

ENERGY COMMUNIQUE

EDITORIAL

ASSESS NEPAL'S HYDRO POWER EXPORT POTENTIAL

Nepal's power sector is starting at a period of excess supply. Nepal Electricity Authority (NEA) projects that within the next two years, supply will exceed demand.

This will be a difficult situation for NEA. They are committed to purchasing all the electricity generated but without the demand from consumers, NEA will be faced with rising financial losses. To overcome this, NEA wants to export the excess electricity to India.

NEA isn't the only one pegging their hopes on selling electricity to India. For decades, Nepali politicians and governments have promoted the idea of a prosperous Nepal through hydro-power exports.

At a broad level, the idea of exporting electricity to India makes

great sense. Nepal is rich in hydro-power. India, one of the fastest growing economies in the world, needs electricity. It seems like a perfect match. Based on this, successive governments have drawn up plans for thousands of MWs - the latest goal is for 10,000 MW within the next ten years.

Two large hydro power plants are being developed to export power to India. New cross-border transmission lines are being planned. There is no doubt that Nepal would benefit from selling electricity to India. But does that mean Nepal is positioned to do so? Before we start walking down this alley, it is important to objectively assess whether Indian power markets really offer opportunities for large scale Nepali electricity exports.



Mr. Bishal Thapa
Executive Committee Member, EDC
MD, Saral Urja Nepal Pvt. Ltd.

INSIDE THIS ISSUE:

EDC HOLDS ITS 3RD AGM IN KATHMANDU	4
FIRST EDITION OF "HOW TO DEVELOP A HYDRO POWER PROJECT IN NEPAL" IS RELEASED	5
TENDER NOTICE	6
MEDIA COVERAGE	8
NEPAL'S SCENARIO	9
GLOBAL PERSPECTIVE	12
MEMBERS	21
PARTNERSHIP	23



Picture Source: The Himalayan Times

Many people believe that Nepal should not export its hydro-power and instead consume it at home to promote domestic value-added growth. We need to overcome this type of false nationalism. Our hydro-resources must be wisely used and if that means export to India, we should pursue it.

But before we go down that path, are we confident that's Indian power markets contain opportunities for large scale Nepali electricity exports?

I don't have the answers. Nobody does. But it is important that we at least ask the right questions.

- Indian power markets are currently experiencing excess ca-

capacity. Approximately, 40,000 MW of capacity is reported as stranded. Some 175 GW of renewable energy capacity is

Two large hydro power plants are being developed to export power to India. New cross-border transmission lines are being planned. There is no doubt that Nepal would benefit from selling electricity to India. But does that mean Nepal is positioned to do so? Before we start walking down this alley, it is important to objectively assess whether Indian power markets really offer opportunities for large scale Nepali electricity exports.

planned by 2022. Will electricity demand in India pick up so drastically over the next decade to create ample secure

opportunities for Nepali hydro power exports?

- Most Nepali hydro power exports will come from run of the river plants. These plants will have high seasonal variation - lots of supply during the wet months and little over the dry winter months. Have Indian power markets achieved the maturity to offer differentiated electricity products that vary by season and time of day.
- Power prices are already very low in India. Most forecasts suggest that they will continue to remain low. The combination of low prices and excess supply has already created very high levels of bad debt in

the Indian power sector. Will Nepali hydro-power exports find enough sustained good prices to be meaningful?

- India also has adequate hydro power capacity. Close to 10,000 MW is already under construc-

tion. Why is it that Nepali hydro-power will be cheaper than Indian hydro power when all the equipment, technology, human capital and financial resources will have to be imported?

- The Nepal-India electricity trade potential remains a potential

only within the ministries. It hasn't spilled over to the private sector. No one in the Indian private sector, other than those

directed by Government, currently believe in Nepal as a reliable supply partner. If Nepal's promise of hydro power doesn't

resonate outside of the foreign ministry, where is the real opportunity for exports?

Even if the answers to these questions suggest that there is no real opportunity for Nepali hydro power exports to India, that doesn't mean we should not pursue it. If we believe hydro-power exports is our ticket to development, then we need to get real about it.

