SUMMARY REPORT:

NEPAL POWER INVESTMENT SUMMIT

27TH – 29TH JANUARY, 2018

VENUE: SOALTEE CROWN PLAZA, KATHMANDU, NEPAL

Background:

Much have already been talked, written and discussed about Nepal's hydropower potential. Many generations have already been raised listening to the glorified cliché that Nepal brags hydropower potential of as much as 83,000 MW, out of which more than 40,000 MW is commercially viable. A big number of energy enthusiasts have turned successful speakers and writers thanking the country's perennial nature of Nepali rivers and finest typography that provides the Himalayan country with ideal conditions for the development of hydropower projects. No government formed post-economic liberalization of 90s have left no national as well as international forums unutilized to tout about the country's abundance water resources and the subsequent hydropower potential. They have been making untiring efforts in tempting domestic as well as foreign investors and developers to invest in Nepal's energy sector. However, the result is – Nepal is limited with only as much as 1,000 MW energy stalled in its national grid ensuring only 40 percent of the total population access to electricity.

At the same time, Nepal's electricity demand is increasing by around 10 percent per annum. Despite Nepal's Tenth Five Year Plan aiming to extend the electrification within the country and export to neighboring markets, much has not happened. Two giant hydropower investors are willing to build big scale hydropower projects since decades, whereas even though a number of Chinese as well as other foreign investors have committed billions of dollars' worth investment to develop the projects, the ground reality is absolutely different.

It is, instead of pride, a matter of shame to recall that the hydropower development in Nepal initiated in 1911 with the development of 500 KW Pharping Power Plant. In looked in this pretext, the present is gloomy. However, thanks to the relentless efforts of Nepal's private sector and integrated groups that have been working relentlessly to alter the flowing water into the priceless energy.

Introduction:

Energy Development Council (EDC) is Nepal's only national level body that holistically represents the interest of the entire energy sector. As an umbrella organization, the Council represents energy developers, Energy Associations, consumers, financiers and other funds, consumer institutions, contractors from both the private and government sectors involved in hydropower, solar, wind and other renewables, generating more than 80 percent of the nation's total electricity.

In an effort to attract foreign investors and developers to investment in and develop Nepal's energy sector and to kick start the momentum for development of 40,000 MW hydroelectricity within the next one decade and for establishment of assemble plant of electric vehicles in Nepal, the EDC organized second edition of annual Nepal Power Investment Summit in Kathmandu.

Keeping in view the financial requirement of US $ 80 billion in investment to develop 40,000 MW, the event also aimed at facilitating Nepali project developers secure financing opportunities for their current and future projects.

Participated by representatives from multinational investment companies, world's famous speakers, government and non-government officials, investors, developers, contractors, consultants, think tanks, researchers, intellectuals, students and enthusiasts, the event was conducted as an energy mart and sponsored by Human Construction Engineering Group of China, Andritz of Austria and Dragon Capital of Vietnam.

The Event Report

Day: I

Venue: Soaltee Crowne Plaza, Soaltee Mode, Kathmandu

Time: 10 AM-5:30 PM

Inauguration session

Proceedings:

The inauguration of two-day-long summit opened at 10:00 AM with the Masters of Ceremony (MC) welcoming all the dignitaries, guests, delegates and participants. She acknowledged the presence of Ambassador of India to Nepal, Manjeev Singh Puri; Ambassador of Bangladesh to Nepal, MashfeeBinte Shams and Ambassador of Germany to Nepal, Matthias Meyer. She also welcomed representatives from SAARC Secretariat, Federation of Nepalese Chambers of Commerce and Industry (FNCCI), Non-resident Nepali Association (NRNA), diplomatic missions and consortiums as well as government officials, experts, business leaders, investors, developers, contractors, consultants and vendors.

The Chief Guest of the event, President of Nepal, Bidhya Devi Bhandari entered the hall at 10:15 AM. All participants rose from their respective seats to welcome her, which was followed by the

singing of national anthem. President Bhandari formally inaugurated the summit by lightening the *panas*.

Following the inauguration, Sujit Acharya, Chairman of EDC delivered his welcome remarks. In his remarks, he, also the Chair of the inaugural session welcomed all the dignitaries, delegates, guests and participants for making to the event and also thanked all the stakeholders for their contribution to help make the summit happen.

Briefly introducing about EDC, Chairman Acharya presented a hopeful future scenario wherein Nepal will be the top destination in South Asia not only to invest in power infrastructure but also to export power to the neighboring nations like India and China. Stating that Nepal is the only country in the world that offers the investors duty and tax-free access to the world's largest consumer market, he requested the foreign participants to ASSEMBLE IN NEPAL. He also further urged the investors to start an assembly plant in Nepal's special economic zone (SEZ) so as to drive their products into entire South Asian markets that are only one to 17 kilometers away while China being only 126 to 150 kilometers far.

According to him, to power Nepal's assembly plants and manufacturing units, to end usage of imported petroleum vehicles running on imported petroleum products in expensive rate and to switch our kitchen cooking gas from LPG that claims 45 percent of country's budget away, Nepal needs to use electricity generated through rivers, sun, wind and renewable resources.

Moving further to talk on over-arching aim of the summit as well as to propose solution for the ever-lasting energy crunch in the country, he stressed that the summit was organized to kick start the process and efforts to develop 40,000 MW of hydroelectricity in the next 10 years. Comparing with the aim of the northern neighbor, India, which has declared to develop 100,000 MW of solar power in the next four years, Acharya said that 40,000 MW in the next one decade was not a non-realistic goal. He also claimed that EDC was resourced with all the database of 40,000 MW of projects, which according to him, was prepared by the EDC only. Regarding the financing requirement of US $ 80 billion for financing the 40,000 MW power projects, the Chair of the inaugural session proposed EPC financing model to be the best solution and moved on to reveal that one of the main sponsors of the Summit was all set to offer US $ 20 billion of EPC financing for quality projects. He however cautioned that a new stable government and subsequent formation of Energy Clearance Committee at the Prime Minister's Office were prerequisites for delivering 40,000 MW energy within a decade. He also demanded that the Committee to ensure all clearances within a year of application so that the developers could use rest nine years to find financing and complete construction of projects to meet the target. Acharya also claimed that Nepalese would have per capita income of US $ 5,000 once the country could develop 40,000 energy and the successful development of this amount of energy was yardstick for a prosperous economy of the country.

Finally, introducing Nepal as the 'Powerhouse of South Asia' and asking the participants to make most out of Powerhouse, Acharya concluded his welcome remarks.

The Chief Guest of the session, President Bhandari presented a book titled 'How to Develop a Hydropower Project in Nepal' for investors who seek to understand the sector in Nepal.

The book unveiling was followed by keynote speech from Indian Ambassador, Manjeev Singh Puri who congratulating the organizer for organizing the Summit expressing his belief that the event would give stimulus for the energy development in Nepal. Stating that the development of energy would led to the economic development and prosperity of any nation said that the electricity development in Nepal would not only be win-win situation to both Nepal and India but also would help Nepal to balance bourgeoning trade deficit with his country.

He also moved further to say that as Nepal and India were tied by people-to-people association, the power can, in the similar manner could bind developing as well as developed countries including India. Informing that his government in India had launched '*SabkaSaath, SabakBikash*,' campaign, he suggested Nepal to not only focus on energy development but only on energy accessibility, sustainability, production, transmission and availability. Citing India's long standing and growing cooperation with the entire region, Ambassador Puri pronounced that Nepal stood on top of cooperation list of India.

According to him, India was always ready to cooperate with Nepal when it came to power sharing. Shedding light more on same, he expressed that as it takes time for Nepal to harness its energy potential and that the country is reeling under the energy crisis, India would always come forward to provide electricity to Nepal. Referring to the agreement between Nepal and India for the import of additional 100 MW energy during the visit of Prime Minister Sher Bahadur Deuba, he stressed that India would increase the supply with the enhancement and development of more cross-border transmission lines. Adding that democracy was all about sustainability, he stressed that growth come from electricity. Expressing that Nepal would be a major export of energy in the region, he uttered that the electric power needed to flow from South to North (Nepal to India). He also informed that his country has already singed power-trading agreement (PTA) with Nepal to provide ground for the latter to generate maximum amount of energy and to ensure regional market for the same. He also stressed that as a neighboring country, India was ready to buy Nepal's surplus energy while if Nepal was to fulfill its current huge energy demand, the country needed to work faster, else the train will be missed.

He also expressed his worries that the water resources from Nepal was flowing down since times immemorial, the country had not still been able to harness it. Hence, he advised that it was a high time to look carefully into the matter and take immediate action to take advantage of the flowing water as the world was watching how well Nepal could manage its hydropower prospects.

Keynote speaker Puri also mentioned about the foreign direct investment (FDI) flowing in to Nepal from India in the hydropower sector and informed that Sutlej Jalvidyut Nigam was all set to carry out construction works for 900 MW Arun III Hydropower Project. According to him, entire construction team, machines and equipment as well as contractor were in place and that

the construction works have begun. According to him, the success of Indian hydropower projects was being keenly looked by the wodrld and that their success meant a huge inflow of FDI in Nepal's power sector from the entire globe as hydropower has attracted global attention.

He also said that everyone wanted to see progress in another 900 MW Karnali Hydropower Project and asked the Nepali stakeholders to work together to take forward Koshi and Pancheshwor Projects. He also expressed his grievance over the dillydally when it came to project execution maintaining that it was always easy to questions and doubt but difficult to find solutions and answers. He also voiced that Nepal and India should collaborate heavily in the energy sector, as the potential for mutually beneficial energy action was what India was looking for.

Shedding some light on the economy and energy situation of India, he claimed that the country's economy was one of the fastest growing in the world and expected it to grow by fivefold by 2040.

Also sharing the Indian government's vision to replace the fuel vehicle by electric one, he said the government was working to generate 40 percent energy from non-fossil fuel by 2030. He also uttered that Nepal held high prospects for renewable energy, for with energy comes the issue of sustainability and that one has to take care of climate and environment while generating energy. This was the reason why, according to him, the world was going in several other new and renewable forms of energy including, solar, tidal, wind and biomass.

Towards the closing of the inaugural ceremony, the Special Guest of the session, President Bidhya Devi Bhandari extended closing remarks stating that energy was the pressing issue all over the world. Saying that the development of energy was synonymous to the development of the country, she pointed out that the organization of the Summit was very timely and relevant.

According to her, the country underwent all sorts of political changes and was heading towards stability and hence, the sole agenda of the government was economic prosperity for which infrastructure was most critical. She also maintained that due to the impact of climate change, the government should minimize the use of petroleum products by focusing on renewable energy. It is hence, she asked the stakeholders to concentrate on the development of energy by harnessing all forms of renewable energies like water, wind, solid waste and solar. Claiming that green and eco-friendly energy was foundation to energy and environmental sustainability, she also requested to preserve the multi-beneficial clean energy sources. She also expressed lamentation over the limited electrification even though the country's geography was very appropriate for wind energy and water resources were only getting waste without proper utilization. Further, she said that even though studies suggested that Nepal had 83,000 MW of hydro potential, it was matter of shame to have only about 1,000 MW connected in the national grid. Hinting at the poor harnessing of natural resources, she referred to the overwhelming investment potential in energy sector for both the local and international investors. Expressing her commitment to ensure investment-friendly environment, she pleaded the local and foreign

investors to come up with their investment projects. She also asked the investors to bring in new knowledge, technology as well as skills in the energy sector. According to her, the energy demand was increasing in the world, yet the supply side was poor. Hence, the energy generated in Nepal could have significant impact in the development of the country and the energy South Asia, she added. She also further said that Nepal's energy was very significant to not only fulfill the domestic demand but also to curb the energy crisis of the whole region. She also expressed her expectation that the Summit would come up with a list of recommendation that would be vital for energy development of Nepal and the government was serious to implement the suggestions.

