Energy Communique

June, 2015
Issue 9

Editorial

Dear Reader,

Mr. Nepal Bhusan Shrestha

Prime Commercial Bank
An EDC member organization

Nepal with its 80,000 MW (economically viable 40,000 MW) untapped hydropower resources may well boast of having the largest hydropower potential. The history of hydropower generation in the country dates back to 1911 from the Pharping hydro plant. Since that time we have only managed an installed generating capacity of 800 MW.

It would not be incorrect to ask what went wrong and why we missed the chances of eliminating blackouts. The blame game continues to point out who is responsible continues. We as individuals go home after work and find there is no electricity. For people who can afford the luxuries in life may have already adapted and might not care. For those who cannot afford to lose a single penny towards buying anything else other than the basic necessities of life however might suffer but they too have adjusted. Well that is how it seems today as nobody has complained, at least seriously.

We as Bankers may boast in the media of having executed financial closures of various projects. Yet the huge gap in demand and supply seems to be ever growing for us to be able to keep up with. Still problems from the developer's side are plentiful in projects where the Banks have already invested. Be it in the form of equity shortfall, cost overrun, conflict of interest among promoters and suppliers- the list goes on. Banks that have burnt their fingers in projects with similar problems have learnt a lot. Yet, learning, as the saying goes, is a continuous process.

With the recent earthquake another issue popping up in everybody's minds today is whether we can or should invest further in the sector. Uncertainty looms large over projects that have been severely or partially affected by the event. Contractors may not be able to resume their work soon now that the monsoon has arrived or because their work force is busy mending their own homes. Even if they do return, projects might be inaccessible due to damaged roads.

Insurance issues have also suddenly propped up everywhere after the quake, with developers being unable to insure their investments. That leaves us Bankers and developers in a state of dilemma as to who to look up to in order to safeguard the infrastructure and what can be done to help affected projects as the project cost is expected to shoot up further.

Bureaucratic hiccups and negative social environment for these projects have been major disappointments in developing any project. It is also surprising to see why the Nepalese corporate have not taken this investment avenue seriously now that Non Resident Nepalese (NRNs) have taken up many projects and are going into construction.

Even then it is in the common interest of both Banks and Project developers to make some money out of their investment, be it in the form of interest or dividend. And it is the priority of both parties to work together to successfully generate electricity and eradicate blackouts for once and for all.

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EDC Activities

Interview with Mr. N.D Lama, Director of Waiba Infratech with EDC

1. Please tell us about your organization?

We are Kathmandu based ISO 9000 QMS certified Class 'A' EPC (Engineering, Procurement and Contracting) business enterprise in the field of Infrastructural development projects like Commercial Buildings, Roads, Underground Tunnels and Hydro Power Projects and in the field of Electrical Power Transmission and Distribution (T & D) Sector like Substation Construction / Up-gradation, Transmission Line / Distribution Line construction including EHV projects i.e. 132 kV and higher voltage. We undertake projects on turnkey basis including Design, Engineering, Construction / Execution, Installation, Testing, Commissioning using latest project management technology. Our management is a rich blend of seasoned veterans, hard working managers and well - networked achievers. Driven by its rich and varied experience, sound technical knowledge, professional manpower and committed to timely execution, **WAIBA** is well equipped and ready to undertake infrastructure projects at all locations in Nepal.

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

We have categorized our business activities under four headings of EPC sector viz. Tunneling, Substation, Transmission Line, Hydropower. Presently we are executing more than two dozen infrastructural development projects simultaneously including Electrical Power Transmission / Distribution sectors projects upto 132 kV with an aim of venturing into EHV sector i.e. 132 kV and above voltage level.

Also we are into the process of expanding our business in Hydropower. We are already executing Construction of Underground Tunnel of Trishuli Jal Vidhyut Company Limited for their 42 MW Trishuli 3B Hydropower project. This is our strategically important project as a part of our diversification plan into this ever growing Underground Tunneling sector business in Nepal. We are very much committed and focused to become the Hydro Solutions (Design, Engineering & Constructions) in the coming years and few of the projects are already in pipeline.

