

Editorial

Dear Reader,

A Need of Study for Urban Solar Program: an Eye Opener

One of the key constraints of Nepal's development, as highlighted in various diagnostics, is energy crisis. The electricity load shedding which goes up to 10 to 16 hours a day during the dry season is not only a serious impediment to growth but also a huge financial burden for households, industries, other businesses, and ultimately the government. The Nepalese people are the ultimate victims in this case. More than 60 billion Nepalese rupees are being lost due to interrupted and irregular supply to the industrial sector alone.

Nepal is endorsed with very rich resource of hydropower and its electricity supply is mainly hydro based. The long-term solution for addressing the energy crisis is to sustainably develop its huge hydro resources. However, it will take years before the country's major hydro power plants are commissioned. Based on the report of high level committee formed by the government of Nepal, despite of all the efforts in constructing and completing hydro power projects, considering the future demand and supply there will still be a shortage of energy in the winter and dry seasons resulting in about 10 hours of load shedding every day even in 2018/19. If the current new hydro power projects progress as scheduled, there will be enough electricity generated by the year of 2018/19. Nevertheless, there will still be a problem of load shedding unless parallel efforts are put on for development and upgradation of the transmission and distribution systems.

To resolve the existing severe power crisis, options like utilization of other abundant renewable energy resources such as solar, biogas, wind, biomass, mini and micro hydro etc. should be explored. This can also help enhance Nepal's energy security by diversifying its mix of primary energy sources. Considering all these facts, the high level committee has recommended to promote solar energy among urban users.

A study shows that about 600,000 households in Kathmandu valley itself are using electrical backup systems to deal with long hours of load shedding. These electrical backup systems use grid electricity to charge batteries during peak demand times which drastically increases the pressure on the national grid, and hence imposes more pressure on the present electricity supply system and exacerbates the already severe load shedding. People prefer electrical/battery backup systems because of the low energy tariff from the national grid (as it is heavily subsidized). In this context, solar energy is a much more expensive alternative option for users. The initial investment for solar energy is higher compared to diesel generators and electrical backup systems which is hindering the use of solar backup systems. Based on a survey sponsored by World Bank, the total installed captive capacity of diesel generator (DG) sets in Kathmandu valley is almost 200 MW. Diesel electricity is very costly and heavily polluting too. But the commercial sector and business houses are forced to use diesel generators, considering that they need stable power to run their businesses and the load shedding issue is not to be handled soon. Solar PV systems could be potentially an attractive alternative for DG sets or could be an important complement to the DG sets in reducing the cost of supply.

At present, in major cities of Nepal such as the Kathmandu Valley, rooftop solar PVs have not been broadly installed yet either by households or by commercial and industrial users. Better understanding of the market from the demand, supply, and the regulatory aspects is urgently needed before decisions on proper interventions can be made. In this context, a study is required to conduct the assessment of the existing market of rooftop solar PV for various urban users in Nepal which will help us to draft a clear policy based on the actual need of urban people regarding their electricity requirement. This will also help the country to present the real situation of energy crisis in front of interested donors and convince them for potential support for urban solar program for the benefit of the country and its people.



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'आयातीत ऊर्जाले राष्ट्रिय स्वाधीनता कमजोर पारेको छ'



नेपालको सम्पूर्ण ऊर्जा क्षेत्रलाई समेटेर आमनेपालीको ऊर्जामा पहुँच र सुरक्षा दिलाउने वातावरण तयार पार्न गठित एकमात्र संस्था इनर्जी डेभलपमेन्ट काउन्सिल हो।

काउन्सिलमा सरकार, निजी क्षेत्रलगायत बहुसरोकारवाला सम्मिलित छन्। नेपालको जलविद्युत् विकासको सम्भाव्यता अध्ययन गरिरहेको काउन्सिलले नेपालको ऊर्जा ऐनको मस्यौदा सार्वजनिक रूपमा संविधानसभामा प्रस्तुत गर्ने तयारी गरेको छ। यही सेरोफेरोमा काउन्सिलका अध्यक्ष सुजीत आचार्यसँग अन्नपूर्णले गरेको कुराकानीको सारसंक्षेप :

नेपालको विद्यमान ऊर्जा क्षेत्रलाई कसरी हेर्नुभएको छ?

