EDC COMMUNIQUE

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ENERGY™ DEVELOPMENT COUNCIL

In this issue

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AN EDC MEMBER ORGANIZATION

Last month was a historic moment for the energy sector in Nepal, as the Nepal-India energy Joint Steering Committee (JSC) finally agreed to a modality for building the New Butwal-Gorakhpur 400 kV cross border transmission line. This second cross border transmission line, first being the Dhalkebar- Muzaffarpur, has opened up a possibility of exporting surplus power to regional market, mainly India and Bangladesh, from projects that would be developed in Marshyangdi, Kaligandaki and Gandaki corridors. And it is heartening to learn that the government is preparing to allow IPPs to learn that the government is preparing to allow IPPs to use the transmission line, by paying wheeling charge to NEA, who has booked it for 25 years once it comes into operation. With so many power projects under construction and in pipeline, it is obvious that our internal demand of electricity alone is not going to be sufficient to sustain our power sector. Selling electricity to power hungry Bangladesh has become a mutual craving, but with the chicken's neck in between, it is not going to be possible without the

consent of our southern neighbour. Hence, having as many cross-border transmission lines and a clear business model of regional electricity market would be a win-win for all.

Among other avenues, the New Butwal-Gorakhpur Transmission Line has opened prospect of large scale wind and solar farming in Mustang, as the power could be evacuated via Dana substation that would be connected to the New Butwal substation. Global Atlas prepared by the World Bank shows that Mustang district has very good wind and solar energy resources. One report shows that using just two percent of Mustang's land area for solar projects could have generation capacity of around 3,000 MW and another 1200 MW of wind project at 30% capacity factor.

In a country abundant with enormous hydropower potential, many would argue if wind and solar are even viable options. However, looking at the latest trend globally, they are the fastest growing energy sources, accounting for more than 70% of new energy addition since 2013. It shows that these nascent technologies have come of age, favoured by both institutional investors and utilities. Cost and speed are the two things that make these technologies so lucrative. Some of the latest solar auctions have seen price dropping below two cents per kwh. In July, a 150MW solar project in Portugal was bid for €0.0147/kWh ($0.016), while last month in Dubai, a 900MW solar project was bid for $0.0169/kWh. Wind and Solar projects takes less time to build. In India, Adani group built 648MW Kamuthi solar power project, in Tamil Nadu, within one year. It is unimaginable to build a hydro project of such size at such speed of time. And these days, time is money too.

However, it is not a cake walk to build wind and solar projects in Mustang. There are challenges of transmission line and road access. These logistics issues are much better now than before, and could be resolved over time, if the resources are allocated. A 10-meter wide black topped Beni-Korala highway which is currently under construction would ease the road access once completed. Whereas a 220KV substation is being built in Dana, which is around 40 km from Jomsom, headquarter of Mustang district. Land acquisition and environmental approval are the two issues that could actually break the camel's back. The entire district falls inside the Annapurna Conservation Area, and per existing rules, a thorough environmental impact assessment is required for an energy project being developed inside a protected area. However, due to lengthy bureaucratic system, the entire approval process

could take years to complete. Likewise, almost 99% of the land in Mustang is government owned forest land, and it also needs government approval to lease or acquire the forest land, that too could take years. Hence, without resolving these issues prior hand, or making the project construction ready, it would be hard to attract investments- domestic or foreign. After all, time is money!

Onus is on the government to come up with a solution and with the 2/3rd majority in the parliament, the current government has a historic opportunity to cash this moment- all they need is to find the right solution. One solution could be to replicate successful model of Solar Energy Corporation of India (SECI). SECI is a central government undertaking dedicated to develop large-scale grid-connected solar and wind projects in India, formed under its Ministry of New and Renewable Energy. It is registered as a power trader and has the role of auctioning and managing solar and wind farms. In short, it develops large scale projects then put them in auction for IPPs to build, own, and operate (BOO). Then it signs 25-year PPAs with the lowest bidder who directly sell the power to SECI and the latter sells the power to state electricity-distributing companies (discoms) at a nominal premium. It assists in signing of power purchase agreements between the discoms and IPPs. In addition, SECI comes with inherent guarantees. It provides a Payment Guarantee Scheme -like guarantee scheme to be used in case a discom default when directly signing PPAs with state discoms, which has boosted the confidence of IPPs. SECI model is a win-win for IPPs and Utilities, as the IPPs do not have to spend time and resources for developing the project, while utilities get electricity at a competitive rate due to the bidding process.

