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Contents

Front Cover Photo : Construction of Headworks of Trishuli 3'A' Hydroelectric Project in progres.
Back Cover Photo : Pathlaiya 132 kV Substation

NEPAL ELECTRICITY AUTHORITY

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Message from the Chairman

I feel elated while expressing these words as the Chairman of Nepal Electricity Authority on the jubilant occasion of its 28th anniversary.

Nepal Electricity Authority, being the State owned power utility, is undoubtedly the leader in the sector, and hence, has a vital role in energizing the industrial growth and social upliftment of the country. It is obvious that the decade long armed conflict affected development of infrastructure including that in the power sector resulting in today's gap between demand and supply of electricity. The shortfall of electricity could also be partially attributed to factors like anti dam campaign and some confusion in the roles and responsibilities of different agencies involved in the power sector, which gained ground for past several years.

NEA needs to formulate and implement time-bound comprehensive programs in order to ensure a balance between demand and supply of electricity. People do not expect a solution overnight, however, they certainly do have a question as to when they will have round the clock sufficient supply of electricity. In the context of present regulatory regime of power sector development, NEA is not the sole agency to resolve all the sectoral issues, but its role is crucial in transmission and distribution, and also to amalgamate the efforts of private sector in adding up country's generation capacity.

We all know that all of NEA's generation projects that are under construction have undergone severe time and cost overrun problems. The situation has raised a question on the capability of the utility in project implementation. Now, this is already a time that NEA's personnel at every rung need to ponder upon the problem and work towards altering a general notion that being built up naturally in utility's disfavor.

The implementation of transmission lines in an unacceptably slow pace is the most worrisome problem, which has multifarious impacts. Spillage of NEA's own electricity, delay in evacuation of IPPs' power and the like have detrimental impacts not only on NEA's own financial health, but on almost every sphere of country's life on account of shortage of electricity. Hence, NEA should make concentrated and concerted efforts in the development of transmission system, and wherever possible, should also take support from the private investors in its endeavors.

A 20% increment in retail tariff has improved NEA's financial health to some extent, but this has not been enough even to meet the utility's annual expenses, leave aside generating additional capital for further investment. NEA should transparently explain its efforts and results in the direction of cost reduction of services rendered and control in system losses. NEA should show what additional revenue it generated through its efforts apart from that by retail tariff increase. Only such convincing explanation could justify NEA's rate case under consideration in the Electricity Tariff Fixation Commission (ETFC).

I am happy to note that NEA succeeded in restricting the load shedding period to 12 hours per day against a widely carried apprehension that it would remain for more than 16 hours per day in the driest months. I understand this was made possible due to various efforts including additional import, sound operation of the power system and careful planning to ensure a completely filled Kulekhani reservoir at the onset of the dry season.

I am also pleased to note that NEA was able to reduce the system losses by around 2% and has exhibited remarkable improvement in its operational efficiency with implementation of advance techniques. I am hopeful that NEA will put its best efforts in the coming year for the utility's better performance.

To conclude, I wish to congratulate all the NEA staff for their sincere efforts while performing their duties in quest for bright future.

(Uma Kant Jha)
Minister for Energy
Government of Nepal
and
Chairman, Nepal Electricity Authority

Board of Directors

Chairman
Mr. Uma Kanta Jha
Minister for Energy

Member
Mr. Bishwa Prakash Pandit
Secretary, Ministry of Energy

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Mr. Shanta Raj Subedi
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Mr.Vivek Tater

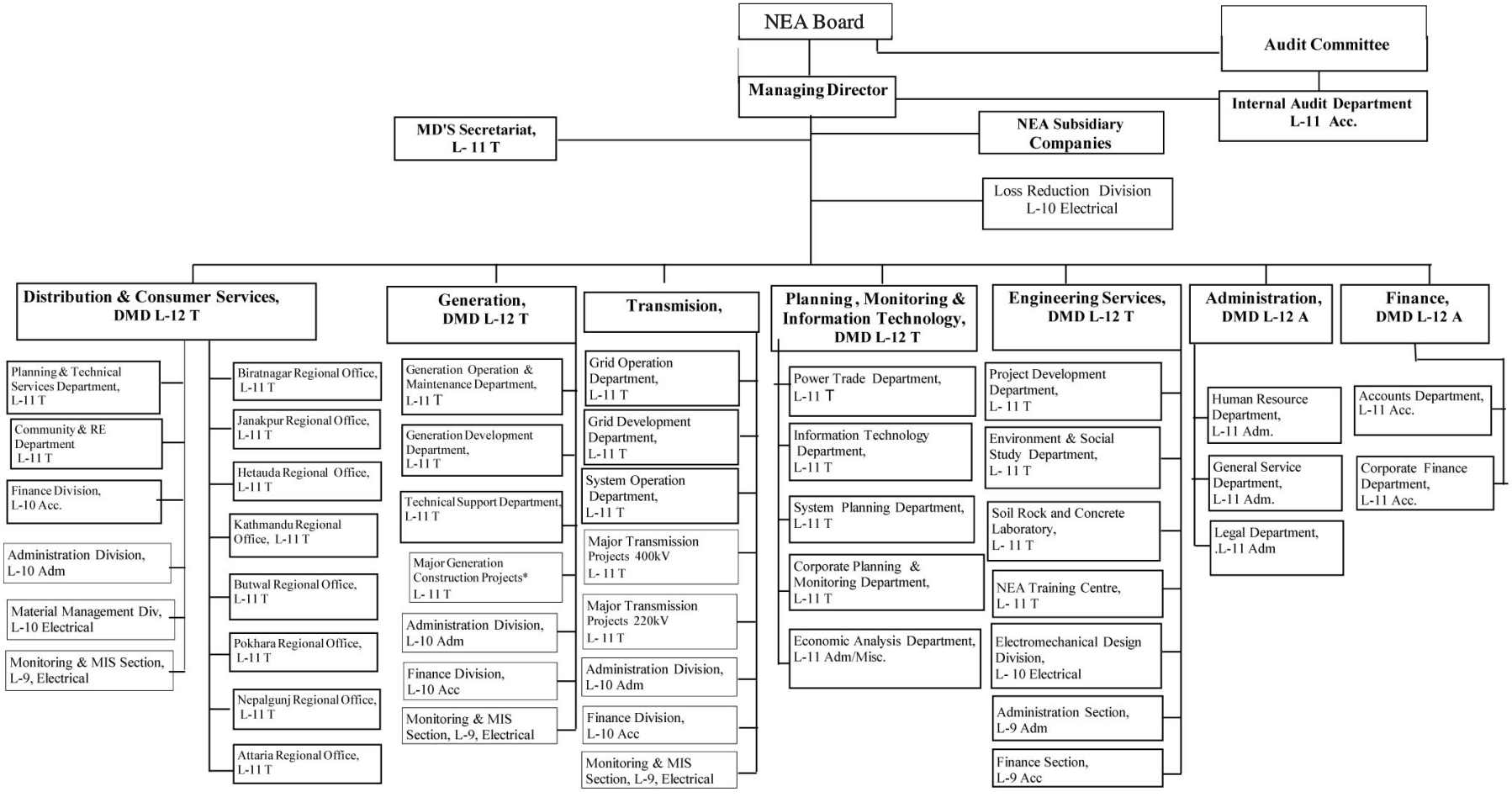
Member
Mr. Santosh Narayan Shrestha

Member
Mr. Manoj Kumar Mishra

Member Secretary
Mr. Rameshwar Yadav
Managing Director, NEA

Nepal Electricity Authority

Organization Structure



Note : * Major Generation Construction Projects will be defined by the Board.
T = Technical Services; A = Administration Services: Adm = Administration Group:
Acc=Account Group

(Effective from July 16,2013)

Deputy Managing Directors

Mr. Lava Bahadur Ghimire
Deputy Managing Director
Finance

Mr. Upendra Dev Bhatta
Deputy Managing Director
Distribution and Consumer Services

Mr. Birendra Kumar Pathak
Deputy Managing Director
Engineering Services

Mr. Ram Chandra Pandey
Deputy Managing Director
Planning, Monitoring &
Infromation Technology

Mr. Rajeswar Man Sulpya
Deputy Managing Director
Generation

Mr. Madhav Parasad Luitel
Acting Deputy Managing Director
Administration

Mr. Pushpa Raj Khadka
Chief
Transmission

Managing Director's Report

I feel privileged to present this annual report on the activities and the performances of Nepal Electricity Authority (NEA) for fiscal year 2012/13 on the occasion of its 28th anniversary. Twenty-eight years long engagement in this organization has enriched me with a great deal of insight on multitude of issues, challenges, opportunities and possibilities of this organization. On this occasion, I would like to take this opportunity to affirm our commitment to perform better and deliver better results in the days to come by taking necessary initiatives and putting best efforts.

The Year's Significant Events

Considering the pending tariff adjustment for 11 years and deteriorating financial health of NEA, Electricity Tariff Fixation Committee (ETFC) approved to increase NEA tariff by 20 percent in average which is effective from Bhadra1, 2069. Recent tariff increment is a milestone for improving the financial health of NEA but NEA Tariff level is still not matching with revenue requirement of the utility. Therefore, in order to match the cost of service and retail tariff level, three different tariff proposals are submitted to ETFC (i) new tariff adjustment (ii) cost plus tariff rates for dedicated feeders to be supplied as un-interruptible supply, and (iii) approval of a formula/ mechanism for annual tariff adjustment.

For strengthening financial accounting and financial management decision support system, NEA plans to put in place an Enterprises Resources Planning (ERP) based Integrated Financial Management Information System (IFMIS) in order to provide the reliable and timely information for decision-making. Accordingly, NEA Institutional Strengthening Project (ISP) is currently under implementation with the technical and financial assistance from the World Bank. (NEA-ISP) has two components, namely (i) Consultancy Service for Accounting Framework Reform; ERP strategy and development of Technical specification and supervision of implementation of new Financial Accounting System (FAS/IFMIS) and (ii) IFMIS implementation.

NEA's new organization structure is in place from the month of Shrawan 2070 after NEA Board approved report on "NEA organizational restructuring and administrative reforms". Earlier, there were seven General Managers for different business groups such as Engineering Services, Grid Development, Transmission Service and Operation, Generation Operation and Maintenance, Generation Construction, Distribution and Consumer Services East and Distribution and Consumer Services West. Similarly, there were three Deputy Managing Directors, one each for Internal Audit, Finance and Administration, The new organization structure in place has seven Deputy Managing Directors (five Technical Deputy Managing Directors along with two Deputy Managing Directors, one each for Administration and Finance). One of the key characteristics of new organization structure is the establishment of "Community & RE Department" to streamline and expedite community rural electrification programs. The new structure will enable NEA to enhance its operational efficiency and performance. Although the new organization structure is in place from Shrawan 2070, this annual report presents the activities carried out in FY 2012/13 as per the prevailing organization structure then.

Considering supply options available, we had predicted resorting to a maximum of 18 hours of load shedding per day per consumer during the driest months of January, February, March and April. However, we succeeded in restricting the load shedding hours to 12 per day per consumer. This was possible due to sound operation of the power system, steps taken to ensure filling up of the Kulekhani reservoir at the onset of the dry season, and also comparatively a wet monsoon. Extended load shedding hours for the feeders that reported high percentage of theft was also a contributing factor. In addition, NEA resorted to all possible means to minimize load shedding including purchase of all excess energy from the Independent Power Producers (IPPs), operation of costly diesel plants of Hetauda and Multifuel

plant of Duhabi and all possible import under power exchange agreement and power trade with India. The power import from India amounted to as high as 173 MW in FY 2012/13.

As per Load Shedding Minimization Program 2069 of Nepal Government, NEA reached an agreement with Bihar State Power Holding Corporation Ltd (BSPHCL) to purchase additional power more than 50 MW at agreed rate. Nine hydropower projects namely, Bijayapur -1 (4,410 kW), Solar Power Station (640.8 kW), Siuri Khola (4,950 kW), Lower Modi-1 (9,900 kW), Siprin Khola (9,650 kW), Chaku Khola (1,500 kW), Middle Chaku (1,800 kW), Tadi Khola (Thaprek) (5,000 kW) and Charnawoti Khola (3,520 kW) were commissioned during fiscal year 2012/13. These projects with an installed capacity of 41,370 kW, developed in the private sector came on-stream to NEA's Integrated Nepal Power System during fiscal year 2012/13.

After a gap of 24 years Budhi Gandaki Storage HEP (600 MW) was taken up for further study in fiscal year 2009/10 and since then NEA has been carrying out various activities as part of the feasibility study. NEA carried out hydrological studies and investigations, topographical survey including fixation of survey control point monumentations, preliminary environmental and social study. An agreement was signed between Nepal Electricity Authority and M/S Tractebel Engineering S.A., France on December 2, 2012 for consultancy services for detailed engineering design and preparation of tender documents and tender drawings. The duration of the service is 30 months from the date of commencement of the services. As per the decision of the Government of Nepal, this project is now in the process of handing over to Budhi Gandaki Development Committee formed by Nepal Government.

The draft report on Master Plan Study of Storage Hydropower Projects by JICA has selected ten storage projects namely, Chera-1 (148.7 MW), Lower Jhimruk (142.5 MW), Nalsyaugad (400 MW), Naumure (245 MW), Lower Badighad (380.3 MW), Andhikhola (180 MW), Dudhkoshi (300 MW), Kokhajor (111.5MW), Sunkoshi-3 (536 MW) and Madi (199.8 MW) as attractive out of 67 projects for development of other storage type projects. The Final Report on these ten projects is due in November 2013.

Since, the development of storage projects will provide a long term solution to resolve the problem of imbalance between supply and demand during wet and dry seasons, Dudhkoshi Storage Hydroelectric Project (300 MW) has been identified as one of the prospective and viable projects among other storage projects for implementation in near future. The project was initially identified during the preparation of the "Master Plan Study on the Koshi River Basin for Water Resources Development" funded by JICA in March 1985. The feasibility study of the project was carried out in 1998 by Medium Hydropower Study Project. For the development of this project, Project Development Department of NEA started preparatory works in fiscal year 2012/13 and plans to carry out the upgrading of the feasibility study and detailed engineering design through International Consultant in this fiscal year.

Similarly, the Project Development Department of NEA has initiated the preparatory works for Detailed Engineering Design of Upper Arun Hydropower Project (335 MW). On 2069/11/04 B.S., the Cabinet of Nepal Government gave permission to Nepal Electricity Authority to implement Upper Arun Hydroelectric Project under the Ownership of the Government of Nepal. In order to expedite the implementation of the project, the field team has been mobilized to the site. NEA plans to carry out the Detailed Engineering Design of this project in this fiscal year so that the project will be implemented as earliest as possible. For this, the process for selection of Consultant has already been initiated.

For development of Tamakoshi V Hydropower Project (87 MW), the Project Development Department of NEA initiated the preparatory works for the Detailed Engineering Design in the last fiscal year and NEA plans to complete the Detailed Engineering Design in this fiscal year so that the project will be implemented as earliest as possible.

Upper Modi-A Hydropower Project(47 MW) is proposed to be developed by NEA and K-Water of South Korea as per the Joint Development Agreement (JDA) through a Special Purpose Vehicle (SPV) with 20 % share ownership of NEA and 80 % share ownership of K-Water. In the meantime, K Water has proposed a different Shareholding Structures with NEA- 60%, K- Water - 30% and Local Community - 10% which is yet to be endorsed by the NEA Board. The preparation of EoI and RFP document for the selection of International Consultant for detailed engineering design is in final stage.

For the enhancement of cross boarder power exchange with India, first cross border "400 kV Dhalkebar - Muzaffarpur double circuit transmission line project has been initiated with the support of the Indian Government. For this purpose, a subsidiary company called Power Transmission Company Nepal, PTCN has been created. The necessary ground works have already been completed and the procurement activities are in place for the implementation of this project. This cross-border transmission line is expected to be in operation by 2015. With the import of 150 MW or more power through this line, the imbalance of supply over the demand is expected to lessen to some extent thereby reducing the amount of load to be shed. There are number of hydropower projects

presently under construction both in the public sector as well as in the private sector. After commissioning of all those hydropower projects, substantial energy will be available as surplus. With the 400 kV Dhalkebar - Muzaffarpur double circuit cross border transmission line in place, this surplus energy can be exported to India. Import at the time of deficit and export at the time of surplus will ultimately lead to low cost of electricity supply for NEA. The successful implementation of the 400 kV Dhalkebar - Muzaffarpur double circuit cross border transmission line will eventually open the doors for the implementation of other cross border transmission lines.

Electricity Distribution Regulation 2069 was passed and Employees Regulation 2068 was amended.

A model document for Transmission Service Agreement (TSA) was approved by the NEA Board in order to boost the development of transmission line by private sectors. Disputes on the claims by the Civil Contractor, in the Kali Gandaki-A Hydropower Project were settled for full and final through court settlement between NEA and the Contractor and accordingly, all the court cases in Nepal and Italy have been withdrawn.

Operational Performance

The annual peak power demand of the Integrated Nepal Power System (INPS) in fiscal year 2012/13 is estimated to be 1,094.62 MW. Out of 1094.62 MW of peak demand, only 719.6 MW could be supplied and 375 MW was shed. Out of 719.6 MW supplied, 433 MW was contributed by NEA hydro, 10 MW by NEA thermal, 174.1 MW by IPP hydro, and 102.5 MW by import. Compared to the preceding fiscal year's figure of 1,026.65 MW, the annual peak power demand of the INPS registered a growth rate of 9.0 %.

Energy demand of INPS in fiscal year 2012/13 is estimated at 5,446.285 GWh, out of which only 4,218.135 GWh (77.45%) could be supplied. The rest 1,228.15 GWh (22.55%) was resorted to load shedding. Of the total supplied energy volume, 3,467.93 GWh (82.56%) was contributed by domestic generation and 792.52 GWh (17.44%) by import from India. Domestic supply included 1,175.97 GWh (34.00%) from IPPs and the rest 2,291.96 GWh (66.00%) was from NEA owned power stations with a share of 2,273.14 GWh from hydro and 18.82 GWh from thermal. The energy demand of INPS in fiscal year 2012/13 grew by 7.70 % over previous year's energy demand.

The total energy sales including export to India increased by 3.83% to reach 3161.39 GWh in FY 2012/13. However, energy sales to India declined to 3.72 GWh from 4.1 GWh in fiscal year 2011/12.

Decrease in NEA's system loss in fiscal year 2012/13 is quite encouraging. NEA's system loss decreased by 1.34 percentage points from the audited loss figure of 26.37% in fiscal year 2011/12 to 25.03 % in fiscal year 2012/13. This, we believe, is the result of our continued efforts and measures taken on curbing electricity theft. We are committed to intensifying our efforts to bring down the system loss to an acceptable level. For this support from the political parties, civil society and the general public will also be solicited.

At the end of FY 2012/13, the total number of consumers reached 2.59 million registering a growth rate of 14.34 % over previous year's number of consumers. The domestic consumer category continued to be the largest consumer category with a share of 95.12% of total consumers. The industrial and other remaining consumer categories combined accounted for 1.44% and 3.44% respectively of the total number of consumers. However, in terms of sales the corresponding shares are 44.05%, 36.95% and 19.0% of the total sales.

Financial Performance

Revenue from sale of electricity increased from NRs.20,518.40 million in FY 2011/12 to NRs.25,132.02 million in FY 2012/13. Net sales revenue after rebate amount of NRs 532.55 million amounted to NRs.24,599.47 million. Income from other services such as surcharge, dividend, lease rent, interest, sale of goods and service charge amounted to NRs.1,609.20 million. NEA's total income increased by 20.31% over previous year's total income to reach NRs. 26,208.67 million.

NEA's total operating expenses increased by 12.46 % over previous year's figure of NRs. 22,293.41 million to reach NRs. 25,071.55 million. The power purchase expenses continued to be the largest component of the total operating expenses. The power purchase expenses in FY 2012/13 amounted to NRs. 13,495.48 million and accounted for 53.82% of the total operating expenses and 51.49% of the total income. Additional power purchase from India and agreed price escalation primarily contributed to the rise in power purchase costs. In addition to that, devaluation of Nepalese currency against US Dollar in respect of some PPAs made in USD also had an impact on the increased power purchase cost. NEA spent significant amount of resources in the maintenance and rehabilitation of its generating stations to increase the availability and reliability.

The interest costs on long-term borrowings increased by 9.69% over the previous year's figure to reach NRs.4,262.03 million. Similarly, annual depreciation charge on fixed assets increased by 1.05% to reach NRs.3,209.06 million in FY 2012/13.

Despite the significant increase in total revenue, total expenses exceeded the total revenue in fiscal year 2012/13 and NEA incurred a net loss of NRs. 4,565.48 million.

Even with the significant amount of old outstanding dues recovered during FY 2012/13, the total receivables at the end of FY 2012/13 stood at NRs 7,949.77 million, which is equivalent to sales revenue of 110 days. Of the total receivables, street light dues of different municipalities outstanding from FY 2009/10 to FY2012/13 and of VDCs outstanding from FY 2011/12 to FY 2012/13 amounted to NRs. 1,582 million.

NEA completed various distribution system reinforcement and rural area electrification projects in FY 2012/13 resulting in capitalization of NRs.3,895 million in property, plant and equipment. At the end of the FY 2012/13, net carrying amount of NEA's property, plant and equipment reached to NRs.86,251.65 million which is 65.55 % of total non-current assets.

Capital work in progress, the second largest component of non-current assets, stood at NRs. 39,540.05 million at the end of FY 2012/13. The ongoing major hydroelectric projects, namely Chameliyagadh (30 MW), Kulekhani III (14 MW), Upper Trishuli 3A (60 MW) and Rahughat (32 MW) and various transmission networks of different voltage level contributed to increase in capital work in progress. During FY 2012/13, NEA invested NRs. 13,634.60 in various projects as capital works. The investment in capital works was made through government equity, foreign grants and loan through GoN and NEA's internal cash generation.

NEA's investment in subsidiaries, associates, joint ventures and others reached NRs. 5,776.51 millions at the end of FY 2012/13. In FY 2012/13 NEA invested NRs. 93.33 million in Sanjen Hydro Power Company Limited , NRs. 30 million in Mid Bhotekoshi Hydro Power Company and NRs1.06 million in Rasuwagadhi Hydro Power Company Limited, all promoted by Chilime Hydro Power Company Limited (UTKHPL), a subsidiary of NEA. In FY 2012/13, NEA invested NRs. 495 million as equity in the Upper Tamakoshi Hydro Power Company Limited and total investment reached NRs. 4,185 millions at the end of FY 2012/13. NEA holds 41% of the total equity in UTKHPL and has completed the full payment of its equity shares.

The long term borrowings, the main source of project financing, increased from NRs. 68,909.20 million in FY 2011/12 to reach NRs.79,333.97 million at the end of FY 2012/13. During the year, NEA repaid the borrowings of NRs. 1,500 million towards the cost of "NEA Power Bond, 2069" secured against lien of NEA's equity shares in Chilime Hydropower Company Ltd. Likewise, NEA repaid the whole amount of short-term borrowings of NRs. 2,000 million taken from local banks. However, NEA borrowed NRs. 1,200 million as short term loans from local banks to meet working capital requirement for FY 2012/13.

During FY 2012/13, NEA received NRs. 4,547.07 million from the Government of Nepal as equity investment in various generation, transmission and distribution projects. NEA also received NRs.279.69 million as reimbursement for losses incurred on energy imports from India to reduce power cuts during dry season of FY 2012/13. Similarly, NRs. 277.82 million was received from the Government of Nepal as subsidies against fuel for thermal plants. As per the instruction of GoN, these amounts have been accounted as GoN equity.

Development Activities

NEA's electricity supply position is far from satisfactory to meet the ever increasing demand, thus compelling NEA to resort to heavy load shedding. To overcome this imbalance of supply over demand, as well to keep pace with the annual demand growth presently averaging at 8.5 %, NEA is undertaking the construction of number of hydropower projects. Quite a few are being developed through NEA's subsidiary and associate companies. The private sector has also a role to contribute. Extension of the transmission grid and the distribution network are also NEA's responsibilities. Construction of Kulekhani-3 Hydroelectric Project (14 MW) is in good progress. So far, the overall progress of 67 % has been achieved. The original construction period was 44 months including mobilization, testing and commissioning. Due to various reasons the project period has been extended for another 30 months with the revised completion date set for September 13, 2014. Much of the civil works activities in the headwork area has already been completed except for the river crossing works. The excavation of headrace tunnel is completed. The concrete lining works for the tunnel is going on in full swing. The concreting of the substructure of powerhouse has already been started after completion of the foundation strengthening works. Diffusers for the powerhouse tailrace outlet have already been installed at the powerhouse site and other electromechanical works including the finalization of the drawings, fabrication, transportation and installation are currently going on, both at the site as well as in China.

Chameliya Hydrolectric Project (30 MW) has achieved 87% of physical progress so far even with numerous problems. Towards civil works, 90.24% of the dam construction works has been completed. Similarly, 90.85 % of intake, 100% of connecting tunnel, 83.29% of de-sanding basin, 94% of adit tunnel and 68% of the headrace tunnel (excluding squeezing portion) has been completed. The progress of power house,

surge tank, penstock and tail race construction stands at 99%, 71%, 63% and 99% respectively. The overall progress of civil works is 90.24%. The progress of headrace tunnel encountered the squeezing problem of maximum 40% (in diameter) between Adit 2 d/s and Adit 3 u/s, total length being 843.00m has been the major challenges of the Project. The treatment for this problem has been started and 11% work has been completed so far.

Another major problem faced by the project has been the excessive weak geological condition in the vertical shaft penstock forming the cavity. This has resulted the design change from R.C.C. to steel lined vertical shaft and horizontal section of the penstock there by increasing the cost and time. The embedded parts for powerhouse are installed. Installation of two draft tubes with all accessories has been completed. Similarly installation of turbines has also been completed. Most of hydro-mechanical and electro-mechanical equipment are delivered to site. Tower foundation works have been completed, 99% of tower erection works of 132 kV transmission line works have been completed. 64 km out of 131 km stringing works have been completed and tree cutting has been completed. 86% of total electromechanical/hydro mechanical/transmission line works has been completed. The project is estimated to be completed on 14 March 2015 The construction Upper Trishuli -3A Project (60 MW) started from 1st June 2011 and is supposed to be completed in 35 months as per the construction schedule. So far, the construction of steel bridge and a pedestrian bridge over Trishuli River, temporary camp at headwork, excavation of Adit no.1, aggregate Screening plant, 1st phase river diversion work at headwork area, foundation excavation for Diversion Weir, about 27,000 cubic meter of concreting works in stilling pool and retaining walls of right bank headwork structure have been completed. The up gradation of the 11.5 km long access road, access road to Surge shaft, Employer's Permanent camp, excavation of Headrace tunnel on both upstream and downstream face from Adit-1 and from head pond are in progress. Similarly, the excavation work for De-sander, Intake and Head pond are completed. In headrace tunnel, about 56% of excavation has been completed.

The construction of Rahughat Hydropower Project (32 MW) started from 04 May 2012 after contract agreement with the main civil works contractor IVRCL Limited, India. The duration of the contract period, after the issuance of "Notice to Proceed", is 42 months. About 30 hectares of land required for project structures such as for the camp facilities, project roads, power house, etc. have been acquired the construction of the access road, bridge and the Contractor's temporary facilities have already been started The construction of camp facilities for the project is at its final stages The contract agreement for the Consultancy Services for Construction of Main Civil Works was signed with WAPCOS Ltd. (A Govt. of India Undertaking) on 16th February 2012 and the concurrence from the Export - Import Bank of India was received on 2nd August, 2012. The Consultant has issued NTP to the Contractor on 30 November 2012. The construction of Khimti - Dhalkebar 220 kV double circuit transmission line project line is 95% completed with single circuit stringing. The rest of the construction work has been interrupted because of right of way issues raised by local inhabitants of Sindhuli District whereas bay extension is in ready position. The stringing of the second circuit is in progress.

The construction of Syangja 132 kV substation and Pathlaiya 132 kV substation has been completed.

Substantial progress has been achieved in the construction of: Dumre - Damauli - Marsyangdi 132 kV transmission line, Singati - Lamosangu 132 kV transmission line, Kabeli 132 kV transmission corridor, Chapali 132 kV substation, Matatirtha 132 kV substation extension, second circuit stringing of Butwal - Kohalpur- Mahendranagar 132 kV transmission line and second circuit stringing of Hetauda - Kulekhani-II - Siuchatar 132 kV transmission line.

The Hetauda - Dhalkebar - Duhabi 400 kV Transmission Line Project is being implemented to enhance cross border power exchange with India and augment the transfer capacity of the INPS. Seven transmission line/substation projects are also being implemented to facilitate power supply to cement industries. Similarly, a number of other transmission lines are planned for implementation.

Similarly, a number of electrification projects, distribution substation construction and upgrading projects and 33 kV transmission line and substation projects are underway throughout the country to increase the accessibility of electricity to the rural population.

NEA's Subsidiary and Associate Companies and the Private Sector

Quite a few development activities are being carried out through NEA's subsidiary and associate companies. The Upper Tamakoshi Hydro Power Company Limited (UTKHPL), in which NEA has a stake of 41 %, is undertaking the construction of 456 MW Upper Tamakoshi Hydroelectric Project, a project of national pride. Upgrading of Dolakha Singati raod (35 Km) and the construction of access road from Singati to Lamabagar (28.6 Km) has been completed. The construction works in the project at different front such as Dam, Intake, Headrace Tunnel, Surge shaft, Powerhouse and Tailrace tunnel are ongoing at full swing. Around 10.5 km of excavation of tunnel works out of 16 km has been

completed so far by the end of fiscal year 2013/13. It is estimated that approximately, 50% of the total project works has been completed physically.

Chilime Hydropower Company Limited (CHPCL), NEA's majority (51 %) owned subsidiary company, is undertaking the development of Upper Sanjen (14.6 MW), Sanjen (42.5 MW), Rasuwagadhi (111MW) and Middle Bhotekoshi (102 MW) hydropower projects, through CHPCL's subsidiary companies. All these four projects are being developed with 50 % debt and 50 % equity financing mix. On its own, NEA has a stake of 10 % in Sanjen Hydro Power Company Limited, a stake of 10 % in Middle Bhotekoshi Hydro Power Company Limited and a stake of 15 % in Rasuwagadhi Hydro Power Company Limited. Upper Sanjen and Sanjen Hydroelectric Project are being constructed under re-measurement contract while Rasuwagadhi and Middle Bhotekoshi Hydroelectric Project are being constructed under EPC model contract. The consulting firm Lahmeyer, Germany has been appointed Consultant for Middle Bhotekoshi. Similarly, the consulting firm SMEC, Australia has been appointed Consultant for Sanjen and Rasuwagadhi hydropower projects. The contract agreement for the main civil works for Sanjen Hydropower Project has been signed and the contractor has already mobilized at site. The selection of contractors for other projects are presently under way.

NEA has also created Tanahu Hydropower Limited, a special purpose vehicle (SPV) with full NEA ownership for the development of a 140 MW Tanahu Hydropower Project. The reservoir- type project is being co-funded by Asian Development Bank (ADB), Japan International Cooperation Agency (JICA), European Investment Bank (EIB), Abu Dhabi Fund for Development (ADFD). Loan agreement for an amount of US$ 150 million was signed with ADB on 21th February, 2013. Similarly, loan agreement for an amount of US$ 183 million was signed with JICA on 13th March, 2013 and that with European Investment Bank (EIB) for an amount of US$ 70 million was signed on 7th May, 2013. ADB loan will be used for the construction of head works, rural electrification, transmission line, and that for JICA for the construction of tunnel, power house, and supply and installation of hydro-mechanical and electromechanical equipment. The loan agreement with ADFD is expected soon. The project is planned to commence the construction work in 2014 and will be completed in 2020.

NEA's other subsidiary/associate companies are Trisuli Jalvidut Company Limited (TJCL) developing the Upper Trishuli "3B" Hydroelectric Project with an installed capacity of 37 MW and the Power Transmission Company of Nepal (PTCN) implementing the Nepal portion of 400 kV Dhalkebar - Muzaffarpur double circuit cross border transmission line. NEA has always considered IPPs as trusted partners in meeting Nepal's growing electricity demand. PPAs for 145 projects have been concluded as of end of fiscal year 2012/13 that would generate 1832 MW installed capacity on their completion. Thirty three of those projects with total installed capacity of 230 MW are already in operation. During the fiscal year under review, 40 new PPAs for a total capacity of 243 MW were signed whereas nine PPAs for capacity up gradation totaling 41.37 MW were amended.

The Way Forward

NEA's current huge shortfall of supply over demand cannot be removed outright and is bound to remain for the next 3-4 years. For the intervening period, following measures, among others, will be pursued to restrict number of load shedding hours to 12-14 per day per consumer during the dry season:

- Apart from power import through active lines, possibility of importing 30 MW power through the 132 kV Gandak - Ramnagar transmission line, 10 MW power from the 33 kV Birgunj - Raxual line and 10 MW power from the 33 kV Bhairahwa - Sunauli line which have been lying idle for quite some time will be explored with urgency. Including the additional import through these lines, total import through existing infrastructure shall reach upto 190 MW.

- The conductor upgradation work of 17 km long existing Kushaha Kataiya 132 kV Cross Border TL has been undertaken. The existing ACSR Conductor of the line will be replaced by the equivalent size high current carrying conductors called Aluminum Conductor Composite Reinforced (ACCR). The Current carrying capacity of equivalent ACCR conductor is almost double that of ACSR. The strengthening in the Indian Grid is also continuing. The work is scheduled to be completed by end September 2013. After the completion of the work, the line will enable to import of around 140-150 MW Power from India.

- NEA's power system will be operated and managed in such a way, even by utilizing existing thermal and import under exchange as well as trade, so that the Kulekhani Reservoir is full at the onset of dry season.

- Demand side management such as promoting the use of energy efficient lamps and electrical appliances shall be continued to be implemented. For this, 750,000 CFL lamps have been procured and will be distributed to the consumers of various distribution centers.

- The Capacitor Banks have been installed in many Substations. This will improve the voltage profile and result in reduction of losses.

- Stringent measures shall be taken for the reduction of technical as well as pilferage losses. For this support from political parties, civil society and the general public will be solicited. Electricity loss including the pilferage part will be restricted to 23 % by fiscal year 20132/14.
- The Hetauda diesel plant and Duhabi multi-fuel plant will be operated to the extent possible.

NEA will improve the quality of its services through the use of new technologies to meet the challenges of new environment of utility business. In particular following measures will be pursued:

- NEA is updating its computerized revenue collection system by introducing modern M-power computerized billing system in each revenue collection centers. By the end of fiscal year 2012/13, 82 revenue collection centers have been updated with this system and NEA has planned to implement this sysytem in additiopnal 20 distribution centers in current fiscal year 2013/14.

- Any Branch Payment System is being introduced in various distribution centers within the Kathmandu valley. For this, major Distribution Centers within the valley are already connected through optical fiber cables and the remaining few will be connected shortly. This system is already functional between Ratnapark and Baneshor distribution centers and will be shortly introduced between Pulchowk and Lagankhel distribution centers.

- Bank through payment system is in operation at Ratna Park distribution center through Prime Commercial Bank and NEA plans to extend it to other distribution centers also.The technical feasibility study for the payment of electricity bills through the use Mobile phone (SMS billing system) and third party agency is under study and NEA plan to introduce it mented on a pilot project basis.

- NEA has plns to introduce Automatic Meter Reading (AMR) System for high valued customers in near future. Preliminary study in this effect has already been completed.

- NEA has plans to establish Centralized Customer Care Center to ensure single point of contact for all consumer related activities including prompt grievance handling services.

- Application of Smart Grid and GIS based automated distribution system will be initiated.

Tariff based on the cost plus principle will be applied to the customers availing NEA's power through dedicated feeder once approval is received from the Electricity Tariff Fixation Commission.

Safety for the NEA personnel while operating and maintaining the electrical supply lines as well as safety to the consumers will be accorded a high priority.

Integrated Financial Management Information System (IFMIS) based on Enterprise Resource Planning (ERP) will be implemented in this fiscal yea. With such a system in place, NEA will be transformed into an IT enabled organization with prompt and reliable information for facilitating effective and efficient decision-making.

The projects under construction by IPPs and projects for which PPAs have been signed are run-of-river type only. These projects will generate substantial energy during wet season but provide less quantity of energy during dry season. This results in surplus during wet season and deficit during dry season. A comprehensive plan is required to utilize this surplus energy and to manage the deficit in dry season. We have already submitted a concept paper through Ministry of Energy on Energy Banking with India. The Energy Banking scheme will make it possible for us to export energy during Wet months and get it returned during Dry months. This may suitably address the seasonality of our generation facilities. The development of a first major 400 kV cross-border transmission line between Dhalkebar in Nepal and Muzarffarpur in India, with a capacity of 1,000 MW has been already undertaken with the participation of utility companies on both sides of the border. This will help improve the power exchange between Nepal and India, particularly exportation of hydropower from Tamakoshi basins.

Large-scale hydropower developments are underway in the Marsyangdi basin and Kali Gandaki basin targeting domestic consumption and export to India. The Government is planning the second 400 kV cross border transmission line from Bardaghat in Nepal to Gorakhpur in India to export the additional electricity to be generated from power projects in Kali Gandaki basin and other basins. This project will be funded by ADB.

NEA plans to complete transmission line sub projects of Kali Gandaki Corridor and Marsyangdi Corridor before middle 2016 for the power evacuation of IPP hydropower projects located in those basins.

The three transmission line projects namely, Modi-Lekhnath 132 kV Transmission Line, Solu Corridor 132 kV Transmission Line and Koshi Corridor 220 kV Transmission Line will be put into implementation following commitment of loan from Exim Bank of India..

Development of storage projects will provide a long term solution to resolve the problem of imbalance between supply and demand during wet and dry seasons. Dudh Koshi, Tamor Storage and Uttar Ganga Hydroelectric Projects have been identified as prospective and viable projects for implementation in near future. NEA will implement these projects on a priority basis.

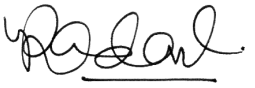
The hydropower project operated by subsidiary company of NEA is performing well. Similarly, the development of other hydropower projects undertaken by NEA's subsidiary companies are in good progress. For the effective and speedy implementation of the functions of NEA, a committee has been formed to recommend appropriate measures for the formation of subsidiary companies under Generation/ Transmission and Distribution business.

Acknowledgements

To conclude, I take this opportunity to thank all those contributing to NEA's activities over the past fiscal year. It is only through positive teamwork, I must stress, that a big organization like NEA can function and achieve results to the satisfaction of its stakeholders including customers. I wish to take this opportunity to thank the Government of Nepal for their continued assistance in our operations and their contributions to our development activities. I express my deep gratitude to the Chairman, Council of Ministers for his interest and guidance in our activities and to the Chairman and members of NEA Board of Directors who have steered the course successfully in all adverse conditions. Thanks are also due to the donor community that has made it possible for NEA to undertake the works for its development. Despite very adverse working conditions, our staff have shown consistent strive for betterment and dedication throughout the year. I am thankful to the entire staff of NEA and their representative Unions for their support and cooperation to the management.

Most importantly, I wish to thank our valued customers for bearing with us during periods of difficulty and assure them that we are in constant pursuit for providing electrical supply that is reliable and adequate for their needs.

Thank You.



Rameshar Yadav
Managing Director

Generation Construction Business Group

The Generation Construction Business Group, headed by General Manager, is responsible for construction management of new hydropower projects. The General Manager is supported by two departments, namely, the Generation Construction Department and the Monitoring and Technical Support Department, each one headed by a Director. At present this business group is taking care of the construction of the following four hydropower projects.

- Kulekhani III Hydroelectric Project (14 MW)
- Chameliya Hydroelectric Project (30 MW)
- Rahughat Hydroelectric Project (32 MW)
- Upper Trishuli 3 A Hydroelectric Project (60 MW)

Chameliya Hydroelectric Project, Rahughat Hydroelectric Project and Upper Trisuli 3 'A' Hydroelectric Project are headed by respective Project Directors and report to the General Manager. Kulekhani III Hydroelectric Project is headed by a Project Manager and reports to the Director, Generation Construction Department. The Monitoring and Technical Support Department provides the different types of technical support needed for the ongoing projects.

KULEKHANI III HYDROELECTRIC PROJECT

Project Background

The 14 MW Kulekhani III Hydroelectric Project is located immediately downstream of Kulekhani II HEP in Makwanpur District. The Civil Works Contract was awarded to Sinohydro Corporation,China and the Electromechanical Contract was awarded to M/S Zhejiang Jinlun Electromechanic Co., China. By the end of FY 2012/13 approximately 65 % of the construction works has already been completed. The power generated from the Project will be evacuated to INPS through a 500 m long 132 kV single circuit transmission line.

Government of Nepal and Nepal Electricity Authority (NEA) are funding the construction of this Project. The initial total estimated cost of the Project was NRs. 2.43 billion and was scheduled to be completed by December 7, 2011. The construction work was halted by contractor citing various problems. Re-negotiations were held with the Contractor and a "Memorandum of Agreement" (MOA) was signed on February 18, 2012 and subsequently, the construction of the project was resumed from March 23, 2012. The main construction components of the Project are Civil Works (Lot C-1) and Electromechanical and Hydromechanical Works (Lot-2). Originally, the project was scheduled to be completed within a period of 44 months including mobilization, testing and commissioning. As per the MOA, the project duration has been extended by another 30 months and the revised completion date has been set for September 13, 2014. Accordingly, the initial cost estimate for the project has been revised and is in the process of approval.

Since, the original contract agreement with the consultant (Joint Venture of Water Resources Consult (P.) Ltd, SILT Consultants (P.) Ltd. and Hydro Engineering & Development Co. (P.) Ltd.)for the Construction Management and Construction Supervision Work was terminated in February 2012, a new Engineer has been appointed temporarily in lieu for the time being until the appointment of the new consultant. Process of appointment of the new consultant Water and Power Consultancy Services, (WAPCOS) Ltd., Haryana, India, in association with Total Management System (TMS), Nepal, is currently underway and is in the final stages.

Project Status

Much of the civil works activities in the headworks area have already been completed except for the river crossing works. Out of the total 5900 m of tunnel length (including forebay, inclined shaft, penstock, headrace tunnel and adits) about 5690 m has already been completed. The excavation of the headrace tunnel has already been completed. The final breakthrough for the headrace tunnel was achieved on the 29th of July 2013. The concrete lining works for the tunnel is going on in full swing. Upon completion of the foundation strengthening works in the powerhouse, concreting of the substructure has been completed up to an elevation of 487.40 m. Diffusers for the powerhouse tailrace outlet have already been installed at the powerhouse site and other electromechanical works including the finalization of the drawings, fabrication, transportation and installation are currently going on, both at the site as well as in China.

Salient Features of the Project

Location	:	Headwork near the tailrace of Kulekhani II at Bhaise Dobhan and Powerhouse in Sanutar village (4.5 km north of Hetauda city), Makawanpur district
Type	:	Cascade project of Kulekhani Storage Project
Installed Capacity	:	14 MW
Annual Energy	:	40.85 GWh
Catchment Area	:	143 km2
Design Discharge	:	16.0 m3/s
Gross Head	:	109.8 m
Net Head	:	103.17 m
Headwork	:	Khani Khola Intake Conventional Side Intake on stilling basin downstream of the consolidation check dam
	:	Conveyance length 302 m
Head pond	:	Capacity 2067 m3; Size 30mx10m; Siphon Barrel Size2.7mx2.7mx68.8m
Headrace Tunnel	:	Horseshoe shaped concrete lined; Length 4.3 m; Diameter 3.5 m
Forebay	:	Underground; Horseshoe shaped concrete lined; Length 107 m; width/height 6 m/9 m
Adit Tunnel	:	4 numbers; Inverted D shaped; 1118.5 m (including branch of Adit 3; Diameter 3.5m)
Tunnel Penstock	:	Horseshoe shaped; Length 370 m; Diameter steel/tunnel 2.3 m/3.8 m
Powerhouse	:	Subsurface, 13.10 m × 21.8 m × 31.1 m
Tailrace	:	44.3 m RCC closed duct and 57.89 m open channel; Size 3 m×3.5 m for closed duct; 10m width of open channel
Turbine	:	2 Vertical Axis Francis Turbine
Generator	:	Two 3 phase, Synchronous AC
Transmission Line	:	132 kV; 0.5 km

CHAMELIYA HYDROELECTRIC PROJECT

Project Background

Chameliya Hydroelectric Project under joint funding of GoN, NEA and Korean loan was started in 2007 and is scheduled to be completed in March 14, 2015. The site is located at Sikhar VDC, Ward No. 4, Balanch of Darchula District. The plant capacity is 30 MW with average annual energy generation of 184.21 GWh. Even with numerous problems, the project has achieved 87% progress so far. The major milestone achieved is the tunnel breakthrough which took place on 12th May 2012.

Project Status

By the end of FY 2012/13, 90.24% of the dam construction works has been completed. Similarly, 90.85 % of intake, 100% of connecting tunnel, 83.29% of desanding basin, 94% of adit tunnel and 68% of the headrace tunnel (excluding squeezing portion) has been completed. The progress of powerhouse, surge tank, penstock and tail race construction stands at 99%, 71%, 63% and 99%, respectively. The overall progress of civil works is 90.24%.

The progress in the construction of the headrace tunnel is delayed due to the squeezing problem encounterd in tunnel section between downstream of Adit 2 and upstream of Adit.3. This is taken as the major challenges of the project. The squeezed tunnel section is about 843 m long. Maximum squeezing of 40% of the tunnel diameter was observed. The treatment for this problem has been started and 11% work has been completed so far. Another major problem faced by the project is the excessive weak geological condition in the vertical shaft penstock forming the cavity. This has resulted in the design change from R.C.C. to steel lined vertical shaft and horizontal section of the penstock there by increasing the cost and time.

The embedded parts for powerhouse are installed. Installation of two draft tubes with all accessories has been completed. Similarly, installation of turbines has also been completed. Most of hydro-mechanical and electro-mechanical equipment are delivered to site. Hundred percent of tower foundation works, 99% of tower erection works of 132 kV transmission line works have been completed. Out of 131 km length, stringing works on 64 Km length has been completed. Likewise tree cutting work has also been completed. In general, 86% percent of total electromechanical/hydro mechanical/transmission line works has been completed.

Salient Features of the project

Type of Project	:	Run-off - river plant with (6 hours daily peaking)
Catchment area	:	835 Km^2
Gross head	:	103.7m
Design discharge	:	36 cumecs (38% exceedence fl ow)
Installed capacity	:	30 MW
Dam	:	Concrete with gated weir Desanding basin
Type	:	Underground
Number of basin	:	2 Headrace Tunnel
Tunnel Type	:	Horse shoe, Pressure tunnel
Length/diameter	:	4067m/5.2m (4.2 m)
Type of surge tank	:	Restricted orifice Surge tank
diameter/height	:	8.0m/49.8m
Penstock length/diameter	:	383.64m/3.7m

Powerhouse		
Type	:	Semi-underground
Length/Width/height	:	37.5m/23.5m/27.4m
Turbine		
Type of turbine	:	Vertical Shaft Francis
Number of unit	:	2
Tailrace	:	Cut and cover box culvert
Transmission Line	:	132 kV single circuit, 131km long
Access Road	:	18 km
Annual Energy	:	184.21 GWh

RAHUGHAT HYDROELECTRIC PROJECT

Project Background

Rahughat Hydroelectric Project with a capacity of 32 MW is currently under construction. The project is located in Galeshwor, near the Beni district headquarter, of Myagdi District in Dhaulagiri Zone of Western Nepal. The Project envisages generating 187.66 GWh of energy annually from the Rahughat River.

The fund requirement for construction works of the project is estimated to be US$ 67 million. Out of US$ 67 million, US$ 31 million is available from EXIM Bank of India under US$ 100 million Dollar Credit Line Agreement dated September 14, 2007. The remaining fund of US$ 36 million required for electro-mechanical, hydro-mechanical, transmission line and main civil works and consultancy services has been made available from EXIM Bank of India under US$ 250 million Dollar Credit Line Agreement dated October 21, 2011. The approval of US$ 36 million Credit Line for the project was conveyed by the Embassy of India, Kathmandu on 3rd June, 2013.

Contract Agreement for the Consultancy Services for Construction of Main Civil Works was signed with WAPCOS Ltd. (A Govt. of India Undertaking) in association with TATA CONSULTING ENGINEERS LIMITED AND LARSON & TOUBRO LIMITED on 16th February 2012 and the concurrence for this from the Export - Import Bank of India was received on 2nd August, 2012.

The Government of India has given approval for the appointment of WAPCOS Limited, consultant for the construction of main civil works of the project, as consultant also for Electro-mechanical, Hydro-mechanical and Transmission Line (EM, HM and TL) works. The process for appointing WAPCOS Limited as Consultant for EM, HM and TL Works is underway.

Project Status

Contract Agreement for the construction of the Main Civil Works (dam, intake structure, de-sander, headrace tunnel, surge tank, penstock, power house and tailrace etc) was signed on 4th November 2010 with IVRCL Limited, India. The duration of the contract period, after the issuance of "Notice to Proceed", is 42 months. As per Contract Agreement, the construction of the access road, bridge and the Contractor's temporary facilities have already been started and the rest of the works are to be commenced only after the issuance of the Work Order by the Consultant.

As per the contract agreement, "Notice to Proceed" for Construction of Main Civil Works was issued by the Consultant, WAPCOS Limited, India, on 30th November 2012. The Contractor, however, is of the opinion that issues raised by him, regarding the increase in the quoted rates, price escalation and compensation of operational losses while waiting for the appointment of the Consultant should be resolved before the acceptance of "Notice to Proceed". As per the request of the Contractor, a High Level Committee was formed by NEA management on 4th of February 2013 to resolve the issues raised by the Contractor. Negotiations are underway with the Contractor in the presence of the Consultant to resolve the issues.