नेपालले जलविद्युत् आयोजना निर्माण गरेको एक सय वर्षको अनुभव हासिल गरेको छ तैपनि हामी अहिले पनि अन्त्यहीन लोडसेडिङको मार खेपिरहेका छौं। उत्पादित बिजुलीमध्ये ३५ प्रतिशतभन्दा बढी चुहावट भएर खेर गएको छ। अझै पनि ४० प्रतिशत नेपाली स्थायी लोडसेडिङ भोग्न बाध्य छन्। हाम्रा बालबालिकालाई अहिलेको युगमा पनि डिजेलबाट चल्ने जेनेरेटर, गाडीको धुवाँमा छाडिरहेका छौं। सबैभन्दा महत्त्वपूर्ण कुरा, हामी सामूहिक रूपमा आफ्नो मूर्खता प्रदर्शन गरिरहेका छौं। हामी स्वदेशमै उत्पादन गर्न सकिने चीजमा ध्यान नदिएर विदेशबाट आयातीत ऊर्जामा निर्भर भइरहेका छौं। यसले हाम्रो राष्ट्रिय स्वाधीनतालाई पनि कमजोर पारिरहेको छ।

ऊर्जालाई कसरी राष्ट्रिय स्वाधीनतासँग जोड्नुभयो?

छिमेकीले हामीलाई ग्यास, डिजेल, पेट्रोल, मट्टितेल आपूर्ति गर्न बन्द गरेका दिन तपाईंको भान्छामा भात पाक्छ? के बसले विद्यालयसम्म विद्यार्थीलाई ओसारन सक्छ? के यातायात चल्न सक्छ? यसको अर्थ तेल अभावमा मन्त्रीहरूलाई समेत सिंहदरबारसम्म पुग्न कठिन हुन्छ। प्रहरीले सुरक्षा गस्ती गर्न सक्दैन, नेपाली सेनाले गाडीको साटो घोडामा आफ्ना सेनालाई ओसारपसार गर्नुपर्ने हुन्छ। आधारभूत रूपमा सरकार सञ्चालन मात्र होइन, जनताको दैनिक जीवन समेत ऊर्जा अभावले अपांग बनाइदिन्छ। यो कुनै काल्पनिक अवस्था होइन, विगतमा हामीले भोगेकै हौं। रोजगारी, तलब, भान्छा, विद्यालय, सुरक्षा, सेना र सरकारजस्ता आधारभूत कुरा अहिले हाम्रो ऊर्जाले चलेका छैनन्। यही कारण हामी अरूको कुरा सुन्न र अरूलाई फाइदा पुग्ने गरी सम्झौता गर्न बाध्य हुन्छौं, जुन हाम्रो राष्ट्रिय हितविपरीत हुन्छ। प्रकृतिले हामीलाई ऊर्जा उत्पादन गर्न अथाह स्रोत दिएको छ। हाम्रो ऊर्जाको अधिकांश आवश्यकता यही स्रोतबाट पूरा गर्न सक्छौं। सबै नेपालीले आँखा उघार्न जरुरी छ।

तपाईंले भनेजस्तो भए नेपालले पेट्रोल, डिजेल, ग्यास र मडितेल नै आपूर्ति गर्नुपर्दैन?

हो। पेट्रोलियम पदार्थ, पेट्रोलैबाट चल्ने गाडी र खाना पकाउने ग्यास आयातमा हरेक वर्ष वृद्धि भइरहेको छ। यी तीन वस्तु खरिद गर्न हामी कुल बजेटको लगभग ४० प्रतिशत र कुल विदेशी मुद्राको ५३ प्रतिशत खर्च गरिरहेका छौं। हाम्रो ऊर्जा क्षेत्रको विकासमा पूर्ण रूपले केन्द्रित भएर बिजुली वितरण गर्न सक्यौं भने हामीले एक लिटर पनि डिजेल, पेट्रोल, मडितेल र ग्यास आयात गर्नुपर्दैन। हवाई इन्धनमात्र आपूर्ति गर्नुपर्ने हुन्छ। हाम्रै ऊर्जामार्फत यी तीन वस्तुको आयात विस्थापन गर्न सक्यौं भने खर्चो रुपैयाँ बचत हुन्छ। यसो भएमा आर्थिक वृद्धि र व्यापार घाटा कम हुनेछ। यति गर्न सकियो भने आयल निगम बन्द गरिदिए हुन्छ। कुनै पनि नेपालीले ग्यास र पेट्रोलको लागि लाइन बस्नुपर्दैन। व्यापारीले कृत्रिम अभाव गर्ने परिपाटी अन्त्य हुनेछ र यो क्षेत्रमा हुने भ्रष्टाचार पनि हुने छैन।

पेट्रोलियम पदार्थको स्थान विद्युत्ले कसरी लिन्छ?