We can't export hydro power to India sitting in a hill top in Nepal and hoping that the Indian envoy will show up with a bag full of cash

to buy our exports. Nepal will have to take the fight into the Indian market place. We will have to create our own opportunities.

Nepal must establish an energy trading firm in India. India's energy sector is an exciting market

– perhaps not yet primed - but a solid long-term bet. We can't tap that market merely by looking at it through a telescope from a hill-top in Nepal. If you want to do business in India - set up an energy shop in India.

EDC ACTIVITIES

EDC conducts its 3rd Annual General Meeting



On 29th June 2018, EDC successfully conducted its 3rd Annual General Meeting (AGM) at Hotel Radisson, Kathmandu. EDC would like to thank all its members for their active participation in the meeting. EDC also expresses its gratitude to all the guests and well-wishers for attending the dinner reception and their messages

EDC delegation visits Ministry of Energy, Water Resource And Irrigation (MoEWRI)

On 13th June 2018, EDC delegation led by Chairman Mr. Sujit Acharya paid courtesy visit to Honorable Minister Mr. Barsha Man Pun at Ministry of Energy, Water Resources & Irrigation, Singha Durbar, Kathmandu.

Mr. Kushal Gurung, Executive Committee Head of EDC, Mr. Sushil Pokharel, Executive Member of EDC, Ms. Itnuma Subba, CEO of EDC and Mr. Manish Basnet, Executive Manager of EDC were present during the visit.



EDC ACTIVITIES

EDC welcomes new member

EDC heartily welcomes “Abhinawa Law Chambers” as its member.

Abhinawa Law Chambers (“ALC”) is full service litigation and legal consultancy law firm based

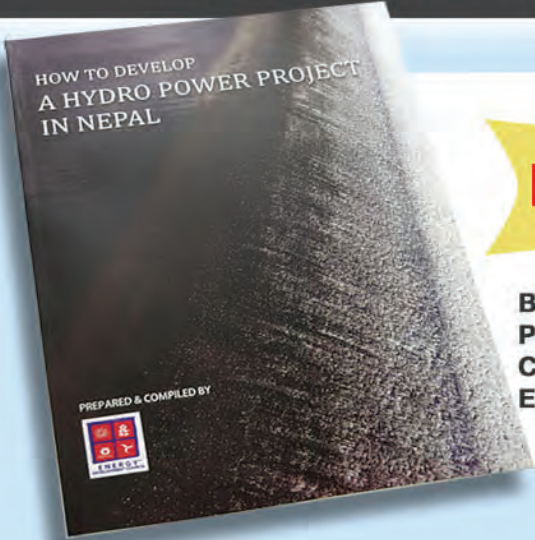


ABHINAWA LAW CHAMBERS
advocates & legal consultants

in Kathmandu, Nepal, founded in the year 1981. The law firm comprises of ten advocates, one Notary Public apart from the secretarial staff. All the lawyers at ALC have a good educational background and significant experience and ability to deal with various practice areas including corporate law, foreign investment, infrastructure projects, project financing and even constitutional law. The law firm is well positioned to render services in relation to litigation as well as joint venture advisory and corporate consultancy.

First edition of “HOW TO DEVELOP A HYDRO POWER PROJECT IN NEPAL” is released

BOOK FOR SALE
HOW TO DEVELOP A HYDRO POWER PROJECT IN NEPAL



Discount Available

Book your copy now:
Price Rs. 5000
Contact: +977-1-4169116 / 4169117
Email: info@edcnepal.org

