km
230 kV	89	74,933.34 MVA	15,542.89 cycle-km
132 kV	-	133.40 MVA	8.71 cycle-km
115 kV	123	15,745.66 MVA	15,152.77 cycle-km
300 kV (HVDC)	-	388.02 MVA	23.07 cycle-km

3. Thailand Cross-border Interconnections Development and LTMS-PIP Project

Benefits of Thailand Cross-border Interconnections Development:



Power Trade Development Roadmap

- Power Purchase (Unidirectional Power Trade): 5,935 MW already COD.
- Energy Exchange (Bidirectional Power Trade): EGAT-TNB (Tenaga Nasional Berhad Malaysia) (HVDC 300 MW, Khlong Ngae – Gurun; HVAC 80 MW / 132 kV, Sadao – Chuping); EGAT-EDL (Électricité du Laos) (115 kV interconnections).
- LTM-PIP (Lao PDR-Thailand-Malaysia Power Integration Project) (Energy Purchase and Wheeling Agreement: EPWA): Phase 1: 100 MW (2018–2019); Phase 2: 300 MW (2020–2021).
- LTMS-PIP (Lao PDR-Thailand-Malaysia-Singapore Power Integration Project) Phase 1 (Energy Wheeling Agreement: EWA / Supply Agreement: SA): Trading capacity up to 100 MW of RE from Lao PDR to Singapore via Thailand and Malaysia under Singapore Wholesale Electricity Market (SWEM) through Keppel Infrastructure. Governed by 3 LTMS Taskforces: Technical (led by Thailand), Commercial (led by Singapore), Regulatory & Legal (led by Lao PDR).
- LTMS-PIP Phase 2 (Launched 20 September 2024 at 42nd AMEM in Vientiane): Up to 200 MW trading capacity and 2-year contract term. Power purchase from Lao PDR up to 100 MW green resources (1st priority) and power purchase from Malaysia up to 200 MW brown resources.



Bilateral System Interconnection Expansion Projects:

Laos PDR (EGAT & EDL Bipartite Working Group:	Malaysia (Malaysia-Thailand Energy Taskforce):
1. Tha Li – Ken Thao 2. Nong Khai – Dongphosy (Upgrade) / Nong Khai – Tha Na Laeng 3. Bueng Kan – Pakxan (Upgrade) 4. Nakhon Phanom – Thakhek 5. Mukdahan 2 – Pak Bo (Upgrade) 6. Sirindhorn 2 – Bang Yo 7. Mae Chan – Ton Phueng (New).	1. 300 kV HVDC Khlong Ngae – Gurun

Sub-Regional, Regional & Cross-Regional Trading Frameworks:**Sub-Regional & Regional Trading:**

- ACMECS (Master Plan 2019–2023: Cambodia, Lao PDR, Myanmar, Thailand, Vietnam);
- GMS (Greater Mekong Subregion: China, Myanmar, Lao PDR, Vietnam, Cambodia, Thailand);
- ASEAN Power Grid (APG: 10 ASEAN Members under ASEAN Interconnection Master Plan).

**Cross Regional Trading:**

- BIMSTEC (Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, Thailand) utilizing the BIMSTEC Grid Interconnection and BIMSTEC Energy Centre (BEC)

Courtesy: EGAT, Thailand

Bhutan Power Sector Key Achievements (Jul-Sep 2026)

Courtesy: DoE, Bhutan

Druk Green Power Corporation Limited (DGPC) initiated its small hydropower programme to strengthen domestic energy security, economic development, and develop national technical and engineering capacity. The programme is implemented through DGPC's subsidiary, Druk Hydro Energy Limited (DHyE). The Suchhu, Burgangchhu, and Yungichhu Hydropower Projects, are the first batch of projects under this initiative, which were designed, engineered, built and managed almost entirely by Bhutanese professionals.

