Issue 34 | August 2017

EDITORIAL

Dear Reader,

We are all happy faces these days and we don't have to look at the load-shedding schedule anymore. Thanks to the effort of the NEA's entire team for making this happen. But, can we be assured that we won't face the load-shedding in the future? We don't have an answer. So, what can NEA and we do together to ensure a load-shedding free Nepal forever and after?

Demand Side Management is one of the option which has been implemented by the NEA to eradicate load-shedding. DSM is the process of modifying energy consumption using cost-effective conservation, efficiency, and load management programs to reduce the demand for, and cost of, energy services. In contrast to "supply-side" strategies, which increase generation capacity by building new power plants whereas the purpose of DSM is to reduce energy use and to smooth out the daily peaks and valleys in electric energy demand to make the most efficient use of energy resources and to defer the need to develop new power plants.

To ensure stability on the local electricity grid, supply and demand must remain balance in real time. DSM typically works by inducing utility consumers to change their energy consumption habits and use energy-efficient appliances and equipment's in the end use application. DSM is a resource option that complements power supply as well as cost savings to the cus-

Mr. Roshan Silwal
Chief Executive Officer
Comtronics Private Limited
An EDC Member Organization

INSIDE THIS ISSUE

tomers. Meanwhile, reductions of environmental pollutions are also indirectly achieved through DSM.

As a DSM initiative, NEA at its end plans to reduce electricity losses to 10 percent by 2020 from existing 25 percent. It already has plans to implement different programs like automating the Distribution and Consumer Services (DCS), introducing smart meters and GIS-based monitoring of the energy supply and management. With this technical loss and non-technical losses can be reduced. Similarly, it also plans to add new substations, transformers where ever required to curb the issue.

Lately, Mr. Kulman Ghising (NEA) had to defend themselves on the government's decision to buy LED bulbs from India's Energy Efficiency Service Limited (EESL), which ran into controversy after news came out on the government paying a lot on the purchase of the LED lights. This initiation is a part of DSM, NEA is planning to procure the LED bulbs and sell them to its 3.5 million customers in a bid to replace CFL and incandescent bulbs that are widely being used by households. Such replacement, as claimed by the NEA, will save around 200 MW of energy during the peak energy consumption hours. The procurement process has stopped, now 200 MW shortage might hit us hard during the peak season. Who are to be blamed, is it the NEA team OR procurement act OR the suppliers who are working for their vested interest? But, ultimately the entire nation must suffer.

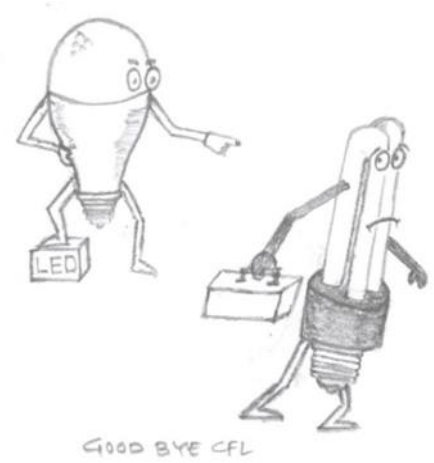
As a citizen of a country everyone should think on how an individual can contribute on being Energy Efficient and save energy. We can easily narrow the gap between demand & supply and decrease the energy intensity in each sector by simple approach towards energy conservation and efficiency through energy efficient technology and housekeeping habits.

Energy Saving Tips

Lighting:

A lumen is the measurement of light output from a lamp, often called a tube or a bulb. All lamps are rated in lumens. For example, a 100-W incandescent lamp produces about 1750 lumens.

Another lighting term is efficacy,



which is the ratio of light output from a lamp to the electric power it consumes and is measured in LPW (lumens per watt).

- Use of electronic ballast in place of conventional choke saves energy up to 20%.
- Use of LED lamps in place of GLS lamp can save energy up to 70%
- \Clean the lamps and fixtures regularly. Illumination levels fall by 20-30% due to collection of dust.
- Use of 16W LED Tube light instead of 40 W tube light saves electricity by 8 to 10%.