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

Various challenges encountered during the execution of such projects can be listed as follows:

- Unavailability of skilled manpower.
- The Existing policies for the new entrants of EHV sector i.e. 132 kV and above voltage level of Power transmission and substation construction projects seems to be quite discouraging.
- Inaccessibility of long term financing of the projects.
- High rate of interest on Short term loan whatever is available.
- Poor and untrustworthy payment schedule of government funded projects.
- Difficulty in getting clearance of 'Right of Way (RoW)' related issues in Transmission Line related projects.
- The availability of explosives and accessories in Nepal for tunneling projects is very much limited because of which we have to directly depend on neighboring country like India for the same. This has consequently put most of the Hydro Power Projects in back foot in terms of completion of the projects in targeted time impacting in huge revenue loss due to this factor. Too much of bureaucratic hurdles in getting Purchase/Import and Use License for Explosives. More defined and proper rule must be framed so that it should not become a bottle-neck for projects to be executed in phased manner and thereby saving much of the enormous time and energy for the purpose. Monopolistic environment for the liaison of getting such clearances must be tackled by the Government such that the process of acquiring such licenses becomes much simpler within the scope of such stipulated rules and regulation.

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

There is no alternative but to depend on whatever resources and options that is available at present which will consequently retard the growth prospects. We are left with no option than to hire skilled manpower from neighboring country i.e. India or elsewhere.

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

- Government should take initiative to develop industry-compatible skilled manpower.
- Government should take initiative for talent retention and to avoid brain drain. For this skill-based higher remuneration package, better facilities, basic requirements and value based growth must be reviewed and well planned.
- Discouraging policies for the new entrants of EHV sector i.e. 132 kV and above voltage level of Power transmission and substation construction projects should be re-evaluated and made more encouraging for competitive Nepalese bidders to sustain growth and expansion.
- Government should facilitate both long term and short term financing at low interest rate. If required, separate independent division should be established to monitor and finance large scale projects.
- Policies to be developed to resolve 'Right of Way (RoW)' related issues of high priority projects in order to avoid delay in execution of the projects.

EDC's public advocacy

EDC 's fifth publication Nepali Times in was released on July 3rd, 2015.

The sun to the rescue

Rural solar systems will not just help quake survivors meet immediate power needs, but also help us build a renewable energy future

Two months after the devastating earthquake, Nepal has proved to the world that despite the death and destruction it can rise up with the energy of youth volunteers, politicians and government to promote innovative approaches to cooperation in relief delivery.

The 2.5 million affected people are all trying to get back to normal life. As with housing, education, health, in energy too we need to think about building back better. Access to energy for lighting and heating is an immediate requirement for many families living in shelters.

National-level hydropower plants were damaged and some will be delayed, most micro-hydro plants in the 15 affected districts were destroyed. Here is where local entrepreneurs can step in with village grids and other renewable energy sources like solar and wind.

After basic needs like food and shelter are taken care of, earthquake survivors need energy. This doesn't just help them get back to normal life, but can also boost the economy. Access to national grid was always a question even before the earthquake happened. However, this void opens up opportunities for another source of energy: solar power, which is free and reliable at least during the daytime.

Solar electricity can be used for Productive End Use systems that are stand alone photo-voltaic arrays designed to power specific equipments. They can power grinding mills, dairy chilling units, vaccine fridges or water pumps. Local entrepreneurs can privately own these systems for businesses and serve local communities.

Nano Grids are centralised DC system typically set up to power clusters of communities for lights, mobile chargers and tv. A typical community consists of 20-25 households and each pays a monthly charge. In northern India, MeraGao Power has successfully implemented Nano Grid models. Although its service is limited to lights and we have more demand here, the concept is somewhat the same. Access to energy at household and community level at affordable prices that are cheaper fossil fuels should be the main goal.

Productive End Use systems and Nano Grids help entrepreneurs to scale up their businesses and side-by-side serve the local community to expand the economy. Agro-processing mills, water pumps, and water purifiers benefit entrepreneurs as well as serve the entire community. The plan for sustainable energy is an immediate need at this point of time. We can't afford to buy fossil fuel and diesel generators again to serve the needs of people in rural areas.

We have many challenges to implement these systems for local business and communities. We first need to encourage demand-driven markets rather than the donor-driven ones. For the moment, the solar industry cannot move ahead without subsidies from outside. Government line agencies and aid agencies must realise that a subsidy driven market cannot achieve sustainability. Donors can provide funds to pilot sustainable models that can be scaled up. If they need to be perpetually bank-rolled they will not be feasible.