Exporting electricity is arguably our biggest opportunity to reduce the trade deficit, and with changing times, it is imperative to embrace the fact that wind and solar are our options too, not just hydro power. And if we want to do it big and quick, then we must develop a gigawatt scale wind and solar projects in Mustang. Rest assured, it is realistically possible to generate and export 3000MW of solar and wind power within next five years, and let's not forget- time is money!

EDC ACTIVITIES

October, 2019

Keynote speaker at KIREC 2019, Seoul

Mr. Kushal Gurung, Head of executive committee, EDC (CEO of Wind Power Nepal) was invited as the keynote speaker at KIREC 2019 organized jointly by the Korea Ministry of Trade, Industry and Energy (MOTIE) & Seoul Metropolitan Government, together with REN21 place at Seoul from 23rd to 25th October 2019. There were around 3000 participants from 108 countries. He delivered his keynote on "How Can We Ensure that Rural Areas Get Access to Renewable Energy to Improve Livelihoods". The Mayor of Seoul, Mr Park Won-soon, announced its ambition to make the city energy producer "solar city" by 2022. Mr Ban ki Moon, former UN secretary general and a renowned Climate Change Activist, pointed out that achieving SDGs and Paris Agreement are the two biggest challenges that the humanity have ever faced. There were around 3000 participants from 108 countries.

October, 2019

Meeting at Alternate Energy Promotion Centre (AEPC)

On 21st October, Ms. Itnuma Subba, CEO of EDC attended the discussion meeting on drafting private sector led renewable energy mini grid regulation for Nepal organized by AEPC. Other representatives present in the meetings were from SunFarmer Nepal Pvt. Ltd, Wind Power Nepal, Peak Power Pvt. Ltd and Ghampower, who are also the members of EDC.

EDC ACTIVITIES

October, 2019

Chinese Investment in Nepal's Hydro Sector — Interview

Mr. Sujit Acharya, Chairman of EDC and Mr. Chabbi Raj Pokhrel, CEO of HIDCL (Hydroelectricity Investment Development Company Limited) were interviewed by Business Plus regarding the prospects of Chinese investment in hydro sector and other infrastructure in Nepal. Mr. Acharya opined that Nepal needs to explain to the world that its proposal of Trans Himalayan Economic Corridor is the quickest and safest access to the world's largest consumer market or 3.2 billion people living across South Asia and China .

https://www.youtube.com/watch?v=6unoiVwHMjE&t=221s

October, 2019

Meeting at DAI—Nepal Renewable Energy Program (NREP)

Ms. Itnuma Subba along with Mr. Piyush Jha, PWC visited NREP on 4th November at their office at Thapathali. Introduction about each other's programs and activities and possible cooperation were exchanged with Mr. Douglas Hinrichs, team leader of NREP and other members present in the meeting.

MEMBER UPDATES

Cosmic Electrical Engineering Associates: A contract has been signed to construct 132kV Double Circuit Transmission Line Project for Super Dordi Hydropower Project as an EPC Contractor. 54 MW will be injected into national grid of Nepal by next year.

Mr. Avishek Malla, CEO of ***SunFarmer Nepal Pvt. Ltd.*** receiving "Suprabidhi Memorial Award" on behalf of its team from Honorable Minister of Energy. Similarly, ***Alternative Energy Promotion Center (AEPC)*** received award for excellence in providing Solar productive end use services in Rural Nepal. Many congratualtions !

NEPAL'S PERSPECTIVE

13th October, 2019

HIDCL, Power China to Build 762 MW Tamor Hydel

The government has awarded the 762-megawatt Tamor reservoir hydropower project to a Nepali and Chinese joint venture firm. Hydroelectricity Investment and Development Company Ltd (HIDCL) of Nepal and state-owned Power China Corporation will construct the project on government-to-government (G2G) basis.

Construction of the Tamor project is expected to start from next fiscal and be completed by 2025.

During Chinese President Xi Jinping's two-day state visit to Nepal, the Investment Board Nepal (IBN) and Ministry of Energy, Water Resources and Irrigation (MoEWRI) awarded the contract to HIDCL-Power China to build the project under the public-private-partnership (PPP) model.

Minister for Energy, Water Resources and Irrigation, Barsha Man Pun, informed that the government has also signed an agreement with Power China to build the 156-megawatt Madi multipurpose hydropower project which is located in Rolpa district. As per an initial study, the project cost is around $39 million.

