

Editorial

Dear Reader,

Due course of the development of hydropower, quite often the ILO Convention 169 is dragged by locals to substantiate their various claims on the project ranging from compensation and employment to share holding and many other communal facilities. The argument for such claims is that the indigenous groups and tribes have their right to the natural resources on which they depend upon. In case of the hydropower development projects, locals right on the water resource that the project uses. Due to various claims which the proponents of project cannot fulfill, locals create obstructions and the project gets delayed causing enormous cost over-run.

Having a close look on the convention suggests that it may be correct to compensate locals who are affected by project activities while many kinds of benefits based on the ownership of the resource cannot be advanced. In fact, the scope of the convention and more particularly the definitions of tribe and indigenous people are not relevant to the situation of Nepal. Unlike USA, Australia and Canada, Nepal was not discovered nor new settlers came in here by pushing the inhabitant tribes and indigenous people to the brink. There are no ghettos of tribes and indigenous people in Nepal. In fact, the whole population of Nepal is composed of a mosaic of various ethnic groups inhabiting harmoniously for centuries. It is a country of the people who have been there since the inception of Nepal as a country. Outsiders did not invade and drive out locals. Moreover, under the law of the land ownership on the natural resources and more particularly on water resource rests on the state. Being fluvial in nature and a vital need for sustenance, it cannot and should not belong to a particular tribe or community. The convention does not accord Veto right to the locals in the project. It allows the ratifying countries to apply the provisions of the convention "flexibly" in the national context. Under the convention the proponent of the hydro project has to ensure transparency and participation of locals if such project affects their habitat and livelihood. There needs to be smooth sharing of information and "where possible" participation in the benefit arising out of such project.

People may also be relocated from their place if it is necessary for the execution of the project. In such situation appropriate procedure as determined by national policy has to be followed and appropriate compensation is to be paid. In the context of our socio-ethnic situation there cannot be any differentiation between the communities belonging to one or the other ethnic groups. The norms and standards for "participation", "exchange of information", "involuntary resettlement" and "compensation" are also to be applied on equal basis without any regard to the cast or ethnic group. The definition of "tribe" and "indigenous people" in the convention is so wide that all Nepalese fall either in one or the other group and hence the provisions of convention cannot be applied to a particularly ethnic group. No ethnic group can claim for special right against another and hence the convention which purports to address the rights of a special category of people in any country becomes irrelevant in the case of Nepal for it loses its speciality.

Therefore, it is the duty of the social mobilizers and all those who are involved in the construction of hydropower to take the convention in its rightful meaning and dispel the confusion. We need to clear the fog of misinterpretation of the convention and help creating a congenial atmosphere for the smooth execution of projects which we need desperately.



Mr. Surya Nath Upadhyay

Former Chief of CIAA, Former Secretary of Water Resource & Secretary General of Jalsrot Vikas Sanstha

EDC Advisory Panel Member

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EDC Activities

[Inaugural video of Power Investment summit 2016Part-1](#)



Power Investment Summit 2016 held on 31st May to 1st June which included national and foreign high level delegates. The theme of the summit Nepal the future battery of South Asia the sum aims to deliver the message to the world that Nepal is emerging market for renewable energy projects. Nepal offers higher rewards than in other South Asia Countries. The first of the video record of the summit is available at the link [:https://www.youtube.com/watch?v=vZdoDq5GiTs](https://www.youtube.com/watch?v=vZdoDq5GiTs)

Interview with Mr. Taranath Sapkota, Managing Director of High Himalaya Hydro Construction Pvt. Ltd.

1) Please tell us about your organization?

Established in 2009, High Himalaya Hydro Construction Pvt. Ltd. (3HC) has already carved a niche in the hydropower construction sector of Nepal. The aim of the company is to meet Nepal's construction demand in the field of hydropower and infrastructure works. The company has been able to contribute significantly in nation building by construction of hydropower projects using modern and highly efficient resources with a sustainable approach.

The majority of shares of company are owned by the employees who are in the board and management of the company. This gives the management and employees a feeling of togetherness to strive and work for the betterment of the company in every aspect.

We are very serious about meeting the requirement of quality, budget and schedule as per the contract. We plan to execute civil works of small to medium sized hydro power projects either alone or through potential JV partners depending upon the complexity and size of construction works of the project. The company is capable of executing any kind of civil engineering construction works such as buildings, roads, bridges, transmission lines, water and waste water management projects etc.



We are committed for safety, protection of environment, quality and timely completion of the projects.

We have completed underground works of Siprin Khola Hydroelectric Project (10 MW), all civil works of Tadi Khola Hydropower Project (5 MW), civil works of Mailun Khola Hydropower Project (6 MW), tunnel excavation of Upper Mai Hydroelectric Project (10 MW), all civil works of Upper Hugdi Small Hydropower Project (5 MW), all civil works of Mai Cascade Hydropower Project (7 MW), test adit tunnel excavation of Budhi Gandaki Hydropower Project (1200 MW), test adit tunnel excavation of Tanahu Hydropower Project (140 MW) and repair works of Khudi Hydropower Project (for 4 years), Indrawati III Hydroelectric Project, Chaku Hydropower Project and Headworks of Khimti I Hydropower Plant (60 MW) and repair works of Siprin Khola Hydroelectric Project.

2) Can you elaborate on the key current activities or projects that your company is executing?

Currently we are executing all civil works of Hewa Khola A Hydro Electric Project (15 MW) which is almost 99% completed, all civil works of Upper Mai 'C' Hydroelectric Project (6 MW) (50% completed), all civil works of Midim Khola (Karapu) Hydropower Project (3 MW) (25% completed), all civil works of Mistri Khola Hydroelectric Project (42 MW) and Rudi Khola A Small Hydropower Project (8.8 MW).

3) What are the major challenges you have been facing during execution of your project?

