NEPAL ELECTRICITY AUTHORITY

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A YEAR IN REVIEW-FISCAL YEAR 2015/2016

AUGUST 2016 (BHADRA 2073)

DURBAR MARG, KATHMANDU, NEPAL

A YEAR IN REVIEW-FISCAL YEAR 2015/2016

Installation of Tower Structure

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COMPLIMENTARY COPY

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Ref. Chairman's Message

NEA has since its creation untiringly worked to improve the living conditions of the Nepalese people by lighting peoples' homes and contributed to the national development by powering the industrialization of Nepal. I would like to congratulate NEA for this contribution that it has made so far and wish to thank the entire staff as well as everyone else who worked hard to make this difficult journey possible.

In its long 31 years of service to the nation, NEA has continuously moved forward and is now managing with over 800 MW of capacity at hand. I have learned that additional 1000 MW is planned to be added to the system in the immediate future, which comes from NEA's own generation and from projects being constructed by IPPs. Despite these developments, I share a common Nepali concern that this progress is far too slow and the rate of growth of energy supply and consumption in Nepal is far too below what is expected given Nepal's rich electricity generation potential. I firmly believe that NEA must be able to stand up to the challenge of powering Nepal's modernization and for this reason, must pursue rapid and accelerated development of generation, transmission and distribution capacities as well as creating a satisfied customer base for its services. These must form the elements of the NEA mantra. Understandably, current prevailing conditions are not very conducive towards achieving this objective, NEA having to face many challenges and difficulties in the implementation of generation projects, construction of transmission lines as well as in equitable and fair distribution of energy through a dilapidated distribution network. Nevertheless, NEA, I believe, must demonstrate the resilience and the strength that is required to shoulder its responsibility to lead the energy delivery sector of the nation based on a dynamic strategic and business planning to overcome these constraints, and through its forceful implementation.

At this juncture, NEA's foremost priority must be to reduce the deplorable load shedding situation occurring in the country and bring it down to the minimum extent as soon as possible. This can be achieved in the short term, by trading energy through the recently completed Dhalkebar – Muzzafurpur cross border transmission line. NEA, in parallel, must also focus on expediting the construction of transmission and distribution networks such that the available energy can smoothly reach to the consumers in the respective load centers.

Although, the private sector has now become an inseparable partner in the electricity delivery with it's significantly growing contribution to power generation, NEA's role in meeting the bulk of the demand remains indispensable. As we all know, Nepal's well being

and economic growth can not be achieved without increasing the availability and use of energy, NEA must make serious efforts to standing up to it's responsibilities by increasing its efficiency and effectiveness. Towards this, it must prioritize its actions to complete all its ongoing projects, by significantly improving contract management and handling capacities within NEA, and move ahead with the implementation of projects that are in its pipe line in the quickest time possible.

Lack of adequate transmission lines to provide national and cross-border connectivity is becoming a major bottleneck in achieving the electricity transport efficiency. NEA should therefore concentrate on removing this bottleneck by aligning it's transmission planning to smoothly evacuate the available electricity. Today, the energy market is getting more populated with several private and public sector agencies entering the market. NEA must prepare itself to embrace this challenge of competitive service and must be able to demonstrate this capability given the wealth of assets, networks and the experienced human resources it enjoys. Rather than fearing competition, NEA will tower by providing the much needed guidance and leadership to these players.

I do not require to further emphasize on the much and well understood need for reducing technical and commercial losses. But, this may be easier said than done. Good planning, action and monitoring as well as commitment to the cause are imperative to bring down the system losses. In this context, I strongly advise NEA to take advantage of the technological innovations available in the market and make its systems more automated and digitally controlled. Smart metering, integration of energy available from other renewable resources, smart enterprise and corporate management, increased use of SCADA systems may all be options to consider.

Finally, I would like to once again appreciate the service provided by NEA within the given constraints to its customers so far, and would also like to wish NEA for their efforts to satisfy its customers as well as contribute to the development of the nation. May the NEA be successful in lighting the path of modern Nepal.

Suman Prasad Sharma
Secretary, Ministry of Energy
Chairman, Nepal Electricity Authority

Board of Directors

Mr. Suman Prasad Sharma
Secretary
Ministry of Energy, Chairman

Mr. Lok Darshan Regmi
Secretary
Ministry of Finance, Member

Mr. Laxman Prasad Agrawal
Member

Mr. Manoj Kumar Mishra
Member

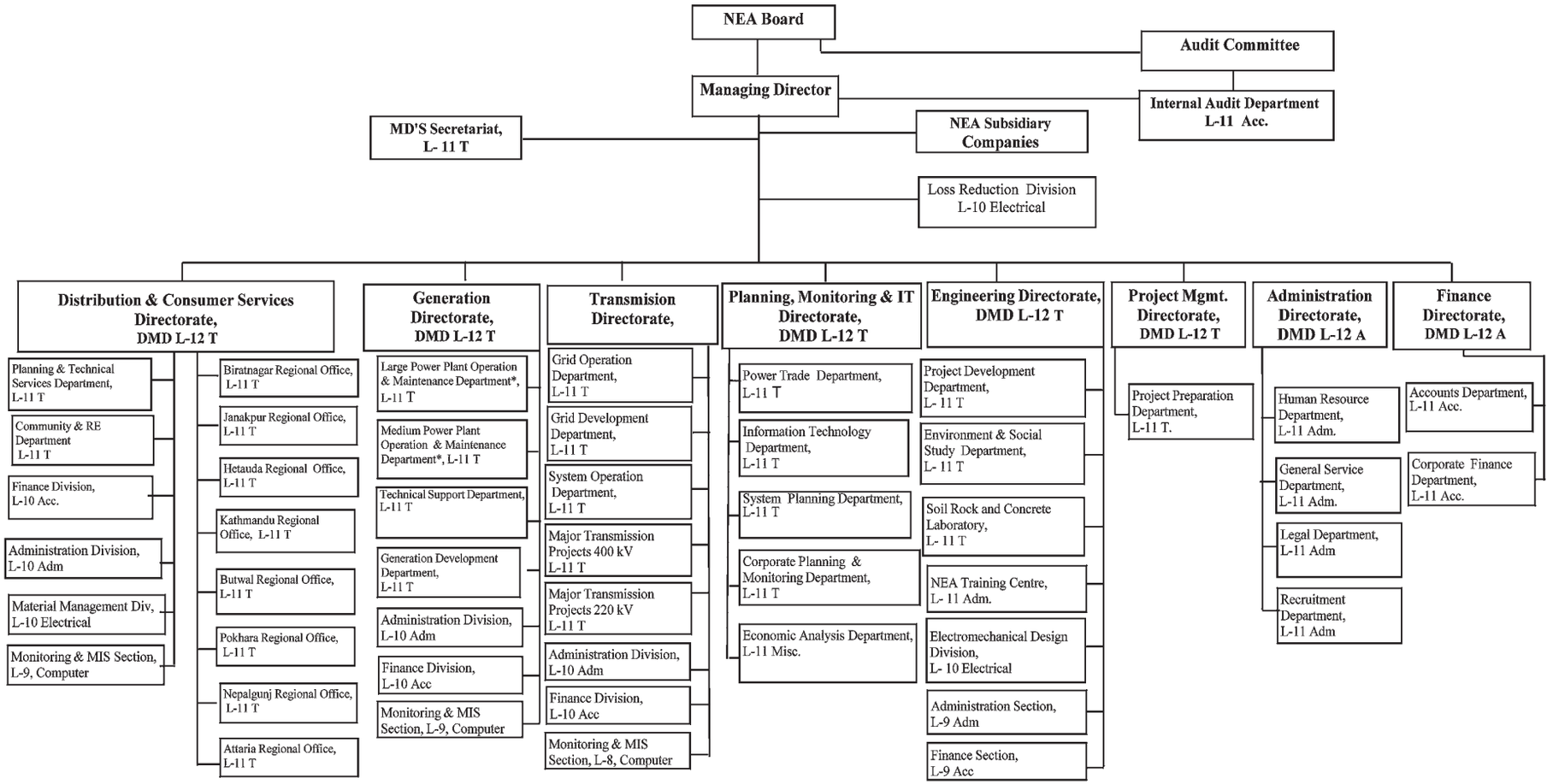
Mr. Chandra Tandon
Member

Mr. Ram Lal Tuladhar
Member

Mr. Mukesh Raj Kafle
Managing Director, NEA
Member Secretary

NEPAL ELECTRICITY AUTHORITY

Organization Structure



Note : * Large Power Plant operation and Maintenance Department will be responsible above 30MW
* Medium Power Plant operation and Maintenance Department will be responsible upto 30MW
T = Technical Services; Adm = Administration services ; Acc=Account Group; Misc = Miscellaneous

Deputy Managing Directors

Mr. Sher Singh Bhat
Deputy Managing Director
Generation Directorate

Mr. Sunil Kumar Dhungel
Deputy Managing Director
(On Deputation to Tanahu Hydropower Ltd.)

Mr. Kanhaiya Kumar Manandhar
Deputy Managing Director
Transmission Directorate

Mr.Surendra Rajbhandari
Deputy Managing Director
Project Management Directorate

Mr. Rajiv Sharma
Deputy Managing Director
Engineering Services Directorate

Mr. Gopal Babu Bhattarai
Deputy Managing Director
Distribution & Consumer Services Directorate

Mr. Lekha Nath Koirala
Acting Deputy Managing Director
Finance Directorate

Ms. Shanti Laxmi Shakya
Acting Deputy Managing Director
Administration Directorate

Mr. Jagadishwor Man Singh
Acting Deputy Managing Director
Planning, Monitoring & IT Directorate

Managing Director's Report

It is with great honour and pride that I bring forth to you this 31st Annual Report of our esteemed organization. The past year has definitely been a year of turmoil as well as a year of gratitude. While we are still struggling to minimize load shedding hours, we have not been able to do so to the desired extent. We, however, have made strong efforts in taking significant strides in trying to minimize it. On one hand, we are putting our greatest efforts to complete on-going projects like Chameliya, Kulekhani III and Upper Tamakoshi Hydroelectric Projects, while on the other we have made significant progress in completing transmission lines to evacuate power being produced from our own projects and the projects developed by our esteemed IPPs. We have even gone a step further and have completed the Dhalkebar – Mujaffarpur Cross Border Transmission Line, despite charging it at 132 kV instead of 220 kV voltage level which will enable us to import power from India till Nepal is at power deficit, so that we can reduce the load shedding during the dry season to a minimum level. In future, when we have surplus power, we can export power to India. We are ever planning to export the seasonal surplus power to India through power banking considering this sort of scenario during the wet season after Upper Tamakoshi HEP (456 MW) is commissioned.

Operational Performance

NEA's consumers increased from 2.83 million to 2.97 million including community and bulk buyers during the year. The domestic consumer category, which holds 2.80 million consumers, continued to be the largest consumer category with 94.18 % share of entire consumers. Domestic and industrial consumer category contributed 45.96% and 31.13 % to the gross electricity sales revenue respectively. Rest of the consumer category generated the remaining 22.91% of gross sales revenue.

NEA experienced another distressing year in terms of energy generation of its own hydropower plants due to the unfavorable impact caused by the massive earthquake of April, 2015. NEA's hydropower plants including small power plants generated a total of 2,168.49 GWh of electricity. As a result, NEA increased power import from India to minimize load shedding hours especially during the dry season. During the past year, Dhalkebar-Mujaffarpur 400 KV cross boarder transmission line came into operation at 132 kV voltage level and allowed NEA to import additional 80 MW of power. The total energy import from India has reached 1,758.41 GWh as compared to the import of 1,369.89 GWh in the previous year. On the other hand, power purchase from IPPs within Nepal declined to 1,173.14 GWh against the targeted figure of 1,416 GWh. The main reason behind this decline was due to the non-operation of Bhote Koshi Power Plant (45MW) as well as other smaller power plants located largely in the earthquake affected areas of the Sunkoshi River Basin. The non-operation was mainly due to the damage caused by the devastating earthquake as well as the massive flood. Power purchase from IPPs decreased by 7.55 % compared to actual purchase in the year 2014/15. The total energy available in NEA's system increased by only 1.89 % over the previous year's figure of 5,005.70 GWh to reach 5,100.11GWh. Out of the total available energy, NEA's own generation, import from India and local IPPs constitute 43%, 23% and 34% respectively. During the year, total energy sales remained stable as compared to previous year's sale of 3743.71 GWh. The resulting system losses slightly increased from 24.44% to 25.78% in the year 2015/16.

As a result of NEA's repeated request for a revision in the electricity tariff to the Electricity Tariff Fixation Commission (ETFC) to compensate for the wide gap in the selling and purchasing price of energy sold and purchased, ETFC has increased the electricity tariff by approximately 19 % on an average with effect from July 16, 2016. As a result of this increment it is estimated that NEA's revenue for the FY 2016/2017 will increase by an additional amount of NRs. 5,000 million. Before this, NEA's electricity tariff had been increased by ETFC in the FY 2011/2012 by 20 % on an average after a long gap of 11 years.

Financial Performance

Despite negligible increment in the total available energy sales, NEA increased its revenue from sale of electricity to NRs 32,210.05 million as compared to NRs. 30,798.67 million in the previous year. The growth in the overall income from revenue is about 4.28 % as compared to previous year's income.

The cost incurred from purchase of power has been the dominating cost factor in NEA's overall operating expenses for a very long time. NEA's overall operating expenses increased from NRs 32,217.75 million in FY 2014/15 to NRs 38,678.21 million for the year FY 2015/16. The increase in the expense is about 20.05 % as compared to the previous year. The power purchase cost continued to be the largest cost component of the total operating expenses. NEA had to spend an amount of NRs 24,235.71 million to pay for the energy generated by different IPPs and for the import of Power from India during the FY 2015/16. Energy from power purchase constitutes 57.5 % of the total available energy for which NEA has paid 75.24% of net electricity sales revenue. The cost for purchase of power itself increased by 26.16 % for the FY 2015/16 due to the increase in volume of import and to some extent due to the normal price escalation. Additionally, NEA increased significant power import from India to compensate for its reduced electricity generation, which also contributed to the raise in the cost of power purchase. Other operating expenses included generation, transmission, distribution, and administration that amounted to NRs 1,463.50 million, NRs 684.39 million, NRs 6,267.46 million and NRs 1,409.09 million respectively. NEA's distribution system was badly affected as a result of the intense fuel shortage experienced in the dry season of the last fiscal year and hence NEA required additional resources to restore the distribution system.

Continued growth in long-term borrowing has constrained the interest costs to increase by 4.84% over the previous year's figure to reach NRs 4,896.39 million. Likewise, depreciation charge on fixed assets has increased by 4.31% that accounted for NRs 3,620.56 million in the FY 2015/16. NEA incurred foreign exchange translation loss of NRs 880 million in FY 2015/16 due to appreciation of the Japanese Yen vis-a-vis Nepali Rupees for the loan taken on Kulekhani Disaster Prevention Project. NEA estimated a provision of NRs 2,050.00 million towards the long term employee liabilities in respect of gratuity, pension, medical facilities and accumulated leave facilities under employees' benefit plan scheme.

NEA has experienced yet another year of deteriorating operational and financial status. Continued disparity in power purchase cost and electricity sales tariff has resulted in NEA to incur a net accounting loss of NRs 11,794.66 million for the year under review. However, NEA received an amount of NRs 3,960 million from the GoN for the compensation of financial loss resulting from power purchase from India for the year 2015/16. NEA has not been able to book this compensation as income because the compensation received by GoN was in the form of an equity investment.

Ongoing Projects

It is much to be regretted that the existence of complex contractual disputes, Terai bandh,

earthquake and other such events have further delayed the completion dates of the projects that are being constructed by NEA. With the completion of about 95 percent of the civil construction work and 70 percent of equipment supply and 37 percent of erection of electromechanical and hydro mechanical works the latest date of completion of Kulekhani III Hydroelectric Project is scheduled as December 30, 2016. Similarly with an overall progress of 96.5 % of the civil works and 96 % of the electromechanical, hydro mechanical and transmission line works completed we expect Chameliya Hydroelectric Project to be commissioned by June, 2017. Issues concerning the treatment of the tunnel squeezing in the headrace tunnel have further complicated the commissioning of this project. Following the complications that cropped up with the previous civil contractor for Rahughat Hydroelectric Project, NEA has taken it as an opportunity to enhance the overall parameters of the project and increase its installed capacity to 40 MW. The project will now be tendered in the Engineering Procurement and Construction (EPC) mode. The submission date for the tender call for Lot 1 is 21st September, 2016. Among the four projects being constructed by NEA, Upper Trishiuli-3A HEP seems to have been hit the hardest by the April 2015 earthquake. The construction works of the project which were being carried out at a very rapid pace came to a sudden standstill as a result of the devastating earthquake. A number of huge landslides occurred along the 5 km access road from the powerhouse to the headworks, and this has made the headworks virtually inaccessible. Upon the decision of the cabinet the Nepal Army had to be mobilized to open the track from the powerhouse to the headworks. It has been a great relief that the Contractor has resumed his work from March 15, 2016. Hopefully the project will be it commissioned by the March, 2017.

On the brighter side, it is a matter of pride that we have realized the completion of Nepal's first-ever 400 kV Dhalkebar-Mujaffarpur Nepal-India cross-border transmission link between Nepal and India. Currently this line has been charged at 132kV voltage level and is importing up to 80MW of power from India. In order to develop a strong transmission network the Hetauda-Dhalkebar-Inaruwa 400kV transmission line is under construction. Similarly, in order to have a proper network of transmission lines to evacuate power generated from potential hydropower projects, NEA intends to develop a river basin wise transmission system as a long term strategy for power development of Nepal based on Transmission System Master Plan for the period from 2015 to 2035. Many of the transmission lines at 132 kV, 220 kV and 400 kV level which are at different stages of completion will also be integrated into this master plan.

Private Sector Participation including the NEA Subsidiary Companies

NEA has been vehemently facilitating the participation of the private sector participation in the field of hydropower through power purchase Agreements. This also includes the many subsidiary companies that have been developed by NEA. Chilime Hydropower Plant (CHPP) is one of such projects which came into operation on August 25, 2003 and has been proudly delivering its energy to the NEA grid since then. Under the scope of Corporate Social Responsibility (CSR) activities for the fiscal year 2015-16, we are very proud to note that Chilime Hydropower Company Limited has spent almost NRs 5.0 million in community and local development works like health, education, infrastructure, drinking water, irrigation, etc.

There are seven projects that are being constructed by sister companies of NEA. While some of these projects are in their earlier stages of development, all the four projects being undertaken by Chilime Hydropower Company Limited are very much into their construction stages already. Despite the

effects of the massive earthquake of April 2015 and the subsequent blockade, these projects have been putting in the best of their efforts in reverting to their pre-earthquake states.

The work progress of Sanjen and Sanjen Upper before the April 2015 earthquake was quite impressive and quite in line with the scheduled time as per PPA. The Company has been successful in remobilizing the contractors and the resumption of construction works of the project is already underway and the overall progress of the project construction works is approximately 30 %. Similarly, the work progress of Bhotekoshi Hydroelectric Project has also been relatively slow due to series of natural disasters like landslide of August 2, 2014 at Jure, followed by the great earthquake of April 25, 2015. Rasuwagadhi Hydropower Project is another project being developed by Chillime Hydropower Company Limited. Approximately 30 % of the civil construction works has already been completed and the expected date for the completion of this project has also been pushed back as a result of the effects of the devastating earthquake of April 2015.

After remobilization in January 2016, the Contractor for Upper Tamakoshi Hydroelectric Project, being developed by Upper Tamakoshi Hydropower Limited, has been making sincere efforts to resume the construction of the project. Construction of a 330 m long road including a 30 m access tunnel of which about 15m has already been excavated is probably one of the main aspects. The project is expected for commissioning by the end of FY 2074/75. Trishuli Jal Vidyut Company Limited aims to complete the construction of Upper Trishuli 3 B Project by the end of the year 2019. Similarly the commencement of construction of Tanahun Hydropower Project being co-funded by ADB, JICA and EIB is being targeted for 2017 and it is hoped that the construction of the project will be completed by the year 2022.

Power Transmission Company Nepal Limited (PTCN), a subsidiary of Nepal Electricity Authority (NEA) was established with the main objective of developing high voltage transmission interconnection system between Nepal and India for the mutual interest and benefit of both the countries. The 42.1 km long section of Dhalkebar-Mujaffarpur 400kV double circuit Transmission Line lying within the Nepalese territory was successfully constructed by PTCN and commissioned in February 2016. NEA is presently drawing 80 MW of power from India through this line which has been initially charged at 132kV voltage level. Upon the completion of the 220 kV substation at Dhalkebar, this line is expected to be charged at 220kV by December 2016 and the quantum of power to be imported from India will be enhanced.

We are continuously pursuing our efforts to promote the private sector in helping us to fulfill the demand in energy. A total of 6 new projects developed by the Independent Power Producers (IPPs) with their combined capacity of 30.978 MW were commissioned in FY 2015/16. Projects that were commissioned are: Naugadh gad Khola (8.5MW), Suspa Bukhari Khola (0.998MW), Mai Cascade Khola (7MW), Chhandi Khola (2MW), Upper Mai Khola (9.98MW) and Daram Khola A (2.5MW). With these 6 projects, the total number of IPP-owned projects that are in operation has reached 50 with their combined installed capacity of 324.45 MW. Similarly, 91 projects of IPPs with their combined capacity of 1721.532 MW are under construction after financial closures. Likewise, 44 projects of IPPs with their combined capacity of 783.8 MW are in their various stages of development. During the FY 2015/16, 27 new PPAs with their combined capacity of 457.59 MW were concluded. With this, the total number of PPAs concluded so far till FY 2015/16 has reached 185 with their combined capacity of2829.78 MW.

The Power in the quantum from 20 to 30 MW RTC was imported at the rate of IRs. 3.44/kWh under a short term PPA with Power Trading Corporation of India (PTC) Ltd. from Tanakpur point at 132 kV level in the Fiscal Year 2015/16. Likewise, a PPA was signed on February 15, 2016 between NEA and NTPC Vidyut Vyapar Nigam Limited (NVVN) for the power import to Nepal in the quantum of up to 80MW RTC through Dhalkebar-Mujaffarpur transmission line at 132 kV level under the contingency arrangement for the period from February 2016 to June 2016 at the rate of IRs. 3.44/kWh at Mujaffarpur off-take point. It was continued for July 2016 by signing a supplementary PPA at the same terms and conditions for the quantum of 50 MW RTC. Further, a new PPA has been signed with NVVN on July 10, 2016 for the supply of power to Nepal in the quantum varying from 50 to 74 MW RTC from August 2016 to December 2016 at the rate of IRs. 3.60/kWh. Besides this, a long term Power Sale Agreement (PSA) has already been signed with PTC India for the import of 150 MW power for 25 years through 400 kV Dhalkebar-Mujaffarpur transmission line, but it is yet to be implemented.

The Way Forward

In order to improve the financial health of NEA, it is of utmost importance for us to improve our energy generation with good and sound projects. Although NEA is compelled to import energy from India at present, we should focus our efforts in developing new projects so that we can fulfill our own needs as well as aim to export surplus energy to India. Keeping this in mind a number of projects are currently under study in NEA and we believe they will help us to go in this direction.

Dudhkoshi Storage Hydroelectric Project and the Upper Arun Hydroelectric Project are among some of the projects that NEA has taken up for this purpose. A Contract Agreement was signed on May 30, 2016 between NEA and ELC Electroconsult S.P.A. (Italy) in association with NEWJEC Inc. (Japan) to carry out the Updated Feasibility Study and the Detailed Design of the project. Similarly, the Detailed Engineering Design of Upper Arun Hydroelectric Project is being taken ahead under the financing agreement between Government of Nepal and World Bank for Power Sector Reform and Sustainable Hydropower Development Program (PSRSHDP) which was signed on February 4, 2016. Likewise, the project agreement between Nepal Electricity Authority and Work Bank was also signed on the same date.

Other projects that have been planned for development by NEA are Tamakoshi V, Upper Modi 'A' and Upper Modi. These projects have been taken on to the detailed engineering phase. NEA has already obtained the generation construction license for Upper Modi 'A' Hydroelectric Project and is now making preparations to develop this project in the EPC mode. The notice for the Expression of Interest for the Detailed Engineering Design and the preparation of Tender Documents for this project has already been published and it is expected that the detailed design of this project will soon be commenced. Similarly, the selection of an international consultant for the detailed engineering design of Tamakoshi V Hydroelectric Project is in its final stages. NEA intends to develop this project as a cascade project to Upper Tamakoshi Hydroelectric Project.

Other projects which are in different stages of study are Uttar Ganga Storage Project, Tamor Storage Project, Andhi Khola Storage Project, Upper Bheri Hydroelectric Project and Chainpur Seti Hydroelectric Project.

The implementation of Geographical Information System (GIS) for DCS Inventory system will be used to capture and store the details about Poles, Transformers, Cables and Consumers. NEA will be implementing Remote Meter Reading (RMR) System using GSM Modems in near future.

As technology is giving us greater autonomy and more choices in the way we source, transform, transmit and use the electricity, NEA is planning to encourage solar power development in the country following the principle of energy mix in our hydropower predominant system. Having called the Request for Proposal from the prospective proponents associated with solar power, NEA shall move forward in this new fiscal year with the target to sign some solar power purchase agreements up to the total installed capacity of 64 MW proposed at various locations of the country.

