

Editorial

Dear Reader,

Transformers are an essential part of power system, allowing large electrical loads to travel long distances and smaller loads to flow safely into our neighborhoods and homes. Like many utility assets in the post-deregulation era, however, transformers are aging and deteriorating. In many cases, utilities face "asset walls," which appear when various equipments installed during high-load growth periods in previous decades simultaneously shows rapidly increasing failure rates. The capital required to replace this vital infrastructure represents a substantial financial burden. Failure to replace old equipment represents several risks, primarily accelerating maintenance costs and increasing loss claims. Power transformers have long been a major underwriting concern. Failure of a single unit can result in widespread loss of service with considerable lost revenue as well as replacement and other collateral costs.



Mr. Amul Shrestha

The Nepal Electricity Authority (NEA) has stopped installing new electricity lines to small and medium scale factories for the past couple of months citing shortage of transformers. After a long delay, NEA recently initiated procurement of transformers as its officials were hesitant to place fresh orders after the earlier procurement process fell into controversy. The process of procuring transformers and other auxiliary equipments including, meter boxes, was disrupted for 18 months due to the controversy. Investigations were launched after the previous supplier delivered substandard transformers. Further, investigation shows that the substandard quality of these transformers have created complex problem to the extent that the whole unit requires a replacement. The long transportation of these huge equipment from outside Nepal puts risk in mishandling causing damage and also time consuming.

Transweld Nepal P. Ltd
An EDC member organization

NEA provides transformers to industries requiring power up to 50 KVA. Firms that need power higher than 50 KVA have to manage transformers on their own. At present, the state-owned power monopoly has only used transformers in stock. At present, majority of transformer are imported, however there is a growing in-house manufacturing capacity in Nepal as well. Home grown private companies are providing good quality services and have expanded its reach to sectors like micro hydro and hotel industry. Provided there be a facility for a detailed test (Type test) for transformer in the country, which is apparently not available in Nepal, the issues faced by relying over foreign companies would be drastically reduced. The detailed testing would give result such as proportion of materials used, like copper and aluminium, which will clearly indicate the quality standard. Therefore, observable analysis will help to make appropriate decisions timely. Likewise, the Nepali companies would also have healthy competition in the market, because conducting Type-test inside the country would reduce cost for transportation and damage risk. It would also be convenient to test all the new transformers as the validity period expires after five years.

Since transformers play a crucial role in entire power system value chain, NEA and other related government agencies should support and protect Nepalese transformer manufactures. In this context government should impose import of transformers from third country, and facilitate production of transformer in the country. Government should also establish type-test and routine-test laboratories to maintain quality of transformers in Nepal itself. This will lessen the hassles that the manufacturers have to bear while taking the transformer to other countries for type-test. To establish these facilities NEA and Nepal Bureau of Standards should play a vital role.

In this Issue

EDC Headlines

EDC Activities

Welcoming new EDC members

EDC Headline News

1. Interview with Mr. Umesh Kasaju, CEO of Shiva Shree Hydropower Co. Ltd. with EDC
2. Promotion of a Radio Program "Jal Sarokar"
3. EDC's public advocacy through Nepali Times and Himalayan Times
4. Nepal's Energy Scenario Page
5. Chhyangdi Hydropower Ltd. and Saral Urja Nepal joins EDC

EDC Activities

Interview with Mr. Umesh Kasaju, CEO of Shiva Shree Hydropower Co. Ltd.

1. Please tell us about your organization?

Our organization is Shiva Shree Hydropower Pvt. Ltd. established in 2062 with a purpose to enhancing the interest of private sector developers for hydropower development so that for a developing country like Nepal the burden to the government running hydropower projects in a challenging topography is minimized. The main objective is to ameliorate the current load shedding problem producing the demanding supply of electricity. Its parent office is located in Anamnagar, Kathmandu, Nepal.



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

Hadikhola Hydroelectric project located in Sindupalchowk district with installed capacity of 1MW was successfully completed by this company in 2067. Nowadays this project is running throughout the year producing 40% of power supply during dry seasons and full capacity (1 MW) during wet seasons.

Upper Chaku 'A' Hydroelectric Project located in Sindupalchowk district (covering an area of Marming and Fulppingkatti VDCs) with installed capacity of 22.2 MW beginning its construction from 2067 is the next project, the developer of which is Shiva Shree Hydropower Pvt. Ltd. Dolakha Nirman Company is the main civil contractor of the project. This company is responsible for detail studies, EIA study, social mitigation, infrastructure development, project administration, construction supervision and monitoring, etc. Approximately 80% of the civil work is completed till date.

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

Successful completion of the project is a challenge from the very beginning. As the project is situated in middle Himalayan range of Sindupalchowk district, mostly the area of penstock alignment is characterized by steep slopes. Although the construction work was started rather the challenge was felt.

The estimated completion time for this project was Chaitra 2071. But, due to massive landslide of Shrawan 17, 2071 blocked the Araniko highway (a major access to the project) and the project was delayed. A new date for completion of the project was scheduled on Kartik 2072.

Again a devastating earthquake of magnitude 7.6 in Richter Scale with epicenter in Gorkha District occurred on 12 Baishak 2072 and subsequent aftershocks including strong aftershock of 6.8 Richter Scale occurred in 29 Baishak 2072 with epicenter in Sindhupalchok District itself has caused massive damage in the district. Government of Nepal has declared 14 out of 75 districts of Nepal as most affected due to earthquake and Sindhupalchok is one of them. Some structures of the project are damaged by this huge earthquake. The work is stopped after earthquake taking into consideration the possible and most dangerous landslides that the upcoming monsoon can bring about. Many big and small landslides are occurring in frequent places of Araniko highway and project area in this monsoon. The work is targeted to commence early after the

monsoon and scheduled to be completed by Shrawan 2073. Many natural calamities are occurring by leaps and bounds in a year period, for the project which is really an unfortunate.

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

Nepal is considered one of the 15 countries which are most vulnerable to the impacts of climate change. Some experts have long listed it as one of the countries most at risk from earthquake.

Hydroelectric plants are highly dependent on predictable runoff patterns. Therefore, increased climate variability, which can affect frequency and intensity of flooding and droughts, could affect Nepal severely. So flood frequency analysis, run off patterns must be studied in initial stage of the project.

Recent events raise serious questions for a country whose economy and energy policy is hydropower-based. So to resolve such problems care and attention is to be taken in following points:

- ✚ The modern plants, many constructed in just the past few years, unable to withstand disasters that are not the worst Nepal has been expecting. In coming days new methods and techniques are to be given high priority.
- ✚ Adequate attention to the location of the sites where these plants are being built and factoring in vulnerabilities shall be taken.
- ✚ The changes in landscapes and ecosystems (for example, deforestation) and calamities like landslides, earthquake put our hydro projects at greater risks. As mitigation measure, areas prone to landslides are to be afforested.
- ✚ It is clear that Nepal cannot afford to delay diversifying its energy portfolio and the process must involve devolution of the country's energy production, distribution to community and municipal levels.
- ✚ Besides the major access to the project (Araniko highway in our case) if not hindered by landslides, the quick transport of the plants and equipments, materials are possible, for this reason the project will run after the scheduled time. These days Araniko highway frequently gets blocked by the landslides and concurrently Nepal and China government is clearing the debris from the road for easy mobilization.

