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# ENERGY COMMUNIQUE

## EDITORIAL

## OVERCOMING BARRIERS TO HYDROPOWER DEVELOPMENT

While the history of hydropower development dates back to 1911 in Nepal, the country is still struggling to harness hydropower potential to its minimum requirement. It has been told over and over again that Nepal's economically feasible hydropower generation capacity is one of the highest in the world. However, this huge potential is still untapped.

Nepal is blessed with abundant hydro resources. Thanks to the country's major rivers and their small tributaries. With the potential to generate over 90,000 MW, nearly 50,000 MW power has been told to be economically and technically viable.

As a result of proper management, Nepal Electricity Authority has been able to slash the power cut to few hours a week. It is definitely a relief to Nepali consumers who were suffering long hours of load shedding in the past. But what is equally important to understand that nearly half of our population have no access to grid-connected power. Because of which, many people are forced to rely on alternative sources like firewood and imported fossil fuel. It is also important to highlight that the power demand is also increasing day by day. The government estimates that at least 8,000 MW of additional power will be needed to fulfil the demand of Nepal alone by 2030. This suggests that investment in hydropower can be beneficial to the hydropower developers as well as the consumers.

Although Department of Electricity Department has issued about 13,000MW of survey license, only a small fraction of those issued has been initiated for construction. A lack of political stability and good governance are some of the important factors which are hindering

Mr. Sushil Pokharel
Executive Chairman
*Sushmit Energy Pvt. Ltd.*
An EDC Member Organization

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The lack of inter-governmental agency co-ordination and prolonged processes for environmental clearances from the government are also often cited as other barriers by the developers. The lack of proper coordination with the locals and their unreasonable demands are also challenging factors in hydropower development. Besides, these socio-political challenges, there are other natural risks like earthquakes and landslides. The little discharge of Nepali rivers in the dry season is also another issue often pointed out by hydropower experts.

### Silver Lining

Despite all above cited problem, it is important to focus that a conducive environment has been created for developers and investors. Although there are some challenges to identify the barriers to the development of hydropower resources, a lot of progress has been done.

At present more than 12 major hydropower projects are under construction. Although many of these project's completion has been a setback because of the devastating earthquake in 2015, the government is firm in the reduction of energy crisis. The government has declared a National Energy Crisis Reduction and Electricity Development Decade (2016-2026) with the aim to end the existing energy crisis of the country and to develop hydropower projects.

Political turmoil has long been blamed as a major barrier for hydropower development, particularly to attract FDI. With recently held local and parliamentary elections, it can be at least assured that political situation in the country is back on the tracks. A conducive environment has been created for developers and financers. In order to address the issue with locals, many hydropower projects have started involving the locals within the projects in different ways.

Similarly, with the objective to help investors develop their projects rapidly, the government is establishing a coordination committee which will work with the investors. The committee will also work towards simplifying administrative procedures.

Another barrier is the requirement of huge capital in investment and financing. However, this problem is also being addressed with the concept of project financing and increasing interest of foreign investors as well as Nepali residing abroad and within the country. Now, the country needs rebranding to assure the investors that the country is ready for hydropower projects.

### 'Unleashing 40,000 MW in 10 years'

Energy Development Council, the umbrella organization representing the entire energy sector organized a three-day summit with the target of knowledge-sharing on investment in Nepal. The event featured renowned speakers and provided a platform for investors, developers and financiers worldwide to seal the deal in the energy sector.

This event provided an opportunity for the investors to come and feel the sense of optimism that is growing in the country with political stability. The event brought in the stakeholders of hydropower so that the risks and benefits of hydropower projects could be analysed from the perspective of different participants. The summit targeted to bring an investment worth US$ 80 billion to Nepal. The ambition to generate 40,000 MW in 10 years will not be far the investors and the government are steady in developing new projects.

# EDC ACTIVITIES

## EDC Executive Committee meeting held at EDC office


On January 3rd, an executive committee meeting was held at the EDC office, Kamaladi. The meeting was attended by Mr. Sujit Acharya, Mr. Uttar Kumar Shrestha, Mr. Bhanu Pokharel, Mr. Kushal Gurung, Ms. Itnuma Subba and Mr. Sushil Pokharel. The agenda of meeting was to further discuss about the various activities and preparation for NPIS 2018. During the meeting Mr. Sushil Pokharel, Executive Chairman of Sushmit Energy was also welcomed to join as a new executive committee member.

## EDC Visits Ambassador of German Embassy

On January 4th, Mr. Sujit Acharya, the Chairperson of EDC along with Ms. Itnuma Subba, Executive Manager visited His Excellency Mr. Roland Schäfer, accompanied by Dr. Claudia Hiepe, Deputy Chief of Mission, German Embassy. The purpose of the meeting was to inform H.E. about NPIS 2018. Mr. Acharya also extended an invitation to the Ambassador for delivering a Special Address as well as Chair one of the Sessions in the Summit. The Ambassador was positive and has shown a great interest for participation in NPIS 2018.

# EDC ACTIVITIES

## EDC Press Meet for Nepal Power Investment Summit 2018


On January 11th, a press meet was organized by EDC for the upcoming NPIS 2018. The aim of the event was to inform people about the three-day summit and how it will target knowledge-sharing on investment in Nepal, feature renowned speakers and provide a platform for investors, contractors and financiers worldwide to expand business and make deals in the energy sector along with the theme of the Summit 40,000 MW in 10 years. The press meet held at Hotel Yak & Yeti was led by Mr. Sujit Acharya, Chairperson of Energy Development Council accompanied by other executive committee members.

The event saw presence of various local media houses and reporters from The Himalayan Times, Republica, Nepal Television, Business Television, Annapurna Post, The Kathmandu Post, Nagarik, Himal Television, Setopati, Aarthik Abhiyan, Avenues Television, Asia Pacific Daily, Karobar and Nepal Samacharpatra.

# EDC ACTIVITIES

## EDC Chairperson interviewed by Business Plus


On January 21st, Mr. Sujit Acharya, Chairperson of Energy Development Council along with Dr. Er. . Chandika Bhatta, the Director of Special Economic Zone Authority, Nepal was interviewed by Business plus Television. Business Plus is a complete solution of each and every aspect of Nepalese and International economy, trade and market and it is a forum of Investors, Industrialists, and Traders and for the general public. The Interview was based on foreign investments in the Hydro Projects of Nepal. Mr. Acharya also talked about developing 40,000 MW in the next 10 years one of the main objectives and of NPIS 2018.

https://www.youtube.com/watch?v=_3SVwW7rEik&t=235s

## EDC visits the Right Honourable President of Nepal for NPIS 2018

On January 24th, the EDC delegation led by Mr. Sujit Acharya, the Chairperson of EDC and Mr. Kushal Gurung, EDC Executive Member visited the Rt. Honorable President of Nepal Smt. Bidhya Devi Bhandari for the upcoming NPIS 2018. The chairman extended an invitation to the Rt. Honourable President to inaugurate the NPIS and deliver the inaugural remarks at the Summit.

## Meetings Corner

During the months of December and January, EDC had various meetings for potential partnership in NPIS 2018. Some important ones were with the following companies: BYD, TBI Holdings, Nepal Non Resident Association, Alternative Energy Promotion Centre, Business Oxygen, Global IME Bank, Nepal Investment Bank Limited Capital, Dolma Impact Fund.

# EDC ACTIVITIES

## EDC welcomes a new member "Sushmit Energy"

EDC heartily welcomes Sushmit Energy to be a member of its council. Sushmit Energy Pvt. Ltd is a leading hydropower project development company established with the aim of expanding hydro energy investment in Nepali market. Sushmit Energy specializes in the development and management of hydro projects with the aim of cost-effective investment and high level of profit to the investors and the nation as well.

## EDC welcomes new member "ANAK Hydropower Co. Pvt. Ltd"

EDC heartily welcomes Anak Hydropower Co. Pvt. Ltd as new member of its Council. Anak Hydropower Co. Pvt. Ltd. is currently developing a 7 MW project named "Molung Hydropower Project" in Okhaldhunga.

## EDC welcomes new member "Gandaki Hydro Power Development Co. Pvt. Ltd"

EDC heartily welcomes Gandaki Hydro Power Development Company Pvt. Ltd to be a member of its council. Gandaki Hydro Power Development Co. Pvt. Ltd is a developer company which has completed the "Mardi Khola Small Hydro Power Project of 4.8MW" currently located at Rivan Vdc, and Lwangghalel Vdc Machhapuchchhre Rural Municipality.

## EDC welcomes new member "Crystal Power Development Pvt. Ltd."

EDC heartily welcomes Crystal Power Development Pvt. Ltd to be a member of its council. Crystal Power Development Pvt. Ltd. is currently developing a 155 MW project named "Super Tamor Hydroelectric Project" , located in the Taplejung District under a feasibility stage.