It has been something of an open secret that additional power import from India is a must to downsize the magnitude of load shedding in the country at present and for some years to come until Nepal becomes a power surplus country. After Dhalkebar-Mujaffarpur transmission line commissioning in the year under review, which is a true success story of Indo-Nepal cross border transmission infrastructure, NEA is endeavoring its best to import power of about 250 MW at 220 kV voltage level through the line in the Fiscal year 2016/17. Likewise, without undermining the potential role of cross border power trade, I also take this opportunity to reveal that we are also on the way to supply more power up to the quantum of 100 MW to our customers through 132 kV Kataiya-Kushaha and Raxaul-Parwanipur transmission lines which are under construction now with the commissioning target by December, 2016.

Likewise, the IPPs' hydropower projects for which NEA has signed PPAs are expected to add about 200 MW power to the system in this Fiscal year 2016-17 and NEA will be accomplishing every role envisaged in the PPAs for their successful completion as per the schedule.

Further, NEA will prioritize and focus on the addition and the improvement of distribution infrastructures by making wise and planned investments in this sector to supply more power and reliable power to the aspiring people through meticulously designed distribution plans in the closest harmony with the transmission master plan in the ongoing Fiscal Year.

Acknowledgments

As always, I emphasize with sincere gratitude the relentless work of the Chairman and the members of the NEA Board of Directors whose expert and policy guidance has been central to the efforts to ensure the overall organizational performance and achievements within the framework of powers and responsibilities envisaged in the NEA Act, 2041.

I would also like to thank the Government of Nepal for supporting us in the many different ways and for standing by us in the development of the energy sector. I would also like to express my heartfelt appreciation to the entire staff of NEA who have stood up to the different challenges from within as well as from outside of NEA and who have continued to be deeply involved in their respective jobs. Thanks are also due to the donor community who have helped us in the past and who are continuously helping us in realizing our efforts to fulfill the growing needs of energy of our nation and to strengthen our institution. Most important of all, I would like to thank our most valued customers for bearing with us at times of extreme difficulties and I would also like to take this opportunity to assure them that no stone shall be left unturned to ensure reliable and sufficient supply of energy with a well-coordinated balance between the technology-powered push and the customer-driven pull.

Thank You.

Mukesh Raj Kafle
Managing Director

Generation Directorate

Generation Directorate, headed by Deputy Managing Director is responsible for construction of new power projects together with operation and maintenance of NEA owned power stations. The main objective of this Directorate is construct new projects owned by NEA and smooth operation and maintenance of existing power plants with optimal use of resources. The Directorate is supported by four departments, namely Generation Development Department (GDD), Technical Support Department, (TSD) Large Generation Operation and Maintenance Department (LGO&MD), Medium Generation Operation and Maintenance Department (MGO&MD) each headed by Director. It is supported by three divisions/sections namely, Finance, Administration and Monitoring and IT. At present, this Directorate is taking care of construction of the following four hydropower projects.

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

Chameliya Hydroelectric Project, Rahughat Hydroelectric Project and Upper Trishuli 3'A' Hydroelectric Project are headed by respective Project Directors and report to the Deputy Managing Director. Whereas, Kulekhani III Hydroelectric Project is headed by Project Manager and reports to the Director, GDD. The TSD provides technical support needed for the ongoing projects and existing power plants on coordination with respective Directors.LGO&MD is responsible for five (5) hydropower and one (1) thermal plant above 30MW installed capacity owned by NEA. Similarly MGO&MD is responsible for twelve 12 hydropower and one (1) diesel plant which are below 30MW installed capacity owned by NEA.

Various activities and features of four hydropower projects under construction, LGO&MD, MGO&MD and TSD are during the FY are described as following.

KULEKHANI III HYDROELECTRIC PROJECT

Project Background

Kulekhani is the only storage Project in Nepal, which has been providing much needed peaking energy to the Integrated National Power System (INPS). The 14 Megawatt (MW) Kulekhani III Hydroelectric Project with two numbers of Francis turbine is a cascade Project which utilizes the regulated flow of Kulekhani Reservoir and additional water from Khani Khola. It is expected to generate about 40.85 Giga Watt hours (GWh) of electric energy per annum.

This hydroelectric Project has been categorized as National Priority (P1) Project by the National

Lowering of Head Cover

Planning Commission, Government of Nepal (GoN). The funds are provided by the Government of Nepal and Nepal Electricity Authority (NEA) for the construction work. The initial total estimated

cost of the Project is NRs. 4.2 billion. The Project is located on the southwest of Kathmandu in Makawanpur district, Narayani zone of Central Development Region.

The headworks site is located on the left bank of the Khani Khola at Bhainse Village Development Committee. The Powerhouse and Headworks are located about 4 km and 11 km north of Hetauda respectively. The Project site has a good accessibility as it is located near the Tribhuwan Highway. The Civil Work Contract was awarded to M/S Sinohydro Corporation, China and The Electromechanical and Hydromechanical Works Contract was awarded to M/S Zhejiang Jinlun Electromechanic Co. Ltd., China.

The existence of complex contractual disputes leading to Arbitration with Civil Contractor, Terai band and earthquake has further extended the completion date of the project. Latest date of completion of the Project is December 30, 2016.

After termination with WRC-SILT-HEDCO JV, a new contract with WAPCOS Ltd., India in association with TMS, Nepal was made on July 26, 2013 for construction management and construction supervision of the Project.

Project Status

By the end of F/Y 2072/073 approximately 85 percent of the work in total has been completed. About 95 percent of the Civil Construction work and 70 percent of equipment supply and 37 percent of erection of Electromechanical and Hydromechanical Works has been completed.

Construction of all Civil structures at the Headworks area has been completed. Total length of 4.2 km tunnel excavation and lining works has been completed. Forebay construction work of Civil has been completed. Inclined and horizontal tunnel excavation work has been completed. Concrete lining of penstock is ongoing. Construction of main Civil structure of powerhouse has been completed. Service bay and control room area is under construction. Construction of Tailrace structure has been completed. Construction of Civil structure of foundation for switchyard is yet to be started.

Installation of Inclined Penstock Pipe

Supply and delivery of remaining EM equipment are in process. Erection of earthing system at Powerhouse has been completed. Earthing work at switchyard is ongoing. Installation of penstock bifurcation has been completed. Installation of inclined and horizontal penstock pipe is ongoing. Draft tube, spiral casing erection has been completed. Erection of turbine and generator of both units is ongoing. Installation of 35/5 ton Powerhouse crane has been completed. Erection of 0.5 km length transmission line with three transmission tower will start immediately after this monsoon.

CHAMELIYA HYDROELECTRIC PROJECT

Chameliya Hydroelectric Project under joint funding of GoN, NEA and Korean loan was started in 2007 and as per the Joint Co-ordinated Working Schedule the completion date (including Testing and Commissioning) is June 2017. The power house site is located at Sikhar VDC, Balanch and the Dam site is located at Bitule of Darchula District. The plant capacity is 30 MW (Peaking Run of River) with average annual energy generation of 184.21 GWh.

Headworks with spillway

Towards the civil works, 100% of the dam construction works has been completed. Similarly, 99.1 % of intake, 100% of connecting tunnel, 100% of desanding basin, 94.1% of adit tunnel and 99.1% of the headrace tunnel (excluding squeezing portion) has been completed. The progress of power house, surge tank, penstock and tail race construction stands at 100%, 95%, 99% and 99.8% respectively. The overall progress of civil works is 96.5%.

Squeezing was encountered in the head race tunnel between Adit 2 down stream and Adit 3 up stream, the length of Squeezing in this stretch being 843 m. This resulted in deformation of several lattice girders/steel ribs, localized cracking of shotcrete and extremely large deformations in the crowns and side walls which is upto maximum 40% of the design diameter. The treatment of Squeezing of Tunnel was started on May 2013 and till date 615 m out of 843 m 73% of Squeezing has been treated.

Switchyard of Chameliya HEP

The relocation of power house caused very large cutting in the slope and the very weak geological condition in the vertical shaft encountered cavity with debris flow making the construction very difficult.

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 and installation of Generators are in progress. Most of hydro-mechanical and electro-mechanical equipment are delivered to site. Hundred percent of tower foundation and tower erection works of 132 kV transmission line works have been completed. 100% (out of 131 km) stringing works have been completed. The overall progress of Electromechanical/Hydromechanical/Transmission line works is 96 %.

RAHUGHAT HYDROELECTRIC PROJECT

Project Background

Rahughat Hydroelelctric Project is located at Galeshwor, near Beni in Myagdi District, Dhaulagiri Zone of Western Nepal.

The cost of the project was initially estimated to be NRs 827.35 Crores (including all taxes). Out of the total estimated cost, US$ 67 million was to be made available from the soft loan provided by the EXIM Bank of India. US$ 31 million was made available from EXIM Bank of India under US$ 100 million, Dollar Line of Credit Agreement dated 14th September, 2007 for the Main Civil works and Consultancy services for civil works. The remaining amount of US$ 36 million for Electro-mechanical, Hydro-mechanical and Transmission line works and the remaining amount for Main

Civil works was made available from EXIM Bank of India under US$ 250 million Dollar Line of Credit Agreement dated 21st October, 2011. Contract Agreement for the construction of the Main Civil Works was signed on 4th November, 2010 with IVRCL Limited, India.

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 from EXIM Bank of India was received on 2nd August, 2012.

The EXIM Bank of India approved 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. A Supplementary Contract was signed with WAPCOS Limited for the Consultancy Services of EM, HM and TL works on 24th March, 2014.

The Contractor could not accelerate the construction work even after repeated instructions from the Consultant, because of the very poor financial condition of the company.

The Employer, with the recommendation of the Consultant, issued "Notice for Termination" to the Contractor on 18th June, 2015 and the Bank Guarantees were seized on 28th June, 2015 as the Appellate Court rejected the Contractor's plea to issue stay orders to prevent the seizure of the Bank Guarantees. The contractor IVRCL has initiated the arbitration process under UNCITRAL rules of Arbitration as per the Condition of Contract. Both parties have appointed their respective arbitrators and the appointment of the third arbitrator is in process.

Adit Portal to Penstock and Pressure Shaft

The Determination process of the Contractor was also initiated by the Consultant with a joint site visit. The Determination is still incomplete as the Contractor has not responded to any of the Consultant's calls to settle the matter.

The Construction of the Camp Facilities being undertaken by Gorkha Swachchanda JV has also entered into dispute and the contractor initiated adjudication proceedings at NEPCA. NEPCA has already given its final verdict on the adjudication process. As the verdict was not totally acceptable to both parties, a negotiating committee was formed by the NEA management to discuss and try to solve the dispute with the Contractor.

The Construction of Infrastructures for Camp Facilities being undertaken by Lama Construction is almost completed. Lama Construction has also gone for arbitration as it feels there are a few disputable items that need to be sorted out.

Project Status

Most of the land necessary for the construction of the Project and permission for cutting of the trees has already been acquired.

After the revision of the river hydrology, the design discharge was fixed at 16.67 cumecs and the installed capacity optimized to 40 MW. An Upgraded Detailed Project Report (UDPR) for the revised installed capacity, with detail cost estimate, was prepared by the Consultant. The total cost of the Project for the revised installed

capacity has been estimated as NRs 859.90 crores (@ NRs 105 per US$) including VAT. After the approval by the NEA management to go for Tendering in Engineering Procurement and Construction (EPC) mode, the Bidding Documents were prepared by the Consultant in EPC mode for Lot 1: Civil and Hydro-mechanical works and in Plant and Design Build (PDB) mode for Lot 2 : Mechanical and Electrical works.

The Tender call for Lot 1 was first published on 6th May, 2016 with the final submission date on 7th July, 2016. On the advice of EXIM Bank of India, the final submission date has been extended three times to 21st September, 2016 as EXIM Bank is waiting for the approval from the Government of India (GoI).

UPPER TRISHULI 3A HYDROELECTRIC PROJECT

Project Background

Construction of Upper Trishiuli-3A HEP a run of river project of 60 MW was initiated in June 2011. The agreement was signed between the Government of Nepal and China Exim Bank for a concessional loan of 120 million US Dollar in 2011. The estimated cost of the project is 125.775 Million US$. Contract for the major construction work (Civil, electro-mechanical & hydro-mechanical works) was signed with China Gezhouba Group Company Ltd., China (CGGC) at a cost of 89.1779 Million US$. Contract for construction supervision of the project was made with Northwest Hydro Consulting Engineers, China (NWH), at a cost of 3.932 Million US$. Contract for the Transmission line work was awarded to China International Water & Energy Corporation (CWE) at a contract price of 22.6 million US$ excluding VAT. The Contract for the transmission line has become effective from 26 February 2012.

CGGC has completed construction of steel bridge and a pedestrian bridge over Trishuli River, temporary camp at headworks and excavation of four no. of adits totaling 607 m. CGGC has completed 2nd stage of river diversion with installation of four radial gates, construction of Intake works and 106 m of approach channel.

Prior to the earthquake of April 25, 2015 nearly 95% of headworks (Intake, weir, stilling basin and gravel trap) concreting work has been completed. About 97% of desander concreting work has also been completed. Excavation of 3867 m out of 4076 m long headrace tunnel (~95%) has been completed. About 23% of Concrete lining in the headrace tunnel, excavation work of vertical and horizontal pressure shaft and about 57% of excavation of surge shaft has been completed. Excavation of underground powerhouse cavern, upper and lower drainage tunnel, switch yard and tailrace tunnel has been completed as well.

Parliamentary committee visit to the site

Concreting of draft tube unit-1 & 2 and upper conical part of unit 1 together with gantry crane installation has been completed. About 33% of concrete lining in the tailrace tunnel has been completed. About 35% of steel lining in penstock branch pipe has been completed.

The transmission line comprises of 44.7 km long, 132 kV line from powerhouse switchyard to Trishuli 3B hub and 220 kV line from 3B hub to Matatirtha substation in Kathmandu. In addition, about 1 km of 220 kV underground cable route leads to the Matatirtha Substation and two 132 kV line bay extension works will be conducted for interconnection with existing Matatirtha substation.

400 km ACSR 'BISON' Conductor and 650 tones

out of 2200 tonnes manufactured tower materials have already arrived at the site. 132 kV Line bay equipment is ready for dispatch to the site from China. In addition, Land acquisition for tower foundation has been completed and approval for tree cutting has been obtained from the relevant district forest offices. Tree-cutting works has been completed for 24 out of 26 community forests. Till date, 40-tower foundation concrete work out of 142 has been completed and other 14 are on progress.

The project has conducted skill enhancement training to 60 persons from the project-affected area under Public Support Program (PSP). PSP also consists of the construction of four school buildings, implementation of two water supply systems, upgrading of road from Trishuli to Champani, road improvement to Trishuli hospital, Supply of hospital equipment, and construction of Irrigation drainage works, pedestrian trails and various village roads in project-affected areas through DDC-Rasuwa and DDC-Nuwakot, which are under progress.

Post-Earthquake status

The project work which was being carried out at a rapid pace came to a standstill by the devastating earthquake of 25 April 2015. A number of huge landslides occurred along the 5 km access road from powerhouse to the headworks, which made the headworks virtually inaccessible. The landslide also blocked the access road to Surge Shaft and adit-1. Many construction equipment of the contractor including the temporary labor camps located near the Headworks, Adit1 tunnel, Adit 2 tunnel and powerhouse, were heavily damaged. Contractor repatriated all Chinese labor back to China and dismissed all local labors. The earthquake followed by the rainy season also triggered further landslide at various places, including a huge landslide uphill side of the Tunnel Inlet portal, downstream of the desander. Later earthquake also triggered a huge debris flow at uphill of the dam site on left bank.

After the earthquake the cabinet decided to mobilize Nepal army to open the track from powerhouse to Headworks. The army opened the track by the end of March 2016. However, as no slope protection works were built together with high gradient of the track enabled road access to the headworks site by light vehicles only for about 2 months. By the end of May 2016, the road has

Headworks site after earthquake

already been blocked by the landslides at various locations; critical of them about 700 m north of powerhouse site.

In addition, Transmission line works had been stopped as the consequence of the earthquake that occurred on 25 April 2015. The Transmission line Contractor (CWE) also repatriated the Chinese workers and dismissed the entire local labors, considering the unsafe working environment. However, from 15 March 2016, the Contractor resumed its work. Now, CWE have been engaged to the Post-quake check survey work, as they claim that the coordinates of the tower points have been significantly changed due to the earthquake. In addition, the tower foundation and other related works are in progress. Since the contractual time expired by the end of April 2016, interim extension of 325 days' time has been done from 1st May 2016 ending on 21st March, 2017, as decided by the NEA board.

Regarding the earthquake related damages NEA board decided to carry out studies through independent Consultants for a) scope of damage assessment & slope protection works including costs b) Contractual issues. On 22 June 2016, chairman and committee members from parliamentary Agriculture and Water resources committee and parliamentary Development committee, secretary of Energy ministry and secretary of Prime minister's Office, Board member of NEA, Managing Director of NEA led by Honorary Deputy Prime minister and Energy Minister Top Bahadur Rayamajhi, visited the site. In order to proceed with the construction work a joint meeting was held, where presentations were made from the Consultant, Contractor (both CWE and CGGC), DMD, generation directorate, NEA and the independent Consultants. NEA has requested ministry of Energy for extension of Grace period and Loan availability period of concessional loan from the Exim Bank of China.

LARGE GENERATION OPERATION & MAINTENANCE DEPARTMENT

The operation and maintenance of five (5) hydropower plants and one (1) Multifuel diesel power plant with capacity above 30 MW fall under the jurisdiction of this department. The total installed capacity of these plants is 414 MW. There were no significant forced outages in these hydropower plants in the reporting period. However, electricity generation from these hydropower plants reduced in comparison to last fiscal year due to decreased river discharge in Kaligandaki and Marsyangdi rivers throughout the dry season this year and Main Inlet Valve (MIV) modification work which was initiated from May 23, 2016 at Kaligandaki 'A' hydropower plant. The generation from cascade Kulekhani I and Kulekhani II plants are mainly intended for meeting peak load demand as per system requirement. The Multifuel power plant is not in operation since Ashad 2071 due to legal dispute and distruption of supply of oil from Nepal Oil Corporation. Total Generation from the hydropower plants under this department in fiscal year 2072/73 is 1.73 TWh.

Overhauling of generating units is a regular practice normally carried out in the lean season avoiding energy loss. This ensures that design capacity is available during wet season. Apart from preventive and corrective maintenance works, periodic overhaulings were carried out in Kaligandaki A, Middle Marsyangdi and Marsyangdi power plants. Kulekhani-I and Kulekhani-II being reservoir type power plants does not experience erosion problems and hence, only regular preventive maintenance activities were carried out. Modernization of excitation system of Marsyangdi Hydropower station jointly financed by ADB and GoN under EAEIP has been completed this year. Under this department, Kali gandaki 'A' Hydropower Plant Rehabilitation Project (KGAHPPRP) under loan financing from International Development Association (IDA) is under implementation. The following sections provide a concise description of the power stations and highlight major activities carried out under this department during the fiscal year.

1. Kaligandaki 'A' Hydropower Station

Kaligandaki 'A' Hydropower Station is the largest Power Plant of Nepal with installed capacity of 144 MW and annual design generation of 842 GWh. It is located at Krishna Gandaki, Syangja. It has the generation of 750.842 GWh this year. The reduction in generation is due to poor

Overhauling Works on Unit No.2

hydrology during dry season owing to lean river discharge and ongoing MIV modification works requiring plant / unit shutdown. The significant maintenance works this year includes overhauling of Unit No. 2 from January 18, 2016 to February 28, 2016 under which repair and maintenance of HVOF coated runner, wicket gates, wearing rings, facing plates were carried out. MIV modification work has been carried out this year under the supervision of TOSHIBA Japan from May 23, 2016. Modification work of Unit No. 1 has been already completed and modification work of Unit No. 2 and 3 is ongoing. Under this work, replacement of new hydraulic servo motor, butterfly valve disc seal, bypass valve, stem bush, etc. were also carried out. Other activities carried out this year include replacement of new HV bushing of Unit No. 2, 56.5 MVA power transformer, installation, testing and commissioning of new 110V, 1100AH lead acid battery bank at powerhouse site for power backup system. At dam gate structure; repair and maintenance works in diversion gates, under sluice gates, desander flushing gates were carried out.

As part of implementation of Kali Gandaki 'A' Hydropower Plant Rehabilitation Project (KGAHPPRP), under Technical Assistance and Capacity-Building component, the Contract Agreement for the Consulting Services for Dam Safety, Civil, Electromechanical Works and Capacity Building have been signed between Nepal Electricity Authority and MWH International Inc, USA on 23rd April 2015. Under Electro-Mechanical Works, all mechanical packages except part of turbine repair and spare parts supply and trash rack cleaning machine supply has been completed. Under component A: civil works preliminary design has been submitted by the consultant. Under head works modification, the contract has been signed between NEA and Hydro Lab on 21 July 2016 for hydraulic model testing and is expected to be completed by November 2016. Under Component C: technical assistant and capacity building activities, consultant MWH USA has already been contracted and design/ study is under process. For left bank slope stability protection part bore hole drilling for piezometer and inclinometer fitting is being done by SRCL, NEA. Four bore holes have been completed out of eight and remaining are expected to be completed by September 2016. Under Safeguard Implementation, maintenance works on Rudrabeni temple and Setibeni bazaar, construction works of new Fish Hatchery & improvement of Irrigation System and water supply in Beltari have been completed. The dismantling of IGL camp and procurement of boat for Bote family are expected to be completed by September 2016.

2. Middle Marsyangdi Hydropower Station

Middle Marsyangdi Hydropower Station with installed capacity of 70 MW and annual design generation of 398 GWh is located at Bhoteodar, Siundibar, Lamjung. It was commissioned in

Condition Monitoring of Switchyard Equipments

2008. It has consistently performed well thereby generating 435.56 GWh this year. Its outstanding operational performance is rightly supported by periodic overhauling of Units. Overhauling of Unit No. 2 was carried out this year from March 8, 2016 to April 10,2016 which included mainly the replacement of the runner, replacement of wicket gate lower and upper bush along with the general maintenance of control panels, generators,

transformers, switchyard equipment, sensors etc. Major maintenance at head works was carried out from December 27, 2015 to March 7, 2016 (72 days) which included maintenance of all three desanders and repair of sliding plates. maintenance of all three radial gates by repair of its sill beam, replacement of rubber seal and application of epoxy on chute surface. Other major maintenance works this year include the Condition Monitoring Tests of switchyard equipment (Power transformers, CTs, PTs, Breakers, LAs etc.). The contract for installation of 350 KVA standby diesel generator for Power House was signed this year. Installation of this DG will enable the plant to power during emergency and black bus condition, thereby enhancing the possibility for black start of INPS through this plant.

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. This year it generated 441.736 GWh of energy. This decrease in generation is due to decrease in the river discharge as compared to last fiscal year. Major works this year includes the overhauling of Unit # 3 along with replacement of runner, wearing ring and facing plates of turbine units. The modernization of excitation system of all the three units with digital type excitation system jointly financed by ADB and GoN under EAEIP, Loan Number: 2587-NEP (SF) was also completed this year. Other major works this year include repair of Radial Gate # 1 along with replacement of SS bottom seal beam and bottom rubber seal with Belzona S-metal, replacement of two nos. of old generator air cooler with new air cooler of unit #1 at power house, repair and maintenance work of Stop-log and EOT gantry crane at dam site. Upgradation of protection system of auxiliary station transformer was carried out this year. Repair and maintenance of Unit 3 powerhouse elevator control system has been completed. Since almost all staff quarters were damaged due to earthquake on April 25, 2015 construction of new staff quarter was initiated in this fiscal year.

Overhauling Works on Unit No.3

4. Kulekhani-I Hydropower Station

Kulekhani-I Hydropower Station is the only seasonal storage type plant in Nepal with installed capacity of 60 MW and annual design generation of 211 GWh. This Hydro Power plant is designed to generate 165 GWh as primary energy and 46 GWh as Secondary energy. The construction of this plant was started in 1977, first unit was commissioned in 14th May 1982 and the Project was completed in 4th December of the same year. The plant is very critical for INPS for meeting peak load demand especially during dry season and also for restoring Power in INPS at the time of Black out. It generated 71.356 GWh of Energy in this fiscal year which is 20.79% less than annual generation of previous fiscal year. The

Maintenance Works on Switchyard Equipments

maximum and minimum water level recorded this year is 1527.10 m and 1502.73 m respectively measured from mean sea level. Major works this year consists of repairing of one pelton runner, condition monitoring of major electrical equipments at powerhouse and switchyard like generators, power transformers, 66 kV SF6 circuit breakers, CTs, PTs etc. Installation of CO2 gas operated automatic fire fighting system for protection of 66kV, 35 MVA power transformers, installation of blower fan and its control panel at drainage tunnel of dam site were carried out this year. Replacement of turbine oil in guide bearings and turbine bearing of Unit No. 1, replacement of seal of nozzle no. 3 of Unit no. 1, replacement of different types of high pressure valve, bearing cooling pipeline system and air compressor pipeline system of both the units were carried out this year. Similarly, landslide protection maintenance works around Indra Sarowar, shotcrete works near spillway, debris removal works at Shera, Palung and Chakhel check dam, civil maintenance and repair works of Dhorsing and Markhu staff colony, maintenance of Kalanki to dam access road, Amudol to Sera access road and Control house to Valve house access road are some of the major civil works carried out this year.

