



IPPAN

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INDEPENDENT POWER PRODUCERS' ASSOCIATION, NEPAL

Remarks From The President



Dr. Sandip Shah

Eight Years as IPPAN President - in Retrospect

It has been eight years since I took over the mantle of leadership of IPPAN. When I look back at the years of my presidency at IPPAN, I am filled with a sense of joy and pride at what we have achieved, the momentum we have been able to create in this sector, and the positive contribution in real terms that we have made to this sector. The journey of achieving greater interest in power sector investments in Nepal has been long and painful, but I believe this holds good for all emerging economies.

I look back at the last 20 years in the history of Nepal and see that major strides have been made in opening up the economy for private sector investment, especially in development of hydropower projects. Efforts of IPPAN in this direction have always been to enlighten the policy and decision makers to create a conducive environment for private sector investment with sufficient political, legal and regulatory stability along with a safe and secure working environment. IPPAN has also worked to encourage the private sector sponsors, banks and financial institutions, construction industry and equipment manufacturers such that projects are developed in a technically viable, environmentally friendly, socially acceptable and sustainable manner with adequate profitability. We have already seen approx. 160 MW hydro generation from the private sector in the last 10 years; however, what encourages me most is the pipeline of projects that, I believe, can easily add approx. 4000 MW to the generation capacity in Nepal in the next 10 years. This is no mean achievement, given the long period of political uncertainty that we have gone through. The private

sector did not shy away during the peak of the insurgency. Now that the political situation is comparatively better, I can feel the vibrancy in the private sector to develop a number of projects with greater speed.

We can actually see the impact that the private sector has made in the overall power sector development of Nepal, which is a reflection of IPPAN's efforts and advocacy over the years. We can say with pride that IPPAN is now recognized as a major stakeholder in the power sector of Nepal. The achievements are numerous, and I am proud to have led an organization with focused objectives, consistent approach, thorough professionalism, sustained advocacy efforts backed by extensive research and analysis, and excellent communication forums. I would like to complement the members for their contributions in technical, research, analysis and communication efforts and continued advocacy, and to the staff at the IPPAN secretariat for their thorough professionalism even under duress of short timelines.

It goes without saying that the road to business advocacy over the last eight years was not without its ups and downs. There were times when the future of hydropower development in Nepal, especially through the private sector, was questionable. Political and legal stability risks, security concerns, growing local expectations, lack of interest of financial institutions to fund large projects in Nepal, lack of adequate transmission capacity, lack of access to the regional power markets, etc. were causing serious concerns in the minds of potential investors. Local investors were wary of investing their funds in such high-risk, capital intensive projects with less than normal returns. International investors were looking elsewhere for investing their funds in safer markets. However, I can confidently say that investor confidence is partially restored due to the advocacy and championing efforts of IPPAN through organization of the Power Summits, Hydropower Convention and other similar efforts. There is still a lot to be done in this context, and I am sure, IPPAN will continue its efforts in a sustained manner in the future.

Having led this business association in a professional manner, I believe that the new leadership will continue to follow the following 10 Cs in the efforts to be conducted through the organization:

- Consistency on views and positions on policies and issues and related efforts;
- Development of Coherent position papers on legal, financial and technical legislation and regulations;
- Clarity of thought supported by adequate research and analysis for balanced benefit of the sector;

- Adequate Content;
- Relevance to Context;
- Clarity and consistency in internal and external Communication;
- Proper Coordination among stakeholders;
- Sustained Collaboration among IPPAN members;
- Continued Cohesion among the members;
- Proper Code of Conduct in advocacy and business practices.

While I handover the baton to the new leadership at IPPAN, I wish them all success in their efforts. I strongly urge the new leadership to remain focused on the objectives of IPPAN, i.e. to support the overall growth of power sector in Nepal, with emphasis on increased investments from the private sector. I am not signing off from IPPAN, but I will continue to lend my support and guidance to the new team, as and when necessary, because the road ahead is still long and winding, and as I always quote Robert Frost, I have miles to go before I sleep

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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Interview with Hon'ble Dr. Prakash Sharan Mahat, Minister for Energy, Government of Nepal

capacity within a short period of time. Therefore, we focused on importing power from India to meet the immediate power need. However, we are not able to import maximum power because of the limitation of transmission capacity.

We were able to reduce load shedding hours from 18 hours to less than 12 hours a day because of demand side management. As a result we were able to supply more power to the far eastern region and mid eastern region. There is almost none or very little load shedding in rural areas.

What do you think that the Government of Nepal is doing to reduce the load shedding hours? In your opinion, when will the Nepali people face the day without load shedding?

It will take some time to completely eliminate load shedding with our own power generation. From our own estimate, it will probably take at least five years to generate enough power supply of our own. With the Upper Tamakoshi project and few other private/public sector projects we will be able to eliminate the load shedding completely. Before that, we need to look for other alternatives such as import from India. Within two and half years, the transmission line between Nepal and India will be completed enabling us to import more power from India and eventually help eliminate the power shortage.

At the same time we are also looking into other areas to meet the power gaps, such as thermal power projects. We have two thermal plants, one in Hetauda and the other in Biratnagar. We are not able to run these thermal plants in full capacity because of some problems. With support of the World Bank, we will be able to generate power from these plants in full capacity for the next dry season. We already have an agreement with the supplier. We would like to add a few more thermal plants with private sector involvement and bilateral support. Similarly we are also looking into the possibility of having coal based thermal plants in the border areas, especially near the industrial areas. Therefore, I think within five years we will be able to eliminate load shedding with our own power generation. However, we will significantly reduce load shedding within two to three years with import and other measures.

What are the major constraints/challenges you foresee in the way of power development in Nepal?

There are several challenges and constraints because our system is still not working in a harmonious manner. There are several Departments and Ministries who should expedite power purchase for example, the Ministry of Environment, Ministry of Forests and Soil Conservation and the Ministry of Finance. There is a dire need for more harmonization and coordination. Similarly there are some rules and acts which need to be changed to meet the coming challenges. There is already a proposed new Electricity Act in Parliament. Hopefully, we will be able to eliminate some of the hurdles through the changes in our Electricity Act.

There are problems in local areas in the power project construction sites. The expectations of the local people are sometimes more than what the project and investors can afford. We need to reconcile with this and manage their expectations. We need to make them feel that they are part of the system and project and that they are important stakeholders in the proposed Electricity Act.

There are political problems especially with the foreign investors. We need to work in the political sector although there is a common commitment from all the political parties to develop hydropower as the lead sector to bring about economic transformation in Nepal. There are problems in terms of commitment at the field level like a difference in their verbal commitment and actual behavior. Such parties need to be changed. These are some challenges for hydropower development in Nepal.

There are problems related to bigger power projects. We intend to export power to India in future, and for this, we need to work in close coordination where Indian collaboration is required for example the Pancheswor Multi -Purpose Project. There has to be a national consensus to work closely with India and we need to do a lot of homework.

Similarly there are multiple problems related to small power investors. They have fixed PPA with NEA and they have their own concerns regarding the cost. NEA has its own challenges of financial crisis. The tariff rate has not changed for a long time. The increased PPA from the private sector and inspite of the huge financial constraints of NEA, the fact that they are still buying power is posing a big problem. The gap between purchase and their tariff for the industry and public is huge so there is a problem, in terms of encouraging more private sector investment especially small domestic investors.

Dr. Mahat, what were your main achievements in the power sector in your tenure as the Minister for Energy?