Touching upon the trade side, she said that harnessing of the renewable energy was also very valuable at a time when the country was facing trade deficit due to heavy import of petroleum products. She also offered that it was horrible to perish under the darkness even though the country was blessed with immense resources. Her sensitivity towards the issue was visible when she uttered that the government was committed to bring reformations in policy and create ambience conducive for the investment. She concluded her remarks by once again soliciting the investors to bring in their investment projects in Nepal's energy sector.

After the concluding remarks, a group photo session was done. With the photo session, the inauguration session came to the end.

Session I: Power Investment Opportunities in Nepal

Indian Ambassador, Manjeev Singh Puri, chaired the first session. He drew background remarks saying that there was a rise of worldwide wave regarding green energy and subsequently production of electric powered vehicles. Stating that despite having good geography, Nepal could not do much due to the apathy of the government. Informing that there was a problem in cross-border transmission line, he also revealed that the government of Indian and Nepal was making huge efforts jointly. He also added that at the time when the price of electricity was higher in Nepal, it could be adjusted only once the timely completion of cross-border transmission lines that were under-construction was ensured. Appreciating the efforts being made by Nepal government in the development of small, solar and other energy projects, he however commented that those were insufficient as there was the need for game changing situation with the development of mega projects and called for dam construction, which could lead to overwhelming change in socio-economic landscape. He also shared that his government was undertaking a number of dam projects in many parts of India for changing lives of people. Saying that even though his country had largest deposit of petroleum products, it was suffering, he moved to claim big dam projects were only remedy. In addition, he underlined on the need of FDI for Nepal and cautioned that the time was running out and any delay would be much costly.

After his background remarks, the first panel discussion began. Moderator of the discussion, Dr Posh Raj Pandey, Executive Chairman of SAWTEE and Panelists Mashfee Binte Shams, Ambassador of Bangladesh to Nepal; Prof. Suthiphand Chirathivat, Executive Director of ASEAN Studies Center and Chairman, Chula Global Network and Baikuntha Aryal, Acting Secretary of National Natural Resources and Fiscal Commission, Government of Nepal were called upon the dias.

Moderator, Posh Raj Pandey began with introductory remarks by stating rule of the session and directed the Panelists to conclude their presentation within the set time.

Pandey began by saying that Nepal had one of the largest hydropower potential in the world, as the country bragged potential of about 83,000 MW of which 42,000 MW was commercially viable. He also said that if the projects were built by utilizing the optimum capacity, the economically viable potential could be much higher. He also, stating that despite having that much of potential plus other huge potential of solar and wind energy, Nepal was limited with only 1,000 MW energy connected to its national grid, that too in the history of a century of hydropower development of Nepal.

He also brought scenario of increasing energy demand and said that by 2030 Nepal's total energy demand would reach 6,000 MW as in the regional level the demand was growing by more than 7 percent annually. He also further informed that the power deficiency hovered at around 31.7 percent and 12 percent in Bangladesh and India respectively. Despite having made initiatives to secure energy market of Nepal in the region by signing PTA with India back in 2014 and by undertaking a number of transmission and grid projects, much had not changed. He also

said that Master Plans for the development of cross boarder transmission lines with India was at hands however, same has not been implemented as Indian government had pointed out a number of issues in the guidelines and called for table talks for resolving the issues.

After giving the introductory remarks, Dr Pandey turned towards Baikuntha Aryal and raised a question, “How do you access the potential of Investment in Nepal’s power sector?” to being the session. He asking Aryal to clarify on why, despite having signed a number of PPA with many developers, the projects were not taking off also requested him to present his take on the issues raised by Indian government in Master Plans for the development of cross boarder transmission lines.

The Panelist Mr. Baikuntha Aryal takes the floor with his reply.

He initially talked about his office and informed about few initiatives taken by his office. According to him, his office was trying to introduce a specific and robust type of mechanism for all national networks relating to energy. He also said works were being done towards the investment side to make sure how does a foreign investors brings in the FDI in more efficient manner, how the returns could be secured for them and how comfortably could they take back their profits. He also said preliminary research and data collection were being done in this effect.

Regarding the prospects of investment in Nepal, Aryal said that the country had a huge potential when it came to investment in hydropower sector. The potential was even higher given the crisis of energy during the dry season. He also thanked Indian government for collaborating with the Nepali one in helping curb the energy scarcity during the dry period and hence called for storage type of project. He however acknowledging the huge investment potential ruled out the private sector investment in storage type projects, as they were capital intensive and that the public, but not the private sector had to come forward to build such projects. He also referred to Budhigandaki storage project, which was in offing under the resource mobilization from the government sector. He also made it clear that private sector investment could be best used and mobilized in run of the river type of projects as they were relatively cheap. He also talking about the concept of energy mix and the urgency to work on that side maintained solar was the main source of energy to switch towards energy mix. It was when he also added that investment from the private sector could be much competitive in solar power sector, as it was what was happening. It is hence, he made it clear that the private sector should focus on run of the river and solar projects while the investment for bigger storage projects should come in from the government sector only.

He however also painted a gloomy picture brining the issue of transmission line, which according to him was the biggest constraint to attract investment in the energy sector. He also stressed that even through many projects were all set to complete their construction, they were being slowed down due to the lack of grid line. Stating that immediate actions needed to be taken for the improvement and expansion of power lines, he informed that the government had taken few initiatives in this direction, for instance, upgrading of Hetaunda-Tankeshwor Grid Line and the

agreement for the construction of Lapsefedi-Butwal Transmission Line. He also presented his belief that those projects would help to supply energy in the mid hills of the country. To sum up, he once stressed that everything could and should not be expected from the private sector and the government should invest in large-scale storage type projects.

Dealing with the second question regarding why despite having signed a number of PPAs, the development was not taking place, he held investment procedure and paper works as well as bureaucratic hassles as culprit. He also maintained that some projects were not moving ahead due to the disturbances and problems posed by the locals of the project site. He however informed that there was a law related to project management, which would be very helpful in dealing with all those uncertainties, problems and confusions. He also pointed on the need of cooling period and concession especially for the foreign private sector investment and demanded for economic prosperity as the sole agenda from political parties. He, albeit, concluded that there were some signs of hope and one could be optimistic about the future of the sector.

Lastly, regarding the reservation of Indian government on power trade guideline, he accepted that the northern neighbor had been a bit rigid. Stating that the deal was between the two countries yet was likely to discourage private sector investment to invest in large projects and export energy to India. He requested the Indian government to be a bit flexible. He narrated his discussion with the government and public servants during his visit to Bangladesh a year ago, when the Bangladeshi government had shown interest to import as much as 500 MW energy from Nepal. He also underlined on the need of signing tripartite agreement among Nepal, India and Bangladesh to make the export happen to Bangladesh and to make the power transaction possible among those three countries.

Thanking Aryal, the session Moderator Pandey reached out for Indian Envoy, Puri stating that as India sits on center position to connect most of the South Asian counties, it was expected to perform as leader, he asked Puri as to how India could ensure cooperation in regional power development and trade. He also probed about the kinds of cooperation that India would look forward from South Asian countries.

Responding to the questions, Ambassador Puri voiced happiness for having India sited in the central position by sharing its border with most of the South Asian countries and placed in a manner to offer regional connectivity due to its geography. Talking about the country-to-country agreement for cooperation in power sector, he mentioned about agreement between Nepal and India, India and Bhutan and India and Bangladesh. He also claimed that the institutional arrangements were working to accelerate the regional cooperation, however called for larger network to work in power investment, for it is economic and affordable.

Giving a very tricky answer, he further moved that conversation over the differences were very important. However, he quipped that we had a tendency to ask many questions and referred that it's been so long we had been talking about Pancheshwor Project without concrete works

being done and hence, the water was only flowing without it having properly utilized. He also asked all the stakeholders to ask themselves if had really been serious to implement the project. He also hinted at the blame game that the concerned were involved in and warned that it was easy to question than to really do work. He also remarked that private sector alone knew the practicality of getting things done while in government level there were only discussions and blame games going on. Also referring to the hydropower potential of Nepal, he also said it had been decades since there were discussions regarding the hydropower potential of Nepal worth 40,000 MW but nothing had changed. According to him, Indian government had already begun its domestic actions and was moving forward to generate power aggressively and stressed that one had to take initiatives to change the scenario. He also clarified that India was happy and always ready to work with its neighbors and there were multiple possibilities in doing so. He also stressed on the need to sitting down and talk over the differences amicably as, according to him, time and technology would wait for no one. He also said that it was a high time make the hydropower potential of Nepal a reality.

After India Envoy, Moderator Pandey asked Bangladeshi Ambassador to Nepal, Mashfee Binte Shams about the energy situation and expectation of Bangladesh from the region. Responding to which, the Ambassador took her turn and began with updating about her country's economy, which according to her was growing by six percent every year and recorded the growth of 7.5 percent last year. According to her, as economic transformation was taking place in her country, there was huge demand of energy and it was therefore, her government was committed to ensure to fulfill the energy demand by 2021. She also shared that it was also due to the same commitment; the government was investing hugely on natural gas as well as undertaking a thermal plant and two nuclear power plants with joint capacity of 4,500 MW under the support from India and Russia. She also added that her country was sourcing power currently from the South Asian region and that imports from India alone would stood at 650 MW and expressed that the import from India will rise very soon as a lot of projects were coming to function in India. She also shared that her country was investing billions of dollars to develop hydropower project in Bhutan jointly with India and that discussions was underway with India and Bhutan to work on tripartite project. She also further said that, in the similar manner, her government was ready to invest in 500 MW project in Nepal with an objective to source energy from Nepal in the soon future. She also referred to good relationship between her country and India as well as Nepal and India in all terms including, political, bureaucratic and people-to-people level and expressed hope that the harmony should be cashed by working on joint hydropower projects and energy sharing. She also requested to the Indian government to play a mediatory role in connect the power exchange between Nepal and her country as these countries can rely on Indian transmission system for energy trade. She also finally ended her remarks by stressing on the keenness of her government to work in cooperation with Nepal.

After the remarks from Bangladeshi Envoy, Shams, Moderator Pandey turned towards Prof. Suthiphand Chirathivat to ask what South Asian countries could learn from the experience of ASEAN.

In the beginning Prof. Chirathivat clarified that he was not an energy expert and it was hence, he would speak more on regional cooperation and lessons that South Asian countries could learn from ASEAN. He however said before thinking into ASEAN, country like Nepal that has not been able to harness its huge hydropower potential could learn much from Bangladesh and India, the countries that were doing wonder in power generation. He suggested that it was very important for Nepal to think on how it could implement its projects on timely manner and added that hydropower development was a tiresome job if not worked smartly, but could be game changer in the economic transformation of Nepal. Moving towards the middle-income countries, he maintained that power was liberating as Thailand, Malaysia, Vietnam and Laos, among others were doing wonder in the sector of energy. Mentioning that South Asia had average economic growth of around five percent per year while Bangladesh and India had strong growth. Regarding electricity development, he suggested that South Asia had its country specific models as India had different model to Bangladesh and that Bangladesh had different model to Bhutan. He however, noted that there was a problem when it came to electricity in South Asian region.