5. Kulekhani-II Hydropower Station

Kulekhani II hydropower plant is a cascade power station of Kulekhani I hydropower plant with diversion of Mandu river and water lift system from Rapti river having 32MW installed capacity and annual design generation of 104.6 GWh. This plant is located at Bhainse VDC of Makawanpur district and was commissioned in 1986 AD. This plant generated 44.74 GWh of electricity this year which is 19.41% less than previous year's generation. Besides regular maintenance works, major works carried out this year include the replacing work of filter material at Mandu intake, construction of coffer dam at Rapti intake which was damaged due to the flood in rainy season and maintenance of access road to surge tank. Maintenance and construction of several security buildings of army barrack at Bhainse which were damaged and collapsed due to the earthquake of April 25, 2015 and maintenance of submersible pump at Mandu intake were also carried out this year.

Generator Units

6. Multi-Fuel Power Plant

Multifuel Power Plant with installed capacity of 39 MW is located at Bansbari, Morang in the eastern industrial corridor of Nepal. Out of total installed capacity of 39 MW, 26 MW capacity was put into service in fiscal year 1990/91 and additional 13 MW capacity was put into service in fiscal year 1997/98. It consists of 6 (Six) Wartsila Diesel engines which use furnace oil (FO) 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. This plant was not in

Plant Auxiliaries- Exhaust Chimneys and Cooling Towers

operation this year due to disruption of supply of oil from Nepal Oil Corporation. Major work this year include maintenance and commissioning of 110V, 50Amp Battery Charger, repair and maintenance of DC supply system, refilling of fire extinguishers, etc.

MEDIUM GENERATION OPERATION AND MAINTENANCE DEPARTMENT

Medium Generation Operation and Maintenance Department (MGO&MD), headed by a Director, is responsible for the operation and maintenance of twelve (12) hydropower stations and one (1) diesel power plants with individual installed capacity below 30MW and owned by NEA with an objective to maximize energy generation by optimally utilizing generation resources while undertaking rehabilitation, periodic overhauling and maintenance of generating facilities. It has always strived to uphold economy, operational efficiency and an acceptable level of reliability in its drive for improvement. The installed capacity of 12 hydropower stations and 1 diesel power plant with installed capacity below 30 MW is 108.39MW. The hydropower generating stations under this department have produced 8.32% of excess energy compared to that of past year and have achieved about 93.59% of target generation this year. Though the adverse condition were present, Gandak power station has generated 150% of its set target. Upon the installation and commissioning of turbocharger in unit no. 7 at Hetauda diesel plant, 14.41 MW installed capacity is in standby condition. There are three major rehabilitation projects ongoing under this department which are Sundarijal, Tinau and Gandak (TRCM) with loan assistance from the Asian Development Bank (ADB) under Energy Access and Efficiency Improvement Project (EAEIP). Major maintenance works have been carried out for Chatara, Trishuli, Sunkoshi & Panauti hydropower plants which is still ongoing.

The following sections provide a concise description of the power stations and highlight major activities carried out under this department during the fiscal year.

1. Trishuli Hydropower Station

Trishuli Hydropower Station is constructed on the banks of Trishuli River at Trishuli Bazar, Nuwakot. Initial installed capacity was 21 MW having 7 units of 3 MW each. It was commissioned in 1967 AD in assistance with the Government of India at a cost of INR 140 million. It was later rehabilitated in 1995 AD and upgraded to 24 MW with 6 units each 3.5 MW and one unit 3 MW. It is a peaking run-of-river plant with peaking capacity of 21 MW. The annual design generation is 163

GWh whereas its actual generation of this year is 125.03 GWh. Significant maintenance works were done this year including overhauling of Unit No. 2 and 5 during the dry season. The overhaul of Unit No. 4, 7 and 3 shall be done consecutively. Repair of Butterfly Valve for the first time since its rehabilitation was done on Unit No.5 and that for Unit No.4 and 7 shall be made accordingly. Many parts of turbine components like Francis runner, shaft seal assembly, head cover, draft tube cone etc. has got aged and eroded that needs a major repair or replacement. Maintenance of butterfly valve for unit 1,2 and 3 needs prompt overhauling/refurbishment of its servo system for efficient operation of the units. Monitoring system, instrumentation and annunciators of Trishuli HPS needs a major upgrading work including

the incorporation of data logging system as well auto start/stop system. Silt deposit especially at balancing reservoir has become a major problem to Trishuli HPS since it subsides the basic purpose of peaking and also reduces the capacity of the reservoir. Efficient plan and process is essential to be devised to reinstate the originality of the balancing reservoir. The capacity of desander also needs to be upgraded for efficient desiliting as compared to the current time since it was not changed during the rehabilitation even after the increment of the discharge capacity. The underwater structure and guides of the main gates at the headworks site require a substantial repair work due the damage made by the river current over the time. In response to the damage done by the earthquake, staff dormitories are being constructed at office area, desander and headgate. Deficiency of required personnel for the O&M works has also been a major problem for this plant.

2. Gandak Hydropower Station

Gandak Hydro Power plant is a canal drop low head Plant located in Western Canal at Surajpura,

Overhauling work under progress of Unit No.2

Nawalparasi. This Canal with maximum discharge of 12,000 cusec advances further for irrigation in Uttar Pradesh, India. The plant has three horizontal mounted tubular bulb turbines, low head high discharge Kaplan Turbo-Generators

Erection of Trash Rack Cleaning Machine (TRCM) at Intake

of 5 MW each with aggregate capacity of 15 MW and annual design generation of 106.38 GWh. It was commissioned in 1979 AD in assistance with the Government of India.

The actual generation of this year is 16.25 GWh from this plant. Presently, Unit no. 1 & 2 are in shutdown condition due to damages on generator, stator and problems in PLC of Governor/wicket gate servomotor from few year back. Overhauling of unit no. 2 is currently in progress for its operation from 1st quarter of this year. Currently unit no. 3 is in operation but the generation is disrupted occasionally due to non- synchronization and trip due to low voltage from Indian grid. The rehabilitation of Intake (procurement & installation of TRCM & gantry crane) of plant jointly financed by ADB and GON under EAEIP is under final stage of completion. The canal is also kept in shutdown two times a year for about 4 months (in total) regularly for main western canal inspection by Indian authority. The plant is seeking rehabilitation for optimum performance of machines under funding from GON/GOI.

3. Devighat Hydropower Station

Devighat Hydropower Plant is a cascade development of Trishuli Hydropower Plant with installed capacity of 14.1 MW and annual design generation of 114 GWh. It is located at Devighat, Nuwakot and was commissioned in

1984 AD. Improved operational performance is observed after successful completion of rehabilitation in 2011. The actual generation of this year is 94.31GWh. Significant works in this year include primary and secondary DPU replacement and Installing SCADA program on it, replacement of governor oil of unit no 2, shaft seal replacement works of all three units, installation, testing & commissioning of 110V DC battery bank, replacement of rotating diodes of unit no 2, 11 KV VCB trolley repair & maintenance works, installation of split AC on control room & substation. The construction of new office staff quarters are in progress after the damage by earthquake.

4. Modikhola Hydropower Station

Modikhola Hydropower Station with installed capacity of 14.8 MW and annual design generation of 92.5 GWh is located at Dimuwa, Parbat. It was commissioned in 2000 AD. Operation of this Plant has been adversely affected especially during rainy season reportedly due to sub-optimal design and inadequate sediment handling facilities. The

actual generation of this year is 62.79 GWh which is 3.58 percent more than its target generation and 6.5 percent more than previous year generation. Major maintenance works carried this year in electrical section include replacement of new battery charger at 33 kV substation, replacement of new disconnecting switch at 33 kV substation, replacement of 132 kV lightening arrestor at 132 kV side of 6.6/132 kV power transformer, replacement of air conditioner at control room of the power house, replacing of 33 kV panel of Baglung feeder due to breaker damage with an extra spare panel, maintenance of protection system of the 33/11 kV , 3 MVA distribution transformer and that in mechanical section are overhauling of unit no 2, replacement of Francis runner of unit no 2, changing of balancing pipe of unit no 1, installation of extra submersible pump at the sump pit of the power house, jet pump at the intake side and welding machine at the workshop of the power house. Similarly civil works carried out during the year include repair and maintenance of office building at power house, construction of new vehicle parking at the colony area, maintenance of staff quarters.

Ongoing rehabilitation works for civil & hydro mechanical structures at headworks area is expected to improve its performance more. Among rehabilitation activities, 90% of both of the two boulders located at upstream has been demolished to enable the uniform distribution of high flood towards diversion weir and under sluice. Diversion weir rectification works which include replacement of plum concreting of downstream apron with RCC apron and construction of cutoff wall at the end has completed. The existing tilted right wing wall has been replaced with new RCC cantilever retaining wall. Installation bypass steel pipe system on the right bank of regulating pondage is in progress. In hydro-mechanical works, stop logs, under sluice gates repair and trash rack installation with new layout has been completed.

5. Sunkoshi Hydropower Station

The 10.05 MW Sunkoshi Hydropower station, on the upper reach of Sunkoshi River is a run-of-river power plant has an annual design generation of 70 GWh build with assistance from China in 1972. The project cost was approximately NRs. 109.4 million including 66 kV single circuit transmission line up to Kathmandu.

The actual generation of this year is 35.99 GWh. Significant works carried out in the year include clearing of large quantity of debris, accumulated at the headworks & waterway after Jure landslide, using heavy construction equipments of NEA. Also gate numbers 1 & 4 of barrage which were dislodged and damaged by Jure landslide were fabricated & installed. Cracks appeared along the length of canal by last year's earthquake was also repaired. Repair & maintenance of headcover, shaft seals of the turbine parts has been carried out. Staffs quarter building construction works is ongoing as old quarter buildings were demolished by last year's earthquake.

6. Ilam (Puwakhola) Hydropower Station

Puwa Khola Hydropower Station is a run of river type with installed capacity of 6.2 MW and annual design generation of 48 GWh. It is located at Golakharka, Ilam. It was commissioned in 1999 AD and was jointly developed by Government of Nepal and NEA at a cost of USD 15.7 million. It has two pelton turbines of 3.1 MW each and has generated 33.83 GWh of energy this year. Major works carried out in this year in electromechanical section are repair and maintenance of spherical valve of unit no. 2, replacement of drain valve at head tank which were facing water leakage problems during sclosed state, painting of existing 8MVA power transformer and switchyard structures, improvement of earthing at switchyard of power house. Similarly major maintenance works in civil section are spall of tunnel and

cracks at head tank that had caused risk to the adjoining structures, construction of retention wall (compound wall) at office and head tank boundary, land protection works at head tank, power house access road and intake access road, construction of guard post at power house and drain construction at geologically prone penstock area, repair of outlet structure damaged due to spilling water from adit tunnel & repair of tailrace outlet.

7. 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 with the assistance from Government of India at a cost of NRs. 162.6 million. The plant which was originally designed to be a captive plant for powering drazer pumps to flush sediments from the Canal was later handed over to NEA by Sunsari Morang Irrigation Project (SMIP) on 29 March, 1999.

The plant is in shutdown condition from last year due to problems in turbine parts for which a contract agreement for the renovation & modernisation of unit no. 2 has been done with Andritz Hydro, being OEM of the plant . The dismantling of the turbine parts under the contract has been disrupted currently due to high flood in the canal and will be resumed soon after the rainy season. Upstream & downstream stoplogs were repaired and turbine pit was dried out to make ready for the maintenance works. But due to the high flood in Koshi river, one of the stoplog is needed to extend its height which is being carried out. 110 volts DC power supply system (battery & charger) & 50 kVA distribution transformer have been repaired. Office & staff quarter maintenance works were also carried out.

8. Panauti Hydropower Station

Panauti Hydropower Station built in 1965 with the assistance of the then USSR, is located 35 km east of Kathmandu. The scheme was an installed capacity of 2.4 MW and annual design generation of 6.97 GWh. The Project was designed for operation of only two units at a time with third unit as a standby. Power canal of 3,721 m long with discharge of 3.2 cu. m/s from headwork to

reservoir has seven (7) outlet gates for irrigation in the vicinity of Khopasi. This year generator stator repairing works for unit no. 1 & 3 along with installation & commissioning were completed. Other works include repairing of unit no. 2 exciter armature, replacement of guide vane links for unit no.1 & 3 with generator coupling, replacement of DC system battery, painting of penstock pipes & CGI sheets for office and quarter roof structures, construction of pedestrian road inside the colony & cleaning of peaking pondage. This power plant is being rehabilitated with procurement & installation of new governor control system including MIV, PLC & SCADA based control, monitoring & protection systems and brushless excitation systems for which the contractor is doing the works.

9. Seti Hydropower Station

Seti Hydropower Station is a run of river plant with installed capacity of 1.5 MW and design generation of 9.8 GWh. It consists of 3 units of

500kW each. It is located at Nadipur, Pokhara and was put into operation in 1985 AD with assistance from the People's Republic of China. Power canal of this Plant serves both objectives of irrigation and energy generation. Intake of the canal is regulated primarily for irrigation by Department of Irrigation and hence, normal operation of the Plant sometimes gets affected regardless of availability of units. The maintenance works carried out this year include overhauling of unit No. 2, temporary relocation of desander gate, repairing of small gravel trap at small desander, penstock painting works and access road to colony. This plant can generate in full capacity almost all days of the year

and all units are in running condition. The annual generation of this station for the F.Y 2072/73 is 10.996 GWh.

10. Fewa Hydropower Station

Fewa Hydropower Station is just 1.0 MW Plant built at the end of the canal for which the water comes from end of the Fewa lake called as Damsite in Pokhara. It consists of 4 units each 250kW and annual design generation of 6.5 GWh. It was commissioned in 1969 AD with assistance from the Government of India. Presently, three units are in operation and Unit No. 4 is not in operation

due to problem in generator turbine coupling. Some of the works completed in this fiscal year are maintenance of compound wall, repair & maintenance of stop log gate and overhauling of unit no. 3. Repairing of power canal is also carried out. The annual generation of this station for the F.Y 2072/73 is 1.66GWh.

11. Sundarijal Hydropower Station

Sundarijal Hydropower Station is located at Sundarijal, 15 km northeast of Kathmandu and serves twin purpose of water supply and energy.

The tailwater discharge is utilized for water supply system to Kathmandu Valley. It has two turbogenerator sets with total installed capacity of 640 kW & annual generation 4.77 GWh. This Plant was erected under Colombo Plan scheme whereby the main equipments were supplied by The English Electric Company Ltd., England. It was commissioned in 1934 AD, being second old hydroplant constructed in Nepal. The actual generation from this plant in this year is 4.3 GWh. Major maintenance works carried out in this year for the plant are painting of penstock pipe, demolishing of damaged buildings, construction of one storey to the existing new quarter building including construction of septic tank, soak pit, housewiring, boundary walls, maintenance of penstock anchor blocks, breakdown & regular maintenance of electromechanical components of power house.

Considering its operational life, rehabilitation of this Plant together with Tinau Hydropower Plant under Electricity Transmission Expansion and Supply Improvement Project (ETESIP) jointly funded by ADB and GON is currently underway. Under the rehabilitation works, remodeling of Nagmati Intake, repair and maintenance works of gates and balancing reservoir, replacement of complete electromechanical and switchyard equipment in the power house are included. Contract has been already awarded for the rehabilitation works and the works are undergoing. This component of Electricity Transmission Expansion and Supply Improvement Project (ETESIP) is jointly funded by ADB and GON under Loan No. 2808-NEP (SF).

This Project is a part of an effort of Nepal Electricity Authority to renovate and modernize aged hydropower plants as this plant has become 82 years old.

12. Pharping Hydropower Station

Pharping Hydropower Station is the first power station in Nepal, which upholds the legacy of hydropower development in Nepal for more than a

century. It was inaugurated by the late king Prithivi Bir Bikram Shah Dev on Monday, 22 May, 1911 (B.S. 1968, 9th Jestha). It was erected with a grant from British Government at a cost of NRs. 0.713 Million. It is located in Pharping of Kathmandu district, nearly 12 km south from the city. There are two units each 250 kW with an aggregate installed capacity of 500 kW. As the water from the penstock has been diverted to drinking water supply to Kathmandu by KUKL, the plant is not being operated for generation nowadays though it has been placed in standby mode to operate occasionally and to demonstrate to the visitors. In this year construction of new roof truss & installation of CGI sheets for the existing quarter buildings, repair of brick masonry walls around power house, construction of retaining walls (in the civil section) and repair of governor, turbine nozzle and other parts (in the electromechanical section) has been carried out.

13. Hetauda Diesel Power Plant

Hetauda Diesel Power Plant with installed capacity of 14.41 MW is located at Hetauda, Makawanpur and acts as a backup to hydropower plants. The first phase with three engine sets of English Electric Co. Ltd. was commissioned in 1963 and the second phase with four engine sets of GEC Diesel Ltd. was commissioned in 1980 in assistance with British Government. It adds to generation mix providing operational flexibility. This Plant is in standby condition and operates in

an emergency when there will be severe power shortage. Soaring fuel prices severely restricts its operation. Unit no. 7 was not in operable condition for more than 2 years due to breakdown of turbochargers & problems in the engine. This year one set of turbocharger is procured and installed for a unit. Cooling system repair works in unit no. 5 & exhaust system repair works in unit no. 3 were also carried out. CGS sheets of power house roof has been replaced. Other regular & routine maintenance works for the diesel engine has been carried out.

REHABILITATION PROJECT UNDER MEDIUM GENERATION OPERATION AND MAINTENANCE DEPARTMENT

1. Gandak Hydropower Plant Rehabilitation Project

Gandak Hydropower Plant Rehabilitation Project is being carried out with loan assistance from the ADB under Energy Access and Efficiency Improvement Project (EAEIP).The Project mainly consists of design, fabricate, supply and install of trash rack cleaner with log grappler and trash

rack panels to improve trash handling system at intake. The other works of the Project include replacement of gantry crane to facilitate the operation of stop-logs gates during repair and maintenance of units. The project is scheduled to be completed by September, 2016 this year.

2. Sundarijal Hydropower Plant Rehabilitation Project

The Government of Nepal (GoN) has received financing from the Asian Development Bank (ADB) in the form of loan, under the Electricity Transmission Expansion and Supply Improvement Project (ETESIP) Rehabilitation of Sundarijal Hydropower Plant. This Project is a part of an

effort of NEA to renovate and modernize the project to a capacity of 1MW. Major works of the Project consist of renovation and modernization of electromechanical and substation system at power house as well as remodeling of Nagmati Intake, repair and maintenance of gates and civil structures at headworks. The contract has already been awarded to carry out the rehabilitation works and the Project is scheduled to be completed by end of 2017.

3. Tinau Hydropower Plant Rehabilitation Project

Tinau Hydropower Plant was developed on Chaitra, 2034 (March/April, 1978) in 3 (three) phases by utilizing the flow of Tinau River as a joint initiative between the erstwhile Ministry for Water and Power/ His Majesty's Government and the United Mission to Nepal (UMN) with an objective of electrifying Butwal-Khasauli as well as facilitating industrial development in the area.

The proposed Rehabilitation Project is financed by the Asian Development Bank (ADB) in the form of a loan under Electricity Transmission Expansion and Supply Improvement Project (ETESIP). The Project aims to increase the efficiency and generation of the power plant for which renovation and modernization of electromechanical system, repair and maintenance of headworks and reinforcements of distribution line and substation are undertaken. The Project will also replace

existing short Suspension Trail Bridge as part of promoting small–scale gender-sensitive infrastructure development to facilitate commuters and support livelihoods in the vicinity. Currently, procurement related activities are underway and the Project is scheduled to be commissioned by end of 2017.

TECHNICAL SUPPORT DEPARTMENT

Technical support department provides the much needed expert advice to the special problems of ongoing and operational projects of NEA. In the past FY 2072/73, the service provided by this department comprises of

a) Proposal for rehabilitation of Trishuli Devighat Project : The present annual generation of these projects are about 25% below the rated capacity. Despite undergoing extensive

rehabilitation program in 1992/93, the capacity of desander is not sufficient enough to fully flush out the sediment at the rated discharge of 45.3 m3/s. This has led to filling of the balancing pond by silt and is rather acting as a reservoir of sand discharge during the dry season. The resulting erosion has rendered 4 out of 7 turbines of Trishuli to dilapidated condition. This department has hence made a proposal to build another bay of desander in Trishuli project and remove the debris from the balancing reservoir without a long shutdown period. The objective of this rehabilitation is to increase the generation by about 65 GWh/year for these two projects and curtail the cost for turbine maintenance.

b) Provide advisory service to the ongoing problems of Kali Gandaki A: Major issues with the headwork involve heavy erosion in the first half portion of desander and erosion of the banks. A task for comprising of TSD has been formed to review and recommend the measures required to mitigate the problems/ issues. TSD has actively participated in the assigned task and working out with other department to remedy the problems at the earliest

c) Framework for operation and maintenance of NEA hydropower projects: TSD has submitted draft report for enhancing the performance of o/m of NEA hydropower projects. There is a critical need for monitoring of operational parameters like sediment inflow, slope stabilization, need assessment of equipment procurement and suitable manpower at site that have a direct impact on generation.

Nepal Electricity Authority

Generation Operation and Maintenance

Actual Generation for the FY 2072/73 (FY 2015/16A.D.)

Unit: MWh

S.No.	Power Stations/Month	Shrawan	Bhadra	Ashwin	Kartik	Mangsir	Poush	Magh	Falgun	Chaitra	Baishakh	Jestha	Ashad	Total
1	Kaligandaki 'A'	96,658.00	93,079.00	93,238.00	87,804.00	62,790.00	45,187.00	39,552.00	36,393.00	42,762.00	50,026.00	59,201.00	44,152.00	**750,842.00**
2	Mid-Marsyangdi	51,717.13	49,830.13	49,695.87	44,632.50	32,917.50	25,080.00	20,686.88	19,243.12	21,357.12	27,091.00	43,549.63	49,757.88	**435,558.76**
3	Marsyandi	48,826.40	46,974.50	47,612.60	45,954.70	36,995.30	28,660.50	23,532.30	21,779.10	22,841.60	27,416.60	45,033.40	46,109.60	**441,736.60**
4	Kulekhani I	626.00	187.00	221.00	716.00	297.00	5,776.00	16,038.00	9,420.00	13,184.00	18,442.00	2,845.00	3,604.00	**71,356.00**
5	Kulekhani II	300.25	88.15	78.77	358.62	169.89	2,978.27	8,214.05	4,847.98	6,606.60	9,308.91	1,383.51	1,720.35	**36,055.35**
6	Trishuli	12,770.20	11,495.60	11,806.10	12,133.10	11,766.60	10,905.00	8,852.40	8,065.70	8,348.80	9,505.20	9,253.00	10,124.00	**125,025.70**
7	Gandak	1,944.90	2,090.70	2,398.30	570.20	-	2,195.80	2,376.70	2,453.20	941.30	-	-	1,277.90	**16,249.00**
8	Modi	4,510.70	6,863.60	8,421.70	7,294.00	5,216.90	3,890.20	3,079.60	2,728.50	3,568.00	4,752.40	7,164.40	5,297.20	**62,787.20**
9	Devighat	9,033.50	7,127.09	6,602.04	9,251.37	8,891.86	8,752.15	7,589.30	6,949.02	7,158.64	8,094.56	7,320.90	7,536.06	**94,306.49**
10	Sunkoshi	2,356.10	1,553.80	2,186.90	4,766.70	4,712.10	4,272.60	3,629.70	3,185.30	2,979.90	2,854.00	1,958.80	1,538.30	**35,994.20**
11	Puwa	4,094.75	3,987.15	4,185.59	4,309.62	2,815.36	2,023.88	1,673.54	1,400.60	1,299.97	1,183.59	2,711.56	4,145.91	**33,831.51**
12	Chatara	-	-	-	-	-	-	-	-	-	-	-	-	**-**
13	Panauti	237.51	353.26	339.21	293.67	269.45	204.17	120.76	71.85	25.58	8.71	66.45	61.97	**2,052.59**
14	Seti	920.25	941.49	968.22	971.37	889.02	956.16	896.67	855.36	888.39	846.00	982.98	880.83	**10,996.74**
15	Fewa	150.05	168.84	180.82	122.55	195.60	228.59	225.15	130.27	109.21	26.53	-	127.16	**1,664.77**
16	Sundarijal	452.66	427.00	453.00	478.00	451.33	342.33	286.66	256.33	219.66	187.66	321.00	418.33	**4,293.95**
17	Pharping	-	0.26	0.48	0.31	0.23	0.22	0.18	0.25	-	-	-	-	**1.93**
	Total (Hydro)	**234,598.40**	**225,167.56**	**228,388.60**	**219,656.70**	**168,378.14**	**141,452.87**	**136,753.88**	**117,779.58**	**132,290.78**	**159,743.16**	**181,791.63**	**176,751.50**	2,122,752.79
18	Multifuel	-	-	-	-	-	-	-	-	-	-	-	-	**-**
19	Hetauda Diesel	1.43	8.28	6.38	50.07	6.90	6.59	6.12	6.19	4.50	7.34	7.84	10.45	**122.07**
	Total (Thermal)	1.43	8.28	6.38	50.07	6.90	6.59	6.12	6.19	4.50	7.34	7.84	10.45	**122.07**
	Grand Total	**234,599.83**	**225,175.84**	**228,394.97**	**219,706.76**	**168,385.04**	**141,459.45**	**136,760.00**	**117,785.76**	**132,295.27**	**159,750.50**	**181,799.47**	**176,761.95**	**2,122,874.85**