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

Obviously the change in following if strictly be bring into effect, I think it will help take forward the private energy sectors like ours:

- ✚ For the construction of private projects, Nepal government is providing subsidies which are inadequate and this makes private developers to invest more capitals of their own which is seen difficult. Therefore some extra subsidies are to be allocated in the national budget for enhancing the energy sectors.
- ✚ The government has announced to provide discount in VAT while purchasing the plants and equipments necessary for hydro projects but not bring in effect yet. It must be bring on effect as near as possible so that private energy sectors will be benefitted which attracts more interest of people to invest in private projects.
- ✚ In many rural areas, there is no access road to the transmission lines due to no nearby sub-stations the route of transmission line is long. So many projects are seen unfeasible for construction. The government of Nepal must take an effort to provide sub-stations nearby the project with access roads.
- ✚ It is seen very tedious in land acquisition process in the very beginning of the project, all the land acquisition process if managed by government itself, this can promote the private developer's interest without burden.
- ✚ Various social and local problems are to be faced during the initiation, implementation and execution of the project. This is delaying the work and the project is not completing in time. In this issue the government must take responsibility to bring new rules stating that the local people will be benefitted as per the act of Nepal. Beyond the act any undesirable activities by the local people must be surpassed by the government.

“Jal Sarokar” in



A weekly interaction radio program named “Jal Sarokar” which is based on general and specific energy issues is successful in completing its 11th episodes and shall continue. The program is aired in Radio Annapurna Nepal 94 every Monday from 8:15 am to 9:00 am. This month, four episodes covering prominent issues of energy have been carried out by interviewing various energy experts from private, government and relevant organization.

(The link of the programs is available at Home Page of EDC website <http://edcnepal.org/> or Visit following links:

www.youtube.com/watch?v=RpPWhMbcCTc&feature=youtu.be (In conversation with Mr. Amul Shrestha, CEO, Transweld Pvt. Ltd)

www.youtube.com/watch?v=NlicJk8qb04 (In conversation with Mr. Deepak Rauniar, CEO, Hydroelectricity Investment and Development Co. Ltd)

www.youtube.com/watch?v=aQ10QuV7xHI (In conversation with Mr. Keshav Dhoj Adhikari, Joint Secretary, Water & Energy Commission Secretariat)

www.youtube.com/watch?v=X0e7Mlf6tcA (In conversation with Mr. Ram Gopal Shivakoti, CEO, Chilime Hydropower Co. Ltd)

EDC’s public advocacy

As a part of a monthly series prepared jointly by EDC and



, the 7th publication was released on August 28th, 2015.

Windfall in Nepal

Industries that switch to wind power protect not just the ecology, but the economy as well.

There are more than 30 cement factories in Nepal producing 2 million tons of cement annually. Even at the best of times that barely meets half the national demand. Nepal imported more than Rs 3 billion worth cement last year and with the earthquake that figure is expected to soar.

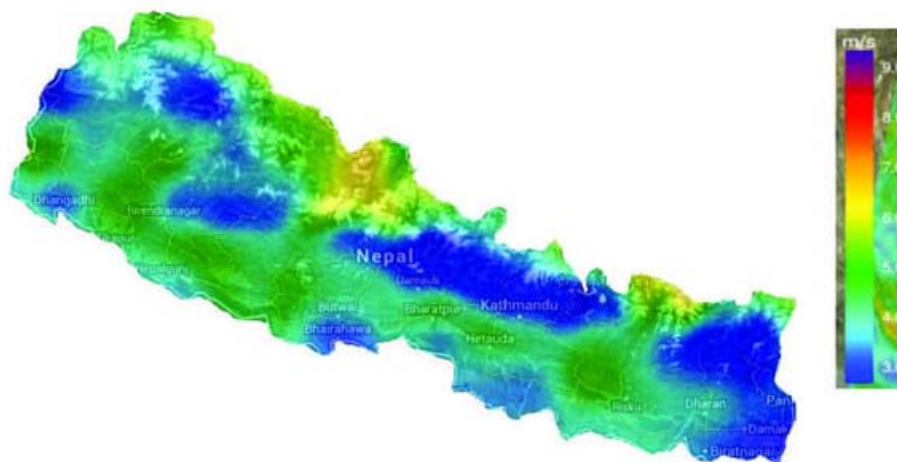
Why isn’t supply meeting demand? A look into another industry would clear the mystery. Tea is one of our major exports and is gradually losing ground in the international market. Despite growing consumption of tea, we have not been able to increase our market share proportionately as our tea has become more expensive than our competitors’, due to increasing production costs. The main reason for this is the need to use diesel electricity, which has increased production cost by Rs 50-100 per kg.



It's the same story in all industries: during power shortages, industries have to rely on high-cost diesel power, which doubles their operating cost. A majority of the industries do not work at full capacity which, in turn, is hurting Nepal's economic growth and is threatening the livelihoods of millions of people who are directly or indirectly dependent on these businesses.

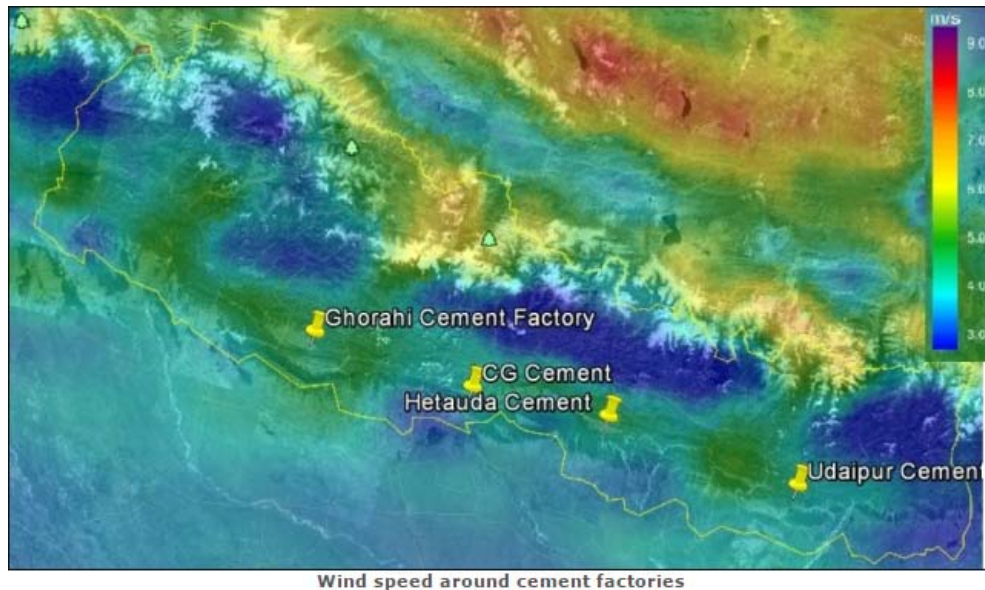
Production cost can be reduced by finding cheaper and reliable alternative energy sources, besides increasing efficiency. Captive renewable energy generation primarily for an industry's own consumption can reduce costs. Electricity generation from diesel power is not only expensive, but also climate unfriendly. Renewable energy is cheaper and cleaner. Reducing our reliance on diesel through increased use of renewable energy sources such as wind, micro-hydro, solar, waste heat recovery, and biomass is crucial in shaping Nepal's image, not just to save the ecology but the economy as well.