# EDC ACTIVITIES

## Nepal Power Investment Summit 2018 conducted from 27th-29th January 2018


The second Nepal Power Investment Summit organized by EDC in collaboration with Bloomberg New Energy Finance, China Daily, International Water Power and Dam Construction Magazine, Xinhua and Nepal Television took place at Hotel Soaltee Crowne Plaza. The three day Summit was held from 27th -29th January with two clear objectives of developing 40,000 MW in the next 10 years and assembled electric in Nepal. The summit was inaugurated by Rt. Honorable President Smt. Bidya Devi Bhandari who stressed on the need of infrastructure based green energy. The Honorable President was offered a token of gift – A book entitled "How to Develop a Hydropower Project in Nepal" for investors who seek to understand the sector in Nepal. The summit saw the participation of 350 international and national delegates from multinational investment companies, world famous speakers, government officials, diplomats, officials of the EDC, and other stakeholders. The chairman of CPN UML and former Prime Minister, Mr. K.P Sharma Oli made remarks on the closing ceremony of the Summit wishing the Summit a grand success. He spoke of the renewable resources of Nepal and showed his commitment to work with national and foreign investors in coming days in power sector development for the country and the region as well.

# EDC ACTIVITIES

## World Class International Training Provided at Day Two and Three of NPIS 2018

Training on Microgrids by NARI State Grid China

World Class International Training Programs were provided from 28th – 29th January at the NPIS 2018. On day 2 the training programs were provided on topics such as "Hydropower economics, financing and risk" by presenters Mr. Truls Holtedahl from Norconsult, Mr. Tom Solberg from International Centre for Hydropower and Mr. Inge Lovasen Statkraft.

On day 3 of the Summit on 29th January, training on "Engineering Procurement Construction and Financing" was provided jointly by Mr. Yu Hong from Sino-Sure, Mr. Gong Li Xin from China Construction bank and Mr. Tan Ding from Hunan Construction Engineering Group.

Training on "Sustainable Energy Development and the Role of Hydropower" was provided by trainers Mr. Jorge Gastelumendi & Ms. Amy Newsock from The Nature Conservancy. A parallel training session was also provided on the same day on "Micro grids" by Dr. Zhang Zizhong and Mr. Li Zhe NARI State Grid China.


Training on Sustainable Energy Development and The Role of Hydropower by The Nature Conservancy

# EDC ACTIVITIES

## The tender notice for the month of December

HARATI is an IT company, working in several technologies based products, services and provides online service portal (tendernotice.com.np). Following is a list of tender notice provided by HARATI for the month of December;

TenderNotice.com.np

**Tender, Bids and Notices related to Hydro and Energy segments in Nepal**

**Date : December 2017**

| S.No. | Notice Publisher | Description | Published Date | Last date of Submission | Notice Category |
|---|---|---|---|---|---|
| 1 | National Hydropower Company Limited, Indrawati Hydropower Station, New Baneshwor, Kathmandu | Maintenance of Head Works | 12/29/2017 | 1/12/2018 | Tender |
| 2 | Siddhi Hydropower Company Private Limited, Kathmandu | Construction of Wier, Intake, Gravel Trap, Approach Canal, Setting Basin, Head Pond etc. Fabrication, Installation, Erection, Testing and Commissioning of Penstock Pipe, Expansion Joint Gates and Stop Log etc. | 12/22/2017 | 1/22/2018 12:00 | Tender |
| 4 | SJVN Arun-3 Power Development Company (P) Ltd., Khandbari, Nepal | Amendment Notice | 12/22/2017 | 12/31/2017 15:00 | Amendment Notice |
| 5 | Upper Tamakoshi Hydropower Limited, Upper Tamakoshi Hydroelectric Project, Gyaneshwor, Kathmandu | Maintenance of Infrastructure Works | 12/21/2017 | 1/5/2018 12:00 | Quotation |
| 7 | Siuri Nyadi Power Limited | Civil Works including Access Road | 12/15/2017 | 1/17/2018 | Pre-Qualification |
| 9 | Madhya Bhotekoshi Jalavidyut Company Limited | Design, Supply, Construction, Testing and Commissioning of Transmission Line | 12/12/2017 | 1/11/2018 12:00 | Tender |

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# EDC ACTIVITIES

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TenderNotice.com.np

**Tender, Bids and Notices related to Hydro and Energy segments in Nepal**

**Date : January 2017**

| S.No. | Notice Publisher | Description | Published Date | Notice Category | Product Service |
|---|---|---|---|---|---|
| 1 | Rasuwagadhi Hydropower Company Ltd., Lazimpat, Kathmandu | Supply and Delivery of Double Cab Pickup and Tractor | 1/23/2018 | Tender | Automotive / Vehicles |
| 2 | Madhya Bhotekoshi Jalavidyut Company Limited | Design,Supply, Construction, Testing and Commissioning of Transmission Line | 1/23/2018 | Tender | Electronics/ Electric Utilities |
| 3 | Daram Khola Hydro Energy Limited, Thapathali, Kathmandu | Main Civil Works of Hydropower Project | 1/18/2018 | Tender | Construction/ Building |
| 4 | Daram Khola Hydro Energy Limited, Thapathali, Kathmandu | Main Hydromechanical Works | 1/18/2018 | Tender | Other Product/ Services |
| 5 | SJVN Arun-3 Power Development Company (P) Ltd., Khandbari, Nepal | Amendment Notice | 1/2/2018 | Amendment Notice | Other Product/ Services |

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## Summit to galvanise Nepal's energy sector

Jan 12, 2018-Energy Development Council (EDC), the umbrella organisation for the entire energy sector in Nepal, is organising the second edition of Nepal Power Investment Summit from 27 to 29 January in Kathmandu. The three day event, according to organisers will feature conferences, international training programmes by Fortune 500 companies along with an energy mart.

The organisers are looking to create a platform for one-step business by matching industry players to share knowledge and expand business in the energy sector. Major participants of the event will be high level delegates from SAARC region, ministers, government officials, ambassadors to Nepal, bankers, financers and developers of energy projects.

"This is the best platform to gather all the key decision makers of the energy sector to make deals on 'shovel ready' power projects in the pipeline and to explore cooperation with potential partners under one roof," reads the press statement issued by the organiser. The summit is billed as an event that is crucial in informing and updating various stakeholders about the current policies and scenario of Nepal's energy sector.

The organiser has claimed that participants of the summit will have access to investors willing to provide debt financing ranging from $5 million to $20 billion for various power projects that include hydro, solar and wind energy. Similarly, companies with total capacity of $3 billion equity financing are also participating in the event, according to the organiser.

"The summit will be an ideal platform for various investors, contractors and financers from around the world and Nepal to make deals among themselves," reads the press statement.

The EDC is also organising training on various key topics such as engineering, procurement, construction and financing (EPCF) model of developing power project, hydro equipment and renewable energy. These training programmes will be conducted by world renowned energy associations and Fortune 500 companies The summit will also include high profile speakers from SAARC, BIMSTEC, Asean along with nationally and internationally acclaimed energy and business personalities and diplomats from the neighboring countries.

Likewise, the event will also see book launches such as 'How to Develop a Power Project in Nepal - A Step by Step Guide', 'Inventory of Rivers in Nepal' and 'Investment Guide to Investing in Nepal'.

(To view the full article, please visit the link below.)■

Source: http://kathmandupost.ekantipur.com/news/2018-01-12/nepal-power-investment-summit.html

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## Power investors meet

**Can Nepal generate 40,000MW of hydroelectricity in 10 years and unleash a slew of downstream industries?**


**Sujit Acharya, Chairperson of Energy Development Council (EDC) at the first Nepal Power Investment Summit in 2016**

Can Nepal generate 40,000MW of hydroelectricity in 10 years and unleash a slew of downstream industries? That is the ambitious goal set by the Nepal Power Investment Summit (NPIS) 2018 taking place 27-29 January at Soaltee Crowne Plaza.

The Summit is organised by the Energy Development Council, the umbrella organisation representing the entire energy sector, both private and public. The three-day conference will target knowledge-sharing on investment in Nepal, feature renowned speakers and provide a platform for investors, contractors and financiers worldwide to expand business and make deals in the energy sector.

The Energy Mart is the highlight of the summit, gathering sponsors and their products to attract project stakeholders to make deals. More than 100 qualified hydropower projects, 20 solar generation projects, 10 transmission line projects and 13 smart city plans will be showcased at the summit.

Nepal's topography and natural resources provide the ideal conditions for the generation of hydropower, which has so far been largely untapped. More than 6,000 rivers originate in Nepal and flow to India, while Nepal's six main rivers actually originate in China and flow across the Himalaya into Nepal.