Note: ***Provisional figures subjected to final audit***

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 2070/71	FY 2071/72	* FY 2072/73										
1	Kaligandaki 'A'	144.00	3	864,103.00	929,983.00	750,842.00	929,983.00 (2071/72)	842,000.00	855,227.91	15,467.00	762,596.30	747,129.30	824.00	99.62%	59.52	120
2	Middle Marsyangdi	70.00	2	434,171.71	457,318.09	435,558.76	457,318.09 (2071/72)	398,000.00	438,850.03	13,365.35	438,807.50	425,442.15	1,177.48	98.01%	71.03	69
3	Marsyandi	69.00	3	461,688.10	472,981.50	441,736.60	483,928.20 (2052/53)	462,500.00	458,915.69	443,454.00	867,654.00	424,200.00	-	98.02%	73.08	70
4	Kulekhani-I	60.00	2	94,084.00	90,081.00	71,356.00	249,680.00 (2056/57)	211,000.00	124,062.79	59,024.19	120,707.90	61,683.71	8,495.70	99.10%	13.58	83
5	Kulekhani-II	32.00	2	46,569.53	44,740.63	36,055.35	122,757.00 (2056/57)	104,600.00	62,031.39	5,488.80	41,962.00	36,473.20	-	#	12.86	45
6	Trishuli	24.00	7	111,846.80	124,763.40	125,025.70	154,423.75 (2053/54)	163,000.00	136,940.02	145,913.12	253,942.85	108,029.73	16,098.48	99.67%	59.47	74
7	Gandak	15.00	3	8,802.30	1,793.70	16,249.00	52,272.70 (2043/44)	106,380.00	10,854.66	137,173.88	117,910.58	(19,263.30)	35,767.09	#	12.37	31
8	Modi Khola	14.80	2	41,637.80	58,955.20	62,787.20	67,348.90 (2063/64)	92,500.00	60,614.69	30,016.34	74,950.00	44,933.66	15,827.25	97.82%	48.43	41
9	Devighat	15.00	3	95,427.00	97,742.69	94,306.49	106,277.70 (2056/57)	114,000.00	108,172.25	115,981.92	201,423.39	85,441.47	488.45	96.02%	71.77	46
10	Sunkoshi	10.05	3	64,667.40	23,014.10	35,994.20	66,383.10 (2068/69)	70,000.00	41,596.72	270.00	34,361.70	34,091.70	1,445.80	98.74%	40.88	56
11	Ilam (Puwa Khola)	6.20	2	29,604.95	32,412.28	33,831.51	34,640.93 (2064/65)	48,000.00	34,192.15	11.23	33,801.63	33,790.40	-	99.88%	62.29	37
12	Chatara	3.20	2	2,355.25	53.25	-	5,219.75 (2063/64)	6,000.00	777.22	-	-	-	-	#	-	20
13	Panauti	2.40	3	2,206.52	1,632.38	2,052.59	4,654.80 (2058/59)	6,970.00	2,611.80	-	-	-	-	#	9.76	22
14	Seti	1.50	3	10,892.52	10,264.81	10,996.74	11,616.19 (2067/68)	9,800.00	11,081.30	-	-	-	-	#	83.69	37
15	Fewa	1.00	4	2,050.14	2,310.74	1,664.77	3,919.47 (2034/35)	6,500.00	2,338.50	-	-	-	-	#	19.00	
16	Sundarijal	0.64	2	3,481.29	4,530.26	4,293.95	4,530.26 (2071/72)	4,770.00	4,551.97	-	4,285.14	4,285.14	-	99.79%	76.59	18
17	Pharping	0.50	2	5.94	4.46	1.93	48.65(2064/65)	-							0.04	4
	Total (Hydro)	**469.29**	**48.00**	**2,273,594.26**	**2,352,581.49**	**2,122,752.79**	**-**	**2,646,020.00**	**2,352,819.09**	**966,165.82**	**2,952,402.99**	**1,986,237.17**	**80,124.25**	98.17%	51.64	**773**
18	Multifuel	39.00	6	4,981.43	-	-	86,215.07 (2055/56)	-	-	354.00	-	(354.00)	-	0.00%	-	
19	Hetauda Diesel	14.41	4+3	4,768.93	1,254.54	122.07	24,203.64 (2055/56)	-	-	-	106.61	106.61	-	87.34%	0.10	29
	Total (Thermal)	**53.41**	**13**	**9,750.36**	**1,254.54**	**122.07**	**-**	**-**	**-**	**354.00**	**106.61**	**(247.39)**	**-**	22.39%	0.03	**29**
	Grand Total	**522.70**	**61**	**2,283,344.62**	**2,353,836.03**	**2,122,874.85**	**-**	**2,646,020.00**	**2,352,819.09**	**966,519.82**	**2,952,509.61**	**1,985,989.78**	**80,124.25**	98.16%	46.36	**802**

Note:

**** Provisional figures subjected to final audit***

 # Metering problem

Transmission Directorate

Transmission Directorate is responsible for development, implementation and operation of high voltage transmission system. This business group is headed by a Deputy Managing Director and has Grid Operation Department (GOD), System Operation Department (SOD), Grid Development Department, each headed by a Director.

This business group monitors, operates and constructs transmission lines and substation facilities to evacuate power generated by both 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 completed with the leading involvement of this business group. Currently this line has been charged at 132kV voltage level and importing 80MW of power. In order to develop strong Transmission Network the Hetauda-Dhalkebar-Inaruwa 400kV transmission line, is under construction.

Transmission Directorate has prepared Transmission System Master Plan for 2015 to 2035 upon which NEA intends to develop river basin wise transmission system as a long term strategy for power development of Nepal.

I. GRID OPERATION DEPARTMENT

The Grid Operation Department (GOD) has the main responsibility of transmitting reliable and quality power from distant generators to various load centers. The Department also provides connection facilities to IPPs and Bulk Consumers at different voltage levels by accomplishing Connection Agreement as per NEA Grid Code. The other major responsibility of this Department is to look after the operation of 66kV & above Substations and Transmission Lines along with routine and breakdown maintenance works including up-gradation, extension, replacement works, reactive compensation, rehabilitation works etc. The three division offices in Kathmandu, Hetauda, Butwal and three branch offices in Duhabi, Pokhara & Attaria are working under GOD for the fulfillment of these responsibilities:

Major Works performed in the F/Y 2072/73 are as follows:

This department has executed numbers of Transformer reinforcement, upgrading works in various Substations. Up-gradation, Reactive Power Compensation and rehabilitation of power system equipments in the Substations are being carried out to meet the increase of power demand and Voltage problem. The existing Transformers after being replaced are reused in other Substations after necessary Overhauling and Maintenance works. Reallocations of such Power Transformers are a cost effective solution for load management.

Various works executed by this department have supported to reduce forced load shedding caused by inadequate substation capacity.

The department has carried out and completed following major up-gradation and reinforcement works in FY 2072/73.

a. Major Up gradation and Reinforcement Works

- Installation of new 132/33kV, 2x30MVA Transformers to replace existing 2x15MVA at Attaria S/S.
- Installation of new 132/33kV, 30MVA Transformer to replace existing 7.5MVA & Installation of new 33/11kV, 16.6MVA

Transformer to replace existing 3MVA at Lamahi S/S.

- Shifting and Installation of 66/11kV, 2x15MVA Transformer replacing the existing 2x6MVA at Simara S/S.
- Shifting and Installation of 132/66kV, 2x45MVA Transformer replacing the existing 2x20MVA at Hetauda S/S. (GSRP I Project)
- Shifting and Installation of 132/11kV, 15MVA Transformer replacing the damaged 7.5MVA at Bardghat S/S.
- Shifting and Installation of 132/33kV, 15MVA Transformer replacing the damaged 10MVA at Damauli S/S.

b. Work in progress:

Following major up-gradation & Reinforcement works for Substation are initiated and are under progress

- Installation of new 132/33kV, 63MVA Transformer Bay at Duhabi S/S.
- Installation of new 132/33kV, 30MVA Transformer at Singati S/S of Singati - Lamosanghu Corridor project as the project upgraded the existing 132/33kV, 15MVA Transformer at Lamosanghu S/S with new 30MVA.
- Installation of new 132/11kV, 22.5MVA Transformer Bay at Lekhnath S/S.
- Installation of new 33/11kV, 16.6MVA Transformer Bay at Kamane S/S.
- Installation of new 132/33kV, 63MVA Transformer to replace existing 30MVA at Lamahi S/S.
- Installation of new 132/11kV, 22.5MVA Transformer to replace existing 7.5MVA at Bardghat S/S.
- Installation of new 33/11kV, 16.6MVA Transformer to replace existing 8MVA at Chandranigahpur S/S.
- Installation of new 132/11kV, 22.5MVA Transformer Bay at Parwanipur S/S. (GSRP I Project)
- Shifting and Installation of 66/11kV, 7.5MVA Transformer replacing the existing 3.15MVA at Amlekhgunj S/S.
- Shifting and Installation of 132/33kV, 15MVA Transformer replacing the existing 7.5MVA at Lamki S/S.
- Shifting and Installation of 132/33kV, 15MVA Transformer replacing the existing 7.5MVA at Mahendranagar S/S.
- Shifting and Installation of 33/11kV, 8MVA Transformer replacing the existing 3MVA at Chanauta S/S.

c. Grid Connection Agreement

The Department has successfully accomplished the Grid Connection Agreement with 8 IPPS (Independent Power Producers) for 315.208MW Capacity to mitigate the future load demand.

d. Maintenance Works

- Gabion protection work of Tower no. 18 of 132kV Khimti - Lamosanghu Transmission line which was damaged during high flood.
- Routine Maintenance works were carried out as per schedule for Substations and Transmission Lines.
- Breakdown maintenance works were carried out as per requirement.
- Regular Relay Testing works were also carried out. Total of 163 relays were tested on 5 Substations (Duhabi, Anarmani, Lahan, Lekhnath and Damauli).

e. Revenue Generation

The Department has made a total income of NRs. 34,82,327.00 from Grid Impact study, hiring testing equipments, programming and testing of energy meters and by selling Grid Code and Tender Documents.

Maintenance Work being carried out on
Trishuli-Chilime 66kV & Dhalkebar-Chandranigahapur 132kV Towers

f. Transmission Loss Status

Comparison of Transmission Line Loss of different F/Y

S. No.	F/Y	Total Import Energy(MWh)	Total Export Energy(MWh)	Transmission Line Loss Energy(MWh)	Transmission Line Loss in Percentage
1	2068/69	3736805.66	3520922.32	215883.34	5.78%
2	2069/70	3772905.51	3574865.1	198040.41	5.25%
3	2070/71	4120153.81	3889823.1	230330.71	5.59%
4	2071/72	4394005.17	4193004.03	201001.14	4.57%
5	2072/73	4476682.97	4260912.71	215770.26	4.82%

II. SYSTEM OPERATION DEPARTMENT (SOD)

As in the preceding year, 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 towards fast restoration of the power system in case of black-outs, thereby reducing loss of revenue. The number of complete system collapse has been reduced to 26 as compared to 28 in the previous year, and the subsequent complete outage time has been reduced to 430 minutes as compared to 1053 minutes (465 minutes during earthquake) in the previous year. The magnitude of load shedding has also been maintained to maximum 91 hours per week despite the unavailability of some power stations due to various reasons (Approximately about 57 MW of generation deficit). Constant monitoring of trading power from India through Dhalkebar-Mujjaffpur Transmission line (400kV line presently operated at 132 kV voltages since 17th Feb 2016) and better management of imported power by LDC contributed significantly to minimize Load Shedding hours.

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, through the regular maintenance works. Beside regular maintenance work new stations Kusum, Chapali, Damak have been integrated on SCADA software. For more reliable communication system, old PLCC systems are replaced with fiber optical equipment in Anarmani, Bharatpur, Kawasoti substations and Trisuli power station. Around Rs.210 million revenue is being received annually by leasing (to Nepal Telecom and other private companies) fibers from the fiber optic cable, an increase in 20% from last year.

Existing software and hardware installed in the LDC control building is of 2002 and earlier. Malfunction of installed equipment has been increased compared to previous years and the spare parts are also not available in the market. So, upgrading of existing hardware and software is obligatory.

III. GRID DEVELOPMENT DEPARTMENT

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

Recently Completed Projects

1. Butwal – Kohalpur 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 (2065/066) with US$13.8 million loan assistance from ADB and NRs. 276.4 Million from GoN and NEA. The summary output of the project includes: 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. Construction work was completed last Fiscal year on 22 June 2015 (Asadh 7, 2072) and now the second circuit line, OPGW, new line bays and Kusum substations are now in operation.

2. Chapali 132kV Substation

Objective of the Chapali 132kV substation project is to cater the increased residential and commercial demand of Kathmandu North and to improve power supply reliability. The main output of the project includes 132/11kV, 30MVA

132kV Chapali Substation

substation at Chapali, 66kV GIS bay at Lainchhour substation and Chabahil-Lainchhour 7.7 km long interconnection by 66kV underground cable. Total cost of the project is US$ 16 Million jointly financed by loan assistance of ADB, GoN and NEA. The project was started in 2008/09 (2065/066) and Substation works was completed on Ashoj 12, 2072 and put in to operation. Underground cable laying works from Chabahil to Lainchaur have been completed. However, works related to 66 kV GIS bay at Lainchaur is in the final stage.

3. First Section Illam-Damak 132kV Transmission Line from Kabeli Corridor

Kabeli Corridor 132kV Project: Illam-Damak Transmission Line Work

Objectives of this section of the Kabeli Corridor 132kV Transmission Line project is to facilitate evacuation of power generated from Mai and other river basin of the eastern region and improve power supply situation in this part of the country. Scope of this section are: construction of 35.5 km of single circuit 132kV transmission line from Damak to Illam (Godak), 132/33/11kV Illam substation with 132/33kV, 30MVA and 33/11kV, 3MVA transformers.

Kabeli 132kV Transmission Line Project was started in 2008/09 and this section of the project is completed on October 2015 and successfully evacuating power from Puwa Khola (6.2MW) NEA Project and Mai Khola (22MW) Sanima Mai IPP's project to Damak Substation.

Projects under Execution

1. Thankot – Chapagaon - Bhaktapur 132kV Transmission Line

The project was started in 2055/056 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 estimated revised scheduled to be completed is Ashadh 2075. The project cost estimated at US$ 23 Million and project 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, construction and upgrading of different substations at Kathmandu valley. Upgrading and construction of substations in Kathmandu valley and transmission line portion within Kathmandu and Bhaktapur Districts has been completed. However, construction of transmission line in Lalitpur district which was stopped due to protest of local inhabitants is under the process of construction.

2. 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 basin 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 remaining works including second and third section of the 132kV double circuit transmission line from illam to Fidim to Kabeli is estimated revised schedule is Ashadh 2075. However Fidim and Kabeli 132/33kV substation construction work has been completed and waiting for transmission line.

3. 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 2065/066 and is estimated revised scheduled to be completed in Asadh, 2074.Project will construct Lamosangu-Singati 40km 132kV Double Circuit Transmission Line and 132/33 kV, 30 MVA substation at Singati.

As of Ashadh 2073, about 65% construction of Singati 132/33kV substation is completed. Regarding transmission line construction preliminary works like Route alignment survey, Check Survey and Tower Spotting for transmission line has been completed, IEE study completed, Design of the Towers has been approved, Conductors and Hardware Fittings received at site for the Transmission Line Package but still transmission line construction work could not be done satisfactorily.

4. Dumre – Damauli – Marsyangdi 132kV Transmission Line

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. 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 (2065/066) and estimated revised scheduled to be completed is December 2016. Scope of the project includes construction of 20km of double circuit transmission line from Dumre to Damauli, 1km four circuit loop-in loop-out transmission line at Middle Marshyangdi power plant, stringing of 39km of 132kV second circuit transmission line from Middle Marshyangdi to Dumre and construction of 132/33kV, 30MVA substation at Markichowk, bay extension at Damauli Substation and Middle Marsyandi Switchyard and GIS bay extension at Lower Marshyangdi Switchyard.

As of Ashadh 2073, about 40% of Transmission Line Construction work has been completed and about 60% of substation construction work is completed so far. Rest of the transmission line and substation construction work is in progress.

5. Bhulbhule-Mid. Marsyangdi 132kV Transmission Line

Objective of this project is to evacuate power generated by Upper Marsyangdi A (50MW). Cost of this project is estimated to US$ 3.0 Million and funded by GoN. The project is started in 2070/071

Erected tower of Bhulbhule Middle Marsyandi 132kV T/L Project

Conductor stringing work of Bhulbhule Middle Marsyandi 132kV T/L Project

(2013/014) and estimated revised scheduled to be completed is FY 073/74 (within August 2016). Scope of the project includes construction of 22km single circuit transmission line from Bhulbhule Upper Marsyangdi-A switchyard to Middle Marsyangdi switchyard and 132kV Bay extension at Middle Marsyangdi Swithchyard.

As of Asadh 2073 construction of transmission line is near to completion. All the tower foundation and tower erection has been completed and around 40% of stringing works has been completed. Bay extension works is near to completion. Upper Marsyangdi-A HEP is planning to be synchronized with National Grid by this September 2016.

6. Kohalpur-Mahendranagar 132kV 2nd Circuit Transmission Line

Objective of 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, to provide upcoming cement factories, to evacuate power from Chameliya, to supply part of the Butwal area from Tanakpur Hydro power plant. Cost of this project is estimated to US$ 26.7 Million and jointly funded by GoN, NEA and ADB. Project started in 2068/069 (2011/012) and estimated revised scheduled to be completed is Chaitra 2074. Scope of the project includes construction of 189km second circuit transmission line from Kohalpur to Mahendranagar with two new 132/33kV substations at Pahalmanpur and Bhurigaon. Substation up gradation to double bus system and appropriate 132kV bay extension at Kohalpur, Attariya, Lamki and Lalpur Substations also taken care by the project.

As of Asadh 2073, transmission line construction materials received at site and 2nd circuit stringing work will be started very soon. About 40% of Substation upgradation work is completed so far and civil construction works of two new substations are in progress.

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

Objective of this project is to increase power evacuation capacity and reinforcement of National Grid. 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.

Tower and Line after second circuit stringing at Syuchatar

Cost of this project is estimated to US$ 2.5 Million and is funded by GoN.

As of Asadh 2073, construction work of all the 2nd circuit transmission line and the 132kV line bays are completed but due to private structures within transmission line right of way in line section between Matatirtha and Syuchatar, line could not be charged. Work is going on to clear the right of way and to charge the line. It is expected that line will be charged by November 2016.

8. Chapali Substation Expansion Project

Objective of this project is to cater the increased power demand of residential and commercial area of northern part of Kathmandu Valley and to increase reliability of National Grid by making 132 kV Double Circuit Connection from

66kV Underground cable laying
Work is in Progress

Bhaktapur Substation to Balaju Substation. Cost of this project is estimated to US$ 11.18 Million and jointly funded by GoN and ADB. Project started in 2065/066 (2008/09) and is expected to complete till 31 December, 2016.

Scope of the project includes installation of 132/66 kV, 7X15/16.5 MVA Transformers at Chapali Substation to make 132 kV Double Circuit Connection in between Balaju and Bhaktapur, 132/66 kV link in between Chapali and New Chabel and Interconnection of Devighat HEP in National Grid.

As of Asadh 2073, almost all equipment for the substation up gradation work received at site and about 80% of construction work completed.

9. Grid Substation Reinforcement Project

Objective of this project is to the primary focus in the reinforcement & up gradation of transformer capacity and voltage improvement of substation supplying power to Birgunj Corridor by upgrading transformer capacity as well as construction of new transformer bays at various substations. Project started in 2069/070 (2012/13) and is expected to be completed in July 2016. Scope of the project includes shifting, up gradation of 132kV power transformers and associated extension works at Hetauda and Parwanipur Substation, supply & installation of 66kV, 30MVAR capacitor Bank. Cost of this project is estimated to US$ 4.56 Million and jointly funded by GoN, NEA and ADB.

As of Asadh 2073, all up gradation, shifting of power transformers at Hetauda and Birgunj has been completed. At Parwanipur up gradation and shifting of power transformer is completed, Minor correction work has to be finalized to charge new 132/11kV power transformer .

10. Rupani 132/33kV Substation Project

Objective of this project is to reinforce the power supply system in this region and for evacuating power to load center of Siraha and Saptari District.

Construction site of the Rupani Substation

Cost of this project is estimated to US$ 3.5 Million and funded by GoN. Project is expected to be completed on January 2017. Scope of the project includes construction of new Rupani 132/33kV substation and reinforcement of existing 33kV network of the area.

As of Asadh 2073, Construction Contract has been signed, equipment design drawings approval almost completed, control room construction, civil construction work including staff quarter, boundary wall, guard house is in progress.

11. Syaule 132/33kV Substation Project

Access Road to Syaule Substation Construction Work is in Progress

Objective of this project is to reinforce the power supply system in this region and to support power evacuation from Chameliya HEP, with the aim of strengthening power system reliability and quality of supply in several districts of far western development region. Cost of this project is estimated to US$ 5.11 Million and funded by GoN. The project is initiated in 2070/071 (2013/014) and scheduled to be completed in Asadh 2075.

As of Asadh 2073, Contract has been signed for construction of Syaule 132/33/11 kV substation project, equipment design and drawings approval is in progress, approach road construction to the substation is in progress.Also contract has been signed for civil construction work including staff quarter, boundary wall, and guard house.

12. Kusma-Lower Modi 132kV Transmission Line Project

Objective of this project is to increase power evacuation capacity of the IPP's up coming in the Kaligandaki Corridor. The project is started in 2070/071 (2013/014) and expected to be completed on December 2016. Cost of this project is estimated to US$ 3.5 Million and funded by GoN. Scope of the project includes construction of 6.2 km 132kV single circuit transmission line from Kusma to Lower Modi HEP and + 132kV Bay extension at Lower Modi.

As of Asadh 2073, Construction Contract has been signed, equipment design drawings approval is in progress, land acquisition for tower footing is about to start.

13. Hetauda-Birgunj 66kV Transmission Line Capacity Increment Project

Objective of this project is to increase power transmission capacity to serve to the industries of the area. The project is started in 2072/073 (2015/016) and expected to be completed on Ashadh 2074. The estimated cost of this project is NRs. 36.8 million and funded by GoN. Scope of the project includes replacement of ACSR 'WOLF' conductor used in existing double circuit 66 kV transmission line from Parwanipur to Simara (12 km) and Parwanipur to Birgunj (8 km) with high power carrying capacity high temperature low sag (HTLS) conductor.

As of Asadh 2073, construction contract has been signed for the replacement of the conductor; preparation for the preliminary work for replacement is going on.

14. Ramechap Garjyang Khimti 132kV Transmission Line Project

Objective of this project is to increase power evacuation capacity of the IPP's up coming in the Ramechap-Garjyang-Khimti Corridor. Project started in FY 067/68 and expected to be completed by Asadh 2075. Cost of this project is estimated to US$ 7.8 Million and funded by GoN. Scope of the project includes construction of 30 km 132kV double circuit transmission line from Garjyang to New Khimti and new 132/33kV substation at Garjyang.

As of Asadh 2073, land acquisition for substation

construction has been concluded, office estimate of the project and tender document approval process is in progress.

15. Modi-Lekhnath 132kV Transmission Line Project

Objective of this project is to increase power evacuation capacity of the IPP's up coming in the Modi and Madi Corridor. Scope of the project includes construction of 45km, 132kV Double Circuit Transmission Line from New Modi via Lahachwok Substation to Lekhnath Substation, Switching Substation at New Modi and 132/33kV new Substation at Lahachwok. Cost of this project is estimated to US$ 21.0 Million and jointly funded by Exim Bank of India and GoN. The project is scheduled to be completed by Ashadh 2076.

As of Ashadh 2073, Detail Project Report has been submitted to Exim Bank, India, detail survey has been completed, EIA is in final stage for approval, land acquisition for substation at Lahachwok is completed and at Kerunga land acquisition notice has been published for New Modi switching station.

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

Objective of this project is to increase power evacuation capacity of the IPP's up coming in the Solu Corridor and 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 jointly funded by Exim Bank of India and GoN. The project is scheduled to be completed by Ashadh 2076.

As of Ashadh 2073, detail survey is completed, land acquisition at Tingla completed, construction contract has been signed, approval from Exim Bank, India yet to be received.

17. Burtibang -Paudi Amrai - Gulmi-Arghakhanchi - Motipur 132kV Transmission Line Project

Objective of this project is to increase power evacuation capacity of the IPP's up coming in the Baglung area and extension of National Grid. The project is initiated in 2066/067 (2009/10) and scheduled to be completed by Ashadh 2076 (1st section Motipur-Sindikharka). Cost of this project is estimated to US$ 22.24 Million and funded by GoN. Scope of the project includes construction of 84km 132kV double circuit transmission line for Motipur to Burtibang, five 132/33kV new substations at Burtibang, Paudi Amrai, Tamghash, Sandikharka and Motipur.

As of Asadh 2073, feasibility study of the project including detail survey has been concluded; land acquisition for the substations at Motipur and Sandikharka is in final stage.