It is very hard to talk about achievements, especially in the power sector. People look for tangible results in terms of power supply but power supply will not happen overnight. It takes time but I am very satisfied with what we were able to do in terms of laying the foundation for power generation in the future. For example, we were able to enter into an agreement with the World Bank to have a cross border transmission line between Nepal and India. With this a lot of investors will feel the confidence to invest in Nepal.

There are several power projects from private investors and external investors in Nepal. They are not only interested but have already started investing. This is a positive sign for power development in Nepal. We were able to secure financial resources required for Upper Tamakoshi, which is a big Nepali investment project. This project will now enter the construction phase. This was also a big achievement.

In the private sector, the Kabeli Hydropower project with World Bank's support, will initiate works soon. NEA is also going to start the construction works of Trishuli III-A and III- B and Rahughat Hydropower projects. Many private investors are also working on different hydropower projects. So there is a reason to be optimistic.

Nepal is reeling under unprecedented twelve hours load shedding a day. The first power crisis began in 2001, and since then, Nepal is suffering from power shortage. What are the reasons for such a long period of power crisis?

The crisis that we are facing is a result of the Maoists insurgency in Nepal. During those years, investments could not materialize. Therefore, our progress in power generation remained very sluggish but demand for power increased by at least 10 % a year. At the same time, we are increasingly expanding rural electrification activities. While we are increasing our electrification drive, there is no tangible achievement in terms of power generation. This has resulted in unprecedented load shedding in Nepal. People and businesses have suffered immensely. However, we were able to reduce the load shedding hours from 18 hours last year to 12 hours this year through power import and some other measures. I think this situation will not remain for long.

What policies and plans are being implemented to reduce the load shedding hours?

We are working on short and long term plans to mitigate this problem. Obviously, we cannot expand generation





Interview with Ms. Nadia Sood

Executive Vice President - South Asia, SN Power, Norway

Many people say: What oil is to Arab world, water is to Nepal. It is also said that hydropower is the engine of growth for Nepal's economic development? What is your comment on it?

Nepal has a very steep gradient and topography that provide ideal conditions for hydropower development. In addition Nepal is home to eight of the world's 10 highest mountains. You therefore have the theoretical capacity to generate more hydroelectricity than almost any other country. However, even with these favorable conditions, much of Nepal's hydropower is still untapped, and despite serious efforts by concerned agencies, potential mega-projects have failed to take shape. This has meant that the potential that hydropower has to unlock economic growth in Nepal has not yet materialized.

You have been associated with Nepal's hydropower development through SN Power. What are the main achievements of SN Power and what are the main strengths that you think will SN Power achieve its targets in Nepal?

Through our majority share in Himal Power Limited, SN Power operates the Khimti hydropower plant which is currently the largest independent hydropower plant in Nepal. In continuously meeting its yearly operational targets, the Khimti-plant has made a profound impact on the lives of the inhabitants of the Dolakha area, where the plant is located. Only fifteen years ago, this area was on the very bottom of the development ladder, with villagers

living in total darkness and a child mortality rate double the national average. Today we are proud of the fact that the village boasts the best school and hospital in the district, and a network of cable- and internet connection.

This progress has not only been made possible through the distribution of electricity to new households, and the building of infrastructure in connection to the plant, but also through a sincere commitment to community development by the company, Himal Power Limited. The most recent example of this is the transfer of two mini-hydro plants, which will distribute electricity to around 8000 households, to the Khimti Rural Electricity Cooperative (KREC) - a local initiative supported by the company.

SN Power is committed to a long term strategy in all our projects. The Statkraft group, which is our majority owner, started operation of the Khimti-plant already in 1996, and the plant's sound operational performance show that we are able to execute and operate successful projects in Nepal. We do this by using our multi-disciplinary project teams, which have a wide range of expertise including: the development and management of hydropower plants, power markets, finance, regulations, environment, and legal and social issues. In addition, we can capitalize on our owners' technical and financial strength, as well as our own longstanding experience in Nepal, when embarking on the two new projects we are currently planning to execute in the region. SN Power has long traditions in Nepal, and we want to continue to be a major hydropower company contributing to economic growth and sustainable development.

What are the main constraints and impediments you think in the way of hydropower development in Nepal?

There are a number of challenges connected to the development of hydropower in Nepal today. The main obstacles are insufficient investments into the

grid, lack of adequate transmission lines and a lack of sufficient capacity on existing and planned cross-border transmission lines. Cross-border power evacuation and sales are critical to the commercial viability of mega hydropower projects. Furthermore the production of hydropower is very capital-intensive, which makes it risky for the developer to embark on new project, unless there is a long-term predictable and stable legal and regulatory framework. This is still a challenge in the business environment of Nepal.

Drawing from your rich Norwegian experience in hydropower development, what institutional and policy reforms do you suggest for Nepal's hydropower development?

The Government of Nepal has expressed a goal of producing 25,000 MW of hydropower within 20 years. Policy reforms will be central to making this goal a reality. In particular, the deregulation of the electricity market, the integration of the Nepalese and Indian markets for export and import, accompanied by cross-border transmission lines between the two countries, are essential in order to develop such a significant volume of hydropower. Sound and solid security measures are also preconditions for us to secure our highly capital-intensive projects.

Will you pls. brief our readers about the progress made in Tamakoshi - III hydropower Project? When will it start generating power?

Currently we are planning for start of construction in March 2012 and commissioning in March 2017. In order to proceed to an investment decision and to construction a number of commercial parameters need to fall in place, a solution for power evacuation needs to be in place and all necessary permits and licenses must have been granted by the Nepali government. We hope to continue to be able to rely on the support of the relevant agencies in Government as we continue to progress the development of this extremely important project.



Interview with Ms. Susan Goldmark

Country Director for Nepal, The World Bank

experience, what are the policy reforms needed to accelerate hydropower development in Nepal?

Nepal's level of development with respect to energy is low by global and South Asia regional standards. An estimated 88% of the country's total primary energy demand is met by traditional forms of energy, reflecting the overwhelmingly rural distribution of population in Nepal and the virtual absence of clean, commercialized forms of energy outside of urban areas. This heavy reliance on traditional energy sources brings with it the well-known problems of limited opportunities for rural economic development and education; environmental degradation; inefficiency; and health impacts.

An estimated 27% of the rural population and 87% of the urban population have access to electricity through off-grid applications or through the national grid. However, actual consumption of electricity remains very low, even for urban Nepalis, because Nepal's supply capacity is highly constrained and has not kept up with the sharp rise in demand of recent years. Nepal's total grid-connected generation capacity amounts to a meager 683 MW, and the actual available capacity at any point in time is generally considerably lower.

Exacerbating this low level of development is an energy crisis of unprecedented severity that erupted in the

The World Bank's involvement in Nepal's power sector is not a recent one. Based on past World Bank

winter of 2008/09. Load-shedding has long been a facet of the hydro-dependent power system in Nepal, where protracted conflict and weak institutions and finances have discouraged investment and hampered the addition of power generation capacity. The supply-demand gap has grown sharply in recent years, with the result that in the winter 2008/09, grid-connected consumers received electricity only eight hours a day. Because Nepal's storage capacity is extremely limited, most of the excess water that is available during the monsoon period, which could be used to augment the naturally low river flows of the dry season, is not stored.

In the absence of a concerted scale-up of grid-supplied power, Nepal will continue to be burdened by a heavy reliance on costly, and often polluting, alternative means for meeting the demand for electricity. While some cite the high costs of hydropower development as an argument against developing Nepal's great potential in this area, the cost to the economy of doing without electricity or relying on the alternatives is enormous.