EDC ACTIVITIES

JICA Visits EDC Office to collaborate for the Nepal Power Investment Summit 2017

On 15th August 2017, the Japanese International Cooperation Agency (JICA) delegation, Mr. Naoki Nishimura and Mr. Prasanna Aryal, visited EDC office to discuss ways of collaboration for Nepal Power Investment Summit (NPIS) 2017, taking place from 15th-17th December 2017. JICA showed a prominent interest in cooperating with EDC.■

EDC visits U.S. Embassy

On 21st August 2017, the EDC delegation led by Chairman Mr. Sujit Acharya had a meeting with the Deputy Political and Economic Chief, Ms. Stephanie L. Reed and Senior Energy Advisor, Mr. Michael L. Boyd to discuss about the upcoming summit. They have expressed a keen interest for the possible collaboration.■

EDC visits Honorable Vice President of Nepal

On 25th August 2017, EDC delegation led by the Chairman visited Honorable Vice President of Nepal, Mr. Nanda Bahadur Pun at his office. The purpose of the meeting was to inform about the NPIS 2017 and extend the invitation of inaugurating the Energy Mart during the Summit. Mr. Pun was positive and has expressed consent for the request made. ■

Bloomberg New Energy Finance, international media partner for NPIS

Bloomberg New Energy Finance (BNEF) has been one of the international media partners for the upcoming Summit. Bloomberg New Energy Finance synthesizes proprietary data into clear narratives that frame the financial, economic and policy implications of emerging energy technologies. Ms. Vandana Gombar, the editor of Global Policy from BNEF would be speaking and sharing her analysis of the market as well as the opportunities (and risks) for investors, during the Summit.■

EDC visits the Ambassador of the People's Republic of Bangladesh to Nepal

On 4th September 2017, the EDC delegation led by the Chairperson visited the Ambassador of Bangladesh Ms. Mashfee Binte Shams at the Embassy. Her Excellency showed a great enthusiasm in cooperating for the Summit.■

HARATI visits EDC Office

On 1st September 2017, HARATI visited EDC office. The meeting concluded to have a mutual cooperation between EDC and HARATI in areas of energy, hydro and construction. HARATI is a company that provides online service portal (tendernotice.com.np). Following is a list of tender notice:

Tender, Bids and Notices related to Hydro and Energy segments in Nepal
Date : From Aug 1 2017 to Aug 31, 2017

S.No.	Notice Publisher	Description	Published Date	Notice Category	Product Service	Notice Link
1	Upper Tamakoshi Hydropower Limited, Gyaneshwor, Kathmandu	Standing List for Supply and Delivery of Office Accessories and Other Services	8/1/2017	Standing List	Enlistment-Multiple Category	
2	SJVN Arun-3 Power Development Company (P) Ltd., Khandbari, Nepal	Amendment to the Tender Notice Published on 16 July, 2017	8/1/2017	Amendment Notice	Other Product/ Services	
3	Suri Khola Hydropower Pvt. Ltd., Tripureshwor, Kathmandu	Construction of Main Civil Works	8/2/2017	Tender	Construction/ Building	
4	Chilime Hydropower Company Limited, Kathmandu	Maintenance Works of Feeder Road	8/4/2017	Tender	Construction/ Building	
5	United Modi Hydropower Limited, Head Office, Kamaladi, Kathmandu	Construction of Civil Structures	8/4/2017	Tender	Construction/ Building	
7	SJVN Arun-3 Power Development Company (P) Ltd., Khandbari, Nepal	Drilling of Exploratory Holes, Supply and Installation of Solar Power System and Supply, Installation, Commissioning and Testing of IP-PABX System	8/10/2017	Tender	Other Product/ Services	
8	Himalayan Hydropower Limited, Kathmandu	Manufacture/Supply and Delivery/Installation/Operation of Hydro Mechanical Equipment	8/11/2017	Tender	Other Product/ Services	
9	SJVN Arun-3 Power Development Company (P) Ltd., Khandbari, Nepal	Amendment to the Tender Notice Published on July 16, 2017	8/12/2017	Amendment Notice	Other Product/ Services	