18. Dordi Corridor 132kV Transmission Line

Objective of this project is to increase power evacuation capacity of the IPP's up coming in the Dordi Corridor and reinforcement of National Grid. The project is initiated in 2067/068 (2010/11) and scheduled to be completed by Ashadh 2075. Cost of this project is estimated to US$ 10.4 Million and funded by GoN. Scope of the project includes construction of 132kV double circuit 16 km transmission line from Kirtipur to Udipur and new 132/33kV substation at Kirtipur.

As of Asadh 2073, detail survey of the transmission line route is in final stage, MoU signed for IEE, land acquisition for the Kirtipur substation is in final stage.

19. Inaruwa-Biratnagar 132kV Transmission Line

Objective of this project is to reinforce the power supply system in Biratnagar Industrial. Cost of this project is estimated to US$ 15.2 Million and funded by GoN. Project is expected to be completed on Ashadh 2076. Scope of the project

includes construction of 23km 132kV double circuit transmission line at Monopole from Inaruwa 400/220/132kV substation, new Biratnagar 132/33kV substation and reinforcement of existing 33kV network of the area.

As of Asadh 2073, feasibility study of the project and detail survey of the transmission line route is completed, MoU signed for IEE; land acquisition for the Biratnagar substation is in final stage.

20. Purbi Chitawan 132/33kV Substation

Objective of this project is to reinforce the power supply system in this region. The project is initiated in 2072/073 (2015/016) and scheduled to be completed in Ashadh 2075. Cost of this project is estimated to US$ 4.0 Million and funded by GoN.

As of Asadh 2073, preparation of office estimate and tender document is in progress, land acquisition for the substation is in final stage.

21. Butwal-Lumbini 132kV Substation

Public Hearing for Lumbini (Mainhiya) Substation Land Acquisition

Objective of this project is to reinforce the existing transmission system in this region for evacuating power to load center of Rupandehi District. Cost of this project is estimated to US$ 9.5 Million and funded by GoN. Project activity stopped due to no budget allocated for this FY. The project is initiated in 2070/071 (2013/014) and scheduled to be completed by Ashadh 2076

As of Asadh 2073, feasibility study and detail route survey work is in final stage, MoU has been signed for IEE study, preparation of office estimate and tender document is in progress, land acquisition for the substation is in final stage.

22. Balefi-Barhabise Corridor 132kV Transmission Line Project

Objective of this project is to reinforce the power supply system and power evacuation from different IPP's at Balefi Corridor. Cost of this project is estimated to US$ 7.5 Million and funded by GoN. This project is initiated in 2072/073 (2015/016) and expected to be completed by Asadh. 2076.

As of Asadh 2073, feasibility study and detail route survey work is in final stage, MoU has been signed for IEE study, preparation of office estimate and tender document is in progress, land acquisition for the substation is in process.

Feasibility Study Completed Projects

1. Sunkoshi 132kV Substation,
2. Hapure-Tulsipur 132kV Transmission Line, 18 km
3. Karnali Corridor (Lamki-Upper Karnali) 132kV Transmission Line, 60km
4. Bajhang-Deepayal-Attariya 132kV Transmission Line, 130 km
5. Surkhet-Dailekh-Jumla 132kV Transmission Line, 107 km
6. Kaligandaki-Gulmi (Jhimruk) 132kV Transmission Line, 43 km
7. Dhalkebar-Loharpatti 132kV Transmission Line, 20 km
8. Baneshwor-Bhaktapur 132kV DC Under Ground Cable Transmission Line, 12 km

Projects for Power Supply to Cement Industries

In order to promote cement industries, the GoN has taken policy of developing transmission line 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. 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 2065/066

Hapure 132/33kV Substation

with estimated cost of NRs. 500 Million is scheduled to be completed in Aswin 2073 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. As of Asadh 2073, construction of 132/33kVsubstation at Hapure is completed, 33/11kV system for local supply to the project effected local people is going on. About 80% of transmission line construction work is completed so far, and remaining work is in progress

2. 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 Shrawan 2073.

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.

As of Ashadh 2073, substation construction work is in final stage.

3. 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 Ashadh 2074. Project components includes construction of 15 km 132kV single 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 Ashadh 2073, Substation and Transmission Line construction contract has been signed, about 15% of transmission line construction work is completed and about 60% of substation construction work completed so far. Remaining transmission line and substation work is in progress.

MAJOR TRANSMISSION LINE PROJECTS 220KV

Projects under Execution

1. Khimti – Dhalkebar 220 kV Transmission Line

The project was started in 2059/60 with the objective of enhancing transmission capacity, improving supply reliability, reducing losses and voltage drops through construction of 220kV double circuit line and First circuit is scheduled to be completed by Marg 2073 while second circuit by chaitra 2073. 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 nos. 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
remaining Tower Foundation work is in progress
Conductor Stringing Work

As of Ashadh 2073, in the first phase of work, supply of line materials and substation equipment is completed; construction of transmission line is in final stage. Second phase supply and construction of 2nd circuit work is about 50% completed. Remaining works are in progress.

2. Hetauda - Bharatpur 220kV Transmission Line

The objective of the project is to enhance the transmission capacity and reliability of the National Grid, 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 Ashadh 2075.

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.

As of Ashadh 2073, 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 received at site, out of 226 towers 137 Tower Foundations and 95 Tower Erection works are completed on Transmission Line Construction side.

Substation construction work at New Hetauda and Bardghat is in final stage, construction work at New Bharatpur is going on. Land Acquisition for transmission towers, about 90% RoW clearance work completed.

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.

Bharatpur Bardghat 220kV Transmission Line
Project Tower Erection work is in Progress

The project is started in 2009 and scheduled to be completed by June 2017.

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.

Bardghat Bharatpur 220kV Transmission line Project Nursery Bed required replacing the trees.

As of Ashadh 2073, 98 % of the transmission line construction materials have been received at site, out of 28000 trees only 6000 trees has been cut out. Out of 246 towers 70 Tower Foundations and 70 Tower Erection works are completed , 97000 trees has been planted on 61 hector land.

4. Chilime-Trishuli 220kV Transmission Line

Objective of this project is to increase power evacuation capacity of the IPP's up coming in the Chilime-Trishuli Corridor. Cost of this project is

Chilime Hub Sub Station Site

estimated to US$ 35.0 Million and jointly funded by German Development Bank (KfW) with European Investment Bank (EIB) and GoN. Project started at FY 067/68 and expected to be completed by November 2018 (FY 2075/76).

Scope of the project includes construction of 220kV double circuit 26.5 km transmission line from Chilime Hub Substation to Trishuli 3B Hub substation and a 220/132kV a new GIS substation at Chilime.

As of Ashadh 2073, final IEE Study report submitted by Environment and Social Study Department has been approved by DoED, detail Survey work for 220kV Voltage Level is completed by Project Development Department, NEA, Feasibility Study for 220 kV transmission line and Chilime Hub substation has been completed by M/S Lahmeyer International. Other Environmental studies such as Land Acquisition Compensation Plan (LACP), Stakeholders Engagement Plan (SEP), IEE Gap Analysis, Environment and Social Management Plan (ESMP) has been completed as per the requirements of funding agencies KfW Development Bank and European Investment Bank(EIB). Financing agreement with both KfW and EIB has been concluded. Similarly, Transmission license has been obtained from DoED, Ministry of Energy for construction of line and substation. Moreover, agreement has been signed with the Consultant Power Grid Corporation of India for the design and construction supervision consultancy services.

However, the project has been suffering from land acquisition problem since last two years for Chilime Hub Substation at Goljung VDC, Rasuwa. The case filed by the land owners at supreme court is in process of hearing and final verdict is expected in near future. The Project is also trying its best to settle this issue by dialogue with land owners.

5. Trishuli 3B 220kV HUB Substation

Objective of this project is to increase power evacuation capacity of the IPP's up-coming in the Trishuli area and expand the national grid. Cost of this project is estimated to US$ 22.9 Million and jointly funded by German Development Bank (KfW) with European Investment Bank (EIB) and GoN. The project is scheduled to be completed by November, 2018.

As of Asadh 2073, detail feasibility study, SEP, IEE, ESIA and LACP studies have been completed. Land has been acquired for substation HUB, civil

construction of staff quarter and boundary wall are near to completion and construction license has been issued to the Project. Power Grid of India Limited has been appointed as Design/ Construction Supervision Consultant and has initiated the design works.

6. Tamakoshi -Kathmandu 220/400kV Transmission Line

Objective of this project is to increase power evacuation capacity of the generating power stations up coming in the Khimti (Tamakoshi)-Kathmandu area. Project will construct 90 km Double Circuit 400kV Transmission Line (initially charged at 220kV) and 15km Double Circuit 132kV Transmission Line, 220/132/11kV Substations at Barhabise and Lapsiphedi (Kathmandu) and 132/11kV substation at Changunarayan (Bhaktapur). Cost of this project is estimated to US$ 94 Million and jointly funded by ADB and GoN. The project is scheduled to be completed by Asadh 2076.

As of Ashadh 2073, detailed survey from Tamakoshi (Khimti) to Lapsiphedi (Kathmandu) 400kV line and Lapsiphedi to Duwakot (Bhaktapur) 132kV line has been completed and IEE has been approved. Power Grid India has been appointed as Construction/Design Supervision Consultant. Tender has been called for New Khimti-Barhabise 400kV Transmission Line and contract is about to sign for the construction of this section. Tender document for Barhabise-Kathmandu 400kV Transmission Line is under the process of approval. Consultant is preparing tender document for associated Substations. Land acquisition for substations at Barhabise, Lapsiphedi and Changunarayan is in process.

7. Koshi 220kV Transmission Corridor

Objective of this project is to increase power evacuation capacity of upcoming HEPs in the Koshi and Mechi zone of Nepal. Followings are the main components of the project.

Package-KC1: Construction of 107 km of 220kV Double Circuit Transmission Line from Inaruwa-Basantapur- Baneshwar- Tumlingtar.(Inaruwa-Basantapur Double Circuit Vertical Configuration Galvanized Steel Towers with twin peak, initially only one Circuit will be strung with Quad Moose ACSR conductor with single Peak i.e. OPGW and Basantapur- Baneshwar- Tumlingtar Double Circuit Vertical Configuration Galvanized Steel Towers with twin peak, initially only one Circuit will be strung with Twin Moose ACSR conductor with single Peak i.e. OPGW). Package-KC2:

Construction of Store building in Tumlingtar Substation site

Construction of 220/132/33kV Substation at Basantapur and Tumlingtar, Construction of 220/33kV substation at Baneshwar and 2 Nos. of Bays Extension at Inaruwa substation. Package-KC3: Construction of about 33km of 220kV double circuitTransmission Linefrom Basantapur to Dhungesangu, Taplejung (Vertical Configuration Galvanized Steel Towers with twin peak, initially only one circuit will be strung with twin moose ACSR conductor with single Peak, i.e OPGW) and construction of 132/33kV Substation at Dhungesangu.

Cost of this project is estimated to US$ 112.0 Million and jointly funded by Exim Bank of India and GoN. 90 MUSD has been set aside for this project out of 250 MUSD Line credit Agreement (21st October, 2011) between government of Nepal and Exim Bank of India. The Project is expected to be completed by Ashadh 2078. WAPCOS Ltd, India has been appointed as the PMC of the Project.

Contract between NEA and M/s Kalpa-Taru Power Transmission Limited, India has been signed for the execution of Package-KC1 of the project and the Contract has become effective from 14th June, 2016. Design/Engineering and detailed survey part for the Transmission line has been started. Notice Inviting Tender has been published on 4th July, 2016 for the execution of Package-KC2 and the Bids for Package-KC3 is expected on second quarter of the fiscal year 2073/074.

In addition Construction of Access road, Boundary wall, Protection wall, Staff quarter, Store, Vehicle parking and Guard house has been started in Tumlingtar and Baneshwor substation site under civil works.

8. Lekhnath-Damauli 220kV Transmission Line

Objective of this project is to increase power evacuation capacity of the IPP's up coming in the Modi, MadiBasin and reinforcement of INPS. Cost of this project is estimated to US$ 55 Million and funded by GoN and expected to be completed on Ashadh 2076. Scope of the project includes construction of 220kV, 40 km double circuit transmission line from New Lekhnath to New Damauli and 220/132/11kV substations at New Lekhnath and New Damauli.

As of Asadh 2073, proposal has to be asked to revise the detail Survey that has been completed 5 years before, IEE work is in progress and TOR is already submitted to MoE, dialog is going on with International Funding Agencies for funding of this project.

MAJOR TRANSMISSION LINE PROJECTS 400KV

Projects under Execution

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

Nepal-India Electricity Transmission and Trade Project (NIETTP) funded by World Bank was started with the objective of establishing cross-border transmission capacity of about 1,000 MW to facilitate electricity trade between India and Nepal; and increasing the supply of electricity in Nepal by the sustainable import of at least 300 MW of electricity. The project includes design, supply and construction of approximately 285 km of Hetauda-Dhalkebar-Inaruwa 400 kVdouble-circuit transmission line together with concomitant substations. Preparation of Transmission System Master Plan of Nepal and synchronization of Nepal and India grids are also the objectives of the project.Total Cost of this project is estimated to US$ 144 Million and jointly funded by WB and GoN.

As of Asadh 2073, the project has achievement in attaining its following objectives: Transmission Line Construction contract was signed with AIL-LTB J/V. Out of 792 towers, 410 tower-foundation and 350 tower-erection work has already been completed. The completion time of construction

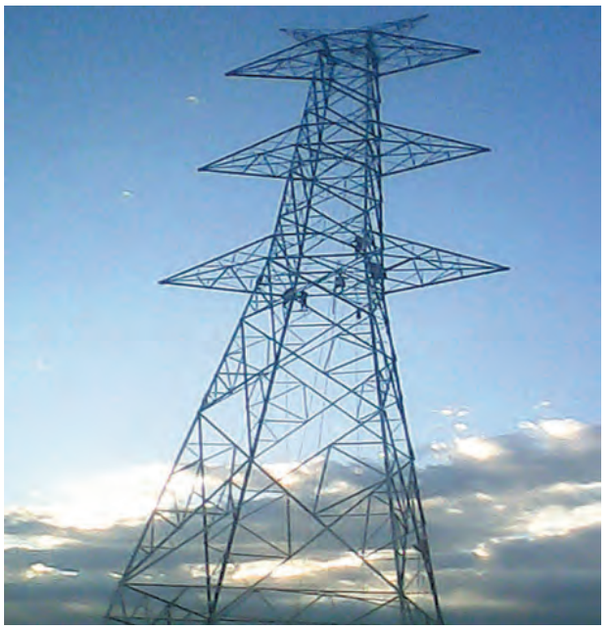
The salient features of the NIETTP are listed in Table below:

Transmission Line		Substation	
Voltage, kV	400	**Hetauda : 220/132 kV**	2x100MVA 220/132 kV and 10 MVA 132/11 kV Transformer
Length, km	285	**Dhalkebar : 220/132 kV**	2x160MVA 220/132 kV Transformer
Circuits, no.	2	**Inaruwa : 220/132 kV**	2x100MVA 220/132 kV and 2x63 MVA 220/33 kV Transformer
Conductor/ Earthwire	Twin MOOSE with OPGW and earthwire		25 MVAr 132 kV Bus Reactor

of Transmission line has been extended up to 31 December 2016.

Contract has been signed with M/S Apar Industries Pvt. Ltd., India for the Supply of Conductor, Earth Wire and OPGW. Except OPGW, all the materials under this contract have already been received at site.

Contract for Transformers and Reactors supply has been signed with M/S EMCO Limited,



400kV Transmission
Tower assembling work is going on

India. Two Nos. of 160 MVA 220/132 kV Power Transformers and 25 MVAR reactor have been reached at Dhalkebar Substation and after few days installation of the same shall be started.

Contract has been signed with M/S Central China Power Grid International Economic & Trade Co., China for New Hetauda, Dhalkebar and Inaruwa Substations. Majority of electrical equipment Technical Data Sheet, Type Test, Drawings and Manufacturing Quality Plan have been approved. Some of equipments (Substation Automation system, Control and Relay panel and communication system) design drawings are under review. Factory acceptance test for CT, CVT, PT, ISO, SA and BPI has already been completed and first lot of these equipments is already delivered at site. All three substations' soil investigation works are completed and approved. Majority of civil design and drawings are completed and remaining is under review. SLD has been finalized for all three substations. BOQ and Foundation Design review have been concluded.

The completion time of Construction of all three substations has been extended up to 31 December 2016.

As a part of this project, contract has been signed with M/S Power Grid of India for Owner's Engineer and this is proceeding satisfactorily. Preparation of Transmission Master Plan has already been completed by EDF France.

The transmission Line alignment passes through the ten districts of Nepal along the east way highway from Hetauda (Makawanpur) to Inaruwa(Sunsari). All 10 District Forestry Offices have been instructed by Department of Forestry to provide the record of the details of trees to be removed within the right of way (RoW) of the transmission line.

Survey/ IEE Study Completed Projects

1. Butwal- Sunauli 400 kV Tr. Line
2. Duhabi-Jogbani 400 kV Tr. Line
3. Hetauda-Butwal 400kV Transmission Line, 168 km
4. Butwal-Lamki 400kV Transmission Line, 300 km
5. Lamki-Mahendranagar 400kV Transmission Line, 102 km
6. Duhabi-Anarmani 400kV Transmission Line, 100 km

Projects under Feasibility Study

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

Distribution and Consumer Services Directorate

NEA board made decision to change the various business groups of NEA in to Directorates, as per which the Distribution and Consumer Services (DCS) Business Group was also changed to DCS Directorate (DCSD). DCSD is responsible for overall management of electricity distribution services and networks of NEA. The major activities of this directorate include planning, expansion, operation, maintenance and rehabilitation of the electricity distribution networks including substations up to 33 kV voltage level and consumer services activities such as new consumer connections, meter reading, billing, and revenue collection. The directorate has lately introduced some of the smart meter reading and billing techniques as a pilot projects in the Kathmandu valley with plans to introduce even better techniques and expand them in the entire areas. The operation and maintenance of off grid small hydro power plants in its area, also falls under the jurisdiction of this directorate. There are Planning and Technical Services Department (PTSD) and Community Rural Electrification Department (CRED) at the central level and eight regional offices to manage the overall distribution and consumer services activities in more effective and efficient manner under this directorate. During review period of FY 2015/16, it was initially headed by the General Manager as a chief of business group and subsequently by Deputy Managing Director as a chief of DCSD. Under the directorate, PTSD & CRED at the centre and eight regional offices are headed by the Directors/chiefs.

DCSD is the largest directorate of NEA in terms of number of employees and business activities. Approximately 67% of the total staff of NEA is employed in DCSD. This is also on the forefront to earn revenue for sustaining operation, maintenance and development activities of NEA. DCSD is providing services to consumers through its 109 Distribution Centers spread over the whole country.

Performance Highlights

In FY 2015/16, total number of consumers under DCS reached 29, 69,576 an increase of 3.54% over the last fiscal year's figure. In comparison to the previous years, less increase in consumer number in last fiscal year was due to insufficient availability of energy meters. However, it is expected to increase substantially once the energy meters are available in the first quarter of the FY 2016/17.

Customer Category	No of consumer (% of total consumers)	Sales %	Revenue %
Domestic	94.18	48.40	45.96
Non-Commercial	0.60	3.66	6.06
Commercial	0.58	7.92	11.64
Industrial	1.47	32.29	31.13
Others	3.18	7.73	5.21

Similarly, in FY 2015/16, a total of 3,746 GWh of energy was sold earning net revenue of Rs. 31,545.05 Million. Industrial and Commercial consumer categories combined together represent only 2.05% of the total number of consumers but shared 40.21% of total sales. Similarly, the domestic consumer category represents 94.18% of total consumers and contributed 48.4% to the total sale.

Programs and Activities

The programs and activities of DCSD were hard hit in FY 2015/16 due to unavailability of goods, specially the distribution transformers and meters and metering equipments due to ongoing rift on procurement practices. However, it was resolved with relentless effort and the goods are now expected for store delivery by the first quarter of FY 2015/16, after which the consumer services activities shall be smoothly run. DCSD took special drives to expedite the activities for loss reduction, metering & billing and decreasing amount receivables from black listed consumers. The goods on stock were closely monitored which resulted in substantial decrease in the stock material/amount. As part of reinforcement and expansion of the distribution systems, many programs, projects and the activities are undertaken in FY 2015/16 to expand and improve the service delivery. These programs and activities are executed by the Departments at center and Regional Offices.

Loss Reduction Activities

In FY 2015/16, 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 substantially effective to bring down the losses of such feeders. 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. Special drives were initiated for monitoring and supervision of overall DCS activities with priority for loss reduction. Regular review meetings were organized at the central as well as regional level. The special efforts of the employees and the support of the various governmental and nongovernmental institutions in controlling non technical losses brought in good results. The overall result towards loss reduction was found to be encouraging during review period. The Business Group carried out regular monitoring of the feeders and areas having more than 30% energy loss. The activities of the Loss Controlling Committee formed under the chairmanship of Chief District Officer were effective enough to reduce non-technical losses. The support from local administration was appreciable in some districts as Rajbiraj. Loss Controlling Committee at the center level issued directives to the concerned offices to improve the loss situation. During the FY 2015/16, a total of 31,127 numbers of consumer lines were disconnected from which Rs 328.21 (millions) was recovered. Similarly legal action was taken against 3,957 consumers for electricity pilferage and Rs 33.58 (millions) 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) cable. Upgrading of overloaded conductors and transformers was also carried out to reduce the non technical losses. As per NEA decision, the electromechanical meters of the consumers of capacity 25-50 kVA range continued to be replaced with electronic (TOD) meters. Because of Terai Band for 138 days and its adverse effect at local levels, especially in Terai and some hilly areas, continued efforts and measures taken to control losses and the system loss is maintained to 19.80% in this Fical Year.

Future Plans and Programs

As high system loss is a major challenge for NEA, DCSD is trying to make every effort to bring down the distribution system loss which contributes in substantial proportion. 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. DCSD is committed to establish centralized customer care center 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. Plans are to make available the payment and billing information in internet so that consumer can access information on line. A system will be implemented for consumers to pay the electricity bill either through bank or in NEA's revenue collection center.

Planning and Technical Services Department

The Planning and Technical Services Department (PTSD) is responsible for planning and preparation of distribution system expansion programs and supporting DCSD in the technical and commercial matters. Major works under this department include-

- Identification of potential rural electrification and substation rehabilitation projects and implement them
- Programming/re-programming, data download and analysis of TOD energy meters & metering equipments
- Monitoring and evaluation of region wise monthly distribution system losses. Assist to identify and implement programs for loss reduction in distribution systems
- Initiate modern facilities for the electricity consumers in the field of meter reading, billing and revenue collection
- Plans to execute distribution planning incorporating demand side management and loss reduction as an integral part of it

One hundred nine collection centers have computerized billing system till date and plans are to extend it to all with modern facilities in the coming years. The Computerized Billing Division under PTSD has successfully completed the entire distribution centers within Kathmandu valley with 'Any Branch Payment System'.

PTSD has recommended to approve Rs 17,957,227.10 for 50 consumer in connection with the missed files forword by different distribution Centres.

Energy Monitoring and Auditing of Distribution Substations

Under the program, static energy meters were installed at distribution substations to measure the amount of energy delivered by the substations enhancing the energy accountability. 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 2015/16. The energy monitoring and audit was also augmented verifying the data with concerned transmission grid and generation units.

Project Highlights

Energy Access and Efficiency Improvement Project

This project is being implemented under ADB loan/grant. The various subprojects under this are as follows.

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 Simara 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 upgradation of 462 Nos of Distribution Transformers (100, 200 and

300 kVA), replacement of 214 Km of overhead 11 kV undersized ACSR conductor with 120 sq.mm. XLPE Covered Conductor, use of 35 Km of 300 sq.mm. 11 kV Underground Power Cable and 401 Km of 95 sq.mm. LV ABC Cable. Major Line material such as distribution transformer, covered conductor, XLPE power cable, ABC cables have already received. The installation of distribution transformer in Kathmandu and Birjung is under progress and it is likely to be completed by the end of October 2016 .Stringing of LV ABC cable and HV covered conductor are underway. The total progress of the project is 85%. The project is scheduled to be completed in FY 2016/17.

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. Out of these substations Paraul, Mulpani, Baniyani, Mirchaiya Barathawa has been already commissioned. The remaining sub-stations shall be commissioned soon.

The construction of substations and interconnection feeders are expected to complete in the current 2016/017.

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. The consultant has shortlisted the distribution centers for implementation. But due to the non-allocation of budget the pilot project has not be implemented.

Grid Solar Energy and Energy Efficiency Project (GSEEP)

The Government of Nepal (GoN) has received a credit from the World Bank (WB) towards the cost of Grid Solar Energy and Energy Efficiency Project (GSEEP) under IDA Credit No. 5566-NP (Project ID P146344) for an amount of USD 130 million under a counter financing of USD 8 million by the GoN. The financial agreement between GoN and the WB was concluded on February 20, 2015. The GSEEP Project comprises of following two components. i) Component 1: Grid–connected Solar PV Farms Development with an estimated cost of 46 million USD which deals with the Design, Planning, Engineering, Procurement (Manufacturing/Supply) Construction/Erection, Testing, Commissioning and Five Years of Operation & Maintenance of 25 MWp Utility Scale Grid Tied Solar Farms And Component 2: Distribution System Planning and Loss Reduction with an estimated cost of 80 million USD dealing with the Rural Electrification in three(3) packages along with Distribution Business Management, Implementation of Loss Reduction and Distribution System Rehabilitation.

