



# ENERGY COMMUNIQUE

## EDITORIAL

### Legal and policy hurdles in hydropower development in Nepal

It has been often observed around the world that economic development and the legal framework of a country share a very close relationship. Good laws that incentivize and ease doing business helps rapid economic development. However, there are huge challenges for investors in the hydropower sector particularly because of major structural flaws in laws and regulations that do not create the right incentive, and implement complex legal framework with excessive red tape. Some of those problems and possible solutions are offered below:

#### Flawed licensing model

Electricity Act 1992 implements “first come first serve” licensing (other than for projects reserved for Government of Ne-

pal). The Ministry of Energy grants survey licenses to the first applicant who agrees to pay the survey royalty and meet other minimum qualifications. The licensees have to complete the survey within five years and apply for the generation license. If the energy is to be sold in Nepal, then power purchase agreement has to be negotiated separately with Nepal Electricity Authority. It is unreasonable to expect any serious business to invest in a project where there is no certainty after years of hard work and investment that the product will be purchased. This has resulted in an investment gap, misallocation of resources, and potential for corruption in negotiating power tariffs. Therefore, it has to be replaced with one where the government awards licenses through a com-



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#### INSIDE THIS ISSUE:

<b>EDC HOLDS ITS NINTH EXECUTIVE COMMITTEE MEETING</b>	<b>4</b>
<b>TRAINING TO ASSESS HYDROPOWER POTENTIAL IS COMPLETED</b>	<b>5</b>
<b>TENDER NOTICE</b>	<b>7</b>
<b>MEDIA COVERAGE</b>	<b>9</b>
<b>NEPAL'S SCENARIO</b>	<b>13</b>
<b>GLOBAL PERSPECTIVE</b>	<b>16</b>
<b>MEMBERS</b>	<b>21</b>
<b>PARTNERSHIP</b>	<b>23</b>

awards licenses through a competitive tariff bidding process. This will optimise risk transfers and investments in the power sector, and also reduce the prices for electricity through competitive pressures.

### **Multiple authorities without coordination**

There is very low level of coordination between government agencies. The Investment Board grants concessions for projects above 500MW, but the Ministry of Energy provides licenses and the NEA purchases power from the projects. These agencies function on an independent basis and while they sometimes cooperate, they usually don't. Recently, the Ministry granted license of the Tamakoshi 3 (600MW) project, which the Investment Board was planning to invite bids internationally, to a local company. Therefore, either the Investment Board needs to be scrapped or it needs to be provided with authority over the Ministry and the NEA. Even if competitive tariff bidding is not undertaken, Ministry of Energy should only provide licenses if a power purchaser is willing to purchase the energy from the project.

### **Unnecessary approvals**

Doing business in Nepal, particularly in the hydropower sector is filled with unnecessary red tape and approvals such as land ceiling waiver, and approval to lease government land. While it is government policy to not allow awards licenses through a competitive tariff bidding process. This will optimise risk transfers and investments in the power sector, and also reduce the prices for electricity through competitive pressures.

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ment Board needs to be scrapped or it needs to be provided with authority over the Ministry and the NEA. Even if competitive tariff bidding is not undertaken, Ministry of Energy should only provide licenses if a power purchaser is willing to purchase the energy from the project.

### **Unnecessary approvals**

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ters. These powers need to be dele- agreement of international stan- mixed tariff for 10 years. Further, gated. Provision restricting mort- dard. This is because government the conditions imposed are also gage of land above land ceiling to and often, their “experts” do not ambiguous. Currency hedging has maximum 50% has considerable understand the concept of bankabil- not yet been implemented in the negative impact on foreign and lo- ity, risk allocation, and how private Nepalese market and no financial cal lenders. financing of infrastructure project institutions are currently offering

## **Bankability**

Foreign investors and lend- project development agreement East Asia who are offering long-term ers are looking for projects that are and the power purchase agree- foreign currency power purchase “bankable”. Essentially, for a pro- ments impose a lot of burden but agreements. There is no alternative ject to be bankable, the project provide very little comfort and need but for the government to fully take company and the lender should be to be redrafted. currency risks, as it is the best party

“risk free” i.e. the project should have a contractual risk allocation

## **Currency risk**

covering a range of issues that Currency risk arises if loan would be nationalized following could potentially impact the project, or investment is in one currency their concession term. To shorten including force majeure, political and revenue in another. The risk is the duration of exposure to the risk, force majeure, change in law, cur- much higher in the power sector as it should be explored if it is better to rency risk; off-take default by the off foreign investors in the power sec- increase in tariff but decrease the -taker; termination by the granting tor have to commit long-term invest- term of the concession. public authority etc. Nepal has not ment. It is a good start that the gov- yet provided a bankable concession ernment is willing to sign power pur- agreement or project development chase agreements in USD-NPR