He moved to talk about ASEAN saying that it was a large network with some big counties as well as some inefficient. According to him, ASEAN aimed at having 20 percent of the total energy from renewable sources by 2025 and hence, it needed generation of fuel by using natural gas and other renewables. Stating that the regional framework started in 1997, he updated that the network recently had developed Second Master Plan laying focus on two things: pipeline for gas and grid connectivity, which was an advanced area. He also recognized the interconnection and cross-border transmission as being very significant. He suggested that securing the local demand should be a matter of concern for country-specific national planners. At the same time, he also maintained that electrification, accessibility and power tariff was an issue of concern for South Asia. He also maintained that modern and advance technology should have to be used to lower the price of energy. Stating that big and hydroelectric projects might not be possible every time, he requested to go for developing any kinds of projects of whatever size and praised countries like Laos, Myanmar and Cambodia for achieving success by doing the same.

Suggesting for the power transaction and growth of South Asian region, he suggested to switching into multilateral cooperation, apart from limiting to bilateral one only. It was where he urged that 2-5 counties could work together for harnessing energy by building big projects and energy trading.

He also moving further into suggestions, asked to minimize the energy price, saying that the price should have to be very transparent, and be mentioned in the cross-border power trading agreement, as electricity price should be fixed so that it would create win-win situation for both buyers and sellers. In context to Nepal, he ended up his remarks expressing belief that the country could be a trading hub.

Moderator Pandey announced the floor open for discussions.

Questions and Answers:

Question to Indian Envoy by Amrit Nakarmi, Prof. at Nepal Engineering College

As you said, pricing is very important for power trading. India is developing renewable energy in very big way, like 1,000 MW solar power project. You also have brought down the price of power in competitive manner. How do you think is it possible for Nepal to export hydropower in competitive price to India?

Answer by Indian Envoy:

I was a school student when energy survey was first conducted in Nepal. However, nothing much has changed since then. When it comes to India, we do not care how well we are with potential but we are only work to develop energy. For reasons, the technology of solar has come which might be changed very soon. We the first thing is we have to make best utilization of the new technology. Still, hydro stands in mainstream source of energy. After certain gestation period, it becomes free. Hence, we have to think in a long-term basis, which helps us to introduce competitive energy price.

Question by Taranath Sapkota, MD, High Himalaya Construction P. Ltd

We are just talking about developing hydropower. We have been hearing Nepal has 40,000 MW but have so far built only 1,000 MW. We do not have experts and technology. We are dreaming of selling energy to neighbors where rice is decreasing. However, we are not talking about transmission line, which is also very critical factor in this regard. At the same time, there is not grid at all to sell energy to Bangladesh. How can we sell energy to this county? How can we develop solar energy? How can we develop our technical teams?

Answer given by Baikuntha Aryal:

You are right that we are talking about potential but not working. It is true. We also are making projections. The thing is we are not planning properly. We are concerned only about financing but not human resources and technology. So these days, whenever we talk about hydropower, we have begun to think holistically incorporating the issues of HR, technology, skills and expertise.

Regarding the price, it can and should be adjusted. No matter what, the price has to be competitive. It is hence, we are working on it.

When it comes to selling our energy to Bangladesh, we have only one option, which is, getting support from India to use its transmission line. So, Nepal, Bangladesh and India should sit down together and discuss on how Indian grid could be utilized for selling energy from Nepal to Bangladesh.

Following the Q&A, session Moderator Dr Pandey makes concluding remarks by summing up the discussion. He said that as technology keeps on evolving, one has to make best use of technology.

With this the first session concluded and Secretary of EDC, Sushil Pokharel presented the guidebook, "How to Develop a Hydro Power Project in Nepal," to the session Chair, Moderator and Panelists as a token of love.

Following the Session I presentation session began. S. K. Sharma, CEO of Satluj Jal Vidyut Nigam Limited was called for the first presentation and he presented on, A Showcase on Arun 3 Hydropower Project.

He began his presentation by introducing on hydropower potential and energy situation of Nepal. He then gave a project background of Arun 3 Hydropower Project stating that the government of Nepal and his company signed the agreement on 3 March, 2008 to finally develop the project. He then gave technical details of his project saying that the project's dam height was 70 meter and type of the dam was concrete gravity dam. He also briefly talked about the salient feature of the transmission line of his project. According to him, the total length of transmission line was 217 km and was double circuit in nature. He also added that the line had 354 angle points and had 501 towers.

Introducing slightly on SJVN, he mentioned about benefits to Nepal government from the project. According to him, the government would receive 21.9 percent of the total energy produced free of cost. He also said that the government would receive Rs 400/KW energy for first 15 years of generation and Rs 1800/KW for next 10 years. Moreover, the government would also get 7.5 percent energy for the first 15 years of operation and 12 percent for next 10 years as energy royalty. At the same time, the government would also get 4.02 crore in non-refundable fee which has already been paid. Sharma also said that equity share to the project affected people worth Rs 100 crore would be given and that his company had already paid Rs 2.50 crore as survey license fee.

Moving further, he talked about direct benefits to Nepal government in monetary terms from the project stating that the government would get NRs. 15,469 crores in free power, Rs 10,685 in energy royalty, NRs. 7,710 crores in lifetime income taxes and NRs. 33,866 crores in lifetime financial benefits.

He also claimed that development of the project region, industrial development, rural electrification and local shares, development of infrastructure and financial support and capacity strengthening of the local people as other indirect benefits from the project.

Talking about the present status of the project, he informed that the DPR of the project was cleared while necessary manpower and equipment had been mobilized in the project site. He also said that the EIA and SEIA had been approved.

In his presentation, he also shared that the DPR of the project was approved on 20 January, 2015 and regarding the financial closure, he stated that debt portion funding amount Indian Rs 728 crore had been arranged and finally mentioned that the process of signing of agreement and completing other formalities were on progress.

In this way, he gave an extensive information about Arun 3 project and its present status.

Deepak Rauniar, CEO of Employees Provident Fund (EPF) followed Sharma to present on Hydropower Investment Experience of Nepal. He began by giving a brief introduction of EPF and moved to informing about the projects having loan investment of the Fund. According to him, the Fund had committed a total of Rs 1.04 billion debt investment for three hydropower development companies – National Hydropower, Chilime Jalavidhyut and Alliance Power and the hydropower projects that these companies developed jointly contribute a total of 29 MW energy and their construction have already been completed.

He also named other five companies – Sanjen Jalavidhyut, Rasuwagadhi Hydropower, Madhyabhotekoshi Jalavidhyut and Super Dord—for which the Fund has committed a total of debt investment worth Rs 27.10 billion. The projects undertaken by these companies are all in under construction phase and once completed, they will contribute a total of 776.3 MW in the national grid.

During his presentation, he also mentioned that the country was lacking bigger projects and is financing, bilateral and multilateral finance, sovereign guarantees, country rating, USD PPAs and third country export of power. He also discussed about the progresses being taking place and he pointed out some of them as happening of mid-sized projects below 100 MW, innovation from the part of independent power producers, enhanced governance and social responsibility in the power sector, enhanced recognition and adoption of better practices and development of projects on consortium model.

The EPF Chief then moved to discuss about National Energy Crisis Mitigation and Electricity Development Decade Concept Paper and Plan, which was introduced back in 2016 AD. According to him, the plan has proposed open and unconstrained as well as short, medium and long-term target to resolve energy crisis. He also informed that the plan has brought about a concept of electricity development decade, which will focus both on energy generation and transmission expansion.

Giving a brief update about the country's power sector scenario from 2016 to 2018, he informed that the electricity demand in 2016 was 1,300 MW while the capacity was limited to 829 MW (hydro-776 MW and thermal 53 MW. However, total installed capacity during the dry season was only 300 MW while import from India stood at 230 MW.

Giving a review of the energy situation of 2017, he said that the demand reached to 1,423 MW while total capacity was only 1,029 MW contributed by hydro (976 MW) and thermal (53 MW). He also informed that the capacity during the dry season was 387 MW and the import from India increased to 580 MW. At the same time, Rauniar also forecasted the energy situation for the year 2018, when, according to him, the demand would reach to 1,837 MW with total capacity of 2,209 MW (NEA: 830 MW, IPPs 600 Mw and solar 200 MW.

Dwelling upon the plan to change the scenario, he said that a holding company for electricity generation, Electricity Generation Company Limited; a separate company for transmission lines, Rastriya Prasaran Grid Company Limited and a separate company for hydroelectricity engineering, NEA Engineering Company Limited were in motion.

He finally concluded his presentation by stating that the story of hydroelectricity generation in Nepal remained mostly of missed opportunities, yet of hope and great aspirations.

There was a lunch break after Rauniar's presentation.

The presentation session continued after the lunch break and Dr. Chandika P Bhatta, Executive Director of Special Economic Zone Authority came upon the dais with his presentation on Assemble Electricals in Special Economic Zone (SEZ) of Nepal. He began by talking about power business in SEZ stating that SEZ would be a best client for power producer and SEZ would be the best place for electric assembly industry. Talking about the power deficiency, he also claimed that there was a high scope of investment in solar panel assembly for faster energy crisis management that the assembly would be best housed within SEZ. Referring to the soaring foreign trade every year, he also maintained that assemble of electric products would support to reduce trade deficit and hence, the Nepal government had placed higher priority for the establishment of export oriented industries in the SEZ.

According to him electric vehicles, electric two/three wheelers, solar panels and different electromechanical components could be produced in the assemble plant and stressed that the plant was much crucial for replacing fossil fuel driven automobiles, controlling vehicular pollution and harvesting solar energy for immediate crisis management. Talking about the market of electric vehicle, solar panel and electromechanical components in global and South Asian region, he stressed that Nepal would be the best location for assembly industries as world's two giant markets were neighboring to Nepal. According to him, assemble plants were best to be established in SEZ as it offers world-class infrastructure, one stop services and special financial benefits hassle-free environment. He also claimed that SEZ was strike-prohibited zone and had special security arrangements.

He also argued that Nepal was one of the best investment destination for manufacturing sector as world's largest market was around Nepal. He also recognized prepared infrastructure for industrial set-up, investment friendly environment, formulation of new rules and regulations, ease of doing business (easy entry, transparent and faster working procedure and easy exit), additional financial benefits in SEZ, one stop services in SEZ and consensus among the political parties for economic prosperity for being instrumental in attracting FDI in the sector.

To conclude his presentation, he summarized that Nepal has high scope of investment on energy sector due to the big gap between demand and supply, as the gap will still aggravate when rapid industrialization begins in near future. He finally summed up saying that solar panel assembly promotes clean energy while it is useful for rapid power crisis management.

With the presentation from Dr. Bhatta, the presentation session ended and session II started.

Session II: Regional Market Updates

Ambassador of Bangladesh to Nepal, Mashfee Binte Shams chaired the first session. She drew background remarks stating that the power sector had turned to be a global concern, than a domestic one and underlined on the need for power trade among the countries calling for regional power grids to increase power supply.

Drawing a picture of destitution, she mentioned that electricity trade within South Asian region was insignificant and insufficient and that the power supply between Nepal and India, India and Bhutan and India and Bangladesh was a matter of huge concern.