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 which is divided into three lots comprising of up-gradation of substations at Gaur, Nijgarh, Chandragadhi, Jare, Belbari, Jaleshwor & Bolo-Damak (Lot-1) Parasi, Gorkha,

Krishnanagar, Tauliahwa, Amuwa, Gaddhachauki & Mirmi (Lot-2)and Lot-3 is development of 11 & 0.4 kV network in the affected area along the proposed Tamakoshi-Kathmandu 400 kV Transmission Line. The total cost of this project is USD 9.5 Million. All the works under Lot-1 is completed and works under remaining other two lots are expected to be completed by February 2017.

Computerized Billing and Networking Division

The objective of this Division 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. M-Power Billing system has provided NEA with a wider and more sophisticated array of functions and features that would enhance the billing efficiency and provide greater visibility into the entire process chain. M-power Billing System is in operation in 109 collection centers which covers more than 80% of the total consumers and covers 85% of the total NEA revenue. Handheld Meter Reading Device (HHD) has also been implemented which is in operation in different collection centers. This has helped reduce human errors during meter reading.

Any Branch Payment System (ABPS) which has been implemented inside Kathmandu valley has helped the customers to pay their bill in any of the above locations with ease. It has helped NEA to collect revenue and get analytical reports on time. This division has plans to extend this system outside Kathmandu valley.

The replacement of One Month Delay Billing System (PSICOBS) to Mpower (Spot) Billing System has been successfully implemented in different locations. This has also increased the revenue of NEA for that Fiscal Year. This division plans to complete the replacement of other third party systems/manual system to Mpower system gradually.

This Fiscal Year Computerized Billing and Network Division plan to implement the Mpower Billing Software in 10 of the different Revenue Collection Centers (Bhaktapur DC, Dhangadi DC, Mahendranagar DC, Tikapur DC, Pachkhal Sub DC, Kohalpur Sub Branch, Kanchanpur Sub Branch, Melamchi DC, Ghorahi DC and Tulsipur DC).

Customized training programs were conducted to NEA staff that has been operating with the billing system. The division plans to conduct more training programs to enhance the skill and knowledge of these staff for smooth operation of the Mpower system.

This division plans to extend the Third Party Payment System (Banks/other third parties) which has been introduced in the previous Fiscal Years.

This division has started implementing “Customer Management Information System (LAGAT)” in Kirtipur DC, Maharajgunj DC and Jorpati DC and Kuleshwor DC. The system will further be implemented in all the collection centers inside Kathmandu valley within this Fiscal Year and also have plans to centralize this system such that consumer reporting to the management will be easier and real time.

This Division has also designed “Consumer Energy Consumption Pattern” report for tariff analysis.

The Division has plans to implement “Complaint Management System (No Light)” which would ease the organized compliant registration and speed up the response.

Matatirtha Naubise 33 kV Transmission Line Project

This project aims at supplying power to United Cement Industry Pvt. Ltd. in Naubise, Dhading and existing NEA consumers in its vicinity. The project will help to improve the quality of supply and reduce the technical losses of the area also.

The scope of the project includes the construction of 33/11 kV, 2*6/8 MVA substation along with double circuit 13 km 33 kV line. The project was started in FY 2009/10 with funds from infrastructure development program of Ministry of Industry, GoN.Continued effort and progress in the construction of substation of Naubise and Matatirtha. Polling work of 33 kV Matatirtha, Naubise transmission line is done.IEE work is in final stage. Rapid progress in the work will take place afterfinalaization of IEE report.Under ground cabling work in some places is obstructed by local community. Talk program with CDO & other authorities are in progress to resolve the issues.

4. Matatirtha Malta 33 kV Transmission Line Project

This project aims at supplying power to Laxmi Cement Industry Pvt.Ltd. in Malta, Lalitpur and evacuation of power produced by Pashupati Energy Pvt. Ltd. (6MW) and suply existing NEA consumers in its vicinity. The project will help to improve the quality of supply and reduce the technical loses of the area also. The scope of the project includes the construction of 33/11 kV, 10/13.3/16.6 MVA substation along with double circuit 35 km 33 kV line. The project was started in FY 2009/10 with funds from infrastructure development program of Ministry of Industry, GoN Here the power transformer of 6/8 MVA has been installed and commissioning work of the station is done Construction of 33 kV line from Matatirtha to Malta is in progres. IEE report finalization for the right of way of 33 kV transmission line in final stages civil work of the substation in Malta is in final stage and the scheduled work is to be complete in FY 2016/17.

5. Matatirtha Markhu 33 kV Transmission Line Project

This project aims to meet the growing demand of electricity in Kulekhai area of Makawanpur district and its vicinity. The project will help to improve the quality of supply and reduce the technical losses of the area. The construction of Transmission line of 33/11 kV, 6/8 MVA substation along with single circuit 15 km line and poling works is going on. Switchyard & control Building of civil work has been completed. Installation of Electrical instruments is in progress. Power Transformer installation has been completed. The project was started in FY 2009/10 with funds from GoN and is expected to complete in FY 2016/17.

6. 33/11 KV Substation Upgration Work

The Capacity of nine, 33/11kV Sub-stations shall be upgraded with 9x6/8 MVA power transformers and the old eight power transformers shall be upgraded to higher capacity. Funding of this work is bear by NEA itself. This work is scheduled to be completed with FY 2016/17.

7. Buipa-Okhaldhunga 33 kV Transmission Line Project

The scope of this project includes the construction of 32.5 km of 33kV transmission line, 80 km of 11kV and 80 km of LV distribution line and two 33/11kV, 1.5MVA substations one each at Okhaldhunga and Khotang districts. 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, 69.79km of 11kV line, 31.5 km of LV

Buipa Substation, Khotang

distribution line and installation & charging of 25 nos. of Transformers have been completed. Buipa-Lamidanda-Bhadaure parallel 11kV line construction has been completed. Buipa-Bakshila 11kV line construction has been completed &

Bakshila, one of the remote VDC of Northern region of Khotang has been electrified.

Jaljale-Buipa 33kV line (69km), constructed by the then Jaljale-Diktel 33kV line project, which is the only source line for this project, had been charging at 11kV. So, parallel new 11kV line was constructed & freed this line. Necessary maintenance of this Jaljale-Buipa 33kV line was completed & successfully charged at 33kV voltage level, first time after its completion on 2000 A.D. And, 33/11kV, 1.5 MVA Buipa Substation is charged after long time of its completion. Now, Khotang & Okhaldhunga districts have been connected to central grid system of Nepal. Supply of line from 3 new 11kV feeders of newly charged Buipa Substation has solved the voltage drop problems & improved the quality of electricity in Khotang & Okhaldhunga districts. The project is expected to complete in FY 2016/17.

8. Rasuwaghat-Khotang S/S and RE Project

Major works to be performed under this Project include the construction of 14km of 33kV transmission line, 33/11kV,1x3 MVA capacity substation at Rasuwaghat (Bagedhunga) of

Work in progress at Okhaldhunga Substation, Okhaldhunga

Khotang district, 90km of 11kV and 90 km of LV distribution line in Khotang and Udaypur district. Out of these, 10 km of 33kV transmission line, 37.2km of 11kV line and 33km of LV distribution line construction have been completed and 11nos. of distribution transformer have been installed & charged.

Store cum Quarter building has been constructed in Bagedhunga, Khotang. After charging of 5km long parallel 11kV line, Rasuwaghat-Bagedhunga 33kV line was freed and charged at 33kV level. The 33/11kV, 750kVA transformer has been charged in Bagedhunga. Also, 33kV Bay extension at Jaljale substation has been completed & now put into operation. Construction of 33/11kV 3 MVA Bagedhunga substation is in progress.

9. Chautara-Sindhupalchok 33 kV substation Project

The project funded by GoN aims to meet the growing demand of electricity in Chautara area of Sindhupalchok District and its vicinity. The scope of the project includes the construction of 33/11 kV, 6/8 MVA Substation with interconnection facilities. The construction of 33 kV line from Lamosanghu to Chautara is about to complete. Substation design works are in progress and is scheduled to complete in FY 2017/18.

10. Transformer Testing Lab Construction Project

The aim of this project is to construct the Transformer Testing Lab Construction Project at Biratnagar, Butwal and Nepalgunj. With the construction of the project, under the above three different regional offices distribution centers, various Power Transformer & Distribution Transformer testing works for new Transformer and maintenance & testing facilities for old transformer shall also be provided. The project is scheduled to complete in FY 2017/18.

11. Madankudari-Makaibari-Singati 33 kV line Project

The project funded by GoN aims to meet the growing demand of electricity in Madan Kudari-Majhifeda area of Kavre District and its vicinity. The scope of the project includes the construction of 33/11 kV, 6/8 MVA Substation with interconnection facilities.

The land acquisition process is on the way. Project is scheduled to complete in FY 2018/19.

12. 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, 20 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 24 distribution transformers. The project will provide electricity to about 11,000 households of the area. The construction of substation and U/G cable and Construction of 20 Km of 33 KV overhead line, 3 MVA, 33/11 kV substation & 11/0.4 kV Distribution Network at Madi area of Chitwan District has been completed and successfully charged on Baisakha 30, 2073.

Besides, above the 33/11 kV, 6/8 MVA each substations at Parsa district and Chautara of Sindhupalchok district are under different stages of construction. The aim of these projects is to improve the quality of electricity supply in the area and also to reduce the system losses.

COMMUNITY RURAL ELECTRIFICATION DEPARTMENT

In order to expand the access of electricity services to the rural areas on the demand driven approach, the Government of Nepal (GoN) has brought forward Community Rural Electrification Program (CREP) since 2003 which is being executed. NEA had established a separate Department "COMMUNITY RURAL ELECTRIFICATION DEPARTMENT (CRED)" to efficiently conduct the Community Rural Electrification Program of GoN in 2003. Later on in 2010, CRED was dissolved in the process of restructuring of NEA and the activities of CREP were carried out through eight Regional Offices. However, the CREP activities were slowed down due to lack of coordination at center and regional level. On this background, CRED has been formed again in July 2013.

Under CREP, the GoN is contributing 90 % of the rural electrification Cost through NEA and the Rural Electric Community (REC) is required to contribute remaining 10 % of the cost. NEA sells bulk power to the RECs and RECs are responsible for operation and management of electricity distribution within the area. NEA provides services up to 11 kV Line and the REC itself is responsible for 400/230 Volt Line. NEA, Community Rural Electrification By-Law 2071 governs the activities of NEA, REC and CREP.

Consumer friendly rural electrification program is becoming more effective to promote energy access, consumer capacity building and livelihood development. Community Rural Electrification Program (CREP) has been playing an integral role in rural development, empowering Rural Electric Community (REC) and to alleviate Poverty. In the journey of 11 years, CREP has achieved a major success of accessing electricity to more than 51000 households of 56 districts through 500 nos. of Different Community entities.

Despite of having many problems like insufficient human resources and adolescent office itself, the performance of CRED evaluated as satisfactory in FY 2015/16. During review period, CRED initiated activities to resolve setback old community rural electrification contracts successfully and by the result hanged out contracts were regularized and most of them were completed in this year. CRED's major activities of the year include:

New NEA, Community Rural Electrification By-Law has been approved by making the existing CRE By-Law 2071 compatible to the motive of re-formed CRED and addressing the problems experienced in community rural electrification program & operational activities. However, it is yet to be submitted for approval.

All together 56 community rural electrification proposals including extension of existing 11/0.4-0.23 kV distribution network and transformer upgrading programme are approved. These proposals comprise construction of 11 kV Line 219km, 400/230 Volt line 300 km.

In order to strengthen the operating capacity of RECs, training for Linemen and Accountant was conducted. 60 Linemen personnel and 80 Account personnel were trained this year.

In order to bring uniformity in cost estimation of rural electrification work, the major line materials cost (Pole, Conductor, Insulator, Transformer and Stay set etc) has been fixed.

CRED has planned different activities in FY 2016/17 for meaningful and result oriented implementation of CREP that will strengthen the CRED and support the sustainability of the RECs too.

Regional Offices

There are eight regional offices (ROs) under DCSD located at Biratnagar, Janakpur, Hetauda, Kathmandu, Pokhara, Butwal, Nepalgunj and Attariya. The functions of operation, maintenance, and expansion of the distribution system up to 33 kV voltage level and consumer services such as new consumer connections, meter reading, billing, and revenue collection are carried out by Regional Offices. In addition, operation and maintenance of off grid small hydro power plants also falls under regional office's jurisdiction. Each regional office is headed by a director/chief and reports to the General Manager. There is provision of technical division headed by a Manager in each RO which looks after the technical matters, rural electrification activities and management of small hydro power plants. The regional chief is also supported by account and administrative sections in the related matters.

Loss Reduction Program

The distribution networks comprise of technical and non- technical losses, in which proportion of non-technical losses is quite high. During the year under review, various measures taken in the preceding years were continued to reduce the non-technical losses. Massive awareness campaigns as workshops and review meetings

Interaction Programme being held at Distribution and Consumer Services Directorate Office

were implemented in various distribution centers. Besides review meetings were organized in each regional office by a DCS central team to evaluate the overall performance of the office.

Strict measures for electricity theft control as confiscation of electric equipments and taking legal action against culprits were also conducted in various distribution centers with the help of local administration and security agencies.

Regional offices in co-ordination with DCSD of NEA as a chief guest and PTSD, implemented extensive programs for the enhancement of electrical infrastructure, revenue and to avoid electricity theft, manipulation meter and metering units.

NEA management made various decisions as 'Immediate Action Plans' to improve its functioning. Among many, this plan included regular inspection of Time-of-Day (TOD) meters, data download and analysis to curb any connection fault or manipulation. All regional offices and distribution centers actively participated in this drive which was found to be much effective.

NEA mangment also decided to announce Baishak 2073 as "Loss Reduction Special Programme" and it is continued till now. All the distribution centre are engaged to remove the hookings, to replace the defective meters and penallise the people who are involve in electricity theft.

Customer Care

Distribution centers work 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. With the Queue Management System at some of the cash collection centers, difficulties encountered by the consumers in queuing for making payments were minimized. 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 regional offices.

The region wise performance under the review period is summarized in Annex-1 and 2 below. Some of the glimpses of the regional offices are presented here under.

BIRATNAGAR REGIONAL OFFICE

Operational highlights

There are 15 Distribution Centers under Biratnagar Regional Office (BRO) spread over Mechi and Koshi zones. The distribution loss of BRO is 20.67%. Sales contribution to NEA system of this RO is 16.62%. The performance highlights of this regional office during review period are as under.

Energy sales (MWH) –617596
Revenue (million) – Rs.5017.98
Numbers of consumers –503233

Project highlights

The major projects being implemented under this regional office are as under.

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, 6/8 MVA substation at Chisapani and 33 kV Switching Station at Ranke . Out of which, 15 km 33 kV line is completed and remaining works are in progress. Land for Switching Station at Chamaita of Ranke has been already acquired while land acquisition for Substation at Chisapani is almost completed. Contractor for the Construction of Sub Station has been awarded by Project Management Directorate (PMD).

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 at Hile 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, 750 kVA Substation at Bhojpur is in progress.

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, 3 MVA Substation at Phidim and 33 kV Bay at Ilam Substation has been completed and in operation. Construction of 33 kV line from Phidim to Taplejung is also construction.Construction of 6/8 MVA substation at Taplejung and 33 kV Bay at Phidim Substation is in progress but installation works of 33/11 kV, 1.5 MVA temporary substation is near about completion.

Aathrai Sakrantibazar 33 kV Substation Project

The project includes the construction of 25 km of 33 kV line, 25 km of 11 kV line, 40 km of LV distribution line, construction of 33/11 kV, 6/8 MVA substation at Sakrantibazzari and 33 kV Bay at Jirikhimti, Terahthum. Out of which, 13 km 33 kV line is completed and remaining works are in progress. Land for Substation at Sakrantibazar has been already acquired and construction of boundary wall is also in progress. Contractor for the Construction of Sub Station has been awarded by Project Management Directorate (PMD).

Bhedetar (Rajarani) 33/11 kV Transmission line and Substation Project

The project includes the construction of 15 km of 33 kV line, 15 km of 11 kV line, 15 km of LV distribution line, construction of 33/11 kV, 3 MVA substation at Rajarani and 33 kV Bay at Bhedetar, Dhankuta. Here, in this project land acquisition has been completed and construction of boundary wall is also completed. 33 kV line survey and estimated work has completed.

Other Projects

The following projects in the region are also in the various stages of execution.

- Panchthar, Taplejung and Bhojpur Distribution Line Strengthening Project
- Chinpur Sitalpati 33 kV transmission line and Substation Project
- Ahale Dadhipurkot Electrification Project.
- Dhulabari Jhapa 33 kV transmission line and Substation Project

JANAKPUR REGIONAL OFFICE
Operational highlights

There are 15 Distribution Centers under Janakpur Regional Office (JRO) spread over Sagarmatha and Janakpur zones. The distribution loss of JRO is 47.95%. Sales contribution to NEA system from this RO is 7.27%. The performance highlights of this regional office during review period are as under.

Energy sales (MWH) –270119
Revenue (million) – Rs.2092.03
Numbers of consumers –435154

Programme at Janakpur Regional office

Programme at Janakpur Regional office

Project highlights

- The major projects being implemented under this regional office are as under.
- Sangutar-Okhaldhunga 33 KV Transmission line project.

Major component of the project include the construction of 33 KV line 40 KM, 11 KV line 40 KM, 33 KV bay 1 No at Sangutar, LV distribution line 40 KM. 60% 33 KV line pole erection works has been completed. And construction of remaining 33 KV line is in progress.

Okhaldhunga-Salleri 33 KV Transmission line project

The major component of line project is construction of 33 KV line 40 KM, 11 KV line 40 KM, 33 KV bey Nirman in Okhaldhunga – 1, 33 KV 1.5 MVA Substation & 40 KM of LT construction for Solu district. 60% of 33 kV line pole erection works and 25 % of 33 kV conductor stringing works has been completed. Construction of remaining line is in progress.

Khurkot-Nepalthok 33 kV Transmission Line Project

Major components of the project include the construction of 25 KM of 33 KV, 25 KM of 11 KV,

40 KM of LV distribution line, at Sindhuli District & 33/11 KV, 1.5 MVA Substation at Nepalthok. 80% 33 kV transmission line construction works has been completed & construction of remaining line is in progress. The procurement of land for Substation is in progress.

Garahia-Dumaria 33/11 kV S/S Construction Project.

Major components of the project include the construction of 20 km of 33 kV, 8 km of 11 kV line & 33/11, 6/8 MVA substation at Garahia Dumaria. The procurement of land is completed. The process of procurement of equipment and work as under process.

Haripurwa-Basatpur 33 kV Transmission Line & Sub station Construction project.
Major components of the project is construction of 33 kV line 30 km. & 33/11 kV, 6/8 MVA substation at Haripurwa-Basatpur. The procurement of land is in progress.
Bhagwanpur 33/11 kV S/S Construction project.

The major components of the project include the construction of 12 km of 33 kV & 33/11 kV, 6/8 MVA substation at Bhagwanpur. The procurement of land is completed. The procurement of land is completed. The process of procurement of equipment and work as under process.

HETAUDA REGIONAL OFFICE

Operational highlights

There are 8 Distribution Centers under Hetauda Regional Office (HRO) spread over Narayani zone. The distribution loss of HRO is 18.33%. Sales contribution to NEA system from this RO is 17.25%. The performance highlights of this regional office during review period are as under.
Energy sales (MWH) –641162
Revenue (million) – Rs.5373.73
Numbers of consumers –344169

Project highlights

The major projects being implemented under this regional office are as under.

Chhatiwan 33/11 kV Project

The project scope includes construction of 33 kV line from Hatia to Chhatiwan and construction of 6/8 MVA, 33/11 kV substation at Chhatiwan of Makawanpur district. Land acquisition at Bhimsendamar of Chhatiwan is completed in FY 2013/14. Project is scheduled to complete in FY 20116/17.

Godhiya Dumariya 33/11 KVA Transmission line and 6/8 MVA substation

The major component of this project is construction of 20 km 33 KV line out of this 9 km is completed. 10 ropani land acqusting is done .And 8 km distribution line out of 35km is completed.

Other project

Haripurwa Banstpur -33/11 kV Transmission line and 6/8 MVA Substation Project

KATHMANDU REGIONAL OFFICE

Operational highlights

There are 18 Distribution Centers and 1 Transformer workshop under Kathmandu Regional Office (KRO) spread over Bagmati zone. The distribution loss of KRO is 11.24%. Sales contribution to NEA system from this RO is 27.95%. The performance highlights of this regional office during review period are as under.

Energy sales (MWH) –1038641
Revenue (MillonNRs) – Rs.10236.9
Numbers of consumers –600342

Project highlights

The major projects being implemented under this regional office are as under:

Chainpur VDC 2, 3, 4 Water drinking Electrification Project

The project includes construction of distribution system in Chainpur VDC 2, 3, 4 of Dhading district. Construction work is in progress and is scheduled to be completed in FY 2016/17.

Khimti –Manthali 33 kV Trasmission line and Substation Project

The project includes construction of 33 kV Tramission line and 33 kV line bay at Ramechape District. Construction work is in progress and is scheduled to be completed in FY 2016/17.

Budhsing, Dansing, Gorsysng, Khadakbhanjhyang, Phikure, Kaule, Bhalche Distribution line Project

The project includes construction of distribution system in Budhsing, Dansing, Gorsysng, Khadakbhanjhyang, Phikure, Kaule, VDC of Nuwakot district. Construction work is in progress and is scheduled to be completed in FY 2016/17.

Sindhu-Dolakha Distribution line Project

The project includes construction distribution system different VDCs of Dolkha and Sindupalchowk district. Construction work is in progress and is scheduled to be completed in FY 2016/17.

Kathmandu Valley Electrical Distribution System Reinforcement Project

The project includes reinforcement of distribution system of different municipalities, metropolitan city and sub-metropolitan city and VDCs and is scheduled to be completed by the end of FY 2016/17.

Saghutar - Manthali 33/11 KV transmission line Project

The project includes construction of 33 kV line from Saghutar to Manthali and construction of substation. Acquiring land for substation construction is under progress.

Sindhupalchok Electricity Distribution Expansion and System Reinforment Project

The project includes constuction of distribution system in diffrent VDCs of Sindhupalchok district. The tender process has just been completed.

POKHARA REGIONAL OFFICE

Operational highlights

There are 11 Distribution Centers under Pokhara Regional Office (PRO) spread over Dhaulagiri and Gandaki zones. The distribution loss of PRO is 12.45%. Sales contribution to NEA system from this RO is 6.34%. The performance highlights of this regional office during review period are as under.

Energy sales (MWH) –238976
Revenue (million) – Rs.1960.75
Numbers of consumers –251038

Project highlights

The major projects being implemented under this regional office are as under.

Udipur Substation Upgrading Project:

The project has been 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 operation during period of review.

Udipur-Besisahar-Manang 33 kV Transmission Line Project:

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 acquisition for Manang Substation has been completed. Procurement of line materials (Insulator & Hardwares) for 15 km of 33 kV transmission line has been completed.

Galkot Substation Project:

This project is being implemented to provide electric supply and Grid connection to IPP of Galkot area in Baglung district. The major

component of this project are construction of 2 km 33 KV line, 27 km 11 kV line, one 33 KV bay construction at Baglung substation and 3 MVA Substation at Galkot of Baglung district. 33 KV Bay extensions at Baglung substation have been completed. Land Acquisition and Civil work for land protection for Sub-station construction at Galkot has been completed. Construction of 33 KV line and substation work are in progress.

Damauli-Bhorletar 33 KV Transmission line project:

The major component of this project are construction of 25 km 33 KV line, 5 km 11 kV and .4KV line, one 33 KV bay construction at Damauli substation and 6/8 MVA Substation at Bhorletar of Lamjung District. Procurement of 980 nos. of poles and 75 km of conductor with hardware has been made for construction of 33 KV line and work is in progress. Land acquisition for Bhorletar Substation has been completed.

Lekhnath-Sindhabesi-Lamjung 33 KV Transmission Line project:

The scope of the project consists of the construction of 60 km of 33 kV transmission line, 10 km of 11 kV and .4KV of LV distribution line and 33/11 kV 6/8 MVA substations at Sindhabesi Kaski and Construction of 33 KV Bay at Lekhnath Substation, Kaski districts. Land acquisition for Sindhabesi Substation has been completed. Construction of 33 KV line and substation work is in progress.

Damauli Khairenitar 33 KV Transmission Line project:

The scope of the project consists of the construction of 25 km of 33 kV transmission line. Land acquisition for Kharenitar 33 KV 6/8 MVA SS has been completed.Construction of 33 KV line work is in progress.

Other Projects

The following projects in the region are also in the various stages of execution.

- Righa Kharwang (Baglung) 33 kV Transmission Line Project
- Lekhnath Distribution Line Rehabilitation project.
- Tatopani Small Hydro Power Rehabilitation Project.

BUTWAL REGIONAL OFFICE

Operational highlights

There are 9 Distribution Centers under Butwal Regional Office (BuRO) spread over Lumbini zone. The distribution loss of BuRO is 16.29% Sales contribution to NEA system from this RO is 14.10%. The performance highlights of this regional office during review period are as under.

Energy sales (MWH) –523795
Revenue (million) – Rs4202.47
Numbers of consumers –386163

Project highlights

The major projects being implemented under this regional office are as under.