EDC ACTIVITIES

The tender notice for the month of May

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

TenderNotice.com.np					
Tender, Bids and Notices related to Hydro and Energy segments in Nepal					
Date : June 2018					
S.No.	Notice Publisher	Description	Published Date	Notice Category	Product Service
1	Trishuli Hydropower Company Limited, Vansthal, Kathmandu	Standing List for Supply and Delivery of Office Accessories and Other Services	6/29/2018	Standing List	Enlistment-Multiple Category
2	Nepal Electricity Authority, Generation Directorate, Upper Trishuli 3A Hydroelectric Project, Rasuwa	Standing List for Supply and Delivery of Office Accessories and Other Services	6/29/2018	Standing List	Enlistment-Multiple Category
3	Ministry of Energy, Water Resources and Irrigation, Alternative Energy Promotion Center (AEPIC), South Asia Sub Regional Economic Corporation Power System Expansion Project	Construction and Completion of Hydro Subproject	6/29/2018	Tender	Construction/ Building
4	Nepal Electricity Authority, Large Generation Operation and Maintenance Department, Madhyamarsyangdi Hydro Electric Center, Lamjung	Amendment Notice	6/27/2018	Amendment Notice	Other Product/ Services
5	Madhya Bhotekoshi Jalavidyut Company Limited, Middle Bhotekoshi Hydroelectric Project, Sindhupalchowk	Construction of School Building, Construction of Health Post Building, Access Road, and Construction of Boundary Wall with Gate, Stone Masonry Works, Gabion Works, Rigid Pavement, Courts of Table Tennis and Volleyball, Vehicle Shed etc.	6/20/2018	Tender	Construction/ Building
6	Himal Hydro & General Construction Ltd., Jawalakhel, Lalitpur	Procurement of Vehicles	6/25/2018	Tender	Automotive / Vehicles
7	Bubwal Power Company Ltd., Buddhanagar, Kathmandu	Standing List for Supply and Delivery of Office Accessories and Other Services	6/9/2018	Standing List	Enlistment-Multiple Category

EDC ACTIVITIES

8	Upper Tamakoshi Hydropower Limited, Upper Tamakoshi Hydroelectric Project, Gyaneshwor, Kathmandu	Painting Works of Office and Camp Buildings	6/26/2018	Tender	Contracting - Painting/ Plumbing and all Hardware
9	Swet Ganga Hydropower and Construction Limited, Kathmandu	Design, Supply, Manufacturing, Delivery, Election/Installation and Testing and Commissioning of Electro Mechanical Works	6/27/2018	Pre- Qualification	Other Product/ Services
10	Upper Tamakoshi Hydropower Limited, Upper Tamakoshi Hydroelectric Project, Gyaneshwor, Kathmandu	Standing List for Supply and Delivery of Office Accessories and Other Services	6/21/2018	Standing List	Enlistment- Multiple Category
11	Upper Hewakhola Hydropower Company Pvt. Ltd., Anamnagar, Kathmandu	Supply and Delivery of Electromechanical Items	6/22/2018	Expression Of Interest	Electronics/ Electric Utilities
12	Ministry of Energy, Water Resources and Irrigation, Department of Hydrology and Meteorology, Building Resilience to Climate Related Hazards Project (BRCH), Naxal, Kathmandu	Amendment Notice	6/18/2018	Amendment Notice	Other Product/ Services
13	Remit Hydro Limited, Babarmahal, Kathmandu	Opening of Financial Proposal	6/24/2018	Notice	Other Product/ Services

Powered By,

www.TenderNotice.com.np

 **TenderNotice**

MEDIA COVERAGE

The Himalayan

PRIVATE SECTOR FOR RURAL ELECTRIFICATION

Private sector for rural electrification

NEED FOR MORE INCENTIVES TO ATTRACT PRIVATE SECTOR INTO MICRO-GRID BUSINESS

Kishal Gurung
Kathmandu

It is welcome news that the government has considered rural electrification as a priority by allocating its five billion for the coming fiscal year. We still have around 35 per cent of population who are not connected to the national grid, and looking at the remoteness and low load factor of these population, decentralised energy system might be a better option to serve them. And so far

are poorly skilled and do not have reserve funds for repair and maintenance work. Once something goes wrong with their power plant, the trouble begins, and they need to look for external support or else the project collapses. This growing number of sick projects is probably urging for a shift away from community-based model to more market-oriented business model. And arguably, a private sector run Energy Service Company (ESCO) model could be a way forward.