The next challenge here is to develop effective financial models to deploy the systems in remote areas who have the most pressing needs for lighting and energy. They will not be able to afford the solar systems, and it is crucial for banks and micro finance institutes to come to the rescue.

Longer-term financing for Nano Grids and Productive End Use system will encourage people to switch to renewable, enabling them to not just deal with their short-term rehabilitation but wean themselves away from diesel generators in the longer term.

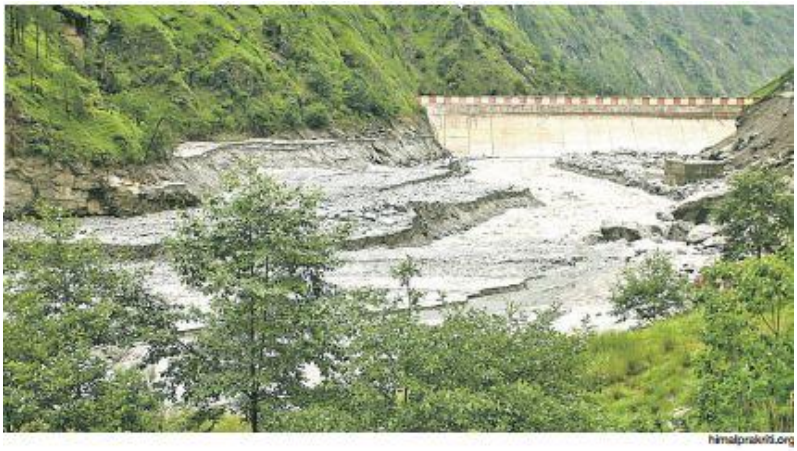
When people start making money from generating solar energy, then sustainability takes care of itself. We focused so much on lighting from solar panels that we forgot to demonstrate that solar energy is more than LEDs and mobile chargers. A centralised fund to finance Productive End Use and Nano Grid System could take Nepal on a path to sustainable energy development.

(This article is derived from Nepali Times published on July 3rd, 2015. Post availabe at: ***http://nepalitimes.com/article/nation/rural-solar-systems-for-renewable-energy-future,2364***).

EDC's third publication in The Himalayan Times was released on June 14th, 2015.

Nepal's hydropower villain

Hydro developers have to pay an extra one per cent of their project profit to the mofsc as an environmental surcharge.



Of many issues faced by Nepali hydro investors, the illegal payment for environmental services (PES) commitment imposed by Ministry of Forest and Soil Conservation (MoFSC) has added unwarranted burden and discouragement. Especially in times like these where the government should be playing a facilitative role, the Ministry continues to lend a deaf ear towards hydropower developer's repeated calls to remove the illegal PES. According to the PES declaration, hydro developers have to pay an extra one per cent of their project profit to the Ministry as an environmental surcharge.

MANIPULATING AND IMPOSING

When the government issues a hydro project developer an initial survey and a final generation license, the terms sought are already spelt out clearly. Additionally, the developer commits to paying two types of escalating royalties to the government upon completion of the project. Hence, there is absolutely no reason for MoFSC to make an ad hoc regulation (which is not based on any kind of legal act) to extract further one per cent royalty from the project. If this decision is compelled to be enacted, what it implies is that any government entity could manipulate and continue imposing similar charges creating havoc for Nepali investors. Therefore, tomorrow the Ministry of Commerce and Supplies might impose one per cent fuel surcharge and so might the Ministry of Environment as environmental surcharge following the footsteps of the MoFSC. What is there to stop them from doing so? And if this were to happen, it would simply drive out all investment from the hydropower sector.

BIAS AGAINST NEPALI INVESTORS

The irony is that even to this non-legal enforcement, there is a bias in the way the MoFSC looks at domestic and foreign developers. There is no PES charge for the recently done PDA of Upper Karnali and Arun III project. Is it fair to levy such charges on one's own citizens while waiving it for foreigners? Does the government want to get rid of Nepali investors imposing such ad hoc surcharges? These questions clearly show how bankrupt the executive branch of the government is in terms of promoting the single most important sector linked to the Nation's progress. The villainy of the MoFSC extends beyond the PES. When developers need to lease public land to build their project, the MoFSC decides to compel developers to purchase the equivalent amount of land it needs leased and transfer it upfront in the government's name forever. A lease means that the developer pays the government a fee for renting the portion of land it has leased – therefore why does a developer need to pay a lease fee and also purchase equivalent amount of land and transfer it to the government? Moreover, the lease on the land will expire within 30 years (the total duration of the license period for which a hydropower location is granted by the government to a developer) — so while the government gets its leased land back, it also takes away the project developers private land. Is this not be tantamount to extortion?