Thada 33 kV Substation Project

The project scope includes construction of 22 km 33 kV line and 33/11 kV, 6/8 MVA substation at Thada, Arghakhachi. Purchasing of land has been completed for the construction of Thada Substation. Poling works about 10 km line length for 33 kV line as well as compound wall work are completed.The consturuction work of 33KV transmission line and distribution line work are in progress. The project is scheduled to complete in FY 2016/17.

Bojhapokhari Nawalparasi 33 kV Transmission Line Project

The project scope includes construction of 15 km 33 kV line, 10 km 11 kV line, 10 km of distribution line and construction 33/11 kV, 6/8

MVA substation at Bojhapokhari of Nawalparasi district. Poling works about 10 km line length for 33 kV line is complete. The project is scheduled to complete in FY 2016/17.

Other Projects

The following projects in the region are also in the various stages of execution.

- Chandrauta-Maharajgunj (Kapilbastua) 33 kV Transmission line and Substation Project
- Majua (Gulmi) 33 kV Substation Project
- Amarai-Dohali-Wagla-Aglung (Gulmi) Electrification Project
- Purkotdaha-Mayalpokhari Bajhakateri Electrification Project
- Ridi 33KV Substation project

NEPALGUNJ REGIONAL OFFICE

Operational highlights

There are 13 Distribution Centers under Nepalgunj Regional Office (NRO) spread over Rapti, Bheri and Karnali zones. The distribution loss of NRO is 19.17% Sales contribution to NEA system from this RO is 6.34%. The performance highlights of this regional office during review period are as under.

Energy sales (MWH) –235541
Revenue (million) – Rs.1942.34
Numbers of consumers –275342

Project highlights

The major projects being implemented under this regional office are as under.

Surkhet Bijaura 33 kV Substation Project

The project scope includes construction of 30 km 33 kV line, 20 km 11 kV line and construction of 33/11 kV substation at Bijaura, Surkhet. Land acquisition work and construction of boundary fencing wall has been completed, erection of more than 170 Poles on the way to substation has been completed and procurement of goods and installation and erection of line materials are in progress.

Dang Bhalubang 33 kV Transmission Line Project

The project scope includes construction of 25 km 33 kV line, 10 km 11 kV line and construction 33/11 kV substation at Bhalubang. Process has been initiated for land acquisition.

Rajapur 33 kV Substation Project

The project scope includes construction of 15 km 33 kV line, 10 km 11 kV line, 10 km of distribution line and construction 33/11 kV substation at Rajapur, Bardiya. Land acquisition work for S/S has been completed and construction of boundary fencing wall and other civil structure works of equipment foundation and control building has been completed, also the L/C order of electrical equipment is in progress. Contractor is obliged to complete the work within F/Y 2016/17.

Sitalpati -Musikot 33 kV Transmission Line and Substation Project

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 one 33/11 kV substations of 3 MVA capacity at Musikot and another 33/11 kV substations of 1.5 MVA Sitalpati . Out of 50 km long 33 kV transmission line, stringing of 34 km line & pole erection and Construction of 33/11 kV, 1.5 MVA substation at Sitalpati has been completed. Construction of 33/11 kV substations of 3 MVA capacity at Musikot contract has been done and the Contractor has produced PCS report .Contractor is obliged to complete the work within F/Y 2016/17.

Chhinchu-Rakam-Jajarkot 33 kV Transmission Line Project

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 has been completed. Project work is in progress and expected to be completed by FY 2016/17.

Ghorahi-Holeri 33 kV Transmission Line Project

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. 33/11 kV, 750 kVA sub-station at Holleri is now in operation from FY 2013/14.

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 , 3 MVA substation at Dullu and 33 kV Bay extension at Surkhet. Construction of 33/11 kV, 1.5MVA sub-station at Dailekh, 33 kV bay extension at Surkhet substation and construction of 25 km of 33 kV has been completed, Contract for the construction of 11 kV line from surkhet to Dailekh and 3 MVA Substation at dullu has been done and Project work is on progress after Contract agreement and expected to be completed by FY 2017/18.

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 33 kV transmission line from Kapurkot to Kalachaur has been completed. Land acquisition for substation construction has been completed. Project work is in progress after Contract agreement and expected to be completed by FY 2016/2017.

Badikot-Bijuwar Distribution System Rehabitation Project:

The Project includes the replacement of wood pole, upgrading of Conductor size and Transformer. Replacement of wood pole, upgrading of Conductor size work is completed and installation Transformer work is on progress and expected to be completed by FY 2016/17.

Pyuthan Substation Project

The project includes the construction of 3 MVA 33/11 kV substation at Damti, Pyuthan. Land acquisition for substation construction has been completed. Construction of boundary fencing wall and other civil structure works of equipment foundation and control building work is on progress and expected to be completed by FY 2016/2017

Dailekh-Seri Line Extension Project

The project includes the construction of 5 km 11 kV line, 10 km of LV distribution line in Dailekh district. Project work is on progress after Contract agreement and expected to be completed by FY 2016/17.

Kalikot Small hydropower center Rehabitation Project

The project includes the canal lining, Flood protection and canal protection works. 65% work of Canal Lining is completed and for Flood protection & headrace protection work Tender has been done and tender evaluation is in progress.

ATTARIYA REGIONAL OFFICE

Operational highlights

There are 9 Distribution Centers under Attariya Regional Office (ARO) spread over Mahakali and Seti zones. The distribution loss of ARO is 19.55%. Sales contribution to NEA system from this RO is 4.04%. The performance highlights of this regional office during review period are as under.

Energy sales (MWH) –149993
Revenue (million) – Rs.1096.75
Numbers of consumers –174135

Project highlights

The major projects being implemented under this regional office are as under.

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 district , 33/11 kV substations at Chainpur and 33 kV bay extension at Baitadi Substation. Tendering has been done for poles to construct additional 10 km 33kV line. Land Acquisition process for Sub-station construction has been initiated. 500 Steel telescopic pole installations have been completed.

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. The project is facing hurdles due to long route, difficult terrain and insufficient budget allocation. 48km of 33 Kv trasmission line is completed and 215 Steel telescopic pole installations have been completed.

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 of 11 kV transmissions in progress. Procurement of conductors and insulator hardware for 33 kV transmission line has been completed. Process of land acquisition has been initiated.

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 substation is completed and now it is in operation.

Other Projects

The following projects in the region are also in the various stages of execution.

- Balanch-Khalanga 33 kV Transmission line Project
- Pahalmanpur-Joshipur 33 kV Transmission line and Substation Project
- Mauwa-Nagardaha (Doti) 33 kV Transmission line and Substation Project
- Sanphebagar-Chamara-Chautara 33 kV Transmission line and Substation Project
- Budhar-Jogbudha Bagarkot 33 kV Transmission line and Substation Project
- Chandani Substation Project
- Chaumala Substation Expansion Project
- Dhangadi-Attaria Distribution System Reinforcement Project
- Mahendranagar Distribution System Reinforcement Project
- Dipayal-Sanphe-Manma-Jumla 33 kV Transmission line and Substation Project
- Tikapur-Lamki Distribution System Reinforcement Projcet

Annex -1: Features of eight regional offices

S.No.	Category	Biratnagar	Janakpur	Hetauda	Kathmandu	Pokhara	Butwal	Nepalgunj	Attaria	Total
No. of Consumers (Nos) for F/Y 2015/16										
1	Domestic	460396	406377	317441	578956	242509	369651	255396	165146	**2795872**
2	Non-Commercial	2599	1826	1474	3226	1856	2579	2490	1682	**17732**
3	Commercial	2384	1458	1816	5653	1535	1860	1543	942	**17191**
4	Industrial	6298	7643	6642	8968	3386	5566	3420	1716	**43639**
5	Water Supply	128	108	172	387	226	266	99	40	**1426**
6	Irrigation	29640	16803	15394	999	323	4621	11591	3912	**83283**
7	Street Light	691	397	411	767	68	323	133	39	**2829**
8	Temporary Supply	67	18	84	533	23	74	58	26	**883**
9	Transport	0	0	1	40	2	0	0	0	**43**
10	Temple	795	341	535	550	566	917	422	265	**4391**
11	Community Sales	104	98	76	116	483	218	124	318	**1537**
12	Internal Consumption	131	85	123	147	61	87	66	49	**749**
13	Bulk Supply	-	-	-	-	-	1	-	-	**1**
	Total	**503233**	**435154**	**344169**	**600342**	**251038**	**386163**	**275342**	**174135**	**2969576**
Sales Unit (MWh) for F/Y 2015/16										
1	Domestic	265881	146589	190533	625211	144142	220405	119078	81120	**1792959**
2	Non-Commercial	15452	4628	13785	69252	10171	8905	7661	4512	**134366**
3	Commercial	32158	10726	24388	150175	22063	21773	15825	9372	**286480**
4	Industrial	259056	78221	368384	140110	23672	243259	71518	21475	**1205695**
5	Water Supply	10335	1792.296	7769	13832	3294	9091	2847	1376	**50336.296**
6	Irrigation	15761	6859	12293	893	227	5860	6076	2109	**50078**
7	Street Light	6595	14420	17529	23406	2737	4728	2527	1941	**73883**
8	Temporary Supply	71	169.375	77	885	54	84	53	706	**2099.375**
9	Transport	0	0	506	5574	18	0	0	0	**6098**
10	Temple	1095	243.143	489	1774	432	988	390	117	**5528.143**
11	Community Sales	10761	6150	4644	6131	31977	8400	9359	27055	**104477**
12	Internal Consumption	431	321.021	765	1398	189	302	207	210	**3823.021**
	Total	**617596**	**270119**	**641162**	**1038641**	**238976**	**523795**	**235541**	**149993**	**3715822.835**
REVENUE(Nrs.in Thousands)										
1	Domestic	2073428	1050235	1555017	5553425	1137713	1726573	954960	600659	**14652010**
2	Non-Commercial	212183	57189	186306	1082633	132866	103778	91486	53884	**1920325**
3	Commercial	414948	144601	304177	1998415	291460	264030	193308	114981	**3725920**
4	Industrial	2088123	684957	3052766	1207202	215250	1948397	595400	177715	**9969810**
5	Water Supply	63065	13999	49304	92135	24515	59546	19611	9843	**332018**
6	Irrigation	58804	27735	47698	3369	899	23320	22306	7829	**191960**
7	Street Light	50586	87509	141583	201125	24277	33275	21817	17577	**577749**

8	Temporary Supply	1374	801.676	1345	15114	899	1395	824	7458	**29210.676**
9	Transport	0	0	4635	34710	259	0	0	0	**39604**
10	Temple	6701	1259.937	2548	9908	2195	6665	2049	632	**31957.937**
11	Community Sales	44350	21461	20438	22593	127880	32350	38393	103572	**411037**
12	Internal Consumption	4426	3155	7917	16274	2544	3149	2192	2597	**42254**
	Total	**5017988**	**2092903**	**5373734**	**10236903**	**1960757**	**4202478**	**1942346**	**1096747**	**31923855.61**
Loss percentage										
1	Received Energy, MWH	760,065,221	525,679,200	789,009,899	1,147,935,780	257,012,571	662,367,466	320,405,762	181,371,539	4,643,847,438
2	Sales Energy, MWH	602,937,977	273,617,769	644,373,010	1,018,956,325	225,016,446	554,486,048	258,943,073	145,905,637	3,724,236,284
3	Loss Unit, MWH	157,127,245	252,061,431	144,636,889	128,979,456	31,996,124	107,881,418	61,417,449	35,465,902	919,611,154
4	**Loss percentage**	20.67	47.95	18.33	11.24	12.45	16.29	19.17	19.55	19.80

Annex- 2: Performance Status of Eight Regional Offices

Description	**Biratnagar**	**Janakpur**	**Hetauda**	**Kathmandu**	**Pokhara**	**Butwal**	**Nepalgunj**	**Attaria**	**Total**
Zonal Coverage	Mechi & Koshi	Jankapur & Sagarmatha	Narayani	Bagmati &Janakpur	Gandaki & Dhaulagiri	Lumbini	Bheri ,Karnali & Rapti	Mahakali& Seti	
No .of municipalities fully electrified	3	19	10	17	17	16	0	8	90
No .of municipalities partially electrified	31	14	12	17	5	10	20	38	147
No.of VDCs fully eletrified	6	232	77	150	227	163	7	20	882
No.of VDCs partially eletrified	255	246	194	192	67	137	169	254	1514
No. of VDCs having no access to eletricity	54	127	9	42	72	23	123	222	672
No. of community eletrified VDCs	23	89	29	54	119	87	33	40	472
No. of distriburtion center	15	15	8	18	13	9	13	9	100
Units sold during the year under review (GWh)	597.53	1330.40	530.44	891	111.45	513.49	240.72	292.58	4507.61

Revenue (NRs in million)

Description	**Biratnagar**	**Janakpur**	**Hetauda**	**Kathmandu**	**Pokhara**	**Butwal**	**Nepalgunj**	**Attaria**	**Total**
Billing Amount	5017988	2092903	5373734	10236903	1960757	4202478	1942346	1096747	31923855.61
Total no of consumer at the end of year	503233	435154	3444169	600342	251038	386163	275342	174135	2969576
No of Black listed consumer	4582	3118	4983	934	1790	3292	2202	1	20902
Revenue to be colllected from Black listed consumer	75.87	78.67	169.85	200.7	13.68	8814	23.76	0.025	9376.56

Revenue collected from Black listed in consumer no.	168	41	200	250	124	171	90	1	1045
Revenue collected from blacklisted consumer	1.92	18.93	16.75	0.45	1.4	3.0	1.78	0.025	44.255
Number of line disconnection	5507	1893	2507	1980	9724	5219	3323	974	31127
Revenue to be collected from disconnection	61.84	68.83	102.89	49.07	24.15	11.48	51.44	15.31	385.01
Revenue collected from disconnection	46.41	28.74	67.72	22.43	21.43	92.06	40.18	9.24	328.21
Action against thept	829	829	516	16	214	790	639	124	3957
Colllection from action against thept	4.24	5.92	5.25	0.4	2.04	10.76	3.57	1.4	33.58
Loss Reduction Activities									
Meter change	182	969	1258	1569	1453	1450	1007	400	8288
Resealing	1852	1648	5555	6010	3621	3026	2502	2570	26784
Conductor Upgrading(HT/ LT);Km	24	19.4	23	16.53	3.56	27.5	15	42	170.99
Transformer adding/ upgrading nos.	26	107	15	88	69	77	60	7	449
Merter inspection (TOD/Three phase/single phase); nos	3450	2546	4500	1830	1250	1480	1300	2500	18856
Public interaction conducted; nos	6	14	5	20	1	12	2	1	61
Public hearing, awareness, notic published ; nos	11	10	9	15	1	2	3	4	55

Planning, Monitoring and Information Technology Directorate

Planning, Monitoring and Information Technology Directorate, a corporate wing of NEA is headed by Deputy Managing Director. This directorate is entrusted with directing and monitoring the activities of five departments namely: System Planning Department, Corporate Planning and Monitoring Department, Information Technology Department, Power Trade Department and Economic Analysis Department. Each of these departments is headed by a director. System Planning Department is responsible for carrying out load forecasting, generation planning and transmission system planning of power system of Nepal. Corporate Planning and Monitoring Department is entrusted with the responsibility of developing Corporate Plan of NEA along with monitoring and evaluating NEA-implemented projects. Information Technology Department develops innovative IT services so as to modernize various activities of NEA. Power Trade Department is responsible for trading of power both in domestic as well as in international market as per NEA's strategy and policy. Finally, Economic Analysis Department carries out financial analysis of projects and proposes electricity tariff & service charge adjustments.

SYSTEM PLANNING DEPARTMENT

Currently, Grid Impact Study (GIS) for new generation projects is the main focus of System Planning Department (SPD). 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.

SPD also assists other departments of NEA by providing necessary data and suggestions regarding implementation of planned projects.

The department was involved in the joint study with the National Load Dispatch Centre, India for the Synchronous Operation of Central part of Nepal Power System with the Indian Power System and was also involved in the preparation of Integrated Master Plan for Evacuation of Power from Hydro Projects for the Joint Technical Team (JTT) that comprises members from Nepal and India.

The department also assisted the Office of the Millennium Challenge Nepal in performing load flow study of Nepal Power System and in carrying out economic analysis of probable transmission line projects.

In FY 2015/16, System Planning Department carried out number of technical studies at the request of NEA's different departments. Notable among them are:

- Transmission System Study of Tamor Storage Hydroelectric Project (762 MW).
- Transmission System Study of Rahughat Hydroelectric Project (40 MW).
- Transmission System Study of Surkhet-Kohalpur transmission line.
- Transmission line study of Butibang-Amari-Sadhikharka-Gorushinghe.

In FY 2015/16, 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 2015/16

S.N.	Name of Projects	Capacity (MW)	Connection Substation
1	Madkyu Khola HPP	13	Upper Madi HEP
2	Richet Khola HPP	4.98	Salyantar substation
3	Langkhuwa Khola HPP	5	Khandabari substation
4	Rudi Khola A HPP	8.8	Lekhnath substation
5	Tinau Khola HPP	1.665	Jhumsa switching station
6	Sabha Khola B HPP	15.10	Khandabari substation
7	Madhya Trishuli Ganga HPP	55	Trishuli 3 B Hub substation
8	Kaligandaki Upper HPP	65	Kushma substation
9	Mistri Khola HPP	42	Dana substation
10	Lower Likhu HPP	28.1	New Khimti substation
11	Upper Naugad Gad HPP	8	Balanch substation
12	Rasuwa Bhotekoshi HPP	120	Chilime hub substation
13	Lapche Khola HPP	99.1	Barabishe substation
14	Pikhuwa Khola HPP	5	Bhojpur substation

In FY 2015/16, System Planning Department completed Grid Impact Study for the bulk load of following industries.

S.N.	Name of Projects	Capacity (MVA)	Connection Substation
1	Shalimar Cement	Load shift	Hetauda-Parwanipur 66kV transmission line
2	Sonapur Cement	6	Ghorahis/s- Tulsipurs/s 33kV transmission line
3	Argakhachi Cement	12	Butwal – Lumbini 33kV transmission line
4	Jagadamba Enterprises Pvt. Ltd.	4.8	Parwanipur 11kV feeder

CORPORATE PLANNING AND MONITORING DEPARTMENT

Corporate Planning and Monitoring Department is responsible for developing corporate and periodic development plans and programs, for carrying out periodic 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 annual budget and programs for projects being undertaken by NEA. Besides, the Department also provides necessary support to NEA management for carrying out various studies related to institutional reforms and development. In addition, the Department also provides input for studies undertaken by various organizations on topics related to NEA.

The Department also plays the coordinating role in the development of hydropower projects under different financing mode. During the year under review, the Department collected, evaluated and reviewed monthly, trimester and annual progress of 175 development projects implemented by NEA. Of these 175 projects: 10 projects were for feasibility study of storage and medium/large hydropower projects; 6 projects were hydropower projects that are under construction; 56 projects were transmission line projects; 89 projects were distribution system expansion and rural electrification projects and the remaining projects included rehabilitation and maintenance of hydropower stations, institutional strengthening and renewable capacity addition.

INFORMATION TECHNOLOGY DEPARTMENT

Information Technology Department is responsible for IT-related activities within the organization and is headed by a Director. The Department has completed a very productive year with the introduction of new ICT (Information and Communication Technology) solutions and expansion of networking infrastructure. Apart

from the implementation of newer IT services, the Department provided continuous ICT maintenance and support at local and regional level. To make the procurement system of NEA more transparent, the department posted more than 760 tenders through its web portal in fiscal year 2015/16 which is an increment of 15.5% compared to the preceding fiscal year. NEA procurement system portal now has a total of 1535 registered active bidders and is a significant increment in comparison to fiscal year 2014/15 (1166 bidders). The department has also made significant progress in the areas of network expansion for Any Branch Payment system. Intranet facility has been extended to NEA training center and for the project offices accommodated in the NEA Training Center premises. The DCS Activities Information System – web portal was revamped in fiscal year 2015/16 to include bank deposit of each day by the revenue collection centers.

Other noteworthy activity carried out by the department in fiscal year 2014/15 is the support and maintenance of e-attendance system in more than 100 NEA offices. Moreover, the department has also initiated for the implementation of this e-attendance system in 20 plus additional NEA offices in fiscal year 2015/16. The Department has also completed a computer hardware procurement process for new roll out of e-attendance system and for replacement of old machines running CAIS and Payroll systems. Furthermore, continuous support was provided to offices with accounting, inventory, payroll and other IT systems. Constant up gradation of the in-house built Payroll Software and e-attendance system have been done. The other major task taken up by the department in fiscal year 2015/16 was the implementation of Asset Management System in 85 DCS offices, 15 Generation offices, 5 Transmission offices, 4 Engineering offices and 14 project offices. The department has also initiated the implementation of Geographical Information System (GIS) for DCS Inventory. This GIS system will be used to capture and store the details about Poles, Transformers, Cables and Consumers. Conceptual design and prototype was made and formal demonstration of the prototype was successfully presented to the top-level management. A dedicated team of engineers are working on the enhancement of this project for the department. Lastly the department has initiated the implementation of Remote Meter Reading (RMR) system using GSM Modems. A dedicated team of engineers are also working on this project to make the remote meter reading system more user friendly, accessible and versatile.

POWER TRADE DEPARTMENT

Power Trade Department is responsible for trading of electric power in both 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:

PPA processing and signing: It covers PPA processing activities up to and including its signing.
PPA implementation and monitoring: It includes PPA administration after its execution till commercial operation.
Operational Administration and monitoring of PPAs: It includes PPA administration after commercial operation.

The department has 3 Divisions to carry out these functions. Various reform measures have been introduced in the fiscal year under review so as to make the processing of the PPA applications systematic and transparent. The applications are put on a processing sequence based on pre-established criteria and displayed in the department's Notice Board. The different stages involved before concluding a PPA are: document study and investigation, technical review, Grid Impact Study followed by conclusion of Connection Agreement and PPA draft preparation and negotiation. Finally, a PPA Processing Basket is formed and the applications which have fallen

into it with the completion of necessary criteria are processed ahead towards the execution of PPAs. When the earlier entries are completed, the Basket is periodically updated.

A total of 6 new projects developed by the Independent Power Producers (IPPs) with their combined installed capacity of 30.978 MW were commissioned in FY 2015/16. Projects that were commissioned are: Naugadh gad Khola (8.5MW), Suspa Bukhari Khola (0.998MW), Mai Cascade Khola (7MW), Chhandi Khola (2MW), Upper Mai Khola (9.98MW) and Daram Khola A (2.5MW). With these 6 projects, the total number of IPP-owned projects that are in operation has reached 50 with their combined installed capacity of 324.45 MW. Similarly, 91 projects of IPPs with their combined capacity of 1721.532 MW are under construction. Likewise, 44 projects of IPPs with their combined capacity of 783.8 MW are in other stages of development. During FY 2015/16, 27 new PPAs with their combined capacity of 457.59 MW were concluded. With this, the total number of PPAs concluded so far till FY 2015/16 has reached 185 with their combined capacity of 2829.78 MW.

A short term PPA was executed in Fiscal Year 2015/16 with Power Trading Corporation of India (PTC) Ltd. for the import of 20 to 30 MW power at 132 kV level on a round-the-clock (RTC) basis from Tanakpur point. Likewise, a similar contract was signed on February 15, 2016 with NTPC Vidyut Vyapar Nigam Limited (NVVN) for the import of 80 MW power for the period February-June, 2016 at 132 kV level on RTC basis from Mujaffarpur off-take point through Dhalkebar-Mujaffarpur transmission line operated at 132 kV level as a contingency measure. Import of 50 MW power on RTC basis continued till July 2016 by executing a supplementary PPA with terms and conditions remaining unchanged. A new short term PPA was also signed with NVVN on July 10, 2016 for the import of 50 to 74 MW power on RTC basis through this transmission line for the period August-December, 2016.

ECONOMIC ANALYSIS DEPARTMENT

The Economic Analysis Department is mainly responsible for conducting activities related with the following responsibilities:

- Formulate criteria for economic and financial analysis of NEA's projects;
- Financial/ economic, commercial and market analyses of NEA;
- Cost benefits analyses of NEA projects;
- Prepare Log Frame of generation and transmission line projects of NEA;
- Cost analysis of electricity services distributed by NEA;
- Prepare documents for review of electricity tariff to be submitted to Electricity Tariff Fixation Commission (ETFC);
- Carryout comparative benefit study of hydropower generation and transmissions lines of NEA;
- Carry out study and evaluation on economic and financial sustainability of completed projects by NEA;

Assist the departments of NEA in prioritizing the selection of the projects.

The department is the focal point of NEA to coordinate with Electricity Tariff Fixation Commission (ETFC). The department also supports Power Trade Department of NEA for concluding PPA with IPPs.

Following ETFC's decision dated Asadh 16, 2073 BS (June 30, 2016 AD), a new tariff structure is in effect from FY 2016/17. This is in response to NEA's filing a proposal in FY 2012/13 to ETFC for the upward adjustment of 20% to existing tariff level. While approving the upward tariff revision, ETFC directed NEA to prepare an action plan relating to: loss reduction; administrative reforms; timely completion of projects that are under construction; effective operation of existing power plants; measures to minimize load shedding etc.

NEA is also coordinating with ETFC to develop an appropriate formula for the auto adjustment of electricity tariff based on various parameters as per Electricity Tariff Fixation Rules, 2050.