Which are the projects in the electricity sector that the Bank is focusing on in Nepal?

In the Energy Sector, the World Bank supports Nepal through a four-pronged approach. The first approach is designed to urgently relieve the energy shortages through critical investments in the maintenance and rehabilitation of existing plants.

In December 2008, the Government declared a "national energy crisis" and approved an Energy Crisis Management Action Plan. Last June, the World Bank approved close to US\$ 90 million in additional financing for the Power

Development Project which we have been supporting since 2003. The additional financing is intended to support demand- and supply-side investments and policy reforms aimed at alleviating the crisis.

Investments include rehabilitation of the Kali Gandaki 'A' Hydro Electric Plant (HEP), the largest plant in Nepal's power system, as well as of two existing thermal plants in Duhabi and Hetauda. It will also finance construction of the Bharatpur-Bardaghat transmission line, strengthen the old and severely overloaded distribution network in Kathmandu Valley. These investments are intended to strengthen Nepal's power system by increasing energy production through reduction of down-time at the Kali Gandaki 'A' HEP; making available an estimated 22 MW of capacity at the existing thermal plants. It will also improve the reliability of the Kathmandu Valley distribution network by adding 500 MW transmission capacity to relay power from existing and expected future projects.

Under the second approach, the Bank will continue its support for the expansion of community managed micro-hydro schemes in isolated rural areas. About 25,000 households are currently served by schemes that the World Bank has financed. An additional 36,000 households will benefit by 2012, with the installation of about 4.25 MW in the Government's micro-hydro program.

Thirdly, the Bank will support medium scale hydropower and transmission schemes such as Kabeli-A and transmission interconnection with India for urgent electricity imports during the load-shedding season and subsequent electricity trade.

Over 1996-97, the Government of Nepal carried out a comprehensive screening and ranking process of 138 candidate projects that ultimately identified seven projects, including the 30 MW Kabeli "A", for detailed feasibility study. The feasibility study and environmental impact assessment were prepared in 1998. The project was eventually offered to the public for competitive tender on the basis of tariff. On January 31, 2010, the Government of Nepal and the project company, Kabeli Energy Limited (majority-owned by Butwal Power Company, a private Nepali company), signed the Project Development Agreement.

The Government of Nepal intends to on-lend World Bank financing to Kabeli Energy Limited for the construction of the hydro-electric plant and to Nepal Electricity Authority for the construction of transmission lines and upgrading of substations. In addition to the Kabeli "A", several other hydro generation projects are under development in the Kabeli River basin. These projects require transmission capacity to evacuate the power they will generate. In total, it is anticipated that the project will eventually make possible the evacuation of approximately 170 MW.

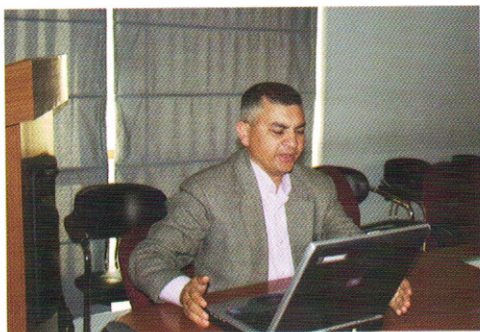
The Government of Nepal and the Government of India have recently accelerated efforts to expand the cross-border transmission linkages between the two countries which could allow Nepal to import sufficient capacity to end load-shedding within three to four years (in the best-case scenario) and, eventually, as new hydropower projects are developed in Nepal, to export surplus power capacity. We are exploring how best we might support this effort.

FRIDAY FORUM

Issue of natural resources in federalization process of Nepal with special reference to hydropower potential (20 November 2009)

Mr. Sunil Pokharel, Civil Engineer, Nepal Telecom

Federalism is said to be a tricky issue in a country as geographically and socially diverse as Nepal. It requires an intelligent assessment of the interactions between



economic, bio-physical and social variables. Federal states will more likely prosper and last longer if they span and enable interaction between the Himalayas, Mid-hills and Terai regions, with equitable distribution

of natural resources. Natural resources of Nepal include hydropower, minerals, timber products, herbs, agricultural production and sand. While assessing the economic potential of hydropower, assumptions made were, total capacity of projects, including applications applied for survey, license issued, survey completed, and running projects as 39315 MW, total potential available in Nepal as 80,000 MW, capital investment required as Rs.175 million per MW, buying rate as Rs. 5.4 per kWh, management cost as 2 % of the total project cost, life of project as 50 years, capital return period as 20 years, Interest Rate as 10% annual, Net Profit per MW per year as Rs.38.8 Million.

As the GIS analysis indicated, castes and ethnic groups were scattered all over the country but the natural resources were not in line with population distribution. People of Manang, Solukhumbu, Sankhuwasabha and Dolakha have per capita resource of more than USD \$7000 per annum, whereas districts like Siraha, Dhanusha, Bara, Sarlahi, Mahottari, etc. have less than \$300 per annum. The huge disparity of natural resources among people creates a breeding ground for violent conflicts or civil war in future. A balance should be maintained between the right to natural resources of the local community and redistribution of extra resources to scarce areas. The demarcation of state/province should be based on the proportionate distribution of potential natural resources. The sharing of royalty among central government, state government and local communities should be decided scientifically.

Engineering Application of GIS, with special focus on hydropower (4 December 2009)

Mr. Naba Raj Subedi: GIS Analyst, National Geographic Information Infrastructure Program of the Survey Department, Government of Nepal

Geographic Information System (GIS) is defined as a system in digital environment that involves geographic



data input, spatial analysis and output. GIS can be used for query based on the existing data, spatial analysis, prediction, simulation, uphold spatial data and can also link other attribute data with the spatial data. GIS can be used for visualization of elevation lines, interactive display

of the elevation lines with multi-resolution, comparing model-based river and the existing vectors river lines. The engineering application of GIS include calculation of watershed or basin area at the given location with a single click, flood mapping, flood prediction, shortest road alignment, profile drawing, power transmission line information, surface analysis, assessing the environment impact assessment and digitizing (i.e. converting features on a paper map or aerial photograph into digital vector format).

In Nepal, GIS database is being created by the Department of Survey, Government of Nepal, ICIMOD and other organizations. However, data from one organization does not match with the data of another organization due to standardization problems. A few tasks that GIS cannot do are acquire data by itself, provide the answer easily without customization of the basic platform, sustain without skilled human resources, be sustainable if the attitude for partnership, sharing and use of the available resources is lacking. GIS can be used for 4 Ms, i.e. measurement, monitoring, mapping and modeling.

Hydropower Prospects and Difficulties: Sharing the Canadian Experience

(10 December 2009)

Dr. Marc Carpenter, President, White Mountain Energy Company, Canada

"Quebec Province of Canada has an installed capacity of 40,000 MW. Quebec Province had decided to go for hydropower development when the price of oil was US \$ 3.5 per barrel. It was a bold decision to go for



hydropower development at that time. The reason for going for hydropower was to generate employment also for other spin off effects like roads, trade, industries etc. The present situation in Nepal favors the development of hydropower because the price of fossil fuel is increasing and there is high fluidity in the electricity market (export, trading) and serious concerns over carbon emissions and climate change.