Nepal's wind map (picture below) shows that most tea factories and big cement industries in Nepal are situated in areas that are feasible for wind energy generation. None of them has so far exploited this available source of captive renewable energy resource. There is one big barrier for many of these industries to switch into wind power generation: initial capital cost which is higher than for a diesel plant.



The average ex-factory cost of a megawatt size wind turbine is around \$1 million. On top of this, an energy storage system will increase costs. The government provides a subsidy on capital cost for small scale projects through the Alternative Energy Promotion Center (AEP) but there is no provision for bigger industries. Even the AEP's newly launched financial intermediation mechanism Central Renewable Energy Fund (CREF) doesn't address such big capital projects. Nonetheless, it is imperative to come up with different support mechanisms and innovative business models to overcome this issue of initial capital.

Despite the heavy capital cost, the payback period for a wind farm located in an area with a good wind speed is only up to five years. Given the fact that a wind farm can be built quickly, it would be a lucrative option for industries that are now relying heavily on diesel for backup power. A wind project needs at least one year of wind data for technical feasibility study and it takes less than a year to complete even a wind farm of up to 10MW provided there is good road access and equipment is available on time.



Wind is a quick fix for tea, cement and other energy-intensive industries. If we can have a mechanism to address capital cost, wind is the way to go.

(This article is derived from Nepali Times published on August 28th, 2015.

Post available at: <http://nepalitimes.com/article/nation/energy-windfall-in-Nepal,2539>).

EDC 5th publication in **The Himalayan Times** was released on August 9th, 2015

Bankers perspective in hydropower financing

Uncertainty looms large over projects that have been severely or partially affected by the earthquake

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. We go home after work to no electricity. People who can afford luxuries in life may have already adapted and might not care. Those who cannot afford to buy anything more than the basic necessities of life, however, suffer.

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 inability of injecting equity, cost overruns, conflict of interest among promoters and suppliers, and the list goes on. Banks that have burnt their fingers in projects with similar problems have learnt a lot.



ed-staticicker.com

Yet, learning is a continuous process. Hence, it is not due to impertinence that banks try to ensure 100 percent equity in the beginning. But then projects do not come easily with this. Hence, a more balanced approach is being worked out currently by bankers to ensure at least 40 to 50 per cent equity in the beginning.

The risky part, however, is ensuring the remaining portion of equity where developers try to play foul. Even with financial and technical consultants in place to cross check malpractices if any, banks have been forced to unwillingly finance the cost overruns.

With the state pushing banks to fulfill its priority sector requirements of investing 20 per cent of its portfolio in the productive sector including hydropower, there was a glimmer of hope that banks would rush toward financing new projects. Risks are prevalent within the system and the risk appetite of most banks is small, other banks have taken the risk and gone ahead.

International financiers are also slowly coming into the scene and inquiries are being made. And the project size is growing bigger.

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 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.

Reliable geological studies that are vital before initiating these projects are largely unavailable and it is up to the developer and the banks to take the plunge.

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

Refinancing options, hence, need to be exercised by the state if any help at all is to be extended to the projects in order to save on the interest incurred due to the natural disaster.

Bureaucratic hiccups and adverse social environment for these projects have been major disappointments. It is also surprising to see why most Nepali corporate houses have not taken this investment avenue seriously now that Non Resident Nepalese (NRNs) have taken up many projects that 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. The priority of both parties is to work together to successfully generate electricity and eradicate blackouts. It is also in the best interest of the state to see to it that these projects operate on time and royalty is paid from the first year itself. Last but not least, it is imperative we construct mega projects and dream big to take a leap forward.

(This article is derived from Himalayan Times Perspective published on August 9th, 2015. Post available at:

<http://epaper.thehimalayantimes.com/epaperpdf/09082015/09082015-md-hr-22.pdf>

Nepal's Energy Scenario Page

27 billion deficit again: NEA

काठमाडौं- सरकारले साढे २७ अर्ब रुपैयाँ सञ्चित घाटा अपलेखन गरेको चार वर्ष नपुग्दै नेपाल विद्युत प्राधिकरणको घाटा फेरि त्यत्ति पुगेको छ। अत्याधिक विद्युत चुहावट नियन्त्रणमा बेवास्ता र संस्थाको व्यवस्थापन सुधार नहुँदा घाटा थपिँदै गएको हो। प्राधिकरणले भने सस्तोमा बिजुली किनेर महँगोमा बेच्नु, समयानुकूल विद्युत महसुल नबढ्नु र भारतबाट आयात गरिएको बिजुलीमा भएको घाटा सकारले शोधभर्ना नदिनुलाई घाटा थपिनुको कारण मानेको छ।

सरकारले आर्थिक वर्ष २०६७/०६८ मा जलविद्युत आयोजना तथा प्रसारण लाइनमा वैदेशिक लगानी आवश्यक पर्ने र यसका लागि प्राधिकरणको वित्तीय अवस्था सकारात्मक हुनुपर्ने भन्दै सरकारले घाटा अपलेखन गरेको थियो। वासलातमा वित्तीय अवस्था सकारात्मक देखाइए पनि घाटा चुलिँदै जाने प्रणालीमा पनि उसले कुनै सुधार ल्याउन सकेको छैन।

आव २०७०/०७१ को तुलनामा गत वर्षको आर्थिक अवस्था र व्यवस्थापनमा सुधार आएको प्राधिकरणका कार्यकारी निर्देशक मुकेशराज काफ्लेले दाबी गरे। 'गएको हिउँदमा लोडसेडिङ औसत १० घन्टामा सीमित गरिएको हो, अघिल्ला वर्षमा यो १२ घन्टाभन्दा बढी थियो,' उनले आइतबार नागरिकसँग भने, 'गत वर्षको घाटा करिब ८ अर्ब प्रक्षेपण गरिएकोमा डेढ अर्ब कम अर्थात ६ अर्ब ५१ करोड रुपैयाँमा सीमित भएको छ।'

प्राधिकरणको घाटा अघिल्लो आवसम्म करिब २० अर्ब रुपैयाँ पुगेको थियो भने गत आवमा मात्र करिब ६ अर्ब रुपैयाँ घाटा थियो। निरन्तर घाटा थपिनुमा अनियन्त्रित सञ्चालन खर्च बढ्नु र समयमा बिजुलीको महसुल नबढ्नु कारक रहेको पनि काफ्लेले बताए। ठूलो परिमाणको चुहावट निरयन्त्रण गर्न नसक्दा भारतबाट किन्ने बिजुलीभन्दा बढी चुहरे खेर जाने गरेको छ।

गत आवमा ५ अर्ब युनिट बिजुली व्यवस्थापन गरिएकोमा ३ अर्ब ७० करोड युनिटमात्र बेचिएको प्राधिकरणले जानकारी दिएको छ। प्राधिकरणले तयार पारेको वार्षिक प्रतिवेदनअनुसार गत वर्ष उसले औसत ८ रुपैयाँ १४ पैसामा बिजुली बेचेको छ। यसमा सेवा शुल्कसमेत जोड्दा बिक्रीदर करिब १० रुपैयाँ १४ पैसा पुग्यो।