While Nepal has potential to generate up to 48,000MW of economically feasible hydropower, only 600MW has so far been harnessed. Although 2,000MW is expected to come online in the next 2 years, the lack of investment in energy means much of Nepal's hydropower potential flows unused into India every year. The estimated investment opportunity of hydropower in Nepal is US$ 80 billion.

With the country likely headed towards political stability after elections, there is a sense of cautious optimism among investors about electricity generation. According to the government's Energy Demand Projection 2030, per capita electricity consumption can reach 700-kilowatt-hour per year by 2030, for which a total of 8,000MW will be needed.

Fortune 500 companies and equity

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financing firms will participate in the summit with the result that engineering, procurement and construction (EPC) financing from US$5 million to US$ 20 billion will be accessible. China Construction Bank, the world's second-largest bank, will provide training on how to get access to such loans. A step-by-step exclusive book, How to Develop a Hydropower Project, will also be available.

(To view the full article, please visit the link below.)■

Source: http://nepalitimes.com/article/business/Power-investors-meet-2018,4130

## 'Nepal Power Investment Summit 2018' from Jan 27

KATHMANDU, Jan 12: Energy Development Council (EDC) is organizing Nepal Power Investment Summit 2018 in Kathmandu on January 27-29. The event is being organized with the slogans '40,000 MW in 10 years' and 'Assemble Electric in Nepal'.

Two conferences are being organized on the sidelines of the event. The summit will see the participation of multinational investment companies, world's famous speakers, government officials, officials of the EDC, and other stakeholders, the organizers said in a press meet in Kathmandu on Thursday. There will also be a training session to discuss tactics of investment.

Speaking at the press meet, Sujit Acharya, chairperson of EDC, promised to bring loan investments worth US$ 80 billion in Nepal through the summit. "If we fail to meet the target, I will resign from the post," Acharya said, adding: "The summit will tell stakeholders why Nepal is a favored for foreign investments."

Acharya further stressed the possibility of generating electricity in Nepal not only from water current but also from waste, wind and solar radiations.

Similarly, Sushil Pokharel, executive member of EDC, said that the summit would be developed as an energy mart in this edition. "It will contribute to create an environment conducive for power development in Nepal," he added.

Human Construction Engineering Group of China, Andritz of Austria, and Dragon Capital of Vietnam are the sponsors of the summit. The first Nepal Power Investment Summit was organized in 2016.

(To view the full article, please visit the link below.)■

Source: http://www.myrepublica.com/news/34208/

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CHINA DAILY 中国日报

## Nepal holds energy investment allure

**Power summit in Kathmandu to highlight the Himalayan nation's topographical advantage in sectors like hydroelectricity**

**From left: Ye Xinping, chairman, Hunan Construction Engineening Group, China; Sujit Acharya, chairperson, Energy Development Council, Nepal; Leela Mani Paudyal, Nepal's Ambassador to China. [PHOTO PROVIDED TO CHINA DAILY]**

Kathmandu is hosting a power summit to attract foreign investors and help the nation develop 40,000 megawatts in the next 10 years.

The three-day Nepal Power Investment Summit on Jan 27-29 will showcase more than 120 investment projects related to hydropower, solar, energy storage, smart cities, and special economic zones for assembling electric machinery and equipment.

Sandwiched between India and the Tibet autonomous region of Southwest China, the Himalayan country's unique topographical characteristics give it the potential to generate green energy such as hydropower. A report by the International Finance Corporation has estimated there are climate investment opportunities in Nepal that will be worth US$46 billion by 2030 in key sectors including renewable energy.

Sujit Acharya, chairperson of Nepal's Energy Development Council (EDC), said those investment opportunities could be even bigger — as much as US$80 billion in the next 10 years. EDC, the organizer of the investment summit, is the umbrella organization for the entire energy sector in Nepal.

"Nepal's current situation is that we have a very low installed capacity of about 1,100 MW of electricity, with almost 400 MW of this imported," said Acharya.

"In contrast, just our hydropower potential is 300,000 MW, which is the largest in South Asia. Therefore, we have not even realized 1 percent of our entire hydropower potential."

But Nepal's per capita energy consumption is the lowest in South Asia at only 191 units per year, according to Nepal's ambassador to China, Leela Mani Paudyal. This compares to 4,000 units in China and 1,000 units in India.

Data from the Nepal Electricity Authority show that only 65 percent of the people have access to grid electricity. "Around 60 percent of the population is using electricity mostly only for lighting purposes," said Paudyal.

While the government has

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declared its goal to develop 17,000 MW in the next 10 years, Acharya said Nepal will require 40,000 MW to transform its economy from import-based to an energy-sufficient consumption- and export-based economy, replacing imported fossil fuels and petroleum vehicles that drain 45 percent of Nepal's budget annually.

Nepal has been working to create an investment-friendly environment, including offering preferential policies and providing tax exemption for foreign investment. It encourages foreign investment both as joint-venture operations with Nepalese investors and as 100 percent foreign-owned enterprises.

**High returns**

In addition, Acharya said Nepal's power sector offers one of the highest returns on investment in Asia — more than 25 percent return on investment over the holding period and four times the value of the investment on exit.

"The various advantages such as a US dollar-based power purchase agreement along with an annual increment in the power purchase rate during the initial nine years, complete tax exemption for the first decade along with a project development agreement that protects investors from changes in law, ensures the above results," said Acharya.

Currently, there are more than 50 foreign investors in Nepal's power sector and Acharya expects the number to grow rapidly in the coming years. The top investing countries are China, India and South Korea.

A Xinhua report citing data from Nepal's Department of Industries showed that China has topped investment commitments to Nepal in the past few years. China committed the largest foreign direct investment in the fiscal year ended July 2016 and also pledged more than two-thirds of total FDI to Nepal during the first half of the current fiscal year. In 2014, it was reported that more than 90 percent of the investment from China went to the hydropower sector.

Ye Xinping, chairman of China's State-owned Hunan Construction Engineering Group (HNCEG), said the engineering cost of hydropower plants is relatively low compared with thermal power, wind power and photovoltaic power systems, making it a green and cost-effective choice for investors. The company is in talks with the Nepal government about the possibility of investing in the country's hydropower sector.

HNCEG has rich experience in overseas electricity projects, with a footprint in Fiji, Mongolia, Ghana and other countries. It is now undertaking construction works in Papua New Guinea on a hydropower plant with installed capacity of 51,000 kilowatts, which is that country's largest hydropower plant so far.

"We now have nearly 20 hydropower plants under construction in China and foreign countries," said Ye, adding that the company has strong capabilities in designing, constructing and operating hydropower projects.

Ye said the overseas projects not only help meet local demand for electricity but also provide jobs for local residents. "Like electricity-related projects in Fiji, Mongolia and Ghana, around 70 percent

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of our staff are hired locally.

We provide training and proper management arrangements to ensure their income and welfare," he said.

"(Foreign) companies need to localize themselves," said Ye. "Not just building up a good relationship with the local government, (and) the embassy, but also gaining support from local residents."

For foreign investors like HNCEG, Ye said the main concern will be risks in politics and resources, as well as the sustainability of economic development. When making investment, a reliable support system is needed, including market research, applying qualifications in accordance with the rules and regulations to ensure a project's smooth implementation.

"Nepal has created a favorable environment for foreign investors, especially with the investment protection agreements it has signed with many other countries. These agreements, along with other agreements that avoid double taxes, have created legal protection for investors like Chinese companies," said Ye.

Ambassador Paudyal said Nepal will have a stable government after the recent election, boosting investor confidence. He said the government will continue to adopt friendly foreign investment policies and make efforts to meet investors' demands.

**Bilateral ties**

Paudyal expects more participation from Chinese companies under the China-led Belt and Road Initiative, which aims to boost trade and infrastructure connectivity between Asia and the rest of the world by reviving the ancient Silk Road routes. He believes the initiative allows China and Nepal to develop projects of mutual benefit.

Nepal and China in May reached a memorandum of understanding on bilateral cooperation under the framework of the Belt and Road Initiative.

"By developing power, Chinese enterprises can contribute to the socioeconomic development endeavor of Nepal that reaches to every household," said Paudyal. "Jobs created for Nepali youths by the Chinese investment will further strengthen, at the people's level, our age-old friendly relations."

In November, Reuters reported that Nepal scrapped a US$2.5 billion deal with China Gezhouba Group Corporation to build the country's biggest hydropower plant — the Budhi Gandaki hydroelectric project — raising questions among foreign investors.

"Lots of Chinese investors have asked me questions about the cancellation of the said project and I have been insisting to them that the cancellation of this project would not impact the future investment from Chinese enterprises in Nepal," said Paudyal.

A case in point is the 750 MW West Seti hydropower development project. Just a few days after the cancellation of the deal for the Budhi Gandaki plant, an agreement was signed by the Nepal Electricity Authority and China Three Gorges International to form a joint venture company to expedite the West Seti project.