About 7 decades have elapsed since abolition of Rana regime in 2007 BS. It is very pity that we could not establish political stability for such long period of time. Democracy was abolished in 2017 BS and partyless Panchayat system was introduced by then King Mahendra. The Panchayat system failed to establish peace and foster development activities for a period of 30 years. This system was overthrown by popular movement in 2047 BS and democracy was reinstated. Nepal Communist Party (Maoist) waged the so-called people's war against monarchy and the bourgeois democracy in 2052 BS. The struggle lasted for almost 10 years. Many people lost their lives and property in this political conflict of this period. The environment was not in favour of economic development. We had to

spend scarce resources to fight with the so-called insurgency. The monarchy ruled by Shah Kings was overthrown by the second popular movement organised by almost all political parties and it was replaced by democracy in 2063 BS. Now, our country has democratic constitution but there has not been political consensus to implement the constitution. We have to go through a long process of federating our nation.

Due to the long period of political instability many young people of our country have left our country. Skilled and learned people have migrated to countries like United Kingdom, United States, Australia, New Zealand, Canada and many European countries. Semiskilled and unskilled people migrated for jobs to Middle East and South East.

We are facing crisis of getting both skilled and unskilled manpower. We do not have sufficient skilled engineers, geologists, technicians, operators, drivers, drillers and so on. Our country has been in the state of lawless situation. Works at site are frequently disrupted by hooliganism, riot, instability, blockade and strike. The construction periods are unnecessarily prolonged. Prolongation of construction period results in increased construction cost.

Especially, in case of hydropower projects, we have been facing many concerns of the local people that are supposed to be addressed by the hydropower developer prior to commencement of works. We have experienced that it has taken long time to resolve local issues during construction period resulting in delay in construction.

We do not have road networks along major rivers, where hydropower sites are located. We must take immediate step to build road networks in order to harness hydroelectricity at reasonable cost. Explosive procurement, transportation, storage and handling take long time under existing security system. This has impact on construction schedule.

Variations are common phenomena in construction engineering. Therefore provision must be made to make payment of varied amount. In most of the cases, the employers have not made any provision for the payment of varied amount. Therefore, the contractor is not paid on time for the works executed beyond original quantity provided in Bills of Quantities (BoQ). This results in cash-flow shortage on Contractor's side making delay in completion of the project. Further, in most of the cases, certification of bills raised by the contractor is not made within the time stipulated in the contract resulting in delay in payment.

Shortages of major construction materials such as cement, reinforcement bars and fuels are quite common in Nepali market. Sometimes, syndicate of suppliers and manufacturers creates artificial shortages making delay in construction.

4) How do you propose such issues can be resolved?

First of all we must bring political stability as soon as possible. We do not have enough time to wait for federating our country. We must implement our new constitution without any delay. Major political parties must find a common point of consensus on political issues. We must go for election of local bodies, provinces and central government.

The government must establish peace and harmony in the society. Security of construction site is of prime concern for development activities. We must control hooliganism, riot and disruption in the construction site.

Local issues such as environmental and social impact mitigation issues; land acquisition issues, employment issues etc. must be resolved prior to commencement of works. This will help smooth operation of construction activities.

The process of explosive procurement, transportation, storage and handling must be simplified so that cost and time required to get explosive is substantially reduced. There should not be any problem to make simple but robust system as there is not insurgency in the country.

Most importantly, the employers must make arrangement for timely payment so that there is sufficient cash-flow for execution of works.

5) Can you also suggest the key changes you think will help take the energy sector forward?

It is very important that construction of all hydropower projects must go smoothly. For this, government must provide security of all hydropower projects under construction. We must have make security policy accordingly.

Further, the government must simplify the system of procurement, transportation, storage and handling of explosives so that cost and time required obtaining explosives (including security cost) is substantially reduced.

The energy mix in our system is such that clean energy (hydropower) has only 2% share. It must be substantially increased. In order to encourage, hydropower development PPA (power purchase agreement) rates must be revised. The present rate of NRs 8.40 per unit for dry season energy and NRs 5.4 per unit for wet season energy is

not attractive. Right now, we have load shedding in the country, therefore, there is no need of using two types of rates until we have surplus energy.

We must accelerate works for strengthening companies for power generation, transmission and distribution without any delay. We must build transmission network all over the country. The government must take immediate initiative for it.

Further, the government must construct road network along major rivers so that we can harness hydroelectricity at minimal cost.

Finally, we must have policies of all concerned government departments or agencies for facilitating hydropower development.

[Interview of Mr. Sujit Acharya, Chairman of EDC and Mr. Deependra Bahadur Chhetri \(Ex Vice Chairman of National Planning Commission and Ex Governor of Nepal Rastriya Bank\)](#)

On June 13, 2016, Mr Gopal Basnet of Mountain Television interviewed Mr. Sujit Acharya, Chairman of EDC and Mr. Deependra Bahadur Chhetri, Ex Vice Chairman of National Planning Commission and Ex Governor of Nepal Rastriya Bank on his energy related talk show 'Urja Bahas'. The topic of discussion was about the 'Nepal Power Investment Summit 2016' organized by Energy Development Council which was held on Yak and Yeti Hotel on 31 May-1 June and why Nepal is the most rewarded countries in terms of investment opportunities than any other South Asian nations in Energy Sector.



The link of the interview is available at: <https://www.youtube.com/watch?v=Q4VBhQw83gE&feature=youtu.be>

Guest Corner

How the Fitbit of Utilities Will Change

Everything

By Karim El Naggar

Karim El Naggar is the Chief Digital Officer (CDO) for GE Energy Connections

Chances are pretty good that you or someone you know is wearing a piece of technology that is quietly collecting data. Things like Fitbits and Apple Watches monitor our steps, our sleep and even our calorie intake. We can then use that data to get healthier or understand more about our own bodies. Now, thanks to the Industrial Internet, utilities can do that exact same thing with the Electrical Grid.