ESCO is an entity that would

are operational too. As per the latest Renewable Energy Subsidy Programme 2073, AEPD provides 60 per cent subsidy for up to 100 KW rural micro-grid projects, either from micro-hydro, solar or wind. They also have special provision for projects between 100 to 1000 KW, for which it has collaborated with the World Bank and the Asian Development Bank. However, the response from the private sector is very tepid. Biggest concerns for the private sector are the return on its investment and security of its investment. Even with 60 per cent

return on equity (Equity IRR) of a rural micro-grid is merely around eight per cent. If we were to invest 30 per cent equity and rest 20 per cent as a debt at 10 per cent interest rate, and keep the electricity tariff at Nepal Electricity Authority (NEA) rate.

The return on micro-grid is less than half than that from an on-grid hydro project, whose expected equity IRR would be more than 17 per cent on average. Furthermore, as the clients in micro-grid are usually communities living under the poverty line, the perceived risk



perceived too low compared to the risk involved. There needs to be more incentives to attract private sector into the micro-grid business. Providing low interest rate on loan; collateral free debt finance; exemption on taxes and import duties on equipment needed for a micro-grid project are some such incentives that could help to level the playing field.

Bringing in private sector to run micro-grids on ESCO model definitely looks like a more sustainable solution for rural electrification. Hence, the government should take necessary steps to woo private investment. Also, it is a moral responsibility of the government to provide electricity for all. It should not shy away from providing subsidy and tax incentives to make rural electrification financially attractive for private sector making it as lucrative as investing in on-grid hydro projects.

government's another agency, Alternative Energy Promotion Centre (AEPD) is catering to these off-grid population by promoting community owned micro-hydro, solar mini grid and wind-solar hybrid projects. However, most of these projects are facing serious issues during operation phase, and some of them are on the verge of shutting down.

AEPD usually selects a contractor to build these off-grid projects which when completed, is handed over to the community by setting up user groups to run them. However, most of these user groups

build, own, operate and manage the energy project. It is like a combination of both an Independent Power Producer (IPP) and Utility ESCO concept for running off-grid projects are getting increasingly popular worldwide, and more so in countries like India and Africa. Per this model, responsibility of running the power plant would shift from the community to a company who is technically more capable and have better means for raising capital.

There is already a provision in AEPD policy to encourage ESCO model, and couple of trial projects

of payment default is higher, which could make the debtors and developers equally wary. While on-grid project provide legally binding power purchase agreement between the IPP and NEA, and since NEA is a government entity, their odds of defaulting is considered relatively less, such that the banks provide debts based on project financing, that is, without extra collateral.

Nonetheless, experiences from off-grid projects show that replacing community-based model by ESCO model is way forward for

sustainability of the power plant as well as scalability of the business from one village to other. However, it would be very challenging to promote ESCOs under current scenario, as the return on investment from a micro grid is



The author is the CEO of WindPower Nepal Pvt Ltd, an EDC member organisation

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

NEPAL'S SCENARIO

The Fourth Element

“Why should we wait at least ten years for a storage hydro to be ready? If environment is conducive, private sector is ready to launch rooftop revolution



Disruptions from Distributed Renewable Energy (DRE), digital technologies and opportunities for peer-to-peer transactions are challenging the business models of power utilities around the world. Nepal is no exception. Power utilities adapting to these “disrupt or be disrupted” phenomenon is emerging as the winners. This disruption offers Nepal Electricity Authority (NEA) an opportunity to leap-

frog into a modern utility.

Past few decades have shown us the importance of adapting to changes. Companies like Kodak, Nokia and RIM that could not keep up with the changes have gone obsolete. Such companies that were once the face of innovation, struggled due to their lack of vision to foresee the disruptive changes. The power sector is going through a similar stage of change and power utilities all over the world are on the spotlight. Renewable and digital disruption has put immense pressure on power utilities to change. Technology change alone is not enough. Utility providers need a 360-degree overhaul of operations and business models. Traditionally, utility business model has been predictable and risk free. It is safeguarded by long term infrastructure investment and suitable regulatory milieu, resulting in captive customers with-

out alternatives. Utilities were the sole providers of power. But in recent times DRE, behind the meter storage, net metering systems and data analytics capacity have added an additional layer of complication (opportunity) for the utilities. Now the customers have a choice. And in some instances these choices are more reliable and cheaper.