Earlier, HIDCL and Power China had jointly submitted a project development proposal at the IBN to build both the projects with a share structure of 46:54 per cent for the Tamor project, with the Nepali firm investing 46 per cent and Power China investing 54 per cent of the project cost. Similarly, in Madi multi-purpose hydropower project, HIDCL will manage 26 per cent and Power China will manage 74 per cent of the total investment.

After receiving the award letter from IBN, Power China signed a memorandum of understanding (MoU) on project implementation agreement with HIDCL today. Chhabi Raj Pokharel, chief executive officer of HIDCL and Pan Deng Yu, vice chairman of Power China signed the MoU on behalf of their respective organisations.

The Tamor reservoir project will cover Panchthar, Taplejung, Terhathum and Sankhuwasabha districts.

Prime Minister KP Sharma Oli-led meeting of IBN had shortlisted three companies and sought proposals from Power China, Nebras Power Holding

of Qatar and Fuji Electric Company Ltd of Japan on August 1. However, till the final date — September 15 — to submit the power development proposal, only HIDCL-Power China had jointly submitted a proposal to develop the Tamor reservoir project. The government had showcased the project at the second Investment Summit on March 29 and 30.

Earlier, IBN had formed a committee led by Minister Pun to conduct necessary assessment of the proposal and submit it to the IBN. After studying details of the project, the HIDCL-Power China proposal was forwarded to the IBN, which was finalised today.

As per IBN, the government will acquire necessary land and provide it to the developer. The government will also provide project security. Likewise, it will facilitate in legal approvals/permits, review and monitoring of the project.

Meanwhile, the developer will plan, design, build, finance and operate the facilities during the concession period of 30 years. Similarly, the project developer will also be responsible for collecting revenue from the project during the concession period. After the concession period is over, the developer will have to hand over the project to the government.

As per an earlier study, the construction cost of the Tamor project has been estimated at $1.21 billion, including interest during construction, finance cost and the 75-kilometre-long 400 kVA double-circuit transmission line from the project site to Inaruwa in Sunsari district.

As per the Nepal Electricity Authority study, if the project builds a dam that is 205 metres high then it will generate 762 MW of electricity. However, if the height of the dam is increased to 300 metres the project can generate 2,565 MW of electricity.

October, 2019

ADB SIGNS $60 MILLION DEAL FOR UPPER TRISHULI-1 PROJECT, NEPAL

The Asian Development Bank (ADB) has agreed a $60 million financing package with Nepal Water and Energy Development Company Private Limited (NWEDC) to help build and operate a 216MW run-of-the-river hydropower plant on the Trishuli River near Kathmandu, Nepal. The agreement for the Upper Trishuli-1 Hydropower Project was signed by the Director of Infrastructure Finance, South Asia, Central Asia, and West Asia at ADB's Private Sector Operations Department Mr. Shantanu Chakraborty and NWEDC's Chief Executive Officer Mr. Yi Bo Seuk at a ceremony in

Kathmandu. The project is one of the largest private sector investments in Nepal to date.

The financing comprises a loan from ADB and a loan from the ADB-administered Canadian Climate Fund for the Private Sector in Asia II (CFPS II). CFPS II was established by the Government of Canada to encourage private investment in climate change mitigation and adaptation projects in Asia and the Pacific. CFPS II funding was integral to the project's financial viability as it helped attract private capital currently unavailable in the market.

"This is a landmark transaction that will provide strong incentives for further private sector investment in Nepal's energy sector," said Chakraborty. "To ensure it provides sustainable benefits, this project will adopt international best practices in safeguards management and will also introduce measures to promote gender equality including job opportunities for women and better access to education, health care, amenities, and infrastructure."

The project has been prepared in compliance with international environmental and social standards. Detailed studies by international experts have assessed alternatives, impacts, and proposed mitigation measures representing global best practice in hydropower development.

ADB is cofinancing the project with other multilateral development banks and development finance institutions including the International Finance Corporation; Export–Import Bank of Korea; Korea Development Bank; Asian Infrastructure Investment Bank; Commonwealth Development Corporation; Nederlandse Financierings-Maatschappij Voor Ontwikkelingslanden N.V.; OPEC Fund for International Development; and Société de Promotion et de Participation pour la Coopération Economique S.A.

Once operational, the plant is expected to provide over 1200GWh annually to the national grid.