यसको आधारमा गत आवमा करिब १३ अर्ब १८ लाख रुपैयाँबराबरको १ अर्ब ३० करोड युनिट बिजुली चुहावट भएको छ। गत वर्ष प्राधिकरणले भारतबाट करिब १२ अर्ब रुपैयाँको बिजुली किनेको थियो।

हरेक वर्ष प्राधिकरणको आम्दानीको तुलनामा खर्च ३ देखि ५ अर्ब रुपैयाँ थपिने गरेको छ। असार मसान्तसम्म आम्दानी साढे ३२ अर्ब रुपैयाँ रहेकोमा खर्च ३६ अर्ब रुपैयाँभन्दा बढी पुगेको प्राधिकरणले जानकारी दिएको छ। सुरुमा घाटा अपलेखन गर्दा सरकारले दिएका सुझाव तथा संस्था सुधारका योजना कार्यान्वयनमा भने प्राधिकरण उदासीन बन्ने गरेको छ।

गत वर्ष बिजुलीको उच्चतम माग १ हजार २ सय ९२ मेगावाट रहेकोमा असार मसान्तसम्म ७ सय ६ मेगावाटमात्र आपूर्ति गर्न सकेको थियो। त्यसमध्ये निजी क्षेत्रबाट १ सय २५ र भारतबाट २ सय २४ मेगावाट किनिएको वार्षिक प्रतिवेदनमा उल्लेख छ। गत वर्ष २४.६४ प्रतिशत रहेको चुहावट जम्मा ०.२० प्रतिशतमात्र कम भएको छ।

चुहावट नियन्त्रणमा व्यवस्थापनको गम्भीर लापरबाही देखिएको कर्मचारीको आरोप छ। तर, यसमा राजनीतिक दल र सरोकारवालाको सहयोगबिना चोरी कम गर्न गाह्रो हुने उच्च अधिकारी तर्क गर्छन्। वार्षिक आयको ठूलो रकम सञ्चालन खर्चमा खर्च हुँदा पनि सञ्चित घाटा बढ्दै गएको निमित्त उपकार्यकारी निर्देशक राजीव शर्माेले बताए।

विगत वर्षमा ग्राहकको संख्या औसत ४ प्रतिशतले बढ्ने गरेको गत वर्षमा ५.७५ प्रतिशतले मात्र ग्राहक संख्या बढेको प्राधिकरणले जनाएको छ। तर, अघिल्लो वर्ष ३२ लाख रहेको ग्राहक संख्या गत वर्षसम्ममा २८ लाख ७० हजारमा झरेको छ।

संस्थाको आम्दानी अघिल्लो वर्षको तुलनामा ५.८९ प्रतिशतले बढेर ३२ अर्ब ५६ करोड रुपैयाँ पुगेको छ। यसमध्ये बिजुली बिक्रीबाट ३० अर्ब ४८ करोड आम्दानी गरिएको छ। सञ्चालन खर्चको ठूलो हिस्सा अर्थात बिजुली खरिदमा खर्च हुने गरेको छ। भारतबाट किन्ने बिजुलीभन्दा बढी चुहेर खेर जाने प्रणाली रोक्न नसक्नु नै घाटाको मुख्य कारण बनेको छ।

आन्तरिक र बाह्य गरेर गत आवसम्म प्राधिकरणको ऋण ९४ अर्ब रुपैयाँ पुगेको छ भने सम्पत्ति करिब ८४ अर्ब रुपैयाँ उल्लेख गरिएको छ। वार्षिक प्रतिवेदनमा गत आवसम्म कुल जडित क्षमता ७ सय ६ मेगावाट अध्यावधिक गरिए पनि अहिलेसम्म ८ सय मेगावाट पुगेको छ। यसमा निजी क्षेत्रको योगदान करिब २ सय ७० मेगावाट छ।

चालु वर्षमा प्रसारण प्रणालीमा १ सय ४० मेगावाट बिजुली थपिने अनुमान छ। यसमध्ये सबैभन्दा ठूलो लमजुङमा निर्माण भइरहेको ५० मेगावाटको माथिल्लो मर्स्याङ्दी 'ए' सम्पन्न हुनेछ। तर, यो वर्ष सरकार तथा प्राधिकरणले बनाइरहेका कुनै पनि आयोजना पूरा हुने संकेत देखिएको छैन।

प्राधिकरणका अनुसार करिब ९६ प्रतिशत निर्माण सकिएको ३० मेगावाटको चमेलिया र त्यत्ति नै काम सकिएको १४ मेगावाटको कुलेखानी तेस्रो यो वर्ष पनि पूरा हुँदैनन्। तर, आयोजना बनाउन प्राधिकरण अक्षम देखिए पनि अहिलेसम्म २ हजार ३ सय ५६ मेगावाट बराबरका १ सय ६० आयोजनासँग विद्युत खरिद सम्झौता (पिपिए) गरिसकेको छ। गत आवमा मात्र ४ सय ४२ मेगावाटका २३ आयोजनाको पिपिए भएको छ।

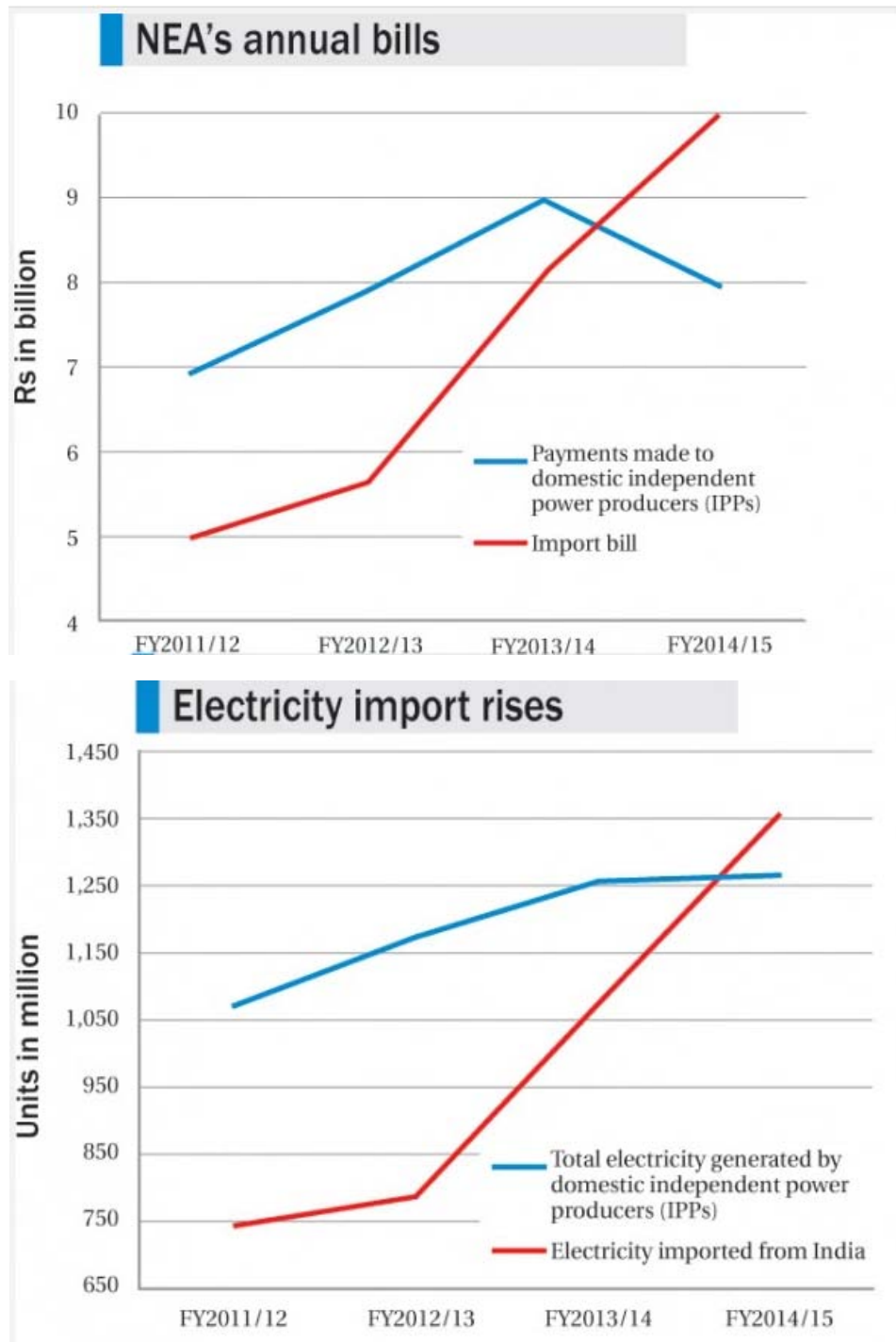
(The article is derived from www.nepalenergyforum.com/27-billion-deficit-again-nea/ published on August 17th, 2015)