YUNGICHHU HPP

Project Snapshot

- ⚡ Installed Capacity: **32 MW**
- ⚡ Annual Energy Generation: **157.60 GWh**
- 📍 Location: Onngar & Zhongmay, Maedtsho Gewog, Lhuntse Dzongkhag
- 🏔️ Elevation: **Above 1,200 masl.**
- 💧 Type: Run-of-the-River Small Hydropower Project
- 💰 Funding: Loan from Consortium of Local Financial Institutions
- ⚙️ Commissioning: **Unit I: May 21, 2026**
Unit II: April 8, 2026



Figure 1: Yungichhu Headworks



Figure 2: Yungichhu Powerhouse



Figure 3: Yungichhu Switchyard

BURGANGCHHU HPP

Project Snapshot

- ⚡ Installed Capacity: **54 MW**
- ⚡ Annual Energy Generation: **260.51 GWh**
- 📍 Location: Buli, Nangkor Gewog, Zhemgang Dzongkhag
- 🏔️ Elevation: **Above 860 masl.**
- 💧 Type: Run-of-the-River Small Hydropower Project
- 💰 Funding: Loan from Consortium of Local Financial Institutions
- ⚙️ Commissioning: **Unit I: June 14, 2026**
Unit II: May 3, 2026



Figure 1: Burgangchhu Headworks



Figure 2: Burgangchhu Powerhouse



Figure 3: Burgangchhu Switchyard

500 kW LUNANA Small Hydro Project: Powering Bhutan's High-Altitude Communities

Project Snapshot

- ⚡ Installed Capacity: **500 kW**
- ⚡ Annual Energy Generation: **4.38 GWh**
- 📍 Location: Lunana Gewog, Gasa Dzongkhag
- 🏔️ Elevation: **Above 4,000 masl.**
- 💧 Type: Run-of-the-River Small Hydropower Project
- 💰 Funding: Government of India- Project Tied Assistance

Key Milestone



16 September 2026:

Foundation Stone unveiled by:

- H.E. Lyonpo D.N. Dhungyel, Minister for Foreign Affairs and External Trade, Bhutan and
- H.E. Dr. S. Jaishankar, Minister of External Affairs, India

at Wangduechoeling Palace Museum & Cultural Centre, Bumthang.



Establishment of Bhutan Power Market Framework in June 2026

Strategic Evolution

Bhutan is transitioning from a centralized single-buyer structure to a modern, dynamic and integrated electricity market. This framework preserves PPA stability while unlocking the dynamic value of flexible

Stage 1: Regulated Model	Stage 2: Hybrid Transition	Stage 3: Full Market Integration
• Single-Buyer Mechanism (DGPC → BPC) • Regulated Fixed Tariffs • Long-Term PPA Dominance	• Centralized PPA Registry • Day-Ahead & Real-Time Markets • Direct Bidding for Large Users	• Regional Market Coupling • Cross-Border Ancillary Trading • Green Certificates & Carbon Credits

Implementation Roadmap & Institutional Roles:

Phased Implementation Roadmap

- **Phase I: Foundation (2025–2027)** National Energy Policy & Energy Bill enacted; Market Operator (BPMP) & MVP IT platform established.
- **Phase II: Domestic Market (2027–2029)** Launch of DAM & RTM trading; onboarding direct consumers; initial ancillary & green frameworks.
- **Phase III: Regional Integration (2030–2040)** Full ancillary services; multi-currency settlement; regional market coupling across BIMSTEC.

Institutional Governance Roles

DoE	Policy direction and market roadmap
ERA	Market rules, licensing & regulation
BPSO	System operator, dispatch & grid stability
BPMP	Market platform, clearing & T+1 settlement
DGPC / BPC	Primary generation supply & demand aggregation

Courtesy: DoE, Bhutan

Enabling Pumped Storage in India’s Renewable-Driven Grid:
Needs, Development and Policy Framework

Courtesy: THDCIL, India

1. Introduction

The global energy landscape is undergoing a swift transition focused on decarbonisation, energy security, and system flexibility. As grids rely more on variable wind and solar generation, large-scale storage is essential to stabilize networks and maintain an uninterrupted electricity supply. In India, this transition is particularly significant as the country aims to achieve 500 GW of non-fossil capacity by 2030 and move towards a net-zero pathway, while electricity demand continues to rise due to economic growth and urbanization. Among various storage technologies, Pumped Storage Plants (PSPs) have emerged as a cornerstone of modern energy systems. With their mature technology, long service life, and high round-trip efficiency, PSPs offer a proven means of balancing generation variability, optimizing energy dispatch, and providing essential ancillary services.

