

Bhutan energy storage solutions

The proposed 5GW capacity includes 4.5GW of hydropower, and features projects such as the 1.1GW Dorjilung HEP [hydroelectric power], the 740MW Gongri reservoir, the 1.8GW Jeri pumped storage and the 364MW Chamkharchhu IV.

Tata Power managing director and CEO Dr Praveer Sinha stated: "Tata Power's partnership with Druk Green Power Corporation reinforces our credentials as the most preferred clean energy partner in the region.

"Together, we are building 5GW of clean energy capacity that will help harness Bhutan's hydropower potential and support both countries' growing energy demands with reliable and round-the-clock clean energy supply. Together we are shaping a new energy era."

Tata Power's relationship with DGPC dates back to 2008, with the successful development of the 126MW Dagachhu hydropower plant, marking the first public-private partnership in Bhutan's hydropower sector.

DGPC managing director Dasho Chhewang Rinzin stated: "This strategic partnership with Tata Power is in keeping with Bhutan's aspirations to maximise benefits to the people of Bhutan through fast-tracking the harnessing of its huge renewable energy resources for its economic development and long-term energy security.

We now have a stronger scientific basis that climate change is the biggest threat to humanity and the planet. The sixth assessment report published in August 2021 by the Intergovernmental Panel on Climate Change (IPCC) suggests that "many changes due to past and future greenhouse gas emissions are irreversible for centuries to millennia, especially changes in the ocean, ice sheets and global sea level".

The Paris Agreement's target to keep the global average temperature well below 1.5 degree Celsius will be exceeded during the 21st Century itself, unless deep reductions in Green House Gases (GHG). Humans will need to adopt more sustainable consumption and production. Fossil fuel consumption must be reduced urgently as it currently contributes to about 78 percent of global GHG emissions.

Our planet will soon be home to 10 billion people. This growth, coupled with growing energy demand and increasing emissions of greenhouse gases, all point towards a climate emergency. Therefore, accelerating the clean energy transition is imperative in our struggle to survive in this climate crisis.

Over the past decades, Bhutan has ambitiously pursued electrification, especially in rural communities. As a result, the country has achieved a commendable 99.9 percent electrification rate. This has helped shift fuel consumption for cooking, lighting, and heating away from biomass and fossil-based fuels to electricity.

Yet approximately 70 percent of the energy demand in Bhutan continues to be met by fossil fuel and biomass, in large part because the transport sector is so heavily dependent on it. The sources of "clean energy" – the country's hydropower plants – are exposed to the threats of numerous climate-induced disasters such as glacial lake outburst floods (GLOFs). In the face of climate change and the need for enhanced energy security, the business case for Bhutan to diversify its energy sources, especially by tapping into alternative renewable energy, is compelling.

Bhutan is yet to realize its full potential in terms of renewable energy. According to its Renewable Energy Management Master Plan (2016), it is technically feasible to produce 12 gigawatts (GW) of solar and 760 megawatts (MW) of wind energy. However, the country's current installed capacity for renewables, apart from large hydropower plants, stands at 9MW.

The Rubesa solar power plant, implemented by the Royal Government, Bhutan Power Corporation and UNDP, with funding from the Government of Japan, is expected to generate about 263,000 units of energy every year, adequate for supplying electricity to around 80-90 households. The statistics presented here may seem insignificant, but it has exponential benefits. Besides complementing the country's vast hydropower resources, leading to enhanced national energy security, this project is helping to create green jobs and enhance skills of national experts in the solar energy space.

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