About 30 hectares of land required for project structures such as the camp facilities, project roads, power house, etc. have been acquired. Construction of camp facilities for the project including 14 numbers of buildings (Office, guest-house and staff-quarters) along with the construction of compound wall and associated works is in its final stages. The camp facility is scheduled to be completed by the end of October, 2013. About 1,442 numbers of trees are required to be cut for clearance of the different construction sites for the project works. The order to cut the trees was issued in February 2012 and as a the cutting of trees has almost been completed.

Some additional geological investigations have been carried out in the project area as per the recommendation of the Consultant for the finalization of design and drawings of the project components. Likewise, 8 number of construction drawings have been issued to the Contractor.

Only one applicant, Bharat Heavy Electricals Limited, India has been qualified for Lot 3: Mechanical and Electrical Works, and similarly four applicants have been qualified for Lot 2: Hydro-mechanical Works. The four applicants are, a) Texmaco Rail & Engineering Limited, India b) Om Metals Infraprojects Limited, India, c) PES Engineers Private Limited, India and d) General Mechanical Works Pvt. Ltd., India and Nepal Hydro & Electric Limited, Nepal Joint Venture.

Initial Environmental Examination (IEE) for the Transmission Line Work is in progress. Preparation of prequalification documents for TL Work is underway.

Salient Features of the Project:

Location	: Myagdi District
Total Catchment Area	: 305 km^2
Design Flow	: 13 m^3/s
Diversion during Construction Designed for (dry season, 1:10 yrs)	: 27 m^3/s
Type of Weir & Undersluice Gated	
Capacity of Weir & Undersluice (1 in 1,000 years fl ood)	: 688 m^3/s
Number of Desanding Basin	: 2
Size of Desanding Basin (Length x Width x Depth per bay)	: 80.0 x 8.0 x 5.2 (m)
Length of Headrace Tunnel	: 6,151 m
Internal diameter of Headrace Tunnel-Shotcrete lined/ Concrete lined	: 3.5 / 2.9 (m)
Diameter of Surge Tank	: 10 m
Height of Surge Tank	: 47 m
Length of Concrete Lined Pressure Tunnel	: 740.5 m
Internal Diameter of Concrete Lined Pressure Tunnel	: 2.6 m
Length of Steel Lined Penstock	: 352 m
Diameter of Penstock (underground)	: 1.95 m
Size of Power House Length x width	: 52.6 x 16.7 (m2)
Number of generating units (19 MVA each)	: 2
Turbine type	: Pelton (vertical axis)
Turbine rated capacity	: 2 x 16 MW
Gross Head	: 295.5 m
Rated Net Head	: 284.3 m
Installed Capacity	: 16 x 2 = 32 MW
Transmission Line (Powerhouse site to Modi Sub-station, Double circuit)	: 28 km
Access road (from Powerhouse to headworks)	: 12.9 km
Project Cost	: 67 MUSD
Total Financial Cost	: 90 MUSD
Total Annual Salable Energy Generation	: 187.66 GWh
Firm Energy (90 % Hydrological Firm)	: 98.92 GWh
Secondary Energy	: 88.74 GWh
Benefit / Cost at 10 % discount rate	: 1.135

Temporary Quarters for Main Civil Contractor's Employees and Workers.

UPPER TRISHULI 3A HYDROELECTRIC PROJECT

Project Background

Upper Trishuli 3 A is a 60 MW project located in Rasuwa and Nuwakot Districts. The construction of this project was initiated in FY 2010/2011. The project is being financed by a soft loan from China EXIM Bank. An agreement was signed between the Governement of Nepal and China EXIM Bank for a concessional loan of 120 Million US Dollars. The estimated cost of the project is US $125.775 Million and the loan from the China EXIM bank is expected to cover the cost of the major works including, civil, electromechanical, hydromechanical and transmission line works. It is envisaged that this medium sized project under construction through concessional loan will help to improve the power supply in the Kathmandu valley.

The project structures comprise of a 15 m high and 95 m wide diversion weir, an intake, a desander, a 4.1 km long headrace tunnel, a surge shaft, an inclined shaft, a pressure tunnel, an underground powerhouse, a tailrace, a 46 km long 220 kV Transmission line and ancillary structures like camp facilities. The 2.3 km new access road to reach the surge shaft site and other project sites, upgrading of 11.5 km existing road and steel bridge of 55 m span over Trishuli River are also other components of the project. The estimated annual energy generation of the Project is 460 GWh. The construction of this project is being undertaken under Engineering Procurement and Construction (EPC).

Project Status

Contract for the major construction work (Civil, electro-mechanical, hydro-mechanical works) was signed on 28 May 2010 with China Gezhouba Group Co. Ltd. (CGGC) at a cost of 89.1779 Million US$. After signing of the Loan Agreement and subsequent Subsidiary Loan Agreement (SLA) between

Headworks OF Spillway

Government of Nepal and NEA, the Contract has become effective since 1st June 2011. The construction work has started from 1st June 2011.

Contract for construction supervision of the project was signed with Northwest Hydro Consulting Engineers in September 2010. The supervision work has also started since 1 June 2011.

Land acquisition for the major project works has been completed including leasing of land for the temporary facilities.

CGGC has completed construction of steel bridge and a pedestrian bridge over Trishuli River, temporary camp at headworks, excavation of Adit no. 1, aggregate Screening plant, 1st phase river diversion work at headworks area, foundation excavation for Diversion Weir, about 27,000 m3 of concreting works in stilling pool and retaining walls of right bank headworks structure. CGGC has been undertaking upgrading of the 11.5 km long access road, access road to Surge shaft, Employer's Permanent camp, excavation of headrace tunnel on both upstream and downstream face from Adit-1 and from headpond. Similarly, excavation work for Desander, Intake and Headpond are completed.

Out of the total length of 4095 m, a total of 2281.1 m of headrace tunnel excavation has already been completed. The excavation of Adit 1 &2 and Cable Tunnel having lengths of 127 m, 134 m and 170 m, respectively has already been completed.

The Transmission line comprises of 46 km long 220 kV line from powerhouse switchyard to Matatirtha substation in Kathmandu. In addition to 46 km overhead line about 1 km of 220 kV underground cable route leads to the Matatirtha Substation and two 132 kV line bay extension work will be installed for interconnection with existing Matatirtha substation. The overhead transmission line comprises of about 4 km 132 kV double circuit single Bison conductors from powerhouse to UT3B Hub substation, about 36 km 220 kV double circuit double Bison conductors from UT3B Hub substation to Bandbhanjyang and about 220 kV four circuit having upper two circuits double Bison conductor and lower two circuits double Moose conductors from Bandbhanjyang to Matatirtha. The 22.6 million US$ (excluding VAT) Contract for the Transmission line was awarded to China International Water & Energy Corporation (CWE) in 27 March 2011. The Contract for the transmission line has become effective from 26 February 2012 after the loan agreement between GoN and China Exim Bank which was signed on 17 August 2011. Till now route alignment survey and soil test for foundation has been completed. The Conductor (Bison) for the 4 km line has already arrived at the site.

Apart from the works mentioned above, NEA is preparing to impart skill enhancement training to 120 persons from the project site. The Report of Initial Environmental Examination (IEE) for Transmission line work, after incorporation of all the MOE's comments, was submitted to Ministry of Energy on September, 2011 and has been approved.

Salient Features of Upper Trishuli 3 A Hydroelectric Project

Type of project	:	Run of River
District/Zone	:	Rasuwa & Nuwakot of Bagmati zone
Headworks	:	1 km downstream of Mailung Trishuli confluence
Powerhouse	:	Near Simle village
Nearest Town	:	Trishuli about 19 km to the south
Nearest Roadhead	:	Simle near proposed powerhouse site
Length of access road	:	2.3 km new and upgrading of 11.3 km between Betrawati & H/W site
Name of River	:	Trishuli
Reference Hydrology	:	Betrawati St. no. 447
Catchment area	:	4542 sq. km
Design Discharge	:	51 cumecs based on 70% excedence flow
Regional geology	:	Lesser Himalyas
Geology of project area	:	Good rock type, Gneiss, Schist
Gross Head	:	144.5 m
Type of headworks	:	Gated weir with side intake
Design flood	:	2424 cumecs (based on 1:1000 year flood)
Full Supply level	:	El: 870.5 m
Undersluice gate size	:	4 nos. 11.6 m x 10 m
Intake type	:	Side intake
Intake channel length	:	148 m
Desander	:	Twin Bierri type
Desander size	:	95 m x 30 m x 9.2 m (L x B x H)
Headrace tunnel length	:	4095 m
Headrace tunnel Shape	:	D type (excavated) and circular (finished)
Headrace tunnel Size	:	5.4 m for concrete lined and 5.9 m for shotcrete
Shotcrete lined portion	:	60% of total length
Surge shaft	:	Restricted orifice type 17 m dia. 37.7 m high
Inclined shaft	:	Length 168.27 m, diameter 4 m
Pressure tunnel	:	Length 86.6 m, diameter 4.0 m to 2.0 m
Powerhouse Type	:	Underground
Powerhouse Size	:	42.6 m x 14 m x 30.2 m
Turbine Type	:	Vertical Francis
Installed Capacity	:	60 MW (2 X 30 MW)
Switchyard Size	:	2 nos of 50 m X 15 m
Tailrace Conduit	:	D type 6.2mx5.0 m size,115 m length And twin conduits 25 m length
Tail water Level	:	El. 726 m
Min. power Generation	:	43.75 MW
Annual average Energy	:	489.76 GWh (gross)
Transmission Line	:	48 km
Transmission Voltage	:	220 kV initially charged at 132 kV
Interconnection point	:	Thankot substation at Kathmandu
Estimated cost	:	109.224 Million US $
Benefit cost ratio	:	2.18
EIRR	:	21.6%
Specific energy cost	:	3.03 cents/kWh

Generation Operation and Maintenance Business Group

Generation Operation and Maintenance (GO&M) Business Group is responsible for the optimum operation and maintenance of the seventeen (17) hydropower stations and two (2) thermal power plants owned by NEA. The mission of the GO&M Business Group has been "Generation of energy by optimally utilizing the resources available while undertaking periodic overhauling, major maintenance works and rehabilitation projects of the generating stations".

The total installed capacity of hydropower stations and thermal power plants under this business group has remained at 469.29 MW and 53.41 MW, respectively. There has not been any capacity addition in the year under view The GO&M business has strived to increase total production of energy year on year basis, without accounting for the thermal energy. This year the same resources have been maximally used to generate 2266 GWh of which Hydro-energy contributed 2247 GWh of the total and 18.8 GWh came from thermal.

The generation target set for the year was 2,342 GWh. Although the target was exceeded by the major power plants, there has been a shortfall of 77 GWh in the total generation. This shortfall has been mainly due to the restriction of generation in Kulkhani 1 and 2 reservoir power plants and maintenance problems faced in Trishuli and Modi power stations. The generations in the two reservoir type cascade power plants vary mainly according to the variations in annual rainfall in their catchment area. During the year under review, the reservoir was kept filled till late in the dry season by restricting its generation so as to maximize output from available stored water. The fire in the transformers in Kulekhani 2 power plant forced the generation from upstream Kulekhani 1 power plant to reduce. It is expected that the water stored during last three months of FY 2012/13 will contribute towards higher generation from these power plants in the next fiscal year as the water level of the reservoir has been more than 1516.00 masl by the end of Asar 2070.

The maximum water-level of the Kulekhani reservoir was recorded at 1530.5 masl in FY 2012/13. The water extraction from Kulekhani reservoir was limited to 1506 masl minimum level while expecting to fill the reservoir for the coming winter season.

The business group has continued to work on the repair and maintenance activities, periodic overhauling and rehabilitation as well as Renovation, Modernization and Upgradation (RMU) projects in assistance with Government of Nepal and multilateral agencies. The Multifuel power plant rehabilitation was completed with all six turbine and generators tested for 6.0 MW continuous generation. However, due to breakdowns in auxiliary systems such as trace heater, cooling water fan, plate heat exchanger and oil separators, the total plant generation was limited to 4 units. The auxiliary systems are being procured and repaired. By the coming winter in 2070, it is expected that 5 units will be able to generate 30 MW with one unit as rotational stand-by and maintenance. The other RMU projects in KGA, Modi and Marsyangdi Power Plant are at various stages of implementation. The weir of Modi power plant has been repaired before the flood season, and further construction and gate installation as well as bypass system in forebay will be completed next year. It is expected to achieve full design generation capacity after completion of the rehabilitation by the end of this fiscal year.

Ageing generating stations are faced with ageing workforce and the skilled and knowledgeable personnel from the initial project period are depleted. This means the operation practices have also seen gradual deterioration. Efforts have been made to upgrade available manpower at floor level and at engineer level. In-house training courses, an initiative launched from last year, have been continued in the major five power plants to train operation & maintenance personnel. Ageing power plants also mean increase in operation and maintenance costs. Coupled with inadequate skilled workforce and unavailability of spare parts, the Operation and Maintenance business faces serious challenges in the days ahead. Advanced technologies used in the new power plants demand manpower up to the notch. Systemic improvements are called for in this sector to bring the generation to the optimum level.

The two Operation and Maintenance departments under the Generation Business Group will continue to work on generation improvement initiatives in a broader framework.

This erstwhile Generation O&M Business Group was structured into two departments, namely, Large Power Plant and Medium Power Plant Operation & Maintenance Departments.

LARGE POWER PLANT OPERATION & MAINTENANCE (LPPOM) DEPARTMENT

The LPPOM Department overlooked the operation and maintenance of five (5) hydropower stations and one (1) thermal power plant above 30 MW owned by NEA, with a total of 414.9 MW of installed capacity. The generations of the power plants have been very satisfactory excluding generation of Kulekhani 1 and 2 power plants, whose water was stored and remained unused, and the Multi-fuel power plant whose operation is dictated by the high fuel costs and subsidy to be provided by the government.

Annual overhauling and repair works were carried out in Kaligandaki A, Middle Marsyangdi and Marsyangdi power plants. In Kaligandaki A power plant, the high sediment load in the waters used for generation had resulted in abnormally high wear and tear in all the three runners and the wearing parts of turbine. Two of the runners have been massively eroded with chunks of blades removed. Hence, two units were completely overhauled while third unit was repaired in situ.

The three Main Inlet Valves were repaired in record time completing the whole work in less than eight days. The surge tank wheel gate problem was solved which was lying as a puzzle since its installation. Now tunnel dewatering is not required during repair of Main inlet valves. It is seen that Kaligandaki A power plant needs major repair every year unless the sediment issue is addressed properly. Kaligandaki A Rehabilitation project has been launched with World Bank loan to take care of some of these issues.
Kulekhani-I and Kulekhani-II being reservoir type power plants does not experience erosion problems and hence, only regular preventive maintenance exercises are undertaken.

Kaligandaki power plant is shutdown frequently for few hours at a time during monsoon due to overload of floating debris at its intake, which also reduces the desander efficiency. A Floating boom with submerged net was designed by the department and constructed and installed at the intake weir this year. The operation of the floating boom has been successful, reducing the trash load by almost half. This indigenous design, made at a very nominal cost, will force to rethink any introduction of new structures to achieve the same function. The conditions of two runners were severely damaged with slices of the blade profile cut -off wholly. The high generation during high sediment load in monsoon, while giving record energy generation, had also caused such severe damage. Thou the runners are repaired, it may be necessary to replace the runners after one or two massive repairs of this scale.

Middle Marsyangdi dam site study of the river sedimentation and flow behavior was carried out in order to prepare a better design for its left bank protection. Technical support in the form of an Advisor from Fichtner GmbH has been employed since January 2012 under KfW loan program for improving the maintenance practices, imparting training and providing technical advice where found necessary.

Marsyangdi power plant has improved its generation for the consecutive year. Additional filter tank was constructed to reduce downtime due to shaft-seal cooling water problem in the monsoon. The runners have been repaired frequently since 1990 and the efficiency of the runners with the present blade profile needs to be checked to improve the repair and achieve better efficiency.

In Kulekhani-II, the132 KV power transformer was damaged due to lightning and resulting fire. The bushings were punctured first, but the resulting fire could not be extinguished and it spread to nearby B-phase transformer. The external auxillaries and bushings of two single phase transformers were damaged by the time help from fire brigade and staff could quench the fire. These transformers were repaired at local manufacturer's shop and are now operating again at its 90% capacity.

Major power plants as Kulekhani-I and Kulekhani-II, Marsyangdi and Middle Marsyangdi now contribute to their capacity in boosting the reactive power generation and improving voltage profile in Hetauda and Bharatpur area. Test operation in Synchronous capacitor mode of Kulekhani-I pushing approximately 38 MVar to the system was done last year. Load Dispatching Center has to put to use the reactive support possible from this plant during periods when it is not generating.

The rehabilitation project of Multi-fuel Power Plant was completed this year, with some works on auxiliary systems remaining which will be completed very soon. This will ensure availability of 5 units everyday producing 30MW in total. In addition to operation and maintenance works, capacity building efforts which were initiated in-house from May 2012, have been continued this year also in all five hydro-power stations. One course for operators was conducted in each power plant. The dire need to transfer knowledge to the lower level technicians is recognized and the best means for doing that is in-house. Engineers have been sent abroad for short training courses in specialized areas. The results and feedback have been very encouraging. This initiative shall be

pursued vigorously in the coming year.

MEDIUM POWER PLANT OPERATION AND MAINTENANCE DEPARTMENT

The department is responsible for operation and maintenance of medium & small power stations with installed capacity less than 30 MW. There are 12 Hydropower & 1 Thermal power stations under this department.

The total generation from Medium Hydropower stations were recorded at 389.24 GWh in FY 2012/13 compared to 403.24 GWh in 2011/12. Generation from Trishuli declined this year due to problems in two generators, and this resulted in consequent decrease in cascade power plant Devighat also. Modi power plant facing significant problems in weir also generated much less than the last year. Gandak, Ilam, Panauti, Seti and Fewa increased generation compared to the last year albeit in a very small quantity.

In Trishuli Hydropower Station, the damages inflicted in generator stator and rotor of Unit No. 1 & 6 in July 2012 due to the failure of the relays to trip the main breakers has been recovered. Protection relays as a safety measure and back-up has been installed in all 7 units. In Devighat, one 6.5 MVA, 6.6/66 kV step-up transformer in Unit No. 1 was installed and 33 kV and 66 kV SF6 breaker were also installed in Dhading and Trishuli-Devighat feeders.

In Gandak Hydropower Station, the proposed installation of trash rack cleaning machine (TRCM) and construction of under-sluice channel at intake are expected to relieve choking of trash rack with debris and silt that flow unabated from the headworks thereby increasing available capacity of the plant during peak and off-peak hours.

In Modi Khola Hydropower station, the proposed civil, hydro-mechanical and electromechanical renovation and modification works are undergoing. After completion of these works this year, it is expected to resolve the underlying problems of trash rack choking, sedimentation and forebay siltation and some persistent electro-mechanical problems.
In Sunkoshi Hydropower station, overhauling of Unit 1 was done in addition to the regular maintenance works in the headworks and canal. In Ilam Hydropower station, penstock pipe rectification works have been carried out. The sliding of the slope where the penstock is aligned has caused serious impacts in the penstock requiring continual monitoring of it and major corrective measures every year to prevent penstock failure.
In Chatara Hydropower Station, Unit No. 1 is in operation while Unit No. 2 needs major electrical and mechanical overhauling works to be carried out in its Bevel Gear Bulb turbine assembly. The outsourcing of the overhauling works to experienced firms in these types of turbines could be an option.

All three units of Seti Hydropower Station are in operation. The equipments for renovation of excitation and switchgear system of Seti Hydropower Station have been installed and commissioned. In Fewa Hydropower Station, 3 Units are in operation while remaining Unit No. 4 needs major rehabilitation work. Operation of only two units at a time is possible due to inadequate canal inflow.

The rehabilitation of electromechanical components of Sundarijal Hydropower station is underway under the joint assistance from ADB, GON and NEA.

Pharping Hydropower Station is a century old, the first power station in Nepal. It is not in scheduled operation at the moment. The station operates only for an hour a day as water that feeds the turbine is being used for drinking water supply. A master plan has been prepared to develop the site as Live Museum with construction and establishments including model power station of wind, solar and hydro and as a centenary celebration memorial.

Hetauda Diesel Plant generated 8.8 GWh this year due to the subsidy policy of the government and limiting load-shedding to 12 hours in the winter. The seven units were rehabilitated last year and all the units are available for generation. The proposal for up gradation of AVR of existing excitation system is under consideration.

Key challenges for increasing generation from medium power stations are namely, the enforcement of maintenance schedule, reduction of maintenance outages, imparting skills and operating prudence and deficient skilled workforce to name a few.


Lowering of Main Shaft into the Turbine Pit

1. Kaligandaki 'A' Hydropower Station

Kaligandaki 'A' Hydropower Station, located at Beltari, Syangja is the largest power plant of Nepal with installed capacity of 144 MW and annual design generation of 842 GWh. It was commissioned in 2002.

Amongst notable maintenance works carried out this year, major repair works of main inlet valves of Unit No. 1, 2 & 3 were carried out during plant shutdown from 1 March, 2013 to 9 March, 2013 within a record time of less than eight days. Many pending repair works were done during this shutdown such as replacing the valve of the adit tunnel pipes to the fish hatchery, repair of stoplog-seal beams and concrete repair in flushing gates of headworks. The tunnel was inspected and water leakage was monitored. The long-standing problem of leakage from the surgetank wheel gate was solved and tested. Now it shall be possible to dewater penstock without tunnel dewatering. The underwater repair of radial diversion gate seal and concrete was completed without shutdown. This repair job is considered to be first of its kind in Nepalese hydro-power plants. As a part of annual maintenance works, this year overhauling of Unit No. 2 & 3, repair of runner of Unit No. 1 were done. Replacement of HV Bushing in Power Transformers and installation of air admission system in Unit No. 1 to alleviate the cavitation problem during low discharges was done.

The Kaligandaki 'A' Hydropower Plant Rehabilitation Project (KGAHPPRP) funded by World Bank (IDA Credit) is estimated to cost US Dollar 30.6 million and scheduled to be completed by April, 2016 includes headworks modification, dam safety & instrumentation, technical assistance and capacity-building and revised electromechanical works.

2. Middle Marsyangdi Hydropower Station

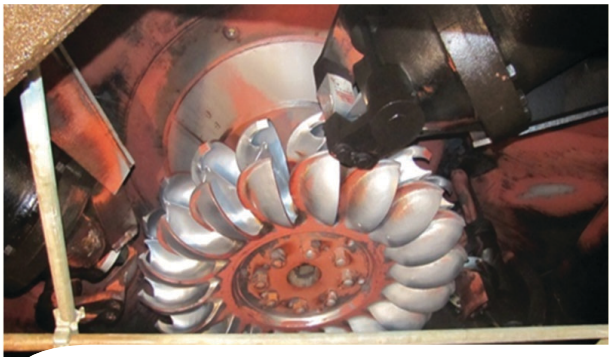
Middle Marsyangdi Hydropower Station is located at Bhoteodar, Siundibar, Lamjung with installed capacity of 70 MW and annual design generation of 398 GWh. It was commissioned in 2008. The operational performance of the plant has been improving, generating record energy this year exceeding the generation target and the design generation. The headworks left-bank stability and slope protection has been a worrisome issue and under scanner for some time. To properly understand this, bathymetric survey using Differential Global Positioning System (DGPS), velocity measurement, gauge installation and discharge measurement of the reservoir are currently undertaken covering up to 50 meter upstream of the reservoir. These findings will be applied to develop a model to study river behavior and sedimentation issues of the reservoir. Overhauling of Unit No. 2 was carried out this year. The application of high wear resistance epoxy component and maintenance of sill beam at spillway gates 1, 2 & 3 are other significant activities this year.

3. Marsyangdi Hydropower Station

Marsyangdi Hydropower Station is located at Aabookhaireni, Tanahun in the central region with installed capacity of 69 MW and annual design generation of 462.5 GWh. It was commissioned in 1989 AD. The plant continues to perform up to the expectation and has generated 450 GWh this year

exceeding last year's generation of 445.90 GWh. The design generation of this power plant is 462.5 GWh, and its record annual generation has been 480 GWh, which indicates that the annual runner maintenance works may need to be supported with turbine efficiency tests and blade profile design checks in order to be able to achieve similar efficiency to the original unit.

Among major repair works this year, the replacement of turbine runner of Unit 3, wearing ring with facing plate of bottom ring and head cover wearing ring, repair of guide vanes, facing plates, Metaceram coating and application of Belzona were done. The weir control modernization and modification under Loan No. 2587-NEP, EAEIP jointly funded by ADB and GON/NEA has been completed in July this year. The 1.5 MW Diesel plant at Dhakaltaar was also operated this year with one unit in operation during peak time.



4. Kulekhani-I Hydropower Station

Kulekhani-I Hydropower Station, located at Dhorsing, Makwanpur is the only storage type power plant in Nepal with installed capacity of 60 MW and annual design generation of 211 GWh (165 GWh primary and 46 GWh secondary) which was commissioned in 1982 AD. The plant was basically designed for peaking, however due to inadequate generation in the system to match the demand; the plant is forced to operate as and when required. The generation this year is quite low compared to previous years primarily due to disruption in KL-II; its cascade. There were two successive interruptions in its own generation due to progressive breakdown of 66 kV XLPE cable at both units at a vulnerable point where water humidity accumulation occurred in the bottom turn raising issues of wet aging of the cable. The cables were immediately repaired using 66 kV straight-through cable jointing kits. Condition monitoring of Power Transformers, CTs & PTs was also carried out. The replacement of MOCBs by VCBs with control and relay panel, installation of combination panel of digital governor and digital AVR in Unit no. 1 and procurement of 66 kV XLPE cable and cable termination kits are currently underway.

5. Kulekhani-II Hydropower Station

Kulekhani-II Hydropower Station, located at Nibuwatar, Makwanpur with installed capacity of 32 MW and annual design generation of 104.6 GWh is a cascade to Kulekhani-I along with a diversion of Mandu River to the specially built intake. It was commissioned in 1986 AD. Water from Rapti River is also fed to the intake of KL-II by pumping when required. The operation of this plant is completely dependent on the operation of Kulekhani-I. The unprecedented incident of explosion and subsequent fire in the switchyard on the night of April 16, 2013 resulted in damage of transformers, cables, instrument transformers and other switchyard equipments. NEA responded promptly to the crisis and damages inflicted by the fire and explosions were repaired and the generation was partially resumed by restoring power transformer from Gandak HPP on 30 May, 2013. The emergency repairs in damaged power transformers were carried out and the 90% of the capacity of the plant has been restored by 11 July, 2013. The commissioning of new 132/6.6 kV, 3 Phase, 26/37.8 MVA Power Transformer will bring the its capacity to 100%. This work and installation of 132 KV SF6 Gas circuit Breaker in switchyard are scheduled to be completed by middle of this F.Y.

6. Trishuli Hydropower Station

Trishuli Hydropower Station, located at Trishuli, Nuwakot, previously with installed capacity of 21 MW consisting of 7 units each of 3 MW commissioned in 1967 AD and developed jointly by Government of India and Government of Nepal at a cost of INR 140 million. It was rehabilitated in 1995 AD and upgraded to 24 MW with 6 units each of 3.5 MW and one unit of 3 MW. It is a peaking run-of-river hydropower station with annual design generation of 163 GWh.

The river training works in headworks include gabion wall protection against landslide in nearby areas. The damages inflicted in stator and rotor of Unit No. 1 & 6 in July 2012 due to the failure of the relays to trip the main breakers was recovered in Unit No. 1 after the replacement of stator windings. Unit No. 6 which shared the major proportion of damage will be recovered shortly as the repair and maintenance works in stator and rotor are underway. The installation of 66 kV SF6 circuit breaker in Balaju-2 Feeder and the replacement of generator protection relays in all units have also been completed.

7. Gandak Hydropower Station

Gandak Hydropower Station, located at Surajpura, Nawalparasi with installed capacity of 15 MW and annual design generation of 106.38 GWh was commissioned in 1979 AD. The station is canal drop type and the first low head (6.09 m) power plant in Nepal. The weir is regulated by the Bihar State Government and the canal is shutdown twice in a year for regular repair and maintenance. The operation of this power station is hence, affected by irrigation in Bihar and Uttar Pradesh.

Repair of generator stator windings of Unit No. 1 has been proposed for FY 2013/14. The retrofitting work of six (6) numbers of VCB trolleys currently underway, is supposed to solve the frequent breakdown of interrupters and operating mechanism of existing circuit breakers. The installation of trash rack cleaning machine and new trash rack panels financed by ADB under EAEIP are expected to commission by end of fiscal year 2013/14.

8. Devighat Hydropower Station

Devighat Hydropower Station, located at Devighat, Nuwakot with installed capacity of 14.1 MW and annual design generation of 144 GWh was commissioned in 1984 and rehabilitated and upgraded to 15 MW in 2011. It lies on the right bank of Trishuli River and is a tailrace development of Trishuli Hydropower station.

Civil works carried out this year include removal of deposited sand in the forebay, protection works at Samari site and repair and maintenance of canal structure. The procurement of spare parts of equipments to establish the desired level of reliability of units has been proposed for FY 2013/14. Apart from regular preventive maintenance works, installation of 6.5 MVA, 6.6/66 kV step-up transformer in Unit No. 1

and installation of 33 kV and 66 kV SF6 breaker with C&R Panel in Dhading and Trishuli-Devighat feeder respectively have been completed this year. The breakdown of Unit No. 6 of Trishuli has adversely affected the generation this year especially during rainy season.

9. Modikhola Hydropower Station

Modikhola Hydropower Station is located at Dimuwa, Parbat with installed capacity of 14.8 MW and annual design generation of 92.5 GWh and was commissioned in 2000 AD. The performance of the plant is largely unsatisfactory especially during rainy season compared to other identical hydropower stations in spite of being a relatively new plant. The existing sediment handling facilities are inadequate for the given river behavior, allowing sediment to enter the tunnel and erode turbine and its assembly, butter-fly valves and wicket gates. Rehabilitation of the plant isbeing implemented. The rehabilitation of civil and hydro-mechanical portions viz. construction of bypass retaining structures and repair of stop log gates are currently underway whereas the procurement of spare parts, upgradation of SCADA software and the modification of cooling water system will be implemented in the next two years. The commissioning of digital governors in both the units and a spare runner are planned for fiscal year 2013/14. The overhauling of Unit No. 1, which was last carried out in 2007, has been successfully completed this year.

10. Sunkoshi Hydropower Station

Sunkoshi Hydropower Station, located at Lamosanghu, Sindhupalchowk with installed capacity of 10.05 MW and annual design generation of 70 GWh was commissioned in 1972 AD. The plant has delivered this year 63.60 GWh against the target of 63.49 GWh. Civil works this year mainly consisted of repair & maintenance of canal side wall at slope No. 2 and crack treatment by application of epoxy at box culvert of Slope No. 2 during canal shutdown from 30 June, 2013 to 06 July, 2013 apart from canal protection, drain and river training works. The overhauling of Unit No. 1 and application of anti corrosive painting over penstock outer surface are the other significant maintenance activities this year.

11. Ilam (Puwakhola) Hydropower Station

Puwa Khola Hydropower Station, run of river type, located at Golakharka, Ilam having installed capacity of 6.2 MW and annual design generation of 48 GWh. It was commissioned in 1999 AD. It was developed by investment from Government of Nepal and NEA at a cost of USD 15.7 million. The station has two units each with 3.1 MW. It has generated 30.44 GWh of

energy this year. Penstock pipe rectification works, transformer oil filtration and topping in power transfomer and head tank crack maintenance are the major activities carried out this year.

12. Chatara Hydropower Station

Chatara Hydropower Station, a canal drop type power station, is located at Chatara, Sunsari with installed capacity of 3.2 MW and annual design generation of 6 GWh. It was commissioned in 1996 AD in assistance from Government of India at a cost of NRs. 162.6 million and was handed over to NEA by Sunsari Morang Irrigation Project (SMIP) on 29 March, 1999. Presently, Unit No. 2 is in a breakdown due to problems related to turbine runner assembly and electrical controls whereas Unit No. 1 is in normal operation. Rehabilitation of this plant is planned under the assistance from ADB and GON, which includes intake area cleaning and clearing, overhauling of both the units, repair and maintenance of scabe at 52 yarde, replacement of automatic elements, procurement of new 33 kV SF6 circuit breaker with C&R panel and procurement of new transformer 4 MVA, 11/33 kV.

13. Panauti Hydropower Station

Panauti Hydropower Station, located at Khopasi, Panauti with installed capacity of 2.4 MW and annual design generation of 6.97 GWh. It was commissioned in 1965 AD. The project was originally conceived for operation of only two units simultaneously and one unit as standby. Presently, unit 2 is running at 400 to 500 kW. The overhauling of Unit 1 & 3 along with other electromechanical works is currently underway under the assistance of GON and scheduled to be completed in fiscal year 2013/14.

14. Seti Hydropower Station

Seti Hydropower Station is a run of river type with installed capacity of 1.5 MW and design generation of 9.8 GWh consisting of 3 units each 0.5 MW. It is located at Nadipur, Pokhara and was commissioned in 1985 AD with assistance from Government of People's Republic of China and Government of Nepal. The power canal for this power station is jointly used for irrigation purposes looked after by Department of Irrigation and hence, the operation of this power station is affected by irrigation as well. The refurbishment works of excitation system and replacement of existing MOCBs with VCB and Control and Relay system have been successfully completed this year. Major repair and maintenance works at headworks are planned for next year.

15. Fewa Hydropower Station

Fewa hydropower station is a canal drop type power station having an installed capacity of 1.0 MW and located at Pardi, Birauta, Pokhara with an annual design generation of 6.5 GWh. It consists of 4 units each 0.25 MW. It was commissioned in 1969 AD and developed jointly by Government of India and Government of Nepal. Currently, three units are in operation and major rehabilitation works are required in the near future.

16. Sundarijal Hydropower Station

Sundarijal Hydropower Station, located at Sundarijal, 15 km northeast of Kathmandu with installed capacity of 640 kW and annual design generation of 4.77 GWh was commissioned in 1934 AD in a grant from British government. Both the Pelton units, each with 320 kW, are in normal operation. The penstock and station flows are part of the water supply system to Kathmandu Valley looked after by Kathmandu Upatayaka Khanepai Limited (KUKL). The individual consultant has been recruited to support in the design and implementation of rehabilitation of this plant. The study for capacity augmentation is currently underway. The project is jointly funded by ADB and GON.

17. Pharping Hydropower Station

Pharping Hydropower Station, commissioned in May, 1911 is the first power station in Nepal. The Power Station was inaugurated by the late king Prithivi Bir Bikram Shah Dev on Monday, 22 May, 1911 (B.S. 1968, 9 Jestha, Monday) at 6:30 PM more than 100 years back by switching on lights in Tundikhel, Kathmandu. It was erected with a grant from British Government at a cost of NRs. 0.713 million.

The Power Station located in Pharping of Kathmandu district, nearly 12 km south from the heart of the city is considered to be the second oldest hydro power station in Asia. The Power Station utilizes spring water from Satmule and Shesh Narayan area. There are two units each with a rated capacity of 250 kW totaling installed capacity of the Power Station to be 500 kW.

It is presently not in normal operation. A master plan has been prepared to develop the site as Live Museum with construction and establishments including model power station of wind, solar and hydro and as a centenary celebration memorial. Now only one unit is running for an hour in a day due to water being utilized for drinking water supply.

18. Multi-Fuel Power Plant

Multifuel Power Plant, located at Bansbari, Morang in the eastern region with installed capacity of 39 MW uses furnace oil (F.O.) as a source of energy. There are

two units each 7.5 MVA from Leroy Somer France and four units each 8.144 MVA from Alsthom, France. The plant has installed capacity of 39 MW with 26 MW put into service in FY 1990/91 and additional 13 MW put into service in FY 1997/98. The rehabilitation of all the six units under World Bank finance and support from Government of Nepal and NEA has been completed on December 2012. The rehabilitation works included only the turbine and the generator. The repair of auxillary systems such as Plate heat exchangers, trace heaters, cooling water fan, oil separators are currently undergoing and expected to be completed before coming winter. Currently, a total of 24 MW four units is available from the plant. The proposed installation of plate heat exchanger (PHE), procurement of associated spare parts and installation of circuit breakers will increase to capacity to 36 MW thermal power with declared availability of only 30MW at a time from 5 units with sixth unit under periodic preventive maintenance. The plant has generated 9,954.28 MWh, which is significantly high compared to that of previous years, with the difference in cost subsidized by Government of Nepal.

19. Hetauda Diesel Power Plant

Hetauda Diesel Power Plant, with installed capacity of 14.41 MW is located at Hetauda, Makawanpur. The first phase with three sets of English Units was commissioned in 1963 and the second phase with four sets of Russian Units was commissioned in 1980 in assistance from British Government and Government of Nepal. The plant operates during peak, however, the soaring fuel price has made its operation costlier compared to that of hydropower stations. The plant contributes to generation mix and provides operational flexibility and strengthens system reliability. However, the exorbitant fuel price restricts its operation and NEA has to receive some sort of subsidy from GON as compensation for its operation. Presently, the plant has been operating at capacity of 10 MW as and when necessary.

Training activities initiated seek to enhance in-house capacity building

Trainees at the Operator refresher trainingin Kulekhani I HPS

Trainees at the Operator refresher training in Kulekhani II HPS

Trainees at Operator Refresher training course I Marsyangdi HPS

Trainees at Operator Refresher training course in Middle Marsyangdi HPS

Trainees of the Operator Refresher course receiving mementos and certificate in Kaligandaki A HPS

Nepal Electricity Authority

Generation Operation and Maintenance

Actual Generation for FY 2012/13, MWh

S.No.	Power Stations/Month	Shrawan	Bhadra	Ashwin	Kartik	Mangsir	Poush	Magh	Falgun	Chaitra	Baishakh	Jestha	Ashad	Total
1	Kaligandaki 'A'	96,909.00	97,864.00	90,407.00	82,537.00	64,932.00	46,001.00	42,012.00	33,049.00	44,102.00	63,648.00	91,419.00	94,378.00	847,258.00
2	Middle Marsyangdi	46,076.26	45,292.52	45,674.04	41,152.02	33,758.00	24,383.87	21,573.81	21,063.29	22,739.02	33,288.75	46,612.51	46,468.12	428,082.21
3	Marsyandi	48,103.80	45,592.60	45,991.70	45,590.00	38,143.30	27,769.20	24,507.00	23,452.80	23,855.40	34,303.70	46,635.10	46,191.40	450,136.00
4	Kulekhani-I	4,704.00	2,205.00	464.00	1,148.00	3,958.00	8,608.00	8,291.00	15,504.00	27,394.00	10,560.00	3,630.00	6,363.00	92,829.00
5	Kulekhani-II	2,467.94	761.29	213.26	585.18	2,072.20	4,396.20	4,208.37	7,746.97	13,621.38	643.70	844.36	2,081.98	39,642.83
6	Trishuli	9,557.50	9,826.30	11,014.20	11,866.00	11,988.80	9,687.20	8,414.50	8,278.30	9,767.10	11,800.80	11,333.10	11,242.40	124,776.20
7	Gandak	2,092.90	2,587.90	3,499.30	773.80	-	1,679.10	2,023.30	1,351.10	996.70	-	1,727.10	2,476.50	19,207.70
8	Modi Khola	750.70	2,013.30	4,060.30	3,612.60	2,444.10	2,309.00	2,066.60	1,830.00	2,640.50	2,905.60	3,524.80	2,561.10	30,718.60
9	Devighat	7,407.60	7,608.80	8,895.20	8,194.90	9,992.90	8,547.60	7,508.70	7,434.30	8,135.84	9,253.84	8,933.89	8,650.03	100,563.60
10	Sunkoshi	7,131.40	7,194.40	7,152.20	7,063.20	5,115.50	3,636.90	3,148.30	3,211.50	3,328.20	4,466.80	6,632.20	5,496.40	63,577.00
11	Ilam (Puwa Khola)	4,341.68	3,228.63	3,888.38	3,783.06	2,312.64	1,553.41	999.86	982.50	714.60	1,800.95	3,058.73	3,771.23	30,435.66
12	Chatara	-	-	-	-	11.25	125.00	133.00	143.25	124.00	269.50	340.75	497.00	1,643.75
13	Panauti	266.76	242.82	65.52	126.18	40.65	151.85	93.43	93.48	10.65	98.54	86.17	234.77	1,510.81
14	Seti	927.00	930.96	978.03	1,029.24	1,024.20	993.87	962.64	984.69	872.73	561.87	527.76	719.55	10,512.54
15	Fewa	263.05	238.12	228.16	104.25	-	137.34	303.77	343.01	146.94	83.52	24.20	209.60	2,081.96
16	Sundarijal	369.66	382.33	419.66	444.33	402.00	340.66	311.00	288.00	216.66	208.00	367.33	448.66	4,198.29
17	Pharping	3.20	2.88	1.56	0.97	0.43	0.37	0.32	0.84	1.03	0.97	1.14	1.37	15.06
	Total (Hydro)	**231,372.45**	**225,971.85**	**222,952.51**	**208,010.73**	**176,195.97**	**140,320.57**	**126,557.58**	**125,757.02**	**158,666.75**	**173,894.54**	**225,698.13**	**231,791.11**	**2,247,189.21**
18	Multifuel	65.97	2.92	-	22.06	118.18	1,317.06	2,466.54	2,227.10	2,920.66	588.71	225.08	-	9,954.28
19	Hetauda Diesel	3.46	7.31	2.40	104.53	178.21	2,150.86	2,731.10	2,053.26	1,196.89	431.56	6.83	2.21	8,868.62
	Total (Thermal)	69.43	10.23	2.40	126.59	296.39	3,467.92	5,197.63	4,280.36	4,117.55	1,020.27	231.91	2.21	18,822.89
	Grand Total	**231,441.88**	**225,982.07**	**222,954.91**	**208,137.32**	**176,492.35**	**143,788.49**	**131,755.22**	**130,037.38**	**162,784.30**	**174,914.81**	**225,930.04**	**231,793.33**	**2,266,012.10**

Nepal Electricity Authority

Generation Operation and Maintenance

Generation Related Statistics and Performance Factors

S.No.	Power Stations	Total Installed Capacity (MW)	Total No. of Units Installed	Actual Generation (MWh)			Maximum Generation in a year till date/year (MWh)	Design Generation (MWh)	Generation Target (MWh)	Backfeed (MWh)	Transmission to Grid (MWh)	Net Transmission to Grid (MWh)	Local Distribution (MWh)	Self Sufficiency Ratio (%)	Plant Factor (%)	Current No. of Employees
				FY 2067/68	FY 2068/69	FY 2069/70										
1	Kaligandaki 'A'	144.00	3	775,172.00	860,754.00	847,258.00	860,754.00 (2068/69)	842,000.00	835,964.42	1,388.00	843,735.46	842,347.46	660.08	99.50	67.17	164
2	Middle Marsyangdi	70.00	2	377,151.30	425,344.20	428,082.21	428,082.21 (2069/70)	398,000.00	416,218.58	12,778.08	431,046.05	418,267.97	894.25	97.98	69.81	73
3	Marsyandi	69.00	3	423,161.30	445,899.40	450,136.00	483,928.20 (2052/53)	462,500.00	451,061.22	431,225.94	860,307.40	429,081.46	110.93	97.62	74.47	99
4	Kulekhani-I	60.00	2	98,886.00	143,284.00	92,829.00	249,680.00 (2056/57)	211,000.00	113,318.42	106,413.84	188,350.80	81,936.96	9,283.10	99.19	17.66	108
5	Kulekhani-II	32.00	2	50,468.13	71,448.38	39,642.83	122,757.00 (2056/57)	104,600.00	53,044.93	-	38,823.49	38,823.49	-	97.93	14.14	60
6	Trishuli	24.00	6+1	128,247.00	134,772.80	124,776.20	154,423.75 (2053/54)	163,000.00	147,063.73	146,620.41	257,105.09	110,484.67	13,541.99	99.72	59.35	99
7	Gandak	15.00	3	11,331.40	13,077.70	19,207.70	52,272.70 (2043/44)	106,380.00	31,681.57	64,670.82	51,246.07	(13,424.75)	31,681.46	98.87	14.62	46
8	Modi Khola	14.80	2	59,961.35	34,608.40	30,718.60	67,348.90 (2063/64)	92,500.00	57,001.66	58,689.97	57,236.44	(1,453.53)	29,580.25	97.10	23.69	38
9	Devighat	15.00	3	74,132.63	105,089.20	100,563.60	106,277.70 (2056/57)	114,000.00	113,117.13	73,539.98	147,848.20	74,308.22	20,486.72	96.69	76.53	73
10	Sunkoshi	10.05	3	60,355.40	66,383.10	63,577.00	66,383.10 (2068/69)	70,000.00	63,491.05	33.05	61,451.88	61,418.83	1,298.30	98.65	72.22	59
11	Ilam (Puwa Khola)	6.20	2	31,547.81	28,329.99	30,435.66	34,640.93 (2064/65)	48,000.00	36,780.28	3.33	30,345.24	30,341.90	-	99.69	56.04	39
12	Chatara	3.20	2	4,097.75	3,032.75	1,643.75	5,219.75 (2063/64)	6,000.00	2,410.00	1,331.20	708.24	(622.96)	2,069.79	93.38	5.86	33
13	Panauti	2.40	3	2,729.22	1,280.16	1,510.81	4,654.80 (2058/59)	6,970.00	4,144.50	2,280.67	215.10	(2,065.57)	3,526.22	98.68	7.19	26
14	Seti	1.50	3	11,616.19	10,411.29	10,512.54	11,616.19 (2067/68)	9,310.00	10,950.60	-	10,474.48	10,474.48	#	99.64	80.00	38
15	Fewa	1.00	4	1,913.49	1,872.21	2,081.96	3,919.47 (2034/35)	2,200.00	2,191.66	9.95	2,058.56	2,048.61	#	98.41	23.77	
16	Sundarijal	0.64	2	4,121.61	4,345.62	4,198.29	4,355.50 (2063/64)	4,770.00	4,515.18	-	4,185.30	4,185.30	#	99.69	74.88	28
17	Pharping	0.50	2	21.95	35.08	15.06	48.65(2064/65)	-	-	-	-	-	#	-	0.34	5
	Total (Hydro)	469.29	48	2,114,914.53	2,349,968.28	2,247,189.21	-	2,641,230.00	2,342,954.94	898,985.25	2,985,137.80	2,086,152.55	113,133.10	98.48	54.66	988
18	Multifuel	39.90	6	2,348.86	623.53	9,954.28	86,215.07 (2055/56)	-	-	872.20	9,313.20	8,441.00	-	86.02	2.85	47
19	Hetauda Diesel	14.10	4+3	1,332.97	940.53	8,868.62	24,203.64 (2055/56)	-	-	-	8,860.93	8,860.93	-	99.91	7.18	42
	Total (Thermal)	54.00	13	3,681.83	1,564.06	18,822.89	-	-	-	872.20	18174.13	17301.93	-	92.28	3.98	89
	Grand Total	523.29	61	2,118,596.35	2,351,532.34	2,266,012.10	-	2,641,230.00	2,342,954.94	899,857.45	3,003,311.93	2,103,454.48	113,133.10	98.44	-	1,077

Note:
**Provisional figures subjected to final audit*
 # Transmission at 11 KV, Local Distribution is same

Grid Development Business Group

Grid Development Business Group is responsible for development and implementation of high voltage transmission system. This business group is headed by a General Manager and has Transmission Line Construction Department (220kV and above), Transmission Line Construction Department (up to132kV), Power Development Project, and Cross Border Transmission Line Project, each headed by a Director.

This business group builds new transmission lines and substations to evacuate power generated both by NEA and IPP owned power plants and undertakes reinforcement of the existing transmission system. Nepal's first-ever 400kV Nepal-India cross-border transmission link is going to be implemented soon with the leading involvement of this business group and study work has been initiated for second cross border Bardghat-Gorakhpur 400kV link. The Hetauda-Dhalkebar-Inaruwa 400kV transmission line, which is under construction, will help build a strong and robust transmission grid in near future.

The Grid Development is forging ahead for an updated Transmission System Master Plan where NEA intends to develop transmission system based on river basin as a long term strategy.

Brief summary of projects in different stages of development are presented below:

A. Transmission Line Construction Department up to 132kV.

Recently Completed Projects

1. Pathlaiya 132kV Substation

Objective of this project is to provide adequate supply to Birgunj industrial corridor, improve quality of supply and reduce technical losses in the area. The project started in 2008/09 and completed in December 2012. Cost of this project is US$5.4 million and is jointly funded by loan assistance from WB, GoN and NEA.

The Project activities include the construction of 132/11kV, 22.5MVA substation at Pathlaiya, 24km of 11kV distribution line and replacement of existing earth wire by OPGW conductor from Pathlaiya to Birgunj and old Parwanipur to Simra substation.

2. Syangja 132kV Substation

Objective of this project is to improve the power supply in Syangja and its vicinity. The project started in 2008/09. This substation was completed and charged on 15th March 2013. Total project cost is US$6.6 million which is jointly financed by GoN and NEA.

The main activities of the project are construction of 132/33kV, 30MVA and 33/11kV, 8MVA substation. The existing Kaligandaki-A Lekhnath 132kV transmission line is looped-in looped-out at Rang Khola of Shyangja District to construct this substation.