पेट्रोल, डिजेलबाट चल्ने मोटर गाडीको साटो हामी विद्युतीय मोटर आयात गर्न सकौं। विश्वका ठूला मोटर उत्पादक कम्पनी निसान, टोयटा र फोर्डले समेत विद्युतीय मोटर उत्पादन गर्न थालिसकेका छन्। हामीले रणनीतिक रूपमा सबै पेट्रोल पम्पहरूलाई विद्युत चार्जिङ पम्पमा परिणत गर्नुपर्छ। विश्वमा इस्टोनिया पहिलो त्यस्तो देश हो, जहाँ उसको राजमार्गभरि विद्युतीय चार्जिङ पम्प छन्। यो गर्न इस्टोनियालाई जम्मा चार वर्ष लागेको थियो। हाम्रै छिमेकी भुटान सरकारले निसान मोटर्सको सहयोगमा सन् २०२० भित्र भुटानभित्र चल्ने ट्याक्सीलाई विद्युतबाट मात्र चल्ने बनाउँदैछ। नेपालभन्दा उनीहरूसित विद्युत उत्पादन गर्ने त्यत्रो स्रोत छ? छैन। हामी अहिले पनि अविच्छिन्न अन्धकारमा छौं। हामी नेपालीका भान्छामा बल्ने ग्यास, दाउरा र मडितेललाई पनि विद्युत्मा परिणत गर्न सकिन्छ। बिजुलीमा भात पकाउने भाडाकुँडाहरू बढी सुरक्षित, सस्तो र वतावरणमैत्री हुन्छन्। सबै नेपाली र विशेष गरी सबै दल (जलविद्युत् विकासका मुख्य बाधक) एक भएर सशक्त रूपमा विद्युत् उत्पादनमा लाग्ने हो भने यो कुरा सम्भव छ। दस वर्षभित्र गर्न सकिन्छ।

दललाई ऊर्जा विकासका बाधक भनेर कसरी भन्नुभयो?

नेताहरू हाम्रो जीवनशैलीमा सुधार गर्ने नीति ल्याउनसक्ने दिव्यदर्शी मानिन्छन्। हामीसित ऊर्जा उत्पादनको यति धेरै सम्भावना छ। हामी ऊर्जामा आत्मनिर्भर हुन सकौं तर विगत सय वर्षदेखि हामी कुल सम्भावनाको जम्मा एक प्रतिशतमात्र विद्युत् उत्पादन गर्न सफल भएका छौं। मुलुकमा कुल जलविद्युत् अंश सात सय मेगावाट छ। लोडसेडिङका कारण निजी क्षेत्रले करिब ६ सय मेगावाट बराबरका डिजेल (क्याप्टिभ) प्लान्ट सञ्चालन गरिरहेका छन्। हाम्रा नेतासित दृष्टि अभावकै कारण हामी अहिलेको अवस्थामा रहन बाध्य भएका हौं। दृष्टि (भिजन) अभावमात्र होइन, उनीहरू स्थानीय प्रवर्द्धकहरूलाई धम्क्याउन र पैसा असुल्न राजनीतिक सिन्डिकेट सिर्जना गरिरहेका छन्। विद्युत् आयोजनामा अवरोध सिर्जना गरिरहेको देखिन्छ। यसको उदाहरण हेर्न अन्त जानुपर्दैन, सिन्धुली-खुर्कोट २२० केभी प्रसारण लाइन खण्ड हेरे पुग्छ। विद्युत् आयोजना र प्रसारण लाइन निर्माणमा अवरोध पुर्‍याउनेलाई फौजदारी कानून लगाउन सकिने गरी ऐनमा व्यवस्था हुनुपर्छ। यो प्रसारण लाइन बनेको भए ५० मेगावाट बिजुली जोगाउन सकिन्थ्यो, जसले दुई घन्टाको दरले लोडसेडिङ कम हुन्थ्यो। १५ वर्षदेखि स्थानीयको अवरोधका कारण थानकोट-चापागाउँ प्रसारण लाइन बन्न सकेको छैन। बहालवाला प्रधानमन्त्रीको दलका कार्यकर्ताले पहिलेदेखि नै सञ्चालनमा आइरहेको भोटेकोसीमा किन १५ प्रतिशत सेयर मागेर अवरोध गरे? यस्ता आयोजनालाई रोक्नु भनेको अझ बढी पेट्रोलियम पदार्थ आयात गर्नु हो। परनिर्भरता बढाउनु हो। जसले राष्ट्रिय स्वाधीनतालाई कमजोर पार्छ।

विद्युत् आयोजनाबाट स्थानीय बासिन्दा प्रभावित भइरहेका छन्। के तीनका माग जायज होइनन्?