## EDC ACTIVITIES

### EDC holds its ninth Executive Committee Meeting

**E**DC held its ninth Executive Committee meeting on 11th July 2018 at its office. The meeting was chaired by Mr. Kushal Gurung, Head of Executive Committee of EDC. Mr Gurung formally welcomed Mr. Aashish Chalise, CEO of Saral Urja Nepal and Mr. Semanta Dahal, Advocate & Partner of Abhinawa Law Chambers, as new executive committee members of EDC. The meeting discussed in organizing an interaction program on “Solar Net Metering and current state of policy and guidelines”, forthcoming five day training program on “Hydropower Financing and Risk Management” together with International Center for Hydropower (ICH) in November, researching on EPCF which is currently gaining currency in Nepal’s hydropower sector and lobbying to promote EV’s use in Nepal.

### EDC delegation visits the Embassy of the People’s Republic of Bangladesh

**E**DC delegation led by EDC Executive Committee Head Mr. Kushal Gurung discussed with Embassy of the People's Republic of Bangladesh to Nepal about the event "Interaction Session on Power Sector Cooperation between Bangladesh and Nepal" to be held on the occasion of visit of H.E Mr. Narsul Hamid, MP and Honorable State Minister, Ministry of Power, Energy & Mineral Resource of Bangladesh to Nepal. The event is being organized by the Embassy of the People's Republic of Bangladesh with EDC and IPPAN as co-organizers.



## EDC ACTIVITIES

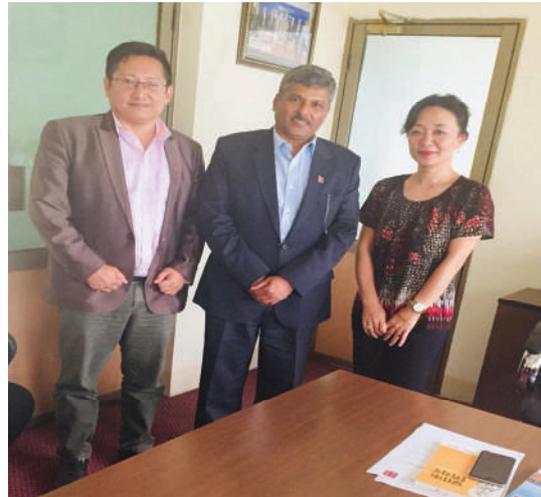
### Training to assess the hydropower potential is concluded

The training required to assess the hydropower potential of Nepal was provided to the Bachelors of Engineering students of Kathmandu University. EDC had earlier signed an MoU with Kathmandu University (KU) to carry out a research on hydro potential of Nepal.



### EDC delegation visits the Investment Board Nepal

EDC delegation led by Mr. Kushal Gurung, Head of Executive Committee EDC invited Mr. Maha Prasad Adhikari, CEO of IBN to deliver a speech in the upcoming event - "Interaction Session on Power Sector Cooperation between Bangladesh and Nepal" taking place on 10th August 2018 at Hotel Hyatt Regency, Kathmandu. Mr. Adhikari has kindly accepted the request.



### Invitation to participate in NDC partnership scoping mission by Ministry of Forest & Environment, Nepal

Ministry of Forest and Environment, Nepal held a NDC partnership scoping mission on 1st August 2018 at Shanker Hotel, Lazimpat. Mr. Kushal Gurung, Head of EDC Executive Committee and Ms. Itnuma Subba, CEO, participated from EDC. They shared the various activities carried out by EDC and expressed their willingness to provide strategic support in few specific areas to the ministry and NDC implementation.

## EDC ACTIVITIES

### EDC welcomes Hydro Energy Concern Pvt. Ltd. as a new member

**H**ydro Energy Concern (P.) Ltd. (HEC) is an organization dedicated to the sustainable development of hydropower energy. HEC provides the hydropower sector with integrated support on development of hydropower and assumes responsibilities of consulting, planning, designing, equipment delivery and installation, operations and maintenance. Presently Hydro Energy Concern is actively developing numerous Micro, Mini and Small projects in the field of hydropower in Nepal.