Newly Installed Capacitor Bank at 66/11kV Baneshwor Grid Substation

3. Capacitor Banks at Grid Substations

The objective of this project is to improve the voltage and reduce the losses through Installation of capacitor banks in 10 different Grid substations at 33kV and 11kV voltage level inside and outside Kathmandu Valley with the total capacity of 232.5MVAR. Project started in FY 2009/10 and completed in 2012/13. Cost of this project is estimated to around US$ 2.2 Million and jointly funded by loan assistance of ADB, GoN and NEA.

The project started installation of capacitor bank from May 2, 2012 to May 16, 2013. Project scope includes installation of 2X12.5MVAR at 11kV in Chabahil, 2X12.5MVAR at 11kV in Baneshwor, 2X12.5MVAR at 11kV in Balaju, 2X10MVAR at 11kV in Patan, 2X10MVAR at 11kV in Siuchatar substations inside Kathmandu Valley.

Likewise 2X20MVAR at 33kV in Butwal, 2X10MVAR at 11kV in Hetauda, 3X5MVAR at 11kV in Simra, 1X12.5MVAR at 33kV and 1X10MVAR and 1X5MVAR at 11kV in Bharatpur, 2X12.5MVAR at 33kV in Duhabi, 1X20MVAR at 33kV in Lahan substations outside Kathmandu Valley.

Projects under Execution

1. Thankot - Chapagaon - Bhaktapur 132kV Transmission Line

The project was started in 1998/99 with the objective of enhancing transmission capacity, improving supply reliability in Kathmandu Valley, reducing losses and voltage drops through construction of 132kV ring main and was scheduled to be completed in 2015/016. The project cost is estimated at US$ 23 Million and is financed by GoN and NEA.

Scope of Thankot Chapagaon Bhaktapur 132kV Transmission Line Project includes construction of 28km 132kV transmission line from Matatirtha (Thankot) to Bhakatpur and construction and upgrading of different substations at Kathmandu valley. Upgrading and construction of substations in Kathmandu valley has been completed. However, due to protest from local inhabitants in the Lalitpur district, construction of transmission line has been stopped. Due to contractual disputes with previous contractor because of the prolongation of time duration due to unavailability of right of way (row), the contract was terminated with mutual agreement between NEA and the contractor and all the transmission line materials were taken over by NEA.

For stringing of conductors to the erected towers in Kathmandu and Bhaktapur district, a new contract has been awarded. Conductor stringing to some span of transmission line in Kathmandu district has been undergoing.

2. Dumre - Damauli - Marsyangdi 132kV Transmission Line

The objective of this project is to evacuate power generated by Middle Marshyangdi power plant, enhance the reliability of Middle Marshyangdi power plant and facilitate the power evacuation from candidate hydro power projects of Marshyangdi Corridor. The objective

also includes enhancing the performance of INPS and reducing outage frequencies of Bharatpur-Pokhara 132kV transmission line. Cost of this project is estimated to US$ 18.62 million which is jointly funded by loan assistance of ADB, GoN and NEA. The project started in 2008/09 and is scheduled to be completed in 2015/016.

Scope of this project includes the construction of 20km of double circuit transmission line from Dumre to Damauli, 1km of four circuit loop-in loop-out transmission line at Middle Marshyangdi power plant, stringing of 39km 132kV second circuit transmission line from Middle Marshyangdi to Dumre and construction of 132/33kV, 30MVA substation at dam site of Lower Marshyangdi power plant.

As of July 2013, for Transmission Line Construction Package, all transmission line materials were received at site and the second circuit conductor stringing work has started. Re-Tender notice is about to be publishd for substation construction package.

Double Circuit Tower of Middle Marshyangdi 132kV Transmission Line

3. Butwal - Kohalpur-Mahendranagar 132kV Transmission Line 2nd Circuit

The rationale behind this project is to provide adequate power to Western Nepal so as to meet the electricity demand requirement of ADB and Danida funded rural electrification projects in the region in addition to regular electricity demand, to provide power to upcoming cement factories in the region, to evacuate power from Chameliya hydropower plant (30 MW) and to supply part of the Butwal area from Tanakpur to alleviate the present load shedding problem. The line is also required to evacuate 36MW free power to be received from Upper Karnali hydropower plant.

The project is divided in two parts, one is from Butwal to Kohalpur and second part is from Kohalpur to Mahendranagar. First part was started in 2008/09 with US$13.8 million loan assistance from ADB and NRs. 276.4 Million from GoN and NEA and is scheduled to be completed in 2015/16.

The main objective of this project is to supply growing electricity demand by upcoming cement factories and manage power from Chameliya Hydropower plant as well as from Upper Karnali. It is also targeted to import additional power from Tanakpur.

The summery output of the project include: 208km of 132kV second circuit stringing on existing double circuit towers from Butwal to Kohalpur including replacement of existing ground wire with Optical ground wire, construction of new Kusum 132/33kV, 30MVA substation and bay expansion work at the substations.

As of July 2013, ACSR Conductor, Insulator & Hardware fittings, OPGW & accessories have been delivered to site. The replacement of ground wire with OPGW has been completed for length of 100 km out of 219 km and the second circuit stringing of ACSR conductor is in progress. The major substation equipments have been received at site. The civil works, steel structure erection works, switchyard equipments erection works at existing substations Butwal, Shivpur, Lamahi & Kohalpur have been completed. At new Kusum substation, civil works, steel structure erection work are in final stage and equipment erection work is in progress.

Kohalpur to Mahendranagar Section was started in 2011/012 with US$20.78 million loan assistance from ADB and is scheduled to be completed in 2015/016. Second Circuit Transmission Line Construction Tender has been submitted and evaluation work is in progress.

4. Chapali 132kV Substation

This project is divided into Chapali 132kV Substation and Chapali Substation Expansion work. Objective of Chapali 132kV substation project is to cater the increased residential and commercial demand of Kathmandu North and to improve power supply reliability. The project started in 2008/09 is scheduled to be completed in 2015/016. Total cost of the project is US$ 16 Million jointly financed by loan assistance of ADB, GoN and NEA.

The main output of the project include 132/11kV, 30MVA substation at Chapali, 66kV GIS bay at Lainchhour substation and Chabahil-Lainchhour 7.7 km long interconnection by 66kV underground cable.

As of July2013, civil construction work has started and the supply of substation equipment is in progress.

132 kV Chapali Substation Expansion Project was started in 2011/012 with US$8.93 million loan assistance and NRs 180. 11 million jointly from ADB and NEA is scheduled to be completed in 2015/16. The main output of the project includes 132/66kV, 7X15/16.5 MVA Transformers at Chapali, 132kV GIS bay at Balaju substation, 132kV Bay at Bhaktapur Substation and 4X 66kV Bays at Chapali Substation to make Double Circuit Connection from Balaju to Bhaktapur and 132/66kV Link to Kathmandu Valley.

5. Matatirtha Substation Expansion

Objective of the project is to cater the increasing electricity demand of the western part of Kathmandu. The project will also provide the electricity supply to United Cement, Naubise and Laxmi Cement, Lalitpur and Kulekahni dam area Markhu at 33kV voltage level. Cost of this project is estimated to US$ 3.3 million and is jointly funded by loan assistance of ADB, GoN and NEA. The project started in 2008/09 is scheduled to be completed in October/November 2013.

Matatirtha Substation Expansion work is in progress

Main project activity included addition of 132/33kV, 30MVA transformer, 33kV and 11kV switchgears at existing Matatirtha substation and 132/11kV, 22.5MVA transformer at Bharatpur substation.

As of July 2013, civil work in Bharatpur substation has been completed and in Matatirtha substation, it is near to completion. Electrical equipment installation works in both the substations are in progress. Most of the equipments have been received at the site and power transformers shall be delivered in near future. Construction of 11kV distribution line from Matatirtha substation to different areas like Matatirtha, Thankot, Kirtipur, Pharping are also under progress.

6. Kabeli 132kV Transmission Corridor

Objectives of this project is to facilitate evacuation of power generated from Kabeli-A Hydro Power Project and power produced from Hydro Power Projects in Kabeli, Hewa, Mai and other river basins in the eastern region. Construction of transmission line and associated substations will meet increasing electricity demand of Damak area, relieve Anarmani substation and improve power supply situation in this part of country. Cost of this project is estimated at US$ 31 Million and funded by WB, GoN, NEA. Project was started in 2008/09 and Damak Substation is estimated to be completed by 2013/014; Damak-Kabeli 132kV DC Transmission Line and Illam, Phidim, Kabeli Substations in 2015/16.

132/33kV, 30MVA Damak Substation under construction

Scope of this project includis the construct on of 90km of double circuit 132kV transmission line from Damak to Kabeli. As will as the construct on of i) 132/33/11kV Damak substation with 132/33, 30MVA and 33/11kV, 8MVA transformers, ii) 132/33/11kV Illam substation with 132/33kV, 30MVA and 33/11kV, 3MVA transformers, iii) 132/33kV Phidim substation with 132/33, 20MVA and 33/11kV, 3MVA Transformers and iv) 132/33/11kV Kabeli substation with 132/33kV, 30MVA, 33/11kV, 3MVA transformers.

Project status as of July 2013 includes completion of 94% equipment supply and 80% construction work for Damak Substation, Damak-Kabeli transmission line check survey, Tower design & type test Tower spotting, and Plan profile. Tree counting/marking in Jhapa & Ilam districts is completed and in Panchthar and Terhathum in progress. Transmission Line material partially arrived at site, detail engineering of Ilam, Phidim and Kabeli substation is in progress and civil construction work has started at Ilam, Phidim and Kabeli substations.

7. Singati-Lamosangu 132kV Transmission Corridor

Objective of this project is to evacuate power from different hydroelectric projects to be developed by different IPP's in the Tamakoshi-Singati basin. Total cost of the project is about US$ 13 million. The project was started in 2008/09 and is scheduled to be completed in 2014/15.

Construction of Sope of the Project includes the Lamosangu-Singati 40km 132kV Double Circuit Transmission Line and 132/33 kV, 30 MVA substation at Singati.

As of July 2013, Route alignment survey, Check Survey, Tower Spotting for transmission line and IEE Study is completed. Design of the Towers has been approved and major substation equipments are received at site. Conductors and Hardware Fittings received at site for the Transmission Line Package and land has been acquired for substation civil work for Staff Quarter and Boundary Wall is completed.

8. Hetauda-Kulekhani-II-Siuchatar 2nd Circuit 132kV Transmission Line.

Objective of this project is to evacuate power from Kulekhani III, to increase reliability of the system and the reinforcement of INPS. The project is scheduled to be completed in 2014/015. Cost of this project is estimated to US$ 2.5 Million and funded by GoN.

Scope of the project includes construction of 46km second circuit 132kV Transmission Line on same existing Tower, Bay extension at substations and reinforcement work on existing 132kV Line.

As of July 2013, 26 km of second circuit stringing work from Fakhel Makwanpur to Bhaise Makawanpur has been completed. Civil works for bay extension at substations are almost completed.

Live Line 2nd Circuit Stringing work is in progress

9. Kusaha-Kataiya 132kV Transmission Line

As an immediate measure for reducing load sheds in the country and with import of power from India being viable option, and in the absence of enough capacity Transmission link between India and Nepal, the conductor up gradation work of 17 km long existing Kushaha Kataiya 132 kV Cross Border TL has been undertaken. The existing ACSR Conductor of the line will be replaced by the equivalent size high current carrying conductors called Aluminum Conductor Composite Reinforced (ACCR). The Current carrying capacity of equivalent ACCR conductor is almost double that of ACSR and existing tower structures can be used. The strengthening in the Indian Grid is also continuing. The work is scheduled to be completed by end September 2013. After the completion of the work the line will enable to import of around 140-150 MW Power from India. Project cost is estimated to US$ 4.0 Million and funded by government of GoN.

As of July 2013, construction contract has been signed, factory acceptance test of the conductor is concluded and the conductor is about to be received at site.

Funding Secured Projects

1. Modi-Lekhnath 132kV Transmission Line

Objective of this project is to increase power evacuation capacity of the IPP's up coming in the Modi-Lekhnath Corridor. Scope of the project includes construction of 132kV Double Circuit Transmission Line from New Modi to Hemja Substation to Lekhnath Substation, Switching Substation at New Modi and 30MVA New Substation at Hemja. Cost of this project is estimated to US$ 14.8 Million and is jointly funded by Exim Bank of India and GoN. The project is scheduled to be completed by FY 2016/017.

As of July 2013, Detail Project Report has been submitted to Ministry, Project approval from Exim Bank of India is yet to be received; subsidiary loan agreement is yet to be signed with GoN. Detail survey has been completed, MoU is signed with Environment and Social Study Department for IEE study and ToR is received for the work.

2. Solu Corridor (Katari-Okhaldhunga-Solu) 132kV Transmission Line

Objective of this project is to increase power evacuation capacity of the IPP & up coming in the Solu Corridor and the expansion of INPS. Construction of 90km of Double Circuit Transmission Line with CARDINAL conductor from Tingla (Solu) substation to Mirchaiya and 132/33kV New Substation at Tingla is the main output of the project. Cost of this project is estimated to US$ 29 Million and is jointly funded by Exim Bank of India and GoN. The project is scheduled to be completed by 2016/017.

As of July 2013, Exim Bank of India has approved the project; subsidiary loan agreement is yet to be signed with GoN, appointment of project consultant is in process, Detail Survey Work and Environment Study have been completed, Land Acquisition for Tingla Substation is completed & Tender Document Preparation work is in progress.

Survey/ IEE Study Completed Projects

1. Kohalpur-Surkhet 132kV Transmission Line, 50 km
2. Sunkoshi 132kV Substation, 15 km
3. Ramechap (Garjyang) - Khimti 132kV Transmission Line, 30 km
4. Madi-Lekhnath 132kV Transmission Line , 22 km
5. Gulmi-Arghakhanchi-Chanauta 132kV Transmission Line, 110 km
6. Tadi Corridor (Samundratar-Trishuli 3B) 132kV Transmission Line, 20 km
7. Hapure-Tulsipur 132kV Transmission Line, 18 km
8. Dordi Corridor (Kirtipur-Udipur/Marsyangdi) Transmission Line, 16 km

Feasibility Study Completed Projects

1. Karnali Corridor (Lamki-Upper Karnali) 132kV Transmission Line, 60km
2. Bajhang-Deepayal-Attariya 132kV Transmission Line, 130 km
3. Surkhet-Dailekh-Jumla 132kV Transmission Line, 107 km
4. Kaligandaki-Gulmi (Jhimruk) 132kV Transmission Line, 43 km
5. Dhalkebar-Loharpatti 132kV Transmission Line, 20 km
6. Butwal-Lumbini 132kV Transmission Line, 22 km
7. Baneshwor-Bhaktapur 132kV DC Under Ground Cable Transmission Line, 12 km
8. Rupeni 132kV Substation

Projects under Feasibility Study

1. Budhganga-Umedi-Pahalwanpur 132kV Transmission Line, 75km
2. Balefi-Barhabise 132kV Transmission Line,25km

Projects for Power Supply to Cement Industries

In order to promote cement industries, the GoN has taken policy of developing transmission line and road networks up to the site of cement industries. A minute of understanding was signed between Ministry of Industry (MoI) and NEA. According to the understanding, NEA will execute the transmission line project as per the instruction of MoI which in turn will provide required funds. Projects aimed for power supply to cement industries at different stages of implementation are as follows:

1. Kamane, Hetauda 132kV Substation

The main objective of this project is to provide power supply to Shivam Cement located at Hetauda. This project started in 2008/09 is scheduled to be completed in 2013/014. Estimated cost of the project is US$ 3.5 Million which is financed by GoN.

The main project output includes construction of a new 132/33kV, 30MVA substation at Kamane and construction of 11 km of 33kV sub transmission line from Kamane to Laxmipur and Phaparbari.

As of July 2013, construction of 11km of 33kV sub transmission line is completed, 90% of the substation construction work has been completed and the targets complete all project work by September 2013.

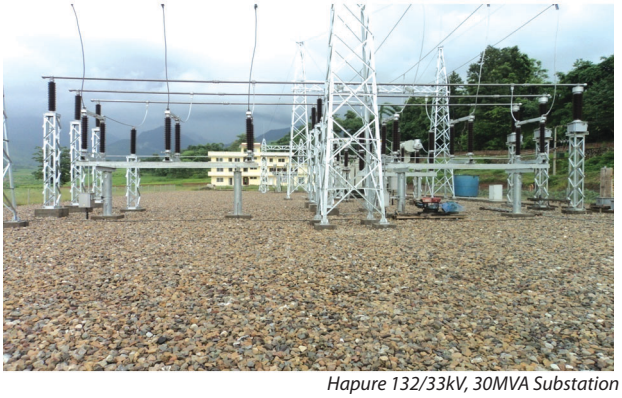
Hetauda-Kamane 132/33kV Substation under construction

2. Kusum - Hapure 132kV Transmission Line

The main objective of this project is to develop transmission system up to the site of Dang Cement to be established at Hapure of Dang. Further extension of this line will benefit Sonapur and Rolpa cements. The project started in 2008/09 with estimated cost of NRs. 500 Million is scheduled to be completed in 2014/015. Total cost of the project is financed by GoN.

Main activities of the project include: construction of

22km Kusum-Hapure 132kV transmission line and 132/33kV, 30MVA substation at Panchakule of Dang. Construction of substation at Hapure is completed and about 30% of transmission line is completed



Hapure 132/33kV, 30MVA Substation

3. Mirchaiya-Katari 132kV Transmission Line

The objective of this project is to provide power supply to Maruti Cement Industry to be established at Katari. Cost of this project is estimated to NRs. 374 Million and funded by GoN. The project is scheduled to be completed by 2015/016.

Project components includes construction of 132/33 kV, 30 MVA substations at Mirchaiya. For this purpose one circuit of existing Dhalkebar - Lahan 132kV line will be looped-in and looped-out at Mirchaiya in Siraha district to extend the 132kV transmission line to Katari.

As of July 2013, construction contract of the substation has been signed and civil construction work is in progress.

4. Lamahi-Ghorahi 132kV Transmission Line

The objective of this project is to provide power supply to Ghorahi Cement Industry and Ghorahi Municipality. Cost of this project is estimated to US$ 6.5 Million and GoN through Ministry of Finance allocated budget for this work. The project is scheduled to be completed by FY 2015/016. Project components includes construction of 15 km 132 kV double circuit transmission line from existing Lamahi Substation to Laxmipur VDC Goglee and construction of 132/33 kV, 30 MVA substations at Laxmipur VDC Goglee.

As of July 2013, Substation and Transmission Line Bids has been approved by the management, land for the substation has been acquired.

5. Matatirtha-Naubise 33kV Transmission Line

The objective of this project is to provide power supply to United Cement. GoN through Ministry of Finance allocated budget for this work. Cost of this project is estimated to US$ 2.5 Million and GoN through Ministry of Finance allocated budget for this work. The project is scheduled to be completed by FY 2014/015. Project component includes construction of 25km of 33kV Double circuit sub transmission line from Matatirtha to Naubise, 33/11kV, 8MVA Substation at Naubise.

As of July 2013, Substation Construction Tender has been awarded, estimate for Transmission Line is completed & Land Acquisition has been finalized with Cement Industry.

6. Matatirtha- Malta 33kV Transmission Line

The objective of this project is to provide power supply to Laxmi Cement. Cost of this project is estimated to US$ 2.2 Million and GoN through Ministry of Finance allocated budget for this work. The project is scheduled to be completed by FY 2014/015. Project component includes construction of 30km of 33kV Double circuit sub transmission line from Matatirtha to Malta, 33/11kV, 2X16.5MVA Substation at Malta.

As of July 2013, Letter of Intent has been issued for Construction of 33/11kV Substation & Preparation of Tender for 33kV Sub-Transmission Line is in final stage.

7. Tulsipur-Kapurkot 33kV Transmission Line

The objective of this project is to provide power supply to Rolpa Cement P. Ltd. Cost of this project is estimated to US$ 0.4 Million and GoN through Ministry of Finance allocated budget for this work. The project is scheduled to be completed by FY 2014/015.

As of July 2013, Tender has been called for construction of 16 km of 33kV transmission line from tapping point at Tulsipur substation (Salyan) up to the proposed substation construction site at Kapurkot.

B. Transmission Line Construction Department 220kV and above Projects under Execution

1. Khimti - Dhalkebar 220 kV Transmission Line

The project was started in 2002/03 with the objective of enhancing transmission capacity, improving supply reliability, reducing losses and voltage drops through construction of 220kV double circuit line and is scheduled to be completed in 2013/014. The project cost is estimated at US$ 22 Million and is jointly funded by World Bank, GoN and NEA.

The scope of the project includes construction of 75 km long Khimti-Dhalkebar 220kV transmission line on double circuit tower with single circuit of twin Bison ACSR conductor (initially charged at 132kV) and two numbers of 132kV line bays at Khimti and Dhalkebar substations in the first phase and stringing of second circuit in the second phase.

Khimti-Dhalkebar 220kV Transmission Line Conductor Stringing Work

As of July 2013, in the first phase of work, supply of line materials and substation equipment is completed, construction of transmission line is 95% completed, rest of the construction work has been interrupted because of right of way issues raised by local inhabitants of Sindhuli District whereas bay extension is in ready position. Stringing of the second circuit is in progress.

2. Hetauda - Bharatpur 220kV Transmission Line

The objective of the project is to enhance the transmission capacity and reliability of the Integrated Nepal Power System (INPS), to evacuate the power to be generated by other hydro power plants from western region of Nepal. Cost of this project is estimated to US$ 24.25 Million and funded jointly by loan assistance of WB, GoN and NEA. The project is started in 2009 and scheduled to be completed by the beginning of 2013/014.

Construction of about 75 km long double circuit Hetauda-Bharatpur transmission line initially to be string single circuit 220kV transmission line and associated 132kV substations are being taken. The substations component includes expansion of existing Hetauda and Bardghat substations and construction of New Hetauda and New Bharatpur substations. New Hetauda substation shall comprise of 132kV line bays and bus coupler bay while New Bharatpur substation shall comprise of 132kV line bays, bus coupler bay, transformer bay and 132/11kV, 22.5MVA power transformer.

As of July 2013, Final Route Alignment Survey has been approved, acquiring land for tower foundation is in final stage, RoW Clearance work is in progress. Earth Wire, OPGW cable, ACSR BISON conductor, Insulators, Hardware Fittings and partially Tower accessories the received at site, 73 Tower Foundations and 10 Tower Erection works are completed on Transmission Line Construction side.

Civil works for control building, store house, guard house and staff quarter on New Hetauda Substation is in final stage. Substation equipments including Power Transformer, SF6 Circuit Breakers, Battery and Battery Chargers has been delivered at site on Substation Construction Part.

3. Bharatpur - Bardghat 220kV Transmission Line

The objective of the project is to enhance the transmission capacity and reliability of the Integrated Nepal Power System (INPS), to evacuate the power to be generated by other hydro power plants from western region of Nepal. Cost of this project is estimated to US$ 17 Million and funded jointly by loan assistance of WB, GoN and NEA. The project is started in 2009 and scheduled to be completed by the beginning of 2013/014.

The project comprises of construction of approx. 74 km long double circuit 220 kV line connecting New-Bharatpur substation (under construction) and existing Bardaghat substation using ACSR "Bison" duplex conductors. 220 kV lines shall be initially energized at 132 kV.

As of July 2013, 80 % of the construction materials have been received at site & forest clearance work is in progress.

Funding Secured Projects

1. Tamakoshi -Kathmandu 220/400kV Transmission Line

Objective of this project is to increase power evacuation capacity of the IPP's up coming in the Khimti (Tamakoshi)-Kathmandu area, increase cross boarder transmission capacity enhancement. Project will construct 85km of Double Circuit 400kV Transmission Line but initially charged at 220kV, 220/132/11kV Substations at Barhabise and Mulpani (Kathmandu). Cost of this project is estimated to US$ 88 Million and jointly funded by ADB and GoN. The project is scheduled to be completed by 2016/017.

As of July 2013, Survey from Tamakoshi to Mulpani (Kathmandu) 220kV & Completed, revised Survey for 400kV from New Khimti to Barhabise to Mulpani (Kathmandu) is started by Project Development Department and New Khimti to Barhabise Reconnaissance Survey is completed within changed scope & the report is received, Evaluation is going on regarding Expression of Interest for Consultant's appointment, Land Selection work for Substation Construction is completed.

2. Koshi 220kV Transmission Corridor

Objective of this project is to increase power evacuation capacity of the IPP & up coming in the Koshi Corridor and expansion of INPS. Main output of the project as component 1 is construction of 110km of 220kV Double Circuit Transmission Line from Khandbari to Baneshwor to Basantapur to Inaruwa and 220/132/33/11kV, Substations at Basantapur, Khadbari and Baneshwor. Construction of 30km of Double Circuit Transmission Line from Lelep to Hangpang to Basantapur and 220/132/33/11kV Substations at Hangpang and Lelep as component 2. Cost of this project is estimated to US$ 112.0 Million and jointly funded by Exim Bank of India and GoN. The project was started in 2008/09 and will be completed by FY 2017/018.

As of July 2013, Exim Bank of India has approved the project; subsidiary loan agreement is yet to be signed with GoN, appointment of project consultant is in process, and Detail Survey from Inaruwa to Basantapur to Khadbari is Completed. Additional Survey Work from Basantapur to Hagpang to Lelep 30km is completed. IEE Draft Report of Inaruwa-Basantapur-Khadbari transmission line has been approved by Ministry of Energy, preparation of ToR is in final stage for Consulting Services and preliminary officer has been appointed for Land acquisition.

Survey/ IEE Study Completed Projects

1. Marsyangdi-Kathmandu 220kV Transmission Line
2. Marshyangdi Corridor 220kV Transmission Line, 90 km
3. Kaligandaki (Dana-Kusma-New Butwal) 220kV Transmission Corridor, 110 km
4. Chilime-Trishuli 220kV Transmission Line, 40 km
5. Lekhnath-Damauli 220kV Transmission Line, 45 km

Feasibility Study Completed Projects

1. Trishuli 3B 220kV HUB Substation
2. Hetauda-Butwal 400kV Transmission Line, 168 km
3. Butwal-Lamki 400kV Transmission Line, 300 km
4. Lamki-Mahendranagar 400kV Transmission Line, 102 km
5. Duhabi-Anarmani 400kV Transmission Line, 100 km

Projects under Feasibility Study

1. Marsyangdi-Bharatpur 220kV Transmission Line, 25 km
2. Damauli-Bharatpur 220kV Transmission Line, 40 km

C. Cross Border Transmission Line Projects

1. Nepal-India Electricity Transmission and Trade Project (NIETTP) Hetauda-Dhalkebar-Duhabi 400kV Transmission Line

The objectives of this World Bank funded project is to establish cross-border transmission capacity of about 1000 MW to facilitate electricity trade between India and Nepal and increase the supply of electricity in Nepal through sustainable import of at least 100 MW of electricity. The project includes design, construction and operation of approximately 285 km of 400 kV double-circuit transmission line for the Hetauda-Dhalkebar-Inaruwa line segment, together with concomitant substations. Synchronization of operation of the Nepal and Indian Grids is another major objective of this project.

The project has achievement in attaining its objectives. Since the tower contract was signed in February 2013, the Contractor has almost completed the check survey. Completion of the transmission line is expected by September 2015, Conductor and Transformers Tender document preparation is in progress, contract has been signed with M/S Power Grid of India and Transmission System Master Plan consultant appointment is in final stage.

Survey/ IEE Study Completed Projects

1. Butwal- Sunauli 400 kV Tr. Line
2. Duhabi-Jogbani 400 kV Tr. Line

Projects under Feasibility Study

1. Mulpani-Naubise-Hetauda 400kV Transmission Line
2. New Khimti-Okhaldhunga-Dhalkebar 400kV Transmission Line

C-Power Development Project

Power development project (PDP) was originally approved by the World Bank board on May 22, 2003 for SDRs 55.25 million. It had three components, and Power Development Project implemented by Nepal Electricity Authority (NEA) is one of them. Additional finance was provided on May 26, 2009 to further enhance NEA components, taking the total project amount to SDRs 93.81 million. These funds were provided to address the prevailing power crisis in Nepal through rehabilitation of generation capacity, strengthening of the transmission system, and expansion of distribution access.

Original NEA components include construction of Chandranigahapur sub-station, the Distribution and Rural Electrification Project and the Khimti-Dhalkebar 220 kV transmission line. At the time of restructuring, following activities were started: Distribution System Rehabilitation Project, Rehabilitation of the Hetauda diesel plant, Rehabilitation of Kaligandaki-A plant, multi-fuel power plant and the Pathlaiya substation, implementation of the integrated financial management information system (IFMIS), Hetauda-Bharatpur 220 kV transmission line, Bharatpur-Bardaghat transmission line and conductor procurement for Hetauda-Dhalkebar-Duhabi (HDD) line. The conductor procurement for HDD line was included under the PDP in January 2011 to achieve financial closure of the Nepal-India Electricity Transmission and Trade Project (NIETTP). However, it could not be materialized under PDP funding. Instead, it is now proposed as additional funding under NIETTP.

Chandranigahapur sub-station, the Distribution and Rural Electrification Projects are now complete. However, Khimti-Dhalkebar transmission line is only 95% complete. Some of the local problems in the area have delayed progress to be made in Khimti-Dhalkebar 220 kV transmission line. Similarly, the Distribution System Rehabilitation Project, the Rehabilitation of Hetauda diesel plant, rehabilitation of the Duhabi multi-fuel plant and the Pathlaiya substation are complete. However, the Hetauda Bharatpur transmission line has been significantly affected due to rerouting and delays in forest clearance. The forest clearance has now been received and the contractor is trying to expedite the work. It is likely that a substantial proportion of the activity would extend beyond the loan closing date, i.e. December 31, 2013. Similarly, having taken more time in securing Forest Clearance approval from the Ministry of Forests, implementation of Bharatpur-Bardaghat transmission line will extend beyond the loan closing period.

Further, the following three activities are cancelled from PDP: (1) Conductor for Hetauda-Dhalkebar-Duhabi line, (2) Rehabilitation of Kaligandaki-A plant and (3) Implementation of the Integrated Financial Management Information System (IFMIS) and procurement of System Integrator (SI). Funds for these three activities have been allocated as an additional financing under NIETTP.

The 144 MW Kaligandaki-A is the largest hydropower plant in Nepal, providing nearly 22% of the electricity supply. Although it is in urgent need for rehabilitation, identification of technical solution has taken much longer than originally anticipated. The World Bank has already proposed funds for rehabilitation of Kaligandaki - A Hydropower Plant as a standalone project. While the overall PDP project is closing on December 31, 2013, the disbursement ratio currently remains at 90%.

Transmission and System Operation Business Group

Transmission and System Operation Business Group is entrusted with the key responsibilities of generation and transmission system planning, system operation, operation and maintenance of national grid and trading of power. It is headed by a General Manager. The System Planning Department carries out load forecasting, generation expansion planning and transmission system planning of the power system of Nepal while System Operation Department performs the operation planning and real time system operation. Similarly, Grid Operation Department carries out overall operation and maintenance of national grid and Power Trade Department executes the trading of power with Independent Power Producers and also carries out the business activities of power exchange and trading of power with India.

System Planning Department

Currently, Grid Impact Study (GIS) for new generation projects is the main focus of System Planning Department (SPD). The GIS analyzes the effect of new connection to NEA Grid to ensure satisfactory operation of the NEA Grid in conformity with the NEA Grid Code; requirement for additional transmission lines, reinforcement in the network, and requirement for the installation of capacitors and reactors are recommended.

SPD also identifies constraints in the grid that could pose operational risk and that reduces efficiency due to outages in the Integrated Nepal Power System (INPS). SPD also develops transmission configurations for evacuating power from planned generation projects. For this, different technical studies such as load flow, short circuit, steady and transient stability are carried out.

As a part of the preparation of the Corporate Development Plan 2013, SPD prepared NEA's new Load Forecast for the next 20 years starting FY 2012/13 incorporating Government of Nepal's macro-economic indicators and NEA's target new connection rates. A short term monthly Capacity and Energy Balance was also prepared considering the new load forecast, existing projects, projects that are firmly in place for implementation as well as the scope for import.

SPD also assists other departments of NEA by providing necessary data and give suggestions regarding implementation of planned projects. The department was also actively involved in the JICA assisted Nationwide Master Plan Study on Storage-type Hydroelectric Power Development in Nepal that is being studied by J-Power as the consultant. In FY 2012/13, System Planning Department carried out number of technical studies at the request of NEA's different departments. Notable among them are:

- Load flow analysis of Lahan-Rupani transmission line.
- Transmission line study for Samundratar-Trishuli Hub.
- Transmission line study for Bhaktapur-Baneswor 132kV underground cable transmission system.
- Load flow study of Upper Trishuli 3 'A' Hydroelectric Project.
- Line energization and synchronization study for the Chamelia (30 MW) Hydropower Project.
- Preliminary transmission system study for the West Seti Storage Hydropower Project (750 MW)

In FY 2012/13, System Planning Department completed Grid Impact Study for the following hydropower projects to be developed by the private sector.

List of GIS conducted projects in FY 2012/13

S.N.	Name of Projects	Capacit (MW)	Connection Substation
1	Puwa Khola-1	5	Godak substation.
2	Lower Solu HPP	82	Tingla substation.
3	Jogmai Khola SHPP	7.6	Godak substation.
4	Ghatte Khola HPP	5	Singati substation
5	Maya Khola HPP	14.9	Baneshwor substation
6	Khare Khola HEP	24.1	Singati substation
7	Nyam Nyam Khola SHPP	6	Trishuli 3 B Hub substation
8	Upper Solu Khola HPP	18	Tingla substation.
9	Upper Balephi-A HEP	36	Lamosangu substation.
10	Balephi-A HEP	10.6	Barabishe substation.
11	Iwa Khola HPP	9.9	Kabeli substation
12	Mai Cascade Khola SHPP	8	Godak substation.
13	Upper Khimti-II HPP	7	Garjang substation
14	Bagamati SHPP	20	Kulekhani I switchyard
15	Buku Khola SHPP	6	Garjang substation
16	Sisa Khola "A" SHPP	2.8	Solu HEP switchyard
17	Sardi Khola HEP	4	Hemja (Banskot) substation
18	Khani Khola 1 HPP	40	Singati substation
19	Solu Khola (Dudhkoshi) HEP	86	Tingla substation.
20	Upper Trishuli-1 HPP	216	Trishuli 3 B Hub substation
21	Karuwa Khola HPP	32	Hemja (Banskot) substation
22	Rupse Khola	4	Dana substation
23	Darbang Myagdi Khola HEP	25	Dana substation
24	Upper Piluwa Khola - 2 HPP	4.72	Baneshwor Substation
25	Sabha Khola-A HPP	8.3	Baneshwor Substation
26	Upper Daraudi-1 HEP	10	New Marsyangdi substation
27	Upper Hewa Khola SHPP	8.5	Baneshwor Substation

Grid Impact Study for the bulk load of 12 MW of Ghorahi Cement Industry to be connected at Lamahi sub-station was also carried out.

System Operation Department

As in the past years, Load Dispatch Centre has been working round the clock to keep the operation of the Integrated Nepal Power System (INPS) on the right track through the use of computer based Supervisory Control and Data Acquisition (SCADA) system.

The availability of real time data and better communication system have improved the overall availability of power stations and transmission lines and has helped to minimize the time required for restoration of the power system in case of black-outs, thereby reducing loss of revenue. The total complete system outage time has been reduced significantly from 1,015 minutes in FY 2011/12 to 543 minutes in FY 2012/13. Load shedding was restricted to a maximum 84 hours per week per customer as against the anticipated 112 hours per week per customer.

For the continued smooth functioning of the system, it is necessary that the data acquisition from the power stations and substations be updated according to the latest changes/modifications in the respective stations. The trained manpower in the LDC has been able to keep the data up-to-date in the SCADA software in the LDC. Besides the regular maintenance works, new bays from upgraded substations, new power stations Lower Modi & Bijayapur, new substations Pathlaiya & Syangja have been integrated into the SCADA software. Around Rs.100 million revenue is being received annually by leasing (to Nepal Telecom and other private companies) the fibers from the fiber optic cable.

Grid Operation Department

The Grid Operation Department is responsible for transmitting reliable and quality power from distant generators to various load centers. It also provides connection facilities to IPPs and Bulk Consumers at different voltage levels by entering into Connection Agreement as per the NEA Grid Code. Another main function of the Department is to look after the operation of 66 kV & 132 kV substations and transmission lines by carrying out routine and breakdown maintenance such as: up-gradation, extension, replacement and rehabilitation works including installation of necessary reactive compensation equipment. Under this Department there are division offices in Kathmandu, Hetauda and Butwal and branch offices in Duhabi, Pokhara and Attaria.

Major Works performed in FY 2012/13 are as follows:

a. Transformer Upgrading, Compensation and Substation Reinforcement Works (Completed)

This department has executed number of transformer reinforcement and upgrading works in various substations. Up-gradation and rehabilitation of power system equipment and installation of shunt capacitor banks in different substations are being carried out to cope with the increased demand and low voltage level, Transformers that are being replaced are installed in other substations after necessary overhauling and maintenance. Relocation of power transformers in different substations is a cost effective way of load management. The department has also completed some of the connection facilities for evacuating power from power plants owned by the Independent Power Producers (IPPs).

Various works executed by this department have supported to reduce forced outage rate caused by inadequate transformation capacity. The department carried out and completed following major up-gradation and reinforcement works in FY 2012/13.

- Replacement of existing 132/33 kV, 7.5 MVA transformer at Lamahi S/S with a new 30 MVA transformer.
- Installation of new 132/33 kV transformer bay and shifting of 7.5 MVA transformer from Attaria S/S at Lamki S/S.
- Shifting of 33/11 kV, 2 x 7.5 MVA transformers from Anarmani S/S each to Attaria S/S and Lamki S/S.
- Shifting of 33/11 kV, 3 MVA transformer from Attaria S/S to Lamahi S/S.
- Replacement of 132/33 kV, 7.5 MVA transformer at Attaria S/S with a 10 MVA transformer.
- Reinforcement of circuit breakers at various substations.
- Installation of frequency relays at various substations.
- Repair and Installation of 33/11 kV, 5 MVA transformer at Dhalkebar S/S.

b. Following major up-gradation & reinforcement works for substation are initiated and are currently under progress

- Installation of new 132/33 kV, 30 MVA transformer bay at Chandranigahpur S/S.
- Installation of new 66/11 kV, 22.5 MVA & 18 MVA transformer bays at Chabel and Patan S/S respectively.
- Installation of new 33/11 kV, 16.6 MVA transformer to replace existing 3MVA transformer at Chanauta S/S.
- Installation of new 132/33 kV, 63 MVA transformer bay at Duhabi S/S.
- Installation of new 132/11 kV, 30 MVA transformer at Pokhara S/S.
- Installation of new 33/11 kV, 16.6 MVA transformer at Damauli S/S.
- Installation of new 33/11 kV, 16.6 MVA transformer at Kohalpur S/S.
- Installation of new 33/11 kV, 16.6 MVA transformer at Attaria S/S.
- Installation of new 33/11 kV, 16.6 MVA transformer at Dhalkebar S/S.
- Installation of new 33/11 kV, 16.6 MVA transformer at Butwal S/S.

c. Relay Testing and Energy Meter Testing Works

Testing and calibration of more than 240 energy meters have been carried out by the Meter Testing Group of this Department in various Grid substations including some of the meters installed in power plants owned by the IPPs.

d. Grid Connection Agreement

The Department has entered into the Grid Connection Agreements with 30 IPPs with a total combined capacity of 793.72 MW.

e. Routine & Breakdown Maintenance Works

Routine Maintenance works were carried out as per schedule for substations and transmission lines. Breakdown Maintenance works were also carried out as per requirement.

Power Trade Department

Power Trade Department is responsible for trading of electric power both in domestic and cross border market. It is the single window interface of NEA with Independent Power Producers (IPPs) for processing their application for Power Purchase Agreement (PPA). Functions of Power Trade department may be broadly classified into three categories:

a. PPA processing and Execution Function:

This function covers PPA processing activities up to and including its execution.

b. PPA Implementation and Monitoring Function:

This function includes PPA administration after its execution till commercial operation.

c. Operational Administration Function of PPAs:

This function includes PPA administration after commercial operation.

A total of 9 projects developed by the IPPs with their combined capacity of 41,370 kW were commissioned in FY 2012/13. This is a significant number as compared to the previous year. Projects that were commissioned are: Bijayapur -1 (4,410 kW), Solar Power Station (640.8 kW), Siuri Khola (4,950 kW), Lower Modi-1 (9,900 kW), Siprin Khola (9,650 kW), Chaku Khola (1,500 kW), Middle Chaku (1,800 kW) , Tadi Khola (Thaprek) (5,000 kW) and Charnawoti Khola (3,520 k W). With these nine projects, the total number of IPP owned projects that are in operation reached 33 with their combined installed capacity of 232 MW. Similarly 26 projects of IPPs with their combined capacity of 870 MW were noted to be under construction.

During FY 2012/13, 40 new PPAs with their combined capacity of 243 MW were concluded. With this, the total number of PPAs concluded so far till FY 2012/13 stands at 145 with their combined capacity 1,832 MW.

Apart from 50 MW import under the Power Exchange Agreement with India, a short term PPA for the import of 20 MW power from January 1, 2013 to April 30, 2013 was concluded with PTC India Limited.

Distribution and Consumer Services East Business Group

The Distribution and Consumer Services (DCS) Business Group is responsible for overall management of electricity distribution networks and services of NEA. The major activities of this business group include operation, maintenance, rehabilitation and expansion of the electricity distribution network up to 33 kV voltage level and consumer services such as new consumer connections, meter reading, billing, and revenue collection. The operation and maintenance of off grid small hydro power plants in its area also falls under the jurisdiction of this business group. Following the change in NEA's organization structure that was affected from beginning of FY 2013/14, the two Business Groups; Distribution and Consumer Services East and West each headed by a General Manager are consolidated into a single wing to manage the overall distribution and consumer services activities in more effective and efficient manner. Since, the activities under this business group during the review period of 2012/13 were run separately for DCS East and DCS West, these are presented here separately.

DCS East is the largest business group of NEA in terms of number of employees and business activities. Approximately 45% of the total staff of NEA are employed in DCS East. DCS East provided services to consumers through its 50 Distribution Centers spread over eastern part of the country.

Performance Highlights

In FY 2012/13, total number of customers under DCS, East reached 1,645,179, an increase of 11.27 % over the last fiscal year's figure.

Customer Category	No of consumer (% of total consumers)	Sales%	Revenue %
Domestic	94.06	42.70	41.96
Non-Commercial	0.48	4.15	5.75
Commercial	0.57	8.98	12.37
Industrial	1.60	36.39	34.68
Others	3.28	7.79	5.24

Similarly, in FY 2012/13, a total of 2259.82 GWh of energy was sold earning a gross revenue of Rs. 18,288.00 Million, an increase of 3.13% and 24.18% over the previous year's energy sales and revenue respectively. Industrial and Commercial consumer categories combined together represent only 2.18% of the total number of consumers but share 45.36% of total sales. Similarly, the domestic consumer category represents 94.06% of total consumers and contributes 42.70% to the total sale.

Programs and Activities

As part of reinforcement and expansion of the distribution systems, many programs, projects and the activities were undertaken in FY 2012/13 to expand and improve the service delivery. Some glimpses of the major activities undertaken are presented below:

Electrification & Expansion Programs

The program during the year under review focused on extension of the existing distribution system and the completion of the outstanding electrification works on a priority basis. The activities are spread over all the areas under the jurisdiction of the DCS, East business group. During FY 2012/13, four 33/11 kV transformers of 6/8 MVA capacity and two 33/11 kV transformers of 10/13.3/16.6 MVA capacity were charged at different substations.

Loss Reduction Activities

In FY 2012/13, special drives were initiated to reduce the technical and non-technical losses. Feeder-wise loss evaluation was continued and extra load shedding hours were set for high loss prone feeders. This practice was found to be effective to bring down the losses of the many high loss prone feeders substantially. At the same time, distribution centers were assigned loss targets to achieve within the prescribed time frame. This was also linked with the performance of concerned distribution center chief and a significant loss reduction was observed in many areas. The special efforts of the employees and the support of the various institutions in controlling non technical losses brought in

good results in many areas. Distribution Centers at Gaur and Bharatpur amongst others were successful to bring down the losses substantially. The overall result towards loss reduction was found to be encouraging during review period. This Business Group carried out regular monitoring of feeders and areas having more than 30% loss. The activities of the Loss Controlling Committee formed under the chairmanship of Chief District Officers were effective to reduce non-technical losses. Loss Controlling Committee at the central level issued directives to the concerned offices to reduce the loss level. During the FY 2012/13, a total of 4573 numbers of direct hooking cases were caught and Rs 1,08,51,743.40 was recovered from persons involved. Similarly action was taken against 2002 consumers for electricity pilferage and Rs 1,36,05,689.79 was recovered from it. Regular monitoring, data downloading and analysis of the large industrial and commercial consumers were augmented. Significant loss reduction was observed in many high non technical loss prone areas by the use of Ariel Bundled Conductor (ABC). Upgrading of overloaded conductors and transformers was also carried out to reduce the non technical losses. In line with NEA decision, the electromechanical meters of the consumers of capacity 25-50 kVA range are also being replaced with electronic meters. Despite the adverse working conditions at local levels, especially in terai and some hilly areas, continued efforts and measures taken to control losses brought fruitful results by bringing down the system losses to 19.32 % in this period.

Demand Side Management

With the grant assistance from Asian Development Bank, DCS East initiated program to distribute 750,000 CFL lamps for in some selected areas of the country. Installation of capacitor banks in Nepalgunj, Jaleshwor, Rajbiraj and Tanki-Sinuwari substations completed last fiscal year resulted in substantial voltage improvement in those areas. Similarly, materials for LV Capacitor bank installation have already been received and the program is expected to be completed in about few months. The construction of 33/11 kV Substations near load centers continued during review period and majority of them are expected to complete in FY 2013/14. This will substantially reduce the losses in the feeder lines and improve the electricity supply situation.

Project Highlights

Energy Access and Efficiency Improvement Project

Project for Energy Efficiency through Loss Reduction

This project has been started with the objective of reducing technical losses in the distribution networks of Kathmandu valley and Birgunj corridor. This project is jointly financed by Asian Development Bank (ADB), GoN and NEA. The project has identified 27 distribution feeders with unacceptable high loss in Kathmandu valley and Birgunj where rehabilitation is required. The scope of this project includes upgrading of 462 Nos of Distribution Transformers (100, 200 and 300 kVA), 214 Km of 120 sq.mm. 11 kV XLPE Covered Conductor, 35 Km of 300 sq.mm. 11 kV Underground Power Cable and 401 Km of 95 sq.mm. LV AB Cable. Contract agreements to supply all required goods and execute installation works have been signed. The project is scheduled to be completed in 2014 AD.

Distribution System Augmentation Project

This project is jointly financed by Asian Development Bank (ADB), GoN and NEA. The scope of the project includes:

i) Construction of new 33/11 kV, 6/8 MVA substation at Baniyani, Mirchaiya, Dhanushadham, Paraul, Barhathawa, Banskot, Kushma, Mainapokhar and 11 kV switching station in Mirmi, Swoyambhu & Mulpani; and

(ii) Construction of 95 km of 33 kV and 156 km of 11 kV lines in the vicinity of substation area.

The construction of substations and interconnecting feeders is expected to be completed by end of 2013.

Construction Works of 33 kV S/S in Banskot, Kaski

Construction Works of 33 kV S/S in Dhanusha Dham, Dhanusha

Construction Works of 33 kV S/S in Paraul, Mahottari

Project for Solar Powered Street Lighting and Grid-tied PV Solar System

This project is run under ADB Grant and aims to install solar powered street lighting systems in some parts of five municipalities of the Kathmandu valley. This project scope also includes installing 100 kWp and 60 kWp Grid-tied PV solar power systems in NEA Training Centre, Kharipati and Bir Hospital, Kathmandu respectively. Solar street light project will facilitate the promotion of solar powered street lighting in historically important places of Kathmandu valley. For the successful implementation of this project, an advisory committee comprising of representatives from Ministry of Federal Affairs and Local Development and members from other stake holders has been set up. The project includes purchase of solar powered street- lighting system, replacement /installation and setting up a system to ensure a smooth maintenance. Around 1000 existing street lamps will be replaced by solar energy which will reduce peak demand by 0.2 MW and save about 700 MWh per year. Contracts have been signed for supply and installation of solar street lights and PV Grid tied solar systems and the project is expected to be completed by April 2014.

Energy Efficiency in lighting (CFL) Project

NEA had launched the pilot CFL distribution program in 21 locations of the country successfully in the past. This was found to be effective in reducing consumption of electricity and created awareness among consumers towards use of CFL lamps. It encouraged NEA to design and implement additional CFL distribution program in other parts of the country.

Under this project, around 7,50,000 high quality CFLs with a capacity of 14 W will be distributed. The implementation of the project is expected to begin from September 2013 and the objective of this program is to reduce annual energy consumption by 23 GWh. About 460,000 residential customers are expected to be benefited from this program. The project is financed by ADB & GoN.

Expanded Electricity Distribution Project

This is one of the components of Electricity Transmission Expansion and Supply Improvement Project financed by ADB under Loan No. 2808-NEP (SF). The scope of project comprises of up-gradation of substations at Gaur, Nijgarh, Chandragadhi, Jare, Belbari, Parasi, Gorkha, Krishnanagar, Tauliahwa, Amuwa, Gaddhachauki & Mirmi and development of 11 & 0.4 kV network in the affected area along the proposed Tamakoshi-Kathmandu 400 kV Transmission Line. Tender notice for above works has been published and tenders so received are being evaluated. The intended completion period of project is 18 months.