Open access to energy would be beneficial for both India and Nepal and hydro and thermal plants are good complements. Nepal can import power during day time from India and can export peak power during peak time. Hydropower development is synonymous to economic and social development relatively less developed regions. It needs infrastructure such as roads, telecommunications, electricity etc. It is labour intensive (creates jobs for unskilled, semi skilled, skilled, and highly skilled manpower) and is renewable and clean. It brings long term and lasting benefits for generations to come. What is most important to note is that building a hydropower is building a country."

Managing Load shedding - IPPs' perspectives

(18 December 2009)

Mr. Gyanendra Lal Pradhan, Executive Chairman, Hydro Solutions

200,000 MW of power and one million GW hour of electricity can be generated from more than 6000 rivers and rivulets of Nepal. Even after knowing that load shedding could recur in the future, no proper exercise was done after 2003. The accumulated loss due to load shedding is estimated to be a whopping Rs. 71,212 million by the year 2010. Mitigation of load shedding involves plans for wet and dry season.

The load shedding mitigation measures for the wet season includes, optimization of the present power



plant capacity, enhancing the plant capacity e.g. Khimti HPS (60MW) capacity can be augmented up to 100 MW, Kaligandaki (144MW) over 200 MW, and purchase of excess energy available with the IPPs ~ 100 GWH.

The load shedding mitigation measures for the dry season includes, increasing the water storage capacity. For example, it might be possible to almost double the energy generation of the Kulekhani Plant No 1, 2 & 3 by pumping water drawn from the Bagmati into the Kulekhani storage reservoir. It could be a very simple and the most cost effective proposition in the present context. Other mitigation measures include upstream regulatory dam construction. For example, by constructing a dam in the Jomsom area in Mustang district, Kaligandaki A (installed capacity 144MW, whose electricity generation capacity goes down to as low as 40MW during dry season) can significantly increase its generation capacity in the dry season. Public awareness is needed to make use of energy efficient bulbs, equipment and capacitor banks. Serious efforts are needed to reduce transmission losses, conducive environment should be created to encourage IPPs and NEA to generate more energy and their plant capacity should be optimized. The immediate short term measure includes import from India.

Managing Load Shedding: The Demand Side Perspective

(8th January 2010)

Mr. Sher Singh Bhat, Director, Systems Operations, NEA

Load shedding that is adversely affecting the entire Nepali economy is not a solution but a compulsion due to mismatch between consumption and generation of power. The sources of Nepal's hydropower are RoR, PRoR hydro plants, seasonal storage hydro plants, thermal power plants and import from India. The power supply to the national grid is characterized by seasonal

variations. The power supply during dry seasons is approximately one third of the installed capacities of hydro plants. The reasons are the seasonal variations in river flows, due to snow fed and rain fed rivers. Due



to the heavy mismatch between power supply and demand, a balance has to be maintained to save the power system from collapsing. Due to limited capacity to generate in supply side, demand has to be curtailed. In other words, power has to be cut off from the power system to prevent complete system collapse. This is called load shedding.

During the driest periods of mid November to mid June, the river flows are just one third of the wet season river flows. Power generated during this period, is therefore one third of the power produced during the wet season. The purpose of load shedding is reducing energy consumption, though it is not a desirable or popular option for NEA. From demand side perspective, consumers have to be responsible citizens and should practice wise use of energy as far as possible, like minimal use of air conditioners, heaters, rice cookers and other appliances like inverters.

Consumers' Role in Energy Savings

(5th February 2010)

L.R. Tamang, President, Nepal Electrical Contractors' Association

"The present power crisis can be managed by upgrading the existing power plants, improving power factor,



enhancing energy efficient programs, new power generation through thermal plants, renewable energy, transmission and grid extension including cross border transmission lines for import of power. Other measures for managing load shedding include peak clipping of residential, commercial and industrial loads (contributes evening peak - reduction), effective pilferage control, checking of wiring and installation, use of CFL, LED, sensors, photo sensors, energy efficient MCB's, mandatory certification of household equipments, incentives for use of energy efficient equipments (freezers, computer, T.V, air conditioners, refrigerators,

etc), tax holiday for import of energy efficient appliances (computer, freezers, MCB's, pumps, motors, etc), incentives for P.f. improvement and penalty for lower P.f, higher customs for GLS lamps / incandescent lamps, power tariff restructuring (energy charge as per consumption and no block tariff) etc."

Managing Load Shedding, a Renewable Energy Way

(12 March 2010)

Dr. Jagan Nath Shrestha, Professor, Centre for Energy Studies, Institute of Engineering, Tribhuvan University

So far only about 603 MW of power (out of theoretical potential of 83,000 MW) have been connected to peak load system. According to a survey carried out in Kathmandu Valley, 74% of the households are ready to pay as high as Rs.10 per unit as energy tariff for regular and reliable power supply. 62% of the companies in Kathmandu expressed their willingness to pay Rs.40 per kwh for reliable and regular power supply. Forests



supply nearly 78 % of the total energy requirement of the country. On an average Nepal has 6.8 sunshine hours per day. Though significant wind potential is noted to be available in mountainous region, no proper wind mapping of Nepal has been done so far. Micro hydro plants, totaling 4500 kW, 60, 600 biogas plants, 50,000 improved cooking stoves, and 23,000 solar house systems, and about 400 solar cookers, dryers were established in Nepal during the ninth five year plan. So, far, about 220,000 biogas plants have been installed in 68 districts of Nepal.

Normally, biogas plants have been found feasible in terai and hilly regions of Nepal and Micro hydro plants have been found to be feasible in mountain regions of Nepal. Solar PV, Solar Thermal, Passive solar building, improved cooking stoves and wind mills have been found feasible in all regions of Nepal. What is important to note is that nothing is more costly than not to have electricity in the 21st century. Government of Nepal should therefore, urgently, formulate a policy for enabling private sector to invest in renewable energy.

Managing Load shedding—Overcoming the Financial Challenges of NEA

(26th March 2010)

Uttar Kumar Shrestha, former Managing Director, Nepal Electricity Authority

"The people of Nepal are reeling under unprecedented twelve hours a day of load shedding. As a single buyer, NEA has been the scapegoat for the mistakes it never committed. The main reasons for NEA's financial losses include pegging of retail tariff for nine years, high average power purchase rate, operational losses on

rural electrification, high re-lending rate, high cost of grant projects due to limited bidding, high system losses, mismatch in royalty calculation with Electricity Act, increase in project cost due to delayed construction, long overdue street light receivables and low capacity utilization of power plants. NEA's financial health must



be obviously improved for which it must get additional cash inflow to reach an annual breakeven, recover accumulated losses and invest in new projects.

Additional cash inflow may be generated by saving cash outflow through financial restructuring by converting loans into equity, changing relending rate, reviewing royalty rate, settlement of receivables/payables with the government, direct cash subsidy for operational losses in rural electrification and power purchases, improvement in internal efficiency and reduction of system losses, retail tariff revision and additional investment by the government as equity. Without substantial improvement in the financial health of NEA, IPPs and investors may be reluctant to invest in the hydropower sector."

Managing Load Shedding: A Generation Perspective

(9 April, 2010)

Sriranjan Lacoul : Joint Secretary, Ministry of Energy, Government of Nepal

"On a short term, load shedding can be managed by importing power through cross border transmission lines and promptly adding thermal plants in India or Nepal. On a long term, load shedding can be managed through



storage plants and run of river plants. The present power sector scenario is characterized by the nation's overall security situation, political transition, perception of political risk and impact after federal structure, lawlessness and ownership of natural resources. Government needs to facilitate IPPs through clear policy guidelines, enactment of Nepal Electricity Regulatory Commission (NERC) to oversee power sector, clear policy for export oriented projects, acquisition of land, clear policy for resettlement and compensation and

smooth approval processes for environmental studies etc. The developers should be provided incentives in the form of tax concessions and holidays. The main challenges for hydropower development are, development of other related infrastructure, related service sector, market development for IPPs, downstream benefits in cases of reservoir projects due to augmented flows, and so on."

