

## Remarks From The President



Dr. Sandip Shah

## Power Crisis and Recent Initiatives

It is with a great deal of optimism, and some pessimism, that I am writing for the IPPAN newsletter again. I am quite optimistic about some of the positive developments that have occurred in recent times, but I do have to become a harbinger of pessimism on issues that should have been resolved by now or about new issues that have cropped up which could have a negative impact on hydropower development in Nepal.

A number of serious efforts are being undertaken by the public and the private sectors to stimulate the electricity sector in recent times. However, the ground reality is that we are approaching the dry season again and the predicament of 12 to 14 hours of load-shedding is looming large in the horizon. In the dry season of last year, when we were suffering from a crippling 18-hour load shedding, a number of initiatives and promises had been made by various authorities to implement possibilities of reducing the load-shedding in the current dry season. These efforts have resulted in slight improvement in the current load-shedding situation. However, NEA's own projections show that the load-shedding will be 12-14 hours per day this year and then upto 16 hours per day next year. This bleak situation is not going to improve till 2013, at the earliest. This is seriously stunting the economic growth of Nepal and has led to losses in industrial productivity, commercial growth and social harmony. It is not that the situation was not foreseen. However, due to a variety of reasons, the electricity supply situation became pathetic and domestic, commercial and industrial consumers had

to resort to alternative, and very expensive, means of power supply or stay in the dark.

In September 2008, IPPAN commissioned a study to conduct research on the impacts of power crisis to the industrial, domestic and commercial sectors and to the electricity consumers at large. This report, to be launched on November 23rd 2009, is the outcome of the research work conducted by SODEJ-Nepal (Society of Development Energy Journalists, Nepal) under the guidance of IPPAN members. We believe that this study will enlighten the planners and policy makers of Nepal to comprehend the seriousness of the situation, and stimulate them to undertake activities to alleviate this situation. This Power Crisis Report has also sought the solutions for load shedding by conducting comparative assessment of public and community-based electrification programs.

The cross-border transmission line project has been in a dormant stage for the major part of this year. However, recent initiatives of The World Bank to bring all the stakeholders at one place and to focus their attention on fast-tracking this project is a remarkable development. We believe that the progress of this project was mired in the classical "chicken-and-egg" story of commitment of generation for transmission and vice versa. However, with the support of The World Bank, we at IPPAN are quite positive that the issues related to financing of the project and bringing the two governments together will be resolved and the development of the line will take place in the now anticipated timeline leading upto commissioning in 2012. This transmission line is imperative to alleviate the load-shedding situation in Nepal for a period upto 2015/16, and then to facilitate the export of electricity from Nepal to India in the subsequent years. IPPAN still feels that the capacity of this cross-border line should be upgraded to evacuate at least 2,500 MW of electricity and not be restricted to the planned 1,000 MW.

Government of Nepal (GoN) has again come up with a basket of 8 projects of less than 50 MW capacity for competitive bid. The bidding process seems to have been simplified this time; however, issues related to tariff for projects larger than 25 MW, peaking tariff, power evacuation have not been adequately addressed. IPPAN feels that there is scope for improvement in such bidding processes, and that GoN should consult with

IPPAN on such issues as it is doing so for other power sector reform issues. IPPAN also notes that projects that were under serious consideration by certain developers have been included in the basket while others have been excluded. In essence, IPPAN believes in and has been advocating about integrated river basin development such that projects under operation are not hindered by upstream developments.

IPPAN is extremely concerned about the extensive delay in the enactment of the Electricity and Regulatory Commission Bills. IPPAN had voiced its concerns,

## IPPAN'S Vision, Mission, Goal & Purpose

- To contribute to the development of Nepal's vast untapped hydropower potential, in line with Nepalese aspirations.
- To help mobilize private capability, both national and international, to overcome the constraints confronting hydropower development.
- To make optimal use of Nepal's water resources endowments, to serve long term national and regional needs in the context of future fresh water and energy scarcity.

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and continues to do so, about major issues in the two Bills that need to be rectified before enactment. These issues, e.g. tax holiday, free energy, local shares, royalty, VAT and duty exemption, profit sharing, term of license, etc. need to be revisited before enactment lest they may have serious long-term repercussions on project development in Nepal. IPPAN is once again taking up these issues through various advocacy efforts, and would like to reinforce its stance on introducing these changes in the bill. Needless to say that these bills need to be enacted at the earliest so that projects that are under serious development will have the desired legal stability.

Hydropower projects being developed in Nepal are vying for supplying to the Nepal as well as Indian electricity markets. IPPAN still maintains its reservation regarding the tariff proposed by NEA for projects less than 25 MW. As I had indicated in our April 2009 Newsletter, the tariff structure of NPR 7 for 4-months dry season and NPR 4 for 8-months wet season does

not make these projects profitable. The studies carried out at IPPAN show that this structure will make projects reasonably profitable if the tariff is made on a 6-monthly basis. This is true from the hydrology perspective as well since the months of March, April and May are still dry months. This should also be seen in context with the tariff of NPR 5.76, or higher, that NEA is willing to purchase power from India.