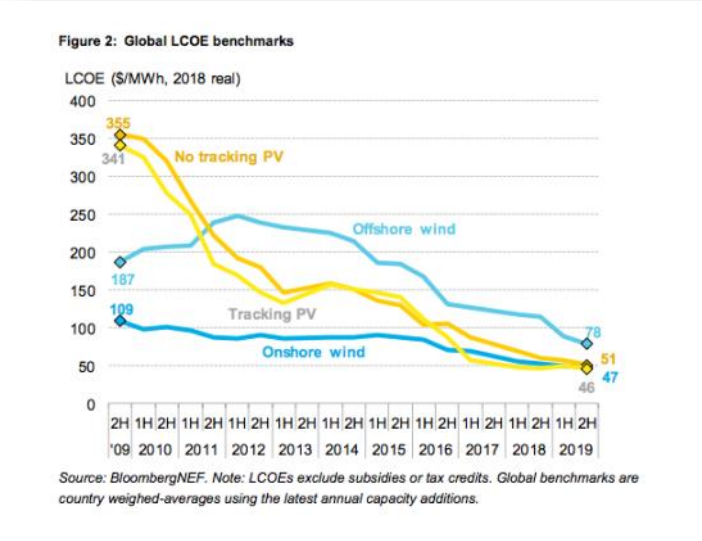
Representatives of development finance institutions, the project sponsor, and government officials after the signing of loans for the Upper Trishuli-1 Hydropower Project. Seated at the center table are Nepal Minister of Energy, Water Resources and Irrigation Mr. Barsha Man Pun (left), and Minister of Finance and ADB Governor Dr. Yuba Raj Khatiwada.

GLOBAL PERSPECTIVES

SOLAR ELECTRICITY CAN RETAIL FOR $0.027-0.036/KWH AS RENEWABLES CLOSE IN ON GLOBAL GRID PARTY

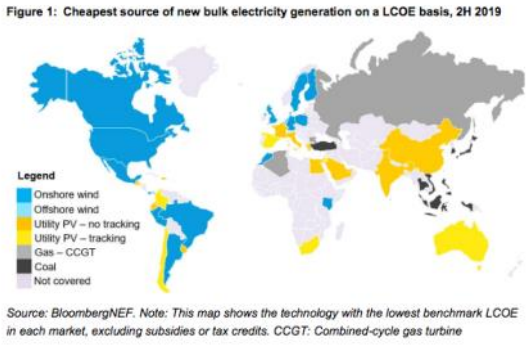
The levelized cost of energy (LCOE) for solar and wind power continues to decline and has already reached parity with wholesale power prices in California, China and parts of Europe, according to the latest report from business intelligence company BloombergNEF (BNEF).

The report illustrates 'grid parity' has already been reached in some of the world's biggest markets as others strive towards the same goal.



According to BNEF's global benchmark, the cost of electricity produced by solar and onshore wind projects stands at $51 and $47/MWh, respectively – down 11% for solar and 6% for onshore wind from six months ago. Cheaper equipment costs are the main driver behind the latest price falls. The offshore wind LCOE benchmark sits at $78/MWh, down 32% from last year.

BNEF analysts estimate some of the cheapest solar projects financed recently will be able to achieve an LCOE of $27-36/MWh, assuming competitive returns for equity investors are factored in. Such generation facilities can be found in India, Chile and Australia.



China's grid parity push

In China, the capital expenditure for utility scale PV plants has fallen 11% in six months, to hit $570,000 per megawatt, BNEF reported. The study's authors

author's say the downturn in Chinese installations since Beijing announced an intent to cut back public solar subsidies at the end of May last year has left developers and engineering, procurement and construction services providers scrambling for business, with an inevitable downward pressure on capital expenditure costs. In the first six months of the year, China deployed only around 11 GW of new PV generation capacity and hopes for an end-of-year rally increasingly appear to have been misplaced.

Meanwhile, the country's grid-parity solar push has intensified. Under the nation's new solar policy, the world's biggest PV market removed limits on non centrally-subsidized PV projects across 12 provinces and parts of three others. The authorities have revealed details of almost 15 GW of 'grid parity' projects already, albeit not expected to come online until 2020-23.

The grid parity projects are not entirely free of public support as land use fees have been reduced or waived in several instances. Grid operators have also been ordered to offer priority dispatch for power generated by grid-parity projects; to ensure electricity off-takers for such power; and to offer fixed-payment power purchase agreements of at least 20 years' duration.

Three-stage process

Average electricity prices for energy generated by new solar and onshore wind plants have reached parity with average wholesale prices in California and parts of Europe, claim the BNEF analysts. In China, the levelized cost of such energy is now below the average regulated coal power price, the reference price tag in the country.