Wearable technology is part of the Internet of Things which, according to Gartner, is comprised of more than 4 billion connected devices including things like smartphones, Fitbits, smart thermostats like Nest and many new smart appliances such as connected refrigerators that sense when you need to buy more milk. These devices collect data and analyse it in ways that are making our lives more efficient and productive than ever before.

Bigger Better Data

The same thing is happening in the industrial world but on a much larger scale. As big as the Consumer Internet of Things is, the Industrial Internet of Things is bigger and it is growing twice as fast. It already has 20 billion connected devices generating massive amounts of data. Many industries are starting to use that data to save money and time. Power plants, for example, that have tapped into the power of the Industrial Internet have found that by improving efficiency by as little as 1 percent they can save \$66 billion over 15 years.

This massive collection and analysis of data is going to fundamentally transform the way utilities operate. When something goes wrong, utilities typically need a physical inspection to locate the problem. But if you add sensors to plant equipment to collect data about the state of everything from pole top transformers to power lines, to meters, you can gather and process that data to get an unprecedented look at the power network which can help limit down time, reduce unplanned outages and operational expenses. It is estimated that utilities could achieve \$160 billion of financial benefits from smart meter installation alone.

These remote sensors will improve operational effectiveness, but also provide insights to capital asset planning and prioritization. Ask utility executives what one of their biggest concerns is and they will cite aging infrastructure. Outages due to electrical faults and insulation degradation from aging assets can cost a single utility more than \$30 million annually.



For years, the generation, transmission and distribution business has only been able to monitor its most expensive equipment — generators in power plants and transformers and circuit breakers in transmission substations. That approach left the industry with a blind spot that undermined reliability. Now power inverters, smart meters, pole-top transformers, cables and even poles can be tracked on the Industrial Internet giving the clearest picture yet of the state of any given network. Remote sensors provide data that can be used to not only monitor current performance, but support prognostics that help identify potential failure in the future.

That data collection and analysis can spread to some surprising places. Imagine sensor-enabled streetlamps providing data about local environmental conditions like humidity and temperature and the condition of the lamp. If you combine that with outage status information collected from smart meters and sensor-enabled pole-top transformers, utilities would actually be able to pinpoint the exact location of an outage and deploy repair crews accordingly. All of this could be done without even having to do a damage assessment inspection first because the utility would know exactly what happened where. The result? Complete Asset Performance Management, faster power restoration, less down time and lower costs.

A Bright Future

We're only just beginning to scratch the surface of the potential of the massive amount of data that will be collected by the Industrial Internet. By 2019, devices connected to the Industrial Internet will create 80 exabytes of data. (Just 5 exabytes equals all the words ever spoken by human beings in the history of time.) That's too much for any utility to process, but just as consumers harness the combined computing power of Google, Facebook, Apple and Amazon in their daily lives, utilities can manage and interpret their growing flood of data by embracing the power of the cloud.

GE's cloud-based operating system Predix is designed to address the unique strength, scale and security requirements of industrial data. Just like Apple's ecosystem, it's open for developers to create innovative apps on top of it. The Asset Performance Management suite of solutions is specifically tailored to give utilities the tools they need to harvest and analyze data supporting the entire life cycle of the asset. The software makes sure that large numbers of connected assets don't break unexpectedly, causing costly downtime.

(This article is derived from the link [:http://www.gepowerconversion.com/inspire/how-fitbit-utilities-will-change-everything](http://www.gepowerconversion.com/inspire/how-fitbit-utilities-will-change-everything) published on June 15, 2016.

Report: Energy storage market to reach \$250B by 2040

By Peter Maloney

Dive Brief:

- Utility scale batteries will be as widespread as rooftop solar panels are now in 12 years, according to Bloomberg New Energy Finance (BNEF).
- BNEF forecasts the energy storage market may be valued at \$250 billion or more by 2040 with 25 GW of the devices deployed by 2028.
- There are now less than 1 GW of batteries operating on the grid globally. By 2040, the industry will expand, storing and discharging 759 GWh, BNEF estimates.

Dive Insight:

As battery costs fall, storage deployments rise. That trend led to a record year for energy storage deployment in 2015, and the trend will continue into the future, according to BNEF's New Energy Outlook.

“Batteries will get a boost as costs drop and developers see the chance for lucrative new revenue streams,” said Julia Attwood, storage analyst at BNEF.

That trend also will pose challenge the traditional utility business model, where power generation and distribution are monopolized in a single company. Energy storage can be used to smooth out variable power flows from intermittent renewable resources and to smooth out demand peaks, reducing or deferring the need to build new power plants.

One of the main drivers of those trends is the spread of electric cars, which is creating demand for lithium-ion batteries, the main technology for storage devices that are attached to utility grids and rooftop solar units.



As electric vehicles become more widespread, manufactures are scaling up production and slashing costs. BNEF expects the technology to cost \$120/kWh by 2030 compared with more than \$300/kWh now and \$1,000/kWh in 2010.

BNEF estimates 35% of all light vehicles sold will be electric in 2040, equivalent to 41 million cars. That’s about 90 times the figure in 2015.

(This article is derived from the link <http://www.utilitydive.com/news/report-energy-storage-market-to-reach-250b-by-2040/420903/> published on June 15, 2016.