For projects that are looking at exporting to India, the growth in the Indian electricity market is quite encouraging. The development of the merchant supply and spot markets is being followed with great interest by developers in Nepal. Long-term PPAs will obviously be required to satisfy lender requirements and for open access on the transmission lines; however, the possibility of accessing the merchant market with peaking hydropower seems to be quite lucrative. It is difficult to look in the crystal ball and project market prices, and hence, a tad of conservatism has to be used in price projections. Cross-border regulatory issues

may also require greater skepticism on projected price levels. IPPAN urges the Governments of Nepal and India to resolve issues related to cross-border trade of electricity with a view on a fully-functional market mechanism. It is encouraging to note that Government of India has recognized electricity as a commodity and has assigned a harmonic code; however, the introduction of a import duty of INR 2 per kWh, and subsequent waiver of it, leaves room for concern. IPPAN urges Government of India to make this a permanent zero import duty commodity.

IPPAN's Friday Forums are quite popular as can be seen from the quality and quantity of participants. IPPAN's secretariat needs to be commended for identifying and facilitating such important discussions.

At the end, I urge you all to join in our continued efforts for harnessing the hydropower potential of Nepal for the socio-economic upliftment of not only the people of Nepal but also of the region!

## Hydro Power 2009: 4th International Hydropower Convention



The 4th International Hydropower Convention on "Hydro Power for Progress of Nepal" was jointly organized by India Tech Foundation, FNCCI and IPPAN. The two day convention was held at the Hotel Soaltee Crowne Plaza, Kathmandu, from April 25-26, 2009. The function was inaugurated by Honorable Minister for Water Resources, Mr. Bishnu Paudel. About 200 power companies, investors, experts, bankers from India, Nepal, Norway, Australia, Korea, Germany and China participated in the two day summit.

Other important personalities attending the meeting were Honorable Member (Energy) of the National Planning Commission, Dr. Kirit Parikh, Former Secretary-Power and Chairman of Energy Infratech Pvt. Ltd., Mr. R.V. Shahi, Managing Director-Moserbaer India Ltd, Mr. A.V. Giri, Joint Secretary-Hydro, Ministry of Power, Govt. of India-Mr. Jayant Kawale, Gol, Chairman, Ministry of Water Resources, Mr. A.K. Bajaj, Secretary, Ministry of Water Resources, Mr. Shanker

Koirala, Governor, Nepal Rastra Bank, Dr. Deependra Bahadur Kshetry, Secretary, WECs, Mr. Kishore Thapa, Joint Secretary and Spokesperson of the Ministry of Water Resources, Mr. Anup Kumar Upadhyaya, Director General of the Department of Electricity Development, Mr. Sriranjana Lacoul, Managing Director, NEA, Mr. Uttar Kumar Shrestha, and Resident Representative of World Bank Mr. Michael Haney.

The objectives of this Convention were to:

- present Nepal's strategy and latest initiatives for harnessing hydropower resources – with a status update;
- showcase Nepal as a lucrative investment destination for renewable power projects;
- deliberate on Policies, Practices and Perceptions of Hydropower project development;
- perform a reality check on the hydropower development process, power market issues and



governments' expectations in light of making these developments feasible and sustainable and make suitable recommendations; and

- establish environmental and social management as an integral part of sustainable project development.

Various papers were presented on the themes-Hydropower Potential, New Policy Initiatives, Case Studies of Projects under Implementation, Social Responsibility and Environmental Management. The topics of the panel discussion were: Open Access, Financial regulation and Grid Synchronization.



## 1. SAARC Seminar, Dhaka, Bangladesh

A Seminar on Regional Connectivity: Potential for Infrastructure Development and Energy in South Asia, jointly organized by FBCCI and SAARC CCI in cooperation with Friedrich Naumann Foundation (FNF) on May 26, 2009 in Dhaka. Mr. Pradeep Gangol from IPPAN participated in this seminar.

## 2. Royal Norwegian Embassy-IPPAN Annual Review Meeting

An Annual Review Meeting of IPPAN was held on June 4, 2009 which was participated by Mr. Inge Harald Vognild, Energy Advisor, Royal Norwegian Embassy and some IPPAN members including Mr. K. B. Bisht, Mr. Amar Jibi Ghimire and Mr. Pradeep Gangol. The discussions were mainly focused on IPPAN's activities, future work plan and budget and compliance with agree obligations.

## 3. Visit to the Ministry of Energy, Government of Nepal

Dr. Sandip Shah, President, IPPAN, together with a team from IPPAN paid a courtesy call to the newly appointed Minister for Energy, Honorable Dr. Prakash Sharan Mahat on June 23, 2009. Dr. Shah was accompanied by Mr. Amar Jibi Ghimire, Dr. Subarna Das Shrestha, Mr. Kiran Malla, Mr. Bijaya Man Sherchan, Mr. Girija Nandan Mishra, Mr. Suresh Adhikary and Mr. Pradeep Gangol.