## EDC ACTIVITIES

### The tender notice for the month of July

**H**ARATI is an IT company, working in several technologies based products, services and provides online service portal ([tendernotice.com.np](http://tendernotice.com.np)). Following is a list of tender notice provided by HARATI for the month of July;

# TenderNotice.com.np

Tender, Bids and Notices related to Hydro and Energy segments in Nepal  
Date : 1st July 2018 - 31st July 2018

S.No.	Notice Publisher	Description	Published Date	Notice Category	Product Service
1	Nepal Water for Health, Kathmandu	Standing List for Supply and Delivery of Office Accessories and Other Services	7/29/2018	Standing List	Enlistment-Multiple Category
2	Sanima Middle Tamor Hydropower Ltd., Kathmandu	Design, Manufacture, Supply, Installation, Testing and Commissioning of Electro-Mechanical Works of Hydropower Project	7/27/2018	Pre-Qualification	Electronics/ Electric Utilities
3	Chirkhuwa Hydropower Pvt. Ltd., Koteswor	Civil and Hydro Mechanical Works	7/27/2018	Tender	Other Product/ Services
4	Vidhyut Utpadan Company Limited, Buddhanagar, Kathmandu	Standing List for Supply and Delivery of Office Accessories and Other Services	7/26/2018	Standing List	Enlistment-Multiple Category
5	Ministry of Energy, Water Resources and Irrigation, Department of Hydrology and Meteorology, Naxal, Kathmandu	Standing List for Supply and Delivery of Office Accessories and Other Services	7/25/2018	Standing List	Enlistment-Multiple Category
6	Tamakoshi Hydropower Company Limited, Thapathali, Kathmandu	घर माडगमा फ्लोसु-ब-प्री	7/24/2018	Proposal	Real Estate
7	Daram Khola Hydro Energy Limited, Thapathali, Kathmandu	Time Extension Notice	7/20/2018	Time Extension	Other Product/ Services
8	Kabeli Energy Limited, Kathmandu	Sale of Vehicle	7/20/2018	Quotation	Automotive / Vehicles
9	Remit Hydro Limited, Babarmahal, Kathmandu	Standing List for Supply and Delivery of Office Accessories and Other Services	7/18/2018	Standing List	Enlistment-Multiple Category
10	SJVN Arun-3 Power Development Company (P) Ltd., Khandbari, Nepal	Supply, Transportation and Installation of Bunk Houses/Portable Cabins and Office IT Equipment	7/18/2018	Quotation	Other Product/ Services

**EDC ACTIVITIES**

11	Chilime Jal Vidhyut Company Limited, Kathmandu	Construction of Chilime Tower	7/18/2018	Tender	Construction/ Building
12	Nepal Electricity Authority, Production Directorate, Kulekhani III Hydroelectricity Project, Makawanpur	Supply of Security Guards	7/12/2018	Tender	Security
13	Kabeli Energy Limited, Kabeli-A Hydroelectric Project, Kathmandu	Construction of Pre-Fab Residential Houses	7/10/2018	Tender	Construction/ Building
14	Kabeli Energy Limited, Kabeli-A Hydroelectric Project, Kathmandu	Construction of Pre-Fab Residential Houses	7/9/2018	Tender	Construction/ Building
15	Raghuganga Hydropower Limited	Design and Build, Electromechanical Works	7/8/2018	Tender	Construction/ Building
16	Swet Ganga Hydropower and Construction Limited, Kathmandu	Design, Supply, Manufacturing, Delivery, Erection/Installation and Testing and Commissioning of Electro Mechanical Works	7/4/2018	Tender	Electronics/ Electric Utilities

Powered By,

[www.TenderNotice.com.np](http://www.TenderNotice.com.np)

## MEDIA COVERAGE

### The Himalayan

#### LIGHT IN THE DARK

# Light in the dark

## EMPOWERING RURAL NEPAL THROUGH MINI GRIDS

Mahesh Mahata  
Kathmandu

It has been estimated that Nepal has approximately 40,000 MW of economically feasible hydropower potential. However, presently Nepal has approximately 900 MW installed capacity. The government aims to generate at least 10,000 MW in the next 10 years. The government has given top priority to energy security by developing hydropower plants rapidly. Presently, only 65 per cent of Nepal's

demands, where as many other micro/mini hydro plants are under utilised. It has also been realised that in case of failure of one micro/mini hydro plants, there is no alternative except living in darkness. Hence, it is a huge challenge to provide reliable power supply in remote area of Nepal with isolated mini/micro power plants having no national grid connectivity. Interconnection of existing micro/mini hydro power plants, solar system and wind plants would help enhance reliability, quality and

- load
- Facilitates interconnections with central grid
- Operational performance of equipment increased
- Computer education, internet service become possible

### FINANCIAL BENEFITS

- Increase in income of individual micro hydro/home solar
- New job creation
- Increase in entrepreneurial activities
- Increase the quality of living

### SOCIAL BENEFITS

- Unite the community
- Social harmony increases

availability of supplied electricity:

### BENEFITS OF MINI GRIDS

As per various reports, benefits (technical, financial and social) of mini grids are listed below:

### TECHNICAL BENEFITS

- Reliability quality and availability of electricity enhanced
- Capacity factor increased
- Overall safety and safety to operator during operation enhanced
- Possibilities to operate large

population has access to national grid. Therefore, distributed renewable energy technologies like mini grids/micro grids are cost effective alternatives for rural electrification in Nepal.