Utilities around the world have embraced this new norm. They have accordingly started planning and implementing infrastructure, operational and business model changes to cater to the changing eco-system. A customer-oriented approach is a must now, it is no longer sales of commodity, it is sales of service. The change should be contagious around the world.

strides in renewable energy deployment. It has set a mammoth target of 175GW by 2022 of which it has already achieved 62GW (35 percent). Of the 175GW target, 40GW was set for rooftop solar. Only 1GW (2.5 percent) of rooftop solar has been deployed till date. Why is there such a huge difference between large scale grid connected solar achievement versus small distributed rooftop achievement? The key is the fourth element, the power utilities.

Changing paradigm

An urban customer can fully go off grid and manage its own power supply or be an exporter of energy. Utilities are used to one dimensional consumer. In today's context the consumer has become a prosumer, one that is capable of bidirectional energy management. Utilities are also behind in utilizing the biggest power of our times, the power of data. Data analytics could help utilities better understand customer needs and manage demand in an efficient manner to optimize profit.

In our part of the world, the feeling from the utilities is that of resentment, unlike other utilities that are now adapting to the disruptive changes. A sense of fear is in the air, a fear of change and a fear of being redundant. Rather than looking at it as an opportunity to better manage utilities and provide better service to their clients, the inevitable disruption is seen as a threat.

Power utilities have made it as hard as possible for people to connect their system to the grid. The application process for net metering is so gruesome and lengthy, only a very few are willing to go through with it. Power utilities fear their customers becoming their suppliers.

The primary argument presented by power utilities against DRE is of technical issues, intermittencies and failures. A recent grid integration study in Nepal was used to argue that only 10 percent DRE/RE could be injected to the grid without hampering critical technical indicators and components.

A combination of cleantech, fintech and Internet of Things (IoT) is transforming the energy world. Power utility is the fourth element in this dynamic disruptive force. Whether they want it or not, the change is coming, and it is coming faster than anticipated. Most power utilities are unwilling to change, there will come a time when innovative energy companies will buy utilities. India is making forward strides in renewable energy deployment. It has set a mammoth target of 175GW by 2022 of which it has already achieved 62GW (35 percent). Of the 175GW target, 40GW was set for rooftop solar. Only 1GW (2.5 percent) of rooftop solar has been deployed till date. Why is there such a huge difference between large scale grid connected solar achievement versus small distributed rooftop achievement? The key is the fourth element, the power utilities.

I would like to differ. In Germany, studies have shown that

even 150 percent of DRE injection has been successfully accepted by the grid, not even a smart grid. This could be because Germany's transmission infrastructure is well connected with the rest of the European grid. But a more recent study communized by GIZ of DRE integration in Delhi showed that up to 75 percent of DRE injection was well absorbed by the grid without additional investment in distribution infrastructure. The DRE injection did not make the system go out of voltage range and all other indicators remained stable. Only injection of greater than 75 percent resulted in some bounds for parameters being breached.

Nepal's case

Nepal presents a unique case. It is well poised to plan and implement its energy strategy. It is in a nascent stage of growth. It does not have any coal or gas generators that it must replace. It has one monopolistic state-run utility which can easily adapt to changes, if it wanted to. Last year Nepal purchased 2,175 GWh (billion units) of electricity from India, approximately 50 percent of total consumed in the country that year. The sole utility company, NEA reported net loss of 978 million Nepali rupees. With Transmission and Distribution (T&D) being very flexible is a key factor to increase RE in the energy mix. We are at the threshold of building a new Nepal. To build it, a massive supply and management of energy is essential. NEA needs all the backstopping and support from private sector, government and development partners. It needs injection of fresh talents with innovative ideas, not only electrical engineers but also software engineers, blockchain developers, management experts, customer service people, people who can drive change. A work force which is visionary and who will lead us through our journey of prosperous Nepal, driven by technology. NEA is at the forefront of catalyzing Nepal's transformation. NEA needs to be the medium through which all energy providers, whether that be hydro power, RE, DRE or any other source of energy, can contribute to power Nepal's development movement. NEA need not fear new technologies. It needs to welcome it with arms wide open. Without the fourth element, the energy revolution will be incomplete.