10	SJVN Arun-3 Power Development Company (P) Ltd., Khandbari, Nepal	Amendment to the Tender Notice	8/16/2017	Amendment Notice	Other Product/ Services	
11	Trishuli Jal Vidhyut Company Limited, Kathmandu	Supply and Delivery of Jeep and Double Cab Pick-Up	8/17/2017	Tender	Automotive / Vehicles	
12	डादी ग्रुप पावर लिमिटेड, अनामनगर, काठमाडौं	Sale of Shares	8/18/2017	Tender	Other Product/ Services	
13	Trishuli Jal Vidhyut Company Limited, Kathmandu	Supply and Delivery of Jeep and Double Cab Pick-Up	8/18/2017	Tender	Automotive / Vehicles	
14	SJVN Arun-3 Power Development Company (P) Ltd., Khandbari, Nepal	Amendment Notice	8/19/2017	Amendment Notice	Other Product/ Services	
15	Trishuli Jal Vidhyut Company Limited, Kathmandu	Supply an Delivery of Jeep and Double Can Pick-Up	8/19/2017	Tender	Automotive / Vehicles	
16	Sanjen Jalavidyut Company Limited, Kathmandu	Standing List for Supply and Delivery of Office Accessories and Other Services	8/27/2017	Standing List	Other Product/ Services	
17	Upper Tamakoshi Hydropower Limited	Prequalify for Cable Car Scheme	8/29/2017	Pre-Qualification	Other Product/ Services	
18	Chilime Hydropower Company Limited, Kathmandu	Standing List for Supply and Delivery of Office Accessories and Other Services	8/30/2017	Standing List	Enlistment-Multiple Category	
19	SJVN Arun-3 Power Development Company (P) Ltd., Khandbari, Nepal	Hydro-Mechanical Works including Pressure Shaft Steel Liner	8/30/2017	Tender	Other Product/ Services	

MEDIA COVERAGE

Riddle of connecting solar to the grid

Solar energy is in the process to become a mainstream source of electricity worldwide. Our neighbour, India, plans to install 100,000MW solar project by 2022, while China installed more than 34,000MW solar last year alone! Cost of solar technology is plummeting rapidly- electricity from on-grid solar PV costs almost a quarter of what it did in 2009. An average cost of on-grid solar project is around $800,000 per MW, which is almost 1.5 times cheaper than a Hydro project. Yet, on-grid solar is still a farfetched dream for Nepal.

There is no clear legal framework for on-grid solar projects and the total installed on-grid solar projects are less than 1MW in total. Nonetheless, the country has been slowly embracing the technology. Last year, the then KP Oli led government came up with "National energy crisis alleviation and electricity development decade concept paper", where the government set a target to integrate 10% of national grid capacity from the solar and wind energy. It also set a benchmark tariff rate of Rs 9.61/kwh for wind and solar projects.

Likewise, the former Energy

PRIORITISE SOLAR PROJECT IN HIGHER SOLAR IRRADIANCE SITES AND WIND PROJECTS IN HIGH WIND SPEED AREAS

Likewise, the former Energy Minister, Janardhan Sharma, announced to add 200MW from solar and other alternative energy. And most recently, Nepal Electricity Authority (NEA) has rolled out a plan of net metering, i.e. it will buy surplus solar electricity from household consumers. NEA is also getting support from the World Bank and Asian Development Bank for developing on-grid solar project. However, NEA's World Bank financed 25 on-grid solar project is currently in limbo due to the issues raised from the way Engineering, Procurement and Construction (EPC) contractor was selected, and per recent news the World Bank has withdrawn from the project.

NEA had called a Request for Proposal (RFP) for 64 MW on-grid solar projects that would be spread over its certain defined substations, and it is now in the process of signing Power Purchase Agreement (PPA) with the Independent Power Producers (IPPs) that have been selected from the bidding process.