### MINI GRIDS

There are over 1,000 mini hydro power plants; over 2,500 micro hydro plants and over 100,000 mini solar systems are already installed in remote areas of Nepal. Many studies have shown that many of these hydro plants are not being able to generate power for pick

### TAPLEJUNG MINI GRID PROJECT

Recently Cosmi Electrical as an EPC contractor under the leadership of the Ministry of Environment Science and Technology, Alternative Energy Promotion Centre, Renewable Energy for Rural Livelihood (RERL) funded by World Bank has constructed 11 KV mini grid in Taplejung. Eight micro hydro power plants are con-



nected with 11 KV transmission line grid with a total length of 41 km in Taplejung district. The total installed capacity of the plants is 901 KW benefiting 3,574 households in the mini grid cluster and 1,794 households in the cluster of Taplejung bazaar. After interconnection, load factor, plant factor and utilisation factor are to be improved to 71.35 per cent, 61.13 per cent and 100 per cent compared to 49.79 per cent, 30.44 per cent, 56.31 per cent respectively. The monthly income of each power plant functional group is expected to double

ag. This is one of the most innovative and unique concepts in South Asian region for distributed energy grid to enhance the quality of people's life in the community. Therefore, construction of mini grids is highly recommended in

Nepal for safe, reliable and sustainable supply of energy.

References for this article has been taken from NEA Annual Report 2017, RERL Report, Conference paper (by Dr. Bhanupendra Shakya), and others



The author is Managing Director of Cosmi Electrical Engineering Associates P.Ltd. an EDC member organization

Source: <http://epaper.thehimalayantimes.com/index.php?mod=1&pgnum=22&edcode=71&pagedate=2018-7-29&type=>

## Path to power

*"We need to do adequate homework to reduce the cost of production of hydropower so that the goal of affordable energy can be achieved"*

For the first time, the government of Nepal in May issued the whitepaper on power development with the objective of increasing electricity supply to gear up overall development of hydropower through integrated hydro policy. The government target includes generation of 3000 MW of power in

three years, 5000 MW in five years and 15,000 MW in ten years. In ten years, the government has targeted to produce 10,000 MW for domestic consumption and 5000 MW for export. This commitment is in line with the spirit of Sustainable Development Goals (SDG) of United Nations on affordable and clean energy. SDGs are a universal call to action to end poverty and protect the planet by ensuring that all people enjoy peace and prosperity. Out of the 17 goals to be fulfilled by 2030, the seventh goal, also known as SDG-7, is related to 'affordable and clean energy'.



The UN has emphasized in power project into a spotlight. This tional grid. Even in the areas ensuring universal access to afford- commitment is mainly zeroed in on where electricity is available, large able electricity by 2030 which calls attracting investors from Nepal and number of people continues to rely for investing in clean energy abroad. Projects which were in on other sources like firewood and sources like hydropower and so- limbo or agonizingly slow are ex- LPG for cooking purposes. Large lar. The SDG-7 aims to close the pected to take off. amount of fossil fuels are also con- energy access gap and “ensure While access to electricity sumed in industrial sectors and access to affordable, reliable, sus- in the urban areas has reached vehicles. tainable and modern energy for all” around 97 percent, the supply of **Slow progress** through national action and inter- electricity is inadequate. We must Electricity in Nepal is mainly national cooperation. note that the supply has been more produced through hydropower and

The UN has clearly pointed reliable since last year after Nepal other sources such as solar and out that country’s ownership is fun- Electricity Authority successfully wind energy in particular contribute damental along with policy innova- addressed irregularities in power negligible share. The journey of hy- tion for meeting the goals. Thus, distribution. Yet, around 20 percent dropower development in Nepal the unveiling of this whitepaper of country’s population still has no dates back to 1911, when the con- along with the commitment to bring access to electrification. Only five struction of Pharping Hydroelectric- an integrated hydro policy has defi- percent of the rural population has ity station started. However, even nitely put the investment in hydro- access to electricity from the na- after more than a century, hydro-

electricity capacity is confined to just a little above 1000 MW. Owing to the slow pace of development, most of the transmission line projects have not been completed on time. Without the proper planning and development of transmission line, it is almost impossible to achieve the target.

As we are moving forward toward meeting 90 percent target on average, it is equally important to make sure that the electricity will be used for purposes like cooking and commuting among others.

After several decades of political turmoil, Nepal finally has a political stability following the recently held general elections. The constitution of Nepal has also adopted a policy of harnessing water resources with domestic investment with equal focus on promoting foreign investment. The government's commitment in the form of whitepaper is definitely an applauding task. But there is more to this problem than the government's commitment. The hydropower sector had received a special attention during the First Five Year Plan (1956-60) as well. In spite of this, Nepalis continue to struggle for proper supply and access to elec-

tricity. Low generation of electricity in winter because of the decreased water level is a challenge to overcome.