IMPAIRED VISION

The explanation given by the MoFSC is that it needs to keep its 40 per cent forest and forest land cover. When the Ministry officials were formally questioned how hydropower projects diminish forest cover, they fail to respond because there are no logical answers. Forest land leased out is simply leased — therefore, as that land is in the name of the government, no forest land is lost from its kitty. And for every tree that the project developer cuts on the leased forest land, it has to plant, grow and maintain two trees as per the written agreement signed by the developers. Therefore, leasing forest land to developers actually increases forest cover. The MoFSC probably has impaired vision that is causing it to view clean renewable energy based hydropower plants in the same way it would view polluting cement or other industrial plant. Nepal continues to be poor because of such knowledge illiteracy residing in the MoFSC.

(This article is derived from Himalayan Times published on June 14th, 2015. Post availabe at: ***epaper.thehimalayantimes.com/epaperpdf/14062015/14062015-md-hr-22.pdf*** *)*

Announcement from Butwal Power Company Ltd (an EDC member organization): Press Release

A Power Purchase Agreement (PPA) has been signed between Nepal Electricity Authority (NEA) and Nyadi Hydropower Limited (NHL) a subsidiary of Butwal Power Company Ltd (BPC) for purchase and sale of power generated by Nyadi Hydropower Project (30 MW) on 26 May, 2015. According to the agreement, NEA will provide posted rate Rs. 8.40 per unit for dry season and Rs. 4.80 per unit for wet season. The above rate will be escalated at 3 percent for a period of 8 years. The duration of the agreement is for 30 years.

52m long bailey bridge over Marshyangdi

Nyadi Hydropower Project is a run of the river project. The project is located in Bahundanda VDC of Lamjung District. The project will divert the water of Nyadi river by constructing a weir and through underground desilting basins and approximately 4 km long tunnel the water will be dropped to the powerhouse to be located near Thulobesi. The water will be released back to Nyadi river through its tailrace after generation of 30 MW power. The generated power of this project will be evacuated through 7km long 132 kV transmission line to be constructed by the project and connected to proposed 132 kV Khudi Hub along the proposed 132 kV Marsyangdi Corridor Transmission line. The estimated cost of the project is US$ 59 million.

The project is expected to complete its construction by December 2019 and help in reduction of load-shedding in the nation to some extent.

The project will be developed jointly by BPC Group and Lamjung Electricity Development Company (LEDCO). The construction works will be started immediately after the financial closure.

The agreement was signed between Mr. Gyanendra Lal Shrestha, Chief Executive Officer of Nyadi Hydropower Limited and Mr. Mukesh Raj Kafle, Executive Director of Nepal Electricity Authority.

Article from our member

Reliable Solar Energy for the Farmers Nepal

By Sneha Bhandari, SunFarmer Nepal Pvt. Ltd.

Faced with the frustrations of frequent load shedding, many in Kathmandu have chosen to install solar home systems. But in Nepal's rural areas, solar is often the only means of accessing electricity. Electricity is crucial for economic development, but expansion of the national grids to rural areas is an expensive process, and it may take decades for the government to reach these isolated regions. As beautiful as it is, the mountainous terrain of Nepal adds to the challenge of expanding the electric grid to the entire country. On the contrary, Solar can be installed quickly and cost-effectively, and can provide a reliable source of power. Solar is particularly fitting for Nepal, which is located at favorable latitude for solar radiation and receives around 300 days of sun per year.

SunFarmer has recognized the energy crisis in agriculture as a big concern. Electricity is required to power the water pumps needed for irrigation. Without it, farmers in Nepal are often only able to grow crops for one season of the year. 70% of Nepalese work in agriculture - yet many farmers buy vegetables imported from India because they are not able to grow all year round, and often lack adequate water to cultivate more valuable and water-intensive vegetable crops. Some farmers have purchased diesel generators in order to pump water from underground to irrigate their fields. However, theadditional income they make from improved crop yields must then be spent on diesel fuel.