Even though the cost of solar technology has reduced significantly over the past few years, cost of electricity generation from solar projects is still expensive compare to hydro projects. In the NEA's call for RFP, most of the IPPs have offered their tariff at less than the government's benchmark rate- as low up to Rs 8.35/kwh. However, on a hindsight, it looks like even the benchmark rate of Rs 9.61/kwh doesn't seem financially attractive to yield an IRR that is on par to that of a hydro project. Hence, the tariff offered by the IPPs in response to the RFP looks very competitive, and the investment little too risky. But on the other hand, it is indeed a premium rate that NEA is offering to the solar projects compare to a hydro run-of-the-river project, which is Rs 4.80 in wet season and Rs 8.80 in dry season. The offered solar rates are also more expensive than importing electricity from India, which is Rs 5.76/kwh. So, if cost of electricity were to be the only factor, then NEA is indeed losing out by choosing solar. However, electricity is not only about cost- it is also linked to sovereignty and urgency, among others. Cost of having no electricity is considered to be around Rs 40/kwh, which is why industries and businesses use costly diesel generator during the power cut even if it is three to four times costlier than the grid electricity.

(For more information please visit the link below)■

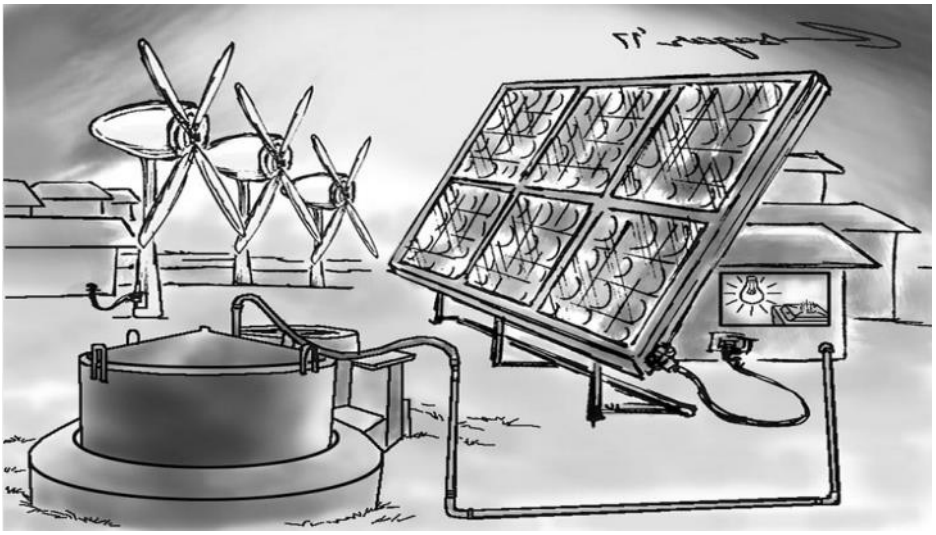
The author is the CEO at Wind Power Nepal Pvt Ltd and the Head of Executive Committee Member, EDC

Source: http://edcnepal.org/riddle-of-connecting-solar-to-the-grid/

NEPAL'S SCENARIO

Climate change: Green energy solutions

Nepal complies with Paris Agreement on Climate Change which came into force since November 4, 2016. The system for allocating and spending budget in line with climate code has been initiated and RE promotion has been given high priority .



According to NASA, the global surface temperature in 2016 was 1° C warmer than in the 20th century, making it the hottest year recorded. IPCC reports states that temperature rise since 1950s has clearly resulted from human activities. Excessive burning of fossil fuel has disrupted climate regulation adversely. While every country is heading towards economic prosperity, energy demand and fossil fuel combustion is escalating – collectively degrading the environment. Thus, the only alternative to curb the situation is by green energy solutions, i.e. use of renewable energy technologies such as solar, wind, biomass and hydro electricity. Rivers originating from snowy mountains along with those which originating from the mid-hill region and Siwalik region have bountiful potential of producing hydroelectricity — 83,000 MW as said by Hari Man Singh 50 years ago. However, the topographical and economic features restrict the production capacity to up to 40000 MW. If surplus energy from hydropower could be produced in the near future, it will not only be sufficient for the country but can also be traded with neighboring economic giants, India and China. The increasing global pressure to switch into green energy therefore provides ample opportunity for Nepal to pave its way into the international market.