#### **Challenge to overcome**

*"While access to electricity in the urban areas has reached around 97 percent, the supply of electricity is inadequate. We must note that the supply has been more reliable since last year after Nepal Electricity Authority successfully addressed irregularities in power distribution. Yet, around 20 percent of country's population still has*

The timely completion of ongoing hydropower project is another challenge. Because of the hindrance of the locals or by negligence of contractor, projects are not being completed within the stipulated time. We are yet to build enough transmission lines, which are required to transmit power to substation. Hydropower experts are worried about imbalance between generation and transmission expansion plans and the fact that the existing transmission lines are being overloaded.

Investors have often blamed the lengthy procedure to acquire license and approval during the development and construction of the projects as the reasons for this. The current policy on hydropower is often criticized for having many gaps because of which the private sector and international investors are unwilling to make investment in Nepal. Besides, inadequate supply of infrastructure including shortage of construction materials has also caused delay in many projects. So what should be done?

#### **Way forward**

Despite these challenges, conducive environment has been created for developers in the recent times. The government's plan is ambitious but can be materialized with a strong coordination among the developers and the government.

We must begin by ensuring proper coordination between concerned ministries, modernizing and expanding distribution system and updating existing policies on a regular basis.

Allocating Rs 83 billion for Ministry of Energy can be fruitful in meeting the goals as stated in the whitepaper in terms of developing

and expanding hydropower projects. One door policy can certainly attract potential foreign investors who have often complained about complex procedures within bureaucracy to obtain the license and to execute the project plan.

The government also needs to work on fast-track measures to construct transmission lines while enhancing the capacity of the substations. Then we will be able to set up electricity transmission and realize phase-wise development of domestic and cross-border transmission lines as stated in the white paper.

The whitepaper will undoubtedly have a positive impact on power generation and supply and attract the attention of international investors. But issuing whitepaper alone won't be enough. We need to do adequate homework to reduce the cost of production of hydro-power so that the goal of "affordable energy" can be achieved.

Meanwhile, it is imperative to launch extensive consultations with stakeholders and immediately enact integrated policy for hydropower development.

The author is Mr. Sushil Pokharel Executive Member of Energy Development Council of Nepal and Executive Chairman of Sushmit Energy

Source: <https://myrepublica.nagariknetwork.com/news/path-to-power/>

# NEPAL'S SCENARIO

## Nepal turns to solar and batteries to meet peak demand

*“As prices fall, it is now feasible to store solar electricity to cover the country’s energy shortfall”*

Nepal’s planners have always faced an uphill task in ensuring energy self-sufficiency. The main issues in the past have been politics, the absence of a strategic vision, and policies that forced the country to suffer chronic power cuts. But the country has a new beginning with a new government that has promised political stability and economic prosperity.

The other challenge is an engineering one. Nepal may have one of the highest per capita hydropower potential, but most of the total 1044MW capacity today comes from run-of-river plants which depend on the water flow to turn turbines, and not from reservoirs that can store monsoon water for the dry season.

This means the country suffers from shortfalls in production during winter when peak demand is highest. There are also the daily peaks in the mornings and evenings that need to be covered by Nepal’s only storage dam, the 92MW Kulekhani cascade. Currently, Nepal meets nearly all its peak demand by importing coal-fired electricity from India.

### FALLING SHORT

Electricity Supply-Demand Winter 2018



Nepal’s power grid will have a dry season shortfall for the next ten years till large reservoir projects like Budi Gandaki and Tanahu come online. Till then, NEA has several ideas to bridge the gap. Among these are solar storage schemes like PEMa to meet daily and seasonal peak demands.



#### 1. Imports from India

With new crossborder transmission lines, Nepal can import:

**550 MW**

**2. New Hydropower**  
Capacity addition from new NEA and Independent Power Producers

**200 MW**



#### 3. Switching to LED

Replacing 20 million incandescent bulbs with LED all over Nepal will save:

**200 MW**

#### 4. Net metering

If 20% of households in Kathmandu install solar panels and feed surplus power to grid it will generate:

**220 MW**



#### 5. Solar Storage

Solar farms, and solar storage schemes like PEMa.

**25 MW**

**6. Leakage control**  
NEA targets reducing 200MW lost to leakage and pilferage by 2-3%.

**250 MW**



Peak load demand is traditionally met with electricity from hydropower reservoirs or power plants burning fossil fuels. But as countries try to meet carbon emission targets, there is pressure to adopt solar and other renewable energy sources to meet gap.

This is precisely what the Dolma Himalayan Climate Fund (DHCF) is trying to do with its proposal to generate 150MW of power and store 20MW of it in battery systems to meet Nepal's seasonal and daily peaks.