Dr. Shah briefed the Honorable Minister on IPPAN's priority issue of accelerating hydropower development in Nepal and highlighted concerns that are posing a hindrance like the tax holiday, VAT exemption, mortgage tax, supremacy of electricity acts, wheeling policy, differential tariffs, reasonable power tariff rates for power producers, construction of access roads and transmission lines under BOOT system among a few. Dr. Shah stated that the power purchase rates offered by NEA was far from sufficient to enthruse the power producers to invest in this sector. He also mentioned about the amendments proposed by IPPAN to the Nepal Electricity Regulatory Commission Act-2066, and Electricity Act, 2066 and said that IPPAN would soon lobby with the Ministry of Energy.

Hon'ble Dr. Mahat opined that the private sector would not come forth to generate electricity, unless there are marginal profit from the investment. He emphasized that the loadshedding issue is being taken up by the government very seriously and IPPAN's concerns would be taken into consideration as far as possible. He welcomed further interactions between IPPAN and the Ministry of Energy in order to bring about positive changes in the power sector.

Further on July 3, 2009, a team from IPPAN comprising Dr. Subarna Shrestha, Dr. Janak Lal Karmacharya, Mr. Bijaya Man Sherchan, Mr. Narendra Prajapati, Mr. Anand Subedi and Mr. Pradeep Gangol met with Honorable Minister Dr. Prakash Sharan Mahat briefing him about difficulties being faced by hydropower companies in many parts of Nepal. The

Minister assured the team that the Government of Nepal is aware of the problems and is committed on solving the issue. He requested for a one page write-up of recommendations from IPPAN on the following issues:

- Managing expectations of the local people;
- Generating feelings of ownership towards the project and the company among the local people of the affected project area.

## 4. Meeting with Hon. Vice Chairman, National Planning Commission

Dr. Yubaraj Khatiwada, Honorable Vice Chairman of the National Planning Commission met with representatives of IPPAN on July 3, 2009 at the NPC Secretariat. Present in the meeting were Dr. Subarna Das Shrestha, Mr. Narendra Prajapati, Mr. Bijaya Man Sherchan, Dr. J.N. Karmacharya and Mr. Pradeep Gangol.

## 5. Pre-Budget meeting

On July 12, 2009, Dr. Subarna Das Shrestha and Mr. Pradeep Gangol attended a pre-budget meeting organized by FNCCI to discuss recommendations to be included in the Government of Nepal budget of 2067/68. Dr. Shrestha put forward the demand of VAT Exemption, LC account in convertible currency and income tax holiday mortgage tax to be included in the national budget.

## 6. Other Meetings

On July 23, 2009, Dr. Subarna Das Shrestha, Mr. Pradeep Gangol, Mr. Vinay Bhandary and Mr. Krishna Acharya participated in the meeting with Mr. Laxman Ghimire, Member of the Nepali Congress at the Nepali Congress Parliamentary Committee Office, Singh Durbar in connection with the amendments proposed by IPPAN related to the proposed Electricity Act.

On July 24, 2009, Dr. Subarna Das Shrestha along with Mr. Girijanandan Mishra, Mr. Surya Prasad Adhikary, Mr. Narendra Prajapati, Mr. Bijaya Man Sherchan, Mr. Vinay Bhandary and Mr. Pradeep Gangol met with Honorable Minister for Energy, Dr. Prakash Sharan Mahat.

On August 10, 2009, an interaction meeting organized by FNCCI was held with the 20 member Yunnan (Chinese) Economic & Commercial Delegation, led by Mr. Li Jimming, Deputy Director General of Department of Commerce, Yunnan Province of China. Dr. Subarna das Shrestha and Mr. Pradeep Gangol participated in the meeting.

The IPPAN team comprising Mr. Gyanendra Lal Pradhan, Dr. Subarna Das Shrestha, Mr. Narendra Prajapati, Mr. Tuk Paudel, Mr. Bijaya Man Sherchan and Mr. Kiran Malla met with Dr. Jivendra Jha, Managing Director of NEA August 26, 2009.

IPPAN was invited by the Asian Development Bank (ADB), Nepal Resident Mission (NRM) on August 26, 2009 for a meeting to discuss ADB's Nepal

Country Partnership Strategy (CPS) for 2010-2014 which is in preparation. The meeting was basically to gather feedback of the private sector. IPPAN was also invited to the Pilot Program in Climate Change being organized by the World Bank Group on September 7, 2009.

Dr. Subarna Das Shrestha and Mr. Pradeep Gangol again participated in a meeting called by FNCCI to discuss policies, strategies and programs of FNCCI and the relationship between FNCCI and the commodity associations on September 15, 2009. On the same day, Dr. Shrestha and Mr. Gangol also attended a meeting called by SEBON to discuss on matters related to issuance of shares of hydropower companies. Dr. Shrestha presented a written recommendation to SEBON.

## 7. Follow up visit to the Ministry of Energy

The IPPAN team led by Dr. Subarna Das Shrestha and accompanied by Mr. Narendra Prajapati, Mr. Kiran Malla, Mr. Krishna Acharya, Mr. Vinay Bhandary, Mr. Pravin Aryal, Mr. Girijanandan Mishra, Mr. Mahendra Kumar Shrestha and Mr. Pradeep Gangol called on Honorable Minister for Energy Dr. Prakash Sharan Mahat, on September 17, 2009. The meeting was basically a follow-up on issues that IPPAN had raised with the Hon. Minister before. Dr. Shrestha reminded the Hon. Minister that IPPAN had asked for redefining dry and wet months, penalty due to low energy, VAT Exemption, supremacy of electricity laws, letter of credit and revision of PPA rates.