"The government is committed to protect the legitimate interests of Chinese investors," said Paudyal.

Ye at HNCEG admits the scrapping of the Budhi Gandaki deal will

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have caused some negative effects for Chinese investors, yet it is important to resolve the problems and barriers in cooperation by enhancing communication with the local government. He foresees more companies expanding their business, especially in infrastructure projects, in support of the Belt and Road Initiative.

Acharya from EDC said investors should pay attention to power-related projects other than in the hydropower sector. "Chinese companies should begin to establish assembling plants for electric machinery and equipment in Nepal if (China) wants to be the major player in the South Asian market," he said.

"It is the right time for Chinese financial institutions and Chinese EPC (engineering procurement construction) contractors to come to Nepal and become the major partner in the 40,000 MW endeavor of Nepal," said Acharya.

(To view the full article, please visit the link below.)■

Source: http://www.chinadaily.com.cn/a/201801/23/WS5a66ee69a3106e7dcc136123_1.html

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## Nepal offers immense opportunity for investors in hydropower: President


**Nepali President Bidya Devi Bhandari addresses the Nepal Power Investment Summit 2018 in Kathmandu, Nepal, on Jan. 27, 2018. Bidya Devi Bhandari on Saturday urged domestic and foreign investors to inject their capital in hydropower to cash in on the immense opportunity provided by soaring demands of electricity in South Asian region. (Xinhua/Pratap Thapa)**

KATHMANDU, Jan. 27 (Xinhua) -- Nepali President Bidya Devi Bhandari on Saturday urged domestic and foreign investors to inject their capital in his country's hydropower to cash in on the immense opportunity provided by soaring demands of electricity in South Asian region.

"In Nepal and South Asia where rapid development is expected, demand for electricity is soaring. Hence, I reckon there is a good opportunity to invest in Nepal's hydropower sector," she said while addressing the Nepal Power Investment Summit 2018 which kicked-off in Kathmandu on Saturday.

The three-day summit has brought together Nepali policy makers, domestic power developers, multinational companies related to power sectors, international financiers and experts who will discuss investment opportunities in Nepal's power sector and find financiers for the "ready to go" projects as well, according to the organizer Energy Development Council (EDC).

President Bhandari said that hydropower development in the country is crucial for meeting Nepal's internal demand and exporting the surplus energy to the neighboring countries.

Pointing out the fact that Nepal has been able to develop just around 1,000 MW of the electricity in more than a century despite having immense potential of generating 83,000 MW of electricity from its water resources, President Bhandari said this has left a lot of room for investors to harness Nepal's water resources and take benefit.

On the occasion, EDC chairperson Sujit Acharya said Nepal has the potential of generating 40,000MW electricity in the next 10 years.

"The resources needed for harnessing hydropower to that level could be available from the international financing institutions under Engineering, Procurement, Construction and Financing modality," he said.

Around 100 participants from 30 international companies and over 400 participants from Nepal including policymakers and the private sector are participating in the summit. (To view the full article, please visit the link below.)■

Source: http://www.xinhuanet.com/english/2018-01/27/c_136929666.htm

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CHINA DAILY 中国日报

## Hydropower: Attracting foreign investment 'Nepal's top priority'


**This Jan 27, 2018 photo shows Nepalese President Bidya Devi Bhandari delivering the inaugural speech at the Nepal Power Investment Summit held at Soaltee Crowne Plaza in Tahachal Marg, Kathmandu, Nepal. (PHOTO PROVIDED TO CHINA DAILY)**

Nepalese President Bidya Devi Bhandari said on Jan 27 that the government is committed to creating a congenial environment for investment, with attracting foreign investment in hydropower as the top priority.

"In the wake of major political change in the country, our main goal is to achieve rapid economic growth," said Bhandari, emphasizing that developing infrastructure, especially in the hydropower sector will be key to the country's progress.

Bhandari was speaking in Kathmandu at the annual Nepal Power Investment Summit. Focusing on developing 40,000 MW in the next 10 years in Nepal, the three-day event, from Jan 27-29, will showcase energy investment opportunities in Nepal and provide updates on the sector's development.

Government officials, ambassadors, industry leaders, and academic researchers from countries including Nepal, China, India, Bangladesh and Germany are attending the summit.

Noting the need to develop renewable energy in the context of climate change and excessive use of fossil fuels, Bhandari said hydro resource is a "valuable gift of nature" to Nepal in developing one of the most eco-friendly and sustainable source of energy - hydroelectricity.

As a landlocked central Himalayan country in South Asia, Nepal is endowed with a large number of high mountains with plenty of glaciers leading out to more than 6,000

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**This Jan 27, 2018 photo shows Roland Schafer, ambassador of Germany to Nepal; Sujit Acharya, chairperson of Nepal's Energy Development Council; Nepalese President Bidhya Devi Bhandari; Mashfee Binte Shams, ambassador of Bangladesh to Nepal, and Manjeev Singh Puri, ambassador of India to Nepal, at the opening ceremony of the Nepal Power Investment Summit, held at Tahachal Marg, Kathmandu, Nepal. (PHOTO PROVIDED TO CHINA DAILY)**

rivers.

But Nepal's hydro resource is far from fully utilized, said Bhandari. Compared with a hydro potential of 8,3000MW, the country only has a production capacity of around 1,000 MW, suggesting 99 percent of its resources are waiting to be developed.

Bhandari called upon both local and foreign investors to be actively involved in Nepal's hydropower sector. "The government is committed to create a congenial atmosphere for investment by taking due consideration of the investors' interest and real needs," she said.

Bhandari said capital, technology, market feasibility and development of cross-border transmission line will be needed for implementation of large scale projects, and the government will accord top priority to attract foreign investment in hydropower.

"I reckon there is a good opportunity to invest in hydropower sector," said Bhandari. "I believe the development of hydropower in Nepal would benefit the neighboring countries as well, and would eventually contribute to economic development of the region."

The summit, organized by Nepal's Energy Development Council, also witnessed the launch the guidebook "How to Develop A Hydro Power Project in Nepal", which will provide information to investors in utilizing the country's hydro resource in various forms.

(To view the full article, please visit the link below.)■


**This Jan 27, 2018 photo shows guests reading China Daily Asia Weekly. (TANYA WANG / FOR CHINA DAILY)**

Source: https://www.chinadailyasia.com/articles/45/35/42/1517049456351.html

# MEDIA COVERAGE

## Nepal bets on hydro resource to fuel growth

**President tells summit that attracting foreign investment to energy sector is top priority for South Asian country's economic development**


**President Bidhya Devi Bhandari (center) attends the opening of the Nepal Power Investment Summit on Jan 27. (PHOTO PROVIDED TO CHINA DAILY ASIA WEEKLY)**

Landlocked Nepal is banking on hydropower to drive the country's economic growth and it hopes to attract foreign investors to the sector.

The need for foreign investment to develop 40,000 MW of energy in the next 10 years in Nepal — with hydropower being key — was highlighted at a Jan 27-29 summit held in Kathmandu.

Nepal's President Bidhya Devi Bhandari said attracting foreign investment to the hydropower sector is the country's top priority.

"In the wake of major political change in the country, our main goal is to achieve rapid economic growth," she said at the opening ceremony of the Nepal Power Investment Summit 2018. "We need to develop infrastructure to promote our economic development. Harnessing hydropower is an infrastructure development and constitutes a base for prosperity."

The summit organized by Nepal's Energy Development Council (EDC) aimed to highlight hydropower's role in the development of the country's power sector.

This was the event's second year and it was attended by government officials, ambassadors, industry leaders, investors and academic researchers from China, South Korea, Japan, India, Europe and the United States. China Daily is a media partner of the summit.

Noting the need to develop renewable energy in the context of climate change and excessive use of fossil fuels, Bhandari said Nepal's hydro resource is a "valuable gift of nature" as hydroelectricity is one of the most eco-friendly and sustainable sources of energy.

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The summit organized by Nepal's Energy Development Council aims to highlight hydropower's role in the development of the country's power sector. (PHOTO PROVIDED TO CHINA DAILY ASIA WEEKLY)

But Nepal's hydro resource is far from being fully utilized, she said. Compared with a hydro potential of 83,000 MW, the country has a production capacity of only around 1,000 MW, suggesting that 99 percent of its resources are yet to be developed.

Nepal is endowed with a large number of high mountains with plenty of glaciers leading out to more than 6,000 rivers.

EDC chairperson Sujit Acharya said there is a need to develop 40,000 MW in the next 10 years through the country's abundant natural resources.

"We predict Nepal to be the top destination in South Asia — not only to invest in Nepal's power infrastructure, but also to use Nepal as the most beneficial destination to export to the world's largest consumer market, that is South Asia and China with 3 billion estimated consumers," Acharya said.