आयोजना निर्माण हुँदा उहाँहरू प्रभावित होइन, लाभान्वित हुनुहुनेछ। उदाहरणका लागि कुनै क्षेत्रमा एउटा जलविद्युत् आयोजना निर्माण हुने भयो। आयोजनाले नयाँ सडक निर्माण गर्छ, स्थानीयलाई रोजगारी दिन्छ, तिनीहरूको जग्गा खरिद गर्छ र बिजुली उत्पादन भएपछि वार्षिक रूपमा सरकारलाई बुझाउने कुल रोयल्टीमध्ये ५० प्रतिशत स्थानीयले पाउँछन्। कुनै आयोजना नबन्ने हो भने यी कुरा प्राप्त हुँदैनन्।

प्रसारण लाइनले त स्थानीयका जग्गाको मूल्य घटाइदिने, उपयोग गर्न नदिने गर्छ भनिन्छ नि?

एक टुक्रा जग्गा देशको राष्ट्रिय स्वाधीनताभन्दा ठूलो हो? राष्ट्रिय स्वाधीनताका लागि हामी आफ्नो जीवन त गुमाउन सक्छौं भने एक टुक्रा जग्गा किन नदिने? प्रसारण लाइनले चर्चेका जग्गालाई कानुनअनुसार पर्याप्त क्षतिपूर्ति दिने गरिन्छ तर यो उनीहरूलाई पुग्दैन। लगातार अवरोध मात्र गरिरहन्छन्। प्रसारण लाइनका लागि जग्गा नदिनुको अर्थ अरु देशबाट ग्यास र पेट्रोलियम पाइप लाइन बनाउनुपर्छ भन्ने हो। यसले विदेशीहरूसँग अझ निर्भर भइन्छ भन्ने हामीले सोचेका छैनौं। जसले जग्गा दिँदैन, त्यस्ता व्यक्तिलाई राज्यबाट दिने सुविधाबाट वञ्चित गरिनुपर्छ, ऐननियम कडाइका साथ लागू गर्नुपर्छ र उनीहरूको नाम राष्ट्रिय पत्रपत्रिकामा फोटोसहित सार्वजनिक गर्नुपर्छ।

कुनचाहिं त्यस्तो तत्त्वले हाम्रो क्षमतालाई रोक्यो र हामीले ऊर्जा क्षेत्रको विकास गर्न सकेनौं?

यसमा केही मुख्य समस्या देखिएका छन्। पहिलो, जुनसुकै बहानामा पनि आयोजना बनाउन नदिने व्यक्तिहरू, दोस्रो, नेतामा दिव्यदृष्टिको अभाव, जसले गर्दा खत्तम कानुन र नीति ल्याए, जसका कारण अहिलेसम्म एक प्रतिशतभन्दा बढी ऊर्जा (कुल सम्भावनाको) उत्पादन गर्न सकिएन।

ऊर्जा विकासको मुख्य उपाय के होला त?

प्रथमतः ग्यास र पेट्रोलियम पदार्थमा परनिर्भरता हुने गरी हामीले सय वर्षको अवधिमा जुन विकास निर्माण गर्नुपर्छ र त्यहीअनुसारको नीति अनुसरण गर्नुपर्छ, त्यसलाई पूर्णरूपले परिवर्तन गर्नुपर्छ। समाधानको अचूक अस्त्र भनेको विश्वकै उत्कृष्ट ऊर्जा नीति र ऐन ल्याउनु हो। हरेक देशको ऊर्जा नीति र कानुन अध्ययन गरेर हामीलाई तीभन्दा उत्कृष्ट कानुन चाहिएको छ। यसपछि मात्र हामीले लगानीकर्तालाई आश्वस्त पार्न सक्नेछौं। विद्युत् आयोजना र प्रसारण लाइन निर्माणमा अवरोध पुःयाउनेलाई फौजदारी कानुन लगाउन सकिने गरी ऐनमा व्यवस्था हुनुपर्छ। कानुनअनुसार जग्गाको मुआब्जा दिएर पनि अवरोध गर्ने, बाधा सिर्जना गर्नेलगायतका कार्यलाई फौजदारी कानुन लगाउनुपर्छ। एकद्वारमार्फत १२ महिनाभित्रै एकीकृत लाइसेन्स दिएर सबै क्लियरेन्स दिनुपर्छ। लगानीकर्तालाई उपयुक्त सुविधा दिएर पनि समयमै आयोजना पूरा नगर्नेलाई कडा दण्ड दिनुपर्छ। स्थानीयलाई १० प्रतिशत सेयर दिइनुपर्छ तर जसले अवरोध गर्छ त्यस्तालाई यस्तो लगानीबाट वञ्चित गरिनुपर्छ। अन्य कानुन बाझिएका हदसम्म खारेज हुने, विद्युत् कानुनबाटै सबै कुरा प्रस्ट हुनुपर्छ।