On the same day, the same team also met with Secretary, Mr. Shanker Koirala. Mr. Koirala informed that the letter regarding VAT exemption and LC account in convertible currency for import of electro-mechanical equipments had already been dispatched to the Ministry of Finance for further processing. Regarding other issues, he proposed a tripartite meeting between NEA, MoEn and IPPAN.

## 8. Other Meetings (cont...)

On October 28, 2009, Mr. Gyanendra Lal Pradhan, Dr. Subarna Das Shrestha and Mr. Pradeep Gangol participated in a meeting with the CII business delegation lead by the Mission Leader of CII.

On October 30, 2009, Ms. Brita Næss, Advisor-NORAD visited IPPAN Secretariat and met with Dr. Subarna Das Shrestha, Mr. Pradeep Gangol and other staff of the secretariat. She was briefed about IPPAN's objectives, activities and achievements.

On 3 November 2009, Mr. Ronald Ivey, Ms. Erin Hughes, and Mr. Bibek Chapagain representing Winrock International, visited IPPAN secretariat, to discuss on possible PPP model for hydropower development in Nepal. The meeting mainly focused on developing a model for connecting a hydropower plant with a business enterprise for mutual benefit.



## Friday Forums

### Barrier to Hydropower Development in Nepal: A Transmission Perspective

May 15, 2009

Mr. Surendra Rajbhandary in his power point presentation listed the following barriers to transmission development:

- Lack of central planning body;
- Lack of regulatory institution;
- Lack of national grid policy;
- Lack of reliability standards;
- Cost allocation / timely recovery;
- EIA and license approval hurdles; and
- Overlapping roles of various institutions.

The construction of transmission lines is often a difficult and painful experience in the Nepali context. The permission for clearance of trees under Right of Way (RoW) is a time consuming process. Public demands (for things not related to transmission line construction) are very high. Concerned land owners often demand 100% compensation of land falling under RoW. Often, the cost of RoW exceeds the cost of line and substations and therefore donor agencies are reluctant to finance the cost of RoW.

Nepal needs to reassess its requirements whether for domestic use or for export? If it is for domestic needs with limited export, a 220 kV grid satisfies the requirement whereas a bulk export of power to India needs a grid voltage of 400 kV or higher. For mega power projects such as Pancheswor, Karnali and Chisapani, individual dedicated transmission lines should be developed.



### Barriers to Hydropower Development – A Policy Perspective

June 5, 2009

Mr. Sujit Acharya presented his views on “Barriers to Hydropower Development” from a policy perspective. He opined that policies are the catalyst towards the progressive development of any sector in any country. But when policies are framed incorrectly, they pose as barriers to development rather than catalysts which is the case with various policies promulgated in Nepal’s hydropower sector. While the Hydropower Licensing Policy of Nepal is obsolete, the proposed Electricity Act seems to almost replicate it. Without immediate changes to both of these, optimum hydropower development in Nepal looks remotely possible. Additionally, if

comprehensive reforms to the NEA are not made immediately, any positive changes made to the above two policies will only have an effect of redundancy. Holistic changes to the hydropower licensing policy, proposed Electricity Act and NEA are the need of the hour.

Mr. Acharya proposed solutions that will transform the existing Acts and Policies into becoming catalysts for hydropower development.



### Barriers to Hydropower Development – An Institutional Perspective

June 19, 2009

Mr. Sher Singh Bhat presented a paper entitled Barriers to Hydropower Development: An Institutional Perspective. He described the many flaws in Nepal’s power sector like the delink between strategist and planner from source data, licenses issued without techno-economic study, planning without basin study and optimization, no authentic demand forecast and integrated supply plan available.

The present working style of the Ministry of Energy gave the impression that it is engrossed in licensing rather than real growth of sector. Finally, he recommended that there should be independent regulator in the power sector like a Centre for Energy Research. The proposed NepGrid should be developed as transmission developer, owner, systems operator, and trader.



### An International Debate on use of Water and Water Rights: An Overview from the Perspective of the 5th World Water Forum

July 3, 2009

Mr. Amar Jibi Ghimire presented a paper on “An International Debate on use of Water and Water Rights:

An Overview from the Perspective of the 5th World Water Forum” on July 3, 2009.

Water is a common denominator for many development issues and the key to successfully resolving those challenges. Because of the interrelatedness of water issues with so many different sectors, progress can only be achieved through an interdisciplinary approach, both at the international and national level. Education, capacity building and financial support need to be enhanced in virtually every domain to support further progress. Solutions must be sustainable and flexible enough, adapted to specific local or regional circumstances. No “one size fits all” approach can be applied to water management. Stakeholders need to be engaged through participatory processes in the early stages of water resource development strategies.

The 5th World Water Forum held recently in Turkey, enabled greater focus to move forward on today’s water-related challenges and to create more political commitment. The forum decided to raise the importance of water on the political agenda, support deep discussions towards the solution of international water issues in the 21st century and to formulate concrete proposals to grab world attention and political commitment.