Future Energy Scenarios and Strategic Options for Nepal

(23 April 2010)

Amrit Nakarmi, Professor, Center for Energy Studies, Institute of Engineering, Tribhuvan University

"The world's dependency on fossil fuel are fast leading to serious depletion of resources. In Nepal, heavy reliance (ca. 88 %) on traditional fuels for livelihood is a very unsustainable practice. While the dependency on imported petroleum products is excessive, the harnessing of indigenous hydropower resources is dismally poor. This calls for import of various fossil fuel substitutes.



Nepal's long term vision for wise energy use should be to ensure energy security, sufficiency, and sustainability for poverty reduction and economic development through the efficient use of alternative energy resources.

The objectives should be:

- » to ensure sustainable consumption of biomass energy resources,
- » to make hydropower as the main energy resource,,
- » to reduce dependency on imported fossil fuels,
- » to provide an adequate supply of energy throughout Nepal at a reasonable and affordable price,
- » to develop alternative energy technologies,
- » to encourage efficient use of energy; and
- » to minimize detrimental environmental effects resulting from energy supply and use.

The policy interventions needed for energy security include:

- » 50 percent replacement of incandescent bulbs with CFLs by 2020, leading to 75 percent by the year 2030,
- » transmission and distribution losses reduced by 25 percent in base year to 10 percent by 2030,
- » diesel and petrol cars reduced by 30 percent in 2030;
- » electric cars replaced by fossils fuel cars at the rate of 15 percent in 2030,
- » environmental degradation minimized by use of clean, renewable and efficient technology
- » introduction of pollution tax on fossil fuel and incentives provided to electric and hybrid vehicles; and
- » provision made for development of alternative energy sources."

IPPAN ACTIVITIES

MEDIA TRAINING

IPPAN organized Media Training for journalists on Jan 21, 2010 at Hotel Himalaya. Participants were from Kantipur TV, Kathmandu Post, Annapurna Post, Nepal Samacharpatra, Karobar daily, Nagarik daily, Ujyalo FM, Naya Patrika, News24 TV etc. The training was organized to make journalists familiar with the issues being faced by the hydropower industry of Nepal.

Dr. Sandip Shah, Mr. K.B.Bisht, Dr. Subarna Das Shrestha, Mr. Apar Neupane and Mr. Bikash Thapa and Mr. Mohan Joshi presented Power Point presentations to explain the various aspects and issues of Nepal's hydropower industry.

IPPAN organized a field visit to Khimti Hydropower plant for the journalists, who attended the media training. The journalists appreciated the efforts of IPPAN to make them more sensitive towards the issues of Nepal's power sector and requested IPPAN to extend the time of field visit for better understanding of hydropower issues at field level.

Journalists participating in the media training and field visit, also appreciated IPPAN's initiatives for organizing very useful media training and hoped to work together with IPPAN in its advocacy efforts to create investor friendly environment for Nepal's sustainable hydropower development. IPPAN thanks Himel Power Ltd. for arranging the field visit and logistics support for the journalists at the Khimti Hydropower Plant.



Interaction with Legislative Parliamentarians-25 April 2010

An interaction session with Legislative Parliamentarians was organized at Hotel Shangrila on 25 April 2010. The session was organized to sensitize the Parliamentarians about the Committee on Natural Resources and Means, hydropower issues and in particular the proposed Nepal Electricity Regulatory Act. The session was attended by Parliamentarians like Mr. Gagan Thapa, Mr. Abhishek Pratap Shah, Ms. Bina Poudyal, Ms. Pramila Rai, Mr. Jit Bir Lama, and Mr. Dhyan Govinda Ranjit.

Dr. Sandip Shah, President-IPPAN, welcomed the Members of Parliament, and stated that the need of the hour is to create a conducive environment with political, legal and regulatory stability such that private sector can develop sustainable projects to alleviate the load-shedding situation in Nepal.

While Mr. Gyanendra L. Pradhan made a presentation on hydropower benefits, Dr. Subarna Das Shrestha briefed the participants on the need for IPPAN's amendment proposals which was submitted to the Legislative Parliament. Mr. Bijaya Man Sherchan spoke about the tariff restructuring which was needed to accelerate hydropower development in Nepal. He added that PPA applications were expecting an agreement. However, IPPs are reluctant to enter into PPA, mainly because of the prevailing non-cost effective PPA rates. He added that IPPs are demanding a flat rate PPA of Rs. 6 per unit and price escalation of five percent for nine consecutive years. He remarked that the proposed flat tariff of Rs. 6 per unit was far lower than the tariff rate at which NEA is importing power (Rs. 10 per unit) from India.

He further added that if the proposed tariff rate was approved by NEA, power projects with combined installed capacity of 1571 MW will start generating power within a span of three years.



Mr. Shailendra Guragain underlined the need for solving the liquidity crunch, establishment of Power Development Fund, interest subsidy of 2.5 % in bank loans, and declaration of high priority to the power sector by the government. In his opening remarks, Mr. Gagan Thapa noted that such interaction meetings between IPPs and Parliamentarians should be continued in the future as well to sensitize Parliamentarians and the general public about the burning hydropower issues of Nepal.

Dr. Sandip Shah strongly put forward his views that the present tariff rates need to be revised and changes should be made in the proposed Hydropower Acts if the Government is serious about ending the load shedding and correcting the balance of payment problems with India.

Other participants from IPPAN comprised Mr. Gyanendra Lal Pradhan, Dr. Subarna Das Shrestha, Mr. Kiran Malla, Mr. Krishna Acharya, Mr. Bijaya Man Sherchan, Ms. Puja Chand Thakur and Mr. Pradeep Gangol. Mr. Hari Bairagi, Mr. Guru Prasad Neupane and Mr. Shailendra Guragain from Small Hydro-Developers' Association, Nepal (SHDAN) were also present in the meeting.



ADVANCED LEVEL GIS TRAINING



An advanced level GIS training was organized in IPPAN Secretariat from April – Mid May, 2010. Altogether eleven participants, representing Cemat Power Company, SN Power, Himalayan Power Partner, Nepal Electricity Authority (NEA) and IPPAN participated in the training. Mr. Nab Raj Subedi, the GIS Analyst of the National Geographic Information Infrastructure Program of the Survey Department of the Government of Nepal, was the instructor of the one month long GIS Training. The training was the second of its kind, organized by IPPAN. IPPAN President Dr. Sandip Shah presented certificate of achievements to the participants on May 16, 2010.

It is to be noted that GIS can be a powerful tool for power companies and other stakeholder companies to assess the hydropower potential of a river basin. The main focus of the training was in the engineering application of GIS in the studies of hydropower projects.

MEETINGS

1. Public Information/Consultation Workshop : Pradeep Gangol, Executive Manager of IPPAN attended a meeting of Public Information/Consultation Workshop on "Developing a Strategy to promote Transparency, Integrity and Accountability in Nepal's Water Sector, jointly organized by Jalsrot Vikas Sanstha (JVS)/Nepal Water Partnership and the Water Integrity Network (WIN) on 17th May, 2010 in Kathmandu.