Maintaining that energy was very vital in the modern world as lack of the same could cripple lives; she suggested that electricity campaign could play a major role in resolving energy crisis, reducing carbonization and elevating lives. Characterizing South Asia as a group of countries with large and unevenly distributed power potentials, she brought into the notice that the region had growing power demands, as countries were aspiring to grow economically. The lack of supply adequate power, according to her would not create problems in household level but would also impart the entire economy. She also pointed out that the electricity generation, grid problems had not only made the energy costly but had also boosted carbon emission as well as use of coal,

and diesel based generators. According to her, addressing the challenge would require efficiency of electricity technology. Talking about her own country's situation, she briefed that Bangladesh had an installed capacity of 16,000 MW energy, which however was not enough to meet the growing economy that had grew by 7.5 percent and hence, the situation had been a real headache for the planners of her country. This was where she linked that there was a huge room for regional cooperation, which would alone enable clear energy to be tapped in the region.

She also expressed her mindfulness regarding hosts of complexities for promoting regional trade due to regulatory and legal as well as technology, and geography related challenges and hinted at the need for sitting together to work out on the issues. She also, stating that the need for cooperation was more than one would expect urged for harmonization of grid codes covering power system, security system as well as monitoring codes. The existing as well as aspiring electricity trade between Nepal, India, Bangladesh and Bhutan should be promoted to the level of regional trade, she opined adding the countries needed more boarder interconnections and trilateral as well as multilateral power trade agreement.

Ambassador Shams also informed that her country had been participating in all sub-regional and regional initiatives for the promotion of regional cooperation in energy and was ready to share cross-border infrastructure as well as to promote competitiveness across the regional markets. She however pointed at the urgent need for consolidated cross border policies for power section regional cooperation and maintained that effective regional cooperation could only be achieved and sustained, if the counties in the region believe on the prospect of benefits of the cooperation.

After having her introductory remarks concluded, Sohinder Gill, CEO of Hero Electric was called to deliver his power point presentation on Indian Electric Vehicles Scenario and Relevance to Nepal.

He began his presentation by briefly introducing his company and informed that, established in 1957, Hero Group had an annual turnover of US $ 7 billion and also talked about Society of Manufacturers of Electric Vehicles, India.

Also talking about the transportation sector of India, he said that 47 percent of the total population (57 crores) travel on foot, bicycle and bus while the other 16 percent population (19 crores) travel on two-wheelers, three wheelers and buses.

Towards the electric vehicle (EV) segment, Gill informed that 99 percent of EVs in India were e-scooters and e-rickshaws. According to him, his government believed that targeting specific electric vehicle market segments based on economics could drive national adoption quickly and hence, had introduced an unique concept to India, battery swapping.

Shedding light on Nepal's EV space, the country had not been able to fully adopt the EVs due to the customers' dilemma over if they should own one or not, as they look for higher level of efficiency, power and quality in the cheap price. Also making a comparative analysis between the

petroleum vehicle and EVs, he said that lithium batteries were the costliest part of EVs (higher the speed/range more the batteries) that was priced today at US $ 250/kWhr. He also moved further to inform that an 80 kmph 70 km range scooter would cost double of petrol scooter and running cost would be similar to petrol scooter. He however suggested that if the government offered around 20 percent subsidy, the scooter would cost similar to petrol and continued that with that equation, there would be a mass shift to "value for money" electric scooters as the customer would save more than Rs.150,000 in the "total cost of ownership".

In his presentation, he made a number of suggestion to Nepal government including, the formulation of good quality and certification standards to weed out bad quality, provision of incentives for assembly of such a certified "Value for money" e-scooter, introduction of 25 percent subsidy for e-scooters in year 1 and taper to 10 percent in next 3 years and provisioning of charging points in offices, shopping centers and public parking. He also encouraged local industry players to scout India/China for the right partner, experiment with limited quantity of mini electric buses and fleet taxis and spread awareness through media and government adoption in a big way. He summed up his presentation claiming that implemented those suggestions; Nepal could become a leading EV country with 'value for money' EVs.

After Gill, Tan Ding, MD of Overseas Branch, Hunan Construction Engineering Group, China came forward to make his presentation on One Belt and One Road Towards Win-Win Cooperation.

He began his presentation by introducing his company and said that business coverage of Housing Building, Roads, Bridges, Power Grids, Water Supply and Drainage, Water Conservancy, Environmental Protection, Equipment Installation and other fields were eight business areas of his company. Even though his presentation was supposed to talk on One Belt and One Road Towards Win-Win Cooperation, he focused much on his own company and said his company's business cooperation modes included six major categories of Foreign Aid Projects, International Bidding Projects, EPC + F Projects, BOT Projects, BT Projects and PPP Projects.

Following his presentation, Managing Director of Nepal Electricity Authority (NEA) was called upon the dais to deliver his presentation. He began his remarks by stating that today many aspects drove the electric market and new sources of demand had emerged within the region. He also added that the trend of electrical vehicle was emerging in the world and the demand for the same was soaring and claimed that it would increase the demand for energy.

He also moved to talk about the per capita consumption of the energy and informed that Nepal remained at the bottom with only 165 unit per person per capita consumption of energy a year while India had 1,000 unit consumption and China had 4,000 NW consumption.

Further stating that if South Asian counties plan to consume electricity at the level of china only, then the region would require more than 1500 GW of electricity, which currently is limited with 350 GW of electricity and hinted at huge demand of electricity in the region. He also said that in that worrisome scenario, if we plan to replace petroleum vehicles with the electric ones, the

situation would turn worst and he elaborated if we replace were to replace only 10 percent of our existing vehicles with electric ones, it will require more than 300 GW of electricity.

Also claiming that the new source of demand with innovation was rising, he added that the question was how to optimally utilize our resources to stay prepared to deal with the future situation. During his delivery, he proposed grid connectivity at local, sub-regional, regional and global level to be the best solution and mentioned that the same was being practiced universally. However, according to him, we were lagging behind in that aspect, yet the initiative for the connectivity had taken place in different forms. He expressed his confidence that it would help optimize the resources so as to meet the demand with minimum price to the consumers. In this point, he recognized the pivotal role of India and said without the Indian cooperation there would not be accessibility within the region and without the accessibility, the market integration was not possible. He also thanked sub-regional grouping clubbed by India, Nepal, Bhutan and Bangladesh and expressed that the clubbing would benefit the region to optimize the resources. Besides that he also acknowledge the initiatives to connect Nepal and China, as, according to him, by connecting Nepal's system with China, Nepal would have global connectivity while connection with South Asia will only ensure connectivity with Central region.

While talking about the sufficient electricity, he noted that we should also make sure reliable and lasting supply, which was a matter of concern at present. He referred to the stoppage of chronic load shedding in Nepal, and said even when there is a power cut for short period; he and his office received many queries asking if the load shedding had again started. It was therefore, he stressed that it was not only stoppage of load shedding, but also reliability of the system that people were expecting for and added Nepal needed to have robust system for which aggressive connectivity and investment in the sector. According to him, reliability and quality supply were the areas his office was currently working on after having successfully ended the power cuts.

Also talking about energy security, he said that Nepal was relying on imported energy from India and the country spent Rs 16 billion to import energy and another more than US $ 1 billion to import petroleum products and made it clear about the vulnerability of the situation when it came to energy security.

In this way, NEA Head Ghising talked about energy situation, regional grid connectivity, reliability, accessibility and security of energy.

After him, Rajat Misra, Principal, Private Sector Operations Specialists of Asian Infrastructure Investment Bank (AIIB) made a presentation on Introduction of Asian Infrastructure Investment Bank.

As suggested by the topic, his presentation focused on introducing AIIB initiatives by illuminating on the context of its establishment of the bank and shed light on mandate, features, importance and scope of the Bank. According to him, AIIB as the *Lean, Clean and Green* infrastructure investment bank for the 21st century, focused on three priority themes, which included sustainable infrastructure (sustainable energy, transport and cities), cross-country connectivity

and mobilization of private capital for infrastructure. He also talked about the long-term aim of the Bank, which was to be a "go-to" institution for providing infrastructure-financing solutions in and to client countries. Moreover, in his presentation slide, he mentioned about three key activities of the bank, which, according to him were;

- AIIB Partners – pursuing and executing transactions based on third party referrals, as well as a few readily investable non-sovereign projects
- AIIB Leads – involves originating, structuring and executing stand-alone deals.
- AIIB Creates Markets - Implementation entails opening up new markets and creating deal flow

Moving further to Forms of AIIB Financing Available, he said that the bank would offer sovereign-backed financing in the form of loan and non-sovereign-backed financing in the forms of loan, equity and others that include bonds, credit enhancement (e.g. guarantees), funds, etc. At the same time, he also talked about the key features of investment of AIIB, which according to him were;

- Financing can be single product or combination
- Investment in infrastructure or productive sectors
- A cap of total investment to crowd in co-financiers
- No controlling stakes, unless under exceptional circumstances
- Usually no tied projects (procurement must be open)
- Strong environment and social safeguards

In this way, Misra, through his presentation gave an extensive introduction to AIIB and finally summed up his delivery stating that AIIB was set up to complement existing institutions and address Asia's development needs by focusing on infrastructure project financing. He also made a conclusion that the bank had made significant progress in first two years since inception in January, 2016 as started with 57 member countries (regional and non-regional); the Bank expanded to 84 and had crossed US$ 4.2 billion in loan and equity investments by the end of 2017.

After the presentation from Misra, Alexander Bihlmayer, Managing Director of ANDRITZ, Myanmmar came to make a power point presentation on Low Head Hydropower Solutions. He divided his presentation into five topics, including, key considerations for choosing low head HPP solutions, boundary conditions and application range, project examples and plant references, key selection criteria and project development aspects and conclusions.

Moving forward to key considerations for choosing low head HPP solutions, he referred factors like maximum energy yield, operational flexibility, low construction cost, low environmental impact, for instance, fish friendliness and ecological safety and easy and low cost maintenance were some of the reasons why IPPs needed to go for low head HPP solutions. He also claimed that his company offered world-leading technology in low head hydropower bulb turbines and

informed that his company had over 80 years of experience with proving services to 749 power projects that produce 12,800 MW and enjoyed over 70% market share for large BULB units. Under project examples and plant references, he presented a short profile of Chi Khe / Vietnam - Plant Optimization, YEOJU / KOREA -Optimizing Construction Schedule and Ashta I and II / Albania Innovative Plant Design to display success of his company in delivery better services. In his presentation, he also mentioned that factors like new plant (Greenfield site) with good geological conditions, wide operating range, no restrictions to grid requirements and no space restrictions allowing river barrage with spillway and adjacent powerhouse, among others as key selection criteria and project development aspects of his company.

Lastly, he claimed that his company, ANDRITZ had extensive know-how based on 8 decades of experience and 750 installed units and that the company helps IPPs throughout the project development processes including, assessment of site conditions and development needs, choosing the best technology for a particular site conditions and assisting in technical layout, project cost and scheduling and financial engineering.

With it, the session II came to the end and the session III began.

Session III: Investment Opportunity Evaluation on Renewable Energy in Nepal

German Ambassador to Nepal, Roland Schafer chaired the session and began the discussion by giving a background remarks. He said that his country, Germany was supporting Nepal from the past and was also ready to extend the support in the future too as the country was looking for economic adventure. Stating that the political vision and commitment for the economic prosperity was visible in Nepal, he expressed his optimism about the partnership between Nepal and Germany.