यसबाहेक निरन्तरता दिनुपर्ने अन्य विषय केही छिन् कि?

छन्। प्रस्तावित विद्युत् ऐन नै ऊर्जामा स्वावलम्बी बनाउने दस्तावेज हुनुपर्छ। जसले पेट्रोलियम पदार्थप्रतिको निर्भरता घटाउने होस्। नयाँ संस्थाको स्थापना गरेर माथि उल्लिखित भिजन हासिल गर्न सकोस्। आगामी दिनमा हुने राष्ट्रिय संरचनाअनुसार संघीय प्रसारण लाइन कम्पनीको स्थापना जरुरी छ। जसमा ५१ प्रतिशत स्वामित्व नेपाली सेनाको होस्(या सबै प्रसारण लाइन निर्माण कार्य नेपाली सेनालाई जाओस्) । यसबाट देशभर प्रसारण लाइन निर्माणमा कुनै अवरोध आउने छैन। सरकारी र निजी क्षेत्रबाट राज्य तहका वितरण कम्पनी स्थापना हुनुपर्छ। जसले प्रतिस्पर्धात्मक तवरबाट उपभोक्तालाई छनोट गर्न मद्दत पुगोस्। । प्रत्येक राज्यमा महसुल निर्धारण आयोग गठन हुन जरुरी छ। संघीय र राज्य दुवै तहमा विद्युत् उत्पादन तथा व्यापार कम्पनी स्थापनालाई प्रोत्साहित गरिनुपर्छ र राष्ट्रिय ऊर्जा योजना विभाग स्थापना हुनुपर्छ।

अन्त्यमा केही भन्नु छ?

हामीले संविधानसभाका सदस्यका लागि अर्बौं रुपैयाँ खर्च गरिसकेका छौं। यो रकमले मेचीदेखि काठमाडौंसम्म वा महाकालीदेखि काठमाडौंसम्म जम्मा साढे चार हजार रुपैयाँमा साढे दुई घन्टामै पुग्न सकिने विद्युतीय रेल निर्माण गर्न सक्थ्यौं। जुन निर्माण गर्न चार वर्ष लाग्थ्यो। ऊर्जा उत्पादनमा कसैको ध्यान पुगेन। सबै विद्यार्थी युनियनदेखि नेतासम्म, कर्मचारीदेखि सर्वसाधारणले ध्यान केन्द्रित गरेमा नेपाललाई समृद्ध बनाउन सकिन्छ। धेरै आन्दोलन भए, अबको आन्दोलन ऊर्जा विकासका लागि हुनुपर्छ। 'देशले तपाईंलाई के गःयो होइन, तपाईंले देशलाई के गर्नुभयो' भन्ने सोच्नुपर्छ।

Visit by USAID/Nepal

Mr. Shanker Khagi, Environment & Energy Specialist of USAID/Nepal was invited at Energy Development Council office, Kamaladi on 5th February, 2015. Mr. Sujit Acharya, Chairperson of the Council introduced EDC and relayed its vision and objectives. The meeting brought up a good potential collaboration of working together in the energy sector of Nepal. Mr. Khagi also expressed that a new entity is needed in the country that could effectively address the energy issues at all levels. Other executive members present in the meeting were Mr. Bishal Thapa (Vice-Chairperson), Mr. Kushal Gurung and Mr. Mrigendra Bhurtel.