### Hydropower in Budget 2066/67

July 17, 2009

Mr. Gyanendra Lal Pradhan highlighted the importance of hydropower in Nepal’s economic development and listed valid reasons like replacing petroleum products, having competitive advantage, arresting the rapid deforestation of Nepal’s forests, sizeable domestic market, and relatively bigger market in India and so on. The budget 2066/67 has made investors satisfied to some extent because of budget announcements like immediate decision on the feasibility applications,





cancellation of license with no construction, declaration of Upper Seti 130 MW project a national priority and pride, fast-track construction of projects like Kulekhani-III, Chameliya, Tamakoshi, Rahughat, Upper Trisuli A and 3B. He listed some outstanding issues which were not addressed by the budget like bureaucratic hurdles in the way of creating investor-friendly environment, lack of strong enforcement of law, order and security, lack of joint political commitment in action, lack of government plan for roads and transmission lines to the upcoming project site, lack of policy for VAT subsidy on construction materials and insufficient local funds to finance projects more than 25MW.

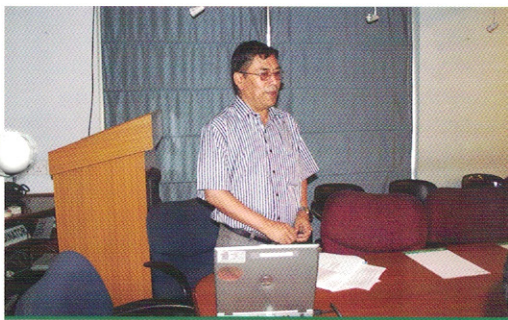
## Hydropower Development and Industrial Policy – 2065

July 31, 2009

Dr. Pushpa Raj Rajkarnikar, presented a paper on: Hydropower Development and Industrial Policy – 2065 on July 31, 2009.

The strong feature of the new industrial policy is the guarantee of incentives and facilities offered by the policy to the investors. Other attractive features of the policy are: additional facilities to be provided to industries established in backward geographical areas, Special Economic Zones (SEZ), established by women entrepreneurs, established in the form of co-operative, priority sector industries, export industries and industries providing more employment.

Priority sector industries enjoy 100 % income tax rebate for ten years, and hydropower industry has been included in the priority sector industries. The proposed policy has made provision for only 1% custom duty in import of machineries. There is No VAT, No excise provision for hydropower industry, no royalty on power production by industries for self consumption and provision has been made that the premium paid on insurance of physical assets are to be deductible from taxable income."



## Pancheswor Multi Purpose Project: A Vehicle for National Development

August 14, 2009

Mr. D.B. Singh presented a paper on Pancheswor Multi Purpose Project- A Vehicle for National Development. The Pancheswor Project will generate 6480 MW of power during peaking period of five to six hours. The project envisages construction of 256m high, rock fill type dam at Pancheswor and a re-regulating dam at Rupaligad or Purnagiri. Mr. Singh described that the project is economically attractive because of economic

parameters like unit cost of \$600 per kilowatt, energy cost of NRs 2.62 per unit, and economic internal rate of return of 25.4 % based on the 1995 year prices.

Though the project will inundate sizable tract of land both in India and Nepal, the benefits far outweighs the losses due to loss of agricultural land. According to Mr. Singh, it is high time that Nepal should make determined efforts to push ahead proposed hydropower projects including the Pancheswor Multi Purpose Project. Nepal has been losing a lot since last thirteen years like Rs. 87,000 per minute for allowing waters to flow down the River Ganges, without harnessing it for irrigation or power. Every drop of water should be utilized.



## Taming the monstrous Kosi to prevent the world's greatest catastrophe

August 28, 2009

Dr. A.B Thapa presented a paper on: Taming the Monstrous Kosi To Prevent The World's Greatest Catastrophe on August 28, 2009

The Kosi has already turned into a monstrous river. There is possibility of more frequent breach of the Koshi river than ever in the past. However, the loss of life and property can be greatly reduced by preventing the Kosi to roam freely to rampage its vast floodplain. One of the relegated old Kosi channels must be developed as a buffer channel for the diversion of the high flood water in excess of the carrying capacity of the present Kosi course. A spillway must be provided to discharge the flood water safely across the embankment into the buffer channel, which could also help to hold back the sediments already accumulated on the river bed.

The implementation of relatively small Sun-Kosi Project and the Tamar-I Project provided with adequate flood control storage would suffice to resolve the present Kosi flood problems and



at least for a period 50 to 60 years. By also raising the present dam height of the Arun-3 project, Arun River may be used as flood storage to a limited extent. Construction might not be necessary if the life of the above proposed reservoirs (in Sunkoshi and Tamor river) could be prolonged to last forever by applying the technology widely used in China, i.e. by venting sediments as a density current. Further destruction of the Kosi river bed could also be prevented if it is found commercially feasible to transport the sediments drawn from the Kosi river near Chatra for use in construction in big barges by using the proposed Kosi canal waterway.