Bhandari called on both local and foreign investors to be actively involved in Nepal's hydropower sector.

"The government is committed to creating a congenial atmosphere for investment by taking due consideration of the investors' interest and real needs," she said, adding that capital, technology, market feasibility and development of cross-border transmission lines will be needed for the implementation of large-scale projects.

Deepak Rauniar, CEO of Nepal's Employees Provident Fund (EPF), said the financial institution aims to invest more in the power sector.

With over 550,000 members, comprising employees from the government, public and private sectors, the EPF manages a total fund of 256 billion Nepali rupees (US$2.5 billion). Rauniar said most of it is put into long-term investments, such as the power sector and airlines, in line with its members' retirement needs.

One of the EPF's major investments is the 680 MW Betan Karnali hydropower project. With an initial cost of 80 billion Nepali rupees, the project is expected to complete its feasibility study in the next 16 months and undertake construction within five years. Around a 40 percent share of the project will be offered to EPF members, said Rauniar.

Pointing to the good opportunities offered by the sector, President Bhandari said: "I believe the development of hydropower in Nepal would benefit the neighboring countries as well, and would eventually contribute to economic development of the region."

Nepal has been working to create

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an investment-friendly environment, including offering many preferential policies and providing tax exemptions for foreign investment. It encourages foreign investment, either as joint-venture operations with Nepalese investors or as 100 percent foreign-owned enterprises.

"The government will accord top priority to attract foreign investment in hydropower," said Bhandari.

Tan Ding, managing director of China's State-owned Hunan Construction Engineering Group (HNCEG), said the China-led Belt and Road Initiative can lead to win-win cooperation in Nepal's power sector.

The initiative was proposed by Chinese President Xi Jinping in 2013 with the aim of expanding connections between Asia and the rest of the world through trade, investment and infrastructure along the ancient Silk Road routes.

For one of HNCEG's power projects in Ghana, West Africa, more than 95 percent of the staff were employed locally. This helped speed up integration with local communities. "The localization strategy enhanced the communication and coordination between HNCEG, the local government and people," said Tan.

"(Training local workers) can also provide an effective protection for the project's follow-up management and maintenance," said Tan, who expects the company to further expand its power investment to Nepal in the near future.

Rajat Misra, principal private sector operations specialist at the Asian Infrastructure Investment Bank (AIIB), said the bank was set up to complement existing institutions and address Asia's development needs by focusing on infrastructure project financing.

With a mission to improve social and economic outcomes in Asia and beyond, the Beijing-headquartered multilateral development bank was formed on China's initiative.

According to Misra, the bank reached US$4.2 billion in loans and equity investments in the fourth quarter of 2017. Among all the projects it has funded, the energy sector is one of its major focuses, with a share of around 45 percent.

"Multilateral banks are uniquely placed to accelerate sustainable infrastructure investments," said Misra.

Suthiphand Chirathivat, executive director of the ASEAN Studies Center at Thailand's Chulalongkorn University, shared his views on regional cooperation in the power sector.

He said the Association of Southeast Asian Nations (ASEAN), which includes Thailand, "has good potential to further harness renewable energy, especially hydro, geothermal, biogas, wind and solar power".

Noting that most ASEAN countries have set individual targets and support schemes which directly support the regional market, Suthiphand said the establishment of the ASEAN Power Market Integration can offer its members better access to various energy and geographic locations.

For ASEAN, coordination is a more preferable option for power market integration, Suthiphand said. He suggested that Nepal could serve as a power trading hub in the

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region to boost its long-term development.

Nepal's former prime minister, KP Sharma Oli, noted that regional cooperation in energy is also about energy trading in South Asia. "We should create an environment for energy trade also under the spirit of the South Asian Free Trade Area and create regional energy infrastructure to facilitate the power trade," he said.

Oli urged investors to participate in Nepal's power sector through joint ventures, arrangements such as build-own-operate-transfer, engineering-procurement-construction, and other models.

(To view the full article, please visit the link below.)■

Source: http://www.chinadaily.com.cn/a/201802/07/WS5a7abdfea3106e7dcc13b5ab.html

## President Bhandari urges investors to invest in hydro sector


KATHMANDU, Jan 27: President Bidya Devi Bhandari has stressed the need for developing infrastructures to promote economic development. Harnessing hydropower was an infrastructure development and also constitutes a base for prosperity, she added.

President Bhandari said this while inaugurating Nepal Power Investment Summit organized by Energy Development Council in Kathmandu aiming at providing key role in the development of power sector in the country.

She said rapid development of renewable energy sources also requires due attention in the context of negative consequences for environment posed by impact of climate change and excessive use of fossil fuels.

Stating that our enormous natural resource is not being utilized, the President added majority of our population is deprived of access to even minimum electricity facility.

Urging the investors to invest in hydro sector, President Bhandari said that hydro sector was a fertile one to make investments adding, "I would like to call upon local and foreign investors to actively get involved in utilizing our enormous hydropower resources."

On the occasion, she assured that the government was committed to creating a favorable atmosphere for investment by taking due consideration of the investors' interest and real needs.

"We need capital, technology, market feasibility and development of cross-border transmission line for implementation of large-scale projects and the government will accord top priority to attract foreign

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investment in hydropower," she reiterated. The President also said that there was a good opportunity to invest in hydropower sector as the demand for electricity was soaring in Nepal and South Asia, where rapid development was being expected.

On the occasion, Bhandari said that development of hydropower in Nepal would benefit the neighboring countries as well and eventually contribute to economic development of the region.

During the program, Indian Ambassador to Nepal Manjeev Singh Puri said that India was always supportive of Nepal's energy sector's development, adding that both the countries were jointly working in this sector.

A total of 350 plus representatives from different countries are attending the three-day-long summit.

The government would be requested for the implementation of the recommendation of the summit, the organizers said.

(To view the full article, please visit the link below.)■

Source: http://www.myrepublica.com/news/35181/

## Nepal Power Investment Summit 2018: Potential and Investment Discussed


Nepal's strong existing and untapped hydropower potential was a point of discussion among various national and international experts at a recently-held global energy summit.

The second edition of the three-day Nepal Power Investment Summit 2018, held during January 27-29, 2018, saw the participation of renowned personalities from international bodies such as SAARC, BIMSTEC and ASEAN, global leaders and investors, ambassadors, bankers, ministers and businessmen, among various other key delegates from different parts of the world.

A total of 350 delegates from 24 countries including China, Korea, Europe and the United States, around 100 participants representing 30 international companies and around 400 participants from Nepal including policymakers and private sector players took part in the summit.

As part of the summit, various government and industry experts expressed their views on Nepal's energy sector and its potential.

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**President Calls for Energy Investment**

Inaugurating the summit on January 27, 2018, President Bidya Devi Bhandari called on the global and local investors to tap the untapped hydropower potential of Nepal."

We need capital and technology for the implementation of large scale hydropower projects and the government will accord top priority to attract foreign investment and technology. The investors will also benefit from the growing demand for electricity in Nepal as well as South Asia," said the President in her inaugural address.

In this regard, she promised an investor-friendly environment in line with their interests and needs to all the players coming forward.

**Need to Act Fast, says Ambassador**

Highlighting Nepal's strong energy potential, Indian Ambassador to Nepal Manjeev Singh Puri said the country should act fast in implementing the hydropower projects considering the inclination towards renewable energy projects at the global-level.

"In the backdrop where solar power is getting cheaper day by day, hydropower will lose its competitive advantage to solar energy soon. Therefore, Nepal should act fast in developing the hydropower projects," said Puri in his keynote address.

He went on to say that Nepal should start mega energy projects for both employment generation and economic development and to stay ahead in competition.

"Nepal should immediately start developing large projects to provide energy at competitive rates," he added

**Industry Experts Seek Faster Implementation**

Though Nepal's energy policies for foreign investors look promising, the government agencies working in the process need to pace up the rate at which they implement the projects, say the energy industry experts.

"We are the private sector who looks maximized return within short period of time, but here in Nepal we have to invest more than five years doing basic things, getting approvals and clearances," said a Vietnam-based businessman who participated in the summit.

The experts also lauded the Government of Nepal's power purchasing policies in USD term, ease in removal of land ceiling for big hydro projects and management of technical human resources as some of the notable developments required for attracting foreign investment.

The summit was hosted a participant-investor platform allowing participants to meet investors for a debt financing of around USD 5-20 billion for various power projects including solar, wind and hydro energy.