CHINA

China has become a green energy superpower. These 5 charts show how



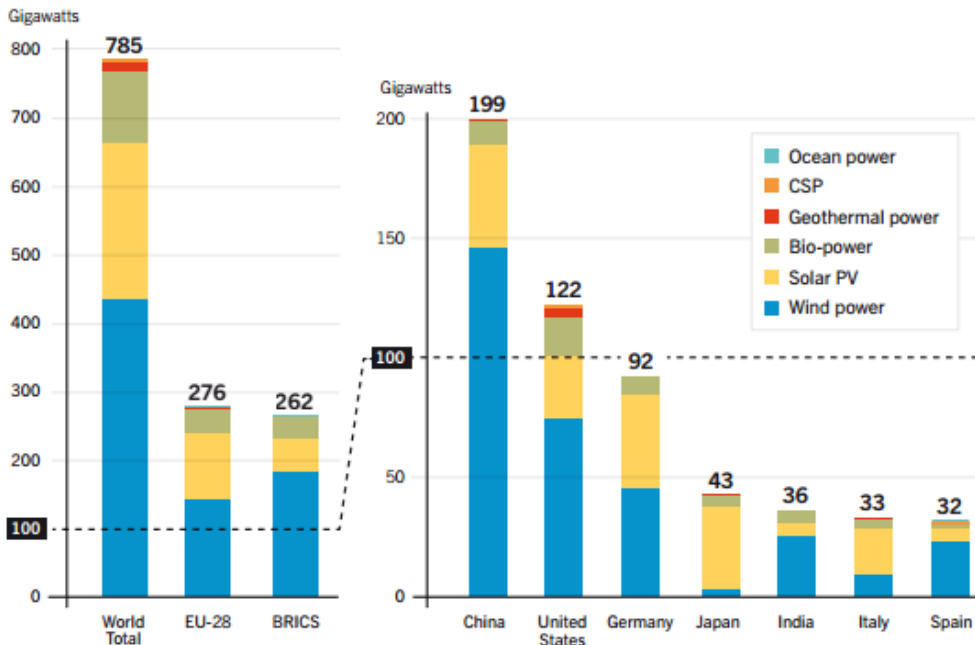
Wind and solar have made China a world leader on renewable energy

Image: REUTERS/Rebekah Kebede

Investment in green energy is on the rise, and a world powered entirely by renewables is no longer a distant dream, with a handful of countries [hitting 100% renewable electricity production](#). But while Portugal ran on renewable energy alone for four days and clean energy accounted for 33% of Germany’s power use in 2015, it is developing countries, and China in particular, driving this green revolution. And these charts, from the [REN21 Renewables 2016 Global Status](#) report and the [United Nations Global Trends in Renewable Energy Investment 2016](#) report, show how China is paving the way to a clean energy future.

1. China has the highest capacity for renewable power production

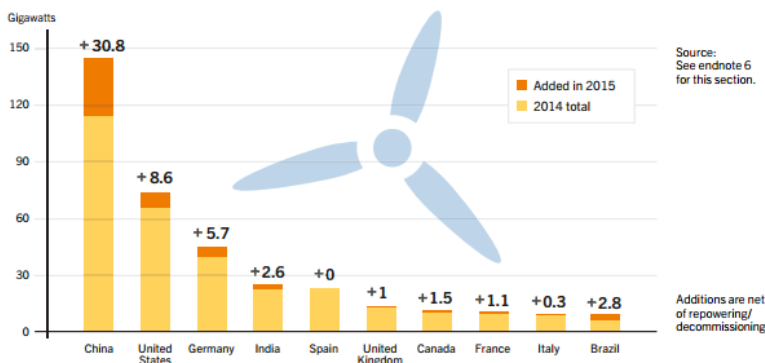
Figure 4. Renewable Power Capacities* in World, EU-28, BRICS and Top Seven Countries, End-2015



* Not including hydropower (→ see Reference Table R2 for data including hydropower).
The five BRICS countries are Brazil, the Russian Federation, India, China and South Africa.

This chart shows the leading role China is already playing in the green revolution. It currently makes up about a quarter of the global capacity for renewable power, predominantly through wind power.

Figure 24. Wind Power Capacity and Additions, Top 10 Countries, 2015



Source: See endnote 6 for this section.

Additions are net of repowering/decommissioning.

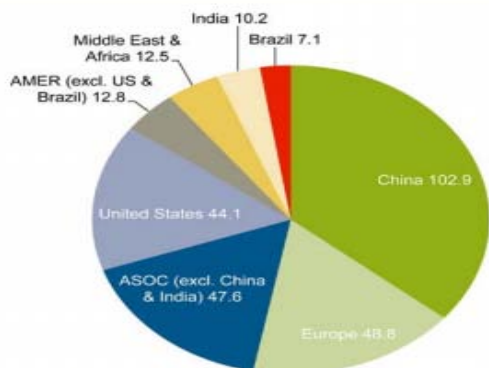
2. China takes the lead in wind power production

China is also the country with the most wind power capacity, and its lead over the US, in second place, increased by over 30 gigawatts in 2015.

3. Solar power is booming in China

The year 2015 saw huge growth in China’s solar power production. It moved into first place, ahead of previous solar leader Germany.

FIGURE 13. GLOBAL NEW INVESTMENT IN RENEWABLE ENERGY BY REGION, 2015, \$BN

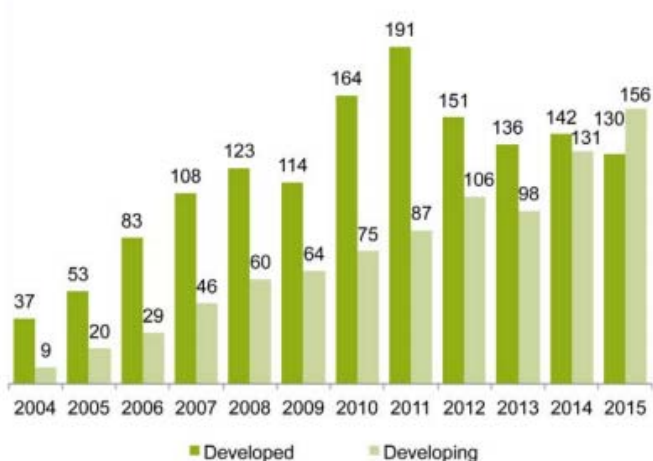


New investment volume adjusts for re-invested equity. Total values include estimates for undisclosed deals.
Source: UNEP, Bloomberg New Energy Finance

4. China is the biggest investor in renewable energy

In 2015, China had the biggest financial commitment to renewable energy, investing over \$100 billion, an increase from \$3 billion just over 10 years ago.