## Preparing Nepal for Extreme Climatic Events: The Consequence of Climate Change

October 9, 2009

Mr Saraju Vaidya presented a paper on "Preparing Nepal for Extreme Climatic Events: The Consequence of Climate Change". Climate change refers to a statistically significant variation in either the mean state of the climate or in its variability, persisting for an extended period (typically decades or longer). The anthropogenic greenhouse gases emitted into the atmosphere is the main reason for global warming and climate change. The effects of climate change has been worldwide like increase in the average arctic temperatures at almost twice the global average rate, increase in the frequency of heavy precipitation events over most land areas, more intense and longer droughts observed over wider areas since the 1970s, particularly in the tropics and subtropics.



Studies have shown that such changes have also been noticed in Nepal. The effect of climate change in the snow and glaciers in Nepal Himalayas is the most serious issue. Nepal's tourism, water resources, hydropower, agriculture are the likely victims of climate change.

The fresh water resource of the Himalayas is depleting fast reducing water availability in regions supplied by melt-water from major mountain ranges. In Nepal, rainfall will increase in monsoon and decrease in winter season indicating that dry season will be even drier and wet season will be even wetter in future. Drought affected areas will likely increase in extent and intensity. Heavy precipitation events, which are very likely to increase in frequency, will augment flood risk and landslides. Some adaptation measures could be suggested like building a reservoir type hydropower, encouraging rain water harvesting system, and developing proper early warning systems.



## Climate Change, Glaciers, Glacial Lakes and Glacial Lake Outburst Floods (GLOFs) in the Hindu Kush – Himalaya

October 23, 2009

Mr Pradeep Mool presented a paper on "Climate Change, Glaciers, Glacial Lakes and Glacial Lake Outburst Floods (GLOFs) in the Hindu Kush – Himalaya". The Himalaya alone has nearly 40,000 sq km of snow and ice cover. The amount of snowfall plays an important role in water availability in the dry period prior to the onset of the summer monsoon. In Nepal, average temperature increase for the last decade was 0.06 °C per year. Warming in the Himalayas is predicted to be more than the global average in this century. As valley glaciers retreat due to global warming, glacial lakes can form, and many are observed at elevations of around 4500m. With increasing amounts of water in these lakes, glacial lake outburst floods (GLOFs) are inevitable. Climate change in general and retreating glaciers and GLOFs in particular will affect water resources, the economy, and livelihoods downstream.

GLOF events and associated hazards have a transboundary effect resulting to loss of many lives as well as destruction of homes, roads and bridges, fields, forests, hydro-power, among others. Various preventive measures are needed to adapt and



mitigate the challenges posed by climate change like maintaining a database of snow cover and glaciers, and its regular monitoring. It will help to make use of available river basin resources. A study of glacial lakes and adaptation measures including engineering structures and linkage to policy on potentially dangerous glacial lakes are necessary.

## News from IPPAN

### Butwal Power Company

#### BPC JV ready to undertake Kabeli – A Hydropower Project

On 7 October 2009, the Government has decided to go ahead with the long waiting 30 MW Kabeli Hydropower Project in Panchthar district in Eastern Region of Nepal. BPC is the leading promoter of the Project. Other promoters are SCP Hydro International (Canada), Shangrila Energy (Nepal), Asia Pacific Power Tech. (China) and Khudi Hydropower Ltd. (Nepal). It is expected that the project will set a milestone of development for the people of Eastern Region.

#### BPC acquired survey license to develop Lower Manang Marsyangdi Project

BPC has acquired survey license to develop 93 MW capacity Lower Manang Marsyangdi Project in southern part of Manang district. This project is now in Feasibility Study stage.

#### PPA Negotiation almost concluded for Andhikhola Upgrading Project

Power Purchase Agreement (PPA) negotiation between BPC and Nepal Electricity Authority has been almost concluded for upgrading

9.4 MW Andhikhola Upgrading Project in Syangja district. The PPA will be signed within a month. After PPA, the project goes into construction phase. Similarly, PPA negotiation for 20 MW Nyadi Hydropower Project in Bahundada VDC of Lamjung District, being developed by BPC subsidiary Project Company, is undergoing. It has been anticipated that the PPA will be signed by the end of 2009 this year. It has been planned that after PPA, Tunnel work will be immediately started.

#### BPC pre-qualified for International Project

BPC has been pre-qualified for Gura Hydropower Project in Kenya and submitted final proposal for Project Management and construction supervision job.

#### BPC bagged Best Presented Accounts Award

BPC has bagged Best Presented Accounts (BPA) Award for the year 2008 in the Manufacturing Sector. This is the fourth consecutive year that BPC has won this prestigious Award since 2005 for its superiority in presenting excellent Annual Reports and Financial Statements.

The Institute of Chartered Accountant's of Nepal from Manufacturing Sector, competing for BPA

Awards were Unilever Nepal, Nepal Telecom and Chilime Hydropower.