Electricity worth Rs. 10 billion imported in 2014/2015

Nepal imported Rs 10 billion worth of hydropower in Fiscal Year 2014/15 – a rise of 24 percent compared to figures of 2013/14. State-owned Nepal Electricity Authority (NEA) imported 1,369 GWh (1.36 billion units) of hydropower from India in the review year. Total energy import is higher than what NEA buys from independent power producers of the country. NEA had purchased 1,268 GWh (1.26 billion units) of hydropower from independent power producers in 2014/15. Its power plants generated 2365 GWh or 2.36 billions of units of electricity in the review year.

NEA had increased its energy import from India after power generation of Upper Bhotekoshi Hydroelectric Project (45 MW) and some other small power plants was affected after a transmission line in Jure of Sindhupalchowk was washed away by landslide in August last year. It took more than four months to reconnect transmission line to evacuate power generated by those projects.

The annual report of NEA to be made public on Tuesday also attributes damages caused by the earthquake of April 25 as the other reason behind rise in its import bill.



Around 80 MW of hydropower, or 11 percent of total installed capacity, generated by different projects, including Upper Bhotekoshi, is still to be connected to the national grid. Officials of Independent Power producers Association of Nepal (IPPAN) say it might take around a year to repair Upper Bhotekoshi Hydroelectric Project.

NEA officials say its import bill will increase further in 2015/16.

As per the bilateral agreement with India, Nepal imports electricity from Power Trade Corporation at the rate of IRs 3.95 per unit, and from Bihar State Trading Company at IRs 5.5 per unit. Difference in price rates as well as technical loss of about 25 percent on imported electricity is the major factor that has pushed NEA into red. NEA has posted net loss of Rs 6.4 billion in 2014/15. Its accumulated loss over the past five years is in tune of Rs 27.5 billion.

“Precipitation is not good this year. Rivers won’t have sufficient water for the coming dry months which means more electricity has to be imported,” Khadga Bahadur Bisht, president of IPPAN, said. He also said the earthquake will further delay Upper Tamakoshi Hydropower Project which will increase our dependency on imports from India.

Energy generated by Sanima Mai Hydropower (22 MW) and Rurukhola Hydropower (5 MW) were connected to the national grid in 2014/15. But Sanima Mai hasn't been able to start full-fledged operation due to delay in development of high capacity transmission line to evacuate power generated by it.

Electricity imports not included in import figures.

Electricity import figures have not been recorded in country's overall imports.

Kilaraj Gyawali, director of Department of Customs (DoC), said they do not include energy import figures as customs duty is not levied on such imports. We don't know how much electricity is imported by NEA, he added.

An official at Trade and Export Promotion Center say electricity import figure is not recorded as electricity is not recognized as a commodity.

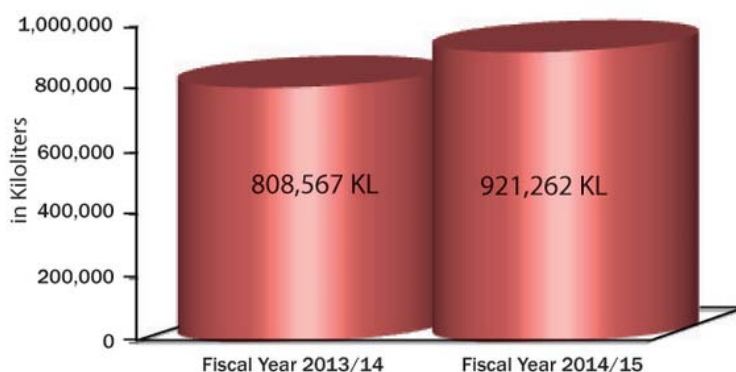
(The article is derived from: www.nepalenergyforum.com/electricity-worth-rs-10-billion-imported-in-201415/ published on August 18th, 2015)

Diesel import up by 14%, petrol by 13%

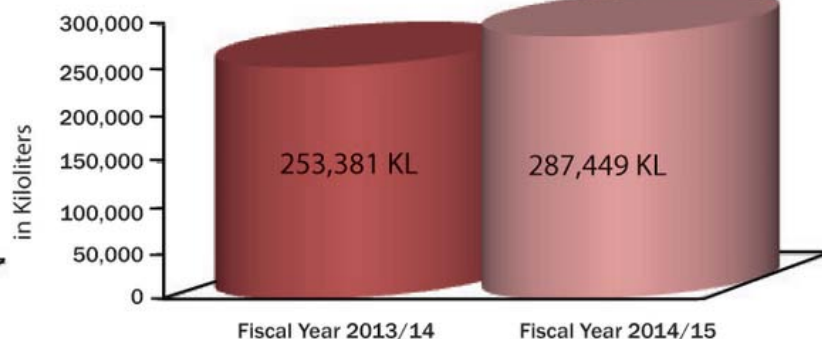
Nepal's petrol and diesel imports increased by 13 percent and 14 percent, respectively, in Fiscal Year 2014/15, compared to import figures of a fiscal year earlier.

According to Nepal Oil Corporation (NOC), a total of 287,449 kiloliters (KL) of petrol was imported in the review year compared to 253,381 KL imported in 2013/14. Similarly, 921,262 kiloliter of diesel was imported in 2014/15. In 2013/14, Nepal had imported 808,567 KL of diesel.

Diesel Imports



Petrol Imports



Officials of NOC -- the state-owned petroleum monopolist -- attributed the growth in import of diesel to long load-shedding hours and growing pace of development activities in the latter months of the fiscal year. "Load-shedding has become a usual phenomenon for us. Because of frequent power cuts, industries and businesses look to diesel-run generators for power supply during load-shedding hours," Mukunda Ghimire, spokesperson of NOC, told Republica. "This is one of the reasons behind hefty rise in diesel imports in recent years."

According to Ghimire, the other reason behind rise in diesel import is growing number of development projects across the country. "Number of big infrastructure and development projects has increased in recent years. These industries meet their energy demand by running big diesel-run generators," he said.