The geographically diverse terrain has been both asset and liability for the development of the energy sector in the country. Most parts of the country are rural settings and scattered settlements depriving communities' access to modern energy. Rural people still possess traditional lifestyle where fuel wood is the major source of cooking. According to Economic Survey 2016/17, the share of traditional fuel sources i.e. firewood, agriculture residue and cow dung, consumption was 74.5% in first eight months of fiscal year 2016/17, which is three fourths of the total energy consumption. Alongside, demand for petroleum products has been on

the rise, making Nepalese economy more dependent. The daily average import of petrol alone has been reaching 1008.1 KL this year till date.

Furthermore, the country's hydroelectric potential is still questionable as the production is just 961.2 MW while the energy demand in the fiscal year 2016/17 reached 1444.06 MW, suffering from an energy deficit by 482.9 MW. Thus, as an alternative solution, solar and wind energy can be a milestone in providing renewable energy after hydroelectricity in remote areas.

According to Solar and Wind Energy Resource Assessment in Nepal conducted in 2008, considering 10% of area with more than 300 watt/m2 WPD (Wind Power Density), 3000 MW of electricity can be generated from wind energy. Likewise, from the concentrating solar power, if 2% of the area is taken as suitable for the power generation there is possibility of generating about 1830 MW. In addition, there is also a possibility to generate about 2100 MW from grid connected PV if power generation per square kilometer is considered to be 50 MW with 2% of the land area as suitable for power generation. However, this is yet to be achieved.

(For more information please visit the link below)■

Source: https://thehimalayantimes.com/opinion/climate-change-green-energy-solutions/

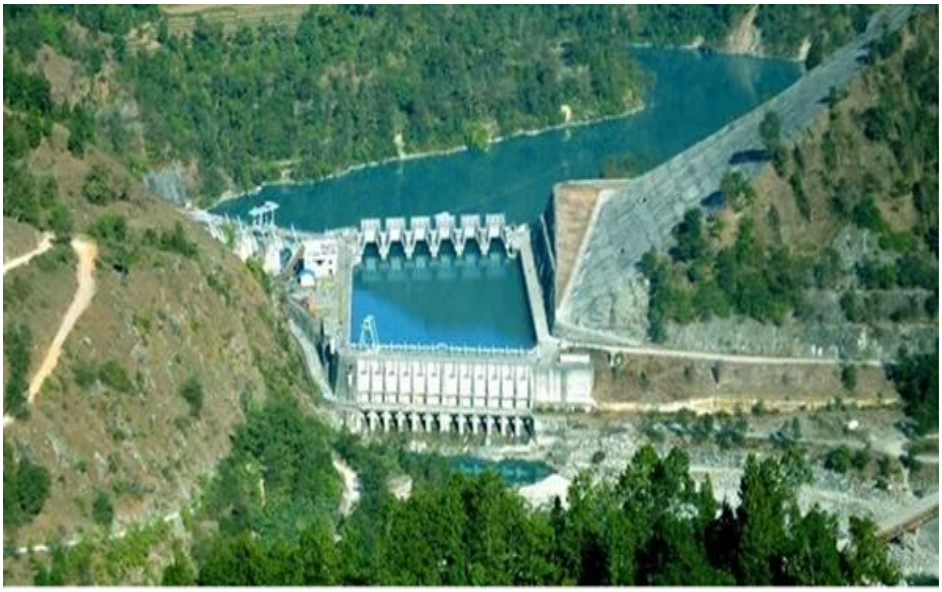
Battle for Hydro in the War against Climate Change

-SLOK GYAWALI

Propelled by the 2016 Paris Agreement there is global impetus towards clean renewable energy. The need now is to invest in 'paradigm shifting technology' to fuel clean development, and with the help of think tank reports and energy expert analysis we have clearer understanding of what the harbingers of this endeavour are: biomass, geothermal, wind power, solar, ocean energy, bio fuel, and hydro*.