Called Peak Energy Management (PEMa) System, the first phase of the project got approval from the Investment Board Nepal (IBN) last week to 'time-shift' daytime solar generated power to help meet evening peak demand, and also store surplus hydroelectricity generated during the night to partially meet the morning peak demand.

Such generation and storage of solar power would have been prohibitively expensive till even two years ago. But the cost of storing energy in batteries dropped to less than \$200/kWh from \$1,200/kWh ten years ago. The price of photo-

voltaic cells have plummeted to only \$60/MWh compared to \$400/MWh in 2008.

The other advantage is that a project of this scale can be up and running within two years compared to the decade that it will take for Nepal's next big reservoir projects like Budi Gandaki and Tanahu. Solar is also much more ecologically benign. There is a neat fit: Nepal's peak demand is in winter when solar generation is highest because of cloudless skies.

"We are not trying to replace hydro with solar, we just want a flexible and reliable system to meet peak demand by complementing hydropower," explains Mike Winkel, Director of the Dolma Himalayan Climate Fund, an offshoot of the Dolma Impact Fund, the first international private equity fund for Nepal which has investments in the hydropower, technology, agriculture and health sectors.

The Dolma Group was set up by Tim Gocher, a finance executive and professor specialising in energy. (Read interview, and watch Nepali Times Studio on our YouTube Channel.)

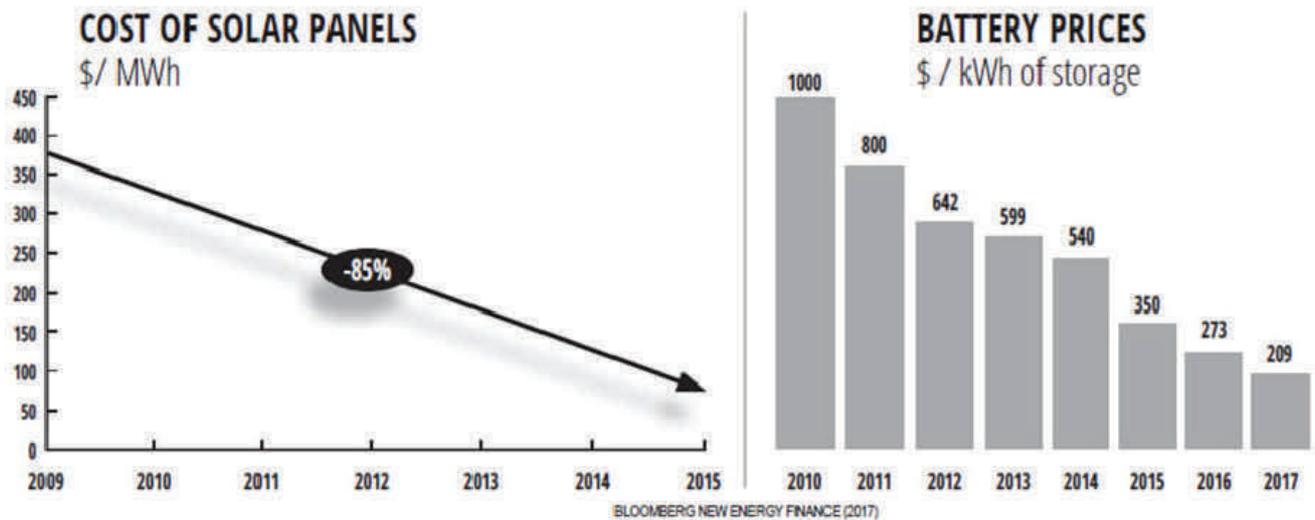
"The project is not going to

replace hydro by any means, but solar does give Nepal another energy option which should directly offset some of the imports from India," Gocher told Nepali Times.

The PEMa serves the same purpose as a storage dam to cover peak winter demand, but unlike reservoirs it can be completed in two years, and can be quickly upscaled to 850MW in the second phase. This makes business sense because Nepal's electricity demand is expected to grow at 7% per year, while peak deficit will continue for another ten years until the big dams come online.

"It will buy Nepal time with short-term supply of power to meet peak time deficits," says Sandip Shah, Managing Director of DHCF, an energy specialist who was formerly with the Norwegian SN Power.

"My entire career has been with hydropower, and I have always grappled with making Nepal self-reliant in meeting daily and seasonal peak power deficits. With prices of solar and battery coming down, the technology is finally there to make Nepal energy independent," explains Shah.



When it comes into operation, possibly by 2020, PEMA will be one of the first utility scale battery operated grid power plants in the region, and it will immediately reduce Nepal's power import bill as well as carbon footprint which has doubled due to the current import of coal-fired energy from India. Winkler used to be with the

also be building on its investments in Nepal's hydropower, that include the 28.1MW Lower Likhu project in Okhaldhunga and the 6.4MW Suri Khola Project in Dolakha into which the Fund has injected \$4.5 million and may invest more in hydropower or other solar projects.