NOC officials have attributed rise in import of petrol to increasing registration of two-wheelers and passenger vehicles like cars.

Statistics of Department of Transport Management (DoTM) shows, 218,360 units of new vehicles were registered in the country in the first 11 months of 2014/15 alone, compared to 198,343 units registered during the review period of 2013/14.

The article is derived from: www.myrepublica.com/feature-article/item/25238-diesel-import-up-by-14-petrol-by-13.html posted on July 26th July, 2015)

Nepal, India sign oil pipeline deal

Rs 4.4-billion Amlekhgunj-Raxaul oil pipeline project is expected to be completed within 30 months after work begins.

Nepal and India on Monday signed a memorandum of understanding for the construction of an Amlekhgunj-Raxaul oil pipeline.

The pipeline, 41 km long and 20 years in the planning, is expected to ensure regular fuel supplies in Nepal which are known to be disrupted by recurring road blocks and strikes.

The exact date when the construction will start is yet to be fixed. Before that, state-owned oil monopoly Nepal Oil Corporation will sign two separate agreements with its sole supplier India Oil Corporation (IOC).

The Rs4.40-billion project is expected to be completed within 30 months after work begins. IOC will be injecting Rs3.20 billion into the project as a grant while NOC will invest the rest of the amount for the upgradation of its Amlekhgunj depot.

The pipeline will transport petrol, diesel and kerosene. Under the first phase of the project, a pipeline will be laid from Raxaul to Amlekhgunj. In the second phase, it will be extended to Kathmandu.

(This article is derived from Kathmandu post published on August 25th, 2015. Full version is available on: kathmandu-post.ekantipur.com/news/2015-08-25/nepal-india-sign-oil-pipeline-deal.html)

Guest Corner

The Point of No Return: Climate Change Nightmares Are Already Here

By Eric Holthaus

The worst predicted impacts of climate change are starting to happen — and much faster than climate scientists expected.

Historians may look to 2015 as the year when shit really started hitting the fan. Some snapshots: In just the past few months, record-setting heat waves in Pakistan and India each killed more than 1,000 people. In Washington state's Olympic National Park, the rainforest caught fire for the first time in living memory. London reached 98 degrees Fahrenheit during the hottest July day ever recorded in the U.K.; The Guardian briefly had to pause its live blog of the heat wave because its computer servers overheated. In California, suffering from its worst drought in a millennium, a 50-acre brush fire swelled seventyfold in a matter of hours, jumping across the I-15 freeway during rush-hour traffic. Then, a few days later, the region was pounded by intense, virtually unheard-of summer rains. Puerto Rico is under its strictest water rationing in history as a monster El Niño forms in the tropical Pacific Ocean, shifting weather patterns worldwide.



Walruses, like these in Alaska, are being forced ashore in record numbers. Corey Accardo/NOAA/AP

On July 20th, James Hansen, the former NASA climatologist who brought climate change to the public's attention in the summer of 1988, issued a bombshell: He and a team of climate scientists had identified a newly important feedback mechanism off the coast of Antarctica that suggests mean sea levels could rise 10 times faster than previously predicted: 10 feet by 2065. The authors included this chilling warning: If emissions aren't cut, "We conclude that multi-meter sea-level rise would become practically unavoidable. Social disruption and economic consequences of such large sea-level rise could be devastating. It is not difficult to imagine that conflicts arising from forced migrations and economic collapse might make the planet ungovernable, threatening the fabric of civilization."

Eric Rignot, a climate scientist at NASA and the University of California-Irvine and a co-author on Hansen's study, said their new research doesn't necessarily change the worst-case scenario on sea-level rise, it just makes it much more pressing to think about and discuss, especially among world leaders. In particular, says Rignot, the new research shows a two-degree Celsius rise in global temperature — the previously agreed upon "safe" level of climate change — "would be a catastrophe for sea-level rise."

Hansen's new study also shows how complicated and unpredictable climate change can be. Even as global ocean temperatures rise to their highest levels in recorded history, some parts of the ocean, near where ice is melting exceptionally fast, are actually cooling, slowing ocean circulation currents and sending weather patterns into a frenzy. Sure enough, a persistently cold patch of ocean is starting to show up just south of Greenland, exactly where previous experimental predictions of a sudden surge of freshwater from melting ice expected it to be. Michael Mann, another prominent climate scientist, recently said of the unexpectedly sudden Atlantic slowdown, "This is yet another example of where observations suggest that climate model predictions may be too conservative when it comes to the pace at which certain aspects of climate change are proceeding."

Since storm systems and jet streams in the United States and Europe partially draw their energy from the difference in ocean temperatures, the implication of one patch of ocean cooling while the rest of the ocean warms is profound. Storms will get stronger, and sea-level rise will accelerate. Scientists like Hansen only expect extreme weather to get worse in the

years to come, though Mann said it was still "unclear" whether recent severe winters on the East Coast are connected to the phenomenon.

And yet, these aren't even the most disturbing changes happening to the Earth's biosphere that climate scientists are discovering this year. For that, you have to look not at the rising sea levels but to what is actually happening within the oceans themselves.

Water temperatures this year in the North Pacific have never been this high for this long over such a large area — and it is already having a profound effect on marine life.

Eighty-year-old Roger Thomas runs whale-watching trips out of San Francisco. On an excursion earlier this year, Thomas spotted 25 humpbacks and three blue whales. During a survey on July 4th, federal officials spotted 115 whales in a single hour near the Farallon Islands — enough to issue a boating warning. Humpbacks are occasionally seen offshore in California, but rarely so close to the coast or in such numbers. Why are they coming so close to shore? Exceptionally warm water has concentrated the krill and anchovies they feed on into a narrow band of relatively cool coastal water. The whales are having a heyday. "It's unbelievable," Thomas told a local paper. "Whales are all over the place."

Last fall, in northern Alaska, in the same part of the Arctic where Shell is planning to drill for oil, federal scientists discovered 35,000 walrus congregating on a single beach. It was the largest-ever documented "haul out" of walrus, and a sign that sea ice, their favored habitat, is becoming harder and harder to find.



Salmon on the brink of dying out. Michael Quinton/Newscom

Marine life is moving north, adapting in real time to the warming ocean. Great white sharks have been sighted breeding near Monterey Bay, California, the farthest north that's ever been known to occur. A blue marlin was caught last summer near Catalina Island — 1,000 miles north of its typical range. Across California, there have been sightings of non-native animals moving north, such as Mexican red crabs.

No species may be as uniquely endangered as the one most associated with the Pacific Northwest, the salmon. Every two weeks, Bill Peterson, an oceanographer and senior scientist at the National Oceanic and Atmospheric Administration's Northwest Fisheries Science Center in Oregon,

takes to the sea to collect data he uses to forecast the return of salmon. What he's been seeing this year is deeply troubling.

Salmon are crucial to their coastal ecosystem like perhaps few other species on the planet. A significant portion of the nitrogen in West Coast forests has been traced back to salmon, which can travel hundreds of miles upstream to lay their eggs. The largest trees on Earth simply wouldn't exist without salmon.

But their situation is precarious. This year, officials in California are bringing salmon downstream in convoys of trucks, because river levels are too low and the temperatures too warm for them to have a reasonable chance of surviving. One species, the winter-run Chinook salmon, is at a particularly increased risk of decline in the next few years, should the warm water persist offshore.