The paper presenters' emphasis was on the need for Integrity, Accountability and Transparency in Nepal's water sector. The requisites are empowerment of people, good policy and political commitment to implement the policy.

1. A meeting was organized by the Natural Resources and Means Committee of the legislature Parliament on May 17, 2010 at its secretariat in the Singh Durbar premises. Representatives of IPPAN and SHDAN were invited to discuss on the problems of loadshedding. Also present in the meeting were : Hon'ble Dr. Prakash Sharan Mahat, Energy Secretary Mr. Shanker Koirala, Joint Secretaries Mr. Anup Kumar Upadhyaya, Mr. Sritanjan Lacoul, Mr. Rajendra Kishore Kshatry of the Ministry of Energy, Mr. Sunil B. Malla, Director General of the Department of Electricity Development, and Dr. Jivendra Jha, Managing Director of the Nepal Electricity Authority. The meeting was chaired by President of the Committee, Ms. Shanta Choudhary. The meeting was called to discuss on issues related to loadshedding like : ways and means to reduce load shedding hours, reluctance of IPPs to generate power, after acquiring licenses, possible solutions to discourage the tendency of holding licenses; review of measures being taken by the ministry of energy, and the possible measures to be implemented by the ministry to reduce load shedding in the country.

IPPAN was represented by Mr. Gyanendra Lal Pradhan, Dr. Subarna Das Shrestha, Mr. Bijaya Man Sherchan, Mr. Kiran Malla, Ms. Puja Chand and Mr. Pradeep Gangol. Mr. Pradhan presented a power point presentation, on behalf of IPPAN. Other CA members also commented on the paper presented by Mr. Pradhan.

2. A meeting between IPPAN, SHDAN, Nepal Bankers' Association (NBA) and Hon'ble Minister of Finance, Mr. Surendra Pandey, was organized at the Ministry of Finance on 25 April 2010.

The meeting was also attended by Mr. Krishna Hari Banskota, Secretary (Revenue) and Mr. Bodh Raj Niraula, Director General, Ministry of Finance. Dr. Sandip Shah, Mr. Gyanendra Lal Pradhan, Mr. Krishna Acharya, Mr. Kiran Malla, Dr. Janak Lal Karmacharya, Mr. Bijaya Man Sherchan, Ms. Puja Chand Thakur, Mr. Sujit Acharya and Mr. Pradeep Gangol participated from IPPAN.

While responding to the concerns about Nepal's hydropower sector raised by IPPAN, NBA and SHDAN, Hon'ble Minister Surendra Pandey said that the Government of Nepal was positive about giving high priority to hydropower in the forthcoming budget program. The Ministry of Finance will also explore the financial incentives needed to accelerate hydropower development in Nepal. He added that the Government will consider the possibility of offering IPOs in the initial years for the power sector.



3. Dr. Sandip Shah, Mr. Kiran Malla and Mr. Pradeep Gangol participated in an interactive meeting on "Ways and Means to solve the Current Energy Crisis" organized by FNCCI on 16 April 2010.

4. **Nepal Bankers' Association (NBA)** hosted a meeting on 13 April 2010 to discuss on hydropower issues related to the banking sector. Mr. Sujit Acharya and Mr. Pradeep Gangol participated from IPPAN.

5. Representatives of **IPPAN** and **SHDAN** met with Dr. Yubraj Khatiwada, Governor, **Nepal Rastra Bank** on 11 April 2010. The meeting was also attended by Dr. Sandip Shah, Dr. Subarna Das Shrestha, Mr. Bijaya Man Sherchan, Mr. Pradeep Gangol, Mr. Hari Bairagi Dahal, Mr. Basanta Nembang, Mr. Shailendra Guragain, Ms. Puja

Chand and Mr. Guru Prasad Neupane. While submitting a letter to the Governor, Dr. Sandip Shah said that IPPAN and SHDAN members were concerned due to the current liquidity crunch and serious investment problems. The concerns raised by IPPAN and SHDAN included provision of a minimum 25% bank loans for investments in the hydropower sector, interest subsidy of 2.5% on bank interest, provision of long term loan for hydropower, establishment of a **Power Development Fund** (in Nepali Rupees) under the auspices of the Nepal Rastra Bank, and arrangement to include hydropower sector as a priority sector in the monetary policy of the forthcoming fiscal year.

6. Constituent Assembly Members Mr. Rajendra Pandey, Mr. Gagan Thapa, and Mr. Abhishek Pratap Shah visited the IPPAN office on 11 April 2010 at the request of IPPAN. They were welcomed by Dr. Sandip Shah, Mr. Gyanendra Lal Pradhan, Dr. Subarna Das Shrestha and Mr. Sujit Acharya. The CA members were briefed about the need for serious efforts to be made to create an investor friendly environment in the hydropower sector. The CA members stressed the need for working together to accelerate hydropower development in Nepal.

7. The World Bank hosted an interactive program on 2 April 2010 with a team from Golder Associates to discuss issues related to power development. The team consisted of Dr. George Annandale (Sediment Management), Dr. Trevor Carter (Geotechnical) and Dr. Manoj Verman (Tunneling). Dr. Sandip Shah, Dr. Subarna Das Shrestha, Mr. Kiran Malla and Mr. Pradeep Gangol also participated in the meeting.

8. Dr. Subarna Das Shrestha and Mr. Pradeep Gangol participated in a discussion program organized by **FNCCI** to discuss on the recommended changes in the forthcoming financial year 2067/68 budget and the financial regulations 2068 on 9 March 2010.

9. Mr. Kiran Malla, Mr. Krishna Acharya and Mr. Pradeep Gangol participated in a meeting hosted by the **Inland Revenue Department**, Ministry of Finance on 16 March 2010.

10. IPPAN submitted a letter to the Inland Department, Ministry of Finance to make necessary provisions for zero Vat and 1% custom duties on the import of equipments and materials related to hydropower industry. Other proposed items include income tax holiday for ten years, as provisioned in the proposed Electricity Act 2067, service charge of 15% only (instead of prevailing service charge of 28%), construction of infrastructural facilities under BT and BOOT system etc.

11. Constituent Assembly Member, Mr. Rabindra Adhikary visited IPPAN office on 17 March 2010. Present in the meeting were Dr. Sandip Shah, Mr. Gyanendra Lal Pradhan, Dr. Subarna Das Shrestha, Mr. Sujit Acharya, Mr. Krishna Acharya, Mr. Kiran Malla, and Mr. Pradeep Gangol. Mr. Adhikary was briefed about the issues of hydropower industry in Nepal. He noted that such interactive meetings are essential to lobby and advocate for proper legislative and policy framework for power development in Nepal. IPPAN delegation team led by Dr. Sandip Shah, met with

12. Dr. Sandip Shah presented a **Memorandum to the Hon'ble Minister of Energy**, Dr. Prakash Sharan Mahat on 28 March 2010, which listed the demands of IPPs enabling them to invest in hydropower projects.

The demands included certain items like enactment of the proposed Electricity Act-2064 and Nepal Electricity Regulatory Commission Act-2064, zero vat and 1% custom duties in the import of equipments and materials related to hydropower projects, revision of Power Purchase rates to Rs.5.99 per kWh so as to reflect current market prices, price escalation of 5% for nine years, service charge for hiring foreign consultants to be limited to 15%, interest rate subsidy of 2.5%, construction of transmission lines in BT or BOOT system etc.