#### BPC Celebrates World Environment Day

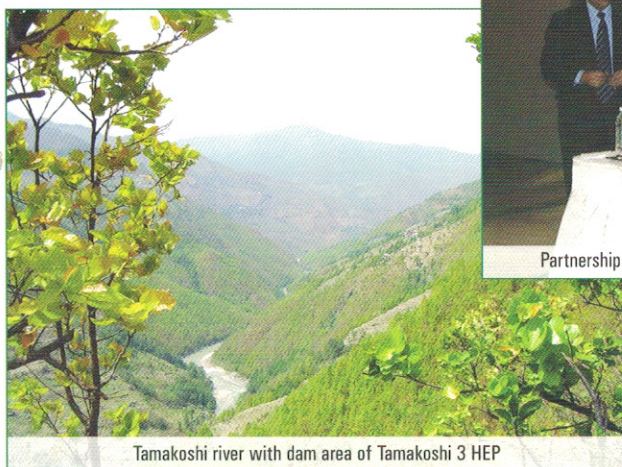
On the occasion of World Environment Day (June 5, 2009), BPC organized various programs such as inter departmental quiz contest and article competition among Kathmandu Head Office staffs. In addition, with the supports and involvement of local community, different schools and clubs, the Dhobikhola bank was also cleaned. On the same program, it was declared that "BPC as No Plastic Zone". Around 200 participants had taken active participation on that program.

#### BPC increased its portfolio to Himal Power Limited

BPC, being one of the shareholders of Himal Power Limited (HPL), developer of 60 MW Khimti Hydropower Project, has increased its portfolio by investing additional 348,168 shares. BPC has purchased 174,084 shares from Alstom Norway AS and 174,084 from GE (Norway) AS. BPC, now holds 2,978,502 shares which is 16.88% of total shares of HPL. Previously it was 14.91%.



SN Power was awarded the Survey Licenses by the Government of Nepal to develop the Tamakoshi 3 (600 MW) Hydroelectric project in the Tamakoshi River of Dolakha district. The Feasibility Study for this project is in the final stage of completion. An underground and a surface power house options are still being investigated for the peaking plant. Power will be evacuated at Dhalkebar. The bulk of the power is expected to be exported to India after supplying the domestic demand on a commercial basis. The Scoping and ToR for EIA of Tamakoshi 3 HEP has been approved by the Ministry of Environment. EIA study is in progress. A field office for EIA study



Tamakoshi river with dam area of Tamakoshi 3 HEP

has been established at Gopitar of Bhirkot VDC. The detailed design of the project is expected to

be completed by 2011 and construction is scheduled to commence in early 2012.

Similarly, SN Power was awarded the Survey License by the Government of Nepal to develop Kirne (65 MW previously known as Khimti I, Unit 6) HEP on the Khimti River of Dolakha and Ramechhap districts. The Kirne project will share resources with the existing Khimti I (60MW)



Partnership Agreement signing ceremony of SN Power and Tata Power

HEP. SN Power has majority shares with management responsibility of Himal Power Limited, which owns and operates the Khimti I HEP. Technical Feasibility Study of

Kirne is nearing completion and the Scoping and ToR for EIA is in the process of approval. The

construction of the project is planned to start in early 2011 and commercial operation is expected from May 2013.

SN Power has recently entered into an exclusive partnership agreement with Tata power to set up joint ventures to develop hydropower projects in Nepal and India. SN Power and Tata Power aim to have 2,000

MW under construction or in operation by 2015, and a total of 4,000 MW by 2020. The business model for the exclusive partnership is to develop hydropower projects that will meet the increasing energy demand in India and Nepal through the provision of clean energy. The partners will also establish a jointly-owned Services Company in India, which will provide each project with world class technical and managerial expertise. In addition to

partnering on new project developments, Tata Power and SN Power are also considering to co-develop the Tamakoshi 3 project in Nepal to which SN Power holds licence rights.

## Member List of IPPAN

### Corporate Members

- 1 Annapurna Renewable Energy (P) Ltd.
- 2 Balephi Hydropower Company Ltd.
- 3 Bhotekoshi Power Company Pvt. Ltd.
- 4 Butwal Power Company Ltd.
- 5 Himal Power Limited
- 6 Himalayan Hydropower (P) Ltd.
- 7 Himtal Hydropower Company Ltd.
- 8 IDS Energy Pvt. Ltd.
- 9 Khudi Hydropower Limited
- 10 Lamjung Electricity Development Company (P) Ltd.
- 11 Mai Valley Hydropower Pvt. Ltd.
- 12 Manang Trade Links Pvt. Ltd.
- 13 Molnia Power (P) Ltd.
- 14 Muktiashree Pvt. Ltd.
- 15 PAN Himalaya Energy Pvt. Ltd.

- 16 Pashupati Energy Development Company (P) Ltd.
- 17 Rairang Hydropower Development Company Pvt. Ltd.
- 18 Sanima Hydropower Company (P) Ltd.
- 19 Tundi Power Company Pvt. Ltd.
- 20 Cemat Power Dev. Co (P) Ltd.
- 21 Ru Ru Jalbidhyut Pariyojana Pvt. Ltd.
- 22 Radhi Bidyut Company Ltd.
- 23 Upper Maiwa Hydropower Pvt. Ltd.
- 24 Nepal Jal Bidyut Prabardhan tatha Bikash Ltd.
- 25 Upper Madi Hydro Pvt. Ltd.
- 26 Super Khudi Hydropower Pvt. Ltd.
- 27 Unique Hydrel Co. Pvt. Ltd.
- 28 Shikhar Hydropower Co.
- 29 Ankhu Hydropower Pvt. Ltd.
- 30 Annapurna Group Pvt. Ltd.