He, a son of Electrical Engineer, shared his childhood story as to how he saw the hydropower development in his country and said the sound of turbine and flowing energy was very natural to him. Stating that electricity was all about the connectivity, he said the present was a high time for international connectivity, as power does not limit to a single country. It was the reason why his country had invested 31 million euros for the development of transmission line in Nepal.

Talking about the progress of energy developed in his country, he announced that Germany was about to dismantle a law that allowed feeding solar energy in the grid at a fixed price as solar energy industry had taken off in Germany. He however mentioned that his government had invested huge amount of money in development of solar energy in far-fetched villages of Nepal so as to electrify those areas as they lack connection with national grid and called for the support from international partners for electrification and connectivity development in Nepal.

He also claimed that even if the size of hydropower is small and fixes a certain price, the price has to be intact until the operation of the plant. He also said that so as to prevent harms to Nepal from climate change, his country had been investing in climate impact measurement

system in Nepal. He also demanded for good regulation, competitive and stable price and promised that if that were fulfilled, the German investors were ready to invest in Nepal. Stating that now was not the time for Nepal to stay shrunken with energy sufficiency but energy surplus, he maintained that the need for connectivity both within and cross-border was pressing to export Nepal's energy to the neighboring countries. Finally, expressing his optimism about Nepal's future regarding the power development, he concluded his opening remarks.

The presenters under the third session were called upon stage turn by turn to deliver their power point presentations.

The first speaker was Joseph J. Hoess, Director for Dragon Capital and he presented on Investment Checklist of Dragon Capital in Pre-emerging Market. The presenter began his presentation by giving a glimpse of demand and supply situation of energy in Nepal. He also projected future growth in power demand keeping in view the replacement of household and small business diesel generators, value-added and light industry fueled by trade between world's largest consumer markets and development and modernization of tourism industry. Towards the international front, he expected that Nepal would be able to export its generated energy to the giant economies like India and China.

Hoess observed few of the obstructions seen in the hydropower development of Nepal. According to him, the outdated/unreliable feasibility studies and data was the primary problem. The situation was, according to him, more aggravating in the light of complexity of building high-head hydropower facilities, lack of access and/or evacuation infrastructure and limited access to local bank debt. He also moved ahead to refer managing the myriad of political and bureaucratic relationships as the biggest constraint in developing hydropower in Nepal.

Commenting on the role of NEA as sole power monopoly, the presenter claimed that the historical role of NEA had been outdated while handing the works relating to generation, transmission and distribution would led to conflict of interest. He further stated that monopoly control over Nepal's national grid ensures power security and permits NEA to focus on load management and transmission and distribution infrastructure. Speaking on the urgency of competitive energy price, he claimed that domestic tariffs, when taken as a whole, should be revised to be commercially viable based on the present usage pattern.

After the presentation, second panel discussion took place. Bishal Thapa, Managing Director of Saral Urja moderated the discussion while the panelists included Nawa Raj Dhakal, Director of AEPC; Jitendra Bhattarai, General Manager of Surya Power and Kushal Gurung, CEO of Wind Power Nepal. The Moderator and Panelists took on the stage, and the Moderator Thapa gave his opening remarks.

He began his remarks by sharing two news- one good news and another a bad one. According to him, the bad news for Nepal was that the story of hydropower was dead in the country and the whole discourse on the same had turned obsolete. Saying that despite having higher potential,

the country could not harness its resources and ended up being a failure in hydropower development.

He however shard a good news that the present and the future was time for renewable energy. Renewables were where the future was. According to him, there were technology, accessibility, affordability, sustainability, resources, skills and finance in renewable energy and urged all that it was a perfect time to kick off.

Making the opening remarks, he turned to a panelist Nawa Raj Dhakal and asked a question, "If you go to the government and say that the time for hydropower is over, how do you think would be the response from the government?"

Responding to the question, panelist Dhakal said that whenever we talked about energy, we would only talk about electricity; whenever we talk about electricity, we talk about hydro and that too big hydropower projects. It was the reason why, according to him, the country lagged behind and stuck with only 1,000 MW hydro in the history of 100 years in Nepal. He informed that even though around 100 small and off-grid alternative energy plants like bio-mass, solar and small hydro projects have contributed 30 MW energy electrifying 18 percent of the country's total population. He at the same time claimed that it was the right time for the off-grid renewable energy projects to connect in national grid and urged that the country should generate from wherever possible, however and of whatever amount and should be connected to the national system.

He further reiterated that small plants could contribute a lot as there had been examples from across the globe. According to him, his office, AEPC had also conducted the experiment lately and clarified that they had installed a rooftop solar of 15 KW on the top of Solar Power Company and connected to the national system while two other mini-hydro had also been connected to the national grid.

Referring to the country's marching towards the federal system, Dhakal informed that alternative energy of up to 1 MW had gone to the purview of local government and the local authority could do anything ranging from issuing the license to developing the project itself. He brought a point saying if all the projects developed this way from the local government were connected to the national grid, the situation would change for good. This way, he inexplicitly responded to the question underlining the need for development of alternative energy projects.

Moderator Thapa then asked to Jitendra Bhattarai, the challenges of having connected the solar power to the national grid (the rooftop solar panel had been installed at Surya Power, the same company Bhattarai worked as General Manager).

Bhattarai responded to Thapa stating that it had been six months since the energy produced from the solar panel was connected to the national grid. He said that even though NEA had connected the surplus energy produced from the solar panel to the national grid, his company had not yet received a single penny. So much so, that, he added NEA had kept the grid

connection affair in total secret as there was no law for the solar power to be connected to the national grid and said so as to resolve the matter, his company and NEA were in regular talks. It was hence, he suggested that the government should had to have concrete policies and plans before conducting any actions. Such was the situation that there PPA rate for the solar power had also not been fixed. He also expressed his grievance that the country still things hydroelectricity as the sole source of energy and hence, implementing new things in the energy sector was a challenged as no one had paid attention towards alternative energy.

It was then turn for Kushal Gurung to speak as a panelist who was asked by the moderator about the opportunities of renewable energy in Nepal.

According to Gurung, his company was working to collect date through the country regarding the viability of developing wind energy and to make sure, if the wind energy projects were bankable or not. He further said that the preliminary studies suggest that the wind energy was feasible, yet, he also added, it was not about the wind energy being feasible but it was more about the necessary policies and infrastructure from the side of government. In this way, he hinted at the laxity of the government when it came to development of alternative energy.

He also further elaborated that Nepal could have wind energy of around 3,000 MW however in the face of emerging modern technology, the figure could be higher. He however referred that despite the government announcing to prioritize connecting energy produce from wind and solar projects to the national line back in 2016, nothing had so far done. It was hence, according to him, despite there having a number of prospects, nothing was happening due to the policy and structural issues from the government's part. He also reported that the government lacked commitment to develop renewable energy.

After the panel discussion, moderator Thapa summed up saying that generation, connection, distribution of renewable energy was the future of Nepal, and democratization of energy was what Nepalese was looking for.

This was how the second panel discussion came to the end. With the panel discussion, the first day of the summit also concluded.

Day: II

Venue: Soaltee Crowne Plaza, Soaltee Mode, Kathmandu

Time: 9:15 AM-5:30 PM

Proceedings:

The second day Summit began at 9:15 AM with Key Note Speaker Vandana Gombar, Editor-Global Policy for Bloomberg New Energy Finance delivering her Key Note Speech on The Three Revolutions. She began her presentation by giving a brief introduction about her company and informed that established in the year 2004; the company had 200 employees in 15 locations of six continents. She also added that her company generated over 700 insight reports annually and had 2,500 global client base. Mentioning about the Three Revolutions, she began to discussion on clean energy, storage and mobility.

Further moving into the investment in clean energy, she mentioned that a total sum of US $ 333 billion was invested in the clean energy in 2017 sector in the global level, up from US $ 325 billion in the previous year. Talking particularly about China, she said that the country had invested a total of US $ 107.2 billion in clean energy in 2016, which rose to US $ 132.6 billion in the last year. She also said that China was not only the biggest investor in clean energy, but also was largest manufacturer of electric vehicles as the global cities were phasing out their ICE vehicles. In addition, while giving a larger picture of global new investment in clean energy, solar was the one to attract highest level of investment, which increased to US $ 161 in 2017 from US $ 137 in 2016. The investment in solar was followed by wind energy where a total of US $ 107 billion had been invested in the last year.

According to her, the reason why countries were interested to invest in clean energy was its competitive rate, both for the manufacturers and the consumers. Making projections for 2018, she claimed that the year would see the installation of 107 GW new solar power in the global level while the new installation of new wind power will be 59GW worldwide. She also made a forecast of the global lithium-ion demand by market segment, according to which there will be demand of 1,300 GWh energy to run electric vehicles in global level. Moving to battery packs production, she claimed that South Korea would be the single largest market in 2018, for the second consecutive year while the price of the battery will dip by 10-15 percent.

After delivering her presentation, she gave a message for Nepal saying that many global companies were committed to build vehicles powered by renewable energy and the present was the high time for Nepal to show its commitment to switch towards clean energy-power vehicle as it had very huge potential in the country due to its large hydropower prospects. He also said

that hydro-resourced countries like Nepal should take initiatives to come up with new campaigns to promote electrical vehicle and it would be done in sustainable and economic manner.

Following the Key Note Presentation, the first technical session for the second day began.

Session I: 40,000 MW in 10 Years: Issues, Challenges and Execution

The first speaker under the first session was Nishant Kumar, Executive Director of GuarantCo. He appeared upon the dais with his presentation on Enabling Long Term Finance in Local Currency.

Kumar began his presentation by introducing his company and said the mission of his company was to be a *market* drivenguarantee solutions provider aimed at enhancing availability and role of local currency debtfinance (where applicable) for infrastructure related endeavours. He also briefed about the sectors where his company had investment and talked about few of his company's achievements according to which his company had US $ 700 million of guarantees written between Sub Sahara Africa (47%), South Asia (49%) and Others (5%) across 46 projects to date and had attracted US $ 3.7 billion private sector investment. He also said his company had commitment to invest worth US $ 1.7 billion in fragile states and had ensured 19.4 million additional people with access to infrastructure and another 14.8 million people with improved access to infrastructure.

According to him, his company was a best to collaborate with as it works as a financer, borrower/issuer as well as supplier of EPC, equipment and others.

He further moved to share that Nepal was a priority country for GuarantCo as it aimed to help build sustainable financing capacity in domestic financing market by collaborating with Nepalese funding institutions and introducing new approaches to project risk evaluation and financing. He also talked about local currency financing which according to him were:

- Local currency finance matched currency of revenue to debt service.
- Even if a project had the right to pass on currency losses, prices/tariffs might be unaffordable - contractual agreements might fail.
- Involving local lenders could reduce the risk of discriminatory action.
- Local currency financing would enable productive recycling of savings within the country rather than increasing the country's external debt burden.
- Involving local lenders would help build capacity to finance future projects.

He also presented some case studies regarding the success of financing and cooperation of his company to some of the global firms/projects.

After his presentation, the session was disintegrated for coffee break.

Following the coffee break, there was a presentation by Dr Biraj Singh Thapa from Turbine Testing Lab of Kathmandu University. Making a presentation on Development of Francis Turbine at Kathmandu University to Initiate A New Business in Hydropower Market Under Himalayan Basins.