13. Dr. Subarna Das Shrestha, EC member, IPPAN participated in a **seminar on "Feasibility and EIA of Hydropower Projects"** organized by Department of Electricity Development on 25 February 2010.

14. Dr. Subarna Das Shrestha and Mr. Pradeep Gangol participated in an Energy Seminar on "Planning and Licensing of Energy Infrastructure," hosted by the Norwegian Ambassador. The seminar was part of the ongoing energy dialog between Nepal and Norway. Presentations were made by representatives from the Norwegian Water Resources and Energy Directorate (NVE), the Norwegian Transmission Company (StatNett), the Department of Electricity Development (DoED) and the Nepal Electricity Authority (NEA).

15. Dr. Subarna Das Shrestha, Mr. Sujit Acharya and Mr. Pradeep Gangol participated in a **FNCCI Interaction Program on "Nepal's Current Financial Health and its Implications on the Economy,"** on 2 February 2010 which was inaugurated by the **Rt. Hon'ble Prime Minister Mr. Madhav Kumar Nepal**. The workshop focused on the emerging financial crisis in Nepal, its impacts on Nepal's economy and possible solutions to shield the economy from this crisis.

16. IPPAN EC members Mr. Gyanendra Lal Pradhan, Dr. Subarna Das Shrestha and Mr. Pradeep Gangol attended a Talk Program on **"Attracting Investment towards Portfolio Diversification,"** on 31 January 2010, organized by the Revenue Administration and Training Centre, Ministry of Finance. The function was also graced by Hon'ble Minister for Finance, Mr. Surendra Pandey, Hon'ble Minister for Energy, Dr. Prakash Sharan Mahat, Secretaries and other high ranking officials of the Government of Nepal and other stakeholders. The Talk Program discussed on various ways to diversify small investors' investment towards infrastructure development for hydropower development.

17. Mr. Sujit Acharya and Mr. Pradeep Gangol participated in a workshop on **"Investment Climate in Nepal: Results of Enterprise Survey 2009 and Scope for Public Private Dialogue,"** jointly organized by the World bank, IFC and FNCCI at Hotel Yak and Yeti on 28 January 2010. The workshop discussed on various options to improve investment climate in Nepal.

18. Mr. Pradeep Gangol and Mr. Grishma Ojha participated in a workshop jointly organized by FNCCI and IFC to discuss on the proposed Nepal Business Forum on 25 January 2010. This forum is expected to initiate public-private dialogue to create investment friendly climate in Nepal.

19. IPPAN organized a **Media Training** for media persons involved in the reporting of energy news on 21 January 2010 at Hotel Himalaya. Reporters from

Kantipur TV, Kantipur, The Kathmandu Post, Nepal Samachar Patra, Annarpurna Post, Nagarik, Ujyalo FM, Naya Patrika and Karobar participated in the training. Dr. Sandip Shah, Mr. K.B. Bisht, Mr. Suman Basnet, Dr. Subarna Das Shrestha, Mr. Bikash Thapa, Mr. Mohan Joshi and Mr. Apar Neupane presented papers on various aspects of hydropower, including emerging opportunities and challenges, technical and financial aspects. The workshop also discussed the reporter's perspectives of Nepal's hydropower industry. The media workshop was organized by IPPAN to familiarize Nepali reporters about the current hydropower issues of Nepal. There were fourteen participants of which four were women.

20. Mr. K.B. Bisht, Mr. Resham Dhakal and Mr. Pradeep Gangol participated in a second Stakeholders' meeting in New Delhi on 19 January 2010, to review the progress made in cross border transmission line between Dhalkebar and Mujafarpur. The meeting decided to go ahead with the present configuration of 400 kV capacity cross border transmission line to transmit about 1200 MW of power in order to facilitate power trade between Nepal and India. The meeting also opened the option of constructing another cross border transmission line between Butwal of Nepal and Gorakhpur of India to transmit additional power from the hydropower projects that are proposed to be commissioned in 2016-2017 AD.

21. Mr. Pradeep Gangol participated in a workshop on **"Ensuring Environmentally Sustainable Hydropower Development in South Asia: Best Practices in EIA Implementation,"** on 13 January 2010 in Kathmandu organized by the World Bank, Ministry of Energy and Ministry of Environment. The workshop concentrated on EIA as a planning tool, rather than a regulatory tool.

22. Mr. Pradeep Gangol participated in a **"National Workshop on the Environmental Impact Assessment of Tamakoshi - 3 Hydroelectric Project,"** held on 14 January 2010.

23. Dr. Sandip Shah, Dr. Subarna Das Shrestha and Mr. Pradeep Gangol participated in an interaction meeting with the union leaders of the NEA on 7 January 2010. The meeting was organized at the request of IPPAN. Dr. Jivendra Jha, Managing Director, Mr. Shiv Chandra Jha, Deputy Managing Director and union leaders of NEA were present in the meeting.

24. Mr. Pradeep Gangol participated in a Consultation Workshop on **"IHA's Sustainability Assessment Protocol"** jointly organized by Ministry of Energy, Government of Nepal and WWF on 2 December 2009. The workshop was organized to disseminate the IHA's HSAF protocol developed to measure and guide performance in the hydropower sector.

25. Dr. Subarna Das Shrestha and Mr. Pradeep Gangol participated in the First Stakeholders' meeting held on 8 November 2009 in Kathmandu. The meeting reviewed the progress made in the advancement of the 400 kv cross border transmission line between Dhalkebar and Mujafarpur.

26. Mr. Pradeep Gangol participated in a workshop on **"Removing Barriers to Hydropower Development,"** held on 6 November 2009 in Kathmandu.

NEWS FROM MEMBERS

HIMAL POWER LIMITED

Press Statement : Assets Handover by Himal Power Limited to Khimti Rural Electric Cooperative

Dolakha, March 24, 2010: Amidst a ceremony at Kirnetar in Dolakha district on Wednesday the Norwegian Ambassador, His Excellency Mr. Thor Gislesen, handed over a 635 kW mini hydropower plant, transmission & distribution system and other assets to the Khimti Rural Electric Cooperative (KREC). The cooperative was established in 2004 by Himal Power Limited (HPL) during the implementation of its rural electrification and development projects "Jhankre Rural Electrification and Development Project" (JREDPD and JREDP II).

The cooperative currently gives access to electricity for 4,600 households and a further 3,800 households will be connected during the ongoing KiND project. One more Mini Hydro Power Plant is being constructed, taking the total capacity of the cooperative to 1,035 kW.

HPL is the owner of the Khimti I Hydropower Project; so far the largest private sector power project and the first "Build, Own, Operate, Transfer" (BOOT) model in Nepal.

The Khimti Rural Electric Cooperative is the first fully independent, democratically operated and locally managed rural electric cooperative in the country. It serves as an example for other power projects of Nepal. KREC is providing better lighting for children's study, better health care, improved living conditions, establishing of small industry and enterprises and access to modern communications. These benefits will reach over 40,000 people in the vicinity of the Khimti I project area.



UNIQUE HYDEL

Baramchi Hydropower Project is nearing commercial commissioning with renewed capacity of 4.2 MW

Located in Sindhupalchowk district and about 80 km from Kathmandu, Baramchi Hydropower Project currently has an installed capacity of 1 MW. Current upgrading works will increase the capacity to about 4.2 MW. This project has one of the highest heads available among all hydro projects in Nepal with gross head around 616 m.