"This is a three-stage process," said Tifenn Brandily, an associate in BNEF's energy economics team and the report's author. He said phase one concerned the electricity generated by new solar and wind projects becoming cheaper than that produced by new coal and gas plants. In phase two, renewable energy reaches parity with power generated by legacy fossil fuel plants and in phase three, clean energy becomes cheaper than that produced by existing thermal plants. "Our analysis shows that phase one has now been reached for two-thirds of the global population," said Brandly. "Phase two started with California, China and parts of Europe. We expect phase three to be reached on a global scale by 2030."

Analysis produced by Bermuda-based asset management company Lazard last year demonstrated building new solar and wind plants is in some cases already cheaper than running existing fossil fuel and nuclear facilities.

October, 2019

Tata Power and The Rockefeller Foundation Announce Breakthrough Enterprise to Empower Millions of Indians with Renewable Microgrid Electricity

Today, Tata Power and The Rockefeller Foundation announced the launch of TP Renewable Microgrid Ltd., which will address one of the most pervasive challenges in modern India: the lack of access to affordable, reliable electricity for millions of rural homes and enterprises. By scaling up an innovative microgrid model to be implemented in collaboration with Smart Power India (SPI) and the Institute for Transformative Technologies, TP Renewable Microgrid Ltd. will provide clean power to nearly 5 million households, directly impacting the lives of 25 million people over the next decade.

This unique collaboration will amplify the Government of India's ongoing campaign to provide electricity to rural areas, unleashing the potential of renewable microgrids to serve households and businesses that suffer from poor reliability and coverage by traditional grid-based power.

Rural businesses and households continue to rely on alternative sources to power daily needs—with more than 40% of rural enterprises in states like Bihar and Uttar Pradesh relying on non-grid sources of power such as diesel. TP Renewable Microgrid Ltd. will provide a competitive and cleaner source of power, expanding access and lowering effective electricity costs and carbon emissions by 1 million tons per year as well as reducing the amount of diesel burned by 57 million liters yearly. Over time, the opportunity to deploy grid-interactive solutions will materialize, creating a more integrated, stable and smart rural grid.

TP Renewable Microgrid Ltd. will be operated and managed by Tata Power, India's largest integrated power company with approximately 11,000 MW of installed generation capacity and over 2.6 million customers under management across Delhi, Ajmer and Mumbai. Tata Power brings significant experience in distributed energy, having established a joint venture with the Delhi government to serve a large portion of the local population, including sizeable slum communities.

"We are proud to bring energy to millions of people. Once at scale, TP Renewable Microgrid Ltd. anticipates supporting 100,000 rural enterprises, creating 10,000 new green jobs, and providing irrigation for over 400,000 local farmers," said Tata Power CEO Praveer Sinha. "We look forward to empowering communities across India by creating micro enterprise and opportunities for all people."

TP Renewable Microgrid Ltd.'s anticipated

rollout of 10,000 grids will drastically expand the global microgrid footprint, and will act as a catalyst for governments and the private sector to collaborate in building clean, resilient and stable grids in other markets. SPI, which was launched by The Rockefeller Foundation in 2015, would provide technical expertise to the enterprise, having built microgrids that today provide clean, distributed electricity to more than 200 villages in rural India.

"We have an unprecedented opportunity to transform the lives of millions of people in India by providing access to power," said Dr. Rajiv J. Shah, President of The Rockefeller Foundation. "Providing reliable electricity to the communities that need it most is one of the best ways for us to end poverty and unleash economic opportunity in our lifetimes."

In addition to building, owning and operating microgrids in India, TP Renewable Microgrid Ltd. intends to provide ancillary micro enterprise services to benefit communities.

TP Renewable Microgrid Ltd. reflects a scaling-up of The Rockefeller Foundation's efforts to tackle energy poverty worldwide. In September 2019, The Rockefeller Foundation also announced the launch of the Global Commission to End Energy Poverty (GCEEP) to fast-track sustainable power solutions, investments and partnerships that will deploy globally over the next decade.

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Energy Development Council (EDC) is a non-profit umbrella organisation of the entire energy sector of Nepal established to ensure every Nepali has access to energy and energy security by promoting favourable policies and investments. EDC consists of Energy Developers, Energy Associations, Energy Consumers, Energy Financiers and other funds, Consumer Institutions, Energy Contractors from both private and government sectors involved in hydropower, solar, wind and other renewables, generating more than 80 percent of the nation's total electricity.

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