Pilot Project for Public Private Partnership in Distribution System

This project is jointly financed by ADB and GoN. The project aims at enhancing the quality of service delivery and overall efficiency through Public Private Partnership program in the sector of electricity distribution. The scope of the project includes procurement of the consulting services for the implementation of Public Private Partnership in three distribution centers of NEA. The consultants have submitted draft bidding document and franchisee agreement which will be used in implementing PPP in distribution.

Distribution System Rehabilitation Project

The scope of the Project included upgradation of distribution substations at 10 locations viz Khanar and Inaruwa of Sunsari district, Rupani of Saptari district, Janakpur of Dhanusha district, Haripur of Sarlahi district, Chanauli of Chitawan district, Bhairahawa of Rupandehi district, Ghorahi of Dang district, Gulariya of Bardiya district and Tikapur of Kailali district. It also included construction of 68 km 11 kV line, rehabilitation of 131 km of existing 11 kV distribution network,

construction of 49 km 0.4 kV line using ABC Cable and rehabilitation of 155 km of existing 0.4 kV distribution network in above mentioned districts. To ease the implementation, the Project was split into two Lots. Lot-1 covered all the works in Sunsari, Saptari, Dhanusa and Sarlahi districts while Lot-2 covered the remaining districts.

Upgradation work of distribution substations of both lots adding 82 MVA capacity of 33/11kV power transformers and the construction of new distribution network & rehabilitation of existing distribution network have been completed in F/Y 2012/13.

Kathmandu Valley Distribution System Strengthening Project

Kathmandu Valley Distribution System Strengthening Project is a component of International Development Association (IDA), World Bank financed Nepal Power Development Project.

The main objective of this project is to strengthen and rehabilitate/upgrade the existing distribution system of eight (8) distribution centers of Kathmandu Valley. The major works include (i) supply and installation of 100 km of Covered conductor, 139 km of HV and around 600 km of LV ABC Cables (ii) supply and installation of 735 numbers of Distribution Transformers of various ratings (iii) laying 34 km of underground XLPE power cable (iv) supply and installation of Steel tubular and PSC poles and (v) Dismantling of existing poles, transformers, conductors and hardware. The project covers following area:

Lot 1: Bhaktapur and Thimi Distribution Centers.
Lot 3: Baneshwor and Maharajganj and Jorpati Distribution Centers.
Lot 4: Ratnapark, Kuleswor and Kirtipur Distribution Centers.

The procurement for most of the items is completed, except the accessories for HV ABC/LV ABC & Covered Conductor. The rehabilitation work is underway. Stringing of covered conductor, LV ABC cables and laying of underground XLPE cable is in progress. The project is expected to be completed by 31 December, 2013.

Before Rehabilitation at Bhaktapur-Nagarkot Road

After Rehabilitation at Bhaktapur-Nagarkot Road

Computerized Billing Project

The objective of the this Computerized Billing Project (CBP) is to implement a common billing system in all the revenue collection centers of NEA for improved billing and revenue collection processes in a modern, efficient and cost effective manner. The Mpower billing system is in operation in 82 collection centers. Computerized Billing Project has also implemented Handheld Meter Reading Device (HHD) which is in operation in 41 different collection centers. Further Computerized Billing Project plans to implement Mpower billing system and Handheld Meter Reading Device in additional 20 collection centers within this Fiscal Year. The Project has also successfully incorporated the increased tariff rates that became effective from FY 2012/13 in the Mpower billing system in all the revenue collection centers where the system is in operation.

Bank through Payment System (Online Banking) has already started for Ratnapark Distribution Center through Prime Commercial Bank. This project targets to implement Bank through Payment System in other revenue collection centers with different banks. The project also targets to introduce SMS banking System and other third party collection system within this FY 2013/14. With the implementation of these systems, the consumers can pay their electricity bills through SMS or pay their electricity bills at any of the nearest electricity bill collection centers with ease.

The introduction of Any Branch Payment System (ABPS) currently implemented in 2 revenue collection centers (Ratnapark DC, Baneshwor DC) will help the customers to pay their bills easily on time on any of these locations. This system will also help NEA to collect revenue and get analytical reports on time. The project will implement this system in additional revenue collection centers (Lagankhel DC, Pulchowk DC, Maharajgunj DC, Kuleshor DC and Chabahil DC).

The project will implement the centralized billing system of the collection centers in Kathmandu Valley within FY 2013/14. For this purpose a Billing Data Center shall be set up. Billing information of the customer shall be put on the internet such that customers can know their respective billing history. Computerized billing project has successfully converted the one month Delay Billing System of Kuleshwor DC to Mpower (Spot Billing System) in July 2013. This has increased the revenue of the Kuleshwor DC for that Fiscal Year. The Project has plans to convert all the other one month delay billing system (Biratnagar DC, Birgunj DC, Janakpur DC, Bhairahawa DC, Nepalgunj DC, Bhaktapur DC, Kirtipur DC and Balaju Sub Branch) to Mpower spot billing System within this FY 2013/14.

Automatic Meter Reading is a technology of automatically collecting consumption, diagnostic, and status of electronic energy meter (TOD) and transferring that data to a central database real-time for billing, troubleshooting, and analyzing. This technology mainly saves utility providers the expense of periodic trips to each physical location to read a meter. The project will implement Automatic Meter Reading System (AMR) as a pilot project for 200 High Value Consumers (TOD) within this FY 2013/14.

33/11 kV, 6/8 MVA Substation at Dhulabari (Jhapa)

This project aims to meet the growing demand of electricity in Dhulabari area of Jhapa districts and its vicinity. The project will help to improve the quality of supply and reduce the technical losses of the area. The scope of the project includes the construction of 33/11 kV, 6/8 MVA substation with interconnection facilities. The project was started in FY 2009/10 with funds from GoN and is scheduled to be completed in 2013.

Substation under construction at Dhulabari Jhapa

33/11 kV, 6/8 MVA Substation at Ramghat (Surkhet)

This project aims to meet the growing demand of electricity in Ramghat area of Surkhet districts along Surkhet-Jajarkot route. The scope of the project includes the construction of 33/11 kV, 6/8 MVA substation with interconnection facilities. The project was started in FY 2009/10 with funds from GoN and is scheduled to be completed in 2013.

Substation under construction at Ramghat Surkhet

Ilam-Phidim-Taplejung 33 kV Transmission Line Project

The scope of the project includes the construction of 90 km of 33 kV transmission line in Fidim and Taplejung district. Construction of 33/11 kV 1.5 MVA Substation and 33 kV Bay at Ilam Substation has been completed. Pole erection for 80 km line is complete out of which conductor stringing in 60 km line is completed. The supply, delivery, installation and commissioning of 3 MVA substation at Taplejung and 33 kV Bay at Phidim Substation is scheduled to be completed by FY 2013/14.

Buipa-Okhaldhunga 33 kV Transmission Line Project (Khotang and Okhaldhunga Districts)

The scope of this project includes the construction of 32.5 km of 33kV transmission line, 80 km of 11kV and 80km of LV distribution line and two 33/11kV, 1.5 MVA substations one each at Okhaldhunga and Khotang districts. Construction of substation at Buipa (Khotang District) has been completed. Construction work at Okhaldhunga S/S is in progress; materials and equipment have been delivered to the site, control building constructed and civil construction is in its final stage. Construction of 32.5 km of 33kV line, 40.2 km of 11kV line and 22 km of LV distribution line and 17 nos. of Transformers has been completed and construction of remaining LV line is in progress. Buipa to Bakshila, a major component of project has been almost completed. Bakshila, one of the remote VDC and center for North-East region of Khotang has been electrified in this year.

Since, 33kV line from Jaljale to Buipa is charged at 11kV, parallel 11kV line is being constructed to free the existing 33kV line to feed the Buipa substation. 48.7 km of 11kV line has been constructed so far. Also 212 poles were erected to free Buipa to Rabuwaghat (Border of Khotang and Okhaldhunga) 12.5km long segment of 33kV line, all materials are handed over to the contractor to complete the 11kV line. Maintenance of 33kV line from Jaljale to Buipa is in progress. The project is expected to complete in FY 2013/14.

Rasuwaghat-Khotang S/S and RE Project

Major works to be performed under this Project include the construction of 14 km of 33 kV transmission line, one 33/11kV, 1.5 MVA capacity substation at Rasuwaghat of Khotang district, 90km of 11kV and 90 km of LV distribution lines in Khotang district. Out of these, 6 km of 33 kV transmission line, 22 km of 11kV line and 33 km of LV distribution line construction have been completed and 11 nos. of distribution transformer have been installed. 33kV Bay extension at Jaljale substation has been completed. Construction of remaining 4 km 33 kV line is in progress. Store cum Quarter building has been constructed in Bagedhunga, Khotang. Tender evaluation is in progress for 1.5 MVA Substation at Bagedhuga, Khotang. 750 kVA transformer and accessories has been achieved. 11kV line construction is in progress to free Rasuwaghat-Bagedhunga 6.5 km long 33 kV line.

Bharatpur-Madi 33 KV Sub-transmission Line & RE Project

This project is financed by the Govt. of Nepal (GoN) and is being implemented for the electrification of Madi area and its vicinity in Chitwan district. The scope of the project includes construction of a 3 MVA, 33/11 kV substation, 22 km of 33 kV overhead line, 8 km of 33 kV underground Cable, 30 km of 11 kV line and 50 km of 0.4 kV line and installation of 30 distribution transformers. The project will provide electricity to about 11,000 households of the area. The construction of substation and U/G cable is under progress. Construction of 22 Km of 33 KV overhead line is almost complete. The project is scheduled to be completed in 2013.

Dhankuta-Hile-Leguwa-Bhojpur 33 kV Transmission Line Project

The project includes the construction of 50 km of 33 kV transmission line, 52 km of 11 kV line, 50 km of LV distribution line and one 33/11 kV substation in Bhojpur district. Construction of 33 kV transmission line and 33 kV Bay/Switching Substation have been completed and are in operation. 23 km of 11 kV line and 15 km of LV line construction has been completed so far. Construction of 33/11 kV, Substation at Bhojpur is in progress. The project is scheduled to be completed by FY 2013/14.

Tumlingtar-Dingla-Bhojpur 11 kV Transmission Line Project

The project includes the construction of 30 km of 11 kV and 25 km of LV distribution line in Sankhuwasabha and Bhojpur districts. The 11 kV line as per project scope and 18 km of LV distribution line has been completed. Tendering process for material supply and construction of remaining work is under progress.

Sangutar-Okhaldhunga 33 KV Transmission line project.

Major components of the project include the construction of: 40 km 33 kV line, 40 km 11 kV line, one 33 kV bay at Sanghutar and 40 km LV distribution line. Pole erection for 20 km of 33 kV line has been completed. Procurement of 315 poles and 120 km of conductor with hardware was made during FY 2012/13 for the construction of 33 KV line and construction work is in progress.

Okhaldhunga-Salleri 33 KV Transmission line project

The major component of this project are construction of: 40 km 33 KV line, 40 km 11 kV line, one 33 KV bay construction at Okhaldhunga substation and 1.5 MVA Substation & 40 km of LT line at Salleri of Solukhumbu district. Procurement of 315 poles and 120 km of conductor with hardware has been made for the construction of 33 KV line and work is in progress.

Khurkot-Nepalthok 33 kV Transmission Line Project

Major components of the project include the construction of: 25 km of 33 kV line, 25 km of 11 kV line, 40 km of LV distribution line at Sindhuli District & 33/11 kV, 1.5 MVA Substation at Nepalthok, Sindhuli. Procurement of poles & conductor for 12 km of 33 kV transmission line and pole erection works in 7 km of the line is completed in FY2012/13. Tender has been invited for the remaining work of the project.

Hatia-Kamane 33 kV line Project

The project scope includes construction of 10 km, 33 kV double circuit line from Kamane in Hetauda to Hatia. This project aims to meet the load demand of the industries in Hatia and eastern part of the Makawanpur district. The project work is complete except about 2 span of line in the private area for which high compensation is being demanded by the local public. NEA is trying to settle the dispute with the help of local administration and the project is expected to be completed soon.

Aathrai VDC-Sankranti Bazaar 33/11 kV Substation Project

Major components of the project includes the construction of: 25 km of 33 kV line, 25 km of 11 kV line, 40 km of LV distribution line in Tehrathum district and a 33/11 kV Substation at Sankarnti Bazaar. Construction of 23 km of 33 kV line has been completed. Contract for supply of line material and construction work has been made. The construction is in progress. The land for Substation construction has been selected and the process for acquiring it is in progress.

Bokhim Lekharka (Bhojpur) Electrification Project

The project includes construction of 70 km of 11 kV line and 100 km of LV line in Bokhim, Khawa, Sideshwor, Gupteswor, Nagi, Lekharka, Gogane, Timma, Kot, Chinamakhu and Annapurna VDC of Bhojpur district. 18 percent of work for 11 kV line and 12 percent of work for LV line has been completed so far.

Dhankuta-Hile-Ranibas-Bhojpur 33 kV Transmission Line Project

The project includes construction of 27 km of 33 kV line, 50 km of 11 kV line and 50 km of LV line in different V.D.C. of Bhojpur district. 67 percent of work for 33 kV transmission line has been completed. Tendering process for other material supply and construction of line is presently under way. Acquiring land for substation construction at Ranibas is under process.

Piluwa 33/11 kV Substation Upgrading

The scope of works includes upgrading of 1.5 MVA, 33/11 kV transformer by 6/8 MVA, 33/11 kV power transformer and replacement of 33 kV Switchgear and Panels. Supply, delivery, installation and commissioning of 6/8 MVA transformer has been completed. Replacement of Switchgear & Panels and 33 kV Bay construction is scheduled to be completed by FY 2012/13.

Ranibas-Balardaha-Bhojpur 33 kV Transmission Line

The project started in FY 2010/11. Scope of works includes 33 kV line survey and its construction apart from construction of 33/11 Substation / 33 kV Bay at Balardaha. Detailed survey has been completed in FY 2012/13. Similarly, procurement of goods for 33 kV line construction is under process.

Muga-Ghodetar-Bhojpur 11 kV Transmission Line Project

The project started in FY 2010/11. Scope of works includes construction of 10 km of 11 kV line and 10 km of LV distribution line in different VDCs of Bhojpur district. Forty percent of the 11 kV line construction work is completed and remaining work is in progress.

Rake-Rabi-Chisapani 33 kV Transmission Line Project

The project includes the construction of: 25 km of 33 kV line, 40 km of 11 kV line, 40 km of LV distribution line, construction of 33/11 kV substation and 33 kV bay. Out of which, 23 km of 33 kV line and 10 km of 11 kV line has been constructed. The procurement of material has been done. Tendering process for the construction of line is presently under way. Land for Switching Station at Chamaite has already been acquired while acquiring land for Substation is still in process.

Bhadratar Talakhu Electrification Project, Nuwakot

This project is financed by GoN to electrify Mahakali, Likhu, Talakhu, and Chhap VDC of Nuwakot district. The scope of the project includes construction of 12 km of 11 kV line, 16 km of 0.4/0.23 kV line and installation of 5 nos of distribution transformers. Construction is in progress and is scheduled to be completed by the end of 2012.

Belkot Kumari Chauthe Electrification Project, Nuwakot

This project is financed by GoN to electrify Belkot, Kumari, Chauthe VDC of Nuwakot district. The scope of the project includes construction of 9 km of 11 kV line, 10 km of 0.4/0.23 kV line and installation of 4 number of distribution transformers. Construction is in progress and is scheduled to be completed by the end of 2013/14.

Line Re-alignment Due to Road Expansion in Kathmandu

Extensive line re-alignment work is being implemented in Kathmandu valley in the areas where road expansion is taking place. Concerned distribution centers are executing this work in co-operation with road department and other concerned agencies. 220 km of 11kV and LV distribution line is to be re-aligned out of which 127 km of line has been shifted so far. The work is to be co-0rdinated with other agencies also and is scheduled to be completed in FY 2013/14.

Pole dismantled and re-aligned in a site

Community Electrification

As part of the government policy to promote community participation in rural electrification, the Business Group carried out community based electrification in various parts of the country and handed over the facilities to the community for operation. The government provided 90% of the capital cost of electrification, and the remaining 10% of the capital cost was borne by the Community. NEA is responsible for maintenance of HT line where as Community/ Users' Group is responsible for maintenance of LV distribution system. The public response to this initiative of NEA has been overwhelming. Altogether, about 73,000 households have been provided with electricity by the end of FY 2012/13 through 94 community groups.

Planning and Technical Services Department

The Planning and Technical Services Department is responsible for planning and preparation of distribution system expansion programs and supporting DCS Business group in the technical and commercial matters. At present, major works under this department include identification of potential rural electrification and substation rehabilitation projects and planning for implementation. The department is also responsible for programming of TOD energy meters & metering equipment and identify and implement programs for loss reduction in distribution systems. In addition, the Department also carries out impact studies for evacuation of power from IPPs to distribution substation. The department aims to include distribution planning, demand side management and loss reduction as an integral part of the planning process in future. Besides, this business group is eagerly trying to meet consumer aspirations by providing modern facilities to the electricity consumers. Eighty two collection centers have computerized billing system till date and plans are to extend it to all distribution centers with modern facilities in the coming years. The Computerized Billing Project under this department has plans to cover entire distribution centers within Kathmandu valley with 'Any Branch Payment System'. Four distribution centers, Ratnapark, Baneswar, Lagankhel and Pulchowk were selected for implementation in the first phase. This system is already implemented between Ratnapark and Baneswar DCs and will be operable soon between Lagankhel and Pulchowk DCs. Bank through payment system (Online banking) has already started for Ratnapark Distribution Center through Prime Commercial Bank.

Future Plans and Programs

NEA has taken the high system loss as a major challenge and shall make every effort to bring down the distribution system loss. It is also planning to improve the quality of the services through the use of new technologies and capacity building to meet the challenges of new environment in utility business. Consumer complaints shall be addressed without delay and the procedure for new connection related works shall be made simple and user friendly. Centralized customer care center shall be established to ensure single point of contact for all consumer related activities, timely service, less processing time for new connection and centralized control and monitoring over the entire customer care process. NEA is planning to implement Automatic Meter Reading, AMR system. Payment and billing information shall be made available in internet so that consumer can access information on line. Bank through payment system will be extended to all distribution centers of Kathmandu valley in first phase to pay the electricity bill through bank. Payment KIOSK shall be installed in major branches to facilitate bill payment outside office hours. Any bank payment system will be extended and SMS banking system will be introduced in near future.

Regional Offices

During review period there were four regional offices under DCS East, located at Biratnagar, Janakpur, Hetauda and Kathmandu. The functions of operation, maintenance, and expansion of the network up to the 33 kV voltage levels and consumer services such as new consumer connections, meter reading, billing, and revenue collection are carried out by regional offices. In addition, the regional offices are also responsible for managing community based rural electrification and operation and maintenance of off grid small hydro power plants within their jurisdiction. Apart from the regular consumer services, the regional offices focused on the following activities in FY 2012/13:

a. Loss Reduction Program

The non-technical losses comprises of major share of losses. During the year under review, various measures taken in the preceding years were continued to reduce the non-technical

losses. Massive awareness campaigns were initiated in various distribution centers.

Besides, strict measures for electricity theft control like confiscation of electric equipment and taking legal course against those involved were carried out in various distribution centers with the help of local administration and security agencies.

NEA employees and Police personnel confiscating electric irrigation pump at Tandi

Electric motors, fans etc. confiscated at Malangawa

Electric equipment confiscated at Rajbiraj

Police personnel & NEA employees heading for loss reduction activities

NEA employees taking action against meter tampering at Lahan

Major programs implemented to avoid electricity theft through manipulating meter and metering units, mainly consisted of:

- Installation of tamper proof meter enclosures and refurbishment of metering facilities
- Implementation of meter enclosure seal management system.
- Replacement of electro-mechanical meters by programmable poly phase electronic meters and replacement of unmatched current transformers to eliminate possible errors in multi plying factor.
- Investigations on illegal tappings and meter tempering
- Meter testing: Bulk/ Ordinary supplies
- Rehabilitation of meter cubicles
- Implementation of meter seal management system to secure energy meters from tempering
- Replacement of bare conductor with ABC cables in loss prone areas

New electricity tariff was implemented from the meter reading date of 1st Bhadra, 2069. This required re-programming of all Time-of-Day (TOD) meters due to change in time slot. This also helped to identify any error in meter and metering units. NEA recovered substantial amount as additional bills due to this initiative. Regular inspection of Time-of-Day (TOD) meters, data download and analysis since then has helped to curb any connection fault or manipulation. NEA management made various decisions as 'Immediate Action Plans' to improve its functioning. Among many, this plan included allocation of substantial fund for execution of loss reduction activities. All regional offices and distribution centers actively participated in this drive which was found to be much effective.

b. Energy Monitoring and Auditing of Distribution Substations

Static energy meters were installed at distribution substations to measure the amount of energy delivered by the substations. The Planning and Technical Services Department co-operated with Grid Operation Department to install TOD meters in various grid substations. The static meters installed at different substations were downloaded to check and verify the data. The program for installation of Bulk Supply Meters and the Metering Unit was also continued in FY 2012/13. The energy monitoring and auditing was also augmented verifying the data with concerned transmission grid and generation units.

c. Customer Care

Distribution and Consumer service works as interfaces between NEA and its consumers. So, special efforts were taken to improve the quality of service at the consumer interface points. The employees took special efforts to serve our valued consumers in more effective way. Extended Queue Management System at various cash collection centers helped to minimize difficulties encountered by the consumers in queuing for making payments. Round the clock no-light services have been implemented in most of the urban no-light centers. These functions and activities were carried out by all the four regional offices.

Features of the four regional offices are given in the following table:

Description	Kathmandu Regional Office	Biratnagar Regional Office	Hetauda Regional Office	Janakpur Regional Office
Zonal Coverage	Bagmati	Mechi & Koshi	Narayani	Janakpur & Sagarmatha
No. of municipalities fully electrified	12		7	8
No. of municipalities partially electrified	1	10	0	1
No. of VDC's fully electrified	121	30	237	389
No. of VDC's partially electrified	333	297	119	209
No. of VDC's having no access to electricity	46	136	19	108
No. of community electrified VDC's	51	25	23	31
No. of distribution centres	17	14	8	11
Units sold during the year under review (GWh)	908.491	458.953	616.732	275.638
Revenue earned from the units sold (NRs in Millions)				
- Billing Amount	8218478	3608360	4736971	1724190
- Collection Amount	8024137	3432285	4647050	1681910
Total no. of consumers at the end of the year	543478	441113	293516	367072
No. of new connections provided during the year	31526	50561	34987	44922
Length of 33 KV line (Km)	249.4	595.3	215.2	3918
Length of HT Distribution (11 KV) Line (KM)	4143.95	4080.4	3384.1	6661.8
Length of LV Distribution (0.4/0.23 KV) Line (Km)	21628.05	12584.4	7212.3	7580.3
No. of 33/11 KV primary S/S	11	19	8	16
Total installed capacity of 33/11 KV substations (MVA)	41.8	190.5	89.5	234.55
No. of distribution transformers	4490	3010	2563	2624
Total installed capacity of distribution transformers (MVA)	678.75	177.3	245.369	197.68

Distribution and Consumer Services, East

S.N.	Category	Janakpur Regional Office	Hetauda Regional Office	Kathmandu Regional Office	Biratnagar Regional Office	Total of DCS East
No of Consumers (Nos) for F/Y 2069/070						
1	Domestic	346927	271659	524811	404040	1547437
2	Non-Commercial	1470	1236	2938	2268	7912
3	Commercial	1197	1392	4700	2150	9439
4	Industrial	6788	5889	8109	5608	26394
5	Water Supply	77	144	290	102	613
6	Irrigation	9701	12105	679	25550	48035
7	Street Light	412	389	773	640	2214
8	Temporary Supply	9	61	435	15	520
9	Transport	0	1	39		40
10	Temple	321	461	487	500	1769
11	Community Sales	83	63	84	90	320
12	Internal Consumption	87	116	133	150	486
13	Bulk Supply	0				0
Total		**367072**	**293516**	**543478**	**441113**	**1645179**
Sales Unit (MWh) for F/Y 2069/070						
1	Domestic	117686.60	149841.00	517518	179860	964905.37
2	Non-Commercial	9235.28	11056.00	61941	11572	93804.56
3	Commercial	10836.76	19179.00	151198	21634	202847.80
4	Industrial	87985.13	393639.00	127251	213371	822245.87
5	Water Supply	5796.28	5395.00	12568	7220	30979.10
6	Irrigation	8715.82	9450.00	550	9916	28631.82
7	Street Light	17684.36	20088.00	23182	6414	67368.21
8	Temporary Supply	22.11	87.00	937	54	1099.73
9	Transport	0.00	658.00	5594	0	6252.00
10	Temple	4668.40	407.00	1442	547	7063.97
11	Community Sales	7838.02	5858.00	5257	7938	26891.22
12	Internal Consumption	5083.56	1074.00	1007	429	7593.47
13	Bulk Supply	86.48		47		133.48
Total		**275638.78**	**616732.00**	**908492.00**	**458953.7971**	**2259816.58**
Revenue (Millon NRs) for F/Y 2069/070						
1	Domestic	776680.00	1170549.00	4401147.00	1324738.47	7673114.47
2	Non-Commercial	64070.00	120522.00	729347.00	137747.63	1051686.63
3	Commercial	75240.00	231688.00	1683192.00	272650.54	2262770.54
4	Industrial	653640.00	2951756.00	1032158.00	1705328.07	6342882.07
5	Water Supply	14480.00	33623.00	82034.00	44585.09	174722.09
6	Irrigation	22090.00	35667.00	1977.00	37721.24	97455.24
7	Street Light	84100.00	155185.00	197232.00	44644.80	481161.80
8	Temporary Supply	320.00	1363.00	19137.00	852.26	21672.26
9	Transport	0.00	5519.00	33336.00	0.00	38855.00
10	Temple	5870.00	2020.00	8357.00	2880.48	19127.48
11	Community Sales	17230.00	16333.00	18634.00	32433.68	84630.68
12	Internal Consumption	10470.00	10931.00	11927.00	4777.90	38105.90
13	Bulk Supply	0.00	1815.00			1815.00
14	Black listed	0.00	0.00	0		0.00
Total		**1724190.00**	**4736971.00**	**8218478.00**	**3608360.16**	**18287999.16**
Loss percentage						
1	Received Energy MWH	448407.87	748619.00	1045218	558714.58	2800959.45
2	Sales Energy MWH	275638.78	616732.00	908492.00	458953.80	2259816.58
3	Loss Unit, MWH	172769.09	131887.00	136726.00	99760.78	541142.87
4	Loss prcentage	38.53%	17.62%	13.08%	17.86%	19.32%

Distribution and Consumer Services West Business Group

The Distribution and Consumer Services West (DCSW) Business Group is the second largest among the business groups of NEA in terms of number of employees and business activities. Approximately 18% of the total staffs of NEA are employed in DCS West.

This Business Group provides service to consumers through 40 Distribution Centers spread over 39 districts of the country.

Performance Highlights:

In FY 2012/13, total number of customers under DCS West reached 924,688 an increase of 10.68 % over the last fiscal year's figure.

Similarly in FY 2012/13, a total of 880.78 GWh of energy was sold earning gross revenue of Rs. 6650.56 million, an increase of 4.98 % and 23.41% over the previous year's energy sales and revenue respectively. Sales, revenue and number of consumers of different regional offices under DCS, West in FY 2012/13 are shown below.

Regional Offices	No. of consumers	Sales (GWH)	Revenue (Millions)	Consumer (%)	Sale (%)	Revenue (%)
Attariya	141015	110.856	792.94	15.25	12.58	11.93
Butwal	333535	428.156	3236.89	36.07	48.61	48.67
Nepalgunj	225895	158.05	1183.08	24.43	17.95	17.78
Pokhara	224293	183.72	1437.65	24.25	20.86	21.62
Total	924,688	880.782	6,650.56	100	100	100

As a part of system reinforcement and expansion of distribution system program, many activities were undertaken in FY 2012/13 to improve the service delivery. The main activities undertaken are listed below:

Electrification Program

Electrification program focuses on extensions of the existing distribution network and on completion of outstanding incomplete electrification works on a priority basis. The activities of the program were spread over all the areas under the jurisdiction of the DCS West business group

Planning and Technical Services Department

The Planning and Technical Services Department is responsible for planning, preparation of distribution system expansion programs and supporting DCS West Business group in the technical and commercial matters. The Department identifies potential RE projects and substation rehabilitation projects for implementation in phase wise manner. The Department also carries out management of TOD energy meter & metering equipment and develops and implements programs for reduction of distribution system losses. In addition, the Department carries out impact studies for evacuation of power from IPPs to distribution substation.

Loss Reduction Activities in DCS, West

In FY 2012/13, special efforts were taken to reduce the Technical and Non-Technical Losses. Distribution and Consumer Service, West started regular monitoring of the feeders and areas having more than 40% loss. The Loss Reduction Committee was formed in many distribution centers. The Committee is headed by the concerned Chief District Officer. Loss reduction committee at the central level has regularly collected loss related information from the distribution centers and regional offices, analyzed the collected information and directed the concerned offices to improve the loss situation. During FY 2012/13, 1321 customers were penalized for electricity pilferage and Rs 89,94,590.14 collected from them. Total 4708 numbers of damaged energy

meters wrer replaced. Significant numbers of Capacitor bank placement, transformer load balancing and transformer shifting has been done.

Monitoring, data downloading and analysis of the consumption of large industrial and commercial consumers have been increased. Use of Arial Bundle Conductor, ABC has been encouraged in high non technical loss prone areas. Upgrading of overloaded conductors and transformers have been carried out to reduce the non technical losses. Despite continued efforts and measures taken to control non technical losses, the desired result could not be achieved. This is mainly due to the adverse local work environment especially in terai and some hilly areas.

Queue Management System (QMS)

As a continuous effort to provide better service and comfort to our valued consumers, QMS has been implemented in different branches and improvement in physical infrastructure at these locations have also been made to provide comfort to consumers.

E-bidding system

DCS continues to explore various modes to utilize technological developments for operational efficiency. In FY 2012/13, DCS West introduced e-bidding with co-ordination from MIS Department of NEA. This has helped a lot in ensuring fair, transparent and more competitive bidding procedure.

Human Resource Development

In FY 2012/13, about 43 technical and non-technical staffs participated in various training program and seminars organized by NEA in Training Center and other agencies to enhance the technical and managerial skill of employees.

Small Hydro Power and Rural Electrification Projects:

Distribution and Consumer Services, West is also responsible for Operation and Maintenance of Small Hydro Plants located in western part of the country.

Besides rural electrification, the Business Group also oversaw distribution and consumer service functions of 22 small hydropower plants located at different districts. Out of 22 small hydropower plants 18 are in operation. These centers serve 221687 consumers in total. Apart from these, 9 more small hydropower plants located at various districts have been leased to private companies or communities. These leased small hydropower plants serve around 12026 consumers.

Small Hydro Plants under DCS West

S.N.	Name of the Center	Installed Capacity kW	No of Consumers
1	Aachham	400	2817
2	Rupalgad	100	
3	Surnayagad	200	Grid connected
4	Arughat	150	1038
5	Dolpa	200	1039
6	Kalikot	500	1518
7	Heldung (Simikot)	500	1034
8	Tatopani	2000	995
9	Gamgad	400	1200
	Total	4400	9641

Small Hydro Plants Leased to Private Communities and Monitored by DCS West

S.N.	Name of Center	Installed Capacity kW	No of Consumers
1	Bajhang	200	1452
2	Bajura	200	1194
3	Chame	45	260
4	Chaurjahari	150	702
5	Darchula	300	1690
6	Jomsom	240	1958
7	Jumla	200	1350
8	Manang	80	735
9	Syarpudaha	200	2685
	Total	1615	12026

Small Hydro Plants under DCS West not in operation:

S.N.	Name of Center	District	Capacity kW
1	Setibeni	Syanja	80
2	Jhupra	Surkhet	345
3	Doti	Doti	200
4	Baglung	Baglung	200
		Total	

For Rural Electrification, a number of 33 kV transmission lines and 33/11 kV substation projects are under construction. The status of those projects is summarized below.

Sitalpati -Musikot 33 kV Transmission Line Project (Salyan and Rukum Districts)

The project includes the construction of 50 km of 33 kV transmission line, 50 km of 11 kV line, 40 km of LV distribution line and two 33/11 kV substations of 1.5 MVA capacity one each at Sitalpati and Musikot. Out of 50 km 33 kV transmission line, stringing of 34 km line & pole erection has been completed. Construction of 33/11 kV, 1.5 MVA substation at Sitalpati and 33 kV bay extension at Tulsipur are in progress and is expected to be completed in FY2013/14. Land for Musikot Substation has been acquired.

Chhinchu-Rakam-Jajarkot 33 kV Transmission Line Project (Surkhet and Jajarkot Districts)

The scope of the project consists of: the construction of 70 km of 33 kV transmission line, 100 km of 11 kV, 100 km of LV distribution line and two 33/11 kV substations at Surkhet and Jajarkot districts. Out of 70 km long 33 kV transmission line, pole erection and stringing of conductor for 45 km and 11 km of 11 kV line have been completed. Construction of 33/11 kV, 750 kVA substation at Rakam is completed. Contract for 33kV and 11kV Protection Scheme of Rakam Substation has been awarded and work is in progress.

Ghorahi-Holeri 33 kV Transmission Line Project (Rolpa District)

Scope of this project consists of the construction of 45 km of 33 kV transmission line, 50 km of 11 kV, 50 km of LV distribution line and two 33/11 kV substations at Holleri & Ghorahi.

Construction of 45 km 33 kV transmission line up to Holleri has been completed.Construction of 33/11 kV, 750 kVA sub-station at Holleri and 33 kV bay extension at Ghorahi are nearing completion. Substation Building at Holleri has been completed.

Construction of 10 km 11 kV Transmission and Distribution line and installation of two (2) 50 kVA distribution transformer have been completed. Procurement of Poles and conductor of 33 kV transmission line have been completed.

Udipur-Besisahar-Manang 33 kV Transmission Line Project (Lamjung and Manang Districts)

The project includes the construction of 90 km of 33 kV transmission line, 53 km of 11 kV, 53 km of LV distribution line and one 33/11 kV, 1.5 MVA substation in Manang and 33 kV bay extension in the existing Udipur substation. Out of 90 km long 33 kV transmission line, pole erection for 70 km up to Danaque of Manang district and stringing of conductor for 15 km up to Bulbule has been completed. Land for Manang Substation has been acquired. Tender for the procurement of line materials (Insulator & Hardwares) for 15 km of 33 kV transmission line has been awarded.

Dadeldhura-Baitadi 33 kV Transmission Line Project

The scope of the project includes the construction of 14 km of 33 kV transmission line, 15 km of 11 kV & LV distribution line, one 33/11 kV 3 MVA substation at Baitadi and 33 kV bay extension in the existing Dadeldhura substation. Construction of 33/11 kV, 3 MVA Baitadi substation and its testing & commissioning was completed in FY 2010/11 and electricity to local consumer is now being supplied from Baitadi S/S.

Dailekh Substation Project:

The project includes the construction of: 25 km of 33 kV, 15 km of 11 kV, 10 km of LV distribution line & one 33/11 kV, 1.5 MVA substation at Dailekh and 33 kV Bay extension at Surkhet. Construction of 33/11 kV, 1.5MVA sub-station at Dailekh and 33 kV bay extension at Surkhet substation is under going. Power transformer and other major electrical equipment have been transported to the construction site.

Galkot Substation Project

This project is being implemented to provide electric supply to Galkot area in Baglung district. 33 KV Bay extension at Baglung substation has been completed. Land for sub-station construction at Galkot has been acquired. Tendering for the construction of civil work for land protection has been done and is now under evaluation process.

Kapurkot-Koilachaur 33 kV Transmission Line Project:

The project includes the construction of: 15 km of 33 kV, 25 km of 11 kV, 25 km of LV distribution line in Salyan & Rolpa districts & 6/8 MVA 33/11 kV substation at Koilachaur & a switching substation at Kapurkot. Construction of 12 km, 33 kV transmission line from Kapurkot to Kalachaur has been completed. Land for substation construction has been acquired. Tender for construction of 6/8 MVA 33/11kV substation has been invited and is in the process for evaluation.

Saphebagar(Achham)-Martadi (Bajura)33 kV Transmission Line Project:

The project includes the construction of: 48 km of 33 kV, 40 km of 11 kV, 40 km of distribution line in Achham and Bajura district , 33/11 kV substations at Martadi and 33 kV Bay extension at Saphebagar. construction 0f 12 kV transmission in progress. Procurement of conductors and insulator hardware for 33 kV transmission line have been completed. Process for acquiring land has been initiated.

Martadi (Bajura)-Gamgadi (Mugu) 33 kV Transmission Line Project:

The project includes the construction of: 90 km of 33 kV, 40 km of 11 kV, 40 km of LV distribution line in Bajura and Mugu district , 33/11 kV substations at Martadi and 33 kV Bay extension at Saphebagar. Construction of 10 km of line has been completed. Procurement of conductor hardware for construction of additional 10 km 33 kV line has been completed. The process for acquiring land for sub-station construction has been initiated.

Khorpe (Baitadi) Chainpur(Bhajang) 33 kV Transmission Line Project:

The scope of this Project includes the construction of: 90 km of 33 kV, 40 km of 11 kV, 40 km of LV distribution line in Baitadi and Bajura districts, 33/11 kV substations at Chainpur and 33 kV bay extension at Baitadi Substation. Construction of 10 km of 33 kV transmission line was completed. Tendering has been done for poles for construction of additional 10 km 33 kV line. The process for acquiring land for sub-station construction has been initiated.

Udipur Substation Upgrading Project:

The project was started from FY 067/068 to upgrade the existing Udipur substation to 8 MVA capacity. Upgrading work has been completed and upgraded substation is in progress.

Rajapur 33 kV Substation Project:

The project was started from FY 067/068 to construct 15 km 33 kV line, 10 km 11 kV line, 10 km of distribution line and construction 33/11 kV substation at Bardiya. Process has been initiated for acquiring land for the construction of Rajapur Substation.

Bojhapokhari Nawalparasi 33 kV Transmission Line Project:

The project was started from FY 067/068 to construct 15 km 33 kV line, 10 km 11 kV line, 10 km of distribution line and construction of 33/11 kV substation at Nawalparasi. Process has been initiated for acquiring land and tender document is being prepared.

Dang Bhalubang 33 kV Transmission Line Project:

The project was started from FY 067/068 to construct 25 km 33 kV line, 10 km 11 kV line and construction of 33/11 kV substation at Dang. Process has been initiated for acquiring land.

Surkhet Bijaura 33 kV Substation Project:

The project was started from FY 067/068 to construct 30 km 33 kV line, 20 km 11 kV line and construction of 33/11 kV substation at Bijaura Surkhet. Land has been acquired.

Khairenitar 33 kV Substation Project:

The project was started from FY 067/068 to construct 12 km 33 kV line. Process has been initiated for acquiring land for the construction of Khairenitar Substation.

Thada 33 kV Substation Project:

The project was started from FY 067/068 to construct 22 km 33 kV line and construction of 33/11 kV substation at Thada, Arghakhachi. Land has been acquired for the construction of Thada Substation.

Regional Offices

Under Distribution and Consumer Services, West, four Regional Offices namely Butwal Regional Office (BRO), Nepalgunj Regional Office (NRO), Attaria Regional Office (ARO) and Pokhara Regional Office (PRO) are in operation. The main function of the Regional Offices is to co-ordinate the activities of distribution centers within its region.

Key objectives of the Regional Offices are:

- Provision of reliable electricity supply to the consumers within the region at statutory levels of voltage
- Sell electricity and achieve planned surpluses of revenue over the total expenditure
- Provide new connections to prospective consumers
- Ensure rational development of the electricity distribution system within the region
- Operation and maintenance of Small Hydropower Plants within the region
- Management of community based rural electrification projects

Main Activities of Regional Offices

1. Loss Reduction Program

The problem of "Distribution Losses" was addressed by two separate ways: Reduction of non-technical (commercial) losses and reduction of technical losses. During the year under review following steps which were taken in previous years were continued to reduce the non-technical losses especially at the bulk supply installations

- Installation of tamper proof meter enclosures and refurbishment of metering facilities
- Implementation of meter enclosure seal management system.
- Replacement of electro-mechanical meters with programmable poly phase meters and replacement of unmatched current transformers to eliminate possible errors in multiplying factor.

During the year following steps were also taken as in previous years to reduce non technical losses in different distribution centers

- Investigations on illegal tappings and meter tempering
- Fixing meter enclosures for bulk supplies and 5-30A supplies

- Meter testing: Bulk/ Ordinary supplies
- Rehabilitation of meter cubicles
- Implementation of meter seal management system to secure energy meters from tempering
- Replacement of bare conductor with ABC cables in loss prone areas

During the FY 2012/13 strong measures were also taken to reduce the electricity losses: mainly non-technical. The name of the feeders having more than 50% loss was made public in the first stage and public notice was issued mentioning that load shedding hours for feeders having such loss will be more than the normal load shedding hours. In the second stage name of the feeders having more than 40% loss was made public. In many distribution centers employees actively participated in the national campaign of reducing the electricity loss and this drive brought good results in many areas.

A satisfactory result was obtained from the loss reduction program this year. Loss reported by four regional offices are :

- Attariya Regional Office : 15.19 % (reduced by 1.49 %)
- Butwal Regional Office : 20.41 % (reduced by 0.35 %)
- Nepalgunj Regional Office: 19.10 % (reduced by 3.68 %
- Pokhara regional Office: 14.10 % (reduced by 0.76 %)

2. Energy Monitoring and Auditing of Distribution Substations

Under this program energy meters were fixed at distribution substations to measure the amount of energy distributed by the substation. TOD meters installed at different substations were downloaded to check and verify the data. The program for installation of Bulk Supply Meters and the Metering Unit was also continued in FY 2012/13

3. Customer Care:

Special efforts were taken to improve the service at the customer interface points. The staffs took special efforts to serve our valued customers effectively in the current year. With the Queue Management System at some of the cash collection centers, difficulties encountered by the customers in queuing for making payments were minimized.

Pokhara Regional Office

Introduction

Pokhara Regional Office (PRO) is one among the four Regional offices of Distribution and Consumer Services, West (DCS, West). The office is headed by a director who is directly responsible to the General Manager. Area of operation of this regional office covers the districts of Gandaki & Dhaulagiri zone.

Operational Structure

There are 10 Distribution Centers within the regional office for effective administration. In addition, there is technical division headed by a Manager who looks after all the technical matters. Rural Electrification activities within the region and management of Small Hydro Plants within the region are also coordinated by the technical division. The finance and revenue functions of the Region are carried out by Accountants and Controlled and supervised by the Asst. Director of the region. The Regional Office is provided with a separate administrative officer to attend human resource function. The regional office is also co-ordinating with community electricity user's groups for network expansion, operation, maintenance and revenue collection through its distribution centers.

An interaction meeting with community electricity user's groups at Tanahu

Highlights of the year

Units sold within the region during the year: 183.12 GWh
Revenue earned from Units sold: Rs 1437.65 Million
Total no. of consumers within the region at the end of the fiscal year: 224,243
No of new connections provided during the year: 16,278
Average revenue per consumer per month: Rs 534.26
Average energy per consumer per month:68.05 kWh
Cumulative loss 14.10% which is less than same of last year(14.86%).
% collection including street lighting :96.36 which is greater than same of last year (95.97).

Distribution Infrastructures

33 kV Distribution Lines: 478.10 km
11 kV Distribution Lines: 2,396.45 km
33/11 kV Primary Substations: 8 Nos
LV Distribution Lines: 7,545.78 km
LV Distribution Substations (Distribution Transformers): 2,452 Nos
Distribution Transformers total installed capacity: 171.154 MVA

Sales

PRO reported 183.12 GWh of electricity was sold in the region in the Fiscal year 2012-13.

Revenue

The revenue from electricity sales during the year was Rs. 1437.65 million. The reasons for increased revenue as compared to the previous year's are growth of energy sales and recovery of old dues from consumers. PRO accounts for 21.44% of the total revenue of DCS, West.

Electricity Consumer Accounts and New service connections

PRO recorded 224,243 consumer accounts by the end of the year 2012-13. The majority of the consumer accounts were in the domestic category. During the year under review, a total of 16278 new connections were provided. A new computerized meter testing lab was commissioned successfully at the regional office premises to meet growing demand of the single phase meters for new connections.

Computerized Single Phase Meter Testing Lab at PRO

Butwal Regional Office

Introduction

Butwal Regional Office (BRO) is one among the four Regional offices of Distribution and Consumer Services, West (DCS West). The office is headed by a director who is directly responsible to the General Manager. Area of operation of this regional office covers the districts of Lumbini zone.

Operational Structure

There are 9 Distribution Centers within the regional office for effective administration. In addition, there is technical division headed by a Manager who looks after all the technical matters. Rural Electrification activities within the region and management of Small Hydro Plants within the region are also coordinated by the technical division. The finance and revenue functions of the Region are carried out by Accountants and Controlled and supervised by the Asst. Director of the region. The Regional Office is provided with a separate administrative officer to attend human resource function.

Highlights of the year

Units sold within the region during the year: 428.15 GWh
Revenue earned from Units sold: Rs 3236.89 Million
Total no. of consumers within the region at the end of the fiscal year: 333535

No of new connections provided during the year: 29078
Average revenue per consumer per month: Rs 808.73
Average energy per consumer per month: 106.97 kWh

Distribution Infrastructures

33 kV Distribution Lines: 512.5 km
11 kV Distribution Lines: 2572 km
33/11 kV Primary Substations: 15 Nos
LV Distribution Lines: 8003 km
LV Distribution Substations (Distribution Transformers): 4128 Nos
Distribution Transformers total installed capacity: 288880 kVA

Sales

BRO reported 48.61 % of electricity sales within the DCS West. In the year 2012-13, 428.15 GWh of electricity was sold in the region.

Revenue

The revenue from electricity sales during the year was Rs 3236.89 million. The reasons for increased revenue than the previous year are growth of energy sales and recovery of old dues from consumers. BRO accounts for 48.67 % of the total revenue of DCS West.

Electricity Consumer Accounts and New service connections

BRO recorded 333535 consumer accounts by the end of the year 2012-13. The majority of the consumer accounts were in the domestic category. During the year under review, a total of 29078 new connections were provided. 33 kV Transmission Line and Substation Projects under Butwal Regional Office:

1. Chanauta-Maharajung (kapilbastu) 33 kV transmission line and 33/11 kV S/S project:
   - Land has been purchased for construction of S/S and other works has been remaining.
2. Gulmi-Majuwa 33/11 kV S/S Project:
   - Purchasing of land for S/S is in process.

3. Ramnagar (Nawalparasi) 33/11 S/S Project:
- Land has been selected for construction of substation.

4. Hanspur (Arghakhachi) 33/11 kV S/S Project:
- Purchasing of land for S/S is in process.

5. Amrai-Dohali-Wagla-Aglung (Gulmi) Electrification Project:
- 90% work has been completed and remaining work will be completed in FY 2013/14.

Nepalgunj Regional Office

Introduction

Nepalgunj Regional Office (NRO) is one among the four Regional offices of Distribution and Consumer Services, West (DCS, West). The office is headed by a director who is directly responsible to the General Manager. Area of operation of this regional office covers the districts of Rapti, Bheri and Karnali zone. Total population within the region is 2.388 million (Census 2001). Out of 6 municipalities and 370 VDCs under NRO, 5 municipalities and 185 VDCs are fully electrified, 1 municipality and 90 VDCs are partially electrified and 95 VDC have no access to electricity.

Operational Structure

There are 13 Distribution Centers within the regional office for effective administration. In addition, there is technical division headed by a Manager who looks after all the technical matters. Rural Electrification activities within the region and management of Small Hydro Plants within the region are also coordinated by the technical division. The finance and revenue functions of the Region are carried out by Accountants and Controlled and supervised by the Asst. Director of the region. The Regional Office is provided with a separate administrative officer to attend human resource function.

Highlights of the year

- Units sold within the region during the year: 158.05 GWh
- Revenue earned from Units sold: Rs 1183.08 Million
- Total no. of consumers within the region at the end of the fiscal year: 225895
- No of new connections provided during the year: 25726
- Average revenue per consumer per month: Rs 436.44
- Average energy per consumer per month: 58.30 kWh

Distribution Infrastructures

- 33 kV Distribution Lines: 483 km
- 11 kV Distribution Lines: 1602 km
- 33/11 kV Primary Substations: 9 Nos
- LV Distribution Lines: 6039 km
- LV Distribution Substations (Distribution Transformers): 1552 Nos
- Distribution Transformers total installed capacity: 102500 kVA

Sales

NRO reported 17.95 % of electricity sales within the DCS West. In the year 2012-13, 158.05 GWh of electricity was sold in the region.

Revenue

The revenue from electricity sales during the year was Rs 1183.08 million. NRO accounts for 17.78% of the total revenue of the DCS. Higher revenue recorded was due to the recovery of old dues.

Electricity Consumer Accounts and New service connections

NRO recorded 225895 consumer accounts by the end of the year. The majority of the consumer accounts were in the domestic category. During the year under review, a total of 25726 new connections were provided.