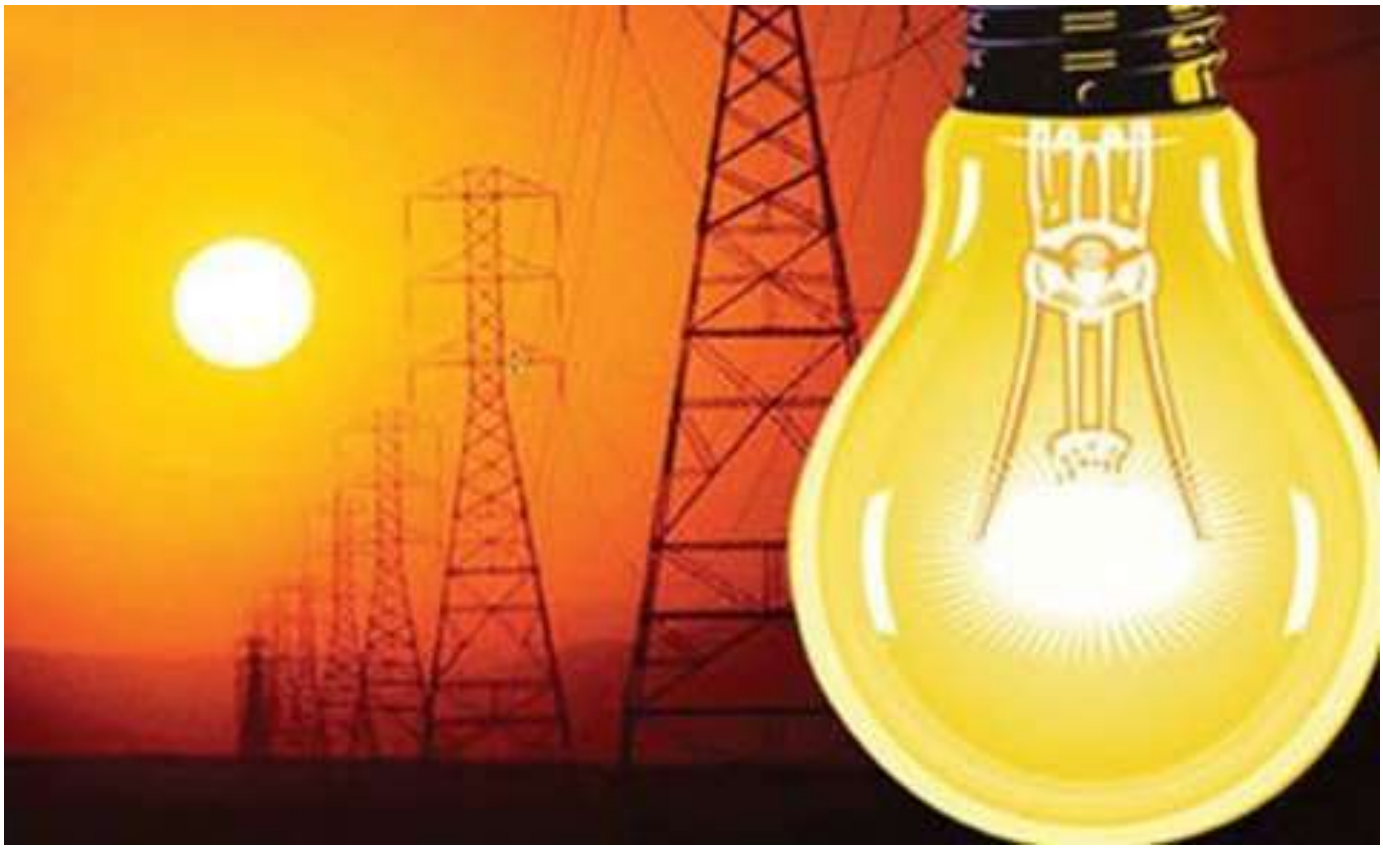
Speaking on the occasion, EDC Chairperson Sujit Acharya highlighted that Nepal holds a 40,000MW electricity generation potential over the next 10 years.

(To view the full article, please visit the link below.)■

Source: http://www.nepalisansar.com/news/nepal-power-investment-summit-2018-demand-foreign-investment-discussed/

# NEPAL'S SCENARIO

## Steady power supply increases productions



A significant cut in power outage in the country had led to the increase in industrial capacity by 9.1 percent.

According to the Economic Activities Study Report- 2073/74 BS unveiled by the Nepal Rastra Bank (NRB) recently, capacity of industries in the fiscal year 2073-74 BS went up by 9.1 percent compared to the previous fiscal year ( 2072-73 BS) and reached 57.3 per cent.

Pashmina industries were able to use 98.5 per cent capacity in this period while beverage industries utilized 82.1 percent, noodle factories 79.1 and tea processing industries became able to use 78.6 per cent capacity.

As the report states, rice mills (28.8 per cent), sugar mills (31.2 per cent) and brick industries (35.7 per cent) used the capacity to the lowest level.

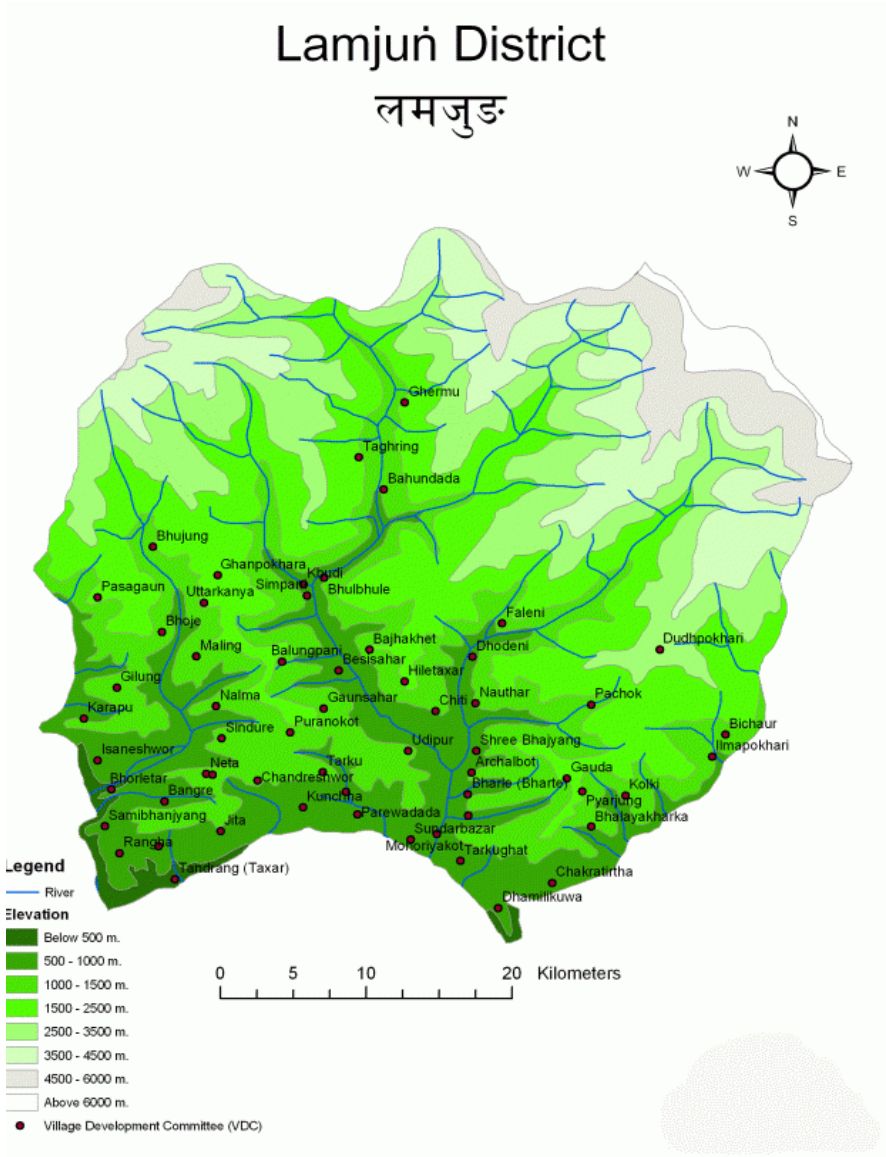
The Nepal Electricity Authority currently ensures 24-hour power supply for household purposes while a power outage for industrial corridor last year was four hours a day and this year, this has been reduced by one hour and limited to three hours a day.

President of Federation of Nepalese Chamber of Commerce and Industry, Bhawani Rana believed that industrial capacity at home would up to 95 per cent provided that uninterrupted power supply to industrial corridor was made sure.

(To view the full article, please visit the link below.)■

Source: http://www.nepalenergyforum.com/steady-power-supply-increases-productions/

# Lamjung to be promoted as a model district for hydropower development




Local stakeholders have started taking initiative for promoting Lamjung as a model district for hydropower generation.

Hydropower projects have combined capacity of around 1,000 are under different stages of development in the district.

The then District Development Committee (DDC) had set a target of generating 1,000 MW in a decade. Though nine year has already elapsed since the target was set, the district is generating only 136.4 MW so far.