SunFarmer works with agricultural cooperatives to offer a Power Purchase Agreement (PPA) model that makes solar powered water pumps affordable and attainable for farmers. We recognize that solar is a major investment for a farmer, or for any business or organization. The upfront cost is very high, and people worry that if the solar equipment breaks, they will lose that investment.

Our PPA model is designed to address these issues. First, customers pay for energy in monthly installments designed to be comparable to or less expensive than diesel. At the end of the PPA contract, they own the system.

Second, the PPA model not only removes the financial road block but also provides a performance guarantee for the customer. SunFarmer is responsible for ensuring that every customer receives a system that is built to last, and we stand behind that promise. We are supported by SunEdison, the world's largest renewable energy company, and we maintain rigorous quality standards throughout our work.

SunFarmer also equips solar energy systems with a low-cost, high-tech monitoring device designed by our experts. These devices allow us to keep track of how much energy is produced and consumed, and how much water flows through solar water pumps. SunFarmer technicians monitor system health, and if something breaks, they know immediately. The device sends and receives information and commands through SMS to our server in Kathmandu.

With this functionality, our technicians can monitor system performance, troubleshoot technical issues, initiate a reset, or diagnose the need for replacement parts, even for systems in very remote parts of Nepal.

The conditions in Nepal make a very strong and suitable market for solar energy systems. But for people to feel comfortable investing in the large solar energy systems needed to power agriculture, health, and education, they need a model that minimizes both the upfront cost and the risk. SunFarmer has already implemented nine projects using the PPA model for health clinics and schools, including Bayalpata Hospital in Achham and the Kopila Valley School in Surkhet. We now hope to power agriculture and see enormous potential for farmers in Nepal. With improved food security, Nepal's farmers will be able to meet domestic demands and even export crops to cities in India. Increasing incomes in agricultural areas will decrease the need for migration across the border, and improve the quality of life in rural areas.

Electricity is critical for powering economic growth and development. For regions where the national grid has yet to reach, solar is the most practical, affordable, and fastest solution.

Guest Corner

The Way Humans Get Electricity Is About to Change Forever

By Tom Randall

The renewable-energy boom is here. Trillions of dollars will be invested over the next 25 years, driving some of the most profound changes yet in how humans get their electricity. That's according to a new forecast by Bloomberg New Energy Finance that plots out global power markets to 2040.
Here are six massive shifts coming soon to power markets near you:

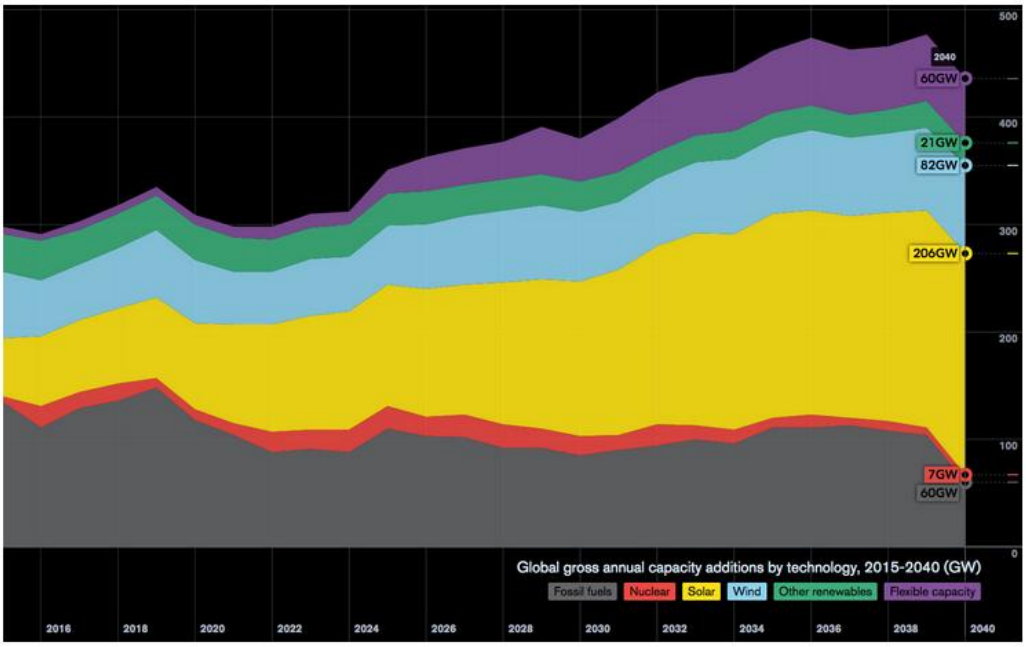
1. Solar Prices Keep Crashing

The price of solar power will continue to fall, until it becomes the cheapest form of power in a rapidly expanding number of national markets. By 2026, utility-scale solar will be competitive for the majority of the world, according to BNEF. The lifetime cost of a photovoltaic solar-power plant will drop by almost half over the next 25 years, even as the prices of fossil fuels creep higher.

Solar power will eventually get so cheap that it will outcompete new fossil-fuel plants and even start to supplant some existing coal and gas plants, potentially stranding billions in fossil-fuel infrastructure. The industrial age was built on coal. The next 25 years will be the end of its dominance.

2. Solar Billions Become Solar Trillions

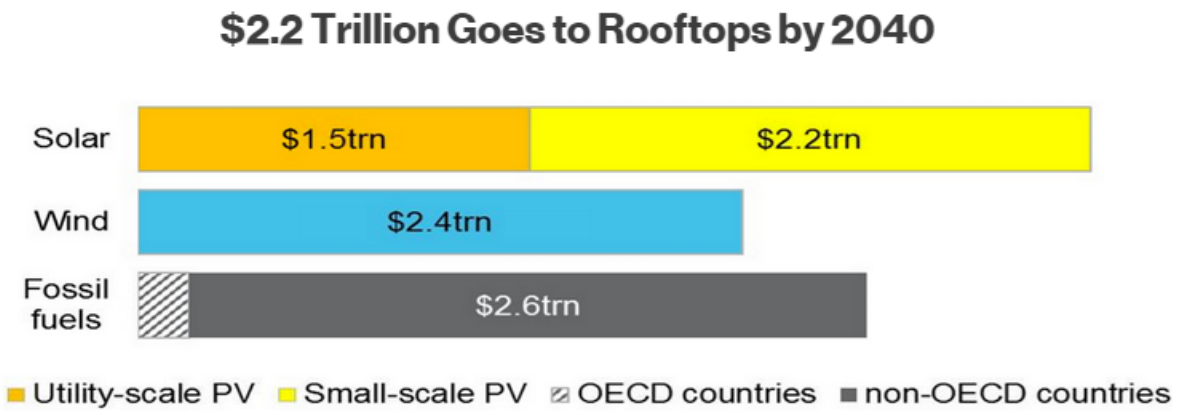
With solar power so cheap, investments will surge. Expect $3.7 trillion in solar investments between now and 2040, according to BNEF. Solar alone will account for more than a third of new power capacity worldwide. Here's how that looks on a chart, with solar appropriately dressed in yellow and fossil fuels in pernicious gray:



Electricity capacity additions, in gigawatts Source: BNEF

3. The Revolution Will Be Decentralized

The biggest solar revolution will take place on rooftops. High electricity prices and cheap residential battery storage will make small-scale rooftop solar ever more attractive, driving a 17-fold increase in installations. By 2040, rooftop solar will be cheaper than electricity from the grid in every major economy, and almost 13 percent of electricity worldwide will be generated from small-scale solar systems.