Visit by Asian Development Bank



Mr. Tika Limbu, Head Portfolio Management and Mr. Pushkar Manandhar, Energy Officer ADB/Nepal were invited at Energy Development Council office, Kamaladi on 20th February, 2015. The meeting started with the introduction of the council and its planned projects by the Chairperson. Mr. Limbu showed his interest particularly in supporting various projects and programs led by EDC. He also mentioned that he would communicate with World Bank to know if they are also interested in jointly participating in such assistance.

EDC Executive Working Committee Meeting

The fourth executive working committee meeting was held on 27th February, 2015. Mr. Sujit Acharya chaired the meeting and other present members were Mr. Hitendra Shakya, Mr. Bhanu Pokharel, Mr. Kushal Gurung and Ms. Itnuma Subba. There were seven agenda which were discussed, the top priority being the Drafting of New Electricity Act. A sub-committee to lead this action was agreed under the leadership of EDC Chairperson.



EDC's public advocacy

As a part of a monthly series prepared jointly by EDC and Nepali Times, the second publication was released on 6th February, 2015.

Putting wind in the map

Areas of Nepal have wind profiles ideally suited to meet peak electricity demand

Last year, Denmark supplied nearly 40 per cent of its electricity from wind energy. This is quite unusual because utilities often try to keep its share of wind energy below 20 per cent as it is so intermittent. Denmark proved that wind can be part of an effective grid integration system and predictability.



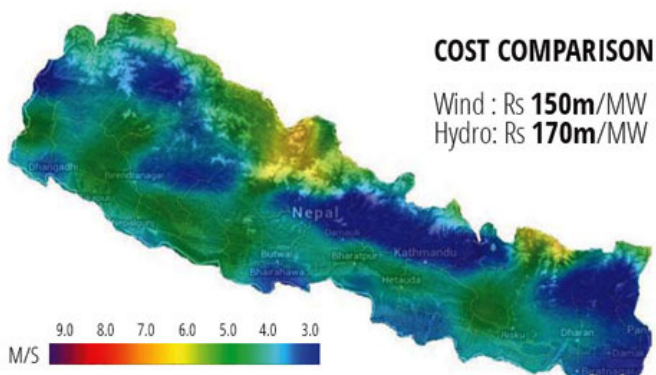
The Global Wind Energy Council predicts that wind could supply up to 19 per cent of global electricity by 2030. The Indian wind energy sector has an installed capacity of more than 20,000MW of wind energy and China will cross 100,000MW by next year.

Nepal is not the windiest country in the region, but a United Nations Environment Programme report in 2008 shows a potential of more than 3000MW of wind power. The figure may look tiny compared to our hydropower potential but it is more than four times our current installed capacity.

The World Bank has begun Nepal-wide wind mapping as part of its Energy Sector Management Assistance Program and its internal assessment shows that some places in Nepal have wind profiles ideal to meet peak demand in the evening. Another study by the US National Renewable Energy Laboratory suggests that some wind sites in Nepal are near existing transmission lines.

But do we have what it takes to harness our wind energy potential? Wind projects are relatively quick to install, and takes much less space than large solar arrays. If there is road access, equipment and no political obstructions, a 100MW wind farm can be built within six months. Our primary concern would be road access to wind sites since bigger turbines mean cheaper cost of electricity generation.

For a wind project, however, big does mean huge. A modern wind turbine usually has a capacity to generate 3MW with each of its blades as long as 50 m — almost the height of Dharahara. The blades cannot be disassembled and need to be delicately handled. So, road access can be a major obstacle to install large wind turbines. Unless highways are widened and improved, we may be restricted to smaller wind turbines for now.



The cost of wind power has been declining and it is now at par with fossil fuels for new electricity generation, but it is still unlikely to attract private investment into Nepal if the conditions are the same as for hydropower projects. Many countries have come up with various policy instruments to promote the renewable energy: the US has tax credit for renewable projects, India has Accelerated Depreciation Tax of up to 80 per cent for wind projects, while the Philippines has a lucrative feed-in tariff rate. Without such incentives, on-grid wind projects may not take off even if we put proper infrastructure in place.

Nonetheless, there could still be opportunities for captive generation, as many of our industries are paying a hefty price for diesel backup power. Wind projects, like other renewables, are much cheaper than diesel generators. Additionally, wind plants cost less than hydro plants: one megawatt of wind power costs Rs 150 million compared to Rs 170 million for hydropower, and can be completed much faster.