Lok Raj Pandey, chief of District Coordination Committee (DCC), Lamjung, said that preparation were underway to create environment conducive in the district to attract domestic and international investment in hydropower sector by analyzing past weaknesses.

Local Development Officer of Lamjung, Dilliram Sigdel, said that DCC has already held interaction with stakeholders for creating environment conducive for domestic and foreign investments in the district.

In the interaction, Maghendra Pokhrel of DCC Lamjung, and Sailendra Guragain, President of Independent Power Producers Association, and Rajkumar Bista of a lobby committee formed by the locals had presented their papers on hydropower potentials of the district.

The interaction saw participation of lawmakers, provincial assembly members, leaders of different political parties, DCC representatives, hydropower investors, and media persons, among others.

Speaking at the interaction Member of Parliament Dev Prasad Gurung, and provincial assembly members Prithivi Subba Gurung and Dhananjaya Dawadi said that they would take needful initiative for addressing policy issues to promote hydropower development in the district.

Chief District Officer Yubaraj Adhikari, Mayor of Besishahar Municipality Gumansingh Aryal as well as leaders of different political parties pledged their support to develop

Lamjung as a model district for hydropower development.

Mid-Marshyangdi Hydropower Project (70 MW), Upper Marshyangdi (50 MW), Siuri (5 MW), Radhi (4.4 MW), Khudi (4 MW), Chhyangdi (2 MW) and Syange (1MW) are the hydropower projects in Lamjung that have already started power generation.

According to DCC, eight more projects having combined capacity of 138.7 MW are in the last leg of development. Other under-construction projects have combined capacity of 830 MW. The district has collected Rs 131.4 million as hydropower royalty in the past five years.

International Organizations such as United States Agency for International Development (USAID), World Wildlife Fund (WWF), Care Nepal, and Community Forest Consumers Centre etc are assisting the district to develop Lamjung as a model district for hydropower development, according to DCC Lamjung.

(To view the full article, please visit the link below.)■

Source: http://www.nepalenergyforum.com/lamjung-to-be-promoted-as-a-model-district-for-hydropower-development/

## NEA to sign first PPA with storage-type hydro

State-owned power utility Nepal Electricity Authority (NEA) has been preparing to sign its first power purchase agreement (PPA) with a storage-type hydropower project.

The NEA will be concluding a deal with its wholly owned subsidiary, Tanahu Hydropower Limited, to purchase electricity generated by the 140 MW Tanahu Hydropower Project located in Tanahu district.

According to Prabal Adhikari, head of the NEA's power trading department, the agreement with Tanahu Hydropower will be signed in a couple of weeks.

"A draft of the PPA is almost ready, and we will be all set to sign it after a few rounds of negotiations," said Adhikari. "The power purchase rate is determined by our power purchase guidelines, so the talks will not take much time."

As per the power purchase guidelines issued by the Energy Ministry and approved by the NEA board, storage projects like Tanahu Hydropower will be paid Rs12.40 per unit during the dry season which lasts from December to May, and Rs7.10 per unit during the wet season which lasts from June to November.

The guidelines also state that if the energy output during the dry season drops below 50 percent of the installed capacity, the payment rate during the wet season will be reduced by the percentage point of the decline.

For example, if electricity generation during the dry season falls to 36 percent of capacity, or a drop of 14 percentage points below the threshold, the NEA will pay 14 percent less for the power produced during the wet season.

This means the purchase rate for the energy produced during the wet season will be Rs6.10, which is 14 percent less than the fixed rate of Rs7.10. Although Tanahu Hydropower is close to signing a power purchase deal with the NEA, the construction of the power station is in limbo due to delays in appointing a contractor.

The company missed the appointment deadline as one of its financiers, the Asian Development Bank (ADB), delayed evaluating the technical proposals of potential

builders. Tanahu Hydropower had planned to hire a contractor last December, it is now planning to do so by March.

Last July, Tanahu Hydropower had forwarded the technical proposals submitted by three companies vying to get the contract for the first package, which includes formulation of a detailed design of the project and construction of the headworks, to the ADB for its examination. However, the multilateral lender is yet to complete the evaluation of the proposals. Meanwhile, Tanahu Hydropower is all set to hire a contractor for the construction of the second package of the project, which includes construction of waterways and a powerhouse at the project site.

The project office has evaluated the technical and financial proposals of the two hopeful contractors and forwarded them to the financier, the Japan International Cooperation Agency (Jica), for its okay. Tanahu Hydropower will enter into an agreement with the selected company after getting a no objection letter from Jica.

The Tanahu Hydroelectric Project, located 150 km west of Kathmandu on the Seti River, will be one of the biggest reservoir-type projects in the country with an estimated annual energy generation capacity of 587.7 GWh in the first 10 years of operation.

The project can generate energy for six hours daily during the dry season. It is being built using credit extended jointly by the ADB, Jica and European Investment Bank.

(To view the full article, please visit the link below.)■

Source: http://www.nepalenergyforum.com/nea-to-sign-first-ppa-with-storage-type-hydro/

## GLOBAL PERSPECTIVE

# What Will Become of the Electric Utility in the Age of Microgrids?

What's an electric utility? Better yet, what will it become?

Those questions nag utilities — and their competitors — as technology disrupts the century-old power industry. Microgrids, electric vehicles, distributed energy resources (DERs), energy storage, the prosumer, blockchain will either upend utilities — or bring them new opportunity — depending on how you look at it.

Which way it goes, who benefits, and what the transformation means to society, depends on action taken now by state regulators, according to a new report by the Rocky Mountain Institute (RMI).

"Reimagining the Utility: Evolving the Functions and Business Model of Utilities to Achieve a Low-Carbon Grid" explores what regulators need to consider in balancing the monopoly franchise and the competitive market, as the new electric era emerges. This includes whether or not utilities should be allowed to own microgrids and distributed energy resources (DERs).

RMI points out that a threshold issue is how utilities and their competitors will make money in the evolving power industry.

The stakes are high. Annual revenue for investor-owned electric utility is about $355 billion, according to a 2016 Edison Electric Institute report. Moreover, that pot could grow, as it did when disruptive technology rearranged the telecommunications industry. Telecom saw revenue rise from about $160 billion in 1992 to $750 billion over 30 years as wireless communication took hold, according to RMI.

"While important differences between electricity and telecommunications exist, there remains promising potential for greater value creation and market growth in the provision of electricity services," RMI says.

So who gets what part of that pie? What goes to utilities and what goes to the competitive market?

### Vision not mandates

In settling these issues, RMI cautions regulators to avoid steadfast rules. Instead, the Colorado-based organization urges that they create a guiding vision, and look at each circumstance in light of that vision.

California offers a good example of how to do this in its handling of electric vehicle charging, according to RMI. The state public utilities commission refrained from

creating a blanket rule about utilities investing in charging stations. Instead, the commission reviews each utility petition using guiding principles and a balancing test to weigh the benefits of utility ownership against the limitations the investment places on competition.

"Regulators and utilities have an important strategic choice to make at the outset: whether to pick off decisions one by one and see over time where they end up, or to set a vision in advance then let decisions follow from that. Clearly, the latter is the better approach," says the report.

Defining the utility of the future also might mean allowing utilities a broader public purpose. Regulators might consider societal goals and not just fiscal prudence when determining if a utility should be granted cost recovery for an investment.

"To build the utility of the future, the historical focus on cost-of-service ratemaking for narrowly interpreted 'used and useful' investments must evolve to a new focus on balancing the needs and opportunities for a larger role from third-party service providers, with a utility role to support a marketplace that delivers societal and environmental goals," says the report. (To view the full article, please visit the link below.)■

Source: https://microgridknowledge.com/microgrids-electric-utility/

# India Wants to Build 10 Gigawatts of Pumped Hydro Storage to Support Solar

**The country expands its hydro storage plans as PV capacity soars.**

India is embarking on a plan to build out gigawatts of pumped hydro facilities to help store the massive levels of renewable energy it will be producing within a decade.

S.D. Dubey, chairperson of India's Central Electricity Authority, last month confirmed plans for 10 gigawatts of pumped hydro storage across the country. The plan will cost 80,000 crore rupees (about $17.2 billion) over the next five to six years according to *The Economic Times*.

Dubey said pumped hydro storage costs could be a fraction of the cost of lithium-ion batteries. He said the capital costs of the plants would be between 6 and 8 crore rupees ($1.3 million and $1.7 million) per megawatt.

This compares to a per-megawatt capital cost for solar projects between 5 and 6 crore rupees ($1.1 million and $1.3 million). India has a potential for up to 90 gigawatts of pumped hydro storage, said the report.

Although supporting solar is a goal, Indian renewable energy analyst Madhavan Nampoothiri said the pumped hydro reserves would be a boon for the grid in general.