### Associate Members

- 1 Shangrila Energy Limited
- 2 Clean Energy Development Bank Ltd.
- 3 Klen Tech Pvt. Ltd.
- 4 SN Power
- 5 Nepal Hydro & Electric Limited
- 6 ICTC Pvt. Ltd.
- 7 Himal Hydro & General Construction Ltd.
- 8 Hydro Solutions Pvt. Ltd.
- 9 II&FS Nepal Infrastructure Devt. Company Pvt. Ltd.
- 10 Jyoti Bikash Bank Ltd.
- 11 Nabil Bank Ltd.



## Muktishree Pvt.Ltd.

### Puldumki River Hydro-power Project

The project is located at Makwanpur district, Nibutar VDC about 76 kilometers north of Kathmanu. The project is a run-of-the river hydropower type without any provision for seasonal flood storage for power generation. Puldumki River is a perennial type of river. The run-off occurs in the catchments area is because

of rainfall and by perennial contribution of several springs. This is a captive project and electricity produced will be solely used for the Industries of the Muktishree Group of companies. The electricity will be used for Muktishree Pvt. Ltd. sister concern Hetauda Lime Industries and Everest Minerals product.



The capacity of the project is 1.6 MW. The feasibility study of the project is going on and will be completed within 6 months. Construction will be started immediately upon completion of the feasibility study.



### Lungri (2) River Small Hydropower Project

Feasibility study of the project has been started and will be completed within one year. This is run off river project. The capacity of the project is 5 MW. The project is located at Sari, Mijim, Khungri VDC in Rolpa and pyuthan District.

## By 2020, Sanima Hydro Group set target of above 500 MW

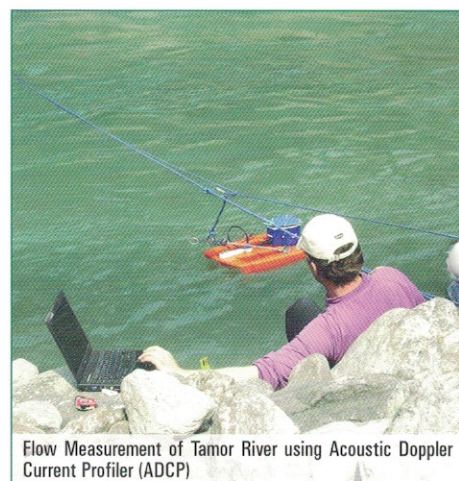
Sanima Hydropower (P) Ltd. (SHPL) was established by a group of Non-Resident Nepalese (NRNs) with a vision to promote hydropower generation in Nepal through private sector investment. The company first successfully commissioned the 2.5 MW Sunkoshi Small Hydropower Plant in 2005 which currently supplies electricity to the national grid under a Power Purchase Agreement (PPA). The detailed engineering design and construction supervision for this power plant was done by in-house experts. As SHPL expanded, there was a felt need to establish an engineering company for design and construction supervision along with other project specific companies. These companies are also collectively referred to as "Sanima Hydro Group". This group is now concluding a PPA for the 15.6 MW Mai Hydropower Project with the aim to start construction within three months. It is also undertaking detailed feasibility studies of various hydropower sites ranging from 4.5 MW Mai Cascade, 25 MW Lower Likhu to 57 MW Middle Tamor and about 400 MW Upper Tamor. Sanima Group has set a target to reach over 500 MW of installed capacity in the hydropower sector by 2020.

Sanima Group recently signed a Memorandum of Understanding (MoU) with Institute Hydroproject (HPI) and Hydro Power Engineering Co. (P) Ltd. (HPEC), Moscow, Russia for the preparation of Detailed Feasibility Study of Upper Tamor Hydropower Project. HPI with more than 70 years

of experience in study, design and construction management of hydropower projects has recently completed Tehri Hydropower Project, Uttaranchal, India, with a total installed capacity of over 2000 MW (Tehri I & II), will lead the study. Sanima Group will provide national technical staff as well as administrative and logistic support for the study. The international experts from HPI and HPEC along with Sanima Group staff recently undertook a site visit. The international experts opinioned that the site is reasonably attractive for the project with possibility of some hours of daily peaking. Topography survey, project components layout, surface engineering and geological mapping, Electrical Resistivity Tomography (ERT), are the major activities that have been completed. Whereas, hydrology analysis, flow measurements and Environmental Impact Assessment (EIA) are being carried out. The hydrological study is contracted out to INTEGRATION environment and energy P. Ltd along with ETH Zurich, Institute of Environmental Engineering Hydrology and Water Resources Management, Switzerland. State of Art Acoustic Doppler Current Profiler (ADCP) is being used to measure real time river discharge in the river.

We believe that apart from meeting the Ministry of Energy's requirements, this technical collaboration will play a vital role in completing the detailed feasibility study of Upper Tamor hydropower project of international standard, and meanwhile help to gear-up technical capabilities of many young

Nepalese engineers and technicians thereby contributing in meeting the target of exceeding 500 MW by 2020.



Flow Measurement of Tamor River using Acoustic Doppler Current Profiler (ADCP)



Site visit to Upper Tamor Hydropower Project by HPI and HPEC international experts along with Sanima Group's staff.