At the Investment Board global energy giant E.ON managing Nepal, CEO Maha Prasad Adhikari is 60,000MW grids, and says PEMA is also excited about the venture. trying to find the optimal technology "This is an innovative way to improve Nepal's energy mix, and can support our peak-time and dry season demand within a short time frame."

and PEMA makes this vision a reality by combining state-of-the-art

Source: <https://www.nepalitimes.com/here-now/nepal-turns-to-solar-and-batteries-to-meet-peak-demand/>

## GLOBAL PERSPECTIVE

### Kenya highlights path to scaling private power grids



Featured Image: Stock

*An innovative multi-million-dollar programme in Kenya seeks to connect 14,000 households and businesses to green mini-grids by the end of 2018.*

The programme dubbed the Green Mini Grid (GMG) Facility Kenya aims to achieve this through scaling up private utilities delivering renewable electricity to rural communities. It is based on results-based financing and could be a model for other sub-Saharan countries dealing with energy poverty.

This initiative is the brainchild of the UK's Department for International Development (DFID), recently provided funds to three private utilities namely; RVE.SOL, PowerGen Renewable Energy and Powerhive to build sites in dozens

of villages located in four counties in the western part of the country. According to the companies, total grants allocated for the projects amount to about €5.2 million (\$6 million).

#### Localised power generation

Mini-grids are localised power generation and distribution infrastructure, ideal for serving remote residential and commercial customers.

The International Energy Agency (IEA) says mini-grids and other distributed solutions are the least-cost option for electrifying

more than 70% of the 1 billion people in the world still without access to electricity, two-thirds of whom live in sub-Saharan Africa.

Aside from electrifying homes, one of the main value propositions of mini-grids is that they can serve a wide range of small industry, from milling, carpentry, welding and poultry incubation, to commercial businesses such as hairdressers, hotels and restaurants, as well as public street lights, health clinics and schools.

But despite the fact that mini-grids are much quicker to deploy (taking just weeks), and more affordable to build than extending the main grid, the industry has been slower to take off than the household solar market in Africa, in part because mini-grids are built to last 20-25 years and require larger up-front capital investment.

“The facility was developed to jump start the private sector,” said Joyce DeMucci, GMG team leader. “We wanted to provide grants to make sure companies are financed for long-term sustainability. I believe we're at the tipping point now.”

The facility is also providing technical support to other developers such as Renewvia and African Solar Designs, grooming them for possible funding in the future, DeMucci said, noting that on top of the initial DFID funding, additional funding had been secured from the European Union (EU), which provides support to extend the facility and accommodate a new call for proposals later in 2018.

### Mini-grid sector is nascent

RVE.SOL's managing direc-

tor Vivian Vendeirinho, echoed the importance of the facility: “It is both catalytic and critical. The mini-grid sector is still nascent, and the level of understanding from the financial sector is very limited. We need grants to lower capital costs and scale so we can ultimately offer a higher return that can attract commercial project debt.”

“This programme is helping the mini-grid sector to scale to thousands of grids and make a significant impact on people in Kenya and beyond,” said Rik Wuts, co-founder of Powerhive, the first company to secure facility funding and deploy grids on the ground.

*“The International Energy Agency (IEA) says mini-grids and other distributed solutions are the least-cost option for electrifying more than 70% of the 1 billion people in the world still without access to electricity, two-thirds of whom live in*

DFID and the EU financed the facility in order to support green mini-grid development and support the Kenyan National Electrification mission to provide power to all Ken-

yans by 2020.

The Agence Française de Développement (AFD) is implementing the programme, and has contracted Innovation Energie Développement (IED) in association with Practical Action Consulting and I-DEV, to manage day-to-day operations.

Besides straight investment grants, the Kenya initiative centres around a mechanism called results-based financing (RBF), which provides a grant for each verified connection, and other milestones such as equipment purchase. Kenya has the potential of serving as a case study for a wider RBF roll-out in Africa.

The African Development Bank is now in the process of developing a continent-wide RBF facility. A recent \$100 million dollar loan from the World Bank to Nigeria for rural electrification will also include an RBF component, with the goal of developing 10,000 mini-grids by 2023.