33 kV Transmission Line and Substation Projects under Butwal Regional Office:

1. Rolpa-Sulichaur 33 kV Transmission Line Project:
- Process of land purchasing is in initial phase.

2. Surkhet-Gagate-Matela-Jajarkot 33 kV Transmission Line Project:
- Process of land purchasing is in initial phase.

Attaria Regional Office

Introduction

Attaria Regional Office (ARO) is one among the four Regional offices of Distribution and Consumer Services, West (DCS West). The office is headed by a director who is directly responsible to the General Manager. Area of operation of this regional office covers the districts of Seti & Mahakali zone. Total population within the region is 1.12 million (Census 2001). Out of 6 municipalities and 309 VDCs under ARO, all municipalities and 37 VDCs are fully electrified, 127 VDCs are partially electrified and 145 VDC have no access to electricity.

Operational Structure

There are 8 Distribution Centers within the regional office for effective administration and DCS operational activities. Within the regional office, there is a technical division headed by a Deputy Manager who looks after all the technical matters. Rural Electrification activities within the region and management of Small Hydropower Plants within the region are also coordinated by the technical division. The finance and revenue functions of the Region are carried out by Accountants and controlled & supervised by the Asst. Director of the region. The Regional Office is provided with a separate administrative officer to attend human resource function.

Highlights of the year

- Energy sold within the region during the year: 110.856 GWh
- Bill amount of energy sold : NRs. 791.89 Million
- Revenue collection: NRs. 792.94 Million
- Total no. of consumers within the region at the end of the fiscal year: 141,015
- No. of new connections provided during the year: 16093

- Indicators :
- Average collection period : 81.6 days (reduced by 23.4 days)
- Collection Percent : 100.13 % (increased by 3.67 %)
- Electricity Loss : 15.19 % (reduced by 1.49 %)
- Average revenue per consumer per month: Rs 467.97
- Average consumption per consumer per month: 65.51 kWh
- Average selling price of energy: NRs. 7.14/kWh
- Operating Surplus: NRs. 614.08 Million (increased by NRs. 126.6 Million)
- Service Cost per kWh: NRs. 1.61 (reduced by 14 Paisa/kWh)
- Consumer number per employee: 446 (increased by 8.3 %)

- E-Attendance has been executed in Mahendranagar, Dhangadhi, Tikapur and Dadeldhura Distribution Centre along with the Attariya Regional Office.
- Computerized Billing system has been installed and operated in five different collection counters of Baitadi and Doti Distribution Centre. By now only two Distribution Centers Achham and Darchula having Consumer numbers less than 3000 has been left to apply the computerized billing facility.
- In order to monitor the daily activities of Distribution Centers, a software named "NEA DCS Activity Information System (NDAIS)" developed by IT Department, NEA upon request of GM office, DCS West, NEA with active participation of Attariya Regional Office has been installed and tested successfully in three Distribution Center Mahendranagar, Dhangadhi and Tikapur. These three distribution centers are now operating revenue part of the software and updating their daily revenue activities which is becoming very useful and informative, as such any authorized personnel of NEA's concerned Department having internet access with the necessary security password can now have access to information on revenue collection, fund transfer to the Bank etc of the individual Distribution Centres. All the other facilities of the software will be enforced to use to all the eight distribution center from the beginning of F/Y 2070/71.
- Use of information technology has always been a priority for Attariya Regional Office (ARO). Recently the ARO, NEA has started to correspond to the Distribution Centers and GM office via e-mail instead of Fax and Couriers. ARO, NEA has a strong belief that this type of correspondence will be very effective as it saves time, money and beyond that get over from the regular problem of loss of important documents. Necessary instructions have been given and have been asked to manage the logistics to each Distribution Centers for this purpose of correspondence.
- Overloaded 33/11 kV, 1.5 MVA Belauri substation has been upgraded to 4.0 MVA and 33/11 kV, 1.5 MVA Gaddachauki Substation to 3.0 MVA.
- Necessary 33 kV Substation equipment has been installed at Chandani, Kanchanpur to take the power from Lohiahead, India.

New Collection Counter of Dhangadhi Distribution Centre with modern QMS

Distribution Infrastructures

- 33 kV Distribution Lines: 345.23 km
- 11 kV Distribution Lines: 3332.49 km
- 33/11 kV Distribution Substations: 12 Nos, 53.5 MVA
- LV Distribution Lines: 8583.69 km
- LV Distribution Substations (Distribution Transformers): 1270 Nos
- Distribution Transformers total installed capacity: 43055 kVA

Sales

ARO reported 12.58 % of electricity sales within the DCS West. In the year 2012-13, 110.856 GWh of electricity was sold in the region.

Revenue

The revenue from electricity sales during the year was Rs 791.891 million. ARO accounts for 11.93 % of the total revenue of the DCS, West. Less revenue percentage in comparison to the sales percentage is due to large numbers of community bulk consumers. Total 259 community bulk consumers' annual consumption equals 18.68 GWH which is 16.85 % of total sales of this region.

Electricity Consumer Accounts and New Service Connections

ARO recorded 141015 consumer accounts by the end of the year 2012-13. The majority of the consumer accounts are in the domestic category. Despite of having no new Distribution Transformer at all throughout the year, a total of 16093 new connections were provided.

33 kV Transmission Line and Substation Projects under Attaria Regional Office:

1. Pahalmanpur/Udasipur 33/11 kV Transmission Line Project:
- Survey work has been completed,
- Land has been received from related VDC for S/S
- Polling work of 33 kV transmission line has been completed.
2. Budar-Jogbudha-Bagarkot-Dadeldhura 33 kV Transmission Line Project:
- Survey work completed, 33 kV Transmission Line Poling work is in progress
- Land for construction of substation at Bagarkot has been acquired.
3. Gokuleswar (balaanch) - Khalanga 33 kV Transmission Line Project:
- Survey work completed, 33 kV Transmission Line Poling work is in progress
- Land for Substation construction at Khalanga, Darchula has been received from related VDC but the ownership is yet to be transferred to NEA.
4. Doti-Mauwanagardaha 33 kV Line and S/S Construction Project:
- Survey work completed, 33 kV Transmission Line Poling work is in progress
- Land for construction of substation at Mauwanagar, kalikasthan has been acquired.
5. Dipayel - Chamra Chautara 33 kV Transmission Line Project:
- Survey work completed, 33 kV Transmission Line Poling work is in progress
- Land for Substation construction at Tikhater, Doti has been received from related VDC but the ownership is yet to be transferred to NEA.
6. Dipayel - Saanfebagar 33 kV Transmission Line and Substation Project
- Executed by Doti Distribution Centre, NEA under direction and supervision of ARO.
- Out of 45 kM, 30 kM of 33 kV Transmission Line from Dipayel to Saanfebagar has been completed.
- Land for Substation has been acquired at Saanfebagar, Achham.
7. 33/11 kV, 5.0 MVA Chandani Substation Project, Kanchanpur
- Project launched in 2012-13, sealed tender invited, evaluated and a letter of intention for Contract award has been issued to the lowest evaluated substantially responsive bidder.
8. 33/11 kV, Belauri, Chaumala, Jhalari and Joshipur Substation Reinforcement Project
- Project launched in 2012-13, sealed tender invited, evaluated and a letter of intent for contract award has been issued to the lowest evaluated substantially responsive bidder.

The above transmission line projects (no. 1 to 5) will be executed by nearby Distribution Center under direction and supervision of ARO, NEA by the year 2013-14. A very positive result achieved and construction of long time stranded 30 kM of 33 kV Line from Dipayel towards Sanfebagar became possible when Dipayel - Sanfebagar 33 kV Transmission Line and Substation Project given to execute to Doti Distribution Centre, NEA.

Small Hydropower Plants

Following seven small hydropower plants exist in this region. Among them three small hydropower plants each one in Bajhang, Bajura and Darchula district was leased out to the Private company and Community. Other four hydropower plants are operated by concerned Distribution Centres of the district. Leased out hydropower plants are monitored by ARO, NEA. Leasing period of Bajhang and Darchula small hydropower plants will be over by this November and ARO, NEA has planned to take over the 300 kW Capacity Darchula small hydropower plant after the expiry of leasing period which will then be operated by Darchula Distribution Centre, NEA, however the leasing period of 200 kW capacity Bajhang Small Hydropower Plant has been planned to extend for five (5) more years realizing the facts that not having NEA office in Bajhnag District yet, no grid connection available, high operation and maintenance cost of the plant and less revenue against the expenditure which will create a financial burden to NEA.

- 200 kW, Surnaygad Small Hydropower Plant (grid connected, operated by Baitadi Distribution Centre)
- 100 kW, Rupalgad Small Hydropower Plant (isolated, operated by Dadeldhura Distribution Centre)
- 200 kW, Doti Small Hydropower Plant (Not running, under Doti Distribution Centre)
- 400 kW, Achham Small Hydropower Plant (Isolated, planned to connect to the Grid as soon as the 33 kV Line of Dipayel - Saanfebagar comes into operation by the year 2013-14, Operated by Achham Distribution Centre)
- 200 kW, Bajhang Small Hydropower Plant (Leased out to M/s Surmadevi Vidhyut P. Ltd)
- 300 kW, Darchula Small Hydropower Plant (Leased out to M/s Darchula Vidhyut P. Ltd)
- 200 kW, Bajura Small Hydropower Plant (Leased out to M/s Navajiwan Cooperatives Ltd.)

Engineering Services Business Group

Engineering services is entrusted with the responsibility to carry out engineering studies beginning from the identification to detailed engineering design, environmental studies, geological and geotechnical studies. It is headed by a General Manager. The business group has rendered its services to NEA and private sector particularly for the study of hydropower and transmission line projects. The Project Development Department, Soil Rock and Concrete Laboratory and Environmental and Social Studies Department provide these services to various departments within NEA and to the private parties.

Project Development Department

Project Development Department (PDD) looks after the study of hydropower projects at different levels. It is headed by a Director. There are six divisions under the department each headed by a Manager. The department mainly focuses on the preparation of hydropower projects for development by NEA. This includes identification of projects, their screening and ranking, carrying out their feasibility studies and finally preparing tender documents and detailed drawings through a detailed design study. The department has also been providing construction supervision services for the projects under construction as per the agreements with the concerned project. In addition, PDD has also been providing consulting services for the detailed survey of a number of transmission line projects being carried out by Grid Development Business Group. Brief descriptions of the projects being carried out from this department is outlined in the following sections.

Tamakoshi- V Hydroelectric Project

The Tamakoshi-V Hydroelectric Project is a cascade development of the Upper Tamakoshi HEP with tandem operation. It is located approximately 170 km north east of Kathmandu, the capital of Nepal and approximately 40 km away from the district head-quarter of Dolkha District-Charikot Bazaar. The newly constructed road connecting Singate Bazaar and Lamabagar for the construction of Upper Tamakoshi HEP passes from the both powerhouse and the headwork sites of this project. Upper Tamakoshi Project has recently built this access road.

Feasibility Study of this project was carried out by NEA in fiscal year 2010/11. The project area is located on the right bank of Tamakoshi River. This project does not need separate headwork. It takes the discharge from the tailrace of the Upper Tamakoshi Project through an underground inter connection arrangement and conveyed to headrace tunnel of this Project. An underground powerhouse is proposed at Suri Dovan. The design discharge of the project is 66 m3/sec and has installed capacity of 87 MW.

The general arrangement of the project comprises of underground inter connection arrangement of headrace tunnel with the tailrace tunnel of Upper Tamakoshi HEP. The water from tailrace of Upper Tamakoshi HEP is diverted to this interconnection system and conveyed to the 8.20 Km long concrete lined headrace tunnel, a 122.38 m high drop shaft, 41.44 m long pressure tunnel, 141.61 m long tailrace tunnel, 54.55 m long tailrace canal and underground powerhouse containing four vertical axis Francis turbines, from where it is released into the Tamakoshi river at about 0.2 km downstream from the confluence of Tamakoshi River and Khari Khola at Suri Dovan. With the availability of the infrastructure developed for the Upper Tamakoshi HEP particularly the access road and transmission line and also being the cascade project of Upper Tamakoshi HEP, Tamakoshi V HEP can be developed along with the construction of Upper Tamakoshi HEP. With this the project can be commissioned by five years from now and would be the milestone project to overcome the load shedding in future.

For the speedy implementation of Tamakoshi V HEP, NEA has the plan to carry out the Detailed Engineering Design of this project in this fiscal year so that the project will be implemented as earliest as possible. The project has initiated the preparatory works for the Detailed Engineering Design

from the last fiscal year and planned to carry out the Detailed Engineering Design in this fiscal year so that the project will be implemented as earliest as possible. Preparation of project for detailed engineering design that includes hydrological Studies, camp facility study, preparation of EIA report and preparation of EOI and RFP documents (Expression of Interest and Request for Proposal) for the selection of international consultant is ongoing.

In order to implement the project earliest possible and not to interrupt the power generation from Upper Tamakoshi Project during the construction of this project, MOU has been signed between Project Development Department, NEA and the Upper Tamakoshi Company to design and construct the upper section of the Inter Connection System of two projects by the Upper Tamakoshi Company through their respective consultant and the contractors. The Executive Board of Upper Tamakoshi Company has approved the issues mentioned in the MOU. After the approval of MOU by the NEA Board the interconnection system will be constructed in this fiscal year.

Proposed Location for Underground Powerhouse, Switch Yard and Camp Site

Upper Arun Hydroelectric Project

The Arun River is bestowed with high firm flow and steep river gradient making very favorable for the hydropower development. The Upper Arun Hydroelectric Project, which lies on the upper reach of the Arun River, is one of the most attractive projects in the Eastern Development Region of Nepal. Based on the feasibility study carried out on 1991, the installed capacity of Peaking Run-of -River type Upper Arun HEP is 335 MW. The design discharge of the project is 78.8 m3/sec and generates the firm energy of 2050 GWh per annum. The project has design head of 492 m. The total cost of the project is US$ 479 Million. Similarly, this project has an economic internal rate of return of 14.52 and specific energy cost of the project is 1.90 cents/kWh.

Review Study of this project is carried out by NEA in 2011. The project cost is revised based on the year 2011 unit rate, prevailing road facilities which is already built up to Num near the dam site of Arun 3 HEP and transmission line. The total project cost at 2011 is estimated to be 445.54 M US$. The review study also shows the increment in the annul generation to 2734.2 GWh. This makes the project more attractive than presented in the feasibility study.

The review study shows that the project is very attractive in both cases either the project is constructed by NEA with the loan from Nepal Government or the project is developed by NEA by taking loan from the commercial bank. The estimated energy cost of Rs. 2.10 per kWh as of 2011/12 is far below the prevailing rate offered in power purchase agreement (PPA), if the project is developed by NEA with finance from international donor agencies. Likewise, the cut off energy rate is Rs. 2.74 per kWh from the year 2020 on ward.

After the completion of the Review report in the year 2011, the project initiated the preparatory works for the Detailed Engineering Design. On 2069/11/04 B.S., the Cabinet of Nepal Government gave permission to Nepal Electricity Authority to implement Upper Arun Hydroelectric Project under the Ownership of the Government of Nepal. In order to expedite the implementation of the project, the project mobilized the field team to the site and started the preparation of the works that relates to the detailed engineering design of the Access Road and the Hydropower components. Likewise, the work related to the Environmental Impact Assessment of the project is also initiated. NEA has the plan to carry out the Detailed Engineering Design of this project in this fiscal year so that the project will be implemented as earliest as possible. For this, the process of selection of the Consulting is ongoing. Preparation of EOI and RFP documents (Expression of Interest and Request for Proposal) for the selection of international consultant is ongoing.

View of Headworks of Upper Arun HEP

Upper Modi A Hydroelectric Project

Upper Modi "A" HEP was identified during 1997 and the Feasibility study of this project was completed in 2000. The Environmental Impact Assessment (EIA) of the project was approved in 2004. Presently this project is conceptualized to develop as a 42 MW run of the river scheme.

This project is located approximately 250 km west of Kathmandu in Kaski District of Gandaki Zone in the Western Development Region of Nepal. Both the headworks and powerhouse sites of the project are located in Ghandruk VDC. The nearest road head to the project site is at Nayapul, about 38 Km west of Pokhara on Pokhara Banglung highway. Approximately 10 km of gravel road and a trust bridge over Modi Khola already constructed by the local VDC which connects Nayapul to the powerhouse site at Saui Bazar. Therefore, approximately 8.0 Km of access road needs to be constructed from the powerhouse to the headwork site at Himalku. Around 7.5 Km long 132 KV single circuit transmission line will be required to evacuated 214.87 GWh of generated annual energy to the INPS system at New Modi Khola substation.

Nepal Government has prioritized Upper Modi "A" as P-1 project so that it could be constructed at the earliest possible time. This project is conceptualized to develop in the Engineering, Procurement and Construction (EPC) model. Presently, necessary documents (Expression of Interest and Request for Proposal) are being prepared to hire an international consultant to conduct a detailed study of the project and to prepare EPC tender document along with the construction supervision of the project. Similarly, land acquisition process has been initiated; design and cost estimation for camp facilities is finalized. Documents for the pre-qualification of the contractors and contract document for hiring contracts to construct camp building are being prepared in this fiscal year.

This project is conceptualized to develop in Public Private Partnership (PPP) model. Hence, Joint Development Agreement (JDA) was signed between Nepal Electricity Authority (NEA) and Korean Water Resources Corporation (K-Water) with the provision of share to the local people for the development of this project.

Dudhkoshi Storage Hydroelectric Project

Dudhkoshi Storage Hydroelectric Project (DKSHEP) was initially identified during the preparation of the "Master Plan Study on the Koshi River Basin for Water Resources Development" funded by JICA in March 1985. The feasibility study of the project was carried out in 1998 by Medium Hydropower Study Project. The feasibility study proposed a high dam at Dudhkoshi and the powerhouse at Baikhu Khola, a tributory of Sunkoshi located far downstream of the confluence of Dudhkoshi and Sunkoshi. The project is located in Okhaldhunga and Khotang Districts.

Survey license was issued recently from the Department of Electricity Development (DoED). However, the license required the tailwater of the project to be released in the upstream of the proposed Sunkoshi-Kamala Diversion head work so that Sunkoshi-Kamala Diversion Project is not affected by the development of DKSHEP. This constrain jeopardized the development scheme proposed in the feasibility study and left alone with the toe development scheme. For the comparison purpose, the Toe Option as well as Tunnel Option was analyzed and compared assuming full supply level is 580 masl as conceived in feasibility study. The comparison distinctly showed that the Tunnel Option is better than the Toe Option even though considerable amount of water is released downstream in the prime dry season for Sunkoshi Kamala Diversion. Hence, the Tunnel Option could not be ruled out for further study. Presently conceived layout of the project for Tunnel Option will have the design discharge of 167 cumecs with rated head of 247.13 meter. This will generate 365 MW with 1928 GWh of annual energy. These values correspond to the mandatory operation of 1937 hours per annum out of which 81% is during dry season (November to April).The project will comprises of a 160 m high dam wit spillway on either sides, a power intake leading to a 13.3 km long headrace tunnel, surge shaft, drop shaft, 140 m long steel lined penstock tunnel, underground power cavern & transformer cavern hoisting electromechanical equipments for 5 units of 73 MW capacity, downstream surge chamber and 300 meter long tailrace discharging turbine flows to Baikhu Khola.

The study shows that there is possibility of increasing the dam height in the present demand and supply scenario. With the increase in dam height up to 220 meter, the project could generate above 800 MW. However, the optimum capacity will be ascertained in the next phase of study. For this purpose the constrained in the license has to be relaxed and license area has to be increased in the survey license.

Budhi Gandaki Hydroelectric Project

The Budhi Gandaki Hydroelectric Project is a storage type of project located between boundary of Gorkha and Dhading districts in Central/ Western Development region of Nepal. The Budhi Gandaki Hydroelectric Project is located on the Budhi Gandaki River, approximately 2 km from its confluence with Trishuli River at Benighat, about 80 km south west of Kathmandu.

The Government of Nepal carried out the prefeasibility study of the project in 1984. Three options were studied in the prefeasibility: one with Arch dam and powerhouse at toe of the dam and another with rock fill dam and tailrace at Budhi Gandki River itself a little downstream and the final one with rock fill dam and tailrace at Trisuli River. The prefeasibility study recommended the final option. The selected scheme in the prefeasibility study consists of a 225 m high rock fill dam, reservoir covering an area of 49.8 km2 at the full supply level (FSL) of 520 masl and having gross storage volume of 3,320 X 106 m3 at FSL, a spillway of discharge capacity of 12,827 m3/s in the right abutment, a headrace tunnel of 276 m length, and underground powerhouse with an installed capacity of 600 MW and average annual energy generation of 2495 GWH, a tailrace tunnel of 1.1 km length with a surge chamber.

After a gap of 24 years, Budhi Gandaki Storage HEP was taken up for further study in fiscal year 2009/10. NEA carried out hydrological studies and investigations, topographical survey including fixation of survey control points monumentations, preliminary environmental and social study, and so on. The study also identified alternative locations of the project facilities/structures with a view to achieve optimum utilization of hydropower power potential of the project site. An alternative location of tailrace near Fisling around 22 km downstream of the Benighat in Trisuli river has been identified, which would result in additional head gain of about 40 m yielding additional energy generation of up to 700 GWh. About 8.7 km of additional tunnel needs to be constructed for this option.

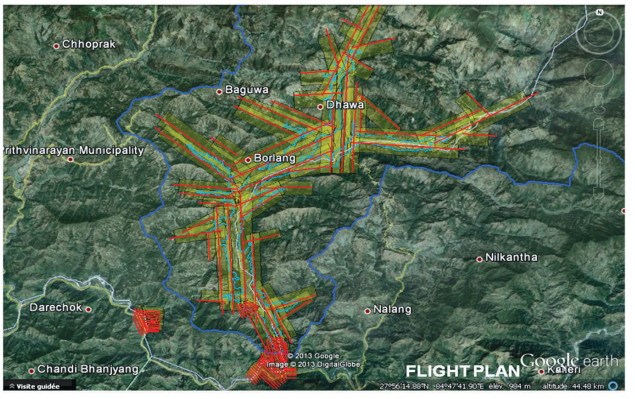
An agreement was signed between Nepal Electricity Authority and M/S Tractebel Engineering S.A., France on December 2, 2012 for consulting services with the objective of preparing the project for implementation from the current status of pre-feasibility study. The overall objective of the consulting services is to carryout necessary field investigation including 1800m core drilling and 600m test adits, LiDAR mapping of the reservoir area and its periphery; to upgrade the existing pre-feasibility study of Budhi Gandaki Hydropower Project to a feasibility level; and to prepare Environmental Impact Assessment, Social Impact Assessment, Environmental Management Plan. The scope of consulting services also includes detailed engineering design and preparation of tender documents and tender drawings. The contract amount is Euro 4,207,804.00 in foreign currency and NRs 470,907,397.69 in local currency. The duration of the service is 30 months from the date of commencement of the services. In consideration to the commencement of services on February 1, 2013, the entire study will be completed in July 2015.

Progress Status

The consultant has already initiated the works by setting up its office in Kathmandu and the project site. The consultant's multidisciplinary team of experts made inception site visits in February and March 2013. The Inception report was submitted on April 16, 2016. The data acquisition through LiDAR survey was performed together with a representative of the Department of survey on board. The processing of the data is being carried out in France.

Geological Investigations:

All the geological traverses were completed in the field. In this stage a set of general geological maps of the project areas covering the major structural sites at scale of 1:10,000 or 1:5000 are being prepared. A total of 1100 m of ERT (Electrical Resistivity Tomography) survey had already been carried out on the left bank of the Budhi gandaki river at the dam site in order to find out the thickness of the overburden and the depth of the sound bedrock. A total of 673m of core drilling in seven drill holes has been completed at the dam site with the use of 4 drilling machines. The first blast for driving test adit was made on 11 June, 2013. Three test adits one at the left bank and the other two at the right bank of Budhi Gandaki river are being driven at the dam site. A total of 71m of the test adits has been completed.



Bathymetry survey:
About 33.5 km of stretch of the bathymetry survey of Budhi Gandaki and trishuli river upto Fisling downstream of damsite has been accomplished. A total of 216 numbers of cross-sections of the river have already been mapped out.

Hydrological Studies and Investigation:
Three gauging stations; one at Trishuli river in front of the alternative tailrace in Phisling village, another one on trishuli river below the suspension bridge in Phisling and the final one at the Ankhu Khola bridge have been established by the Consultant. Water level reading are recorded on all the above three gauges and the three gauges established by NEA. High flow discharge measurement is continued. Sediment sampling is being regularly carried out just downstream of Dam site. For estimation of bed load, 3 sediment trapping pits with dimension of 1.5x1.5m have been constructed.

Environmental and Social Study:
The preparation of Public Consultation and Disclosure Plan (PCDP) to meet the requirement of GoN and Multilateral agencies such as WB and ADB has been initiated. Zoological and fishery studies around the submerged area for this stage have been completed. Air and noise quality are regularly monitored in 3 stations at damsite, Powerhouse (PH) at Ghyalchok and PH at Fisling. Sampling of Household estimate survey has been carried out at different villages around the submerged area.

Uttar Ganga Storage Project

The Government of Nepal (GoN) has given a priority for the development of storage type hydropower projects and accordingly NEA has initiated the "Selection and Feasibility Study of Storage Projects" across the country under funding of GoN. Uttar Ganga Storage Project is one of such potential projects, for which NEA has proposed to initiate the feasibility study in the fiscal year 2011/12. The proposed project lies in Baglung District of Dhaulagiri Zone in Western Development Region (WDR) of Nepal. The dam site is located at Gaba Village, of Nisi VDC, whereas the powerhouse site is situated on left bank of Nisi Khola nearby Kaigau Village of Nisi VDC. The powerhouse site is accessible by Burtibang-Nishi road. About 25 km long access road from Boban, the nearest roadhead, will be required to reach the dam site.

The application for the survey license of generation was submitted to DoEd in the F/Y 2011/12. As the dam and reservoir area of the project are located within Dhorpatan Hunting Reserve, pre-approval is required from Ministry of Forest and Land Conservation for conducting the feasibility study. Though the application for the same has been submitted, the approval from the Ministry has not been received yet. However, the third meeting of Project Facilitation Committee under the Office of Prime Minister and Cabinet chaired by the Chief Secretary on April 29, 2013 decided to prepare the Detail Project Report (DPR) and Environmental Impact Study of the project. Accordingly, NEA has again made a request to DoED for the survey license of generation submitting the required additional license fee and prepared the project status report in the F/Y 2012/13.

View of Reservoir Area of Utter Ganga Storage Project

The major components of the project are 145 m high rock fill dam, sloping type intake, 9,800 m long headrace tunnel, circular restricted orifice surge shaft, 3,900 m long inclined pressure shaft and horizontal tunnel and an underground powerhouse on the right bank of Nisi Khola. The installed capacity of the project has been computed as 300 MW on basis of 16 hours in dry season (November-May) and 6 hours in wet season (June-October) operation. The annual energy generation from the project after outage and losses will be 1,269.4 GWh of which the firm energy (all dry season energy from November to May and peak wet season energy from June to October) is 1.252.0 GWh and the secondary energy (off peak wet season energy from June to October) is 17.4 GWh. The energy generated from the project will be evacuated to the INPS at the proposed Kusma sub-station through 85 km long 220 kV transmission line. The distinct features of the project are as follows:

- Availability of very high effective head of up to 1,310 m making the project very cost effective;
- High Run Off Capacity Factor (RCF) of 62% facilitating the much flexibility in reservoir operation;
- Less sediment yield of 2,750 t/km2/year thereby increasing the life of the reservoir;
- Inundation of only 250 ha of cultivated land and resettlement of 260 households thus having comparatively less socio-environmental impacts.

The total cost of project has been updated as US$ 775,139,203 at the price level of June, 2013 excluding interest during construction (IDC) and other financial costs. The economic indicators EIRR of 12.91 and B/C of 1.30, as well as financial indicators FIRRof15.2 and B/C of 1.16 show that project is viable for development.

Kaligandaki Storage Project

Kaligandaki Storage Project lies in Nawalparashi district of Western Development Region of Nepal. The project site is located in Kaligandaki River, about 25km upstream from Devghat where the Kaligandaki joins the Trishuli river Basin. The pre-feasibility of Project was completed in 1985. The site of this project lies approximately 30 km from Gaindakot, Nawal-parasi via earthen road.

The Project is in its initial stage of feasibility study with site reconnaissance and hydrological study performed till this fiscal year. The pre-feasibility study has recommended a 177 m high rockfill dam on Kaligandaki River, at Khalte and the powerhouse located at the toe of dam. The dam will create a reservoir of 106.5 sq.km with full supply level at 375 masl with gross capacity of 5200 M m3. The study proposed the project with installed capacity of 660 MW with annual firm energy of 3470 GWh.

Pre-feasibility Review Study has been carried out till date which included update of hydrological study, reservoir simulation, and cost estimate for pre-feasibility design. A gauging station has been established just upstream of the proposed dam site of the project. The further study of the project is planned to be carried out in on coming fiscal years.

Kaligandaki Storage Project Dam site

Andhi Khola Storage Hydroelectric Project

Andhi Khola Storage Hydroelectric Project is a medium sized storage scheme situated on Andhi khola, a tributary of Kali Gandaki River in the Gandaki Basin. The dam site is located at about 1.6 Km upstream of confluence Kali Gandaki River and Andhi Khola whereas, powerhouse site is located on the left bank of Kali Gandaki River, about 12 Km downstream of the Kali Gandaki-A powerhouse.

AnAndhi Khola Dam Site

The Feasibility Study of this project was carried out by NEA in 1998. As per the study, the Project will generate an annual average energy of 693 GWh with installed capacity of 180 MW. NEA has applied for survey license of this project in the fiscal year 2010/11. After commissioning of Kaligandaki-A HEP, the full supply level of Kali Gandaki-A encroached the dam site of this Project. In view of this, the Project Development Department (PDD) carried out a topographical survey of new dam site and powerhouse site in the fiscal year 2011/12. In the fiscal year 2012/13, the PDD carried out the project alternative study with new dam site and two powerhouse options and prepared the Interim Upgraded Report. The study indicated that the powerhouse having short tunnel option will be more economical than power house with longer tunnel. Further, the study shows that the Project with the new dam site is not so economically attractive. In addition, the construction of powerhouse of Andhi Khola will diverts the flow which will affect the Kali Gandaki-A's dry energy. So, the further study has to be carried out in the coming year. In this study the dam with power house at toe option also should be considered.

BAGMATI STORAGE HYDROELECTRIC PROJECT

Bagmati Storage Hydroelectric Project is a storage type hydropower project on the Bagmati river which is located about 70 km south-east of Kathmandu. Nepal Electricity Authority has submitted a 'Review of Feasibility Study and Status Report, July 2012' of Bagmati Storage Hydroelectic Project. According to this study, this project will have 418MW installed capacity which generates total energy as 829 GWh for 6 hour operation in Dry peak period and 6 hour operation in Wet peak period.

In February 1981 AD a Feasibility study 'phase-I' of 'Bagmati Multipurpose Project' has been carried out by Government of Nepal with an objective of development of hydropower, irrigation, flood and erosion control and agriculture development. The proposed Dam site of Bagmati Storage Hydroelectric Project is located approximately 3km upstream of Bagmati Bridge of East West Highway at Karmainya in the Bagmati River at the district borders between of Makawanpur and Sindhuli district of Nepal. The latitude and longitude of the proposed Dam site are 21o30' East and 85o30' North respectively. An Irrigation barrage has already been constructed at Karmaiya and has been providing irrigation facility to 68000 hectares of land in Tarai and it aims to irrigate 122,000 hectares. To meet the target of irrigation, a storage reservoir is required to regulate the water in the dry season. According to the Phase I study, a 117m high Rockfill dam will be constructed creating reservoir Storage in the Bagmati River to generate total energy of 540 GWh in the dry season with an installed capacity of 140MW. Since, Kulekhani-1 and KL-2 are the only seasonal storage project in Nepal which has been meeting the peak power demand of the country for almost three decades, there is an immediate need to develop new storage power projects to fulfill the country's need for the peak load demand. Therefore, review of Bagmati Storage has been made in several steps.

Proposed Dam site of Bagmati Storage Hydroelectric Project

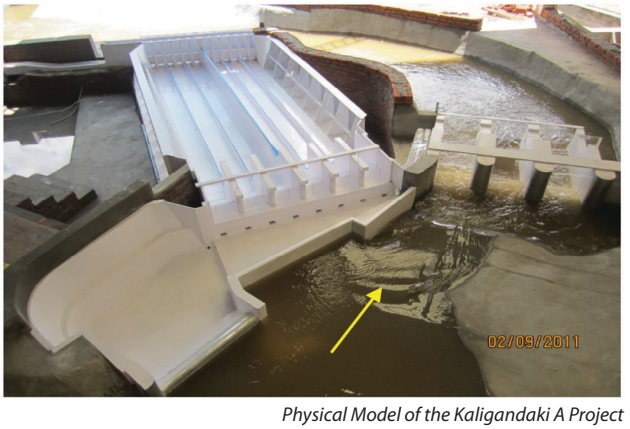
Proposed Dam site of Bagmati Storage Hydroelectric Project Firstly, JICA expert for NEA has made a 'Review study of Feasibility study Phase-I' for installed capacity of 140 MW In 2011. This study result shows that it can generate firm energy of 248 GWh and Secondary energy of 381Gwh with total energy of 629 GWh, so that the water release will meet the demand for irrigation of 120000 ha land. The total cost of project has been estimated as 600 MUS$ with B/C as 0.95. Secondly, 'Review of Feasibility Study and Status Report, July 2012' has been prepared by NEA. In this study, optimization of Bagamati Storage Hydroelectric Project has been carried out for ten different options. The optimum capacity found in this study has been 418MW installed capacity which generates total energy of 830GWh with Dry peak energy as 498 GWh and Wet peak energy as 331 GWh. This scheme will have Dam height 112m above foundation with Dam Top Level at 247masl with toe dam Power house. The Gross head fluctuates from 102m to 83m with reservoir area covering more than 100 sq.km. The design discharge fluctuates from 582 to 476 cumecs. There will be 6 units of each 70MW capacity turbine Generator. The total cost of Project including environmental resettlement cost is found to be 875 M US$. The B/C and IRR are obtained as 1.575 and 14.92 respectively. Finally, a 'Subsequent Status Report Summary of Bagmati Storage Hydroelectric Project 2013' has been prepared which found that the optimized capacity of 138 MW for the case of 24 hour dry period operation and 6 hour wet peak period operation will generate 661 GWh energy in dry period and 119 GWh in wet period and the total project cost has been estimated as 890 MUS$ (B/C 1.547).

The optimized capacities from two optimization studies found that the project can be developed as either 418 MW or 138 MW capacities. Despite of some adverse environmental impacts identified due to need of resettlement of about two thousand houses both capacities are found to be with benefit capacity ration higher than 1.547. Based on present peak time demand of electric energy in the country, 418 MW installed capacity option has been recommended for future study.

Kali Gandaki 'A' Model Test Project

Kali Gandaki 'A' Hydropower Project (KGA) was commissioned in August 2002. It has an installed capacity of 144 MW and is the largest hydropower project in operation in Nepal till date. From the very beginning year of its operation, the power station has been facing problems related to floating debris and sediment at its headworks. The hydraulic performance of the headworks and desander has also been below par leading to unexpected damage to turbines and other hydro mechanical parts resulting in frequent shutdowns for repair and this has caused a loss in the overall generation from the project. To identify the cause behind these problems and to propose appropriate remedial measures, the World Bank has provided financial assistance to conduct a physical hydraulic model study of the KGA headworks. Hydro Lab Pvt. Ltd. has been appointed to carry out the physical model study.

The consultant collected necessary data, reports and field measurements required for the model study. Then, the consultant constructed the model of the Kaligandaki A headworks at 1:40 scale and simulated various flow scenarios at the premises of Hydrolab Pvt. Ltd. at Pulchowk, Lalitpur. The consultant has simulated various possible modifications and recommended the possible modifications for improvement of sediment and debris handling at headworks and desander of KGA. The consultant has submitted the final report and the model test study have been accomplished.



Physical Model of the Kaligandaki A Project

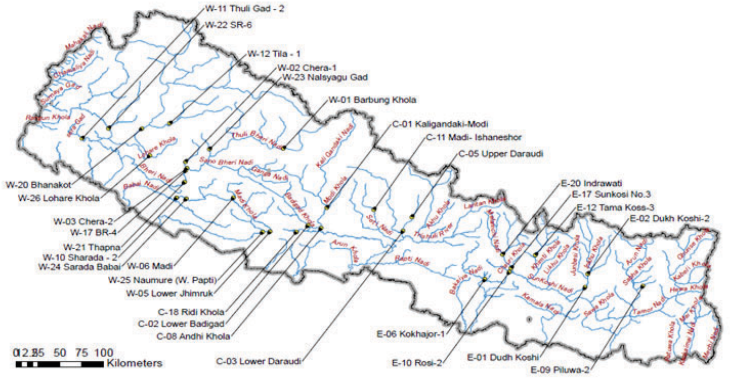
Nationwide Master Plan Study on Storage Hydroelectric Power Development in Nepal

The Nationwide Masterplan Study on Storage Hydroelectric Power Development in Nepal is being conducted on the basis of the scope of work agreed between Japan International Cooperation Agency (JICA) and the Ministry of Energy, Government of Nepal (MoE) with Nepal Electricity Authority (NEA) as the counterpart agency. The study aims to prepare a master plan for storage type Hydroelectric Power Development for domestic demand in Nepal for the coming 20 years by selecting promising candidate projects in the range from 100 MW to 300 MW from a list of 67 potential projects listed by NEA.

The study started off in Japan from the end of December 2011. The first work period in Nepal began from January16, 2012 up to February 26, 2012. The first stake holder's meeting was held in February 2012 in Kathmandu. The second work period for the JICA team in Kathmandu was from the May 8, 2012 up to June 30, 2012. The end of the second work period concluded with the reconnaissance site survey work of four storage projects. Third, Fourth and Fifth work period

of JICA study was concluded between November 18th 2012 to December 2nd, 2012, February 3rd, 2013 to February17th, 2013 and May 27th 2013 to June 8th, 2013 respectively.

The Second and Third stake holders meeting between different agencies was held on November 28th, 2012 and February 13th, 2013 respectively. Out of 67 indentified projects, the study team has selected 10 promising storage projects from three river basins of Nepal. Along with the other promising projects these 10 projects will be considered in the Master Plan study.



Location of Candidate Storage Projects

Ten Promising Projects to be selected for the Master Plan Study

Western Region		Eastern Region		Central Region	
Project	Capacity (MW)	Project	Capacity (MW)	Project	Capacity (MW)
Madi	199.80	Dudh Koshi	300.00	Andhi Khola	180.00
Lower Jhimruk	142.50	SunKoshi-3	536.00	Lower Badigad	380.30
Nalsyau Gad	400.00	Kokhajor	111.50		
Chera-1	148.70				
Naumere	245.00				

The Joint Coordination Committee (JCC) and Strategic Evaluation Assessment (SEA) meeting between different stake holders was held on June 3, 2013 and June 5, 2013 respectably at Ministry of Energy, Government of Nepal. The JICA Study Team along with the Nepal Electricity Authority has submitted the Draft Final Report in this fiscal year BS 2069/070. The Final Report is expected to be completed by December 2013.

Survey of Transmission Line

Survey Division has been accomplishing different activities of Engineering Services. During this fiscal year 2069/2070 the following surveying activities of the transmission line have been undertaken.

S.N	Project Name	Project Status
1	Kushaha Kataiya 132 kV Transmission Line Project	Final report submitted
2	Paudiamarai Tamghas Argakhachi Gorusinge 132 kV Transmission Line Project	Draft final report submitted
3	Koshi Corridor 220 kV Transmisiion Line Project	Detailed field survey work completed
4	Chilime Trishuli 220 kV Transmission Line Project	Reconnaissance Survey completed
5	Kushma Dana 220 kV Transmission Line Project	Reconnaissance Survey completed
6	Budhiganga Umedi Pahalwanpur 132 kV Transmission Line Project	Desk study completed
7	Tamakoshi V 132/220 kV Transmission line (PDD)	Final report submitted
8	Rapti Mandu Hydro Power Project	Final report submitted
9	Upper Modi Hydro Power Project (PDD)	Final report submitted
10	Samundratar Trishuli 3A 220kV Transmission Line Project	MoU signed
11	Marsyandi corridor 220 kV Transmission Line Project	Technical & Financial Proposal submitted

Other Activities

In addition to the regular work consisting of carrying out studies at different levels for different projects, PDD has been carrying out various other activities which have been instrumental in developing the institutional strength of Nepal Electricity Authority in the field of consulting services. The following are the few of the activities of PDD carried out during the fiscal year 2069/2070:

- Continuation of the construction supervision of Chameliya Hydroelctric Project in association with the Joint Venture of three local consulting firms (SHAH, SILT and ICON JV).
- Construction Supervision of Slope Stabilisation works near powerhouse of Puwa Khola Hydropower Station.
- Initiation for the design of three new NEA Office Complexes based on the new master plan within the premises in RatnaPark.
- Construction supervision of staff quarter building on the following substations
  - Unichaur substation in Lalitpur District (11kv-33kv)
  - Salyantartar substation in Dhading District (33kv-66kv)
  - Chaughada substation in Nuwakot District (33kv-66kv)
- Detailed survey and design of Access Road of Upper Trisuli 3A HEP for Upgrading of road from Trisuli Colony to powerhouse site.
- Detailed survey and design of Access Road of Upper Seti Storage HEP.
- Field studied and submitted reports on rehabilitation of Baglung Microhydro Project, Baglung and Kailash Khola Small Hydroelectric Project, Achham.
- Detailed Survey, design and cost estimation of alternative access road to the dam of Kaliganki A hydropower Station.

Environment and Social Studies Department

Environment and Social Studies Department (ESSD) is of the integral departments of Engineering Services Business Group. This department executes activities related to all aspects of environmental and social aspects of hydropower and transmission line (TL) projects being planned, designed, constructed or operated by NEA.

This department is a commercial unit of NEA and with its technical expertise involved in conducting Environmental Impact Assessment (EIA), Initial Environmental Examination (IEE), Social Impact Assessment (SIA), Vulnerable Community Development Plan (VCDP), Acquisition Compensation Resettlement Plan (ACDP) studies and monitoring and environmental auditing of hydroelectric, transmission line and distribution line projects.

During this fiscal year 2012/13, ESSD was actively engaged in overall environmental assessment, monitoring and protection of environment. The Department successfully conducted several environmental studies out of which IEE of Upper Trishuli 3 'A'- Matatirtha 220 kV TL, IEE of Lamahi-Ghorahi 132kV TL and IEE of Solu Corridor 132 kV TL have been approved by Ministry of Energy (MoE). Similarly, the department completed Environment and Social Impact Assessment (including Environment Assessment, Vulnerable Community Development Plan, Social Impact Assessment) of Kaligandaki 'A' HEP and reports are approved by the World Bank. Currently, ESSD has been undertaking environmental monitoring and mitigation of Chameliya Hydroelectric Project, Bharatpur-Hetauda 220 kV Transmission Line, Trishuli 3A Hydroelectric Project and Kabeli Corridor 132 kV Transmission Line by establishing Environmental Management Units at project site. Recently, an EMU has been established for monitoring of Dumre-Damauli 132 kV Transmission line. At Present, the Department carried out the following assignments in the fiscal year 2012/13:

1. EIA Completed Projects (reports submitted to concerned ministry/department for approval)
- Kohalpur-Surkhet 132 kV TL

2. IEE Completed Projects (reports submitted to Ministry of Energy for Approval)
- Kusaha-Kataiya 132 kV TL
- Koshi Corridor 220 kV TL
- Rahughat-Modi 132kV TL

3. TOR and Scoping of following Projects
- Tamakoshi V HEP
- Dordi Corridor 132 kV TL

4. Mitigation Measures and Monitoring Works
ESSD has been conducting mitigation and monitoring measures of following 6 projects:

- Hetauda-Bharatpur 220 kV TL,
- Chameliya HEP,
- Kabeli Corridor 132 kV TL,
- Jagatpur-Madi 33kV TL,
- Trishuli 3A HEP,
- Balanch-Attariya 132 kV TL.

ESSD is also carrying out hot spot study of five endangered species regarding the impact on Hetauda-Bharatpur Transmission Line. In near future, EMU will be established for Kulekhani III HEP and Hetauda-Dhalkebar-Duhabi 400 kV TL projects. Besides, proposals have been submitted for Environmental Monitoring of Upper Tamakoshi HEP. Similarly, a number of request for proposal for EIA/IEE have been received from different hydropower and TL projects.

ESSD also conducted School support Programs in the project affected area of Khimti-Dhalkebar 132 kV Transmission Line. Valuable Inputs were also provided by ESSD in the abatement of hazardous Polycarbonate (PCB) in transformers owned by NEA.

Forest Management Training under Khimti- Dhalkebar 220 kV T/L Project

Soil, Rock and Concrete Laboratory

Soil, Rock and Concrete Laboratory (SRCL) established and developing as Geotechnical Department under the Engineering Services of Nepal Electricity Authority is providing services for more than two decades. It provides services in material testing, geological and geotechnical investigations for the different phases of a hydropower project development. It provides services like geological mapping, various types of geophysical surveys, core drilling and construction material investigation at different levels to the different departments of NEA and the private sector. In the field of soil and rock engineering, it also provides services of carrying out in-situ tests and laboratory tests viz. determination of index properties, tri-axial tests, consolidation tests, point load tests, direct shear tests, uniaxial compressive strength tests etc. on a regular basis for clients inside and outside NEA.

Following are the major works executed by SRCL in fiscal year 2012/13

1) Core drilling works at Trishuli 3B Hydropower Project:
This project is being developed by Trishuli Jal Vidhyut Company Ltd. Core drilling work of 195m length and laboratory test of core samples has been completed.

2) Geological and geotechnical investigation works of Super Dordi Kha Hydroelectric Project:-
This project is being developed by Peoples Hydropower Company Pvt. Ltd in Lamjung district. Geological and geotechnical investigation works including 150 m core drilling, and Laboratory tests have been completed.

3) Geological and geotechnical investigation works of Rahughat Hydroelectric Project:-:-
This project is in construction phase and being developed by NEA. Engineering geological mapping, seismic risk analysis, landslide hazard mapping and drilling work of 89m has been completed in this project.

4) Core drilling works at Upper Tamakoshi Hydropower Project:
Exploratory Core drilling of total 42m length has been completed in the Headrace tunnel of the Upper Tamakoshi Hydropower project.

5) Core drilling works at Sapta Koshi High Dam Project:
Exploratory Core drilling of total 80.5m length has been completed at the Dam site area of the Saptakoshi High Dam Project.

Laboratory works:

SRCL provides laboratory services of carrying out in-situ tests and laboratory tests including construction material survey and quarry site investigations. Following major works has been carried out in this fiscal year.

- Test pitting, SPT, DCPT and laboratory testing works of tower foundation of Solu Corridor 132 kV T/L Project (Katari - Mirchaiya Section), Udayapur, Siraha.
- Test pitting, SPT, DCPT and laboratory testing works of Amarpur Substation (Kabeli Corridor 132 kV T/L Project), Panchathar.
- Test pitting, SPT, DCPT and laboratory testing works of Modi Khola Hydroelectric Centre, Dimuwa, Parwat.
- Construction material survey and laboratory testing works of Rahughat Hydroelectric Project, Myagdi.
- Laboratory testing works of Sisa Khola 'A" Hydroelectric Project, Solukhumbhu.
- Laboratory testing works of Rasuwagadhi Hydroelectric Project, Rasuwa.
- In-situ concrete over coring and compressive strength determination of Chautara Hospital (DUDBC, Nepal Goverment), Sindhupalchowk.
- Laboratory test works on core and rock samples of Bheri - Babai Diversion Multipurpose Project, Surkhet.
- Laboratory test works on soil, rock and aggregate of Upper Marsyangdi - 1 Hydroelectric Project (Mulit Model Developer Pvt. Ltd.)
- Laboratory test works (uniaxial compressive strength, point load, absorption, specific gravity, density etc.) on core samples of Kulekhani - 3, Upper Modi 'A', Rahughat, Upper Trishuli 3B and Super Dordi Hydroelectric Project (SRCL package project).
- Various laboratory test works done on soil, rock, core, concrete and aggregate to private parties/clients like Soil Test P. Ltd, EMES P. Ltd., Silt Consultants P. Ltd. and others.
- Sediment tests (including ppm determination, grain size & hydrometer analysis) of proposed Uttar Ganga, Nisti Panah, Andhi Khola, Nalsyaugad and Upper Modi 'A' Hydroelectric Project, Project Development Department, NEA.

From fiscal year 2012/13, SRCL is now able to carry out 2-D Electrical Resistivity Tomography (2-D ERT) with latest equipment. This WDJD-4 Digital Resistivity / IP model ERT machine is purchased and delivered to the office recently.

Final inspection and test of New WDJD-4 Digital Resistivity / IP model ERT machine.

Electromechanical Design Division

This division handles all of the electromechanical issues arising within Engineering Services. These issues range from the design of electromechanical equipments of projects that are under various stages of study. Apart from design of the electromechanical equipments, this division also runs and maintains Central Workshops in Hetauda and manufacturers of concrete poles from its two Concrete Pole manufacturing Plants, one in Kotre and the other in Amlekhgunj.

Central Workshop

During the last fiscal year 2012/13, Central Workshop had completed maintenance of 254 Distribution Transformer capacity ranging from 15 KVA to 250 KVA. Also it had completed repairing, servicing, Shifting, Installation of 18 more Power Transformer capacity ranging from 1 MVA to 30 MVA. Central Workshop had also tested 506 Distribution Transformer brought from various outer sectors.

