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**ENERGY
UPDATE**
M A G A Z I N E

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Presents

4th International Hydropower Conference 2024

Future of
Hydr  **power**

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Serena Hotel, Islamabad

Industry Overview

Development of hydropower plants (HPPs) presents significant challenges due to their technical, social and environmental complexities, long gestation periods, high CAPEX, and inherent risks, unlike fossil fuel or wind and solar-based power plants. Hydropower currently provides over 15% of the world's electricity, with global installed capacity reaching 1,412 GW in 2023. Despite this, around 1,300 GW of hydropower potential remains untapped, excluding pumped storage hydropower (PSH). Globally, there are 598 GW of hydropower projects in the pipeline, including 131 GW under construction. China leads in the development of mega hydroelectric dams, boasting the world's largest power station with a 22.5 GW capacity and an annual production nearing 112 TWh in 2020. The International Energy Agency (IEA) and International Renewable Energy Agency (IRENA) project that achieving global net zero energy by 2050 will require doubling today's hydropower capacity to between 2,500 GW and 3,000 GW, including PSH.

Pakistan is set to make significant strides in its hydropower sector from 2024 to 2028 with several major projects underway. The Tarbela 5th Extension Hydropower Project, scheduled for completion by the end of 2024, will add 1,410 MW to the existing Tarbela Dam, greatly enhancing the country's energy output. The Mohmand Dam, an 800 MW initiative on the Swat River, is expected to be completed by 2025, offering crucial hydropower and water management benefits. In the private sector, the Kohala Hydropower Project, part of the China-Pakistan Economic Corridor (CPEC), is advancing with renewed momentum due to Chinese investment, while the Suki Kinari project, also under CPEC, will contribute 884 MW to the grid soon. Additionally, the Diamer-Bhasha Dam, a major project with a capacity of 4,500 MW, is under construction and anticipated to be completed by 2028, with an early phase potentially coming online sooner. These initiatives underscore Pakistan's commitment to bolstering its energy infrastructure through both public and private investments.

The total installed capacity of hydropower stations in Pakistan is approximately 10,852 MW, with regional distributions of 5,789 MW in KPK, 2,524 MW in Punjab, 2,370 MW in AJK, and 169 MW in Gilgit-Baltistan. Despite this, Pakistan has around 64 GW of untapped hydropower potential. The government's commitment to the UN's Sustainable Development Goal No. 7 is reflected in its National Electricity Policy and the Indicative Generation Capacity Expansion Plan (iGCEP) 2022-31. This plan envisions adding 13.7 GW of hydropower and 11 GW of solar and wind power, increasing the share of renewables in the national electricity mix from 34% to 62% by 2030-31, with hydropower's share rising from 28% to 33%.

Challenges &

Despite these advances, both the public and private sectors face challenges, including:

Financing Issues:
Securing adequate funding for large-scale hydropower projects remains a significant hurdle.

Regulatory Hurdles:
Navigating complex regulatory frameworks can delay project timelines and increase costs.

Environmental & Community Concerns:
Addressing the environmental impact and managing local community interests are critical for projects success.

outlook

However, the progress in these projects indicates a strong commitment to leveraging hydropower as a cornerstone of Pakistan's energy strategy. The collaboration between public institutions and private investors, particularly through frameworks like CPEC, is vital for meeting Pakistan's ambitious energy goals. The ongoing development of these projects is expected to significantly boost the country's power generation capacity, reduce its dependence on fossil fuels, and contribute to sustainable economic growth.

Pakistan's hydropower development faces additional challenges such as circular debt, economic pressures, and policy uncertainties, which have impacted investor confidence. To revitalize the sector, collaborative efforts are needed to boost investment, streamline development, and implement effective policy measures.

Topics

- Hydropower in Pakistan – Current Landscape and Opportunities
- Overview of Pakistan’s Hydropower Potential
- Public and Private Sector Contributions to Hydropower Development
- The Role of Provincial Governments in Hydropower Development
- Pakistan’s Hydropower Policy: Recent Changes and Future Direction
- Challenges in Financing Large-Scale Hydropower Projects
- Opportunities for International Investors in Pakistan’s Hydropower Sector
- Emerging Technologies in Hydropower Development
- Environmental Sustainability and Hydropower
- Improving Efficiency and Resilience of Hydropower Projects
- Unlocking the Potential of Small and Medium-Sized Hydropower Projects
- The Role of Hydropower in Pakistan’s Energy Transition
- Social and Economic Benefits of Hydropower Development
- Success Stories of Hydropower Projects in Pakistan
- Overcoming the Regulatory and Logistical Hurdles
- Hydropower’s Role in Pakistan’s Water Management and Flood Control
- Pumped storage
- Green financing with respect to hydropower
- Innovative financing scheme

Outcome of the Event

The event underscored hydropower's pivotal role in Pakistan's energy strategy and renewable energy goals. Key outcomes include a strengthened commitment to addressing, financial, regulatory, and environmental challenges through enhanced public-private collaboration. The discussions highlighted the need for streamlined policies and strategic investments to accelerate major hydropower projects. Participants agreed on the importance of innovation and international partnerships to unlock Pakistan's hydropower potential, positioning it as a crucial element in reducing fossil fuel dependence and fostering economic growth.

Event Organizer

Monthly Energy Update - Pakistan's premier monthly magazine dedicated to the Energy Sector, Power Generation, Oil & Gas, Alternate & Renewable Energy, Environment and Engineering. It was an important and vibrant sector that lacked a dedicated publication, and it is the stated aim of the magazine to become the 'voice of industry'. The magazine has completed its journey of 17-years of successful publications.

The Team Energy Update is also actively engaged in providing platforms for Energy Industry by organizing and managing various successful events in recent past like Solar Clean Energy Pakistan, Conferences on LNG and CNG-CONEX, LPG, Hydropower, PowerGen-Pak, Wind Energy Summit as well as Webinars on Renewable Energy. These interactive events were largely attended by local & international delegates and government officials

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Energy Update



CONFERENCE REGISTRATION FORM

Name of Participant(s)

1. _____

2. _____

3. _____

4. _____

Company:

Address:

Telephone:

Participation fee:

Payment through online:

Authorised signature & Company seal

CONFERENCE FEES:

- Fee Included networking tea, food and certificate - @ PKR 30,000+ Tax per participant (1 person)
- @ PKR 25,000+ Tax per participant (Group of 2 or above persons)

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