"Considering a target of 175 gigawatts of renewables capacity by 2022, India will need to be ready with all technologies at its disposal to manage the grid, which will have to handle a progressively increasing quantum of intermittent solar and wind energy," he said.

"These 10 gigawatts of pumped storage will complement, and not replace, chemical storage. Both can co-exist."

Pumped hydro would be useful not just for storing excess renewable energy, he noted, but even thermal power produced during periods of solar or wind overload.

"In addition to providing grid flexibility, these plants can use cheap off-peak power to pump up the water and generate power during peak hours, at higher rates," he said.

Brett Simon, energy storage analyst with GTM Research, said there were advantages and drawbacks to the pumped hydro concept.

"Today, pumped hydro accounts for the bulk of deployed electrical energy storage capacity worldwide and is often cheaper than other forms of storage, such as batteries," he commented.

"However, pumped storage is location-dependent, and unlike battery systems, cannot easily be expanded. Also, given the permitting process needed for pumped hydro, such projects often have a longer development timeline compared to

hydro development by the Indian government, although a number of projects are already underway, and the concept has been alive in India since well before the current solar boom.

For instance, in Tamil Nadu, India's top state for PV installations, "pumped storage projects were envisioned long before solar became mainstream in India, and were apparently meant for storing excess wind power," Nampoothiri said. "Wind has a 20-year history in India, and specifically in Tamil Nadu, which was the pioneer."

One of the most significant pumped hydro storage projects currently underway is Sillahalla, a 7,000-crore-rupees ($1.5 billion), 2-gigawatt plant in the Nilgiris District of Tamil Nadu.

The plant is being developed by the Tamil Nadu Generation and Distribution Corporation and involves construction of a dam across the Sillahalla River and a 2.75-kilometer tunnel connecting it to the existing Avalanche-Emerald reservoir.

The dam is scheduled for completion in 2018 or 2019, while the rest of the project is due to start operation in 2022, according to news reports last year. A tender is currently open for laboratory tests on borehole core and bedrock samples at the site.

Other pumped hydro projects known to be under consideration include the 1-gigawatt Turga project in West Bengal, the 600-megawatt Upper Indravati plant in Odisha, and a 450-megawatt development based around the existing Kundah hydro stations in Tamil Nadu.

Storage is likely to become a pressing issue across the country as it moves forward with ambitious solar targets. According to GTM Research's latest *Global Solar Demand Monitor,* India is set to have a cumulative PV demand of 46.1 gigawatts between 2016 and 2020. (To view the full article, please visit the link below.)■

Source: https://www-greentechmedia-com.cdn.ampproject.org/c/s/www.greentechmedia.com/amp/article/india-to-build-pumped-hydro-storage-for-solar

# Who is Leading the Smart City Revolution?

***As cities look to improve the quality of lives of their residents, they are embracing smart city technologies to usher in clean energy, connectivity, safety, better public transportation and much more.***

It seems like every time you turn around, another company, utility, municipality or institution announces some sort of "smart" initiative. In July, Xcel Energy and Panasonic announced a collaboration with the National Renewable Energy Lab (NREL) and others to study a potential carbon-neutral energy district master plan for Peña Station NEXT smart city development in Denver, Colorado; a trio of companies announced the formation of the "Energy IoT and Smart City Technology Alliance," which consists of Envision, Microsoft, Accenture and others; and Black and Veatch and CPS Energy hosted a webcast called "The Smart City Puzzle: The Role of Utilities in Next-Gen Communities."

Indeed, the smart city revolution is unfolding as cities seek to embrace the marriage of technology, energy, infrastructure, and transportation and use it to create better living environments for people across the world.

"Holistically [a smart city] relates to the services that cities offer to the residents and businesses," said Jennifer James, Smart City Solution Lead at Black and Veatch, adding "it relates to things like safety and ultimately quality of life for people."

## Smart City Leaders

Take San Diego, California as an example. The city is number one in the nation for rooftop solar and has in place a climate action plan that calls for all electricity to come from renewable sources by 2035, according to James. But what is making San Diego stand out is the fact that in addition to its extremely ambitious renewable energy goals, the city is upgrading to LED streetlights and equipping those poles with cameras, sensors and a variety of devices to help with things like traffic management, management of parking and even crime, said James.

(To view the full article, please visit the link below.)■

Source: http://www.renewableenergyworld.com/articles/print/volume-20/issue-5/features/solar-storage/who-is-leading-the-smart-city-revolution.html

# Digitalization Is Revolutionizing the Renewable Energy Sector

Renewable energy capacity increases faster than any other technology, as clean energy has never seen such high demand. A decline in investment is not due to a lack of interest, but more significantly, a considerable drop in the costs of green energy technology. Renewable energy investors need service providers that are familiar with the investment landscape at a local level, can adapt to the latest technologies, and have a clear vision of market evolution and regulations. This new sector, called Enertech, includes organizations that use new technology to find innovative solutions to increase the efficiency and optimization of renewable energy portfolios based on an advanced asset management.

Given the current context of climate change, coupled with the increased competition within the renewable energy market, energy investors are being forced to develop new ways to increase production and efficiency by limiting the use of fossil fuels and reducing prices throughout the value chain. It is becoming increasingly important for asset managers to be able to integrate and transparently manage the technical and financial performance of their energy portfolios, especially to minimize the risk of their investors.

## The Potential of IoT

The possibilites of the Internet of Things (IoT) and Big Data-analytics have revolutionized the future of the energy sector. Along with a solid digital infrastructure, IoT allows access to data almost anywhere in the world, and has the ability to analyze data mitigating the risk of investments in energy assets and to maximize the performance of portfolios. This type of analytics is the driving force behind standardized management of energy assets around the globe. This makes it possible to produce power, monitor performance and manage portfolios efficiently within large networks.

Successful data analysis can also help investors (banks, funds, etc.) to increase the productivity of their assets. If anything can encourage the financial community to further their investments, it is the promise of lowest risks and highest performance. It also enables new private investors to enter the renewables market, attracted by the potential value and the sector's imminent growth.

## Digitalization Unlocks the Potential of Renewables

The rise of renewables is not only beneficial to the environment, but also to the economy, with a recent industry study by the International

Renewable Energy Agency demonstrating that global GDP would increase by over 1 percent to about $1.3 trillion if the market share of renewables were doubled by 2030. However, this will only be possible if renewable energy investors can rely on investment security, professional risk management, and standardized portfolio management for their assets, from anywhere and at any time.

To do this, all we need is the Internet and the capability to analyze smart data. Digitalization of the energy sector is the only way to help fighting against climate change and develop a sustainable development. The International Energy Agency (IEA) has been spreading this key message for many years: “Digitalization holds great promise to help improve the safety, productivity, efficiency and sustainability of energy systems worldwide. But it also raises questions of security, privacy and economic disruption.”

Globally, utilities are undergoing a cultural shift towards an information-based digital economy — where primary processes are digitalized — and moving away from the traditional business model that requires heavy investment in physical assets. In the face of this change, chief executives feel there is a real danger of getting left behind if they fail to rally their organization to the new digital order. The drive from leadership is key to the implementation of successful digital projects.

It is vital that there is a clear link between any digital project and a company's strategic priorities. Digitalization should not make people feel alienated or excluded from the industry's digital future. Companies need digital programs, projects and pilots to engage the right stakeholders, which extend beyond operations and often involve information technology, compliance and finance. In other words, remember to bring the right team along on the digital journey.

At a press conference during Asia Power Week, ABB, a Swedish-Swiss technology multinational, said that the power industry is "battling complex challenges and rapid change: shifting and ever-widening regulations, the large-scale integration of renewables and distributed energy resources, the increasing risk of cyberattack, a generational shift in the workforce, aging plant equipment, volatile dynamic pricing and business model disruption." It stressed that digitalization, big data and analytics "offer a timely and uniquely powerful solution to solve these challenges. They give power and water companies visibility and insights into the performance of their equipment, plants and fleet that open new ways of operating more competitively in ever-changing markets."

In order to compete, having a digital platform that makes it possible to actively steer and remotely monitor companies’ global investments is key to achieving client investment goals. IoT, smart data analytics and predictive data simulations of these platforms provide the necessary technical and economic KPIs automatically, up-to-the-minute and free of any type of manipulation.

(To view the full article, please visit the link below.)■

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## ENERGY DEVELOPMENT COUNCIL

### Main Office

Heritage Plaza II (Block C & D), Kamaladi,

Kathmandu, Nepal

P.O Box no. 516

Phone: +977-1-4169116/4169117/4169118

Fax: +977-1-4169118

Email: info@edcnepal.org

Website: http://edcnepal.org/

### Contact Office

RM 316/3 F Chinese Overseas Scholars Venture Building, South District

Shenzhen Hi-tech Industry Park, Shenzhen, China

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