“The Green Mini Grid facility in Kenya has done the work of laying a foundation for micro-grid financing,” said Sam Slaughter, CEO

of PowerGen. "What's critical now is for governments, together with the private sector and existing and new funders, to build on Kenya's electrification challenge across Africa." success so that we can solve the

Source: <https://www.esi-africa.com/kenya-highlights-path-to-scaling-private-power-grids/>

## Indonesia inaugurates its first three solar plus storage mini-grids



Image: Jon Hanson/Wikimedia

**Indonesia's dispersed, mountainous and seismically active geography is an obstacle to the development of cost effective grid-connected electricity systems, however the 1.2 MW mini-grids commissioned by Akuo Energy show there are solutions.**

The Indonesian villages of Merabu, Long Beliu and Teluk Sumbang, located in the isolated Berau district of East Kalimantan have, at last, gained uninterrupted access to electricity, thanks to three hybrid mini-grids – comprising solar PV and lithium-ion battery storage – commissioned by Akuo Energy, a French renewable power developer, which has established a subsidiary in Bali, Indonesia. Until recently, the three islands, which host just over 460 homes comprising mainly farmers and fishermen, had access to electricity – from diesel generators – for a paltry four hours a day. Breakdowns and the cost of generating electricity from diesel meant the villagers could not afford electricity for longer periods of time.

The villages' remoteness further meant that the cost of fuel was particularly high, meaning inhabitants spent up to 30% of their monthly incomes on electricity.

### Community-owned, clean, unsubsidized electricity

In December 2016 Akuo Energy and Millenium Challenge Account (MCA) Indonesia – a trustee institution formed by the Government of Indonesia – joined forces to develop the three hybrid mini-grids. pv magazine presented them exclusively, and in detail, a year ago.

The project has a combined solar PV capacity of 1.2 MW, and a storage capacity of 2.1 MWh, which has been entirely integrated.

What is even more striking is that the state does not subsidize the retail purchase of electricity. Instead, the mini-grids are owned by the local communities and operated by a local board.

“Akuo Energy has provided these villagers with training so that they have the necessary skills to

maintain and operate a mini-grid and run an electricity board,” said the French firm.

*“The project has a combined solar PV capacity of 1.2 MW, and a storage capacity of 2.1 MWh, which has been entirely integrated.”*

### Immense opportunities

Indonesia is a populous country with a peculiar geography: it comprises more than 17,508 islands, of which 6,000 are inhabited and 1,000 are permanently settled. The dispersed, mountainous and seismically active geography of the archipelago is an obstacle to the development of cost effective grid-connected electricity systems, however the 1.2 MW mini-grids commissioned by Akuo Energy show there are solutions.

Indonesia's Ministry of Energy and Mineral Resources said

the country's electrification rate reached 92.8% in the first half of 2017, up from 84% in the end of 2014. Akuo Energy, meanwhile, said the Indonesian government “is targeting a 100% electrification rate by 2020.”

In January 2017, the Ministry of Energy and Mineral Resources (MEMR) issued the Minister Decree (MD) No. 12/2017 on the utilization of renewable resources for electricity, altering the calculation method for feed-in tariffs (FITs) for large-scale renewable power projects.

As a result, many foreign firms have now plans to develop utility-scale projects in Indonesia.

## Musk The UK wants an electric-vehicle charger in every home



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The country's new electric-vehicle strategy aims for 50 percent of its new car purchases to be of "ultra low emission vehicles" by 2030.

### Some background

Last year, the UK announced the sale of gas and diesel cars and vans will be banned after 2040. It also committed almost 1 billion pounds to clean-energy innovation, some of which will help people buy electric cars.

### The news

After months of de-

lays caused by intense lobbying, the government's report on the initiative, called "The Road to Zero," was released today. It states that by 2040, the UK expects "the majority of new cars and vans sold to be 100 percent zero emission and all new cars and vans to have significant zero emission capability." So yeah, 2040 is a soft deadline, and there's plenty of wiggle room for hybrid cars.

### Charged up

Newly built homes could soon be required to install an electric-car charging port. The report

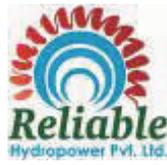
also stated that the UK is launching a 400-million-pound investment fund to help speed up the construction of charging stations.

### Why it matters

As we have said before, a boost from government policy is needed to help electric cars dominate the roads. This government push, combined with how little it costs to own an electric car in the UK, could give them the bump they need.

Source: [https://www.technologyreview.com/the-download/611610/the-uk-wants-an-electric-vehicle-charger-in-every-home/?utm\\_medium=social&utm\\_source=facebook.com&utm\\_campaign=owned\\_social](https://www.technologyreview.com/the-download/611610/the-uk-wants-an-electric-vehicle-charger-in-every-home/?utm_medium=social&utm_source=facebook.com&utm_campaign=owned_social)

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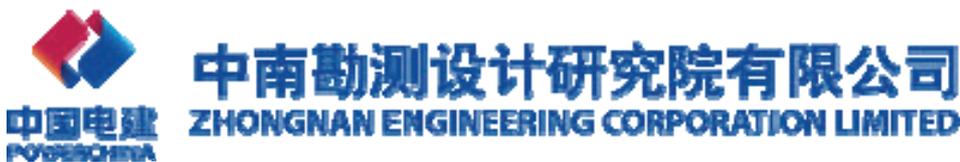
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