FIGURE 4. GLOBAL NEW INVESTMENT IN RENEWABLE ENERGY: DEVELOPED V DEVELOPING COUNTRIES, 2004-2015, \$BN



New investment volume adjusts for re-invested equity. Total values include estimates for undisclosed deals. Developed volumes are based on OECD countries excluding Mexico, Chile, and Turkey.
Source: UNEP, Bloomberg New Energy Finance

5. China helped push developing countries into the lead

Globally, \$286 billion was invested in renewable power and fuels (not including hydro power) in 2015, and for the first time the developing world invested more than developed countries.

This article is derived from the link: https://www.weforum.org/agenda/2016/06/china-green-energy-superpower-charts?utm_content=buffer13461&utm_medium=social&utm_source=facebook.com&utm_campaign=buffer published on 25 June, 2016.



Propelling a New Profitability Model for Hydro Generation

Project owners seeking to get more profit from their hydro assets should consider harnessing minimum flow

By Kevin Quirion, Contributor

One of the diversion dams on Cache la Poudre River in Colorado near Fort Collins supplying water for farmland irrigation, fall scenery with gold foliage and low flow. Credit: Shutterstock.

gation, fall scenery with gold foliage and low flow. Credit: Shutterstock.

Many hydropower plants are fed by reservoirs that are used by homeowners, boaters, swimmers, hikers, wildlife and others. The operating license issued by the Federal Energy Regulatory Commission (FERC) may have conditions that require a minimum water release to benefit wildlife, tourism and recreational activities. Historically, the main generating units of the dam have produced the total electrical output of the plant, but these units are not designed to operate during very low flow periods of the year and may periodically be shut down for other reasons. During these times the water flowing through the minimum flow system has not been harnessed to generate power.

Constructing a small powerhouse adjacent to the dam to capture electricity from the continuous water flow required can do more than supplement generation; it can change the model for power markets. Owners of hydroelectric power projects can become continuous power producers, maintaining a unit connected to the grid at all times. Therefore Independent System Operators (ISOs) may allow owners to use other generating assets to swing during peak times, maximizing profitability by supporting electrical usage during peak demand.

By establishing an extremely efficient, compact powerhouse and fast-tracking project construction; the payback on the new powerhouse can be greatly improved.

The Case For Minimum Flow Projects

Minimum flow projects can be developed with minimal impact on the environment and communities — taking advantage of generating capacity from existing impoundments. These run-of-the-river hydroelectricity projects typically involve small-scale generating capacity, yet can have dramatic impact on overall system profitability.

Generating power from a minimum flow system, owners can provide a uniform power source for base load requirements. The regional or independent transmission organization (RTO or ISO) may then allow project owners to use the energy generated from the rest of the system to meet peak power demand and therefore profit more from the rest of the system's generating assets. There may also be renewable energy grants available for these projects. Overall, there is a powerful case for developing minimum flow systems.

With that said, most minimum flow projects require a multi-year process that involves applications for license amendments and related meetings and studies, as well as the manufacture of turbine and auxiliary equipment and engineering development.

How To Determine if You Can Benefit from a Minimum Flow Project

The first step is an analysis of existing generation assets and expansion potential. It may be possible to take advantage of existing infrastructure to reduce project costs. Beyond looking at the existing system, the impact of the new capacity on the entire system should also be assessed.



Remote circuit breaker racking. Credit: Eaton.

Once the basic, upfront analysis has occurred and the new generating system is designed, the value of the minimum flow project can be established. This typically accounts for energy, capacity, reserves and any renewable energy credits available. The energy calculation should account for additional generation for day-ahead and real-time market bidding or for selling forward, capacity factor, and operations during peak and off-peak hours. Project owners may be well advised to also evaluate capacity and the potential to contract capacity with others in order to hedge long-term price risk. Utilizing minimum flow assets connected to the grid virtually all of the time, power producers can dispatch other units into the spinning reserve markets.

Powerhouse Design Considerations And Best Practices

Constructing a powerhouse for hydroelectric facilities typically is complex. There may be limited space to store equipment, inconvenient site access, tight project schedules and coordination with other system assets that may include aging electrical equipment. A project partner able to provide turnkey services from start to completion can help reduce risk of project delays and problems — yielding a safer, more reliable and cost-efficient power system.

Key design aspects include safe and reliable switchgear, system monitoring and control. Switchgear provides centralized control and protection for power distribution equipment, while the monitoring and control systems allow local and remote access to real-time data — providing the information maintenance personnel need.

The switchgear installed at hydroelectric facilities has been known to operate for several decades. It is critical that the equipment employed is designed to enhance safety, protect personnel during routine maintenance and maintain production reliability. Front access only designs minimize space requirements with a small footprint and allow for flexible location of equipment within a facility. Today's most innovative equipment can even extend arc-resistant ratings during routine maintenance.

The 24/7 nature of the power generation business makes remote telemetry critical in any location, particularly at automated, unattended plants. The control system can allow project owners to optimize output, enhance reliability and manage the facility remotely. Smart phones can allow operators to remain informed of plant status and alarm conditions and even provide access for remote control. This is accomplished using a mixture of technologies including SMS text messaging of alarm conditions generated by the station HMI, automated status and production reporting via email and even remote access and control through web-enabled smart phones.

Best Practices for Small Hydroelectric Power System Designs

1. Engage with service organizations that can take the project from start to finish and provide a single point of accountability.
2. Engage with a single team to design, construct and commission the project.
3. Work with manufacturers able to provide a high-level of technical support, not just during the project, but also after all the equipment is installed and commissioned.
4. Ensure suppliers can provide product and technology training.
5. Look for project partners able to reduce procurement cycle times and help expedite the project.
6. Full function factory acceptance testing for switchgear, protection and controls, and generator simulator can minimize on-site time and construction costs.