Source: <http://myrepublica.nagariknetwork.com/news/the-fourth-element/>

GLOBAL PERSPECTIVE

Global PV module prices collapse

“The predicted fall in global PV module prices appears to have already begun, with PVIn-sights and EnergyTrend reporting average prices in the \$0.27-\$0.37/W range.”



Well, that didn't take long.

Only days after the Chinese government announced a substantial withdrawal of support for solar PV on May 31, Bloomberg New Energy Finance (BNEF) responded with a report forecasting that global PV module prices would fall 34% this year, estimating that monocrystalline silicon modules would cost only \$0.24 per watt by the end of the year.

The note also predicted “market panic” in the short term.

Only a few weeks later both dynamics to appear to be at play, according to data by PVInights and EnergyTrend.

“As of Wednesday (June 20), PVInights estimated average PV module prices had fallen to \$0.278 per watt for standard multicrystalline modules, with multi-PERC modules coming in at an average of \$0.337 per watt, and mono-PERC modules at \$0.363 per watt.”

As of Wednesday (June 20), PVInights estimated average

PV module prices had fallen to \$0.278 per watt for standard multicrystalline modules, with multi-PERC modules coming in at an average of \$0.337 per watt, and mono-PERC modules at \$0.363 per watt.

These numbers represent declines from 0.3% to 2.1% over the course of the last week, with the greatest fall related to standard multicrystalline products.

PVInights is not the only company reporting this information. Taiwan-based EnergyTrend is

Solar PV Module Weekly Spot Price					
Item	High	Low	Average	AvgChg	AvgChg %
Poly Silicon Solar Module	0.41	0.25	0.278	↓-0.006	↓-2.11%
Poly High Eff / PERC Module	0.45	0.30	0.337	↓-0.002	↓-0.59%
Mono High Eff / PERC Module	0.55	0.32	0.363	↓-0.001	↓-0.27%
ThinFilm Solar Module	0.42	0.28	0.305	↓-0.004	↓-1.29%

Credit: PVInsights, taken from the PVInsights site

Well, that didn't take long.

Only days after the Chinese government announced a substantial withdrawal of support for solar PV on May 31, Bloomberg New Energy Finance (BNEF) responded with a report forecasting that global PV module prices would fall 34% this year, estimating that monocrystalline silicon modules would cost only \$0.24 per watt by the end of the year.









The note also predicted "market panic" in the short term.

Only a few weeks later both dynamics to appear to be at play, according to data by PVInsights and EnergyTrend.

PVInsights is not the only company reporting this information. Taiwan-based EnergyTrend is also reporting average prices from \$0.295 per watt to \$0.367 per watt, as of Wednesday, depending on the type of module. However EnergyTrend is seeing these numbers as the result of a much steeper

These numbers represent declines from 0.3% to 2.1% over the

weekly fall, describing price falls of up to 12.5%.

Module						2018/06/20 update
Item	High	Low	Avg	Chg	Chart	
 Multi-Si Module (Per Watt)	0.34	0.27	0.295	↓ (-12.46 %)		
 High Efficiency Multi-Si Module (Per Watt)	0.36	0.33	0.341	↓ (-2.57 %)		
 Mono-Si Module (Per Watt)	0.42	0.36	0.361	— (0 %)		
 High Efficiency Mono-Si Module (Per Watt)	0.41	0.36	0.367	↓ (-10.49 %)		
*Module power output: Multi-si modules (270W); High efficiency multi-si modules (280W); Mono-si modules (285W); High efficiency mono-si modules (300W)						

Credit: EnergyTrend Taken from the EnergyTrend site.