2. India’s Power Sector: Capacity Growth and Future Outlook

India has made substantial progress in strengthening its energy sector in recent years, with a clear focus on expanding access, improving reliability and advancing clean energy deployment. The country is carefully managing the dual objective of meeting rising electricity demand while pursuing long-term sustainability goals. According to the International Energy Agency (IEA), 85% of the increase in global electricity demand over the next three years will come from emerging and developing economies. With rising electricity demand, India continues to expand its energy capacity to support economic growth and sustainability goals. Fig. 1 below illustrates India’s energy transition from the present to 2047, depicting the evolving generation mix of conventional and renewable energy sources.

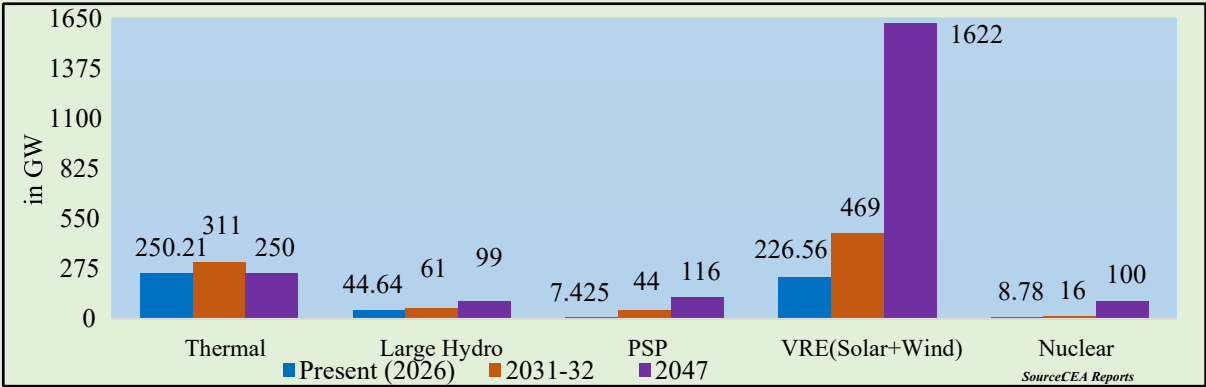


Fig.1: Energy Transition scenario in India.

3. Need for Energy Storage

The growing penetration of intermittent renewable energy sources has increased the need for flexible, reliable and efficient energy storage solutions. Despite the substantial growth in renewable energy generation, a portion of renewable energy may need to be curtailed due to factors such as demand-generation mismatch, transmission constraints, and limited grid flexibility. During FY 2025–26, the total curtailment including emergency TRAS down of variable renewable energy (solar and wind) in India was 2553 MU. The month-wise pattern of renewable-energy curtailment from solar and wind sources during FY 2025–26 is presented in Fig. 2.

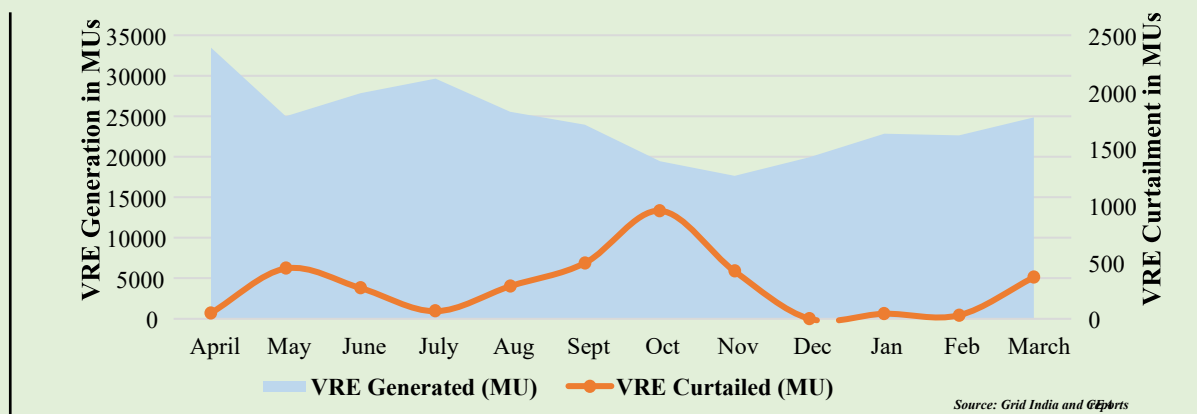


Fig.2: Variable Renewable energy curtailment in FY 2025-26

This highlights the need for adequate and viable energy storage solutions to minimise renewable energy curtailment and improve utilisation of available generation. A complementary deployment of BESS and PSPs can provide flexibility across different time scales, supporting grid stability, reliability and efficient integration of increasing renewable capacity. PSPs, in particular, offer proven large-scale, long-duration storage, peaking capability, operational reliability and ancillary grid support.