7. Manufacturer-created wiring harnesses can further drive down costs.

8. Remote racking mechanisms for switchgear help advance safety by providing a means to remotely insert or remove circuit breakers and auxiliary drawers – the technology helps increase the distance between the operator and live components.



Switchgear with type 2B arc-resistant ratings. Credit: Eaton.

To further extend safety during maintenance, projects can incorporate industry-leading switchgear designs that extend type 2B arc-resistant ratings, even with the instrument and breaker secondary terminal door.

According to the U.S. Energy Information Administration, an additional 250 GW of power will be needed by 2035 in the U.S. Minimum flow projects can help meet this demand sustainably and help owners improve profitability. Robust service organizations are helping advance minimum flow projects and improve costs and system performance — to maximize project return on investment.

The article is derived from the link: <http://www.renewableenergyworld.com/articles/print/volume-18/issue-110/features/hydropower/propelling-a-new-profitability-model-for-hydro-generation.html> published on Jan13,2016.

JAPAN

Japan now has more electric charging points than petrol stations

There are more electric car charging points in Japan than petrol stations, according to Nissan. The Japanese car manufacturer reports that the number of charging points in the country has surged past 40,000, compared to fewer than 35,000 petrol stations.

However, this number does include points in private homes, as well as the nearly 3,000 publicly available rapid charge points. But with the growth of the sharing economy and the rise of sites like PlugShare.com, owners of private charging points will be able to make them available to multiple users.

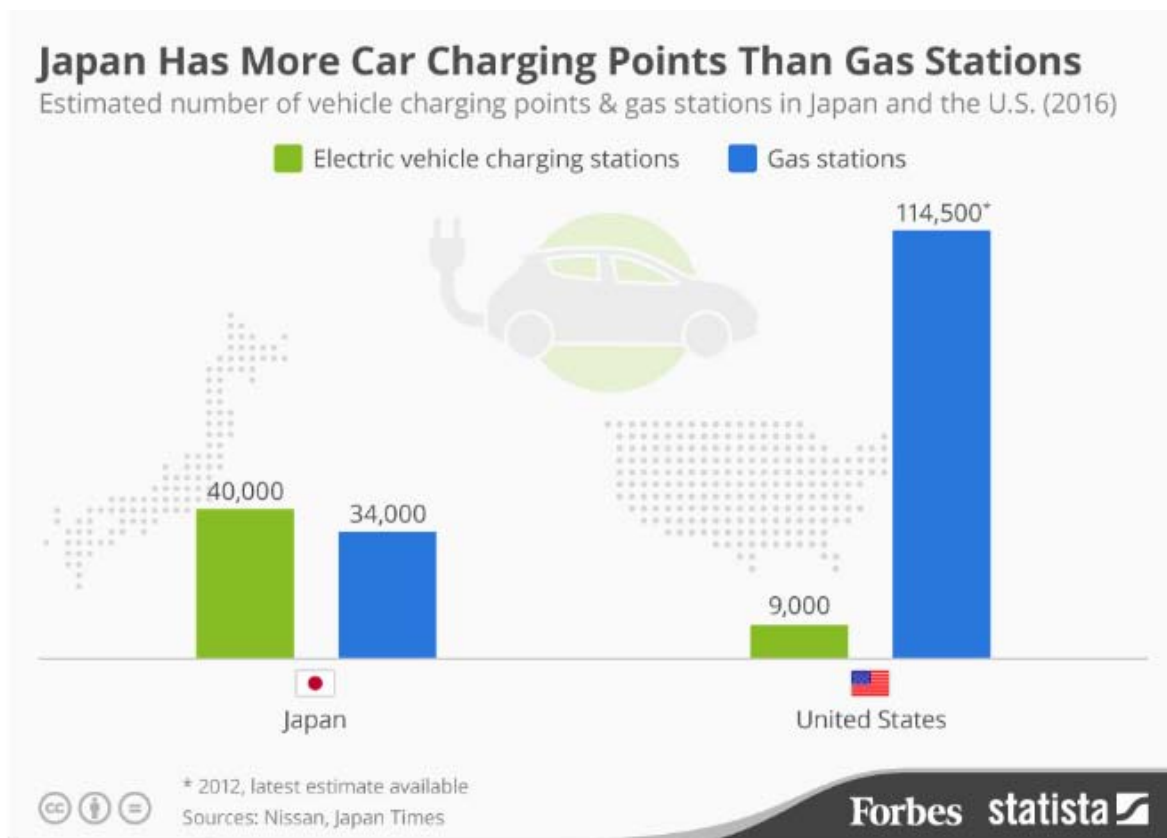


Image: Statista

The importance of charging points

As the electric car market grows, the infrastructure to support it has to grow as well. "An important element of the continued market growth is the development of the charging infrastructure," Joseph G. Peter, CFO at Nissan, is quoted as telling analysts in a conference call.

As the charging networks expands, electric cars are set to become a more viable option for drivers around the world. Mary Barra, CEO of General Motors, sees electric cars as one of many technological advances set to change the auto industry. She believes this change will happen at an unparalleled pace.



The industry is also reacting to these infrastructure needs. Tesla has its own network of high-speed charging points. VW and BMW have also teamed up to build a network of charging stations in the US.

The news from Japan represents a significant milestone. With generous subsidies in some countries, new and improved battery technologies and charging points popping up all the time, it may not be too long before electric cars become commonplace.

This article is derived from the link: https://www.weforum.org/agenda/2016/05/japan-now-has-more-electric-charging-points-than-petrol-stations?utm_content=buffer6af81&utm_medium=social&utm_source=facebook.com&utm_campaign=buffer published on May 9, 2016.

INDIA

New hydropower policy aims to boost project viability

Policy will provide for viability gap funding, which will help meet shortfall in project costs and reduce tariffs



Photo: Indranil Bhoumik/Mint

A comprehensive policy to promote hydropower generation is set to be announced by September—with viability gap funding for projects, compulsory hydropower purchase obligations for distribution companies and a set of good practices that states have to follow.