"You talk to fishermen, and they all say: 'We've never seen anything like this before,'" says Peterson. "So when you have no experience with something like this, it gets like, 'What the hell's going on?'"

Atmospheric scientists increasingly believe that the exceptionally warm waters over the past months are the early indications of a phase shift in the Pacific Decadal Oscillation, a cyclical warming of the North Pacific that happens a few times each century. Positive phases of the PDO have been known to last for 15 to 20 years, during which global warming can increase at double the rate as during negative phases of the PDO. It also makes big El Niños, like this year's, more likely. The nature of PDO phase shifts is unpredictable — climate scientists simply haven't yet figured out precisely what's behind them and why they happen when they do. It's not a permanent change — the ocean's temperature will likely drop from these record highs, at least temporarily, sometime over the next few years — but the impact on marine species will be lasting, and scientists have pointed to the PDO as a global-warming preview.

"The climate [change] models predict this gentle, slow increase in temperature," says Peterson, "but the main problem we've had for the last few years is the variability is so high. As scientists, we can't keep up with it, and neither can the animals." Peterson likens it to a boxer getting pummeled round after round: "At some point, you knock them down, and the fight is over."

Attendant with this weird wildlife behavior is a stunning drop in the number of plankton — the basis of the ocean's food chain. In July, another major study concluded that acidifying oceans are likely to have a "quite traumatic" impact on plankton diversity, with some species dying out while others flourish. As the oceans absorb carbon dioxide from the



Pavement-melting heat waves in India. Harish Tyagi/EPA/Corbis

atmosphere, it's converted into carbonic acid — and the pH of seawater declines. According to lead author Stephanie Dutkiewicz of MIT, that trend means "the whole food chain is going to be different."

The Hansen study may have gotten more attention, but the Dutkiewicz study, and others like it, could have even more dire implications for our future. The rapid changes Dutkiewicz and her colleagues are observing have shocked some of their fellow scientists into thinking that yes, actually, we're heading toward the worst-case scenario. Unlike a prediction of massive sea-level rise just decades away, the warming and acidifying oceans represent a problem that seems to have kick-started a mass extinction on the same time scale.

Jacquelyn Gill is a paleoecologist at the University of Maine. She knows a lot about extinction, and her work is more relevant than ever. Essentially, she's trying to save the species that are alive right now by learning more about what killed off the ones that aren't. The ancient data she studies shows "really compelling evidence that there can be events of abrupt climate change that can happen well within human life spans. We're talking less than a decade." or the past year or two, a persistent change in winds over the North Pacific has given rise to what meteorologists and oceanographers are calling "the blob" — a highly anomalous patch of warm water between Hawaii, Alaska and Baja California that's thrown the marine ecosystem into a tailspin. Amid warmer temperatures, plankton numbers have plummeted, and the myriad species that depend on them have migrated or seen their own numbers dwindle.

Significant northward surges of warm water have happened before, even frequently. El Niño, for example, does this on a predictable basis. But what's happening this year appears to be something new. Some climate scientists think that the wind shift is linked to the rapid decline in Arctic sea ice over the past few years, which separate research has shown makes weather patterns more likely to get stuck.

A similar shift in the behavior of the jet stream has also contributed to the California drought and severe polar vortex winters in the Northeast over the past two years. An amplified jet-stream pattern has produced an unusual doldrum off the West Coast that's persisted for most of the past 18 months. Daniel Swain, a Stanford University meteorologist, has called it the "Ridiculously Resilient Ridge" — weather patterns just aren't supposed to last this long.

What's increasingly uncontroversial among scientists is that in many ecosystems, the impacts of the current off-the-charts temperatures in the North Pacific will linger for years, or longer. The largest ocean on Earth, the Pacific is exhibiting cyclical variability to greater extremes than other ocean basins. While the North Pacific is currently the most dramatic area of change in the world's oceans, it's not alone: Globally, 2014 was a record-setting year for ocean temperatures, and 2015 is on pace to beat it soundly, boosted by the El Niño in the Pacific. Six percent of the world's reefs could disappear before the end of the decade, perhaps permanently, thanks to warming waters.



Biblical floods in Turkey. All Atmaca/Anadolu Agency/Getty

Since warmer oceans expand in volume, it's also leading to a surge in sea-level rise. One recent study showed a slow-down in Atlantic Ocean currents, perhaps linked to glacial melt from Greenland, that caused a four-inch rise in sea levels along the Northeast coast in just two years, from 2009 to 2010. To be sure, it seems like this sudden and unpredicted surge was only temporary, but scientists who studied the surge estimated it to be a 1-in-850-year event, and it's been blamed on accelerated beach erosion "almost as significant as some hurricane events."

Possibly worse than rising ocean temperatures is the acidification of the waters. Acidification has a direct effect on mollusks and other marine animals with

hard outer bodies: A striking study last year showed that, along the West Coast, the shells of tiny snails are already dissolving, with as-yet-unknown consequences on the ecosystem. One of the study's authors, Nina Bednaršek, told Science magazine that the snails' shells, pitted by the acidifying ocean, resembled "cauliflower" or "sandpaper." A similarly striking study by more than a dozen of the world's top ocean scientists this July said that the current pace of increasing carbon emissions would force an "effectively irreversible" change on ocean ecosystems during this century. In as little as a decade, the study suggested, chemical changes will rise significantly above background levels in nearly half of the world's oceans.

"I used to think it was kind of hard to make things in the ocean go extinct," James Barry of the Monterey Bay Aquarium Research Institute in California told the Seattle Times in 2013. "But this change we're seeing is happening so fast it's almost instantaneous."

Thanks to the pressure we're putting on the planet's ecosystem — warming, acidification and good old-fashioned pollution — the oceans are set up for several decades of rapid change. Here's what could happen next.

The combination of excessive nutrients from agricultural runoff, abnormal wind patterns and the warming oceans is already creating seasonal dead zones in coastal regions when algae blooms suck up most of the available oxygen. The appearance of low-oxygen regions has doubled in frequency every 10 years since 1960 and should continue to grow over the coming decades at an even greater rate.

So far, dead zones have remained mostly close to the coasts, but in the 21st century, deep-ocean dead zones could become common. These low-oxygen regions could gradually expand in size — potentially thousands of miles across — which would force fish, whales, pretty much everything upward. If this were to occur, large sections of the temperate deep oceans would suffer should the oxygen-free layer grow so pronounced that it stratifies, pushing surface ocean warming into overdrive and hindering upwelling of cooler, nutrient-rich deeper water.

Enhanced evaporation from the warmer oceans will create heavier downpours, perhaps destabilizing the root systems of forests, and accelerated runoff will pour more excess nutrients into coastal areas, further enhancing dead zones. In the past year, downpours have broken records in Long Island, Phoenix, Detroit, Baltimore, Houston and Pensacola, Florida.

Evidence for the above scenario comes in large part from our best understanding of what happened 250 million years ago, during the "Great Dying," when more than 90 percent of all oceanic species perished after a pulse of carbon dioxide and methane from land-based sources began a period of profound climate change. The conditions that triggered "Great Dying" took hundreds of thousands of years to develop. But humans have been emitting carbon dioxide at a much quicker rate, so the current mass extinction only took 100 years or so to kick-start.