4. PSP Potential in India & Future outlook:

India is also rapidly expanding its pumped storage capacity to support the growing share of renewable energy and to reduce reliance on battery storage imports. As per the Central Electricity Authority, the country currently has an installed pumped storage capacity of about 7.42 GW. India has substantial potential for Pumped Storage development, with an estimated 56.67 GW of on-stream sites and 288.71 GW of off-stream sites identified across various regions.

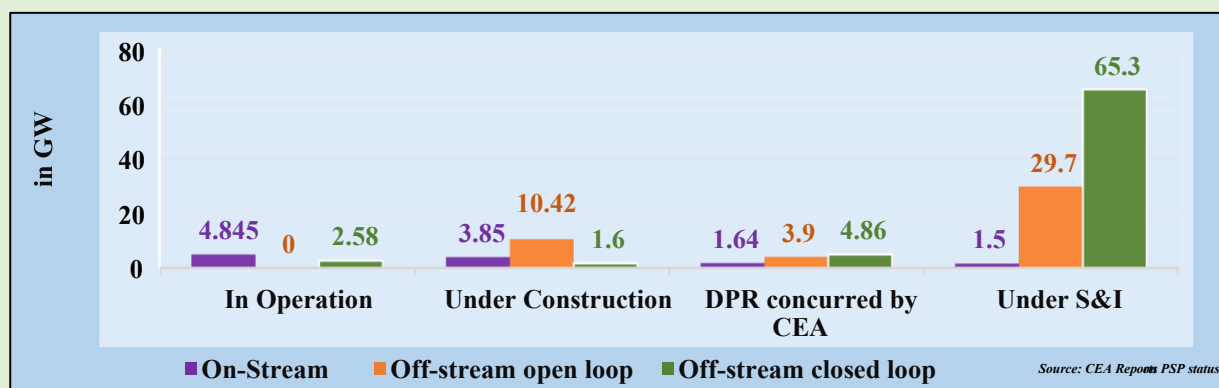


Fig.3: Status of PSP Development in India as of 31.08.2026

Recognizing the critical role of PSPs in firming renewable energy generation and enhancing grid flexibility, a target of around 100 GW of pumped storage capacity has been envisaged by 2035–36. This reflects the strategic importance of PSPs as a long-duration storage solution integral to India's clean energy transition. India possesses a substantial exploitable pumped storage potential of around 345.382 GW, yet only 7.42 GW has been commissioned so far, with approximately 122.7 GW currently progressing through various stages of planning and development. With the increasing share of variable renewable energy sources, particularly solar power and the requirement to ensure their continuous and reliable operation, the significance of Long-Duration Energy Storage (LDES) is becoming progressively more critical. The graph below suggests about the significant expansion required in Pumped Storage to meet future grid flexibility needs.