The idea is to address factors that currently drive hydropower costs up way above those of other sources of power and give policy support in its market development, according to a government official, who asked not to be named.

The policy being prepared by the power ministry will have provisions for viability gap funding, which will help in meeting the shortfall in project costs and reducing hydroelectricity tariffs for consumers, said the official. Hydropower is expensive and in some cases more than double the cost of power from coal-based thermal plants, which is available at Rs.3-5 per unit.

The ministry will also expand the scope of power distribution companies' renewable power purchase obligations to include hydropower from projects with a capacity greater than 25 megawatts (MW). At the moment only power from those with less than 25MW is considered renewable power.

Compulsory hydropower purchase from large projects will either be made part of the existing renewable power purchase obligation of distribution companies or a separate requirement, so that its inclusion does not affect the market for other renewable sources of energy like wind, solar or biomass, said the official cited earlier.

Power minister Piyush Goyal said on 18 June that the new hydropower policy will be comprehensive. "It will explore the possibility of providing to hydroelectric projects beyond 25MW the benefits that are at present available to renewable energy," Goyal said. The power tariff policy announced by the ministry on 20 January included steps to promote clean energy, which at present is not available to large hydropower projects. It specified that 8% of total electricity consumption will be from solar power by March 2022 and exempted renewable energy from interstate transmission charges.

Since state governments have rule-making powers in the electricity sector, the central government has been offering incentives for the adoption of a uniform policy framework and signing binding agreements with states to implement reform measures. One example is the debt restructuring and efficiency improvement measures taken under the Ujwal Discom Assurance Yojana (UDAY). That helps in addressing state-level implementation hurdles when a national policy in the sector is framed. One of the factors that contribute to higher tariff for hydropower is the upfront project-acquisition charges that some states levy. Hydropower tariffs, determined through a "cost plus generating company's margin" formula, are a disincentive for achieving efficiency in the sector, say industry players.

"The fact is that consumer is not prepared to buy electricity at any price. Therefore distribution companies are not able to sell hydropower. This needs to change," said Awadh B. Giri, chief executive officer, hydropower, Hindustan Powerprojects Pvt. Ltd.

India's unmet requirement for electricity offers a huge market for hydropower, which, unlike coal-based [thermal power projects](#), [does not require expensive fuel](#), said Giri, adding that [the cost of hydropower](#) generation declines over a period of time. What is needed is a price for hydropower for 25 years discovered through competitive bidding, its recognition as renewable energy and similar policies across states in awarding projects, said Giri.

The article is derived from the link:

<http://www.livemint.com/Industry/CTkPVBRLmWvpWpfRIm20mO/New-hydropower-policy-aims-to-boost-project-viability.html> published June 27,2016.

Creating an Offshore Wind Industry

Vince Font, *Contributor*

As the United States starts to build its first offshore wind farm, what policy and technology initiatives will be necessary to create a fully functioning offshore wind industry?



The London Array is the world's largest offshore wind farm. *Credit: London Array Limited.*

It is an auspicious time for the U.S. offshore wind industry. Driven by the fact that a present count of offshore wind farms in the United States amounts to nil, there is a great push underway to leverage one of the country's most abundant and untapped natural resources for the production of clean energy. A wave of recent conferences, including a White House summit on the matter, have served to spark serious discussion on what remains to be done to create a robust U.S. offshore wind industry.

The Block Island Factor

At center stage is the Block Island Wind Farm, a 30 MW installation currently under construction in the waters some 15 miles off the southern coast of Rhode Island. If all goes according to plan, Block Island will begin commercial operations in 2016, becoming the first operational offshore wind farm in the United States. Small though it may be, Block Island represents a crucial first step that has served to invigorate the proponents of offshore wind development following a decade of stagnation.



The 630-MW London Array in UK waters. *Credit: London Array Limited.*

Deepwater Wind CEO Jeffrey Grybowski, whose company is spearheading the project's development, said he believes Block Island is "just the start of something much bigger," and added he is "more optimistic now than ever" that offshore wind will take hold as a transformative means of shaping the future of the U.S. renewable energy mix, while also revitalizing the local economies that will benefit from these installations.

In *Lessons From U.S. Offshore Wind Projects to Date*, Keith Martin of Chadbourne & Parke said Block Island serves as an example of the importance of scale when tackling early offshore wind efforts. "Block Island demonstrates it may be better to make the first project a small project as proof of concept before moving to a larger scale," Martin wrote. He added that the significantly higher number of financially responsible parties involved in large-scale projects could "increase the difficulty of holding everything together."

Late Starts and Missed Opportunities

Although the U.S. appears poised to take concrete steps in the direction of offshore wind energy, many share the opinion it should have been much further along by now. In a paper titled *The Time Has Come for Offshore Wind Power in the United States*, professors from the University of Delaware (UD) suggest the U.S. offshore wind industry may actually be worse off today than it was 10 years ago following the passage of the Energy Policy Act of 2005. Jeremy Firestone, School of Marine Science and Policy professor and lead author of the UD paper, called the embryonic state of the offshore wind industry in America "disheartening" and said the past decade was an era of "missed opportunity."



Lillgrund Wind Farm is located about 10 km off the coast of southern Sweden. *Credit: Mariusz Pazdziora.*

Compared to Europe, the U.S. has far to go. There are now over 10 GW of installed offshore wind capacity throughout 11 European nations, with another 26.4 GW of projects already consented and 98 GW of offshore wind farms in the planning. In the UK alone, there are 1,452 offshore wind turbines accounting for 5.1 GW of capacity. The UK is also home to the world's largest offshore wind farm, London Array, which alone has a capacity of 630 MW.



Aerial view of Block Island off the coast of Rhode Island, where the first U.S. wind farm is under construction. *Credit: Wikipedia.*

Adding perspective, Grybowski drew comparisons to the early days of the European offshore wind market and where the U.S. is today. "What we're going through in the U.S. is not really surprising, because the same thing happened in Europe," Grybowski said at a recent briefing held by the Environmental and Energy Study Institute (EESI). "It took a long time for the industry to take off in Europe, and then it exploded."