An asterisk (or parentheses) after hydropower alerts one about the numerous caveats surrounding this technology. Hydropower (other than small hydro) is not considered new or paradigm shifting. Indeed, the parentheses for small hydro being the lack of consensus of what it means; reports define it to be anywhere from <10 to <50 MW. Yet, it is this caveat that determines the future of investments into hydropower — and the future of the countries who rely on them–in our climate conscious world.

The investments into hydropower, especially in climate vulnerable developing countries, are



complicated because they interlace with the Right to Development and the principle of climate justice. Radical arguments for starving investments from hydropower without consideration of historical and political complexity is a disservice against the fight to eradicate poverty and manage climate change.

Global Investments

In early April, a letter, addressed to the Board of Directors of the Global Climate Fund, and signed by 272 environmental organisations asked that no investments to be made on "large" hydropower. The letter highlighted three projects that were at in the GCF pipelines: Qairokkum Hydropower Rehabilitation (126 MW), Tajikistan; Tina River Hydro Project (20 MW), Solomon Islands; and Upper Trishuli-1 (216 MW), Nepal. The last of which was not up for the April review.

They argued that technology used in large hydros – regardless of whether its reservoir or run-off-the-river, as in the case of Upper Trishuli 1 – was not paradigm-shifting and its climate resilient reputation was doubtful.

GCF is the financial mechanism under the UNFCCC, which helps finance investment in climate-resilient development. The fund "helps developing countries lim-

it or reduce their greenhouse gas (GHG) emissions and adapt to climate change. It seeks to promote a paradigm shift to low-emission...taking into account the needs of nations that are particularly vulnerable to climate change impacts."

Earlier today, the Chinese vice premier announced a USD 1 million assistance to Nepal, where more than 100 people have died in flooding and landslides.

China's vice premier Yang led the Chinese delegation while Deputy Prime Minister Krishna Bahadur Mahara led the Nepalese the talks. Yang arrived in Kathmandu yesterday from Pakistan after attending the country's Independence Day celebrations as a "special guest".

(For more information please visit the link below)■

Source : *http://moderndiplomacy.eu/index.php?option=com_k2&view=item&id=2840:battle-for-hydro-in-the-war-against-climate-change*

A new optimization model could bring higher solar-power integration

Solar power has been established as a source of mainstream power generation across the globe. With numerous installations of photovoltaic (PV) systems for residential homes at or near the distribution site, there is a challenge to balance supply and demand to make these intermittent energy sources reliable. Too little sun means low solar generation and poor PV system efficiency. Excessive generation can jeopardize normal operation of electricity networks.

Demand response (DR) is one promising way to increase operational flexibility and energy efficiency. However, little research has been conducted on a large scale to quantify the benefits of DR in residential communities. To fill this gap, researchers at the Universiti Teknikal Malaysia Melaka (UTeM) in Malaysia incorporated DR scenarios in simulated comprehensive network case studies based on 100 urban low-voltage network samples.

Their research showed the significance that DR can have on network operations with different levels of PV penetration. The researchers report their findings this week in the Journal of Renewable and Sustainable Energy, from AIP Publishing. "We highlight the importance of the paradigm shift from the traditional 'generation to follow demand' to 'demand to follow generation' in renewable-rich energy mix scenarios," said Chin Kim Gan, UTeM associate professor and co-author of the paper.

DR initiatives, through the use of advanced building controls or manually reducing power during hours of peak demand, encourage consumers to reduce their electricity use in exchange for lower electric bills and other incentives.

Three case studies were developed to investigate how various DR scenarios would affect network performance. Malaysia was chosen as the location because of its consistent tropical weather pattern, with sunny days about 50 percent of the time. Different degrees of DR participation at varying levels of PV penetrations were considered for each case study for a total of 10,000 network analyses performed for each case study.