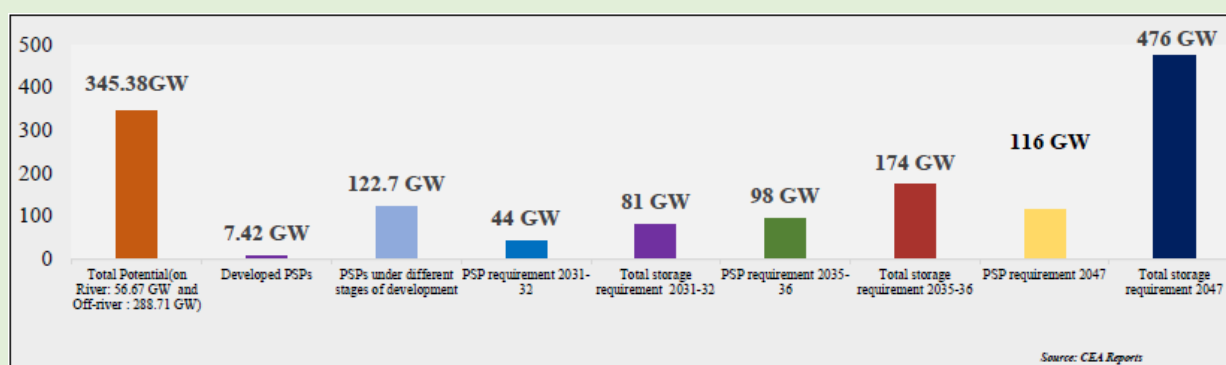


Fig.4: PSP Capacity and Future Requirements in India

5. Enabling Policies Framework for Pumped Storage Development in India:

Strategic emphasis on PSP development is essential, as PSPs provide multi-hour, grid-scale flexibility, system inertia and long operational life with minimal degradation. Compared with BESS, PSPs leverage domestic civil works, hydropower expertise and local manufacturing, supporting Make in India and Atmanirbhar Bharat through domestic value addition and employment. A phased and planned development of India's PSP potential is therefore important for achieving the nation's 2047 storage vision sustainably and economically. The Government of India has introduced several policy measures and guidelines to promote PSP development, as highlighted below:

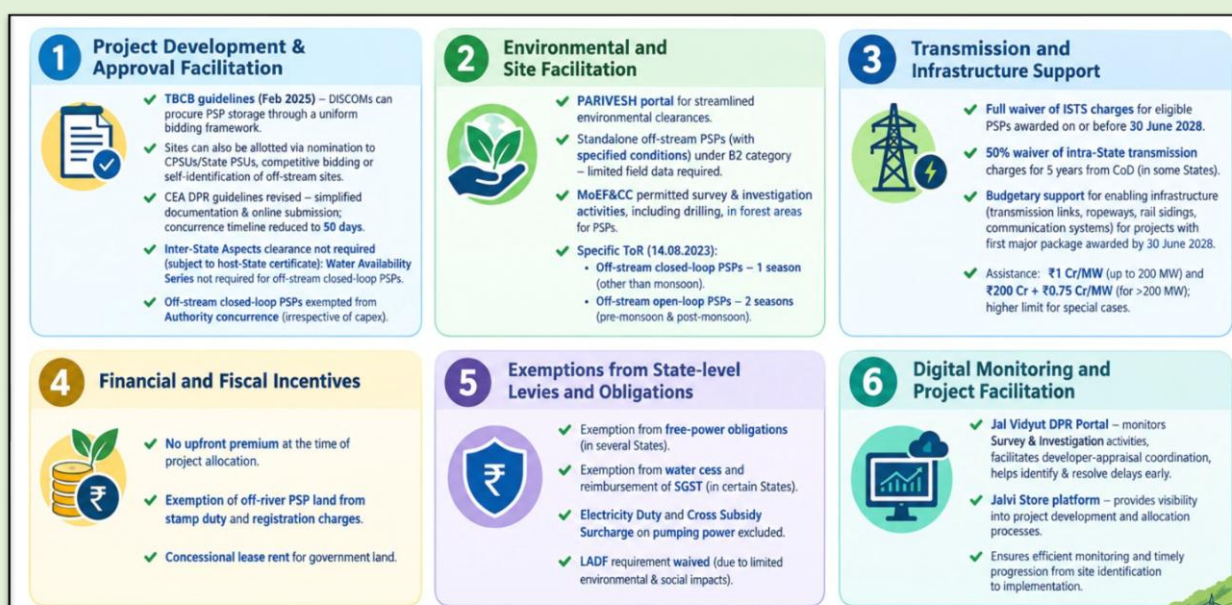


Fig.5: Enabling Policies for Pumped Storage in India

6. Way Forward for Accelerating PSP Development in India

India has made significant progress in establishing a conducive policy framework for the development of PSPs, recognising their critical role in meeting the country's growing energy-storage requirements. The next phase of PSP development will require continued efforts to strengthen the supporting ecosystem and facilitate timely project execution. Fig. 6 presents the key measures required to further accelerate and fast-track the development of PSPs.