The result of nearly a quarter century of continued deployment and investment, the European offshore wind industry saw exponential growth in the decade between 2004 and 2014, adding almost 7.5 GW of capacity. Current in-construction projects in Europe will bring cumulative capacity to 10.9 GW by 2016.

Bruce Bailey, CEO of AWS Truepower, said much of that success is owed to broad support of renewable energy initiatives among policymakers and the public. “There has always been a greater appetite in European for renewable energy,” Bailey said, pointing also to the fact that European offshore wind has enjoyed a greater than 20-year jump on the U.S.

Offshore Wind Stalling in China

The U.S isn’t the only world superpower having trouble launching an offshore wind industry. Things are rocky in China, too, where a recent report states the country has fallen behind by three years on its bid to develop 5 GW of offshore wind capacity.

Shi Pengfei, honorary chairman of the Chinese Wind Energy Association, cited high risk and cost as the main reasons behind China’s failure to achieve its goal — although the country does have a modest number of operational offshore wind farms at just under 660 MW.

In response, the National Energy Administration in China has issued directives to get the industry back on track, which involve coordination between various agencies to put supporting policies and technologies into place.

Leveraging the European Model

In the UD paper, Firestone and associates identified a combination of “political will, price and policy support, and spatial planning” as the driving forces that propelled the European offshore wind industry to great success – leading to the natural presumption that Europe could serve as a model from which all other lagging nations, including the U.S. and China, might learn a great deal.

European technology and experience in the arena may also serve as the catalyst to jumpstarting the fledgling U.S. industry. Grybowski said that continued development of offshore wind projects in the U.S. will rely heavily at first on the importation of the existing European supply chain. He said this will gradually lead to the creation of an established stateside infrastructure capable of operating on its own.



The Sprogø Vindmølle Wind Park in the Baltic Sea. *Credit: Fxp42*

Paul Rich, director of project development for US Wind, said at the EESI briefing that leveraging European technology will enable offshore wind developers to “finally begin to establish an industry, a source of workforce development, and centers of excellence” in the United States.

Proposed Solutions

According to Firestone, one of the key stumbling blocks that has handicapped offshore wind efforts is the perception that development should follow the path laid by offshore oil endeavors. Emphasizing the great differences that exist between the two industries – including the fact that oil can be shipped across vast distances and sold, whereas offshore wind power generation relies on an established local grid – Firestone said comparing the two is “like trying to put a square peg in a round hole.”

Firestone and associates propose a number of solutions that will serve to pave the way forward. These include the establishment of a long-term tax credit that takes into consideration offshore wind’s “long planning horizon”; greater emphasis on loan guarantees that put developers on more solid footing; and focus on interstate collaboration, rather than policy they caution may end up “reinforcing competition among states when cooperation is needed.”

Likewise, Bailey emphasized the critical need for the installation of an investment tax credit, stating, “If nuclear power receives tax incentives, so should offshore wind.”

What Lies Ahead

Beyond Block Island, a handful of initiatives loom encouragingly. Neighboring state Maryland is in the process of performing survey work and pursuing financial incentives for offshore wind. Meanwhile, US Wind has begun the planning stages of a proposed 500 MW project to be located just off the coast of Ocean City, Maryland.

Further up the food chain, the Bureau of Ocean Energy Management (BOEM) plans to auction some 350,000 acres of sea off the coast of New Jersey in November. The BOEM also teamed with the Department of the Interior for an environmental assessment and discussion of offshore wind development in North Carolina.


At the recent Summit on Offshore Wind, the White House announced the establishment of an Interagency Work Group whose purpose will be to aid in the coordination of efforts between federal agencies devoted to offshore wind development. Additional commitments announced include the creation of a multi-state project funded by the Department of Energy to develop a roadmap for large-scale deployment, and the establishment of an international forum to exchange best practices between nations.

Taking all of this into account, it would be easy to declare that growth of the U.S. offshore wind industry is imminent. However, it's not a foregone conclusion. Whether the industry takes off in the U.S., and how fast growth will occur when those steps are taken, remains to be seen.





“The technology is there,” Bailey said. “But it’s the establishment of long-term policy that will have the greatest influence on how quickly the offshore wind industry develops in the United States.”

The article is derived from the link: <http://www.renewableenergyworld.com/articles/print/volume-18/issue-110/features/cover-story/creating-an-offshore-wind-industry.html> published on December 7,2015.


List of EDC members







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1.	Nepal Electricity Authority	
2.	Alternative Energy Promotion Center	
3.	Chilime Hydropower Company Ltd.	
4.	Madhya Bhotekoshi Jalvidyut Company Ltd.	
5.	Rasuwagadhi Hydropower Company Ltd.	
6.	Sanjen Jalavidhyut Co. Ltd.	

S. No.	Name of the Organization	Organization logo
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10.	Arun Valley Hydropower Development Co. Ltd	
11.	Dantakali Hydropower Pvt. Ltd.	
12.	Reliable Hydropower Pvt. Ltd.	
13.	Himalayan Infrastructure Fund	
14.	Sanvi Energy Pvt. Ltd.	
15.	Dibyashwari Hydropower Ltd.	
16.	Shiva Shree Hydropower Co. Ltd	
17.	Chhyandi Hydropower Ltd	
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31.	TSN Energy Pvt. Ltd.	
32.	Waiba Infratech Pvt. Ltd.	
33.	North Hydro & Engineering Pvt. Ltd	
34.	Nepal Hydro & Electric Ltd.	
35.	Nepal Hydropower Association	

S.No.	Name of the Organization	Organization logo
36.	National Association of Community Electricity Users Nepal	
37.	Dudhkoshi Power Pvt. Co. Ltd	
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40.	Himalayan Bank	
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