Central Workshop

Kotre Pole Plant

Kotre Pole Plant was jointly established by Government of Nepal & Finland Government in 1985 to implement for Pokhara Electrification Project. It is located in Dulegauda-2 VDC, Kotre of Tanahu District. After termination of this project this plant was handover to Nepal Electricity Authority (NEA).Then this plant was run by NEA, Distribution & Customer Service business group up to FY 2004/05. In that period this plant was in near to close condition and only produced very few pole required for Pokhara Distribution center & its periphery. In FY 2004/05, again it was handover Engineering Service business group. Since, then the plant was maintained and started to produce PSC pole commercially. Now it is running with separate budget center to implement pole production & Distribution activities.

Production of PSC Pole in Past Two Fiscal Years.

SN	Types of pole	FY 2011/12	FY 2012/13	Remarks
1	10.4m	112	332	Pole production increased by
2	8 m	2124	2188	13 % in this F.Y compared to last F.Y.
	Total	2236	2520	

Existing Mould for PSC pole production

Amlekhgaunj Concrete Pole Plant,

Concrete pole Plant was established in 2050 B.S at Bara District, Amlekhgaunj V.D.C, ward no. 3. It was jointly established under the Government of Nepal in assistance of Asian Development Bank to implement for seventh electrification project. After termination of the project this plant was handover to Nepal Electricity Authority (NEA), Engineering Service business group. The total capacity of manufacturing pole is 14000 in numbers

Daily production capacity of the plant and the production scenario are as follows. However, from F/Y 2013/14 the production capacity will increase as shown below:

Pole Type	FY 2012/13	FY 2013/14
8 m long	30	48
9 m long	20	30
11 m long	8	8

Production of PSC Pole

SN	Types of pole	FY 2012/13	FY 2013/14 (Target)	Remarks
1	8.0 m	6020	9600	
2	9 m	3400	6000	
3	11 m	1280	1600	
	Total	10,700	17,200	

Amlekhgaunj Concrete Pole Plant

NEA's Aubsidiary and Associate Companies

CHILIME HYDROPOWER COMPANY LIMITED

Chilime Hydropower Company Limited (CHPCL), a subsidiary of Nepal Electricity Authority (NEA) was established in 1996 with the main objective of harnessing the hydropower potential of the country for the benefit of the people at large by optimally utilizing the untapped resources and creating synergy with the private sector. The company's 51% share belongs to NEA, 25% to employees of NEA and CHPCL, 10% to local public of Rasuwa District and the remaining 14% share to the general Public. The CHPCL owns and operates hydropower plant of 22.1 MW capacity, generating 20 MW based on the power purchase agreement with Nepal Electricity Authority (NEA). The plant is designed to generate 137 GWh energy per annum. The generated energy from this Project is being fed into the National Grid of Nepal Electricity Authority (NEA) through a 38 km long 66 KV transmission line at Trishuli, Nuwakot District.

The Company is undertaking the development of four hydropower projects with total capacity of 270.3 MW through it's three subsidiary companies.

Chilime Hydropower Plant (CHPP)

In Fiscal Year 2012/2013 Chilime Hydro Power Plant was able to transmit an excess of 17.54 % of energy in addition to the deemed energy of 132.795 GWh. Generation figures depict that the plant was able to deliver chargeable deemed energy of 132.65 GWh and excess energy of 23.43 GWh..

The Plant load factor was calculated to be 80.62 % for FY 2012/134. The total availability was increased to 97.15% from the last year's figure of 96.77% as outages were kept to the minimum levels. CHPCL has launched four hydropower projects with total capacity of 270.3 MW for construction through its three subsidiaries, namely Rasuwagadhi Hydropower Company Limited (RGHCL), Madhya Bhotekoshi Jalavidyut Company Limited (MBJCL) and Sanjan Jalavidyut Company Limited (SJCL). Likewise CHCPL has already applied for the survey license to Department of Energy Development (DOED), Govt. of Nepal for the development of other new hydropower projects to meet the company's target of 5000 MW by 2020.

Under the scope of Corporate Social Responsibility (CSR) activities in fiscal year 2012/13, Chilime spent almost 14.2 million in community and local development works like health, education, Infrastructure, drinking water, irrigation etc.

Chilime has been able to receive the following prestigious awards and recognition in fiscal year 2012/13.

- Hydropower Excellence Award, 2012 from Nepal German Chamber of Commerce and Industry (NGCCI)
- National Best Presented Accounts Award, 2012 from The Institute of Chartered Accountants of Nepal (ICAN)
- ISO Certification on Quality Management System (ISO 9001:2008) from BM TRADA Certification Limited, UK

- ISO Certification on Environment Management System (ISO 14001:2004) from BM TRADA Certification Limited, UK

ISO Certification (EMS & QMS)

Rasuwagadhi Hydropower Company Limited (RGHPCL)

Introduction

Rasuwagadhi Hydropower Company Limited (RGHPCL), a subsidiary of Chilime Hydropower Company Limited (CHPCL) was incorporated in August 2011 as a public limited company with the objective of developing Rasuwagadhi Hydroelectric Project (RGHEP) having capacity of 111MW in Rasuwa district of Central Development Region.

The cost of the project is estimated to be NRs. 13,684.20 million excluding financial cost. A 50:50 debt-equity structure is proposed to be employed for financing this project.

The company will manage the debt requirement of the project from the Employer's Provident Fund (EPF) for which tri-partite loan arrangement has been signed between EPF, CHCPL and RGHPCL on 8th December, 2011. The equity investment will be made through 51% promoter share and 49% public share.

Ownership

The company has the equity structure with share investments of 51% as promoter share and 49% as public share. As a promoter, CHCPL holds majority of the shares with 33% shareholding. The breakdown of the promoter share is as follows:

- Chilime Hydropower Company Ltd.(CHPCL) : 33%
  (With a provision of 3% share for DDC and VDCs of Rasuwa district)
- Nepal Electricity Authority (NEA) : 18%
  Public Share : 49%
- Depositors of Employees Provident Fund :19.5%
- The project effected people of Rasuwa District : 10%
- General Public : 15%
- Employees of Company, Promotor's and loan Financing organizations : 4.5%

Project Features

The Rasuwagadhi Hydroelectric Project having capacity of 111 MW is located in Rasuwa district, Bagmati Zone of Central Development Region.

The cost of the project is estimated to be Rs. 13,684.20 million without financing cost. A 50:50 debt-equity structure will be employed for financing this project.

The design discharge of the project is 80m3/sec in Q40 exceedance of time. The headworks site is located about 400 m downstream from the confluence of Kerungkhola and Lendekhola which are the Boundary Rivers of Nepal and China (Tibet). The total headrace tunnel length of the project is 4196 m up to the surge tank. Tail water from the powerhouse will be released to main river course through 598.55 m long tailrace tunnel in the downstream of powerhouse site. The Headwork site of the project is located on the Thuman and Timure VDC at Rasuwagadhi, whereas all other project components lie in Thuman VDC.

The project is basically a run-of-river type scheme having the capacity of 111 MW and the annual energy generation is 613.875 GWh with the available gross head of 167.9 m.

PRESENT STATUS OF THE PROJECT

- PPA has been signed with NEA on November 14, 2011.
- Consultant has been appointed and contract has been signed on 3rd December, 2012.
- Generation license has been obtained from DoED on Dec 6, 2012.
- Certificate of Registration in Industry was obtained on July 3, 2012.
- The Environmental Impact Assessment (EIA) report has been approved by the Ministry of Environment.
- Detail survey of double circuit 132 kV transmission line has been completed and design is in progress.
- Pre-qualification for the civil and hydro-mechanical works in EPC model to construct RGHEP has been completed and Bid document has been issued to the pre-qualified bidders.
- Pre-qualification of Bidders for Electromechanical Works is ongoing.
- Surface geological investigation, ERT works including drilling in headrace tunnel and tailrace tunnel has been carried out to determine the geological condition in the key structure locations.
- Private land acquisition has been completed.
- 125 m length of test Adit Tunnel at powerhouse site has been constructed.
- Construction of 11 kV construction power line from Chilime hub to the project site has been completed.
- Construction of Camp Facilities has started.
- IEE for 10 km long Transmission Line is in progress.

MADHYA BHOTEKOSHI JALAVIDHYUT COMPANY LIMITED (MBJCL)

Madhya Bhotekoshi Jalvidyut Company Limited (MBJCL), established as a public limited company in July 2010, is a subsidiary of Chilime Hydropower Company Limited. MBJCL, since its inception, has initiated a medium sized project entitled "Middle Bhotekoshi Hydroelectric Project (MBKHEP)" of installed capacity 102 MW at Sindhupalchowk district, Bagmati Zone.

MBJCL has been directing its efforts to carry out the project activites in order to meet its targeted commercial operation date (COD) of December 2016. The cost of the project is estimated to be NRs. 12283.30 million excluding its interest during construction (IDC) cost. Project will be developed on Debt-equity ratio of 50:50. The company has assured its debt requirement from the Employee Provident Fund (EPF). For this, a tri-partite agreement has already been signed amongst EPF, CHPCL and MBJCL. The equity investment will be managed through promoter and public shares as presented below:

Shareholding Composition

Promoter Shareholder: 51%

1.	Chilime Hydropower Co. Ltd.:	38%
2.	Nepal Electricity Authority:	10%
3.	Nepal Arniko Hydropower Co.Pvt.Ltd.	1%
4.	Sindhu Investment Co. Pvt. Ltd.	1%
5.	Sindhupalchwok Hydropower Co.Ltd.	1%

General Public: 49%

1.	Contributors of EPF:	19.5%
2.	Project-affected local people:	10%
3.	Employees of Promoter Companies:	3.5%
4.	Employees of EPF:	1%
5.	General Public:	15%

MBJCL has made inclusive arrangement in share distribution with the notion of equal "Access to Benefit Sharing (ABS)" that accommodates different tiers of institutions and public from centre to the grassroots so that ultra poor and deprived community of the host district can also be an integral part of benefit sharing. The Power Purchase Agreement (PPA) has already been signed between MBJCL and Nepal Electricity Authority (NEA) to ensure its energy sale.

1. Progress Status

- Land acquisition process has been completed.
- NRs 11 crore approx. for 188.23 Ropani of land had been distributed till date.
- Public Notice of EIA Report was first published on 09-Jul-2013.
- Test (Adit-1) tunnel of Length 250m and 5m diameter has already been completed.
- Contract for test (Diversion) tunnel of length 330 m and 6m diameter at Headworks area has been awarded to Himal Hydro Limited.This work is scheduled to be completed by the end of December 2013. Contract for construction of 10 numbers of permanent RCC buildings and 1030 m length of road consisting of 500m access road has been awarded.
- Consulting services for review of design and construction supervision of the project was awarded to Lahmeyer International, Germany in association with Total management system, Nepal on 04 Nov 2012.
- The consultant has completed the review and finalization of Design and analysis works and Bidding
- Documents of LOT 1 Civil and Hydromechanical works-Review and finalization of Bidding Documents for LOT 2-Electromachanical works is in progress.
- Bid evaluation for LOT 1- Civil and Hydromechanical works is in progress. This is an EPC Contract in which Civil Works include complete design, engineering, procurement and construction of the civil structures - Headworks, headrace tunnel, surge tank, penstock, powerhouse, tailrace and others all complete.
- Prequalification for LOT 2- Electromechanical works is in progress. This contract will be carried out on PDB (Plant, Design and Build) Model.

SANJEN JALAVIDHYUT COMPANY LIMITED (SJCL)

Sanjen Jalavidhyut Company Limited (SJCL), a company promoted by Chilime Hydropower Company Limited (CHPCL) was established on 1st February, 2010 AD with the objective of harnessing hydropower potential of the county with participation of local people and mobilization of local resources for the successful implementation of various hydroelectric projects. As the first initiative the SJCL has planned to develop two hydroelectric projects, namely, Sanjen (Upper) Hydroelectric Project (14.8 MW) and Sanjen Hydroelectric Project (42.5 MW) in cascade, with its own equity and loan from financial institutions of Nepal. Both the projects' financing mechanism will be 50% Debt and 50% Equity. 51% of the equity part will be invested by the promoters of the company, which comprises of CHPCL (38%), Nepal Electricity Authority (10%) and District Development Committee (DDC) and all 18 Village Development Committees (VDCs) of Rasuwa (3%). The remaining 49% of the investment will be raised through share participation of the public comprising of Depositors of Employees' Provident Fund (EPF-19.5%), Employees of EPF (1%), Employees of Promoters (3.5%), General Public (15%) and Project Affected Local People (10%).

Progress Status:

- Loan Agreement with Employees' Provident Fund was signed on 8th December, 2011 for finncing 100% of the loan part in the two projects.
- Generation License has been received.
- Registration in the Department of Industry has been completed.
- EIA has been approved.
- Land Acquisition has been completed.
- Chilime - Tiloche main access road and access road to Surge Tank in progress
- Construction of camps, offices and resettlement buildings is in progress
- 11 kV dedicated line for the Construction Power has been completed.
- Contract with the Consultant for final design and construction supervision of both the projects has been signed.
- Contract for construction of Lot 2: Civil Works of both the projects has been awarded.
- Survey works are in progress.
- LoI has been issued and negotiation is in progress with the lowest evaluated substantially responsive bidder for Lot
- Bid evaluation has been for Lot 4: Hydromechanical Works.

The commercial operation date slated for Sanjen (Upper) HEP is July 2015 for Sanjen (Upper) HEP and that for Sanjen HEP is December 2015. The total cost of the two projects is NRs. 7.24 billion.

Upper Tamakoshi Hydropower Limited

Upper Tamakoshi Hydropower Limited(UTKHPL) was formed as a subsidiary company of NEA on March 9, 2007 (Falgun 25, 2063) with the primary objective of developing and managing 456 MW Upper Tamakoshi Hydroelectric Project (UTKHEP) utilizing the financial and the technical resources from within the country. NEA is the major shareholder of the Company with 41% stake. Contributors of Employees Provident Fund (EPF) will contribute 17.28% , Nepal Telecom (NT) 6%, Citizen Investment Trust (CIT) 2% and Rastriya Beema Sanathan (RBS) 2% of the share equity. The rest of the equity capital will be raised from general public (15%), natives of Dolakha District (10%), NEA and Company staff (3.84%), and staff of financial institutions providing the debt for the Project (2.88%). A Seven-member Board of Directors representing 4 from NEA, one each from EPF and NTC and one free lancer (to be nominated) for the Company has been constituted after shareholder agreement between UTKHPL and NEA, NT, CIT and RBS which was signed on 26 July, 2010 (Sravan 10, 2067). One member each from CIT and RBS will represent the UTKHPL Board as invitee. A tripatriate loan agreement between NEA, EPF and UTKHPL was signed on 30 July, 2010 (Sravan 14, 2067) for NRs 10 Billion loan and 2 Billion Debanture. A loan agreement for Rs. 2 Billion each from CIT and RBS was signed on 7 December,2010 (Mangsir 21, 2067) and for Rs. 6 Billion from NTC was signed on 12 May,2011 (Baisakh 29,2068). Also, the Government of Nepal has decided to provide loan up to Rs. 11.8 Billion during construction period in case of shortfall. With this the financial arrangement for the project has been completed. The Company also has plans to develop other hydropower projects in Nepal in near future.

Project Features

Upper Tamakoshi Hydroelectric Project (UTKHEP) is located in Lamabagar Village Development Committee of Dolakha District and is a peaking run-of-river type of project with 822 m gross head, design discharge of 66 m3/s and Installed capacity of 456 MW. The Project will generate 2,281.2 GWh of energy annually. The major components of this Project are: an intake, a 22.0 m high concrete dam, twin desanding basins, 7.86 km long headrace tunnel, 360 m high surge shaft, 495 m long penstock pipe, underground powerhouse with six units of pelton turbines, 2.9 km long tailrace tunnel and 47 km long 220 kV transmission line to Khimti substation.

Financial Management of the Project

The total cost of the project is 441.17 MUSD without Interest During Construction (IDC). Out of the total estimated cost of 441.17 MUSD, project cost stands at 376.26 MUSD, Price Contingencies at 29.81 MUSD, VAT is 24.89 MUSD and Taxes and Duties are estimated at 10.21 MUSD. The project funding comprises of NRs 10.59 Billion (30%) of equity and NRs 24.70 Billion (70 %) of debt.

Project Status

Power Purchase Agreement (PPA) with NEA was signed on 29 December,2010 (Poush 14, 2067). The PPA rate agreed stands at NRs 3.5 average per KWh for the base year (2010/11) and NRs 4.06 average per KWh at required commercial operation date (RCOD). After escalation 3% per year upto 9 years the average rate per KWh will be NRs. 5.30 through out contract period.

JV Norconsult AS -Lahmeyer International GmbH (JVNL) is the Engineer for consultancy services for construction supervision and the Ms. Sinohydro Corporation, China is the Contractor for the main civil works (LOT-1). For Hydromechanical works (Lot-2) Texmaco India Limited and for Electromechanical works (Lot-3) Andritz Hydro GmbH , Austria has been awarded contracts. For Transmission and sub station works (Lot-4) KEC International, India has been awarded contracts. Similarly, procurement process for " Management Team " including Chief Executive Officer (CEO) of UTKHPL is underway.

The upgrading of Dolakha Singati raod (35 Km) and the construction of access road from Singati to Lamabagar (28.6 Km) has been completed. The construction works of the project at different fronts such as Dam, Intake, Headrace Tunnel, Surge shaft, Penstock, Powerhouse and Tailrace tunnel are ongoing at full swing. Around 10.5 km of excavation of tunnel works out of 16 km has been completed. By the end of the year under review, approximately 50% of the total project works has already been completed. UTKHPL is planning to issue share for employees of NEA and UTKHPL, employees of loan Investor organization including EPF and Depositors of EPF and local people of Dolakha District within fiscal year 2013/14.

Dam & intake under construction

Tanahu Hydropower Limited (THL)

Tanahu Hydropower Limited (THL) is a subsidiary company of Nepal Electricity Authority (NEA) established in 2012 to develop 140 MW Tanahu Hydropower Project ("the Project") (formerly, Upper Seti Hydropower Project). The Project site is situated 150 km west of Kathmandu on Seti River near Damauli of Tanahu District in Gandaki Zone.

The Project is a storage type hydropower project with an estimated average annual energy generation of 585.7 GWh (Years 1-10) and 489.9 GWh (Year 11 onwards). The main components of the Project are a 140 m high concrete gravity dam with a crest length of 175m on the Seti River and a reservoir with a total surface area of 7.26 km2 at FSL (EL 415m). The waterway consists of a 7.4 m diameter, 1,203 m long headrace tunnel. A 117 m long 7.4m diameter tailrace tunnel will discharge the tail water back into the Seti River. An underground powerhouse measuring 27m wide x 46m high x 97m long will be built aprox. 6 km (along the river course) downstream of the dam. Access roads (totaling 7.3 km) and several temporary and secondary access roads will provide access to the Project area. Temporary facilities include contractor's camps, equipment and maintenance yard, office areas, project staff's camp area.

The project will also include rural electrification (RE) and transmission lines (TL) component. A new 220 kV double circuits TL will evacuate the generated power to the Bharatpur Substation. The length of the transmission line corridor is 39 km. Additionally, the Project will electrify villages through its Rural Electrification (RE) Program in 18 VDC areas. The project is being co-funded by Asian Development Bank (ADB), Japan International Cooperation Agency (JICA), European Investment Bank (EIB), Abu Dhabi Fund for Development (ADFD). Loan agreement for an amount of US$ 150 million was signed with ADB on 21th February, 2013. Similarly, loan agreement for an amount of US$ 183 million was signed with JICA on 13th March, 2013 and that with European Investment Bank (EIB) for an amount of US$ 70 million was signed on 7th May, 2013. ADB loan will be used for the construction of head works, rural electrification, transmission line, and that for JICA for the construction of tunnel, power house, and supply and installation of hydro-mechanical and electromechanical equipment. The loan agreement with ADFD is expected soon. The project is planned to commence the construction work in 2014 and complete in 2020.

Proposed Dam site of Tanahu Hydropower Project

Land acquisition for access road and camp area has been completed and preliminary actions for land acquisition in reservoir area have been initiated. Development of preliminary infrastructures is in progress. RCC Bridge over Seti River is under construction and will be completed in FY 2013/14. The construction of access road and construction of power supply will be initiated in FY 2013/14. The procurement of supervision consultant and contractor for project construction works will begin in FY 2013/14.

Under construction Bridge over Seti River

Trisuli Jalvidyut Company Limited (TJCL)

Trisuli Jalvidyut Company Limited (TJCL) is a joint venture company of NEA and Nepal Telecom having equal equity share participation apart from other equity share holders. The main objective of this company is to develop the Upper Trisuli 3B Hydroelectric Project (42 MW) located in Nuwakot and Rasuwa District. This project is cascade project of Trisuli 3A Hydroelectric Project (60 MW) and therefore, operates with respect to Trisuli 3A HEP. The equity share structure of the company is as follows:

a) Nepal Electricity Authority: 30 %
b) Nepal Telecom: 30 %
c) VDCs and DDCs of Nuwakot and Rasuwa: 5 %
d) Financial institutions formed by the natives of Rasuwa and Nuwakot District: 5 %
e) Natives of project effected districts (Nuwakot and Rasuwa): 10 %
f) General Public: 15 %
g) Employees of NEA and Nepal Telecom in proportion to employees ratio: 5 %

Photo 1: Proposed Powerhouse site

Project Status

The feasibility study of the project was completed by Nepal Electricity Authority in fiscal year 2007/08. TJCL has carried out the review of the project and updated the project parameters based on the site condition. The TJCL by its own engineer has completed the detail design of the project in the fiscal year 2012/13. During the detail design, the capacity of the project has been upgraded to 42 MW with the gross head of 100 m, design discharge of 51 m3/s. The project will generate 336.92 GWh annually. The cost of the project is estimated at 57.74 Million US$. The company has set target of commissioning this project by the end of 2017 AD. In order to achieve this target, the company plans to carry out the following:

a) Acquire generation license from DoED,
b) Acquire land (public and private),
c)Carry out connection agreement and PPA with NEA,
d) Make financial closer from the lending agencies,
e) Carry out tendering and award the EPC contract,

The project has completed the detail survey. Additional core drilling of 195 m at the powerhouse site has been completed for the surface powerhouse design. Similarly, the project has already completed the cadastral mapping to acquire the land.

Photo 2: Drilling work at Powerhouse site

Power Transmission Company Nepal Limited (PTCN)

In Mid 2006 IL&FS, NEA and Power Trading Company of India (PTC India) took initiative to facilitate the development of transmission interconnection between India and Nepal for the mutual interest and benefit of both the countries. For this purpose Power Transmission Company Nepal Limited (PTCN) and Cross Border Power Transmission Company India (CPTC) were established.

The responsibilities of these companies include development, construction, operation and maintenance of the Dhalkebar-Mujaffarpur 400 kV Transmission Interconnection (D-M Line). The PTCN will construct, operate and maintain an approximately 40 km of transmission line from Dhalkebar to Bitthamod near Indo-Nepal border in the Nepalese territory and around 100 km of line in India will be constructed, operated and maintained by CPTC. This Transmission interconnection will be initially charged at 220kV and would be operated in Synchronous mode between Indian and Nepalese Electrical grids.

The Nepalese portion of the project cost includes NRs 1503.57 million (USD 20.0 million) out of which USD 13.2 million is to be funded by government of India through soft loan as a line of credit to GoN through Exim Bank of India and remaining part would be funded through shareholder's equity.

Two separates Agreements namely Implementation and Transmission Service Agreement (ITSA) that governs the legal provision for the construction, operation, maintenance of the line and payment mechanism by NEA and Power Sale Agreement (PSA) with PTC India for the purchase of 150 MW of power in long term basis has been signed on December 12th and 13th, 2011.

As of Baishakh 2070, The Company has established office in the close proximity of NEA, which is located at Lalitpur, Sub Metropolitan City, Sanepa-2.

The Commencement of Business certificate has been issued to PTCN on 28th March, 2013 by Registrar of Companies/Department of Industries, Kathmandu. The Survey License, which was earlier issued in the name of NEA, has been transferred in the name of PTCN on 12th April, 2013.

Power Grid Corporation of India Ltd. retained as Project Management Consultant (PMC) by PTCN for execution of the 400 KV D/C Twin Moose (to be initially charged at 220kV level) of Nepal Portion of transmission Line.

Tender has been called for the construction of the line Nepal portion on 04/03/2013, Tender evaluation of first envelope (techno-commercial part) is in final stage.

Central Activities

Information Technology Department

The Information Technology Department headed by a Director has completed a fruitful year with the introduction of new, innovative IT services, continuous ICT maintenance / support and further enhancements and expansions of its fiber and wireless network infrastructure and server Systems. During the year under review, the Department has posted more than 300 tenders through its portal making transparent the procurement system of NEA. With modification of CAIS software and codification of new branches ID's, compilation of financial data business-unit wise is now finally achieved. Other important activities carried out by the Department in fiscal year 2012/13 are:

1. Revenue collection portal setup and tested from far west region.

Traditionally, updates of revenue collection of NEA used to be made through banks and revenue collection centers and would take weeks if not months to get update and compiled. A revenue collection portal site has been made accessible through the NEA intranet site www.nea.org/revenue and the website http://nea.org.np/revenue/ . Calendar Grid view of the portal shows the total revenue collected by the region up to this day and the details of revenue collected each day by the distribution centers of the region. The system is being tested from far west region and is found to be very efficient. The application has also been designed to capture overall DCS activities including line collection/disconnection details, leakage, generation, accidents & electrocution etc. Various channels such as Virtual private network client, direct posting into the sight are made available for easy and quick posting of the data.

2. SMS complain system setup and tested.

In addition to the traditional complaint lodging system using two way telephonic conversations, Interactive voice response (IVR) and complains through HELLO SARKAR, NEA has launched a new service that would allow the stakeholders to register complain using Nepal Telecom MOBILE SMS service.

As per the understanding reached, NTC will charge NEA seventy paisa for each SMS received but the service is to be free for the SMS generating mobiles. A final agreement regarding the payment scheme is to be signed with NTC. The software required for this system is already developed by the IT department and deployed. The system is also tested by the joint team of NTC and NEA.

In addition to the traditional complain system using two way telephonic conversations, Interactive voice response (IVR) and complains through HELLO SARKAR, NEA has launched a new service that would allow the stakeholders to complain using NTC MOBILE SMS service.

3. Video conferencing system (VC) launched.

To reduce the travel cost and the employees/ executive time saving from travel delays, NEA has launched a multi presence Video conferencing system. The system is intended to be used for Giving directives, remote trainings, disseminating information, conducting regular meetings with regional chiefs. In the context of NEA owning quite a length of optical fiber cables, VC may become a very important tool for saving expenditure and valuable time.

Corporate Planning and Monitoring Department

Corporate Planning and Monitoring Department is responsible for developing corporate development plans and programs, for carrying out periodical monitoring and evaluation of projects implemented by NEA and for assisting the National Planning Commission, Ministry of Energy and Ministry of Finance in the preparation of national budget by providing data related to projects undertaken by NEA. In addition, the Department also provides necessary support to NEA management and data input for studies undertaken by various organizations on topics related to NEA. This Department also assists in obtaining new licenses and any extension there of as required for development of power projects. During the year under review, NEA obtained 6 survey licenses for transmission line, 2 survey licenses for substation and 2 survey licenses for hydropower project. The survey

license for hydropower included two important hydropoeer projects: Dudhkosi Storage Hydroelectric Project and Upper Arun Hydroelectric project. Similarly, the validity of survey licenses was extended for two transmission lines.

The Department also plays coordinating role in the development of hydropower projects under different financing mode. During the year under review, a Memorandum of Understanding was signed with TBEA of Peoples Republic of China for the development of 87 MW Tamakosi V Hydropower Project located in Dolakha District.

During fiscal year 2012/13, a Corporate Development Plan 2013 was developed for five year period after a long gap. The Corporate Development Plan covers activities and policies to be implemented during FY 2013/14-2017/18.

During the year under review, the Department collected, evaluated and reviewed monthly, quarterly and annual progress of 169 projects being implemented under various Business Groups of NEA. Of these 169 projects, 14 projects were Study Projects, 5 projects were Hydropower Projects under construction, 35 projects were Transmission Line Projects, 95 were Distribution Projects and the rest comprised of other projects . The Department also furnished various data and reports to Ministry of Energy (MoEn), National Planning Commission (NPC) and other concerned authorities of Nepal Government.

NEA Board Matters

Pursuant to a decision of Government of Nepal dated December 10, 2012, Chief Secretary Mr Lila Mani Paudyal was appointed as the Chairman of NEA Board. Under his Chairmanship, a total of thirteen Board meetings were held. Before this, Energy Secretary Mr. Hari Ram Koirala was the Chairman of the Board. Following the appointment of Mr. Uma Kanta Jha as Minister of Energy, NEA Board was reconstituted with Energy Minister as the Chairman of NEA Board. Subsequently, Mr. Laxman Prasad Agrawal, Mr. Manoj Kumar Mishra and Mr. Santosh Narayan Shrestha and Vivek Tater were appointed as members of NEA Board effective from April 11, 2013. Mr. Rameshwar Yadav was appointed as Managing Director on December 10, 2012.

During Fiscal Year 2012/13, altogether 40 Board meetings were held. Many important decisions were taken during this period. Approval of report on "NEA organizational restructuring and administrative reforms" for the improvement of efficiency and effective functioning of NEA, Approval of Electricity Distribution Regulation-2069, Amendment of Employees Regulation-2068, Approval of a model document for Transmission Service Agreement (TSA) for the construction of transmission line by the private sectors were some among the many significant Board decisions in this period under review.

Administration

Administration wing of NEA is responsible for the management of human resources, logistic support, legal advice and arbitration, property management and promotion of public relation functions. Timely amendment of personnel administration regulation and financial administration regulation also falls under the jurisdiction of this wing. This wing is led by a Deputy Managing Director and supported by four departments, namely, Human Resources Department, General Services Department, Legal Department and Training Center, each led by a Director.

Human Resource Department

Human Resource Department is responsible for executing manpower planning, recruitment, training and capacity development, disciplinary actions, implementation of staff welfare activities and other human resources related functions.

By the end of FY 2012/13, the total number of staff stood at 8,966while the approved positions remained at 11,142. During the year under review, 346 employees were retired out of which 6 employees took voluntary retirement and services of 9 employees were terminated on charge of long absence. Similarly, 4 employees resigned and 36 employees passed away. During the year under review, 147employees of different levels were promoted to higher levels based on their performance evaluation and internal competition and 319 employees were promoted to higher level under special promotion scheme. During fiscal year 2012/13, the Department filled 403 vacant posts of non officer levels.

Meanwhile, 8 employees were cautioned and 7 employees were suspended under disciplinary action. Similarly, yearly increment in the salary of one staff was halted. As a part of staff welfare activities, financial support was provided to12 employees for different causes. Similarly, under the staff welfare loan facility, a total sum of NRs. 109,820,000.00 was disbursed as loan to employees for purchase, construction and maintenance of house/land, for carrying out social event/ rituals and so forth. Similarly, a sum of NRs. 1,72,08,772.00was disbursed to various employees under accidental insur-ance and medical facility scheme and NRs. 22,68,01,574.49 was disbursed under life insurance scheme.

The statistics of employed personnel till the end of fiscal year 2012/13 is given in the table below:

Level		Approved Position			Existing Situation			
	Service	Regular	Project	Total	Permanent	Periodic	Daily Wages/ Contract	Total
Managing Director		1	0	1	0	1	0	1
DMD (level-12)		7	0	7	7	0	0	7
Officer (level 6-11)	Technical	1202	159	1361	837	1	1	839
	Non- Tech	503	25	528	482	1	0	483
	Total	1705	184	1889	1319	2	1	1322
Assistant (level 1-5)	Technical	5888	0	5888	4520	500	34	5054
	Non- Tech	3358	0	3358	2459	162	11	2632
	Total	9246	0	9246	6979	662	45	7686
Grand Total		10958	184	11142	8305	664	46	9015

General Service Department

General Service Department (GSD) is an auxiliary unit responsible for vehicle management, logistics management, maintenance of vehicles and corporate office buildings, property management and security management of NEA's corporate offices. The Department is also responsible for dealing with media, organizing press conferences and releasing ceremonial activities.

The Department also publishes 'Vidhyut', a half yearly magazine which covers the wide spectrum of technical, managerial, administrative and other activities of NEA. It also appoints the advertising agency for the publication of various notices of NEA. The Department also registers the complaints from stakeholders regarding service delivery and forwards them to the concerned units for necessary action. During the year under review, 495 such complaints were registered and forwarded to concerned units for the necessary actions. Out of 495 such complaints, 486 complaints were settled/addressed and remaining complaints are under settlement procedure.

During the year under review, the Department updated the records of land owned by NEA and their utilization. The total land available with NEA is 31,458-13-0-3 Ropanis as per record of Assets Management Section. The new Land Registration Certificate is yet to be received for a total of 5,718-0-3-1 Ropanis of land. In addition, the Department was also entrusted with the responsibility of organizing sports activities for staffs. The Department established NEA Sports Club to encourage participation of staffs in the various sports competition. NEA was successful in securing third position in the inter-corporation sports tournament organized by Public Enterprises Sports Development Association, Nepal (PESDAN) in 2013.

Photo: The winners of inter-corporation sports tournament organized by PESDAN in 2013 under different categories

Legal Department

The Legal Department is responsible for dealing with all legal matters of NEA. It provides legal advice to the management as well as to the different departments of NEA. The Department is also involved during negotiations for power purchase and contract agreements. Another area of its participation is to defend cases of NEA through NEA's legal advisors in different courts of the country and abroad for dispute resolution. Gen-erally, cases to be resolved are related to the misuse of electricity, electricity theft and unauthorized use of electricity, land acquisition, employees' service termination, staff promotion and contracts/tenders disputes. The Department also provides assistance to the various committees formed for formulating rules and regulations of the organization.

During the fiscal year under review, the Department provided 83 numbers of legal advices to the NEA Management & other departments. The Department also organized legal workshop in Pokhara Regional Office of Distribution & Consumer Services West. Out of 137 cases registered in different courts during fiscal year 2012/13, NEA won 49 cases, lost 14, one was settled through arbitration and the other cases remained sub-judice. Some disputes related to contracts of construction projects are presently being resolved through arbitration and some others are under consideration.

Training Center Department

Training Center has been enhancing the skills and knowledge to the staffs of NEA as well as Nepalese citizens since 1989A.D. As human resource is one of the most important ingredients of any organization, if development is indispensable for the survival and advancement of the organization. So investment in training is treated as corporate assets of organization. NEATC has been providing need based short term trainings from 2 days to 20 days duration for NEA employees with an objectives of upgrading the professional knowledge, skills and attitudes of manpower at operational and managerial levels involved in the power sector. During the year under review, NEATC conducted 19 training programs for the staffs of NEA in different Fields of specialization. A Total of 627 participants participated in those training programs. Out of 627 participants, 153 participants were of officer level and 474 participants were of assistant level. The training types involved induction, in-services or refreshers course and custom designed as per request and requirement. The summary of training conducted in FY 2012/13 is presented below.

Training no	Training Name	Level	Service	Days	No . Of Trainees
1	Basic Computer Hardware and Networking	Asst.	All	7	17
2	General Mechanical Training	Asst.	Tech	15	10
3	Auto CAD, Land Development and Civil Design	Off.	Tech	20	17
4	Training of Trainers (TOT)	Off.	All	15	16
5	Vehicle Maintenance for Drivers	Asst.	Tech	12	18
6	Accounting System (Basic)	Asst.	Admin	10	15
7	Induction Training	Asst.	Tech	2	134
8	Induction Training	Asst.	Tech	2	42
9	Ms Office Package (Basic)	Asst.	All	14	14
10	Induction Training	Asst.	Tech	2	52
11	TOD Meter (Kathmandu)	Off.	Tech	5	26
12	TOD Meter (Biratnagar)	Off.	Tech	5	33
13	Induction Training	Asst.	Admin	2	67
14	TOD Meter (Hetauda)	Off.	Tech	5	23
15	TOD Meter (Pokhara)	Off.	Tech	5	27
16	TOD Meter (Nepalgung)	Off.	Tech	5	24
17	Induction Training	Asst.	Tech	2	66
18	Geographical Information System (GIS)	Off.	Tech	10	16
19	Auto CAD (2D)	Off.	Tech	10	10
	Total			148	627

In F/Y 2012/13 NEATC also conducted a 3 month General Electrical Training for Upper Trishuli 3 A Hydro Electric Project affected local people in Bidhur, Nuwakot. The training was as per the request of the project and 39 participants successfully completed the training.

In addition to training programs, NEATC provides seminar halls, class room, hostel and ground space on rental facilities to different users, groups/ organizations etc on their request. in the F/Y 2012/13 various organizations used the facilities available in the training center for various purposes and the total income generated from these services amounted to Rs. 2,975,280.00.

Internal Audit

Internal Audit, led by Deputy Managing Director is responsible for reviewing the internal control system, economy, efficiency and effectiveness of operation, risk issues and compliance to applicable rules and regulations. The Deputy Managing Director is assisted by Director who is further assisted by five regional offices and technical and management audit divisions. The Internal Audit functions are structured into financial audit, technical audit and management audit. Division wise summaries of the performance/non-performance and associated reasons for non-performance during the period are given in the following paragraphs in brief:

Financial Audit

The financial audit covers audits of financial aspects of various Business Groups. During FY 2012/13, Financial Audit was carried out in 142 budget centers out of 156 budget centers of NEA till the end of second quarter of Fiscal year 2012/13. The audit of transactions of the third quarter has already started. The status of progress on clearance of audit observations is generally not satisfactory. The findings, suggestions and recommendations of financial audits to be included in the annual Audit Report for FY 2012/13 are in progress.

Technical Audit

The technical audit covers the audit of energy balance and other technical aspects of development works carried out by various Business Groups. During FY 2012/13, the Internal Audit Department carried out technical audits of 19 offices as against the target of 30 offices. Non-availability of adequate technical audit staffs constrained the coverage of technical audit. The process for carrying out technical audits of rest of the offices has been started. The technical audit findings, suggestions and recommendations shall be included in the annual Audit Report for FY 2012/13.

Management Audit

The management audit covers the audit of managerial aspects of various Business Groups. During FY 2012/13, management audit was carried out in few distribution centers. Due to non-availability of adequate audit staffs, the management audit department is not functioning as per the expectations. The management audit findings, suggestions and recommendations shall be included in the Audit annual report for the FY 2012/13.

Annual Audit Reporting and Progress Monitoring

For the preparation of annual audit report, Financial, Technical and Management audit divisions and all five regional offices must submit their annual report to the Deputy Managing Director, Internal Audit. Then all the reports are consolidated and sent to the Managing Director and Audit Committee. The annual audit report for FY 2011/12 has already been submitted to the Managing Director.

Capacity Building

A customized training program was conducted for senior and junior officers at two stages in the Institute of Cost and Works Accountants of India, Delhi in January/February 2013 to enhance professional knowledge of various issues of internal audits.

Audit Committee

The Audit Committee formed in FY 2011/12 by the Board of Directors of NEA has prepared the Audit Operating Procedures and has been submitted for the approval by the Board of Directors of NEA. The audit operating procedures will be implemented after approval by the NEA Board.

Finance

The finance wing, headed by a Deputy Managing Director, is responsible for overall financial and accounting functions of NEA. The responsibility covers areas of revenue administration, accounting system, budgetary control, and treasury operation. Apart from the conventional role, the finance wing is also involved in financial planning, monitoring, and control at corporate level of decision making process. The finance wing is structured into four functional departments namely Corporate Finance Department, Accounts Department, Revenue Department and Economic Analysis and Planning Department.With restructuring of the organisation w.e.f July 16, 2013, functions of Revenue Department have been transferred to Distribution and Consumer Service while Economic Analysis and Planning Department, by its functional nature, has been transferred to newly created Office of Deputy Managing Direcotor, Planning, Monitoring and Information Technology. The Corporate Finance Department is responsible for revenue, budget, and treasury management functions. Likewise, Accounts Department consolidates the overall accounts and prepares stand alone and group financial statements. It also deals with the statutory audit, tax affairs, follow up and settlement of audit qualifications etc. Each Department is headed by a Director responsible for its functional areas of operation and reports to the DMD, Finance.

FY 2012/13 remained a mixed year in terms of achievement and challanges. The long awaited tariff adjustment in upward direction and continued effort for loss reduction prevented NEA from incurring huge financial loss. Further, the remarkable achievement in revenue collection made it easy for NEA to manage the working capital. NEA was also able to manage the required funds for Tanahu Hydropower Company, a subsidary company promoted by NEA, with the funding support from JICA, ADB, European Investment Bank and Abu Dhabi Fund and Government of Nepal for the development of 140 MW Tanahu Storage Hydroelectric Project.

During FY 2012/13, energy generation from NEA's hydropower plants amounted to 2273.14 GWh, lower than the target generation by 86.86 GWh and a decrease of 3.58% over previous year's generation of 2357.43 GWh. During FY 2012/13, thermal generation increased from previous year's figure of 1.56 GWh to 18.82 GWh. Similarly, energy import from India grew by 6.23 % over the previous year's figure of 746.07 GWh to reach 792.52 GWh. The power purchase from IPPs increased by 9.54% to reach 1,175.97 GWh. The total energy available in the NEA's system increased by 1.96% over the previous year's figure of 4,178.63 GWh to reach 4,260.45 GWh. Out of the total available electricity, internal and external consumptions accounted for 3,194.12 GWh and system losses accounted for the rest. The system losses stood at 25.03 % for the year under review. NEA was able to bring down the system losses to 25.03% from previous year's figures of 26.37%.

During FY 2012/13, total energy sales including export to India increased by 3.83% to reach 3,161.39 GWh.

At the end of FY 2012/13, total number of consumer reached 2.59 million including community and bulk buyer. The domestic consumer category continued to be the largest consumer category with 95.12 % share of entire consumers. Domestic and industrial consumers contributed 44.63 % and 34.44 % to the gross electricity sales revenue respectively. Rest of the consumer categories contributed only 20.93 % to the total sales revenue.

Revenue from sale of electricity increased from NRs.20,518.40 million in FY 2011/12 to NRs 25,132.02 in FY 2012/13. The upward revision of tariff by 20% in average w.e.f 17th August, 2012 and continuing effort for loss reduction contributed to increase in sales revenue. Net sales revenue after rebate of NRs 532.55 million amounted to NRs.24,599.47 million. Income from other service such as surcharge , dividend, lease rent, interest, sale of goods and service charge amounted to NRs.1,609.20 million. NEA's total income including income from other services increased by 20.31% to reach NRs. 26,208.67 million.

In FY 2012/13, total operating expenses increased by 12.46 % over previous year's firgure of NRs 22,293.41 million to reach NRs. 25,071.55 million. The power purchase expenses continued to be the largest component of the total operating expenses. The power purchas expenses in FY 2012/13

amounted to NRs 13,495.48 million and accounted for 53.82% of the total operating cost and 51.49% of the total income. Additional power purchase from India and agreed price escalation primarily contributed to rise in power purchase costs. In addition to that , devaluation of Nepalese Rupees against US Dollar in respect of some PPAs made in USD also had an impact on the increase in power purchase cost. The operating expenses in generation, transmission, distribution and administration including staff cost in the respective headings stood at NRs.1,371.52 million, 502.78 million, 4,400.88 and 1,162.51 million respectively. NEA spent significant amount of resources in the maintenance and rehabilitation of its generating stations to increase reliability and availability.

During the year under review, interest costs on long-term borrowings increased by 9.69% over the previous year's figure to reach NRs.4,262.03 million. Similarly , annual depreciation charge on fixed assets increased by 1.05% to reach NRs.3,209.06 million in FY 2012/13.NEA made foreign exchange translation gain of NRs. 662.83 million in FY 2012/13 due to appreciation of Nepalese Rupees vis-a-vis the Japanese Yen loan for Kulekhani Disaster Prevention Project. A provision of NRs. 2,053.40 million in FY 2012/13 was made towards future liabilities in respect of gratuity, pension, medical facility and accumulated leave facilities under employees'benefit plan.

Despite the significant increase in total revenue, total expenses exceeded the total revenue in FY 2012/13 and NEA incurred a net loss of NRs. 4,565.48 million.Even with the significant amount of old outstanding dues recovered during FY 2012/13 ,the total receivables at the end of FY 2012/13 still stood at NRs 7,949.77 million, which is equivalent to sales revenue of 110 days. Of the total receivables, street light dues of different Municipalities from FY 2009/10 to FY2012/13 and VDCs from FY 2011/12 to FY 2012/13 amounted to NRs. 1,582 million. During the year under review, NEA completed various distribution system reinforcement and rural electrification projects resulting in capitalization of NRs. 3,895 million in property, plant and equipment. At the end of FY 2012/13, net carrying amount of NEA's property, plant and equipment reached NRs. 86,251.65 million which is 65.55 % of total non-current assets.

Capital work in progress, the second largest component of non-current assets, stood at NRs. 39,540.05 million at the end of FY 2012/13. The ongoing major hydroelectricity projects, namely Chameliyagadh (30 MW), Kulekhani III (14 MW), Upper Trishuli 3A (60 MW) and Rahughat (32 MW) and various transmission systems of different voltage level contributed to increase in capital work in progress. During FY 2012/13 NEA invested NRs. 13,634.60 in various construction projects as capital works. The investment in the capital works was made through the government equity, foreign loan and grants, GoN loan and NEA's internal cash generation.

NEA investment in subsidiaries, associates, joint ventures and others reached NRs 5,776.51 million at the end of FY 2012/13. In FY 2012/13 NEA invested NRs. 93.33 million in Sanjen Hydro Power Company Limited , NRs. 30 million in Middle Bhotekoshi Hydro Power Company and NRs1.06 million in Rasuwagadhi Hydro Power Company Limited, all promoted by Chilime Hydro Power Company Limited, a subsidiary of NEA. In FY 2012/13, NEA invested NRs. 495 million as equity in Upper Tamakoshi Hydro Power Company Limited and total investment in UTKHPL reached NRs.4,185 millions at the end of FY 2012/13. NEA holds 41% of the total equity in UTKHPL and has completed the full payment of its equity. Likewise, NEA has equity of NRs. 489.60 million at cost in Chilime Hydro Power Company Limited (CHPCL), a subsidiary of NEA. In FY 2012/13 , NEA received NRs. 123.95 million (20%) cash dividend and 30 % bonus share (Equivalent to NRs. 205.63 million) from CHPCL. It is anticipated that the CHPCL will yield better results in future as it is developing four hydroelectric projects through its three subsidiary companies. The projects being undertaken by CHPCL for development include Upper Sanjen HEP (14.6 MW), Sanjen HEP (42.5), Middle Bhotekoshi (102 MW) and Rasuwagadhi (112 MW). NEA has 10% equity each in Sanjen Hydro Power Company Limited and Middle Bhotekoshi Hydro Power company Limited and 18 % equity in Rasuwagadhi Hydro Power Company Limited . Other investment of NEA includes equity investment in Khumbu Bijuli Co (NRs. 20.65 million), Salleri Chaylsa Hydro Electric Co. (NRs. 11.63 milion), Nepal Engineering Consultancy Service Center Ltd (2.28 Million), Nepal Hydro lab (NRs.1 million), Power Transmission Company Limited (NRs.5 million) and Butwal Power Company (NRs. 8.8 million). NEA has not received any dividends from these subsidiaries except from CHPCL and Butwal Power Company Limited (BPCL). In addition to the above investment, NEA also invested NRs. 30.42 million the Cross Border Power Transmission Company Limited, a company established for the development of Muzaffarpur-Bhittramod section of Dhalkebar- Muzaffarpur 400 kV Cross Border Transmission Line. NEA deposited NRs. 60 million in Citizen Investment Trust (CIT) towards gratuity and pension liabilities. Total amount deposited in CIT reached NRs. 822.90 million at the end of FY 2012/13.

The long term borrowings, the main source of project financing, increased from NRs 68,909.20 million in FY 2011/12 to reach NRs.79,333.97 million at the end of FY 2012/13. This includes NRs. 2,000 million received at the end of the FY 2012/13 from GoN for the purpose of relending to UTKHPL. During the year, NEA repaid borrowings of NRs. 1,500 million towards the cost of "NEA Power Bond, 2069" secured against

lien of NEA's equity shares in Chilime Hydropower Company Ltd. Similarly,NEA repaid the whole amount of short-term borrowings of NRs. 2,000 million taken from local banks. However, NEA borrowed NRs 1,200 million as short term loans from local banks to meet the working capital requirement for FY 2012/13.

During FY 2012/13, NEA received NRs. 4,547.07 million from the Government of Nepal as equity investment in various generation, transmission and distribution projects. NEA also received NRs.279.69 million as reimbursement for losses incurred on energy imports from India to reduce power cuts during the dry season of FY 2012/13. Similarly, NRs 277.82 million was received as subsidies against fuel for thermal plants. As per the instruction of GoN, these amounts have been accounted as GoN equity.

During FY 2012/13 NEA paid NRs. 1,000 million as royalties. The outstanding royalty up to FY 2012/13 has been almost cleared.

NEA is required to achieve a number of covenants in respect of borrowing from the donor agencies. Major covenants related to financial performance are Rate of Return (RoR) of (6%) ,Self Financing Ratio (SFR) of (23%), Debt Service Coverage Ratio (DSCR) of (1.2 times), Average Collection Period (ACP) of (<3month). In FY 2012/13, NEA achieved RoR of (0.29%), SFR of (4.36%) , DSCR of (0.59%) and ACP of (3.66 month) resulting in defaults .