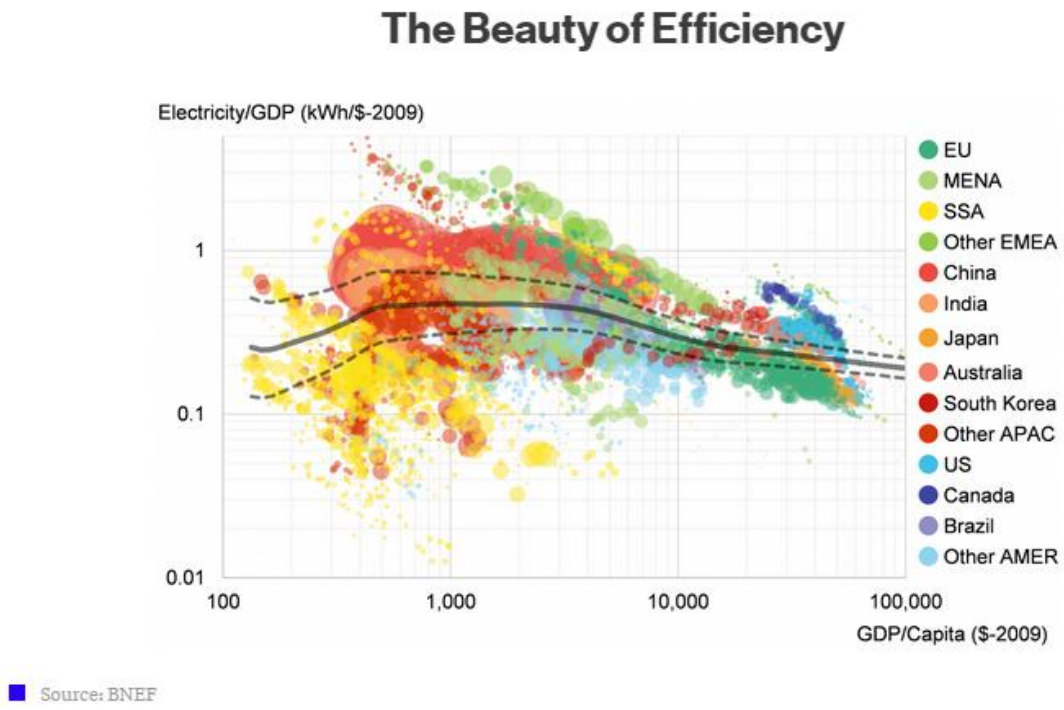
Rooftop (small-scale) solar in yellow. Renewables account for about two-thirds of investment over the next 25 years.

4. Global Demand Slows

Yes, the world is inundated with mobile phones, flat screen TVs, and air conditioners. But growth in demand for electricity is slowing. The reason: efficiency. To cram huge amounts of processing power into pocket-sized gadgets, engineers have had to focus on how to keep those gadgets from overheating. That's meant huge advances in energy efficiency. Switching to an LED light bulb, for example, can reduce electricity consumption by more than 80 percent.

So even as people rise from poverty to middle class faster than ever, BNEF predicts that global electricity consumption will remain relatively flat. In the next 25 years, global demand will grow about 1.8 percent a year, compared with 3 percent a year from 1990 to 2012. In wealthy OECD countries, power demand will actually decline.

This watercolor chart compares economic growth to energy efficiency. Each color represents a country or region. As economies get richer, growth requires less power.