The current electricity shortage is here to stay for some time. Energy demand, including for electricity, will keep rising as Nepal proceeds to become a 'developing country' from a 'least-developed' one by 2022. We have already seen how time consuming hydropower projects can be, and with the possible impact of climate change on the Himalaya and river systems originating from them we may be putting all our eggs in one basket if we stick to a hydro-only policy.

A flexible energy mix is the way to go, and we need to be open to all options available. It is about time we put wind on our map.

(This article is derived from Nepali Times published on February 6th, 2015

Post available at: <http://nepalitimes.com/article/nation/wind-energy-for-electricity-in-nepal,1997>)

EDC Newsletter Readership Base Touches 2000

EDC has been successful in reaching over two thousand readers within just six months of its newsletter publication and shall continue to expand this reader database. All the readers are working in the field of the energy sector or have a keen interest in this subject.

Articles

The future of energy is solar and it looks very bright

by Anil D Ambani, Reliance Group, India

The sun, says the Rig Veda, is the soul of all beings. Yoga, a globally acclaimed symbol of India's soft power, begins with the surya namaskar. Today, faced with our soaring energy demand, potentially irreversible climate change and depleting fossil fuel reserves, we are now turning to the sun for clean and renewable power, which will not only safeguard the nation's long-term energy security but also the future of the planet. Prime Minister Narendra Modi has not only articulated this mantra but has also redefined India's renewable energy ambitions and goals.



The best international developers can install a 100 MW plant in about 90 days. More than 40 developers are keen on enhancing renewable energy in India.

Thanks to his push for solar power, the power ministry has dramatically scaled up our national solar power target of 100 GW by 2022. India's current installed solar capacity is 3 GW, which means 10 GW of new capacity has to be added each year. This is in addition to the rooftop solar target of 40 GW. The PM has described this shift in the mindset as India's 'quantum leap' from "Megawatt to Gigawatt".

The real challenge lies in the effective execution of the plan. However, we have done quick capacity addition before: India has added more capacity in conventional energy – over 140 GW — in the last 10 years than it did in the 55 years between 1947 and 2003. Over a third of this capacity was created by the private sector. The same can be done in the solar power sector. There are global success stories to learn from — and improve upon: China, for instance, added nearly 13 GW solar capacity in 2013. Similarly, Germany, Italy and Japan have added substantial solar capacity of 7 GW each per year.

The best international developers can install a 100 MW plant in about 90 days, which means 1 MW per day. In India, more than 40 developers have shown a keen interest in being a part of the PM's renewable energy dream. Even if 25 of these developers build simultaneously on 25 sites in the top five states with solar potential — Rajasthan, Jammu and Kashmir, Maharashtra, Madhya Pradesh and Andhra Pradesh — at 1 MW per day, we will have more than our desired objective of 10,000 MW per year. Unlike conventional sources of energy, the word 'mega' has a different connotation when it comes to solar power. At the core is the availability of land at competitive rates so that projects remain viable.

Every additional megawatt of solar power needs five acres of land. To generate 60 GW of solar power — the balance 40 GW will come from roof-top installations — we will need 3, 00,000 acres of land or an area equivalent to more than twice of Mumbai. Land acquisition on this scale cannot be done by the private sector. The government will have to step in a major way to ensure acquisition and also make the land available on long-term leases at affordable rates.

The new solar energy policy being implemented by Rajasthan incorporates a number of path-breaking initiatives for speedier land acquisition. In the true spirit of competitive federalism, other states can emulate the Rajasthan model even as the latter continues to learn, improve and innovate.

The strength of Anil D Ambani of the Rajasthan model lies in its unique land-leasing plan. It has expanded the definition of farming to include solar farms, thereby doing away with the earlier cumbersome requirement of change in the land use pattern. Second, it seeks to lease on nominal rent and not buy the land from the farmer for the duration of the power purchase agreement (PPA). At the end of the PPA period of 25 years, the project is dismantled and the land is returned to the farmer. Hence, the ownership of land as well as the capital appreciation of land value during the lease period rightfully accrues to the farmer.

Adding 10 GW of additional capacity every year will need an investment of around Rs 80,000 crore per year. This will comprise nearly Rs 20,000 crore of equity and the balance in debt. On the equity side, the required investment will be available from local and global capital, including private equity provided investors get a fair return. But the debt part is no less important and will only happen if we have bankable PPAs with credit-worthy customers.