In the first case study, consumers responded to their own demand profile without PV generation (e.g., they delayed using their washing machine until later in the evening).

In the second, participants responded to their own PV genera -tion profiles. For them, DR con-

sisted of load shifting (e.g., taking a hot shower in the morning when local solar power is available).

In the last case study, consumers considered both their own demand and PV generation profiles simultaneously (e.g., they decreased their use of air conditioning after receiving a signal from a central DR optimizer). (For more information please visit the link below)■

Source: *http://www.solardaily.com/reports/A_new_optimization_model_could_bring_higher_solar_power_integration_999.html*

The Use of Biogas for Cooking

Biogas production depends on the availability of sufficient biomass feedstock, water and space for the digester. Biogas is produced by the anaerobic digestion of organic matter under anaerobic conditions. Biogas is comprised primarily of methane and carbon dioxide. At household level, biogas systems can be used to produce fertilizer and for providing energy for cooking and lighting.

Cookstoves and ovens for biogas application are similar to those of conventional appliances running on commercial gasfuels. A biogas stove usually has a single or double burner with varying gas consumption rates, which is influenced by the pressure provided by the biogas plant and the diameter of the inlet pipe. The burner itself has several parts. The amount of gas that flows into the burner is controlled by the jet, a hole which is carefully sized and defines the power output of the burner. Compared to other gases, biogas needs less air for combustion. Therefore, conventional gas appliances need larger gas jets when they are used for biogas combustion. Most of these conventional appliances can be adapted for the use with biogas by the modification of the burners to ensure proper combustion and efficient use of energy. Stoves running on biogas contain a valve to premix the biogas with the right amount of oxygen, a burner to combust the mixture and a structure to hold a pot. Piping is needed to transport the biogas from the digester to the point of use in the cook stove. Generally one can state that literature and studies focus much more on biogas plants and the production of biogas than on its use and the real experience of households switching from woodfuel stoves or even a three -stone fire to biogas stoves.

A biogas user survey carried out in 2013 in Vietnam showed that more than 50% of interviewed biogas users stated that the cooking environment has less dust, soot and smoke. 77% were satisfied with the functioning of the biogas stove. However, issues with the ignition switch were often mentioned as a difficulty for lighting up the stove. It was further noted that the cost for repairing the stove counted for 63% maintenance cost of a biogas user. It was also shown that on average, each biogas plant saves daily 4.5 kg of wood and 1.6 kg of agriculture residues from human food and animal feed preparation. Thus, a household with a biodigester saves about 1.2 million VND (around 40-50 Euros) per year in fuel consumption for preparing food and animal feed. (For more information please visit the link below)■

Source: *https://energypedia.info/wiki/Biogas_Stoves*

BATTERIES VS PUMPED STORAGE HYDROPOWER – ARE THEY SUSTAINABLE?

A sustainable grid needs sustainable energy sources. While there's no doubt that it makes sense to store renewable energy, whether in batteries or in a pumped hydro scheme, just how sustainable are these technologies?

As we move rapidly towards ever-greater levels of wind and solar power in the network, increasing quantities of storage are needed to smooth intermittency and ensure secure supply. Pumped storage hydropower and batteries are likely to do much of the heavy lifting in storing renewable energy and dispatching it when power demand exceeds availability or when the price is right.

We've previously compared the two technologies in terms of their costs, the speed with which they can be deployed, and their ability to support the grid. Here we compare their sustainability in terms of storage efficiency and capacity, safety, use of scarce resources, and impacts through all stages of their lifecycle.

Storage efficiency and capacity

For both batteries and pumped hydro, some electricity is lost when charging and discharging the stored energy. The round-trip efficiency of both technologies is usually around 75% to 80%. This level of efficiency for either technology represents a significant displacement of non-renewable generation if we assume that the stored generation would not otherwise occur.