As a number of other speakers and presenters, he began his presentation by giving a glimpse of hydropower development in Nepal and also talked about opportunities by comparing Nepal's slow power sector development with other fast developing nations to eventually establishing the point that investing in hydropower sector was still an investment in virgin sector and offered lots of prospects to the investors.

Purely technical, he then talked about turbine design philosophy and performance. Moving into the turbine manufacturing experience of Nepal, he said that the first turbine was manufactured in Nepal back in 1962 which was 5 kW propeller. He also mentioned about first Crossflow turbine manufactured in Nepal in 1973, first Pelton turbine in 1975 and said that till 2016 Nepal had manufactured 58 unites of turbines with unit capacity up to 100 kW.

Moving to talk about his University's development of Francis Turbine, he said that the project actually began in 2012. Informing on some of the activities and aim of Department of Mechanical Engineering, Kathmandu University, he informed that the Department's aim was to prepare Nepalese hydropower industry capable to produce hydro turbines addressing local and regional technical challenges through continuous research and development activities.

However, he also accepted that there were many challenges in that respect and pronounced some of the issues as challenges, which according to him were: formation of the project consortium and company, role of design experts in overall business, response from hydropower market and existing players, design competence and guarantee issues on turbine design, industrial capacity for turbine manufacturing, system integration of components from different suppliers, acquiring and completing the pilot project, conflicts and mutual interest between partners and support from hydropower industry and the government.

After Dr. Thapa, it was the turn of Brian Sheng, Founding Partner of Fresh VC and Lead Investor for FND to make a presentation. He presented on Atmospheric Water Generation: The Next Resource Revolution, by stating that there would come a time when revolutionary innovation would be introduced to change everything. He claimed that his company's idea of atmospheric water generation was game changing and revolutionary. Pointing at the crisis of pure and safe drinking water that persisted globally, he referred to the date of WHO, according to which, 844 million people across the globe did not have access to clean drinking water while a huge big chunk of global population depended on surface water for survival. According to him, purifying dirty water to make it pure for consumption was almost impossible, he said that it was his company's innovation to think that there was a huge lot of water in atmosphere in the form of cloud and air, but the world had no ability to source it.

According to him, the level of humidity was a blessing to source the atmospheric water and presented a data of average humidity level of many cities. According to him, the annual average humidity of Kathmandu was 78 percent while Abu Dhabi had average humidity level of 62 percent. Similarly, Cape Town, Jeddah and Ulaanbaatar had annual average humidity at 78 percent, 62.8 and 58 percent respectively.

He further stated that even though human kind receives immense amount of water from atmosphere in the form of rain, it did not responded the need of mankind and hence, his company had introduced the concept of atmospheric water sourcing. He also talked about the problems of other forms of water purification stating that it would require longer project time, need water source and use of chemicals and had possibilities of re-contamination. Referring to a report from the U.S. Council of Environmental Quality, he also said that the risk of cancer to the people who drink chlorinated water was 93 percent higher than those whose water does not contain chlorine. He also, during his presentation, served a technical details as to how did his Atmospheric Water Generation machine extracts the water from atmosphere and purifies it to make it drinkable. According to him, the machine first extracts the humid air from the atmospheric source and does the air purification. Following the purification of air, the machine then generates water out of the air. After having have collected water, the machine then conducts multi-layer filtration and purification to make it high quality portable water.

He claimed the Atmospheric Water Generation system through which one can bring to earth water from the sky to be one of the 21st century's best innovation aimed at curbing worldwide pressing water crisis issue. He also claimed that the technology would be very appropriate for South East Asia where the humidity level is higher. Informing that people were very excited about his technology, he stated that his company was looking forward to work with partners including investors, governments, I/NGOs and others to help the company to bring this technology to the world population. Finally, he pleaded to make the future bright and secure by best utilizing his technology.

Kiran Jethwa, Founder and Managing Partner from Fumase, Malaysia came forward with his presentation, Fumase: Energy, Water and Waste; Asset Management and Asset Development. His presentation entirely focused on offering introduction to his company, Fumase.

He informed that Fumase, LLC was an Asset Management and Asset Development company based out of USA with focus on Renewable Energy, Water and Waste sectors; and geographic focus on South East Asia and South Asia. He also added that Fumase originated with an advisory background and its sectors of focus included energy, water and waste. He also said that his company's works included advisory (policies, energy mix, tariff, due diligence etc), partnering in technology in all sectors, project development including solar power projects in Malaysia (40MW), Philippines (30MW), India (1.5GW) and Nepal as well as waste to energy projects in Malaysia, India, Nepal and Philippines, development fund and construction fund. Talking about some of the achievements of his company, he mentioned that his company had generated predictable, long-term annuities, geographic and sector diversification and developed Greenfield

projects and acquired operational projects. He also said that 24 X 7 renewable energy was his company's strategy and hence was working in all renewable energy sector like, solar, biomass and energy storage, which the company called 'integrated power'.

After the end of presentation session, the first Panel took off.

Panel Discussion I: Discussion on Accelerating Hydropower Development: Key Challenges

Anil Chitrakar, President of Siddharth Inc. moderated the session while the Panelists included Pratik Pradhan, Vice President of Butwal Power Company; Alexander Schwab, Managing Director of ANDRITZ, and Sushil Pokharel, Secretary of EDC.

Moderator Chitrakar began expressing his belief that everybody at the Summit were of the belief that the country needs hydropower development in accelerating pace. The

Without wasting much time, he promptly moved towards the discussion and raised three talking points:

- What are some of the recent developments that give us hope?
- What are some of the hurdles being faced by developers and investors?
- What are ways ahead?

The first Panelist to speak on was Pratik Pradhan, so said that the government's reluctance to sign PPA in foreign currency was the biggest hurdle in Nepal's energy sector. According to him, there was a gap between what government promised and what it did when it came to signing PPA in dollar. He however, expressed his optimism saying that the government had recently agreed to sigh the PPA as demanded in foreign currency with certain conditions. For instance, signing of PPA in dollars to the projects having capacity of 100 MW and loan replacement of 10 years. He also said that it would help to attract foreign investors in Nepal. He also talked about another problem, which according to him was the issue of energy price. Mentioning that the government used to fix a flat rate for the projects of up to 25 MW, the same had now been applied to the projects with capacity of 100 MW, 140 MW and 180 MW. He said that it was very discouraging to the projects with higher capacity. He opined that the rate should be fixed and adjusted as per the fluctuation in the rate of dollars. Also talking about the hope, he expressed that it was very positive that banks and financial institutions in Nepal had strengthened capacity and that they were financing bigger projects of up to 100 MW.

According to him, the ceiling fixed by the government in land was another hurdle as according to the state, previously any hydropower project would use only 75 ropanis of land. He however said that there was talks with government going on and the government had shown flexible to change that ceiling. He also said that with the government declaring the hydropower as a priority investment sector, there were reforms being seen. Unbundling of NEA into different generation and transmission companies was another positive sign, which had taken place within very short

period of time. According to him, PPA in dollar issue was somehow a hurdle, yet said that once the issue would be resolved, everything would be fine.

Dealing with the constraint side, Pradhan complained that Nepal's hydropower sector was lucrative, but only in papers while the IPPs would not agree on that as they were tensed. He further shed light that the assurance that the developers as well as shareholders having their return in 10 years was solely limited to paper but not in reality. According to him, the major challenge for the developers was the issue of power evacuation. Moreover, there were also local level challenges, as locals would come up with many demands and expectations. He also informed that there was a project all set to go for production but the locals vandalized it. Also explaining further about the problem of power evacuation, he said that his company was doing a project in Lamjung, which was about to end but there was no grid line in place prompting the construction works to be delayed. He then demanded that the government should ensure security to the projects in whatever way or form. He also claimed that the regulations should have to be in place. He added that there were technical as well as legal problems for export-oriented projects. He finally summed up the challenges as:

- Grid moving slowly than generation.
- Rule of law and absence of government.
- Design issues in a river where many projects are being designed.

Alexander Schwab followed Pradhan, who responding to the questions of the Moderator, informed that his company had been doing hydro business in Nepal for last four decades. He again, as other speakers mentioned that despite having one of the leading hydro potential, Nepal has started and done nothing. He also moved further to say, there were hundreds of studies conducted by the World Bank and expressed his wonder about the progress not being taken place. He blamed political instability and the subsequent impediments. He however hailed the political stability that Nepal achieved last year and expressed his hope that everything would now change as the new government would work for introducing concrete policies, manage funding and electricity price. According to him, the direction would be straight, things would change for good, and that the problems being faced by investors and developers would soon disappear. He also added that the government and the people had gradually begun to accept privatization, yet urged that there should be balance between affordability and consumption. Elaborating further on the same, he said that food and drinking water were the first need of people and once they secure food and water, the society would move towards the journey of development. Adding that one would need electricity was major prerequisite for development; he said with the development, the demand for energy would also increase. According to him, electricity was basic commodity for citizens of any country and they needed to have energy in cheaper price. He also cited that once a family have had electricity at their home, they would have freezer, mobile charger and other many things and people getting used to with the modern commodities would again push the development further. It was where he again demanded that the price of electricity should be in accordance to the income of the people. He also opined that

Nepal having such a huge hydropower resources should fix the price keeping in mind the long-term sustainability. He also further mentioned that to keep things in balance, it was much crucial for the private investment to be poured in small and medium sized hydro projects, which were very important to electrify rural areas, while it was the government who should be responsible to develop larger projects.

To be specific about the problems and challenges, Alexander said that in most of the cases, whenever any developers wanted to develop a project, they come up with simple design, made cross checks and move further. However, delays were tremendous. He also mentioned that if the project was being financed privately, one have to have a good project since the early beginning. He also brought an international reference that the projects worldwide would complete their financing, finalizing contract and financial closure within a year and a half. However, according to him, the time was much longer in Nepal due to many problems and it was then difficult for the investors to wait till the longer period. He hence, demanded that there should be regulation in place and the political task should ensure win-win situation both for the country and the investors.

Talking about some of the positive signs being seen in the hydropower sector, panelist Sushil Pokharel told that the discussions being taken place during the summit in itself was a positive event. He also said that the urge of the summit to develop 40,000 MW energy within a decade of which 80 percent would come from hydropower projects was another positive move. He also recognized the participation from delegates and investors from across the globe was another positive sign.

According to him, the one door policy system introduced by the government in the energy sector was encouraging. Informing that he himself had been developing 100 MW worth projects, he claimed that things were moving forward, which however was not the case five years ago. According to him, international investors were 'dying' to invest in Nepal's energy sector and claimed that he had not seen any signs of negativity and added even if there were some, the present was the high time to change risks into opportunities. Also informing that the legal rigidity had gone as the government had amended the law allowing the investors to take back 25 percent of their profits, it would foster foreign investors to come to Nepal with their investment schemes.

Moving further Pokharel said that the issue of demand and consumption should be calculative. He also said that there was demand in Nepal, yet there were potential to sell the energy outside the country informing that there were high demands in international market, if considered the bigger aspect. He however stressed that no matter the project was big or small, the investors would look for return in investment. He demanded that it was the PPA to address the issues and concerns and said that we had to begin to work to make the foreign investment to happen in the country.