Again the steepest declines lapsed prices. “After a lack of cheap prices to tumble,” notes were for standard multicrystalline modules due to artificially induced Schachinger in a post on the products. bottlenecks caused by the market pvXchange site (in German).

Both of these appear to be regulations in the USA and in **5-10% fall in U.S. prices** Europe, and the resulting stagnating prices, we now look forward to a Current U.S. prices are Europe, Martin Schachinger of module glut which inevitably causes higher, as global module imports pvXchange is also reporting col-

Source: <https://www.pv-magazine.com/2018/06/21/global-pv-module-prices-collapse/>

BP buys UK's largest car charging firm Chargemaster



Image Credit: BP

Oil giant BP is buying the UK's largest electric charging network, Chargemaster, for £130m.

BP runs 1,200 petrol forecourts, but said earlier this year it expected renewable energy to be the fastest-growing fuel source.

It said the number of electric vehicles in the UK is set to grow from 135,000 at present to 12 million by 2040.

The move echoes one made last year by rival Shell, which bought car charging company NewMotion.

All leading car manufacturers are moving into electric vehicle

production. Volkswagen, the world's biggest carmaker, has said it will offer an electric version of all its

"David Nichols, a spokesman for BP, told the BBC: "We have no doubt that the electric vehicle market is growing and will become a significant part of the transport sector in future."

300 models by 2030.

Chargemaster, which will be rebranded BP Chargemaster, currently has 6,500 charging points and also sells electric vehicle charg-

ing points for home use.

BP said the acquisition was an important move towards the company becoming the leading provider of energy to low carbon vehicles.

Analysis

By Theo Leggett, business correspondent, BBC

For a global giant like BP, £130m is small change. But the acquisition of Chargemaster could turn out to be lucrative.

The logic is simple. Electric



Image Copyright: Getty Images

- but they're expected to become much more so. It will give those millions of drivers a reason to keep on visiting - ing 100 miles of range within 10 and help keep the tills ticking over. minutes.

BP itself thinks there will be 12 million on UK roads by 2040. David Nichols, a spokesman for BP, told the BBC: "We have no doubt that the electric vehicle market is growing and will become a significant part of the transport sector in future." ChargeMaster, which was founded in 2008, runs POLAR, the largest public charging network in the UK. It has more than 40,000 service stations - and those service stations are also retail outlets. If a third of drivers no longer need to visit them, they'll become a lot less profitable.

"ChargeMaster is a leader in the UK market. We want to learn from them, and eventually, yes, That's why BP says a major goal of the deal is to step up the deployment of fast and ultra-fast chargers on UK forecourts.

It said one of its goals was to speed up charging capability to

Source: <https://www-bbc-com.cdn.ampproject.org/c/s/www.bbc.com/news/amp/business-44640647>

Falling battery costs to enable wind and solar generation to hit 50% globally by 2050 - BNEF



The arrival of cheap battery storage will mean that it becomes increasingly possible to finesse the delivery of electricity from wind and solar. Credit: Lyon Group

Wind and solar could provide half of the world's energy generation by 2050 on the back of continually declining technology costs, particularly in battery energy storage, according to a new report from Bloomberg New Energy Finance (BNEF).

The 150-page New Energy Outlook (NEO) 2018 report predicts that the future of the global electricity system will be dominated by tumbling lithium-ion battery prices. These have already fallen 80% per MWh since 2010 and will continue

to decline as electric vehicle manufacturing builds up through the 2020s.

"The report, which utilised more than 65 analysts globally, predicts that US\$11.5 trillion (~£8.7 trillion) will be invested globally in new power generation capacity between 2018 and 2050, with \$8.4 trillion (~£6.3 trillion) of that going to wind and solar."

renewable generation from wind and solar to grow in prominence as output from these sources becomes more dispatchable as Seb Henbest, head of Europe, Middle East and Africa for BNEF and lead author of NEO 2018, explained.

"The arrival of cheap battery storage will mean that it becomes increasingly possible to finesse the delivery of electricity from wind and solar, so that these technologies can help meet demand even when the wind isn't blowing and the sun isn't shining," he said.