The financial health of the State-run utilities will have to be restored without delay. Without bankable customers, equity and debt holders would not invest in any project. The bankability of the buyers (State discoms) could be improved by enabling the sale of power through the NTPC Vidyut Vyapar Nigam Limited, the trading affiliate of NTPC.

The per unit price of solar power has come down in the last three years – from `20 per unit to Rs 6.50- Rs 7 now. But the price is still higher compared to conventional power. To reduce costs, we will have to make solar power grids competitive. This can be done by improving viability of companies. The government must introduce fiscal incentives such as elimination or reduction of MAT and waiver of customs duties for solar plant equipment should be considered. To reduce interest rates and make adequate funds available for investment till the target of 100 GW is achieved, lending to solar projects must to be treated as priority-sector lending.

Such a large-scale solar program cannot be sustained only through imports. In the 'Make in India' program, an appropriate ecosystem should be created for the large-scale production of solar panels and other related components in India, which would also save the country precious foreign exchange and create jobs. Alongside, the Electricity Act of 2003 needs urgent amendment to put in place a robust compliance mechanism towards the enforcement of renewable power/generation obligations as proposed in the Electricity Act 2014, which is currently awaiting parliamentary approval.

The government also needs to upgrade the country's power grids, capitalize the distribution companies, create green energy corridors for inter-and intra-state transmission networks and establish a national university for renewable energy that can focus on research in renewable energy technologies.

The task before us is huge but achievable. As my father, Dhirubhai Ambani used to say, "If you can dream it, you can do it".

In Modi, we have a visionary leader. He can help us fulfill this dream.

And the optimist in me believes, he will.

(This article is derived from Hindustan Times e-paper updated on February 17th 2015.

Post available at: <http://www.hindustantimes.com/analysis/the-future-of-energy-is-solar-and-it-looks-very-bright/article1-1317891.aspx>)

Welcoming new EDC members



Sanjen Jalavidhyut Company Limited (SJCL) is a subsidiary of Chilime and was incorporated in March 2010 as a public limited company. SJCL has planned to develop two new projects—Sanjen Hydroelectric Project (SHEP) having capacity of 42.5 MW and Sanjen(Upper) Hydroelectric Project (SUHEP) of capacity 14.8 MW in Rasuwa district of Central Development Region.

The company will manage the debt requirement of the project from the EPF for which tri-partite loan arrangement has been signed between EPF, Chilime and SJCL. The equity investment will be made through 51% promoter share and 49% public share. Chilime has 38% shareholding in SJCL. The promoter share will be raised first then after public share.



Waiba Infratech Private Company Limited is the ISO 9001:2008 QMS certified one of the fastest growing EPC (Engineering, Procurement and Contracting) business enterprises in the field of Power Transmission and Distribution. They provide services such as integrated design, testing, installation, construction and commissioning services on a turn-key basis. Their projects include rural electrification, Substation/switching stations construction / up gradation, installation of capacitor banks, reduction of AT&C losses, feeder renovation, underground cabling, feeder segregation, installing High Voltage Distribution System ("HVDS") and Low Voltage Distribution System ("LVDS") distribution lines and transmission lines. Some of their executed contracts are:














Design, Supply, Installation, Construction, Testing, Commissioning and charging of 33/11 kV Sub Transmission Line in Dhulabari, Jhapa

Shifting, Installation and Commissioning of 132/33 kV, 30 MVA Power Transformer at Anarmani Substation with the supply, Delivery and commissioning of OLTC

Supply, Delivery, Installation/Erection, Commissioning and Testing, Handover of Electricity Distribution Networks in Chitwan and Dhading

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 Private Limited	
4.	CEDB Hydro Fund	
5.	IDS Energy Pvt Ltd	
6.	Nabil Bank	
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	

S. No.	Name of the Company	Company logo
15.	Reliable Hydropower Pvt. Ltd.	
16.	Sanvi Energy Pvt. Ltd.	
17.	Dantakali Hydropower Pvt. Ltd.	
18.	Prime Commercial Bank Ltd.	
19.	Century Bank	
20.	Arun Valley Hydropower Development Co. Ltd	
21.	Hydroelectricity Investment and Development Company	
22.	TSN Energy Pvt. Ltd	
23.	Madhya Bhotekoshi Jalvidyut Company Limited	
24.	Rasuwigadhi Hydropower Company Limited	
25.	Chilime Hydropower Company Limited	
26.	Waiba Infratech Pvt. Ltd.	
27.	Sanjen Jalavidhyut Co. Ltd	



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