Pokharel again stressed on the positive aspect accepting that there were problems in the past, however with the formation of stable government, the indications for betterment were there. According to him, FDIs were queuing up at Nepal Investment Board. He also mentioned that just a decade ago, wherever the private developers planned to develop mini projects, there were whole lot of problems to first deal. But, according to him, today private players were developing many hydropower projects of medium size while skilled human resource and better technology were at place with the banks and financial institutions were capacitated to finance projects. He summed up expressing his confidence that those reforms and enabling environment will help draw attention of foreign investors and that the future of Nepal's energy sector was bright.

The Moderator Anil Chitrakar said summed up the whole discussion saying that things do not change overnight and there were lots of things in place indicating the hope in future.

He then announced opening of the floor for interaction.

Questions and Answers:

Question: Mr. Prateek Pradhan you said that PPA should be signed in dollars to attract FDI. This however does not seem sustainable in the long term as it adds burden to the state coffer. At the same time, do you think Nepal has enough dollars to convert the currency here in Nepal?

Answer from Pradhan

I do agree with what you said. However, it all depends on the target of the government and how it plans for its hydropower development. Yes, there definitely is the issue of convertibility. This is the area where I can't claim my expertise. However, there are agencies like Finance Ministry and Nepal Rastra Bank to look into this issue and I seriously would like to request them to pay a serious attention towards this issue and come up with a sustainable as well as effective measure.

Answering the same questions, Alexander added that it risks were planned properly, there would not be any problem. He also added that even though there will be a crisis of dollars in the initial stage, the country will also earn currency once it begins to export the energy and hence, urged the government to sign PPA in foreign currency.

Question:

Could solar projects be treated as off-grid small hydropower projects? If the government does proper studies and plan properly, is there any likelihood for the international investors to invest in solar.

Answer from Sushil Pokharel:

The unique feature of Nepali energy landscape is that we have dry as well as wet season. So, the energy generated by solar projects could get better price during the dry season and it will also lead the energy sector to implement the concept of energy mix. Hence, looking from investors' perspective, it seems plausible.

Answering the same questions, Alexander added that hybrid solutions is mainly off-grid solution and this is very important for Nepal. Solar, wind and other can be cheaper and assessable for Nepal. On the other hand, how much of solar investment does the country could take risk is your own calculation. You have to have more balanced investment in energy mix. However, you have to be careful in brining investment for large solar projects.

Question:

It usually takes five years to clear things from the government. AEPC however is trying to reduce it. After signing PPA, you have to connect your project to the grid. Do we need particular incentive from the government for using extra labor and finish the grid project? What can be done from the government side?

Answer from Prateek Pradhan:

Yes, there should be incentives for finishing transmission line projects on time-before date of hydropower project's commencement. However, the question is if the grid line is ready and you are ahead of time, you are able to evacuate power. They will give you 50 percent as an incentive. So expedite your work. But, there are delays due to various reasons even though no private player wants to delay the project.

Answering the same questions, Alexander added it does not happen in even in my country, Austria too. But, if the market is ready you can sell the energy. So, it's not about incentive, it's about selling the energy and getting price at the earliest.

This way the first panel discussion came to the end.

Following the first panel discussion, Chi Yuki Suzaki, Senior Engineer, TEPCO came to make a power presentation on his company, TEPCO, a Renewable Power Company from Japan. He attempted to shed light on the nature, works, and areas of investment, profile as well as the strategy for the hydropower business in the global market including Nepal of his company through the presentation. According to him, TEPCO is the biggest power utility in Japan, established in 1951, and provided electricity in the Tokyo metropolitan area and its surrounding area. He informed that the company's electricity sales stood at 250 billion kWh in 2016 and accounted for about 30 percent of the nation's electricity consumption and added that his company's sales of US $ 50 billion was ranked 8th in the world.

Suzuki also informed that his company's power generation sources, total capacity of around 70GW, had been diversified including thermal, nuclear, hydro and renewable, considering stability, economic and environmental aspects.

Regarding the global business, TEPCO had already provided more than 600 consulting services in about 70 countries, and invested in total of 5GW power projects so far. These investments were only in Thermal power projects. He also revealed that the company also decided to invest also in

hydropower projects especially in Asian countries, using extensive experience in Japan and said that that was the reason why he came to participate in the summit.

As for the renewable energy, TEPCO, he said, owned and operated 163 hydropower plants, thee solar and 1 wind power plant in Japan and added total capacity of hydropower was 10 GW, including reservoir type and pumped storage type.

He also added more that based on the accumulated experience, his company were seeking for new investment opportunities with a special focus on overseas hydropower projects and informed that their target capacity was from 30MW to 500MW including green and brown fields. He also stating that the main target area for investment was South East and south Asian countries especially Nepal and informed that in Nepal, they would like to invest in the hydropower project with local partners. According to him, his company had already met some Nepalese companies to discuss the future corroboration and stated that they were so reliable that he was assured to build a strong relationship with them. During his presentation, he also opined that Nepal should develop the storage type of hydropower plants to bridge the gap between supply and demand especially in dry season and moved further to say TEPCO had a lot of experience of the storage type in Japan. It was when he expressed his belief that his company could contribute strongly to the development of storage type projects in Nepal as well as provide owner's engineering services for design, construction and Operation and Maintenance.

According to him, in addition to the technical contribution to the project, TEPCO could bring high quality civil contractors and electrical-mechanical manufacturers from Japan to Nepal for the enhancement of profitability for the project. He also committed to take initiative in arranging financial framework with Japanese public financial institutions such as JICA and JBIC who could offer a good loan terms.

Finally, he ended his presentation by saying that TEPCO would like to contribute to further development of friendship between Nepal and Japan through the hydropower project.

After the presentation, the second session took place on Foreign Direct Investments (FDI) in Energy Projects. The Chair of the Session N.L. Sharma Chairman of Sutluj Jal Vidyut Nigam took to the dais and extended his opening remarks.

He began his remarks by giving a good news saying that his company was going to invest about US $ 1.2 billion in the construction of Arun III project in Arun River of Sankhuwasabha district and claimed that the company would make that amount of investment in the coming five years. He also talked about other different benefits including, employment generation of seven million days, and skill upgrade of as much as 3,000 local youths and urbanization of the project location, among others.

In his remarks, he claimed that energy was basic requirement for any civilization and that per capita consumption of energy was very crucial and was one of the measuring rod of

development. Giving a figure of per capita consumption of energy, he said the figure was 12,000 units per year for the US, 1,100 units for India and mere 134 units for Nepal.

Mentioning that since the hydro was capital-intensive sector with long gestation period, most lender and investors don't have long term outlook. It was hence, according to him, optimizing and innovative ways of financing was need of the hour. He moved further to say that even in his country, India, most of the big business as well as corporate houses had stayed away from hydro sector because of land, environment and forest issues as well as local and social level problems and said that it was the duty of any government to ensure safe playing ground for the investors.

Recalling that his company had faced financial problem while developing its first 1,500 MW hydropower project in India, he expressed his belief that financing in the energy sector comes from within if worked in committed manner. Urging on the need of investment in Nepal's energy sector, he added that lack of power had resulted in the import of plethora amount of petroleum products and contributing to Nepal's trade deficit. Recognizing the inability of Nepal's banks and financial institutions to finance large hydropower projects, he claimed that there was no option left other than attracting FDI in the sector. He however identified some of the hurdles in securing FDI, which according to him were, political situation, lack of tax incentive, absence of land acquisition mechanism, problem in land and forest clearance, weak transmission line and grid connectivity, and others.

He also adding on the same issue pointed out that Nepal's regulatory and legal frameworks were not sufficient and concrete. Redundant and they had many anomalies to attract FDI. He also demanded for independent power sector regulator who could also oversee the demand and supply situation including fixing the price of the energy. At the same time, he also called for financial institutions to enhance their knowhow for project evaluation and monitoring as according to him, it was always easy to give solutions but hard to implement them.

Finally, he wrapped his remarks stating that energy would enable to scale to new heights and that asses to energy was critical very critical in the modern time and world.

Following the opening remarks, the summit moved towards second panel discussion of the day on FDI in Nepal's Power Sector. Rajan Kandel, Director of Kandel Group moderated the session where the panelists were Apar Neupane, Vice President of Finance at Equicap Asia Pvt. Ltd; Gorakh Rana, Head of Commercial and Global Banking at Standard Chartered Bank; Joseph Hoess, Director of Dragon Capital and Naoki Nishimura, Representative from JICA.

The Moderator Kandel stating that even though the first hydropower project in Nepal was developed back in 1911 during the premiership of Chandra Rana. He also said that he, as a Non-resident Nepali in UK had been making efforts to encourage British investors to come to Nepal with their FDI in Nepal's hydropower project. He then asked his panelists that even though many investors were willing to invest in Nepal why was not it happening.

The first panelist Apar Neupane replied saying he had been working with many FDI companies since many years and observed that the hydropower development consisted of many stakeholders, including, developer, contractor, government, locals and many others. He claimed that all those stakeholders had their own interests and added it was because of the difference in interest, it was not easy for a project to be successfully developed. He also suggested that if the interests of all stakeholders were synchronized, developing hydropower project was an easy game. He also further said that when it came to large projects, the market was the major constraint and claimed that Nepal had no market to sell energy generated from big projects and hence suggested that if only there were cross boarder markets, FDI would come to Nepal in mega scale.

Gorakh Rana answered to the same question said that it was due to the trust issue that the FDI was not coming to Nepal. Elaborating further, he stated that most of the investors would seek project financing from Nepal itself while BFIs in the country lacked that capacity. He hence, demanded that there needed to have a lot of education among the investors. He however said that there were some positive signs of late. Discussions regarding the creation of market in neighboring counties was a positive development.

Joseph Hoess to respond to the same question blamed political instability for the FDIs not coming to Nepal. He also talked about bureaucratic and procedural problems saying that his company had been working in Nepal since 2016 and that they had to come across new faces every time while getting approval from government or to clear many formalities. He however referring to the political breakthrough that Nepal recently achieved expressed his hope that the instability would no longer last. He also stressed on the fact that as an investor, he would expect return as soon as possible, and added that nobody would be interested to invest in Nepal if s/he has to spend five years doing basic works. He also talked about lack of connection grid as a reason for FDIs to not come to Nepal.

Naoki Nishimura from JICA pointed at the challenges relating to implementation as major barrier for FDI. He said even though there were many agreements with government, no work had been progressed. Talking about government developed projects; he accused NEA for not making timely payment to the contractor, eventually delaying the project. He added further that, the delay would not cost much to the government as it developed project with concessional loan but the private sector could not lift the burden.

To further the discussion, Moderator Kandel said that of late Nepalese themselves were doing many projects, yet they could not finance big sized projects and asked for suggestions from the panelists for doing mega projects by Nepalese in joint venture with foreign investors.

Speaking on the issue, Apar Neupane said that even though Nepali private developers were enhancing their capacities in terms of execution and project operation. He however maintained that alone was not sufficient to win the trust of foreign investors. According to him, the Nepali private sector needed to improve their corporate governance and transparency and claimed that

without making improvements in the areas of governance and transparency, no foreign companies would join hands with the Nepalese.

Explaining further on the same, Naoki Nishimura said that as per the international practice, local partner would have to come up with the investment of its share to develop projects with foreign investor in joint venture. But however in Nepal, he added local partner would commit finance through equity which is not a reliable source. At the same time, local banks also do not have capacity to lend that amount of money to the Nepali developers. It was therefore, he suggested that the government had to guarantee financing of the project on behalf of local partner while, since local issues could be dealt effectively by local partners; the foreign investors would like to develop projects in JV modality.