This will allow intermittent

“The result will be renewables eating up more and more of the existing market for coal, gas and nuclear.”

ables eating up more and more of the existing market for coal, gas and nuclear.”

The report, which utilised more than 65 analysts globally, predicts that US\$11.5 trillion (~£8.7 trillion) will be invested globally in new power generation capacity between 2018 and 2050, with \$8.4 trillion (~£6.3 trillion) of that going to wind and solar.

ables eating up more and more of the existing market for coal, gas and nuclear.”

With the addition of cheaper battery storage in this capacity expansion, coal will be pushed off the system.

ables eating up more and more of the existing market for coal, gas and nuclear.”

This will lead to a 17-fold increase in solar PV capacity worldwide, alongside a six-fold rise in wind power capacity. The levelised cost of electricity (LCOE) will fall by

Source: <https://www.pv-tech.org/news/falling-battery-costs-to-enable-wind-and-solar-generation-to-hit-50-global>

Musk says Tesla can get li-ion cell prices below \$100/kWh this year

Tesla CEO Elon Musk told shareholders at a June 5 meeting that he expects the company will break through the \$100/kWh barrier for lithium-ion cell costs later this year.



Elon Musk has a penchant for big announcements. During a conference call with analysts in May, he said Tesla would announce a "gigawatt-hour-scale" energy storage project in a matter of months. A project of that size would equal the scale of all the energy storage projects Tesla has deployed since 2015.

On Tuesday, during a meeting with shareholders, Musk said his company is close to breaking through the \$100/kWh barrier for lithium-ion battery cells — an equally ambitious target. If achieved, it could be a contributing

factor in greater EV and storage adoption, but some analysts are uncertain about timing.

"We're unsure \$100/kWh is achievable this year," Mitalee Gupta, an energy storage analyst at GTM Research, told Utility Dive.

GTM uses rack prices, not cell prices, in its estimates for stationary energy storage prices and

puts rack prices for 2018 at around \$207/kWh. That implies a cell price lower than \$207/kWh because cells are combined into packs and then into racks. GTM does not make its cell price forecasts public.

While lower cell costs trans-

late into lower costs for packs, it is not a direct pass through. At the pack level, cell costs comprise 75% of costs, Gupta said. At the rack level, cell costs account for even lower percentage of overall costs since battery rack prices also include items such as battery management software, packaging and electronics.

Gupta also noted that Musk's claim was not very specific. It is unclear, for instance, if the \$100/kWh number is for materials only or if it allows for any profit.

Nonetheless, cell prices are still a primary driver of overall en-

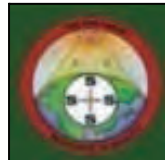
energy storage costs, and the main market and to keep his promises. Tesla's share price has fallen with time and does not always meet his promises on schedule. The driver of cell price declines is the Tesla missed its April EV production numbers and now Musk is promising to get clear that the majority of demand for producing 5,000 Model 3 cars a week by the end of June, up from a current level of about 3,500. Tesla shares rose almost 10% on Wednesday as Musk also said the energy storage industry has been able to ride that cost curve." In Tuesday's shareholder meeting, Musk said he was removing the chairman part of his role. There, again, Tesla and "naturally optimistic person" and dual CEO and chairman role at Musk, are pushing to expand the acknowledged that he has a problem, Tesla, Axios reported.

Source: <https://www.utilitydive.com/news/musk-says-tesla-can-get-li-ion-cell-prices-below-100kwh-this-year/525162/>

[EDC MEMBERS]



[EDC MEMBERS]



ABHINAWA LAW CHAMBERS
advocates & legal consultants

[PARTNERSHIP]



Investment Board of Nepal
Government of Nepal



中南勘测设计研究院有限公司
ZHONGNAN ENGINEERING CORPORATION LIMITED



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

Main Office

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

Kathmandu, Nepal

P.O Box no. 516

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

Fax: +977-1-4169118

Email: info@edcnepal.org

Website: <http://edcnepal.org/>

Contact Office

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

Shenzhen Hi-tech Industry Park, Shenzhen, China



Click to visit