Fig.6: Measures to Accelerate Pumped Storage Development in India

7. THDCIL's Role in Advancing Pumped Storage Development in the Country

THDC India Limited, a Central Public Sector Enterprise (CPSE), has evolved from a predominantly hydro-power-focused utility into a diversified power-sector enterprise. With a total installed capacity of 3,918 MW across hydro, thermal, wind, and solar projects, THDCIL has developed a broad generation portfolio while continuing to leverage its core expertise in hydropower and large-scale energy-storage solutions. In the area of pumped storage projects, THDCIL has developed India's first 1,000 MW variable-speed Tehri Pumped Storage Plant, which has emerged as an important asset offering multicycle operation and enhanced operational flexibility. This is one of the first PSPs implemented by a CPSE to provide power support across state and regional boundaries. Therefore, amid the growing requirement for energy storage in an increasingly renewable energy environment, Tehri PSP contributes to the development of reliable, flexible and dispatchable energy storage capacity, supporting India's transition towards renewable energy-based power system. The response of Tehri PSP in supporting grid stability and balancing renewable generation is illustrated below:

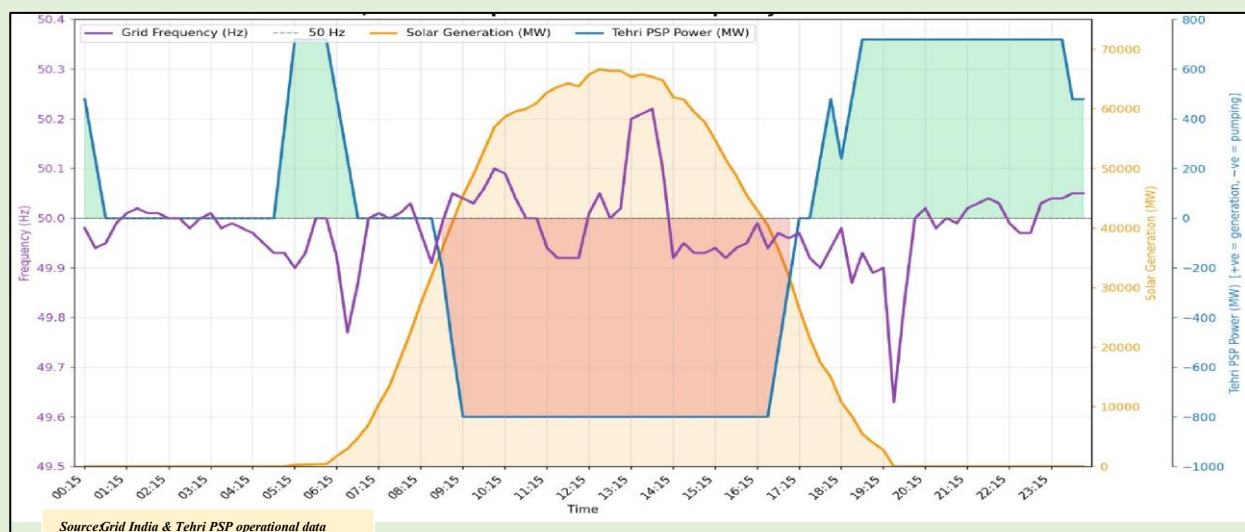


Fig.7: Solar Generation, Tehri PSP Operation and Grid Frequency

The graph for a representative day illustrates the complementary operation of the Tehri PSP with

grid-frequency variations. Pumping operation was undertaken during solar hours, when the grid frequency was relatively higher, while generation operation was scheduled during non-solar hours, coinciding with periods of significant decline in grid frequency.

THDCIL is further expanding its PSP portfolio, with projects aggregating 6,000 MW currently under Survey & Investigation in Maharashtra, while exploring additional PSP opportunities across other states, thereby reinforcing its commitment to supporting India's evolving energy-storage requirements and enhancing grid flexibility.

8. Conclusion

PSPs are poised to become a critical element of India's future power system architecture, providing the multi-hour flexibility, inertia and fast-response capabilities required to stabilise a grid with high penetrations of variable renewable energy. While recent policy interventions have begun to address long-standing challenges, the technical and institutional enablers necessary for large-scale PSP deployment are still evolving. Sustained progress will depend on harmonising regulatory structures with system operations, particularly in the domains of ancillary services compensation, dynamic dispatch optimisation and market mechanisms that accurately value long-duration storage and fast-ramping resources.

From a system-planning perspective, accelerated PSP development is essential to meeting India's projected flexibility requirements under high-VRE scenarios. If the technical, regulatory and institutional gaps are addressed in a coherent manner, PSPs can evolve into a system-critical asset class, providing dependable long-duration storage, grid-forming capability and high-inertia support. This will enable deep decarbonization of the electricity sector while maintaining system reliability and cost efficiency. Ultimately, large-scale deployment of PSPs will underpin a structurally flexible, resilient and future-ready power system capable of supporting India's long-term energy transition and reliability imperatives.

Courtesy: THDCIL, India



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