A particular consideration for batteries is degradation. Batteries degrade as they age, which decreases the amount they can store. The expected life of the batteries that will be used for the recently announced battery storage project in South Australia is about 15 years (depending on how the batteries are operated). By the end of that time, the capacity of the batteries is expected to have dropped to less than 70% of their original capacity.

To maintain a reliable and steady capacity for storage as batteries age and degrade, large-scale battery plants will require ongoing staged installation and replacement of batteries. In comparison, the degradation of pumped storage is close to zero. With appropriate maintenance, peak output can be sustained indefinitely.

Safety

No storage solution can be considered sustainable unless it is safe. The greatest risk relating to pumped storage is dam safe-

ty. If it occurs, dam failure can affect downstream communities and the environment, with its impact potential likely to be far greater than a battery safety incident. Nevertheless, pumped hydro technology is mature, dam risks are generally well understood and managed, and the frequency of dam safety events is low.

The main safety concern for batteries is thermal runaway leading to explosions and fires. The severity of this risk will depend on how a battery project is implemented. In a modular arrangement, thermal runaway would be localised, not affecting the whole bank. However, because of the very rapid deployment of evolving battery technologies, safety standards may not be rigorously enforced.

Impacts on land and water

Pumped hydro and grid-scale battery plants may have environmental and land-use impacts. These impacts would vary depending on the sensitivity of the site selected.

A grid-scale battery facility needs a relatively small parcel of land and is likely to be able to be created very close to the energy demand or where generation occurs. Land in these areas has often already been disturbed and the new operations may have little extra environmental impact. Land and water impacts of batteries relate more to their disposal at the end of their effective life, and to the extraction of the resources to produce new batteries.

(For more information please visit the link below)■

Source: *http://www.entura.com.au/batteries-vs-pumped-storage-hydropower-are-they-sustainable/*

GLOBAL PERSPECTIVE

These Solar-Powered Trees in Dubai Provide Wi-Fi, Charging Stations and Shade

In preparation for the World Expo 2020, Dubai is rolling out solar-powered palm trees that will help visitors beat the heat while surfing the web

It's no secret that solar energy is making real progress around the world.

With companies such as the Elon Musk–backed SolarCity adding practicality and panache to the young industry, it seems that more people are understanding the limitless potential generated by the sun.

Similar, in ways, to when countries scoured the earth for oil, the race for renewable energy technology has a sense of urgency. The winners in this game will possess the greater power that comes from new technology, as well as new jobs and greater energy security. Which is one of the biggest reasons why the United Arab Emirates—a nation among the top oil-rich countries in the world—is shifting some focus toward solar energy. And it is doing so in original ways.

As Dubai prepares for the World Expo 2020, "Smart Palm" trees have been installed throughout the city. The device, which gets its named from its palm tree–like design, uses solar energy to provide free Wi-Fi, charging stations, and much-needed seating and shade from the region's sweltering heat (temperatures commonly soar into the 90s/100s in summer).

Located on beaches and in public piazzas, the Smart Palm trees also have several security features: Each unit comes equipped with a 360-degree camera as well as an emergency button to notify authorities. What's more, a touch screen provides city information and public messages of importance from the government.

To date, roughly 50 Smart Palm trees have been erected throughout the city. The panels, which are located on top of the palm trees, have enough energy to power green LED lights at night. Not only does this make the trees aesthetically pleasing, but it also makes them easier to spot at night.

This news was originally published at Architectural Digest.

(Please click the link below for more information)■

Source: https://glocalkhabar.com/featured/solar-powered-palm-trees-dubai-provide-wi-fi-charging-stations-shade/

EDC MEMBERS


IDS ENERGY
MBK JCL
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ARUN VALLEY
HYDROPOWER DEVELOPMENT CO. LTD
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DIBYASWARI
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HYDROPOWER
DEVELOPMENT
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Solar Energy Systems
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nhe
WAIBA
Expediting Growth
TSN
NHA
Nepal Hydropower
Association

PARTNERSHIP

Investment Board of Nepal
Government of Nepal

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

Energy Development Council

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