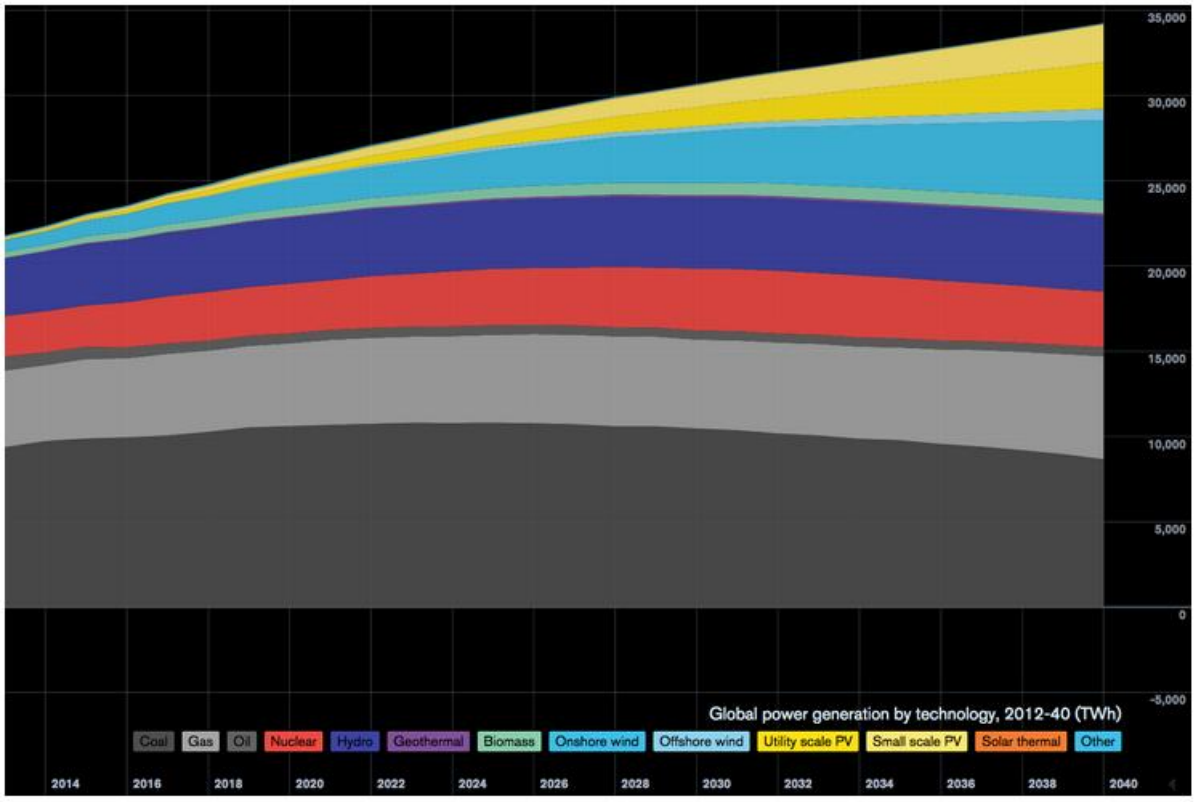
4. Natural Gas Burns Briefly

Natural gas won't become the oft-idealized "bridge fuel" that transitions the world from coal to renewable energy, according to BNEF. The U.S. fracking boom will help bring global prices down some, but few countries outside the U.S. will replace coal plants with natural gas. Instead, developing countries will often opt for some combination of coal, gas, and renewables.

Even in the fracking-rich U.S., wind power will be cheaper than building new gas plants by 2023, and utility-scale solar will be cheaper than gas by 2036.

Fossil fuels aren't going to suddenly disappear. They'll retain a 44 percent share of total electricity generation in 2040 (down from two thirds today), much of which will come from legacy plants that are cheaper to run than shut down. Developing countries will be responsible for 99 percent of new coal plants and 86 percent of new gas-fired plants

between now and 2040, according to BNEF. Coal is clearly on its way out, but in developing countries that need to add capacity quickly, coal-power additions will be roughly equivalent to utility-scale solar.



Source: BNEF

(This article is derived from Bloomberg published on April 23rd, 2015. Post available at: *http://www.bloomberg.com/news/articles/2015-06-23/the-way-humans-get-electricity-is-about-to-change-forever).*

List of EDC members

S. No.	Name of the Company	Company logo
1.	Nepal Electricity Authority	
2.	Alternative Energy Promotion Center	
3.	Butwal Power Company Ltd.	
4.	CEDB Hydro Fund	
5.	IDS Energy Pvt. Ltd.	
6.	Nabil Bank Limited	
7.	Himalayan Infrastructure Fund	
8.	Transweld Pvt. Ltd.	
9.	Clean Energy Development Bank	
10.	Nepal Hydropower Association	
11.	Global IME Bank Limited	
12.	Gham Power Pvt. Ltd.	
13.	Lotus Energy Pvt. Ltd.	
14.	Wind Power Nepal	
15.	Reliable Hydropower Pvt. Ltd.	
16.	Sun Farmer Nepal Pvt. Ltd	

S. No.	Name of the Company	Company logo
17.	Sanvi Energy Pvt. Ltd.	
18.	Dantakali Hydropower Pvt. Ltd.	
19.	Prime Commercial Bank Ltd.	
20.	Century Bank Limited	
21.	Arun Valley Hydropower Development Co. Ltd	
22.	Hydroelecticity Investment and Development Company	
23.	TSN Energy Pvt. Ltd.	
24.	Chilime Hydropower Company Ltd.	
25.	Madhya Bhotekoshi Jalvidyut Company Ltd.	
26.	Rasuwagadhi Hydropower Company Ltd.	
27.	Sanjen Jalavidhyut Co. Ltd.	
28.	Waiba Infratech Pvt. Ltd.	
29.	North Hydro & Engineering Pvt. Ltd	
30.	Nepal Hydro & Electric Limited	
31.	National Association of Community Electricity Users Nepal	

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