The installation of the power plant is ongoing and commercial operation with renewed capacity of 4.2 MW is scheduled for May 2010. The installation experts from China are at site. All construction works including the foundation for the installation of the Generator and Turbine are in the process of being completed. Construction of the approximately 18 km long, 33 kV transmission line is also in the process of being completed. The substation at Lamo Sanghu is also being constructed. As part of upgrading the project, Baramchi HEP have undertaken major social mitigation works, specifically in electrification, road construction, school support etc.



ANKHU HYDROPOWER

Ankhu Khola Hydropower Project (42.9MW) is progressing rapidly

This project lies in Dhading district, about 30 km from Dhading Besi the district headquarters. Detailed design of the project has been recently initiated and is scheduled to be complete by December 2010.

As part of the environmental study, the approval of Terms of reference (TOR) has been received from the Ministry of Energy. Subsequently Public Notice has been published requesting for comments from local stakeholders for completing the IEE process. The IEE is expected to be submitted for approval in May 2010 and expected for approval within four months thereafter.



A contract has recently been entered for opening of track road towards from the existing road head to the project site. The access to the powerhouse is expected to be available prior to the upcoming monsoon. Likewise, the project have applied to the Nepal Electricity Authority to start negotiations for entering into a Power Purchase Agreement for energy generated from the project which is expected to be completed by July 2010.

Many financial institutions and investors are eager to enter into a partnership to develop this project. HSL is in discussion with them and expect to close the partnership and finance by the end of the monsoon so that we can start the real construction works in the next dry season.

HYDRO SOLUTIONS

Kaligandaki Gorge Hydropower Project (254 MW) conducts its Public hearing

The Kaligandaki Gorge Hydropower Project is one of the high head and high discharge projects in Kaligandaki corridor. The project is planned as a run-of-the-river type scheme with installed capacity of 164 MW. The detailed feasibility study for this capacity has already been completed.

The project is planned to be complete in 5 years. The environment study of the Project is ongoing. A public hearing was conducted at the powerhouse site in April 2010 as part of Environment Impact Assessment study. The local people were very positive about the project and have urged the developers to implement this project as soon as possible.

This Project will be larger than any other hydro projects built in Nepal, it will require international expertise. Hydro Solutions has partnered with BPR Canada to undertake the detail design of this project. BPR ha started work on this project and is scheduled to make a site visit prior to the upcoming monsoon.

As the Kaligandaki corridor has the potential of being developed as an export corridor for extra energy generated in Nepal, HSL have initiated a study to optimize the power plant for the Indian market. Initial study shows that the project would be optimized as peaking run of river type scheme, with 4 hours daily peaking, at an installed capacity of 254 MW. At this installed capacity the project would generate 1010 GWh energy annually. The cost of this project would be close to US \$ 300 million.



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. Mukdishree 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. Upper Madi Hydro Pvt. Ltd.
25. Super Khudi Hydropower Pvt. Ltd.
26. Unique Hydei Co. Pvt. Ltd.

27. Shikhar Hydropower Co.
28. Ankhu Hydropower Pvt. Ltd.
29. Annapurna Group Pvt. Ltd.
30. Grid Nepal Pvt. Ltd.
31. Welcome Energy Development Co. Pvt. Ltd.
32. Dordi Khola Jalabidyut Company Ltd.
33. Nepal Hydro Developer (P) Ltd.
34. Himalayan Power Partner Pvt. Ltd.

Associate Members

1. Shangrila Energy Limited
2. Clean Energy Development Bank Ltd.
3. Klen Tech Pvt. Ltd.
4. SN Power
5. Nepal Hdyro & 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.
12. Himalayan General Insurance Co. Ltd.
13. Standard Chartered Bank Nepal Ltd.
14. Bank of Asia Nepal Ltd.
15. Sunrise Bank Ltd.
16. Sanima Bikas Bank Ltd.
17. ACE Development Bank Ltd.
18. Nepal Investment Bank Ltd.



SANIMA HYDROPOWER PVT. LTD.

Over a decade of its establishment in March 1999 by NRNs represented mainly by engineering professionals, Sanima Hydropower Pvt. Ltd positioned itself as an organization dedicated for hydropower development in Nepal. Moving with the vision of "Sustainability with Nature", it is conscious on optimum utilization of water as a premium source of renewable energy and promotes them as one of the viable assets of hydropower sector in Nepal. Sunkoshi Small Hydropower Plant (2.5 MW) acts as a visiting card of this organization since 2005 and supplies electricity to the national grid. The experience paved way to set higher standards and encouraged to work in larger projects like Mai, Likhu, Tamor are among them in various stages of implementation and Feasibility study. The firm is moving with a vision to generate above 500 MW by 2020 and hence enhancing capacities of in-house technicians and experts. To strengthen the engineering wing for providing quality technical service, Sanima Hydro and Engineering Pvt. Ltd. (SHE), a sister concern was established in 2005. Under SHE, study of many projects are ongoing at both national and international level. Moreover, Mai Hydropower Project (15.6 MW), of the many projects owned by Sanima has started its pre-construction activities at site.



Other Projects owned by Sanima Hydro Group are

- ▶ Upper Tamor Hydropower Project, Taplejung (≈400 MW) in Feasibility Study Stage



- ▶ Middle Tamor Hydropower Project, Taplejung (57 MW) in Feasibility Study Staged



- ▶ Lower Likhu Hydropower Project, Ramhaph/ Okhaldhunga (≈27 MW) in Feasibility Study Stage
- ▶ Mai Hydropower Project, Ilam (15.6 MW) in Implementation Stage.

Information Dissemination on Mai Hydropower Project Area

- ▶ Mai Cascade Hydropower Project, Ilam (4.5 MW) in PPA process
- Services provided by Engineering Department are:**

- ▶ Site Investigation and project planning
- ▶ Desk study and licensing



- ▶ Pre-feasibility & Feasibility study and Economic & Financial analysis
- ▶ Detail Engineering design, Surface geological mapping and Engineering Management
- ▶ Construction management and site supervision
- ▶ Environmental Impact Assessment (EIA) / Initial Environmental Examination (IEE)

Feasibility Study, Detail Project Report, Consulting Services, Construction Supervision as well as Due diligence for projects ≥ 1MW provided to both national and international level are:

- ▶ Namarjun Madi Hydropower Project, Kaski (12 MW)
- ▶ Upper Mai Hydropower Project, Ilam (10 MW)
- ▶ Siprin Khola Hydroelectric Project (10 MW) under Sanima Bikash Bank Ltd.
- ▶ Lower Modi-I Hydropower Project, Kaski (10 MW) under Citizens International Bank Ltd.
- ▶ Junbesi Khola Hydropower Project, Solukhumbu (5.2 MW)
- ▶ Bhairabkund Small Hydroelectric Project, Sindhupalchowk (3 MW)
- ▶ Mailun Khola Hydropower Project, Rasuwa (≈9MW)
- ▶ Khanabad Hydropower Station, Afghanistan (1.6 MW)
- ▶ Tinekhu Khola Small Hydropower Project, Dolakha (1 MW)
- ▶ Thotne Khola Hydropower Project, Okhaldhunga (1 MW)
- ▶ PHEME Khola Small Hydropower Project, Panchthar (1 MW)

Volunteering Services provided for Technical Support to:

- ▶ Thame Small Hydropower Project, Solukhumbu (600 kW)
- ▶ Odarey Micro Hydropower Project, Khotang (12 kW)

INDEPENDENT POWER PRODUCERS' ASSOCIATION, NEPAL (IPPN)

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