Another panelist Joseph Hoess also blamed lack of financing and access to finance for the major reason for the JV not happening.

The Moderator Kandel asked panelist Gorakh Rana why was his bank was not willing to bank hydropower projects. Serving an answer, he said that his bank had a structured way of approaching hydro projects and moved further to say that those projects have longer gestation period yet; the amount involved would be very huge and the risk was high. He however made it clear that his bank was not totally unwilling to fund projects and informed that his office was, of late, in negotiation with some large developers and ensured that if the conversation went well, the bank would finance those projects.

Moderator Kandel then asked for suggestions from the panelists to the foreign investors.

Offering his suggestion, Apar Neupane said that as most of the foreign investors come from developed countries with proper systems at place; they expect the same here in Nepal. However, after coming to Nepal they would see huge gap between what they expected and what they found here. Even though they would do risk assessment, they could only mitigate half of the total identified risks. Stating that hydropower development took longer time and that the investors need to have patience, he suggested them to find a good local partner here to understand the situation here and to work for efficient problem solving. He also suggested them to better understand the situation of Nepal before coming here and get prepared for every uncertainties during the project development.

Gorakh Rana also suggested for partnership between the foreign investors and Nepali local partners.

Turning towards Joseph Hoess, Kandel said what foreign investors would need in Nepal so that they could invest.

Responding to the question, Hoess said that investors would need assurance for safe investment return. He also said that they would expect support and facilitation while conducting predevelopment works like license, permits, EIA clearance and other basis things. He also said that the power evacuation was biggest hurdle and demanded the issue to be resolved. He also

reiterated that no investor would be interested to invest in Nepal if it took them five years to do preparatory works before construction. He also said the foreign investors needed a private company to take care of transmission works so that the projects could sell their energy once the construction of the project ended.

Speaking on the same, Naoki Nishimura said that comparing to other counties; the investors would think that there was no balance between the risk and return.

After the discussion, the floor was open for question and answer.

Question and Answer

Question: We are talking to develop 40,000 MW within a decade while the ground reality is there is no security at all. For instance, locals come and vandalize the projects. What is your take in this aspect? – Tara Nath Sapkota, MD, High Himalaya Construction Pvt. Ltd.

Answer from Apar Neupane: The issue of security, law and order has been the biggest problem since last many years. The problem is whenever a project is being developed; locals appear with demands, whatever they want. At the same time, most of the demands are not really from the locals, it is rather a political thing. For instance, if a cadre from one party makes demand, the cadre of other party also does the same. It is hence, fulfilling their demands are beyond the capacity of the developer. If there are vandalism and the responsible for the same is held in custody, big leaders from the party make efforts for their release. Some of the projects have received security from security forces. However I believe the problem will be gone very soon with the stable government coming to scene.

Question: Naoki saidthat the local partner needs to arrange funds to develop project in JV model. However, the amount is very high. How do you think the local partner can manage it? - Suresh Regmi, Professional, Computer System

Naoki Nishimura replies: It all depends on how the foreign investor is. There are investors who expect exit guarantee from local partner. But, what we should understand is that the foreign investors also look for some support from the local partners as they also have to manage loans to invest in the project. However, if they can't receive any support from the local partner, they does not see any points in coming up with their investment plans. This however is an issue of discussion. If both the parties sit for negotiation, I believe, they will come up with some solutions, which will be benefitting to both parties.

After the panel discussion, the summit was disintegrated for lunch break.

Following the lunch, Bhaban Bhatta, President of Non-Resident Nepali Association made a presentation on NRNs as Nodal Points in Energizing Power Sector.

Briefly introducing his Association, he informed that it was a voluntary association of 5 million non-resident Nepalese all over the world (except SAARC countries) and the motto was for Nepali by Nepali. He also said that established in 2003 with its headquarters in Kathmandu, the

Association had over 70,000 registered members and had presence in 78 countries across the globe. He also informed that NRNA had recently initiated "Ujyalo Nepal" campaign. Taking about the potentials of the Association, he said that the members were rich in knowledge, experience and resources and were willing to be nodal points for Nepal to be prosperous.

Speaking on NRNA's contribution to Nepal's energy sector, he claimed that hundreds of individual NRNs had invested millions of dollars in hydropower and had recently pledged US $ 100 million in infrastructure development. Moving forward he also informed that Sanima Group had developed Sunkoshi (2.6 MW) and Sanima Mai (22 MW) and both the projects were in operation. He also updated that the company was doing Middle Tamor (75MW), Swet Ganga (28.1 MW), and had contemplated Tamor Sanima (285MW). According to him, NRN Infrastructure and Development Limited (an investment company focusing on hydropower) was involved in development of Swet Ganga, Dordi Khola Project (27 MW) and Middle Tamor hydel projects.

NRNA President Bhatta also mentioned about TBI Group, his personal venture and said that it had been awarded with survey license for Tamakoshi III (650MW). The Group, which had invested in several energy projects as joint promoter, had also pledged US $ 50 million in development of renewable energy sector in Nepal. According to him, TBI was promoting electric vehicles in Nepal and was planning to set up an electric vehicle production plant.

Claiming that NRNs was a nodal point for investment, he said that they were prospective investors and they were the major source of remittance.

Following the presentation, third session for the second day took place.

Session III: Emerging Energy Opportunities in Nepal

Ambassador of Sri Lanka to Nepal, W.S. Perera chaired the session. She delivering the opening remarks said that hydro, wind and solar were emerging and very important source of energy. She said that Nepal was developing renewable energy rapidly and in the country dominated by hydroelectricity, solar and wind could be important supplements. Saying that due to the over exploitation of petroleum products, there were higher demand for renewable energy and the world was going towards the energy mix. She also noted that hydro, solar and wind energy in Nepal had not been sustainably utilized due to its geographical, political and technical as well as economic reasons. He also observed that at a time when hydropower projects were moving in sluggish pace, the use of renewable energy was a viable alternative.

Mentioning that solar power was only in use in Kathmandu, she maintained that Nepal was yet to exploit its solar energy potential to fulfill its present energy need. Ambassador Perera suggested that Nepal needed to enhance the use of renewable energy and decrease its reliability upon the traditional hydro based energy. Saying that for any country to be developed, energy plays a very crucial role she added that while the rich countries could use nuclear power as a source of energy, Nepal's energy sector was lagged behind.

She also mentioned that her government had committed some amount to invest in Nepal's hydropower sector during the Investment Summit held in Nepal a couple of years back and concluded her remarks by expressing her belief that that in the future, Nepal would be able to generate the required energy and develop the country.

Closing remarks from then CPM UML Chairman and Former President K.P. Sharma Oli

He began by saying that the event was timely for the reason that Nepal had completed its political transition process and was entering to a new era of political stability, high and sustainable economic growth with social justice, and prosperity shared by all citizens of the nation.

He claimed that in the path towards economic progress and social transformation, Nepal needed to develop its abundant natural resources and fulfil the infrastructure gap, mainly in areas of energy, water, transportation and tourism.

According to him, Nepal needed to harness its abundant clean energy potential and transform our infrastructure into a domestically consumable electricity based on large scale investment and added that the requirement of such large scale investments meant an opportunity for both the local and foreign investors. He referred to a recent report of IFC, according to which Nepal would have a clean energy investment opportunity of US $ 46 billion in the short team and added that Nepal government had also estimated the energy investment requirement of US $ 31 billion from 2017 to 2030 to meet the target of energy for all and achieve high and sustainable development.

Stating that renewable, modern and affordable energy for all was one of the 17 sustainable goals which Nepal was also committed to achieve and added that the SDG 7 on energy committed to ensure access to affordable, reliable, sustainable and modern energy for all, increase substantially the share of renewable energy source in global energy mix and double the global rate of improvement in energy efficiency.

Talking about the modern energy, he said that it was transformative as it would change production relations, household activities and women's work burdens by means of providing machine supported food processing and cooking, would shift business models, would change transportation system and would protect the environment by reducing the use of conventional fuels. He also stated that Nepal aspired to be a part of sustainable development process by focusing on renewable energy.

Speaking on his party, CPN UML's focus towards energy, the Head of the Party said that his party aimed at increasing power generation to 15,000 MW in coming 10 years with an energy mix of hydro, solar, wind, geothermal and other alternative energy sources. He also informed that as per the Left Coalition Election Manifesto, they intended to increase installed capacity of electricity to 15,000 MW in 10 years including, 12,000 MW of hydro, 2,000 MW of solar and 1,000 MW of wind and other energy sources. He also moved forward to say that to meet the peaking energy demand of the country, we needed to develop at least 5,000 MW worth of storage and pondage type of hydro projects and stop importing the electricity. He claimed that as one of the key development strategies, his party wanted to ensure energy security to the Nepali citizens along with other securities such as food security. He also brought to reference some of the past initiatives his party had taken for hydropower development which, according to him, included the development of Karnali-Chisapani as tripartite project, many big projects under joint venture, transmission and distribution system upgradation, construction of cross boarder transmission lines, establishment of grid company, simplification of generation procedures, removal of obstructions in project sites, construction of road and other infrastructure and strengthening of Investment Board of Nepal for developing projects and effective coordination at all levels.

Talking about some of the myths in the energy sector, he tried to clarify that there were things were not as problematic as one had thought.

Moving to speak on regional cooperation, he said the cooperation was about energy trading in South Asia and we should work to create environment for energy trading also under the spirit of SAFTA and create regional energy infrastructure to facilitate the power trade. He also argued that the regional cooperation was also important in the context of seasonality of power production and consumption, energy mix, cost effectiveness in transmission and distribution, substitution of energy demand by clean and renewable energy than fossil fuel based ones.

Eventually, he also requested all investors to come and invest in power sector in different capacity such a joint venture, BOOT, EPC, EPCF or other models of partnership. He also urged

foreign investors to come and explore the opportunities Nepal offered to them and also to forge partnerships and life-long friendships with Nepali citizens.

Day: III

Venue: Soaltee Crowne Plaza, Soaltee Mode, Kathmandu

Time: 9:00 AM-12:00 PM

Training Programs by World Renowned Organisations

On the final day of the event, trainings on much needed topics were provided by the world renowned organizations. Altogether, there were 4 training programs. One training was held on 28th January which was on Hydropower Economics, Financing and Risk and rest 3 were on the final day (29th January). Trainings on Micro-grids; Engineering, Procurement, Construction and Financing (EPCF) and Sustainable Energy Development and The Role of Hydropower were held.

More than 80 participants attended these training programs combined. Training on Micro-grids was provided by Dr. Zhang Zizhong and Mr. Li Zhe from NARI State Grid China. The presenters included topics like development profiles of distributed generation and micro-grid; distributed generation connection technology, micro-grid connection technology. They also presented NARI's solution for micro-grid with an example of typical micro-grid project. Training on EPCF was provided by Mr. Yu Hong (Sinosure), Mr. Gong Li Xin (China Construction Bank) and Mr. Tan Ding (Hunan Construction Engineering Group) who also was our one of the speaker. They provided training on ECA Financing, presented necessary procedures to get finance from China Construction Bank and how to implement EPCF. Training on Sustainable Energy Development and The Role of Hydropower was provided by Mr Jorge Gastelumendi and Ms. Amy Newsock from The Nature Conservancy along with Mr. Tom Solberg from ICH. Major topic presented were on Hydropower by Design (HbD) Approach and Identification of River Pathways.