In FY 2011/12, Electricity Tariff Fixation Commission (ETFC) approved to increase tariff by 20 percent in average. While revising the tariff, ETFC instructed NEA to comply with certain conditions regarding loss reduction, inventory management, receivables management and administrative reform. The tariff revision brought in positive impact on NEA's operational and financial performance but not to the dsesired level.Therefore, NEA has again submitted the tariff petition for upward adjustment of up to 20 % on existing tariff structure in FY 2012/13. The proposed tariff petition is under consideration at ETFC.

The financial audit for the FY 2011/12 was carried out and completed within nine months following the financial year by the joint auditor Mr. JagadishBhattarai and Mr. Mahesh Guragain, Chartered Accountants, appointed by the Office of the Auditor General. Office of the Auditor General has appointed the same auditors for third term to perform financial audit of NEA for the FY 2012/13. The audit for FY 2012/13 is expected to be completed by December 2013. Income Tax Returns for the FY 2011/12 was filed with the Large Tax payer's Office in May 2013. Income tax assessment up to FY 2009/010 has been completed by Large Tax Payer's Office in the FY 2012/13. However, NEA has filed petition for review against tax assessment order for the FY 2005/06 to Revenue Tribunal which is pending for settlement.

NEA has perceived the need for improvement in its current financial management system to meet the requirement of national and international accounting standards in preparation and presentation of financial statements. For strengthening financial accounting and financial management decision support system, NEA plans to put in place a modern IT based Integrated Financial Management Information System (IFMIS). Accordingly, Institutional Strengthening Project is under implementation with the assistance from World Bank to strengthen financial management and accounting system under Institutional Strengthening of NEA project. MS Deloitte Touch Tohmatsu India Pvt. Ltd. (DTT) in association with Raj MS, Kathmandu Nepal has been appointed as consultant for this project and has been working since December 2010.The major scope of the consultancy service includes Accounting Framework Reform, Design and Support for Implementation of new IFMIS & capacity building. During the year, the Consultant submitted a final report on new accounting policy manual, internal audit manual and enterprise resource planning (ERP) strategy paper. Accordingly, NEA has invited Expression of Interest for the procurement of SAP/ ERP package with hardware.

Nepal Electricity Authority

Highlights of FY 2012/13

Description	FY 2013*	FY 2012	Increase(Decrease)	
			Amount	%
Revenue				
Net Sale of Electricity (M.NRs.)	24,599.47	20,088.64	4,510.83	22.45
Income form other Services (M.NRs.)	1,609.20	1,695.42	(86.22)	(5.09)
Total Renenue (M. NRs.)	**26,208.67**	**21,784.06**	**4,424.61**	**20.31**
Operating Expenses:			-	
Genertion Expenses (M. NRs.)	1,371.52	1,147.69	223.83	19.50
Power Purchase (M. NRs.)	13,495.48	11,948.41	1,547.07	12.95
Royalty (M. NRs.)	929.32	941.60	(12.28)	(1.30)
Transmission Expenses (M. NRs.)	502.78	421.38	81.40	19.32
Distribution Expenses (M. NRs.)	4,400.88	3,685.15	715.73	19.42
Administration Expenses (M. NRs.)	1,162.51	973.38	189.13	19.43
Depreciation Expenses (M. NRs.)	3,209.06	3,175.80	33.26	1.05
Total Operating Expenses (M. NRs.)	**25,071.55**	**22,293.41**	**2,778.14**	**12.46**
Operating Surplus (M. NRs.)	**1,137.12**	**(509.35)**	**1,646.47**	**(323.25)**
Interest on Long-Term Loans (M. NRs.)	4,262.03	3,885.49	376.54	9.69
Foreign exhcnage tranlation losses (gain)	(662.83)	896.57	(1,559.40)	(173.93)
Provision for Employee benefits	2,053.40	4,106.68	(2,053.28)	(50.00)
Prior years Income(Income) Expenses	50.00	(80.91)	130.91	(161.80)
Street light dues written off	-	549.79	(549.79)	(100.00)
Net Income (Loss) (M. NRs.)	**(4,565.48)**	**(9,866.97)**	**5,301.49**	**(53.73)**
Long-Term Loans (M. NRs.)	79,333.97	68,909.20	10,424.77	15.13
Net Property, Plant & Equipment (M. NRs.)	86,251.65	85,460.71	790.94	0.93
Number of Consumers	**2,599,152**	**2,324,414**	**274,738**	**11.82**
Total Sales of Electricity (GWh)	**3,161.39**	**3,044.69**	**116.70**	**3.83**
Internal Sold/Utilised (GWh)	3,157.67	3,040.57	117.10	3.85
Annual Average Consumer's Consumption (kWh)+	1,216.32	1,309.87	(93.56)	(7.14)
Average Price of Electricity (NRs./kWh)	7.95	6.74	1.21	17.94
Peak Load Interconnected System (GWh)	1,094.62	1,026.65	69.60	6.78
Toal Available Electric Energy (GWh)	**4,260.45**	**4,178.63**	**81.82**	**1.96**
NEA Hydro Generation (GWh)	2,273.14	2,357.43	(84.29)	(3.58)
Termal Generation (GWh)	18.82	1.56	17.26	1,106.41
Purchased Energy (GWh)- India	792.52	746.07	46.45	6.23
- Nepal (Internal)	1,175.97	1,073.57	102.40	9.54
Average Power Purchase Rate (NRs./kWh)++	6.86	6.90	(0.04)	(0.57)
Exported Energy (GWh)	3.72	4.12	(0.40)	(9.71)
Self Consumption (GWh)	32.73	32.17	0.56	1.74
Net System Losses (Percentage)	25.03	26.37	(1.34)	(5.08)

Note: *Provisional figures +on internal sales ++on total purchase

(NRs. in million)

Particulars	2013*	2013	2011	2010	2009	2008	2007	2006	2005	2004
Assets										
Non Current Assets										
Property, Plant & Equipment	86,251.65	85,460.71	84,725.47	83,105.63	81,238.50	52,030.28	51,781.76	51,743.38	52,166.56	51,415.14
Capital Work in Progress	39,540.05	29,905.45	22,832.03	17,040.47	13,550.46	35,699.71	29,145.19	21,991.50	16,060.40	10,619.55
Investments	5,776.51	5,049.17	4,855.07	3,122.06	2,139.92	1,620.19	882.05	819.90	777.00	713.01
Deferred Expenditure to be Written Off	-	-	-	323.68	361.22	423.33	130.94	32.40	126.70	250.01
Total Non-Current Assets	**131,568.21**	**120,415.33**	**112,412.57**	**103,591.84**	**97,290.10**	**89,773.51**	**81,939.94**	**74,587.18**	**69,130.66**	**62,997.71**
Current Assets :-										
Inventories	3,061.91	3,033.83	2,502.93	2,431.99	2,159.12	1,800.13	1,498.45	1,354.80	1,372.70	1,048.01
Trade and other Receivables	7,949.77	6,693.17	6,871.19	6,097.74	4,854.02	5,721.08	5,151.41	4,415.40	3,947.00	3,735.71
Cash and Cash Equivalents	3,155.00	2,697.48	2,016.58	1,244.65	1,724.76	1,337.15	1,447.58	1,258.60	1,322.60	1,036.42
Prepaid, Advances, Loans and Deposits	5,583.06	4,222.65	2,976.82	4,585.60	2,495.13	2,319.72	2,225.53	2,293.90	2,098.60	2,063.27
Total Current Assets	19,749.73	16,647.13	14,367.52	14,359.98	11,233.03	11,178.08	10,322.97	9,322.70	8,740.90	7,883.41
Total Assets	151,317.94	137,062.46	126,780.09	117,951.82	108,523.13	100,951.59	92,262.91	83,909.88	77,871.56	70,881.12
Equity and Liabilities										
Capital and Reserves										
Share Capital	36,527.02	31,422.44	25,694.81	38,651.77	33,659.46	28,609.97	26,382.18	23,113.10	20,161.80	18,215.85
Reserves and Accumulated Profits:										
Reserve	1,760.15	1,706.03	1,677.55	1,631.30	1,497.85	1,407.83	998.92	550.49	513.87	477.51
Accumulated Profits (Loss)	(14,432.45)	(9,866.97)	0.00	(21,022.36)	(14,098.83)	(8,985.61)	(6,650.04)	(6,095.81)	(4,808.01)	(3,475.20)
Total Equity	**23,854.72**	**23,261.50**	**27,372.36**	**19,260.71**	**21,058.48**	**21,032.19**	**20,731.06**	**17,567.78**	**15,867.66**	**15,218.16**
Non-Current Liabilities										
Borrowings	79,333.97	68,909.20	62,631.85	58,231.66	53,788.45	51,368.84	47,616.15	46,487.91	44,537.51	41,103.14
Deferred Tax	693.20	693.20	693.20	693.20	693.20	791.01	848.40	-	-	-
Total Non-Current Liabilities	**80,027.17**	**69,602.40**	**63,325.05**	**58,924.86**	**54,481.65**	**52,159.85**	**48,464.55**	**46,487.91**	**44,537.51**	**41,103.14**
Current Liabilities										
Borrowings	1,200.00	3,500.00	790.00	1,280.00	250.00	1,140.00	-	700.00	600.00	600.00
Sundry Creditors and Other Payables	32,621.18	29,137.09	27,825.95	32,909.45	29,402.22	24,534.17	22,374.17	18,444.39	16,168.69	13,278.34
Provisions	13,614.87	11,561.47	7,466.73	5,576.80	3,330.78	2,085.38	693.13	709.80	697.70	681.48
Total Current Liabilities	**47,436.05**	**44,198.56**	**36,082.68**	**39,766.25**	**32,983.00**	**27,759.55**	**23,067.30**	**19,854.19**	**17,466.39**	**14,559.82**
Total Liabilities	**127,463.22**	**113,800.96**	**99,407.73**	**98,691.11**	**87,464.65**	**79,919.40**	**71,531.85**	**66,342.10**	**62,003.90**	**55,662.96**
Total Equity and Liabilities	**151,317.94**	**137,062.46**	**126,780.09**	**117,951.82**	**108,523.13**	**100,951.59**	**92,262.91**	**83,909.88**	**77,871.56**	**70,881.12**

Nepal Electricity Authority

Income Statement for the year ended July 15, 2013

(NRs. in million)

Particulars	2013*	2012	2011	2010	2009	2008	2007	2006	2005	2004
Sales	**24,599.47**	**20,088.64**	**17,946.82**	**17,164.60**	**14,405.93**	**15,041.39**	**14,449.73**	**13,331.90**	**12,605.20**	**11,874.70**
Cost of Sales :										
Generation	1,371.52	1,147.69	929.56	1,541.27	1,119.71	979.76	855.64	811.12	642.06	544.18
Power Purchase	13,495.48	11,948.41	10,493.74	9,746.57	7,691.28	7,437.04	6,967.58	6,391.95	5,760.31	5,415.62
Royalty	929.32	941.60	854.76	849.77	796.12	839.18	970.47	897.50	844.11	606.10
Transmission	502.78	421.38	345.96	337.73	328.16	274.85	240.88	232.13	215.93	199.50
Gross profit	**8,300.37**	**5,629.56**	**5,322.80**	**4,689.26**	**4,470.66**	**5,510.56**	**5,415.16**	**4,999.20**	**5,142.79**	**5,109.30**
Other Income	1,609.20	1,695.42	1,382.94	1,188.27	1,601.67	934.66	1,016.61	639.90	617.50	671.40
Distribution Expenses	4,400.88	3,685.15	3,004.18	3,091.21	2,575.09	2,110.01	1,834.39	1,703.70	1,484.20	1,376.10
Administrative Expenses	1,162.51	973.38	866.74	789.52	651.69	683.98	479.60	419.50	622.40	489.10
Interest Expenses	4,262.03	3,885.49	3,594.01	3,668.65	2,492.55	2,274.37	2,385.41	3,050.90	3,079.80	2,991.50
Depreciation	3,209.06	3,175.80	3,031.33	2,902.92	2,361.20	1,895.17	1,856.47	1,816.90	1,733.50	1,686.00
Loss (Gain) on Foreign Exchange	- 662.83	896.57	85.01	28.67	813.96	484.10	- 493.39	42.70	- 230.00	59.10
Provision for losses on property, plant & equipment	-	-	-	-	-	60.00	60.00	65.00	40.00	-
Provision under Employees' Benefits Plan	2,053.40	4,106.68	1,890.01	2,246.02	1,246.00	1,354.00	-	-	-	-
Street light dues written off	-	549.79	-	-	863.00	-	-	-	-	-
Deferred Expenditure Written Off	-	-	323.68	112.36	96.68	108.51	42.56	105.40	123.30	320.10
Net Profit/(Loss) before Tax	**- 4,515.48**	**- 9,947.88**	**- 6,089.22**	**- 6,961.82**	**- 5,027.84**	**- 2,524.92**	**266.73**	**- 1,565.00**	**- 1,092.91**	**- 1,141.20**
Provision for Income Tax			-	-	-	-	-	-	-	274.20
Deferred Tax Expense (Income) recognised			-	-	97.80	57.39	73.47	-	-	-
Net Profit (Loss) after Tax	**(4,515.48)**	**(9,947.88)**	**(6,089.22)**	**(6,961.82)**	**(4,930.04)**	**(2,467.53)**	**193.26**	**(1,565.00)**	**(1,092.91)**	**(1,415.40)**
Net Profit (Loss) as per Last Account		**-**	**(21,022.36)**	**(14,098.83)**	**(8,985.61)**	**(6,650.04)**	**(6,095.81)**	**(4,808.01)**	**(3,475.20)**	**(1,694.90)**
Prior years (Income) Expenses	50.00	(80.91)	76.61	(38.29)	163.18	(151.96)	727.49	(297.20)	219.90	344.90
Total Profit Available for Appropriation	**(4,565.48)**	**(9,866.97)**	**(27,188.19)**	**(21,022.36)**	**(14,078.83)**	**(8,965.61)**	**(6,630.04)**	**(6,075.81)**	**(4,788.01)**	**(3,455.20)**
Appropriation for Insurance Fund			-	-	20.00	20.00	20.00	20.00	20.00	20.00
Accumulated Loss Adjusted		**-**	27,188.19	-	-	-	-	-	-	-
Profit (Loss) transferred to Statement of Financial Position	**(14,432.45)**	**(9,866.97)**	**-**	**(21,022.36)**	**(14,098.83)**	**(8,985.61)**	**(6,650.04)**	**(6,095.81)**	**(4,808.01)**	**(3,475.20)**

*Note:- *Provisional figures*

Accounting Policies

For the year ended July 15, 2013

Constitution and Ownership

Nepal Electricity Authority ('NEA') was incorporated on 16 August 1985 under the Nepal Electricity Authority Act, 1984, through the merger of the Department of Electricity of Ministry of Water Resources, Nepal Electricity Corporation and related Development Boards. The merger was necessitated to remedy the inherent weaknesses associated with these fragmented electricity organizations with overlapping and duplication of works.

1 Significant Accounting Policies

1.1 Basis of preparation of Financial Statements

a. The financial statements have been prepared in accordance with Nepal Accounting Standards (NAS) and Generally Accepted Accounting Principles and practices following historical cost conventions. These standards and practices are substantially in line with the principles set out in IFRS.

The preparation of financial statements requires NEA's management to make estimates and assumptions that affect the reported balance of assets and liabilities, revenues and expenses and disclosures relating to the contingent liabilities. The management believes that the estimates used in preparation of the financial statements are prudent and reasonable and management is aware that future results could differ from these estimates. Any revision to accounting estimates is recognised prospectively in the current and future periods. Examples of such estimates include provision for employee benefits, net realisable value of inventory, diminution in value of long-term investments and non-recoverability of receivable balances etc.

b. The figures for the previous year are rearranged and reclassified wherever necessary for the purpose of comparison.

c. Appropriate disclosures are made for the effect of any change in accounting policy, accounting estimate and adjustment of error

d. The financial statements are prepared, generally, on accrual basis. However, some income and expenses are accounted on a cash basis, for practical reasons. Management believes that the impact of recognising those revenues on accrual basis will not be materially different from the current practice.

e. Management has applied estimation while presenting financial statements. Such specific estimates are disclosed in individual sections wherever they have been applied.

1.2 Foreign Currency Transactions

The transactions in foreign currency are recognised at the prevailing rate on transaction date.

The balances of monetary assets and liabilities in foreign currencies are translated at closing rate. The resulting gain or loss due to the translation is taken to profit and loss.

1.3 Functional and Presentation Currency

Items included in the financial statements of the Company are measured and presented using the currency of the primary economic environment in which the Company operates (the functional currency), which is the Nepalese Rupees (indicated as NRs. in short).

1.4 Property, Plant and Equipment

Property plant and equipment are stated at cost of acquisition and/or cost of construction less accumulated depreciation. The cost of property, plant and equipment include cost of acquisition or construction/erection together with other incidental costs and charges attributable to bringing the asset to its working condition for its intended use and also include borrowing costs directly attributable to the acquisition, construction/erection of qualifying asset.

The incidental costs include proportionate overheads relating to the following offices at the rates given below:

(a) Planning	50%
(b) Distribution and Consumer	10%

(c) Engineering	50%
(d) Finance and Administration	10%

Depreciation

Depreciation is provided on Property, Plant and Equipment, except land, on straight-line basis, which reflects the estimated useful lives of those assets. The rates of depreciation applied on property, plant and equipment are as follows:

	Assets Category	Depreciation Rate (per annum)
(a)	Land	-
(b)	Buildings	2%
(c)	Hydro Electric Structures	2%-3%
(d)	Hydro Electric Plant & Machinery	3%
(e)	Internal Combustion on plant & machinery	2%
(f)	Transmission lines (66 KV, 132 KV and above)	3%
(g)	Transmission lines (33 KV)	3%
(h)	Transmission Substations	3%
(i)	Distribution system (including < 11 KV Transmission lines)	3%-4%
(j)	Solar Power	3%
(k)	Meter & metering equipment	10%
(l)	Consumer Services	7%
(m)	Public lighting	3%
(n)	Vehicles, tools and instruments, furniture and fixtures.	20%
(o)	Office Equipment	15%
(p)	Miscellaneous properties	50%
(q)	Additions during the year	50% of applicable rates

1.5 Capital Work in Progress (CWIP)

All expenditures in developing property, plants and equipments not yet completed or not ready to use are categorised as CWIP. The value of Capital works-in-progress includes stock of equipment lying in store or in transit for the purpose of use in the construction or development. It also includes the balances with contractors and suppliers for the value yet to be received. These are capitalised upon commissioning or identified as being ready to use.

1.6 Investments in Shares

All investments in shares are carried at cost. Write-downs are made for impairment, if any, in the value of such investments.

1.7 Inventories

a. Inventories include goods in hand being held for use, sale or as spares.

b. Inventories are valued at lower of cost or net realisable value, using the weighted average method.

c. Net realizable value is the sale price as estimated by the management in the ordinary course of business, less estimated costs, if any, necessary to make the sale. Further, adjustments are made for those inventories identified by management as obsolete or otherwise.

1.8 Trade Receivables

Trade receivable are stated at carrying values except for those identified by the management as being doubtful on recovery. Such estimations for doubtful recovery are reviewed by the management regularly.

1.9 Cash and Cash equivalents

Cash and cash equivalents are carried at cost. They include cash-in-hand, cash-in-transit (bank transfers and cheques in collection which are collected in the subsequent period), and deposits with banks in the various forms of deposit accounts which may or may not bear interest, but which are not of the nature of investments.

1.10 Borrowings

Borrowings that are due after 12 months from the date of the financial position are classified as non-current liabilities and those less than 12 months areclassified as current liabilities.

1.11 Foreign Currency Loans

Liabilities on foreign currency loans as at the year ended are converted into Nepali Rupees by applying prevailing year-end exchange rates. The gain /loss arising there from such transaction is recognised as profit or loss.

1.12 Trade and other payables

Liabilities for creditors and other payables are carried at cost which is the fair value of the consideration to be paid in the future for the goods / services received, whether or not billed to the Company.

1.13 Provisions

Provisions are recognised when the Company has a present legal or constructive obligation as a result of past events, it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation and the reliable estimate of the amount can be made.

Recognition of Provisions involves substantial degree of estimation in measurement. Provisions are reviewed at each statement of financial position date and are adjusted to reflect the current best estimate.

1.14 Employee Benefits

a. Employee benefits, other than retirement benefits, are accounted for in the period during which the services have been rendered on accrual basis.

b. For Retirement Benefits Plans

- Defined Contribution Plans (such as Provident Fund and Insurance Schemes) expenses are charged to income statement on the basis of the liability recognised for the period.
- Defined Benefit Plans (such as Gratuity, Pension, Leave Encashment and Medical Benefits) expenses are charged to the income statement on the basis of actuarial valuation.

c. Liability of actuarial valuation done during the year 2007/08 (2064/65) is being charged over the period of five beginning in that particular year.

1.15 Grant-in-Aid, Contribution from Customer / Local Authority

Grants-in-Aid received from the GoN or other Authorities towards capital expenditure as well as consumers' contribution to capital work are treated initially as Capital Reserve and subsequently adjusted as income in the same proportion as depreciation is charged on such assets.

1.16 Contingent Liabilities

Contingent liabilities are disclosed in respect of possible present obligations that have arose from past events but their existence can only be confirmed on occurrence or non occurrence of one or more uncertain future events not wholly within the control of NEA and possibility of outflow of resources is not determinable.

1.17 Revenue from Sale of Electricity

a. Revenue from sale of electricity is recognised at the time of raising bills to the customers as per the billing cycle. Revenue from the billing cycle date up to 31Ashad (15 July) has been recognised on estimated basis. Revenue from sale of electricity is shown net of rebate.

b. Rebate on payment before the due date and surcharge for delayed payments are accounted for on cash basis.

1.18 Income from Other Services

a. Interest on investments and rental income are recognised on accrual basis.

b. Dividend on investment in shares is recognized when right to receive has been established.

c. Revenue from other services, including services provided by Engineering Services, are recognised on cash basis.

1.19 Insurance Fund

Insurance fund is created by setting aside a sum of Rs 20 million every year, in case of profit for the year, to cover any loss of property, plant and equipment, for any eventuality.

1.20 Taxes

a. Current tax

Current Tax is determined as the amount of tax payable in respect of taxable income for the year.

b. Deferred tax

Deferred tax is recognised on temporary difference, being the difference between tax base of assets and liability and carrying amount thereto. Where there is carry forward losses, deferred tax asset are recognized only if there is virtual certainty of realization of such assets. Other deferred tax assets are recognised only to the extent there is reasonable certainty of realisation in future.

Tariff Rates

(Billing Effective since August 17, 2012)

1: DOMESTIC CONSUMERS

	1.1	Low Voltage (400/220 V)		
	A	Minimum Monthly Charge		
		Meter Capacity	Minimum Charge (NRs.)	Exempt (kWh)
		Up to 5 Ampere	80.00	20
		15 Ampere	365.00	50
		30 Ampere	795.00	100
		60 Ampere	1765.00	200
		Three phase supply		
		Up to 10 KVA	4400.00	400
		Above 10 KVA to 25 KVA	6900.00	600
	B	Energy Charge: (Single Phase)		
		Energy Consumption Block	**Rate Rs (Per Unit)**	Billing Method
		Up to 20 units	4.00	Minimum charge
		21 -50 units	7.30	Up to 20 units Rs 4.00/unit, for 21-3- units NRs 7.30/unit. But, for energy consumption above 30 units, consumption from unit itself shall be charged at Rs 7.30/ unit.
		51 -150 units	8.60	NRs 7.30/unit for0-50 units and NRs 8.60/unit for 51-150 units.
		151 -250 units	9.50	NRs 8.60/unit for 0-150 units and NRs 9.50/unit for1 51-250 units.
		above 250 units	11.00	NRs 9.50/unit for 0-250 units and NRs 11.00/unit above 250 units.
	C	Energy Charge : (Three Phase)		
		Up to 10 KVA	12.00	Minimum charge Rs 4400.00 for consumption up to 400 units and Rs 12.00/unit above 400 units.
		Above 10 KVA to 25 KVA	12.50	Minimum charge Rs 6900.00 for consumption up to 600 units and Rs 12.50/unit above 600 units.
	1.2	Medium Voltage (33/11 kV)		
	A	Minimum Monthly Charge		
		Meter Capacity	Minimum Charge (NRs.)	Minimum unit (kWh)
		Above 25 KVA	31,250.00	2,500.00
	B	Energy Charge		
		Energy Consumption Block	**Rate NRs per unit**	Billing Method
		Above 25 KVA	12.9	Minimum charge Rs 31,250.00 for consumption up to 2500 units and Rs 12.90/unit above 2500 units.

2		OTHER CONSUMERS		
	2.1	Low Voltage (400/220 V		
	S. N.	Consumer category	Demand Charge, Rs/KVA/month	Energy Charge (Rs/Unit)
	1	Industrial		
		a)Cottage	55.00	6.50
		b) Small industry	100.00	8.00
	2	Commercial	295.00	9.35
	3	Non Commercial	195.00	10.00
	4	Irrigation		3.60
	5	Water Supply		
		a) Community Water Supply	140.00	4.30
		b) Other Water Supply	210.00	6.00
	6	Temple		5.10
	7	Street light		
		a) Metered		6.10
		b) Non Metered	2,255.00	
	8	Temporary Supply		16.50
	2	High Voltage		
	A	66 kV or above		
	1	Industrial	220.00	6.25
	B	Medium Voltage (33 kV)		
	1	Industrial	230.00	7.00
	2	Commercial	285.00	9.00
	3	Non Commercial	220.00	9.50
	4	Irrigation	50.00	4.00
	5	Water Supply		
		a) Community Water Supply	200.00	5.00
		b) Other Water Supply	200.00	5.50
	6	Transportation		
		a) Trolleybus	230.00	5.30
		b) Other Transportation	230.00	7.20
	C	Medium Voltage (11 kV)		
	1	Industrial	230.00	7.20
	B	Commercial	285.00	9.25
	1	Non Commercial	220.00	9.60
	2	Irrigation	50.00	4.10
	5	Water Supply		
		a) Community Water Supply	200.00	5.20
		b) Other Water Supply	200.00	5.70
	6	Transportation		
		a) Trolleybus	230.00	5.30
		b) Other Transportation	230.00	7.30
	7	Temple	200.00	8.25
	8	Temporary Supply	300.00	10.00

3		TIME OF DAY (TOD) TARIFF RATE				
	S. N.	Consumer Category	Demand Charge, Rs/KVA/month	Energy Charge (Rs/Unit)		
				Peak Time	Off-Peak	Normal
				17:00-23:00	23:00-5:00	5:00-17:00
	A	66 kV or above				
	1	Industrial	220.00	7.75	3.30	6.25
	B	Medium Voltage (33 kV)				
	1	Industrial	230.00	8.50	4.20	7.00
	2	Commercial	285.00	10.25	5.40	9.00
	3	Non Commercial	220.00	11.00	5.60	10.00
	4	Irrigation	50.00	5.25	2.50	3.90
	5	Water Supply				
		a) Community Water Supply	200.00	6.10	2.90	4.90
		b) Other Water Supply	200.00	8.50	4.20	7.00
	6	Transportation				
		a) Trolleybus	230.00	6.35	3.10	5.20
		b) Other Transportation	230.00	8.50	3.10	7.00
	7	Street Light	70.00	7.00	2.80	3.50
	C	Medium Voltage (11 kV)				
	1	Industrial	230.00	8.75	4.30	7.10
	2	Commercial	285.00	10.50	5.50	9.25
	3	Non Commercial	220.00	11.25	5.70	10.20
	4	Irrigation	50.00	5.30	2.80	3.95
	5	Water Supply				
		a) Community Water Supply	200.00	6.20	3.50	5.10
		b) Other Water Supply	200.00	8.75	4.30	7.10
	6	Transportation				
		a) Trolleybus	230.00	6.50	3.50	5.30
		b) Other Transportation	230.00	8.75	3.50	7.10
	7	Street Light	70.00	7.35	3.00	3.65
	8	Temple	200.00	9.40	4.10	7.60
	9	Temporary Supply	300.00	12.00	5.25	9.80
4		COMMUNITY WHOLESALE CONSUMER				
		Voltage Level	Energy Charge (Rs/Unit)			
	a	Medium Voltage (33 kV and 11 kV)				
		Up to(N x 30) Units		3.50		
		Above (N x 30) Units		5.00		
	b	Low Voltage (400/230 V)				
		Up to(N x 30) Units		3.50		
		Above (N x 30) Units		5.25		

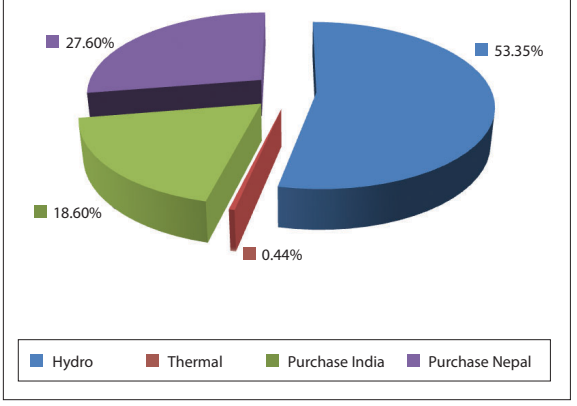
N=Total number of consumers of a community group

Note:

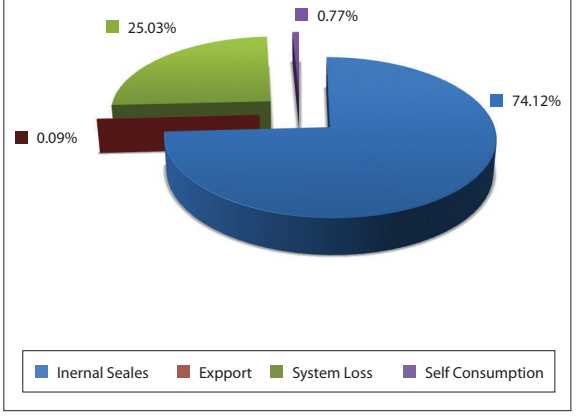
1. Low voltage refers to 230/400 V, Medium voltage refers to 11 kV/33 kV and High voltage refers to 66 kV and above.
2. If Demand Meter of any consumer reads kilowatts (KW), then KVA=KW/0.8. Consumers having kW demand meter shall mandatorily install Capacitors within the given time. Otherwise their KVA demand shall be calculated as KVA=KW/0.7.
3. 10% discount in total bill amount will be given to the GoN approved Industrial Districts if the bill is paid within 21 days of billing date.
4. 20% discount in total bill amount will be given to the Nepal Government Hospitals and Health Centers (except residential complex) if the bill is paid within 21 days of billing date.
5. Consumers supplied at High Voltage (66 kV and above) and Medium Voltage (33 kV and 11 kV)should compulsorily install TOD Meters.
6. If new additional consumers applying for 11 kV supply are to be supplied at 33 kV, they will be charged as per 11 kV tariff structure.

Statistics & Schematics

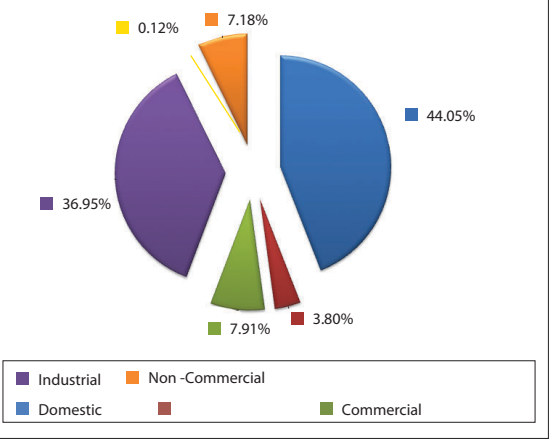
AVAILABILITY OF ENGERGY (FY 2012/13)



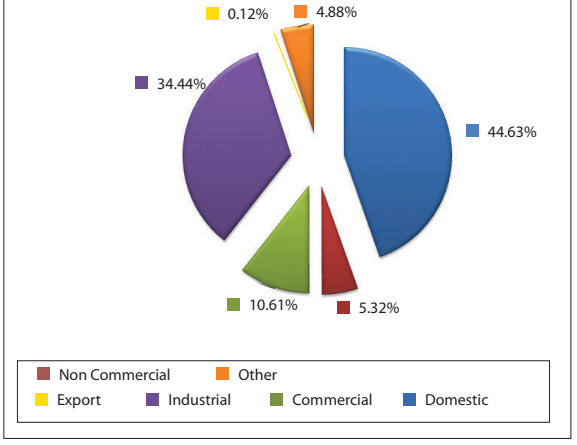
UTILIZATION (FY 2012/13)



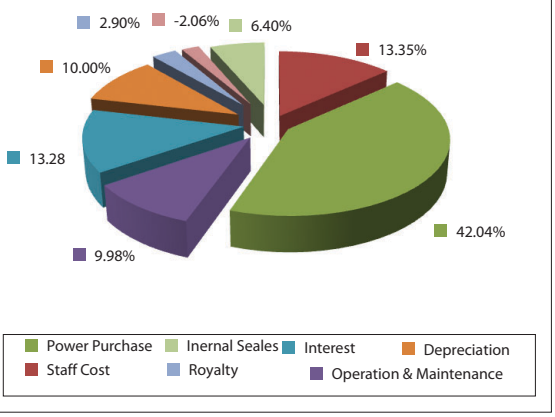
SALES (FY 2012/13)



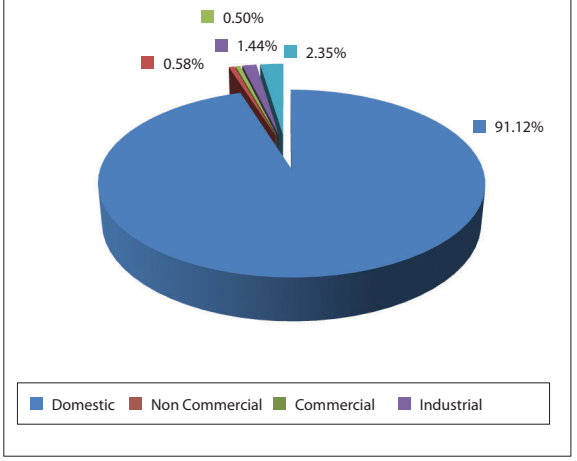
REVENUE (FY 2012/13)



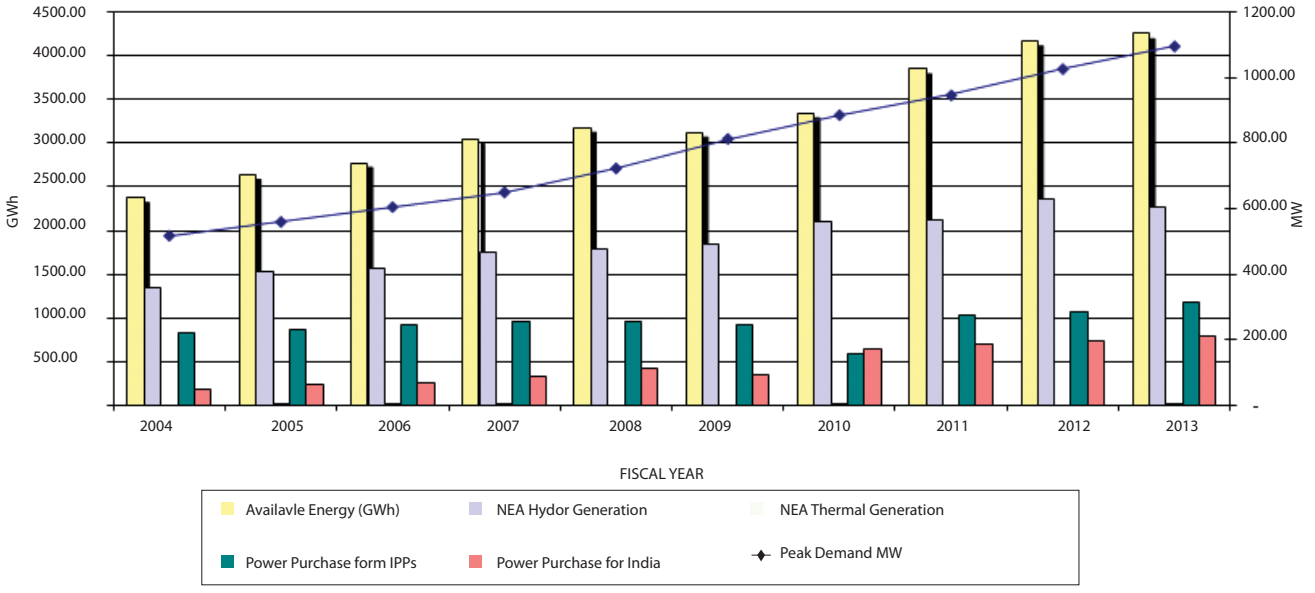
EXPENDITURE (FY 2012/13)



NO. OF CONSUMERS AS OF 15 JULY, 2013



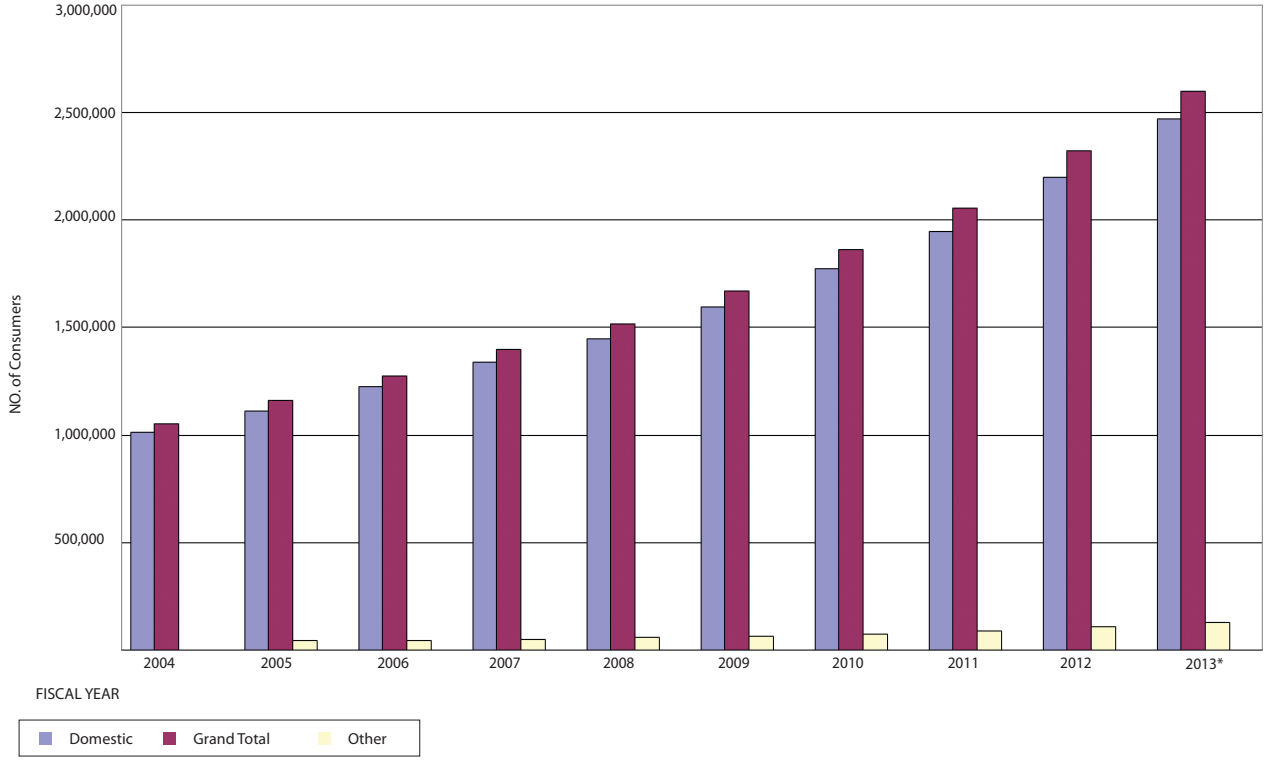
Total Energy Available & Peak Demand



Particulars	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013*
Peak Demand (MW)	515.24	557.53	603.28	648.39	721.73	812.50	885.28	946.10	1,026.65	1,094.62
NEA Hydor Generation	1,345.46	1,522.90	1,568.55	1,747.42	1,793.14	1,839.53	2,108.65	2,122.08	2,357.43	2,273.14
NEA Thermal Generation	9.92	13.67	16.10	13.31	9.17	9.06	13.01	3.40	1.56	18.82
NEA Generation Total (GWh)	1,355.38	1,536.57	1,584.65	1,760.73	1,802.31	1,848.59	2,121.66	2,125.48	2,358.99	2,291.96
Power Purchase from India	186.68	241.39	266.23	328.83	425.22	356.46	638.68	694.05	746.07	792.52
Power Purchase from IPPs	838.84	864.80	930.04	962.26	958.42	925.74	591.43	1,038.84	1,073.57	1,175.97
Power Purchase Total (GWh)	1,025.52	1,106.18	1,196.27	1,291.09	1,383.64	1,282.20	1,230.11	1,732.89	1,819.64	1,968.49
Available Energy (GWh)	2,380.90	2,642.75	2,780.92	3,051.82	3,185.95	3,130.79	3,351.77	3,858.37	4,178.63	4,260.45

Note :- Peak demand is for all areas covered by integrated system including supply to India
* Provisional figures

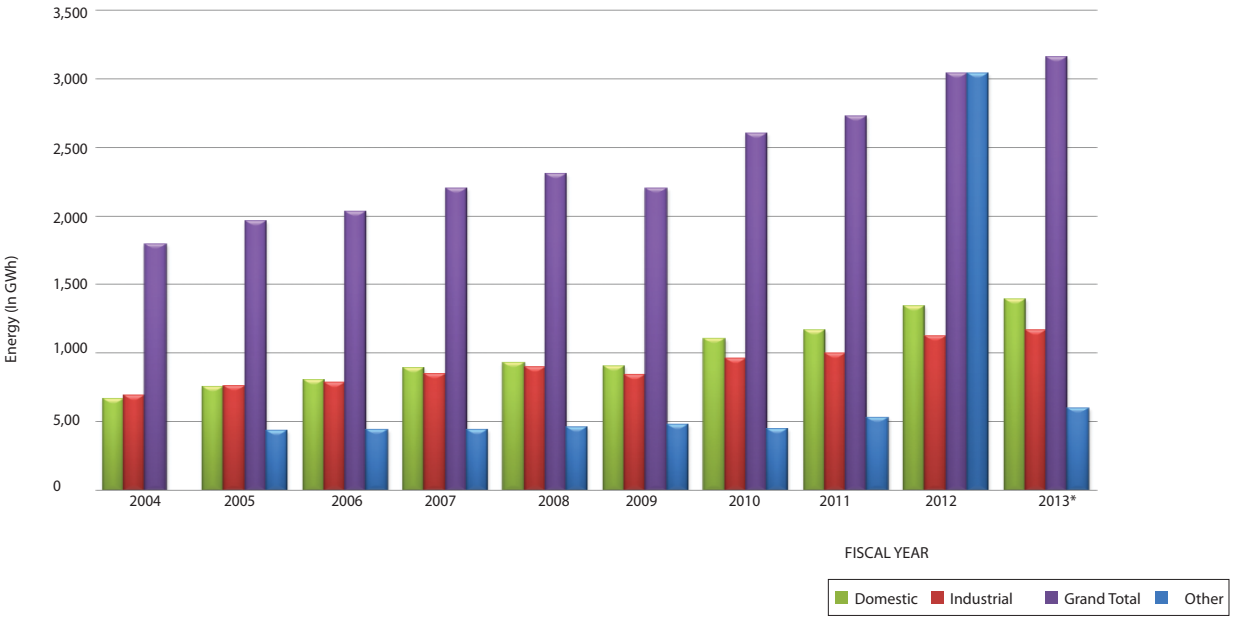
Growth of Consumers



Particulars	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013*
Domestic	1,010,719	1,113,740	1,227,295	1,339,253	1,450,254	1,595,015	1,775,571	1,949,530	2,198,680	2,472,260
Non-Commercial	9,865	9,950	10,010	10,215	10,556	10,518	10,952	12,520	14,055	15,179
Commercial	5,454	6,000	6,170	6,000	6,052	7,305	8,919	10,802	13,297	13,096
Industrial	21,374	22,500	23,020	24,089	25,548	28,559	29,410	33,030	36,409	37,498
Water Supply	352	370	380	414	434	584	609	688	860	834
Irrigation	2,557	3,400	6,450	13,183	18,614	22,335	32,089	42,494	53,165	51,520
Street Light	1,437	1,500	1,550	1,608	1,961	2,339	2,214	2,374	2,590	2,878
Temporary Supply	150	155	165	210	300	403	522	634	619	768
Transport	48	50	54	39	38	42	41	42	44	51
Temple	1,959	2,150	2,290	2,628	2,746	2,911	2,941	3,181	3,529	3,857
Community Sales	15	35	58	169	375	594	795	995	1,161	1,207
Total (Internal Sales)	**1,053,930**	**1,159,850**	**1,277,442**	**1,397,808**	**1,516,878**	**1,670,605**	**1,864,063**	**2,056,290**	**2,324,409**	**2,599,148**
Bulk Supply (India)	5	5	5	5	5	5	4	2	5	4
Grand Total	**1,053,935**	**1,159,855**	**1,277,447**	**1,397,813**	**1,516,883**	**1,670,610**	**1,864,067**	**2,056,292**	**2,324,414**	**2,599,152**

Note:- *Provisional figures

Electricity Sales

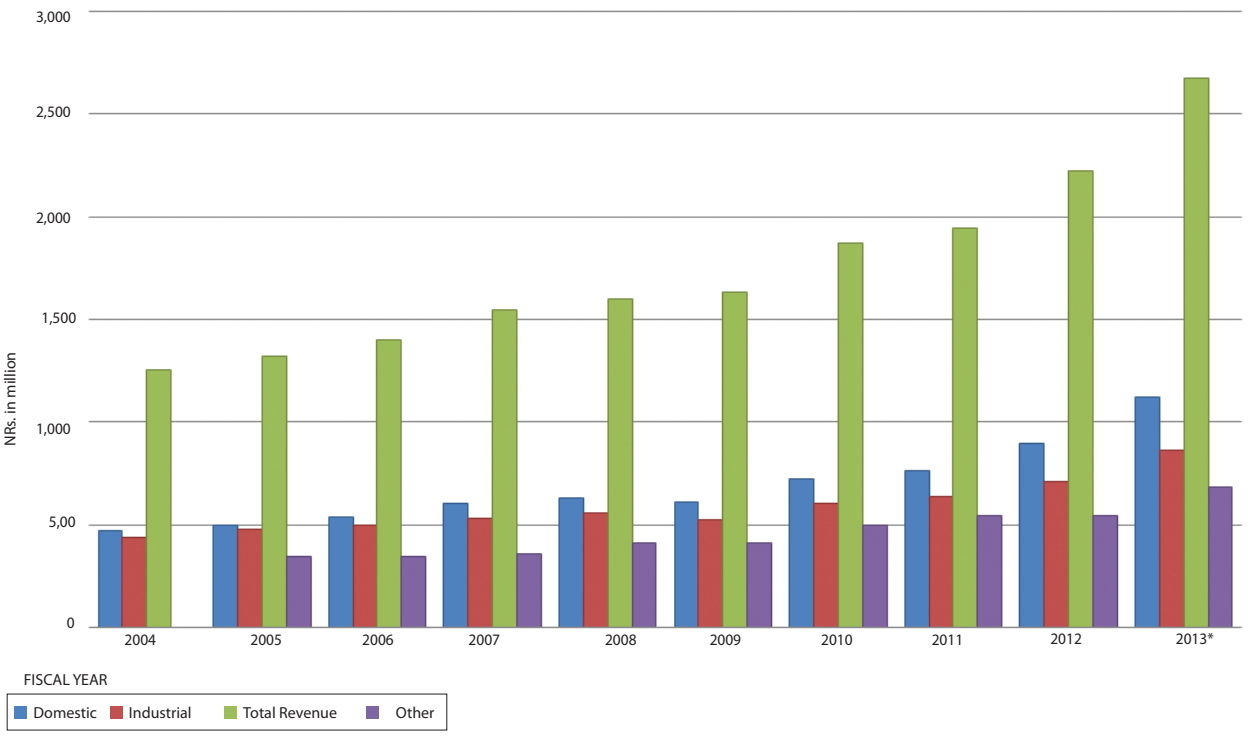


(In GWh)

Particulars	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013*
Domestic	670.78	758.19	805.72	893.27	931.35	908.67	1,108.87	1,169.31	1,342.67	1,392.44
Non-Commercial	83.01	100.54	95.29	100.52	109.93	98.89	103.47	109.49	115.68	120.21
Commercial	108.12	109.31	120.30	141.69	154.38	146.29	187.12	204.03	240.74	250.17
Industrial	689.80	764.00	785.55	849.13	901.09	845.68	960.43	1,001.73	1,123.94	1,167.98
Water Supply & Irrigation	31.67	49.98	45.50	47.96	46.86	48.14	55.98	82.80	64.59	67.12
Street Light	55.20	54.86	63.24	66.90	70.26	67.51	65.58	67.21	72.06	74.86
Temporary Supply	0.25	0.39	0.87	1.26	0.70	1.04	1.00	1.00	1.20	1.26
Transport	5.47	5.80	5.65	6.31	5.88	5.22	5.42	5.54	6.72	7.79
Temple	4.11	4.58	4.77	4.78	5.12	4.76	3.64	3.46	3.95	4.11
Community Sales	5.58	6.03	9.18	15.51	24.65	32.01	34.95	51.95	69.02	71.73
Total (Internal Sales)	**1,653.99**	**1,853.68**	**1,936.07**	**2,127.33**	**2,250.22**	**2,158.21**	**2,526.46**	**2,696.52**	**3,040.57**	**3,157.67**
Bulk Supply (India)	141.23	110.70	96.55	76.87	60.10	46.38	75.07	31.10	4.12	3.72
Grand Total	**1,795.22**	**1,964.38**	**2,032.62**	**2,204.20**	**2,310.32**	**2,204.59**	**2,601.53**	**2,727.62**	**3,044.69**	**3,161.39**