With all these stressors working against it, a hypoxic feedback loop could wind up destroying some of the oceans' most species-rich ecosystems within our lifetime. A recent study by Sarah Moffitt of the University of California-Davis said it could take the ocean thousands of years to recover. "Looking forward for my kid, people in the future are not going to have the same ocean that I have today," Moffitt said.

As you might expect, having tickets to the front row of a global environmental catastrophe is taking an increasingly emotional toll on scientists, and in some cases pushing them toward advocacy. Of the two dozen or so scientists I interviewed for this piece, virtually all drifted into apocalyptic language at some point.

For Simone Alin, an oceanographer focusing on ocean acidification at NOAA's Pacific Marine Environmental Laboratory in Seattle, the changes she's seeing hit close to home. The Puget Sound is a natural laboratory for the coming decades of rapid change because its waters are naturally more acidified than most of the world's marine ecosystems.

The local oyster industry here is already seeing serious impacts from acidifying waters and is going to great lengths to avoid a total collapse. Alin calls oysters, which are non-native, the canary in the coal mine for the Puget Sound: "A canary is also not native to a coal mine, but that doesn't mean it's not a good indicator of change."

Though she works on fundamental oceanic changes every day, the Dutkiewicz study on the impending large-scale changes to plankton caught her off-guard: "This was alarming to me because if the basis of the food web changes, then . . . everything could change, right?"

Alin's frank discussion of the looming oceanic apocalypse is perhaps a product of studying unfathomable change every day. But four years ago, the birth of her twins "heightened the whole issue," she says. "I was worried enough about these problems before having kids that I maybe wondered whether it was a good idea. Now, it just makes me feel crushed."

Katharine Hayhoe, a climate scientist and evangelical Christian, moved from Canada to Texas with her husband, a pastor, precisely because of its vulnerability to climate change. There, she engages with the evangelical community on science — almost as a missionary would. But she's already planning her exit strategy: "If we continue on our current pathway, Canada will be home for us long term. But the majority of people don't have an exit strategy. . . . So that's who I'm here trying to help."



Katharine Hayhoe speaks about climate change to students and faculty at Wayland Baptist University in 2011. Geoffrey McAllister/Chicago Tribune/MCT/Getty

James Hansen, the dean of climate scientists, retired from NASA in 2013 to become a climate activist. But for all the gloom of the report he just put his name to, Hansen is actually somewhat hopeful. That's because he knows that climate change has a straightforward solution: End fossil-fuel use as quickly as possible. If tomorrow, the leaders of the United States and China would agree to a sufficiently strong, coordinated carbon tax that's also applied to imports, the rest of the world would have no choice but to sign up. This idea has already been pitched to Congress several times, with tepid bipartisan support. Even though a carbon tax is probably a long shot, for Hansen, even the slim possibility that bold action like this might happen is enough for him to devote the rest of his life to working to achieve it. On a conference call with reporters in

July, Hansen said a potential joint U.S.-China carbon tax is more important than whatever happens at the United Nations climate talks in Paris.

One group Hansen is helping is Our Children's Trust, a legal advocacy organization that's filed a number of novel challenges on behalf of minors under the idea that climate change is a violation of intergenerational equity — children, the group argues, are lawfully entitled to inherit a healthy planet.

A separate challenge to U.S. law is being brought by a former EPA scientist arguing that carbon dioxide isn't just a pollutant (which, under the Clean Air Act, can dissipate on its own), it's also a toxic substance. In general, these substances have exceptionally long life spans in the environment, cause an unreasonable risk, and therefore require remediation. In this case, remediation may involve planting vast numbers of trees or restoring wetlands to bury excess carbon underground.

Even if these novel challenges succeed, it will take years before a bend in the curve is noticeable. But maybe that's enough. When all feels lost, saving a few species will feel like a triumph.

This article is derived from: www.rollingstone.com/politics/news/the-point-of-no-return-climate-change-nightmares-are-already-here-20150805 published on August 5th, 2015)

Welcoming new EDC members



Chhandi Khola SHP is a run-of-river type hydropower scheme aimed with utilizing water discharge from Chhandi & Ghatte Khola of Lamjung District, a tributary of Dordi River for power generation. The Project has an installed capacity of 2.0 MW. The project utilizes gross head of about 186.0 m and design discharge of 1.30 m³/s from Chhandi Khola and Ghatte Khola in order to generate an annual average energy of 11.204 GWh. It is under construction project completed approx 85% of total construction activities. It will connect 2 MW power in national grid through existing 33kV transmission line of Udipur Sub-station.



SaralUrja Nepal (translation: Simple Energy Nepal) was incorporated in Nepal in June 2013 with the purposes of becoming an energy services company. SUN is pursuing a business model that is focused on delivering reliable energy services to rural communities and hinges on two key principles; Energy as a service & Community partnership. Such solutions are applicable to both grid connected and off-grid rural customers, both of whom need reliable energy services.

List of EDC members

S. No.	Name of the Organization	Organization logo
1.	Nepal Electricity Authority	
2.	Alternative Energy Promotion Center	
3.	Chilime Hydropower Company Ltd.	
4.	Madhya Bhotekoshi Jalvidyut Company Ltd.	
5.	Rasuwagadhi Hydropower Company Ltd.	
6.	Sanjen Jalavidhyut Co. Ltd.	

S. No.	Name of the Organization	Organization logo
7.	Butwal Power Company Ltd.	
8.	Hydroelectricity Investment and Development Company Ltd.	
9.	IDS Energy Pvt. Ltd.	
10.	Arun Valley Hydropower Development Co. Ltd	
11.	Dantakali Hydropower Pvt. Ltd.	
12.	Reliable Hydropower Pvt. Ltd.	
13.	Himalayan Infrastructure Fund	
14.	Sanvi Energy Pvt. Ltd.	
15.	Dibyashwari Hydropower Ltd.	
16.	Shiva Shree Hydropower Co. Ltd	
17.	Chhyandi Hydropower Ltd	
18.	Saral Urja Nepal	

S. No	Name of the Organization	Organization logo	S. No.	Name of the Organization	Organization logo
19.	Wind Power Nepal		23.	CEDB Hydro Fund	
20.	Gham Power Pvt. Ltd.		24.	Nabil Bank Limited	
21.	Lotus Energy Pvt. Ltd.		25.	Clean Energy Development Bank	
22.	Sun Farmer Nepal Pvt. Ltd		26.	Global IME Bank Limited	
			27.	Prime Commercial Bank Ltd.	
			28.	Century Bank Limited	

S. No.	Name of the Organization	Organization logo	S.No.	Name of the Organization	Organization logo
29.	Transweld Pvt. Ltd.		34.	Nepal Hydropower Association	
30.	TSN Energy Pvt. Ltd.		35.	National Association of Community Electricity Users Nepal	
31.	Waiba Infratech Pvt. Ltd.				
32.	North Hydro & Engineering Pvt. Ltd				
33.	Nepal Hydro & Electric Ltd.				



Energy Development Council

Main Office

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

P.O. Box no. 516

Phone: +977-1-4169116/4169117

Fax: +977-1-4169118

E-mail: info@edcnepal.org

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

Branch Office

RM 316/3 F Chinese Overseas Scholars Venture Building, South District
Shenzhen Hi-tech Industry Park, Shenzhen, China