Note:- *Provisional figures

Revenue

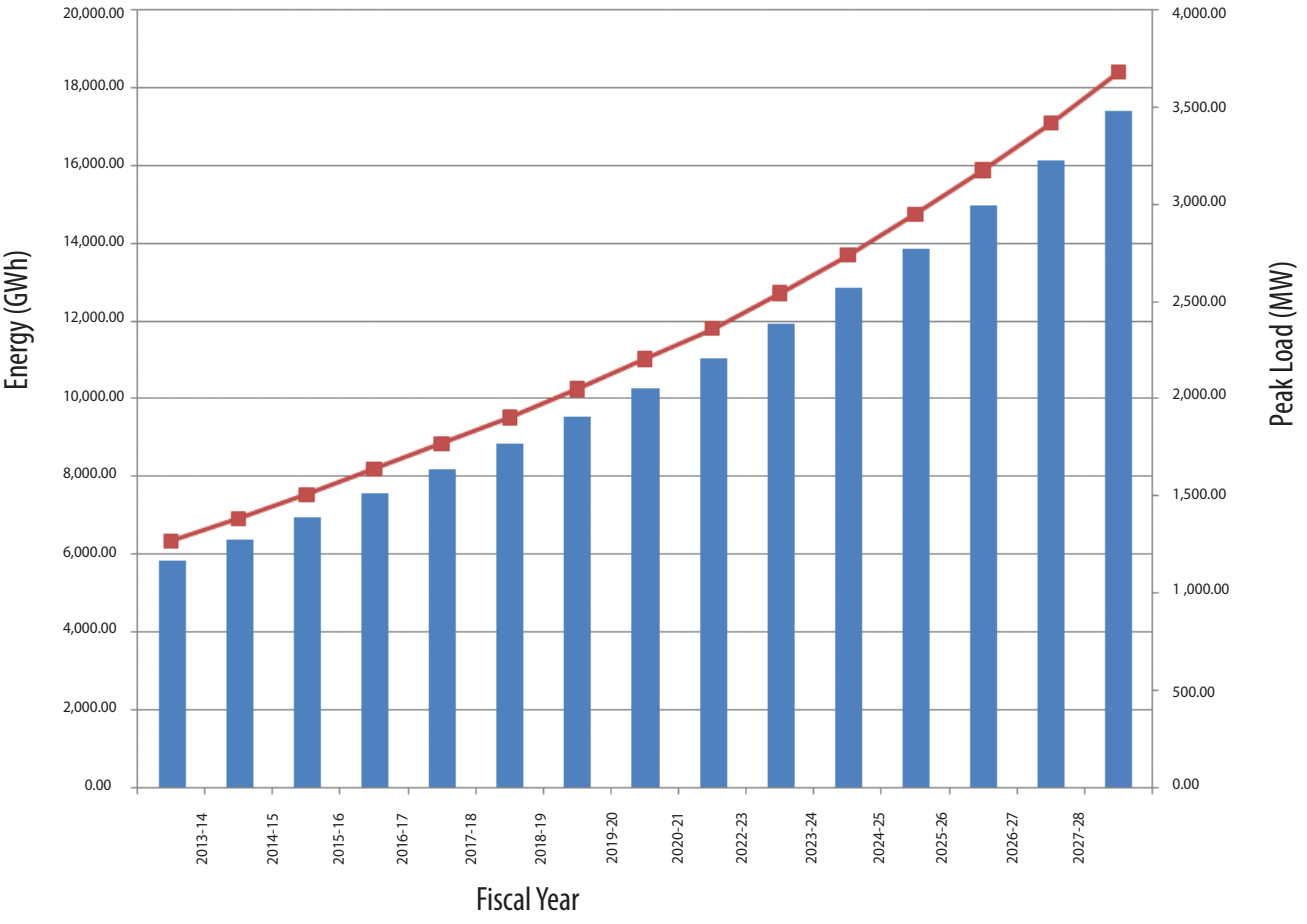


NRs. in million

Particulars	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013*
Domestic	4,701.07	4,987.04	5,405.12	6,021.40	6,297.65	6,100.65	7,252.06	7,602.34	8,967.77	11,217.38
Non-Commercial	816.03	862.37	881.73	940.20	982.08	900.75	983.63	1,020.51	1,091.52	1,338.00
Commercial	986.32	1,012.66	1,081.26	1,288.05	1,399.51	1,384.67	1,719.35	1,910.28	2,259.50	2,666.84
Industrial	4,380.89	4,799.74	4,978.69	5,300.91	5,544.80	5,264.33	6,060.20	6,378.25	7,102.37	8,654.78
Water Supply & Irrigation	154.91	171.57	197.96	214.18	204.67	215.62	353.14	250.60	294.82	330.81
Street Light	329.31	354.10	422.35	454.85	467.31	445.96	333.90	433.42	464.22	504.53
Temporary Supply	3.46	5.06	11.18	17.36	10.51	12.20	13.58	13.98	16.18	20.33
Transport	28.92	30.72	29.78	31.65	33.70	26.95	27.58	27.78	31.70	43.48
Temple	26.38	29.17	24.42	26.03	26.38	24.41	28.16	26.51	21.38	28.53
Community Sales	20.09	24.03	23.94	53.70	64.22	70.10	170.90	189.28	244.97	297.66
Total (Internal Sales)	11,447.38	12,276.46	13,056.43	14,348.33	15,030.83	14,445.64	16,942.50	17,852.95	20,494.43	25,102.34
Bulk Supply (India)	673.93	609.51	579.33	428.93	361.14	295.49	604.85	215.42	23.97	29.68
Gross Revenue	12,121.31	12,885.97	13,635.76	14,777.26	15,391.97	14,741.13	17,547.35	18,068.37	20,518.40	25,132.02
Net Income from Other Services	424.75	336.70	336.09	689.08	584.18	1,601.66	1,188.27	1,382.94	1,695.42	1,609.20
Total Revenue	12,546.06	13,222.67	13,971.85	15,466.34	15,976.15	16,342.79	18,735.62	19,451.31	22,213.82	26,741.22

Note:- *Provisional figures

Load Forecast

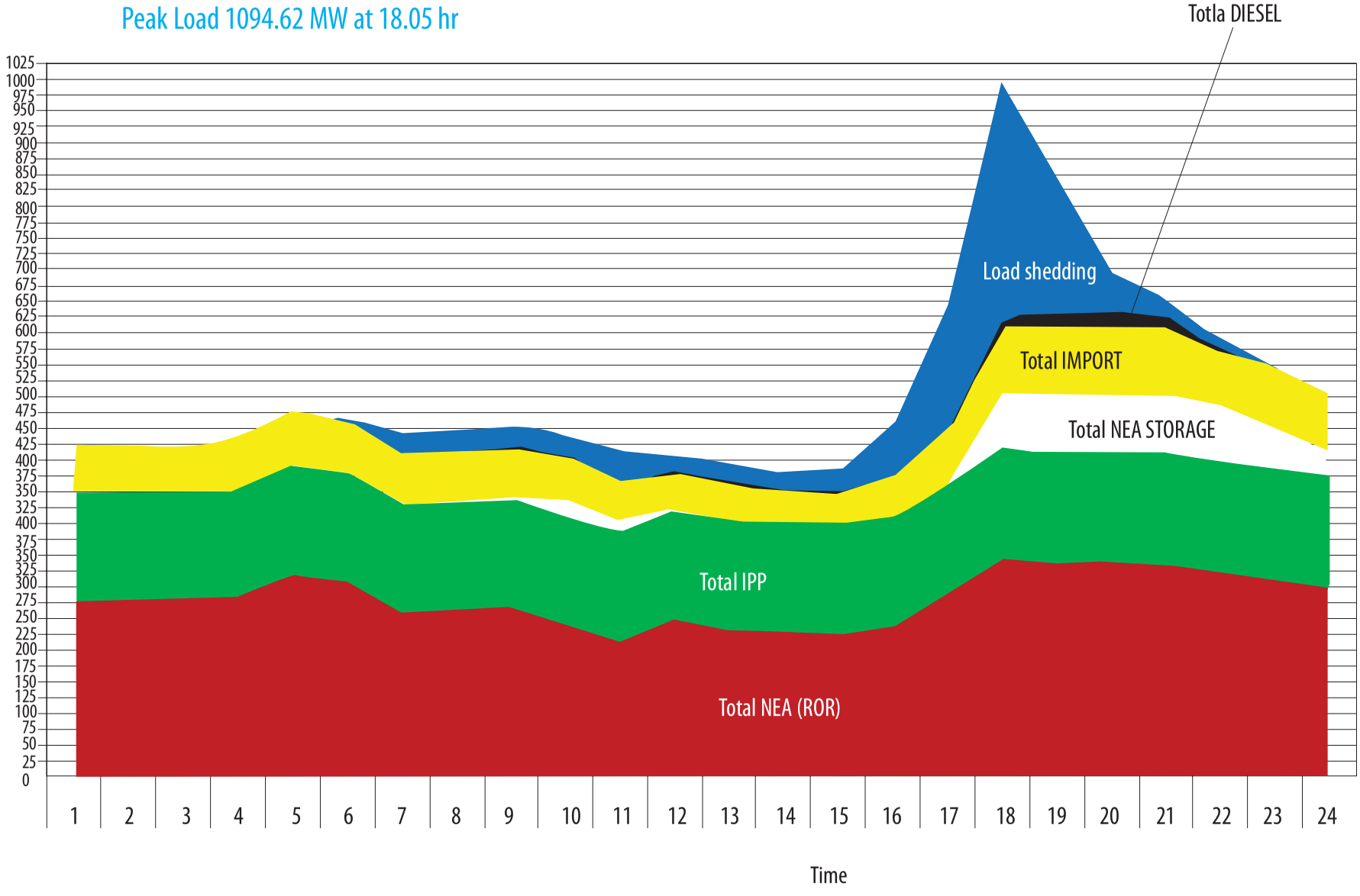


Fiscal Year	Energy (GWh)	System Peak Load (MW)
2013-14	5,859.90	1,271.70
2014-15	6,403.80	1,387.20
2015-16	6,984.10	1,510.00
2016-17	7,603.70	1,640.80
2017-18	8,218.80	1,770.20
2018-19	8,870.20	1,906.90
2019-20	9,562.90	2,052.00
2020-21	10,300.10	2,206.00
2021-22	11,053.60	2,363.00
2022-23	11,929.10	2,545.40
2023-24	12,870.20	2,741.10
2024-25	13,882.40	2,951.10
2025-26	14,971.20	3,176.70
2026-27	16,142.70	3,418.90
2027-28	17,403.60	3,679.10

System Load Curve of Peak Load Day

November 13, 2012 Tuesday

Peak Load 1094.62 MW at 18.05 hr



Electricity Generation Power Plants and Projects

Major Hydropower Stations		
S. No.	Power Plants	
1	Kaligandaki A	144,000
2	Middle Marsyangdi	70,000
3	Marsyangdi	69,000
4	Trisuli	24,000
5	Sunkoshi	10,050
6	Gandak	15,000
7	Kulekhani I	60,000
8	Devighat	14,100
9	Kulekhani II	32,000
10	Puwa Khola	6,200
11	Modi Khola	14,800
	Sub Total	459,150
	Small Hydropower Plants	
12	Sundarijal	640
13	Panauti	2,400
14	Fewa	1,000
15	Seti (Pokhara)	1,500
16	Tatopani	2,000
17	Chatara	3,200
18	Tinau	1,024
19	Pharping***	500
20	Jomsom**	240
21	Baglung***	200
22	Khandbari**	250
23	Phidim**	240
24	Surnaiyagad	200
25	Doti***	200
26	Ramechhap	150
27	Terhathum**	100
28	Gamgad	400
	Sub Total	14,244
	Total	473,394

Small Hydropower Plants (Isolated)	
Dhankuta***	240
Jhupra (Surkhet)***	345
Gorkhe(Ilam)***	64
Jumla**	200
Dhading***	32
Syangja***	80
Helambu	50
Darchula**	300
Chame**	45
Taplejung**	125
Manag**	80
Chaurjhari(Rukum)**	150
Syaprudaha (Rukum)**	200
Bhojpur**	250
Bajura**	200
Bajhang**	200
Arughat (Gorkha)	150
Okhaldhunga	125
Rupalgad (Dadeldhura)	100
Achham	400
Dolpa	200
Kalokot	500
Heldung (Humla)	500
Total	4,536

S. No.	Thermal Power Plants	Capacity (KW)
1	Duhabi Multifuel	39,000
2	Hetauda Diesel	14,410
	Total	53,410
	Solar Power Plants	
1	Simikot	50
2	Gamgadhi	50
	Total	**100**
Total Major Hydro (NEA) - Grid Connected		**473,394**
	Total Small Hydro (NEA)-Isolated	4,536
	Total Hydro (NEA)	477,930
	Total Hydro (IPP)	230,589
	Total Hydro (Nepal)	708,519
	Total Thermal (NEA)	53,410
	Total Solar (NEA)	100

Total Installed Capacity (NEA and IPP) 762,029

Total Installed Capacity (NEA & IPP)-Grid 757,393

Under Construction		Capacity (KW)
1	Upper Tamakosi Hydropower Project	456,000
2	Tanahu Hydropower Project	140,000
3	Chameliya HEP	30,000
4	Kulekhani III	14,000
5	Upper Trisuli 3 'A' HEP	60,000
6	Rahughat HEP	32,000
	Total	732,000

Planned and Proposed		Capacity (KW)
1	Upper Trisuli 3 'B'	40,000
2	Upper Arun HEP	335,000
3	Upper Modi 'A' HEP	47,000
4	Dudh Kosi Storage HEP	640,000
5	Tamor Storage HEP	530,000
6	Uttar Ganga Storage HEP	300,000
	Total	1,892,000

Note:
** Leased to Private Sector
*** Not in Normal Operation

High Voltage Transmission Lines & Substations

Existing	Type of Ckts	Length	Conductor	Conductor	
132 kV Transmission Line			**Circuit km**	**Type**	**Size (Sq.in.)**
1	Anarmani-Duhabi	Single	75.76	BEAR	0.25
2	Kusha-Katiya(India)	Single	15	BEAR	0.25
3	Duhabi-Lahan-Chandranigahpur-Pathaliya/Parwanipur-Hetauda	Double	598	BEAR	0.25
4	Hetauda-KL2 P/S	Single	8	BEAR	0.25
5	Bharatpur-Marsyangdi P/S	Single	25	DUCK	0.3
6	Hetauda-Bharatpur	Single	70	PANTHER	0.2
7	Marsyangdi P/S-Suichatar	Single	84	DUCK	0.3
8	Suichatar-KL2 P/S	Single	36	BEAR	0.25
9	Suichatar-Balaju-New Bhaktapur	Single	26.9	BEAR	0.25
10	New Bhaktapur-Lamosangu	Double	96	BEAR	0.25
11	Lamosangu-Khimti P/S	Single	46	BEAR	0.25
12	Lamosangu-Bhotekoshi P/S	Single	31	BEAR	0.25
13	Bharatpur-Damauli	Single	39	WOLF	0.15
14	Bharatpur-Kawasoti-Bardghat	Single	70	PANTHER	0.2
15	Bardghat-Gandak P/S	Double	28	PANTHER	0.2
16	Bardghat-Butwal	Double	86	BEAR	0.25
17	Butwal-KGA P/S	Double	116	DUCK	0.3
18	KGA P/S-Lekhnath	Double	96	DUCK	0.3
19	Lekhnath-Damauli	Single	45	PANTHER	0.15
20	Lekhnath-Pokhara	Single	7	WOLF	0.1
21	Pokhara-Modikhola P/S	Single	37	BEAR	0.25
22	Butwal-Shivapur-Lamahi	Single	112	BEAR	0.25
23	Lamahi-Jhimruk P/S	Single	50	DOG	0.1
24	Lamahi-Kohalpur-Lumki-Attariya	Single	243	BEAR	0.25
25	Attariya-Mahendranagar-Gaddachauki	Single	49	BEAR	0.25
26	Marsyangdi -M. Marsyangdi	Single	40	BEAR	420 sq mm
	Total		**2,129.7**		
66 kV Transmission Line					
1	Chilime P/S-Trishuli P/S	Single	39		0.15
2	Trisuli P/S-Balaju	Double	58		0.1
3	Trisuli P/S-Devighat P/S	Single	4.56		0.15
4	Devighat P/S-Balaju	Single	30		0.1
5	Devighat P/S-New Chabel	Single	33		0.1
6	Balaju-Lainchor	Single	2		0.2
7	Balaju-Siuchatar-KL1 P/S	Double	72		0.15
8	KL 1 P/S-Hetauda-Birgunj	Double	144		0.15
9	Suichatar-Teku	Single	4.1		0.25
10	Suichatar-New Patan	Double	13		0.15
11	Teku-K3 (underground)	Singlecore	2.8	XLPE Cable	400 sq.mm.
12	Suichatar-K3	Single	6.9	XLPE Cable	0.25+500 sq.mm.
13	New Patan-New Baneswor	Single	2.8		120 sq mm
14	Bhaktapur-New Chabel	Single	23		250 & 100 sq.mm.
15	Bhaktapur-Banepa-Panchkhal-Sunkoshi P/S	Single	48		120 sq. mm.
16	Indrawati- Panchkhal	Single	28		95 sq.mm.
	Total		**511.16**		

Existing Grid Substations							
132KV Substations Capacity, MVA			**132 kV S/S**	**Capacity, MVA**	**66 KV S/S**	**Capacity, MVA**
					1. Birgung	55.0
	1. Mahendranagar	15.5	14. Dhalkebar	68.0	2. Amlekhgunj	3.2
	2. Attariya	25.5	15. Lahan	74.0	3. Simra	20.1
	3. Lumki	10.5	16. Duhabi	159.2	4. Hetauda	20.0
	4. Kohalpur	37.5	17. Anarmani	75.0	5. Siuchatar	36.0
	5. Lamahi	18.0	18. Pokhara	45.0	6. K-3	45.0
	6. Shivapur	41.0	19. Lekhnath	12.5	7. Teku	45.0
	7. Butwal	142.6	20. Damauli	26.0	8. Patan	36.0
	8. Bardghat	13.5	21. Lamosangu	15.0	9. Baneshwor	36.0
	9. Kawasoti	38.0	22. Bhaktapur	94.5	10. Bhaktapur	
	10. Bharatpur	55.0	23. Balaju	45.0	11. Banepa	22.5
	11. Hetauda	40.0	24. Siuchatar	113.4	12. Panchkhal	10.0
	12. Parwanipur	90.0	25. Matatirtha	22.5	13. Lainchour	45.0
	13. Chandranigahapur	38.0	26. Pathlaiya	22.5	14. New-Chabel	45.0
			27. Shyangja	38.0	15. Balaju	45.0
			Total	**1,375.70**	**Total**	**463.75**

High Voltage Transmission Lines & Substations

S. No.	Under Construction	Type of Ckts	Length	Conductor	Conductor
132 kV Transmission Line			**Circuit km**	**Type**	**Size**
1	132 kV Thankot-Chapagaon	Double	57	BEAR	0.25
2	132 kV Chameliya-Attaria	Single	129	BEAR	0.25
3	132 kV Butwal-Kohalpur-Mahendranagar 2nd Circuit	Double	208	BEAR	0.25
4	132 kV Mid. Marsyangdi-Dumre- Damauli-Marsyangdi	Double	76	BEAR	0.25
6	132 kV Kabeli-Damak	Double	180	BEAR	0.25
7	132 kV Singati-Lamosangu	Double	76	BEAR	0.25
8	132kV Kusum -Hapure	Single	22	BEAR	0.25
9	132kV 2nd Circuit Hetauda-KL-II-Siuchatar	Double	45	BEAR	0.25
	Total		**793.0**		
220 kV Transmission Line					
1	220 kV Khimti-Dhalkebar	Double	150	BISON	
2	220 kV Hetauda-Bharatpur	Double	146	BISON	
3	220kV Bharatpur-Bardghat	Double	150	BISON	
	Total	**Double**	**446**		
400 kV Transmission Line					
1	Hetauda-Dhalkebar-Duhabi	Double	570	MOOSE	
Planned & Proposed 220 kV Transmission Line					
1	Koshi Corridor	Double	350		
2	Kaligandaki Corridor	Double	219.8		
3	Lekhnath-Damauli	Double	80		
4	Marsyangdi-Kathmandu	Double	170	2 X MOOSE	
5	Marsyangdi-Bharatpur	Double	50		
6	Marsyangdi Transmission Corridor	Double	180		
7	Chilime-Trishuli	Double	80		
8	Tamakoshi-Kathmandu 220/400kV	Double	180		
	Total		**1309.80**		
132 kV Transmission Line					
1	Butwal-Lumbini	Double	44	BEAR	0.25
2	Dhalkebar-Loharpatti	Double	40	BEAR	0.25
3	Gulmi-Arghakhanchi-Gorusinghe	Double	220	BEAR	0.25
4	Ramechap-Garjyang-Khimti	Double	60	BEAR	0.25
4	Dordi Corridor	Double	32	BEAR	0.25
6	Modi-Lekhnath	Double	84	BEAR	0.25
7	Samundratar-Trishuli 3B	Double	40	BEAR	0.25
8	Kohalpur-Surkhet	Double	100	BEAR	0.25
9	Karnali Corridor	Double	120	BEAR	0.25
10	Bajhang-Deepayal-Attariya	Double	260	BEAR	0.25
11	Hapure-Tulsipur	Double	36	BEAR	0.25
12	Surkhet-Dailekh-Jumla	Double	214	BEAR	0.25
13	Kaligandaki-Gulmi (Jhimruk)	Double	86	BEAR	0.25
14	Solu Corridor (Katari-Okhaldhunga-Solu)	Double	180	CARDINAL	
15	Baneshwor-Bhaktapur	Double	24	XLPE	800 sq.mm.
	Total		**1540.00**		
Planned & Proposed 400 kV Transmission Line					
1	400 kV Dhalkebar-Muzzaffarpur Cross Border Line*	Double	78	MOOSE	
2	Duhabi-Jogbani*	Double	52	MOOSE	
3	Hetauda-Butwal-Lamki-Mahendranagar	Double	1140	MOOSE	
4	Bardaghat - Gorakhpur*	Double	50	MOOSE	
	Total		**1320**		

Under Construction Grid Substations	**Capacity, MVA**
1	132/11 kV Matatirtha	22.5
2	132/33/11 kV Damak, Illam, Phidim, Kabeli	124.0
3	132/11 kV Chapali	120.0
4	132/33/11 kV Matatirtha	52.5
5	132/33 kV Hapure	30.0
6	132 kV Hetauda (Kamane)	30.0
7	132/33 kV New Marsyangdi	30.0
8	132/33 kV Singati	30.0
9	132/33 kV Kusum	30.0
10	132/33kV Mirchaiya	30.0
11	132/33kV Ghorahi	30.0
12	132/11kV New Bharatpur	30.0
	Total	**559.0**

Planned & Proposed Grid Substations		
Voltage Level	No. of S/S	**Total (MVA)**
1. 400 kV S/S	5	2025
2. 220 kV S/S	18	3876
3. 132 kV S/S	21	917
Total		6818

** To be developed by Public-Private Company*

Projects Developed by Independent Power Producers

S.No.	Name of Company	Name of Project	Location (District)	Capacity (kW)
Projects In Operation				
1	Himal Power Ltd.	Khimti Khola	Dolkha	60,000
2	Bhotekoshi Power Company Ltd.	Bhotekoshi Khola	Sindhupalchok	45,000
3	Chilime Hydro Power Company Ltd.	Chilime	Rasuwa	22,000
4	National Hydro Power Company Ltd.	Indrawati - III	Sindhupalchowk	7,500
5	Butwal Power Company Ltd.	Jhimruk Khola	Pyuthan	12,000
6	Butwal Power Company Ltd.	Andhi Khola	Syangza	5,100
7	Syange Bidyut Company Limited	Syange Khola	Lamjung	183
8	Arun Valley Hydro Power Company Ltd.	Piluwa Khola	Sankhuwasava	3,000
9	Rairang Hydro Power Development Co. (P) Ltd.	Rairang Khola	Dhading	500
10	Sanima Hydro Power Company Ltd.	Sunkoshi Khola	Sindhupalchok	2,500
11	Alliance Power Nepal Pvt.Ltd.	Chaku Khola	Sindhupalchok	1,500
12	Khudi Hydro Power Ltd.	Khudi Khola	Lamjung	3,450
13	Unique Hydel Co. Pvt.Ltd.	Baramchi Khola	Sindhupalchowk	4,200
14	Thoppal Khola Hydro Power Co. Pvt. Ltd.	Thoppal Khola	Dhading	1,650
15	Gautam Buddha Hydropower (Pvt) Ltd	Sisne Khola	Palpa	750
16	Kathmandu Small Hydropower Systems Pvt. Ltd.	Sali Nadi	Kathmandu	232
17	Khoranga Khola Hydro Power Co. Ltd.	Pheme Khola	Panchtar	995
18	Unified Hydropower (P) Ltd.	Pati Khola	Parbat	996
19	Task Hydropower Company (P.) Ltd.	Seti-II	Kaski	979
20	Ridi Hydropower Development Co. (P.) Ltd.	Ridi Khola	Gulmi	2,400
21	Centre for Power Dev. And Services (P.) Ltd.	Upper Hadi Khola	Sindhupalchowk	991
22	Gandaki Hydro Power Co. Pvt. Ltd.	Mardi Khola	Kaski	4,800
23	Himal Dolkha Hydropower Company Ltd.	Mai Khola	Ilam	4,500
24	Baneshor Hydropower Pvt. Ltd.	Lower Piluwa	Sankhuwasabha	990
25	Barun Hydropower Development Co. (P.) Ltd.	Hewa Khola	Sankhuwasabha	4,455
26	Nyadi Group (P.) Ltd.	Siuri Khola	Lamjung	4,950
27	United Modi Hydropower Pvt. Ltd.	Lower Modi I	Parbat	9,900
28	Bhagawati Hydropower Development Co. (P.) Ltd.	Bijayapur-1	Kaski	4,410
29	Synergy Power Development (P.) Ltd.	Sipring Khola	Dolakha	9,658
30	Kathmandu Upatyaka Khanepani Board	Solar	Kathmandu	680
31	Aadishakti Power Development Co. (P.) Ltd.	Tadi Khola (Thaprek)	Nuwakot	5,000
32	Laughing Buddha Power Nepal (P.) Ltd.	Middle Chaku	Sindhupalchowk	1,800
33	Nepal Hydro Developer Pvt. Ltd.	Charnawati Khola	Dolakha	3,520
	Total			230,589

Power Purchase Agreement (PPA) Concluded Projects

S.No.	Name of Company	Name of Project	Location (District)	Capacity (kW)
Projects Under Construction				
1	Sunkoshi Hydro Power Co. Pvt. Ltd.	Lower Indrawati Khola	Sindhupalchok	4,500
2	Ankhu Khola Jal Bidhyut Co. (P.) Ltd.	Ankhu Khola - 1	Dhading	8,400
3	Bhairabkunda Hydropower Pvt. Ltd.	Bhairab Kunda	Sindhupalchowk	3,000
4	Laughing Buddha Power Nepal (P.) Ltd.	Lower Chaku Khola	Sindhupalchowk	1,765
5	Bojini Company Private Limited	Jiri Khola	Dolkha	2,200
6	Eastern Hydropower (P.) Ltd.	Pikhuwa Khola	Bhojpur	2,475
7	Sanima Hydro Power P.Ltd.	Mai Khola	Ilam	22,000
8	Upper Tamakoshi Hydropower Co. Ltd.	Upper Tamakoshi HPP	Dolkha	456,000
9	Prime Hydropower Co. Pvt. Ltd.	Belkhu	Dhading	518
10	Mailung Khola Hydro Power Company (P.) Ltd.	Mailung Khola	Rasuwa	5,000
11	Electro-com and Research Centre Pvt.Ltd	Jhyadi Khola	Sindhupalchowk	2,000
12	Shivani Hydropower Company (P.) Ltd.	Phawa Khola	Taplejung	4,950
13	East Nepal Development Endeavour (P) Ltd	Upper Mai Khola	Ilam	9,980
14	Garjang Upatyaka Hydropower (P.) Ltd.	Chake Khola	Ramechhap	2,830
15	Madi Power Pvt. Ltd.	Upper Madi	Kaski	19,008
16	Radhi Bidyut Company Ltd.	Radhi Khola	Lamjung	4,400
17	Greenlife Energy Pvt.Ltd	Khani khola-1	Dolakha	25,000
18	Sanjen Hydropower Co.Limited	Sanjen	Rasuwa	14,800
19	Middle Bhotekoshi Jalbidhyut Company	Middle Bhotekoshi	Sindhupalchowk	102,000
20	Chilime Hydro Power Company Ltd.	RasuwaGadi	Rasuwa	111,000
21	Water and Energy Co.Pvt.Ltd	Badi Gad	Baglung	6,600
22	Sanjen Hydropower Co.Limited	Sanjen	Rasuwa	42,500
23	Gelun Hydropower Co.Pvt.Ltd	Gelun	Sindhupalchowk	3,200
24	Pachathar Power Company Pvt. Ltd.	Hewa Khola A	Pachathar	14,900
25	Sinohydro-Sagarmatha Power Company (P.) Ltd	Upper Marsyangdi A	Lamjung	50,000
26	Joshi Hydropower Development Co. (P.) Ltd.	Upper Puwa Khola-1	Ilam	3,000
27	Butwal Power Company Ltd.	Upgradation of Andhikhola	Syangja	4,300
28	Alliance Power Ltd	Upgradation of Chaku	Sindhupalchowk	1,500
		Total		**927,826**

Power Purchase Agreement (PPA) Concluded Projects

S.No.	Name of Company	Name of Project	Location(District)	Capacity (kW)
Projects In Different Stage of Development				
1	Annapurna Group Pvt. Ltd.	Madi-1 Khola	Kaski	10,000
2	TMB Energietechnik	Narayani Shankar Biomass	Rupandehi	600
3	Nama Buddha Hydropower (P) Ltd	Tinau Khola	Palpa	990
4	Gayatri Hydro Power (P.) Ltd.	Charanawati	Dolakha	980
5	Mansarowar Powers (P.) Ltd.	Golmagad	Doti	580
6	L. K. Power (P.) Ltd.	Dapcha-Roshi	Kavrepalanchowk	5,000
7	Universal Power Company (P) Ltd.	Ladku Khola	Kavrepalanchowk	700
8	Himalayan Hydropower Pvt. Ltd.	Namarjun Madi	Kaski	11,880
9	Welcome Energy Development Company (P.) Ltd.	Lower Balephi	Sindhupalchowk	18,514
10	Ruru Hydropower Project (P) Ltd.	Upper Hugdi Khola	Gulmi	5,000
11	Shreeup Hydropower Co. (P.) Ltd.	Seti Khola	Chitwan	465
12	Sikles Hydropower (P) Ltd.	Madkyu Khola	Kaski	9,968
13	Baishno Devi Hydro Power (P.) Ltd.	Lower Sunkoshi -III	Sindhupalchowk	9,900
14	Triyog Energy & Development Pvt. Ltd.	Middle Gaddigad	Doti	2,970
15	Jumdi Hydropower Pvt. Ltd.	Jumdi Khola	Gulmi	1,750
16	Barahi Hydropower Pvt.ltd	Theule Khola	Baglung	1,500
17	Hira Ratna Hydropower P.ltd	Tadi Khola	Nuwakot	5,000
18	Api Power Company Pvt.Ltd	NauGad Gad Khola	Baitadi	8,500
19	Eklekunda Hydropower Co.Pvt.Ltd	Dorkhu Khola	Nuwakot	990
20	Energy Engineering Pvt.ltd	Upper Mailun A	Rasuwa	5,000
21	Teleye Samyak Company Pvt.Ltd	Dhansi Khola	Rolpa	955
22	Shiva Shree Hydropower Pvt.Ltd	Upper Chaku A	Sindhupalchowk	22,200
23	Swoyembhu Hydropower Pvt. Ltd	Upper charnawati	Dolakha	2,020
24	Balefi Jalbidhyut Com. Pvt. Ltd	Balefi	Sindhupalchowk	24,000
25	Himalayan Urja Bikas Co. Pvt. Ltd.	Upper Khimti	Dolkha	12,000
26	Mount Kailash Energy Pvt. Ltd.	Thapa Khola	Myagdi	11,200
27	Green Venture Pvt.Ltd.	Likhu-IV	Okhaldhunga, Ramechhap	52,400
28	Robust Energy Pvt. Ltd.	Mistri Khola	Myagdi	42,000
29	Pashupati Environmental Eng. Power Co. Pvt. Ltd.	Chhote Khola	Gorkha	993
30	Ingua Hydropower Company Pvt.Ltd	Ingua Khola	Ilam	9,700
31	Daraudi Kalika Hydro Pvt. Ltd.	Daraudi Khola A	Gorkha	6,000
32	Manang Trade Link Pvt. Ltd.	Lower Modi	Parbat	20,000
33	Molnia Power Ltd.	Upper Mailung	Rasuwa	14,300
34	Jywala Sajhedari Hydropower Company Pvt. Ltd.	Tame Khola	Dailekha	1,250
35	Dronanchal Hydropower Co.Pvt.Ltd	Dhunge-Jiri	Dolakha	600
36	Mandakani Hydropower Privated Limited	Sardi Khola	Kaski	3,500
37	Dibeshwori Hydropower Company Limited	Saba Khola	Sankhubasha	3,300
38	Dariyal Small Hydropower Pvt.Ltd	Upper Belkhu	Dhading	750
39	Suryakunda Hydroelectric Pvt. Ltd.	Upper Tadi	Nuwakot	11,000
40	Sayapatri Hydropower Privated Limited	Daram Khola A	Baglung	2,500
41	Mai Valley Hydropower Privated Limited	Upper Mai C	Ilam	5,100
42	Chyangdi Hydropower Privated Limited	Chhandi	Lamjung	1,700
43	Himalayan Power Partner Pvt. Ltd.	Dordi Khola	Lamjung	27,000
44	Sasa Engineering Hydropower (P) Ltd.	Khan Khola (Dolakha)	Dolakha	30,000
45	Arun Kabeli Power Ltd.	Kabeli B-1	Taplejung, Panchthar	25,000
46	Rising Hydropower Co. Ltd.	Selang Khola	Sindhupalchowk	990
47	Upper Piluwa Khola Hydropower Co. Pvt. Ltd.	Upper Piluwa Khola	Sankhuwasabha	9,622
48	Pashupati Energy Development Co. Pvt. Ltd.	Tungun Thosne	Lalitpur	4,360
49	Pashupati Energy Development Co. Pvt. Ltd.	Khani Khola	Lalitpur	2,000
50	Kutheli Bukhari Small Hydropower (P) Ltd.	Suspa Bukhari	Dolakha	350
51	Dupcheswor Mahadev Hydro Co. Ltd.	Middle Tadi	Nuwakot	5,325
52	Rishikesh Hydropower Pvt. Ltd.	Upper Jumdi	Gulmi	995
53	Liberty Hydropower Ltd.	Upper Dordi A	Lamjung	22,000
54	Hydro Innovation Pvt. Ltd.	Tinekhu Khola	Dolakha	990

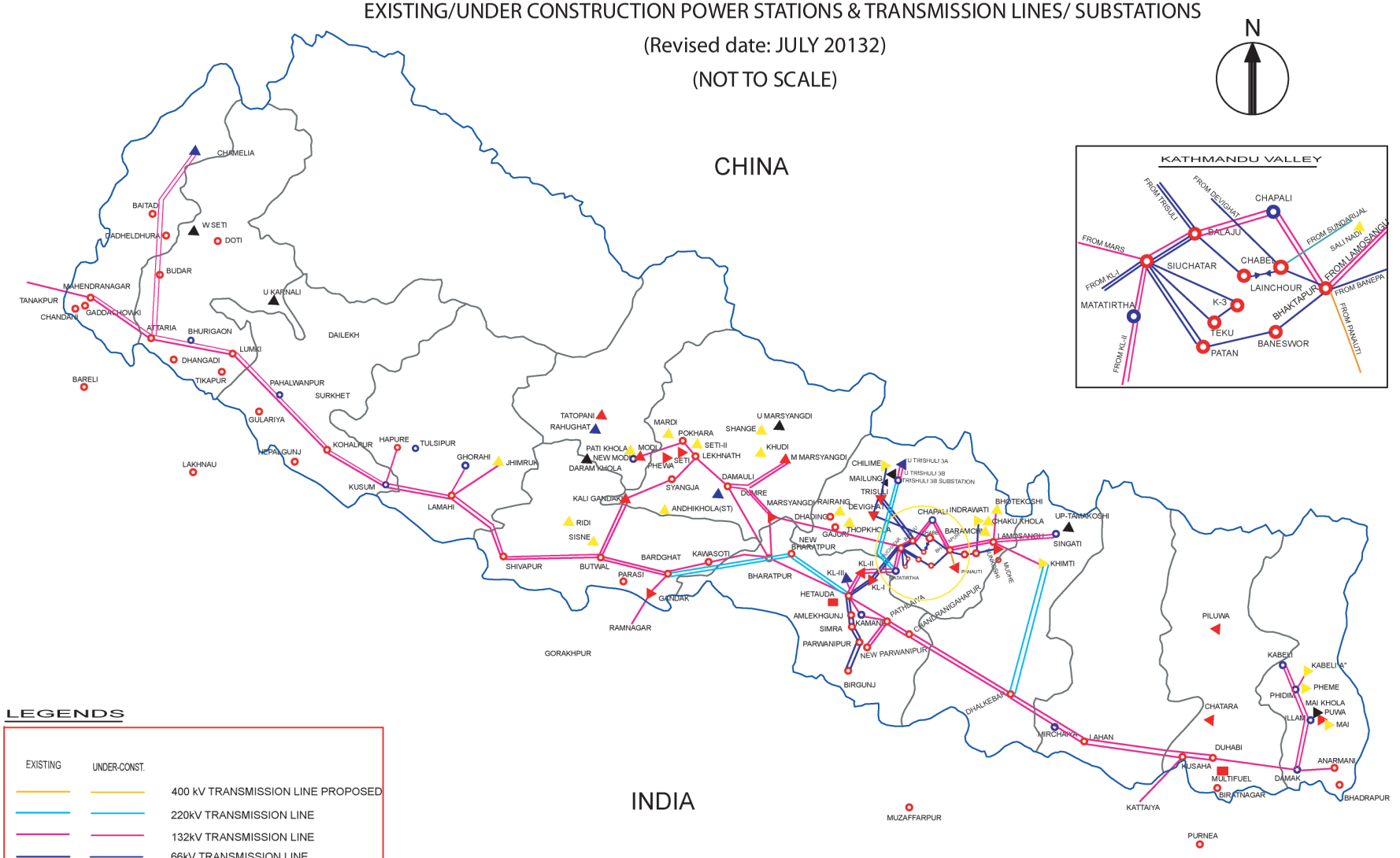
55	Salankhu Khola Hydropower Pvt. Ltd.	Salankhu Khola	Nuwakot	2,500
56	Moonlight Hydropower Pvt. Ltd.	Balefi A	Sindhupalchowk	10,600
57	Sanvi Energy Pvt. Ltd.	Jogmai	Ilam	7,600
58	Sapsu Khola Hydropower Co. Ltd.	Miya Khola	Khotang	996
59	Middle Modi Hydropower Ltd.	Madhya Modi	Parbat	15,100
60	Reliable Hydropower Co. Ltd.	Khorunga Khola	Terhathum	4,800
61	Rara Hydropower Co. Pvt. Ltd.	Upper Parajuli Khola	Dailekha	2,150
62	Lahore Hydropower Co. Pvt. Ltd.	Lohore Khola	Dailekha	4,200
63	Beni Hydropower Project Pvt. Ltd.	Upper Solu	Solukhumbu	18,000
64	Dudhkosi Power Company Ltd.	Rawa Khola	Khotang	6,500
65	Mandu Hydropower Company Pvt. Ltd.	Bagmati Khola	Makawanpur	20,000
66	Sanima Mai Hydropower Ltd.	Mai cascade	Ilam	7,000
67	Universal Power Company Ltd.	Lower Khare	Dolakha	8,260
68	Madhya Midim Jalvidyut Company Pvt. Ltd.	Middle Midim	Lamjung	3,100
69	Volcano Hydropower Pvt. Ltd.	Teliya Khola	Dhankuta	996
70	Union Hydropower Pvt. Ltd.	Midim Karapu	Lamjung	3,000
71	Bindyabasini Hydropower Deevelopment Co. Pvt. Ltd.	Rudi A	Lamjung, Kaski	6,800
72	Himal Dolkha Hydropower Company Ltd.	Mai sano cascade	Ilam	8,000
73	Molung Hydropower Co. Pvt. Ltd.	Molung Khola	Okhaldhunga	7,000
74	Betrawati Hydropower Co. (P) Ltd.	Phalankhu Khola	Rasuwa	13,700
75	Himalaya Urja Bikash Company (P) Ltd.	Upper Khimti II	Ramechhap	7,000
76	Salmendevi Hydropower (P) Ltd.	Kapadigad	Doti	3,300
77	Dovan Hydropower Company (P) Ltd.	Junbesi Khola	Solukhumbu	5,200
78	Cemat Power Development Company (P) Ltd.	Ghalendi Khola	Myagdi	4,000
79	Bhugol Energy Dev Company (P) Ltd.	Dwari Khola	Dailekha	3,750
80	Tallo Midim Jalvidyut Company (P) Ltd.	Lower Midim	Lamjung	996
81	Rairang Hydropower Development Company (P) Ltd.	Iwa Khola	Taplejung	9,900
82	Apolo Hydropower Pvt. Ltd.	Buku Khola	Solukhumbu	6,000
83	Deurali Bahudesiya Sahakari Santha Ltd.	Midim Khola	Lamjung	100
84	Tangchhara Hydro Pvt. Ltd.	Tangchhahara	Mustang	2,200
85	Abiral Hydropower Co. Pvt. Ltd.	Uppe Khadam	Morang	990
86	Midim Hydropower Pvt. Ltd.	Midim Khola	Lamjung	3,400
	Total			**673,525**

POWER DEVELOPMENT MAP OF NEPAL

EXISTING/UNDER CONSTRUCTION POWER STATIONS & TRANSMISSION LINES/ SUBSTATIONS

(Revised date: JULY 20132)

(NOT TO SCALE)

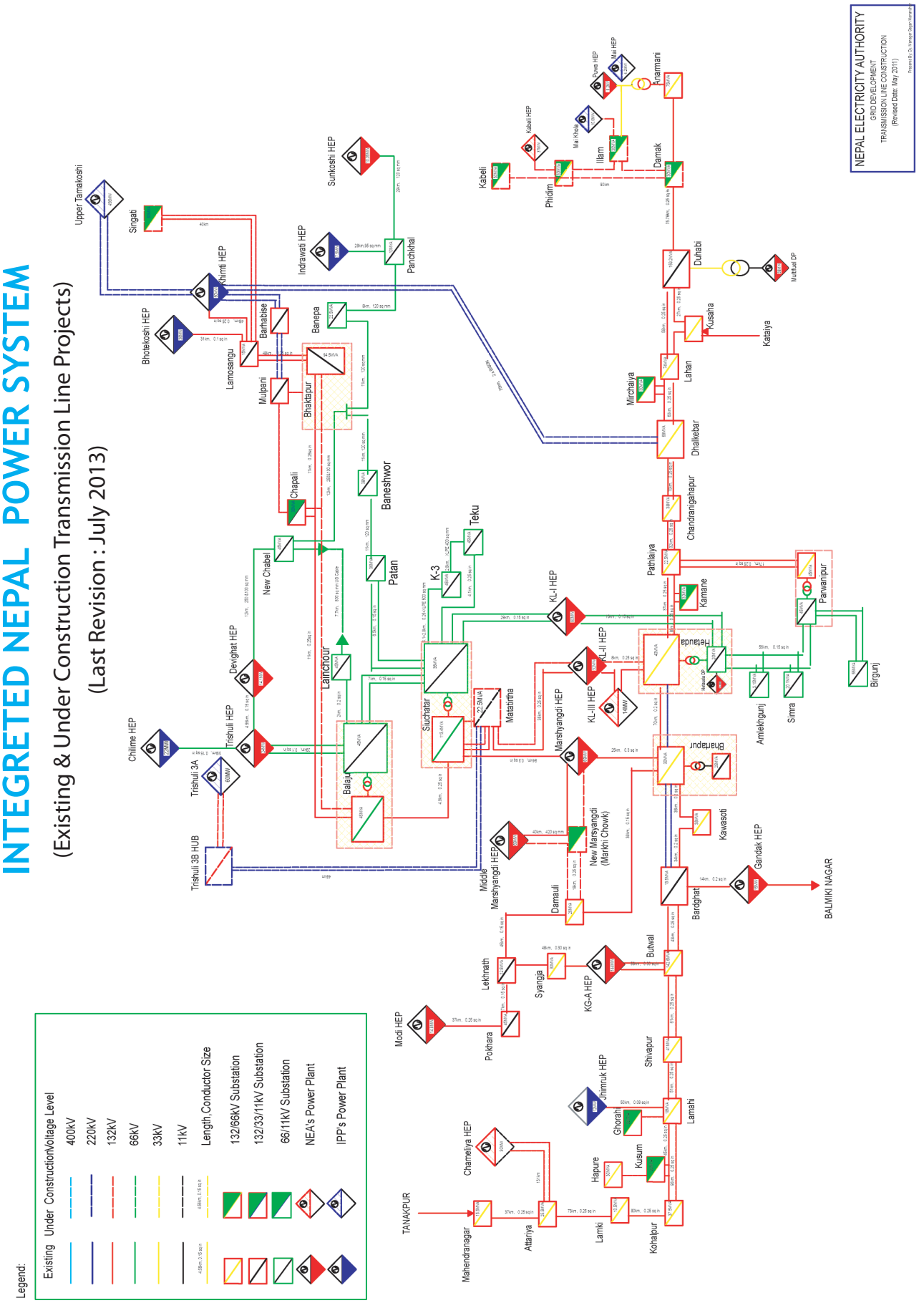


LEGENDS

EXISTING	UNDER-CONST.	
		400 kV TRANSMISSION LINE PROPOSED
		220kV TRANSMISSION LINE
		132kV TRANSMISSION LINE
		66kV TRANSMISSION LINE
		GRID SUB-STATION
		HYDRO-POWER STATION
		IPP's HYDRO-POWER STATION
		DIESEL/M-F POWER STATION

NEPAL ELECTRICITY AUTHORITY
GRID DEVELOPMENT
TRANSMISSION LINE CONSTRUCTION DEPARTMENT

Prepared by : Dy. Manager Gagan Manandhar


INTEGRETED NEPAL POWER SYSTEM
(Existing & Under Construction Transmission Line Projects)
(Last Revision : July 2013)
NEPAL ELECTRICITY AUTHORITY
GRID DEVELOPMENT
TRANSMISSION LINE CONSTRUCTION
(Revised Date: May 2011)
Legend:
Existing Under Construction\Voltage Level
400kV
220kV
132kV
66kV
33kV
11kV
Length,Conductor Size
132/66kV Substation
132/33/11kV Substation
66/11kV Substation
NEA's Power Plant
IPP's Power Plant
Upper Tamakoshi
Singati
Khimti HEP
Bhotekoshi HEP
Lamosangu
Barhabise
Mulpani
Sunkoshi HEP
Indrawati HEP
Panchkhal
Banepa
Bhaktapur
Chapali
Baneshwor
New Chabel
Devighat HEP
Trishuli HEP
Trishuli 3A
Trishuli 3B HUB
Chilime HEP
Lainchour
Balaju
Patan
Teku
K-3
Suichatar
Matatirtha
KL-I HEP
KL-II HEP
KL-III HEP
Marshyangdi HEP
Middle Marshyangdi HEP
New Marsyangdi (Markhi Chowk)
Damauli
Baglung
Kabeli
Phidim
Kabeli HEP
Illam
Mai Khola
Rowa HEP
Nai HEP
Anarmani
Damak
Duhabi
Multifuel DP
Kusaha
Kataiya
Mirchaiya
Lahan
Dhalkebar
Chandranigahapur
Pathaiya
Kamane
Hetauda
Hetauda DP
Parwanipur
Birgunj
Amlekhganj
Simra
Bharatpur
Kawasoti
Gandak HEP
BALMIKI NAGAR
Baroghat
Butwal
KG-A HEP
Syangja
Lekhnath
Pokhara
Modi HEP
Damauli
Shivapur
Lamahi
Ghorahi
Jhimruk HEP
Kusum
Hapure
Lamki
Kohalpur
Attariya
Chameliya HEP
Mahendranagar
TANAKPUR

POWER DEVELOPMENT MAP OF NEPAL

SMALL HYDRO POWER STATIONS, ISOLANTED SOLAR & DIESEL POWER STATIONS

Last Revision : July 20113

(NOT TO SCALE)

LEGENDS

- NEA SMALL POWER PLANTS
- IPP's POWER PLANTS
- D NEA's DIESEL POWER PLANTS
- SOLAR POWER PLANTS

NEPAL ELECTRICITY AUTHORITY
GRID DEVELOPMENT
TRANSMISSION LINE CONSTRUCTION DEPARTMENT

Prepared by : Dy. Manager Gagan Manandhar