Engineering Services Directorate

Engineering Services Directorate 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 Deputy Managing Director. The Directorate 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, Environmental and Social Studies, Dudhkoshi Storage Hydroelectric Project and Upper Arun Hydroelectric Project provide these services to various departments within NEA and to the private parties. Likewise, Training Center is one of the important departments of Nepal Electricity Authority, under Engineering Services Directorate. It has been enhancing the skills and knowledge to the staffs of NEA as well as Nepalese citizens since 2046 B.S.

DUDHKOSHI STORAGE HYDROELECTRIC PROJECT

The Dudhkoshi Storage Hydroelectric Project is a storage type hydropower project located at border of Khotang and Okhaldhunga districts on Dudhkoshi River in Eastern Development Region of Nepal. The project was initially identified during the Master Plan Study on the Koshi River Basin in 1985 and the feasibility study was carried out by Nepal Electricity Authority (NEA) in 1998. The feasibility study of Dudhkoshi Hydropower Project was carried out for 300 MW installed capacity and was identified as the viable and attractive option and recommended for the development. The Nationwide Master Plan Study on storage type Hydroelectric Power development in Nepal being conducted by JICA in 2014 has identified and selected 10 most promising storage projects for development. Dudhkoshi is the top ranking project among 10 storage projects.

The Dudhkoshi project site is located approximately 5 km northwest of Lamidanda airport, which is about 160 km east of Kathmandu. There is no motorable access at dam site and powerhouse site at present. However, gravel roads and fair weather roads are available within the vicinity of the project area. Ghurmi, a market center located at the middle hill road is the nearest road junction for this area. The middle hill road continues towards east connecting Halesi, Diktel etc. Regular public transport service to Diktel, the head quarter of Khotang district and Okhaldhunga, the district headquarter of Okhaldhunga district are in operation from Kathmandu and Katari via Ghurmi. The dam site can be accessed from a 20 km long fair weather road that branches from Ghurmi – Diktel road. The dam site can also be accessed by other 30 km fair weather road from Okhaldhunga. Nearest road head for proposed powerhouse site is located at Dhitung village which is about 8 km from powerhouse site. A fair weather road that connects Dhitung village from the main road to Diktel is about 11 km long.

The procurement of consulting services for Updated Feasibility Hydroelectric Project was initiated in the grant assistance of Asian Development Bank (ADB). The main objective of this study is to prepare the project for implementation from

Dam Site of Dudhkoshi Storage Hydroelectric Project

the current status of the existing Feasibility study. The overall objectives of the consulting services are to carryout necessary field investigation; update the existing Feasibility study of Dudhkoshi Storage HEP, carryout detail design, prepare tender documents and tender drawings; prepare Environmental Impact Assessment, Social Impact Assessment, Environmental Management Plan and Construction Plan to meet the NEA, GoN and leading multilateral agencies requirements for construction of the Project.

The Expressions of Interest (EoI) for the Consulting Services for the Updated Feasibility Study and Detailed Design of Dudhkoshi Storage Hydropower Project was published on 19 June 2014 and 22. A total of 22 consulting firms submitted their EoIs within the stipulated date and time. Six firms from different countries were shortlisted and Request for Proposal (RFP) was issued to the shortlisted firms. All the six shortlisted firms submitted their technical and financial proposal separately on 3rd July 2015.After Combined Technical and Financial Evaluation and subsequent approval of proposals, the first ranked Consultant (ELC Electroconsult S.p.A. (Italy) in association with NEWJEC Inc. (Japan)) was invited for contract negotiation. The Contract Negotiation between NEA and Consultant was successfully held and finally a Contract Agreement between NEA and ELC Electroconsult S.p.A. (Italy) in association with NEWJEC Inc. (Japan) was held on 30 May, 2016 and the Consultant has already commenced the work. For establishment of site office, an agreement to take the building and land on lease for 10 years with the District Development Committee (DDC) Khotang took on 8 April, 2016.

Contract Agreement between NEA and ELC ElectroconsultS.p.A.(Italy) in association with NEWJEC Inc.(Japan) for Consulting Services for Updated Feasibility Study and Detailed Design of Dudhkoshi Storage Hydroelectric Project

The sediment concentration and its sampling are very much important for the reservoir project like Dudhkoshi for the sustainable management of reservoir. On the other hand, the river sediment study helps to estimate the sediment yield, life of the reservoir and energy depletion of storage project due to sediment encroachment of live storage volume. Owing to this, Suspended Sediment Measurement is being carried out by D74 Depth Integrated Sediment Sampler. As part of this, regular suspended sediment measurement is being done at the proposed dam site.

UPPER ARUN HYDROELECTRIC PROJECT

Upper Arun Hydroelectric Project (UHEP) is located in Sankhuwasabha District of Eastern Development Region of Nepal about 700 km East of Kathmandu. The proposed dam site is located in a narrow gorge about 350 m upstream of the confluence with Chepuwa Khola in Chepuwa Village. The powerhouse lies at Sibrung in Hatiya Village, nearby the confluence of Arun River with Leksuwa Khola. The power house lies at the distance of about 32 km from Tumlingtar, the nearest air strip from the project site. The access to the project area starts from “Koshi Rajmarg” which is a national high way to Kimathanka (Chinese Border) and is presently under construction by Government of Nepal (GON). The power house site is just at the other side of the “Koshi Rajmarg” across Arun River. An access road with total length of 24 km will be required to reach headwork site along the left bank of Arun River. The access road will consist of 1.7 km long road tunnel. The power from UAHEP is proposed to be evacuated to national grid from Tumlingtar Hub through 49 km long 220 kV transmission line.

The stretch of Arun River in the project area is the boundary of the buffer zone of Makalu Barun National Park. The right bank of Arun River in this stretch lies within the buffer zone. Except the head works, all the main structures of the project are located on the left bank of Arun River.

Feasibility study of this project on behalf of Nepal Electricity Authority (NEA) in 1991. Now the NEA has given priority for the development of this

Upper Arun Headwork site

project as to augment the energy generation capability of the integrated Nepal Power System due to its relatively low cost of generation and availability of abundant firm energy. Based on the feasibility study carried out by the Joint Venture of Morrison Knudsen Corporation, Lahmeyer International, Tokyo Electric Power Services Co. and NEPECON on 1991, the installed capacity of Peaking Run-of –River type UAHEP 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 consists of 7.8 km long headrace tunnel. The project has design head of 492 m.

Review Study of this project was carried out by NEA in the year 2011. The project cost is revised based on prevailing unit rate and road facilities which is already built up to Num, near the dam site of Arun 3 HEP. The power will be evacuated to the national grid through the transmission hub at Tumlingtar.

The Cabinet of Nepal Government, on 2069/11/04, gave permission to Nepal Electricity Authority to implement UAHEP under the Ownership of the GON. The Department of Electricity Development also informed NEA that issuance of the Survey License to NEA for the Study of UAHEP is not necessary as this project will be implemented by NEA under the Ownership of the GON.

As UAHEP is proposed to be developed by NEA under the ownership of Nepal Government; it will not be possible for the local people to invest on it. Hence, a separate project called Ikhuwa Khola Hydropower Project (IKHPP) has been identified and is proposed to be developed as an integral part of Upper Arun HEP for the social mitigation purpose. The ownership of this project is proposed to be transferred to the local people partly or wholly as per their capacity. IKHEP is located approximately 8 km downstream from the powerhouse site of Upper Arun HEP. The feasibility study of the project is being carried out by the Department of Electricity Development. NEA is planning to develop Upper Arun and Ikhuwa Khola HPP at the earliest possible time.

The financing agreement between Government of Nepal and Work Bank for Power Sector Reform and Sustainable Hydropower Development Program (PSRSHDP) has been signed on February 4, 2016. Likewise the project agreement between Nepal Electricity Authority and Work Bank has also been signed to develop UAHEP and IKHPP under PSRSHDP and other components as mentioned in the Project Appraisal Report in the same date - February 4, 2016. As per the financial agreement between GoN and World Bank for the implementation of PSRSHDP, the World Bank has sanctioned the loan of US$ 20 Million on the proposed credit number 5728- NP to the Government of Nepal, which was provided to Nepal Electricity Authority (NEA) as a subsidiary loan under the subsidiary loan agreement between GoN and NEA on May 5, 2016. With effect from June 2, 2016, the subsidiary loan agreement has been effective.

The following activities were performed in FY 2072/73:

- Project Agreement and Subsidiary Loan Agreement (SLA) for Power Sector Reform and Sustainable Development Hydropower Projects (PSRSHDP).
- Preparation of Project for construction viz. Detailed Engineering Design and Environments and Social Study of the Project and its components. This includes:
  - Evaluation of EoIs for procurement of Consulting Services for Detailed Engineering Design and Preparation of Bidding Document of UAHEP and IKHPP.
  - Evaluation of EoIs for procurement of Consulting Service for Environmental and Social Impact Assessment (ESIA), Cumulative Impact Assessment (CIA) and Social Planning Studies (SPS) for UAHEP and IKHPP
  - Preparation and Finalization of draft Request for Proposal (RFP) and Cost Estimate for Detailed Engineering Design and Preparation of Bidding Document.
- Notice Published for EOI for procurement of Consulting Services for Detailed Engineering Design and Construction Supervision of Access Road including road tunnel and bridge for UAHEP.
- Preparation of ToR and Cost estimate for Fishery Baseline Study.
- Formation of Project Management Unit (PMU) for overall managements of Projects under Component A for PSRSHDP.
- Topographical Survey for detail design of camp facilities for UAHEP.

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 Directorate. Brief descriptions of the projects being carried out from this department is outlined in following sections.

Upper Modi 'A ' & Upper Modi Hydroelectric Project

Upper Modi 'A' Hydro Electric Project was identified during 1997 and the Feasibility study of this project was completed in the year 2000. Environmental Impact Assessment (EIA) of the project was approved in 2004. Presently this project is conceptualized to be developed as cascade scheme between Upper Modi 'A' and Upper Modi HEP with total installed capacity of 60.2 MW (Upper Modi 'A'- 42 MW and Upper Modi - 18.2 MW)

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 headwork and powerhouse site of the project is located in Ghandruk VDC. The nearest highway to the project site is at Nayapul, about 38 Km west of Pokhara on Pokhara Banglung highway. Approximately 8 km of motorable road and a steel truss bridge over Modi Khola has already been constructed by the local administration. Hence, approximately 10.0 km of access road need to be constructed from powerhouse of the Upper Modi 'A' to the headwork site. Approximately 1.0 km of project road will be required for the construction of Upper Modi project. Similarly, 11.5 km long 132 KV single circuit transmission line will be

required to evacuate generated energy from both projects to the INPS system at New Modi Khola substation.

Upper Modi 'A' Headwork site

Environmental Assessment study of the Biological environment of the project area has been completed as per the requirements of Ministry of Forest and Soil conservation. The generation license Upper Modi 'A' HEP for Construction of Project was obtained from concerned authority.

The South Korean company Korea Water Resource Corporation (K-Water) and the Nepal Electricity Authority (NEA) have agreed to construct both Upper Modi and Upper Modi 'A' projects through a single structure in cascade format. In this regards, the financial modality of the development of about 60% of NEA, 30% of K-Water and remaining 10% of local residents was cleared by NEA board dated 2070/07/04. However, it is still consideration in NEA board demanding dollar PPA in K-Water part. Similarly, from September 15, 2015 the joint development agreement (JDA) between NEA and K-Water was over.

At present, project is conceptualized to develop in the engineering Procurement and Construction (EPC) Model. Expression of interest (EoI) document was prepared and EoI notice was published on 15th and 16th June 2016 for procurement of consultant to review feasibility report, detailed engineering design and preparation of EPC tender document. Request for proposal is being prepared for further selection of consultant after EoI evaluation. To developed the project NEA has appointed the land acquisition officer for land acquisition works and approval from Ministry of Energy (MoE) was obtained.

Tamakoshi V Hydroelectric Project

The Tamakoshi-V Hydropower Project is a cascade development of the Upper Tamakoshi Hydroelectric Project (UTHEP) 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 road connecting Singate Bazaar and Lamabagar for the construction of UTHEP passes through both powerhouse and headwork sites of this project. UTHEP recently built this road. The feasibility study of the Project was carried out by NEA in fiscal year 2010/11. All the structures of this project are located on the right bank of Tamakoshi River. The project being a cascade development to UTHEP, it does not need separate headwork. Tamakoshi-V feeds on the discharge from the tailrace of the UTHEP through an underground inter connection arrangement; the water is conveyed to the headrace tunnel of the Project. An underground powerhouse is proposed at SuriDovan. The design discharge of the project is 66m3/sec with an 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 UTHEP. The interconnection system consists of connecting tunnel, a head pond required to maintain suction head before the pressurized head race tunnel entrance, spillway and spillway tunnel. Discharge from the tailrace of UTHEP is diverted through interconnection system and conveyed to 8.20 Km long concrete lined headrace tunnel, 122.38 m high drop shaft, 41.44 m long pressure tunnel and to the underground powerhouse containing four number of vertical axis Francis turbine for

the generation of 87 MW electricity equivalent to 460.5 GWh of energy (without Rolwaling). Tailrace tunnel of 141.61m and 54.55m long tailrace canal will release the water into the Tamakoshi River itself after the generation of power. The outlet of the tailrace is approximately 0.2 km downstream from the confluence of Tamakoshi River and Khari Khola at SuriDovan. With the availability of the infrastructure developed for the UTHEP particularly the access road and transmission line and also being the cascade project of UTHEP, Tamakoshi V HEP can be developed along with UTHEP.

For the speedy implementation of Tamakoshi V, NEA has initiated the preparatory works for the Detailed Engineering Design in this fiscal year so that the detailed engineering design can be carried out at the earliest. All the necessary activities like additional geological and geotechnical investigation/s, Environmental Impact Assessment (EIA) finalization, finalization of Expression of Interest (EoI) and Request for proposal (RFP) documents for selection of international consultants have already been completed for the detailed engineering design of the project.

The works performed during fiscal year 2072/73 includes the activities for the Detailed Engineering Design of Tamakoshi V Hydroelectric Project, preparatory works for land acquisition, camp facility planning and design, works for the construction of interconnection system, preparation of Request for Proposal (RFP) document, request for proposals from shortlisted international consultants and evaluation of received proposals.

With regards to the interconnection system, UTHEP had forwarded the technical and financial proposal submitted by JV Norconsult AS-Lahmeyer International GmbH for performing Hydro-mechanical works and civil works. It has been proposed to construct the interconnection system through UTHEP using the contractor working for the UTHEP with the arrangement of work variation of UTHEP. The works to be executed by UTHEP has been forwarded to NEA board for approval.

Presently, the evaluation of the proposals from international consulting firms for detailed engineering design and tender document preparation is complete and the consulting firm scoring the highest has been invited for

Tamakoshi V Powerhouse Site

negotiation. The negotiation with the selected international consulting firm is ongoing. The Environmental Impact Assessment (EIA) report has already been approved by the Ministry of population and Environment on 2073/03/08. NEA had applied for the Generation License on fiscal year 2071-72 which is in the process of approval and the license is expected soon.

Andhikhola Storage Hydroelectric Project

Andhikhola 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 of Kali Gandaki 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 HEP powerhouse.

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 started to upgrade the feasibility study from the year 2010/11 and NEA has applied for survey

Andhikhola Dam Site

license of this project in the same year. In the view of further study, altogether four options have been considered.

An alternative study was carried out considering two dam and two powerhouse sites including the old dam and powerhouse site from previous studies (1998). In the fiscal year 2072/73, the Project Development Department carried out the hydrological data collection works & purchased vehicle for carrying out the project work in the coming fiscal year and environment study has to be carried again in the future for the project if the sufficient budget is allocated in the fiscal year 2073/74. The study indicated that the option with old dam site and the powerhouse option from the previous studies are more attractive from economic and geological point of view. Hence this alternative is recommended for the further study. As per the study, the project will generate an annual energy of 664 GWh with installed capacity of 303 MW with dam height of 193 m and Full Supply Level of 710 m.

Uttar Ganga Storage Hydroelectric Project

The Government of Nepal (GON) has given 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 Hydropower 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 the left bank of Nisi Khola nearby Karigaun village of Nisi VDC. About 11 KM long access road from Uttar Ganga, the nearest road head will be required to reach the dam site. The proposed power house site is accessible by Rukum – Banglung part of Madhyapahadi Highway (Pushpalal Lokmarg). A bridge across the Nisi Kholahas been constructed by DOR as a part of Madhyapahadi Highway(Pushpalal Lokmarg) which will give access to the powerhouse site. A survey license was received for conducting feasibility study for 300 MW in FY 2072/73. But after optimization

Dam Site of Uttar Ganga Storage HPP

study of the project, the capacity was upgraded to 828 MW. So in order to continue the feasibility study, the survey license should be upgraded, which will be carried out in FY 2073/74. Since the dam and reservoir area of the project are located within Dhorpatan Hunting Reserve, approval was received from Ministry of Forest and Soil Conservation for conducting Feasibility Study for 300 MW in FY 2072/73.

Major components of the project are 200 m high rockfill dam, sloping type intake, 9,800m long headrace tunnel, circular restricted orifice surge shaft, 4,554m long inclined pressure shaft and horizontal tunnel and a powerhouse on the left

bank of Nisi Khola. The installed capacity of the project has been optimized as 828 MW on basis of 5 to 12 hours in dry season (November-April) operation. The annual energy generation from the project after outage and losses will be 1299.36GWh. Energy generated from the project will be evacuated to the INPS at the proposed Butwal sub-station through 105 km long 400kV transmission line. The distinct features of the project are as follows:

- Availability of very high effective head of up to1287.25 m making the project very cost effective.
- Less sediment yield of 2,750 t/km2/year there by increasing the life of the reservoir.
- Inundation of only 250 ha of cultivated land and resettlement of 625 households thus having comparatively less socio-environmental impacts.
- Total cost of the project has been updated as 1,083,021,724 US$. The economic indicators are EIRR of 23.19% and B/C of 1.80.

During the fiscal year 2015/16, the following works have been carried out:

- License received for conducting Feasibility Study for 300 MW
- Approval received from Ministry of Forest and Soil Conservation for conducting Feasibility Study
- Optimization of Installed Capacity and Full Supply Level
- Geological & Geotechnical Investigation of Phase-I (Drilling and ERT) & Phase-II (ERT)
- Topographical survey and Mapping of the dam site
- River cross-section survey
- Continuation of hydrological gauge reading at Dam Site and powerhouse site with discharge measurement.

Tamor Storage Hydroelectric Project

Tamor Storage Hydropower Project lies in Terhathum and Panchthar districts of Eastern Development Region. The Project was identified during the Koshi River Basin Master Plan Study, 1985. Further studies on the project started only in 2009, after about 25 years of its identification. The Project site can be accessed via. Biratnagar – Dhankuta- Myanglung black topped road.

An earthen track of about 25 Km connects Myanglung to Lambhughat which is located at about 1.5 Km upstream of the proposed dam site. Being a reservoir project with seasonal storage capacity and suitably located to cater the energy hungry industries of Eastern Development Region, this is one of the promising storage projects being studied by Project Development Department.

DoED had issued the license of 200 MW with FSL of 450 masl with an issue of non inundation of Kabeli -A HEP and Lower Hewa HEP. Project Development Department had carried out the alternative study of the project with two alternatives as limiting the FSL upto 450 masl and more than 450 masl. The result of the alternative study shows the Project to

Project Area

be optimum at FSL of 550 masl with and installed capacity of 762 MW. The study shows the annual energy of 1109 GWhr and 3152 GWhr at FSLs of 450 masl and 550 masl respectively. As the result of this study the PDD had applied the licence of 762 MW with FSL of 550 masl and planned to go for the further study with FSL of 550 masl.

During Fiscal year 2072/73, The Project Development Department had prepared the

interim report of the feasibility study of the project .The Geotechnical investigation which includes ERT, Geological mapping of project area was completed. Similarly two drill holes were drilled at the diversion inlet and diversion outlet of the project area and the drillings at the other components are being planned to be completed in this fiscal year. The hydrological study was being carried out. The final layout of the project along with the design of the different project component is on the final stages of completion. The interim report shows the project with an installed capacity of 762 MW and an annual average energy of 3152 GWhr (dry energy of 1075 GWhr). The study proposes the rockfilled dam with height of 200 m with toe powerhouse with four francis vertical units.

PDD has planned to complete the feasibility study in the fiscal year 2073/74.

Upper Bheri Hydroelectric Project (85 MW)

Upper Bheri Hydroelectric Project was identified by Project Development Department under the title of "Identification and Feasibility study of Two New Medium Sized Projects" in the fiscal year 2071/72. It is preliminary identified with an installed capacity of 85 MW.

Upper Bheri Hydroelectric Project is a run-of-river schemed hydroelectric project located in Dolpa District. The headwork site is proposed at Kaigaun of Kaigaun VDC of Dolpa. Tentatively, the major structures including diversion weir, desanding basin, water conveyance tunnel lie in Kaigaun VDC of Dolpa. Similarly, the surge tank and power plant facilities lie at Ila Gaun of Narku VDC of Dolpa district.

Headwork Area of Upper Bheri Hydroelectric Project

The Project area has partial accessibility up to the confluence of Thuli Bheri and Bheri Riverat the Dolpa Highway (under construction by GoN). Up to Khalanga, the district headquarters of Jajarkot, the road is Black topped and beyond which the road is earthen type only. So, only about 10km of access road needs to be constructed from the said confluence up to the Project site.

During the fiscal year 2072/73, Project Development Department had initiated the Feasibility Study of the Project. Under the study, the topographical survey was carried out at the different locations of the project components. Under the hydrological study, the gauges were installed at the headwroks and powerhouse site, the daily gauge readings are taken continuously at the both sites and the discharges were being measured. The feasibility is being continued and during this fiscal year 2072/73. The feasibility study of the project is intended to complete in the fiscal year 2074/75.

Chainpur Seti Hydroelectric Project (140MW)

Chainpur Seti Hydroelectric Project was identified by Project Development Department under the title of "Identification and Feasibility study of Two New Medium Sized Projects" in the fiscal year 2071/72. It is preliminary identified with an installed capacity of 140 MW.

Chainpur Seti Hydroelectric Project (CSHEP) is a run-of-river schemed hydroelectric project, located in Bajhang District of Far-Western Development Region of Nepal. The major structures including diversion weir, desanding basin, water conveyance tunnel lie in Kanda VDC of Bajhang. Similarly, the surge tank and powerhouse lie at Dhamena VDC of Bajhang.

Headwork Area of Chainpur Seti Hydroelectric Project

The project site is currently inaccessible by road. The Government of Nepal has been constructing the Local Highway which links the district headquarter Chainpur to the Nepal-China Border. The highway section starts from Chainpur- Basti-Rupatola- Ramkot- Dhuli to the Nepal China Border.The Project Components lies on the vicinity of the highway.

During this fiscal year 2072/73, Project Development Department initiated the Feasibility Study of the Project. A technical team visited the Project site for the reconnaissance survey and identified the various alternatives for further study. Under Project investigation, the topographical survey was carried over the project area. Under the hydrological study, the gauges were installed at the headwroks and powerhouse site, the daily gauge readings are taken continuously at the both sites and the discharges were being measured. The feasibility is being continued and during this fiscal year 2072/73. The feasibility study of the project is intended to complete in the fiscal year 2074/75.

Survey of Transmission Lines & Substation

Survey Division has accomplished different activities during this fiscal year 2072/2073. The status of Survey activities of the transmission line and substation are following:

S.N.	Transmission Line (T/L) and Substation Project Name	District	Length of Transmission Line in KM	Project Status
1.	Kushma – New Butwal 220 KV	Parbat, Baglung, Palpa, Syangja, Rupandehi and Nawalparasi	87.57	Completed
2.	Budhiganga – Punyapato – Kuine – Lamki 220 KV	Achham, Surkhet and Kailali	98.52	Completed
3.	Ramechhap Garjan Khimti 132 kV (Additional)	Dolkha and Ramechhap	2.00	Completed
4.	Dordi Corridor 132 kV T/L project	Lamjung	11.50	Completed
5.	Butwal Lumbini 132 kV T/L project	Rupandehi	18.80	On progress

New Projects to be Survey/Study by PDD within in F.Y. 2073/74

S. N.	Projects	Districts	Length(km)	Status
1.	Balephi Corridor Feasibility Study	Sindhupalanchok	20.00	Reconnaissance survey completed
2.	ButwalBardaghat 220 kV T/L Project	Nawalparasi	13.00	Proposal ongoing.

Other Activities

In addition to regular work consisting of carrying out studies at different levels for different projects, PDD has been carrying out various 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 2072/73.

- Continuation of the construction supervision of Chameliya Hydroelectric Project in association with the joint venture of three local consulting firms (SHAH, SILT and ICON JV).

Construction of Corporate Office Building Project

NEA planned to establish a corporate office, commercial complex and business complex at 26 ropanis land at Durbarmarg, Kathmandu. A master

plan was developed in 1989. Due to enormous change in building technology, evolution in latest office design concept and changed scenario in commercial building requirements, NEA modified the existing master plan through the Consultant 'Designer Pavilion (P) Ltd. For further improvement of the Project, NEA has selected the joint venture consortium of "BDA nepal (P.) Ltd., Innovative CREATEERS Architects & Engineers Pvt. Ltd. and MRB Associates." The detail design of Corporate Office Building was completed in FY 2070/71 by the Consultant.

Project Development Department invited a bid for the pre-qualification of the contractor for the construction of NEA corporate office building at existing NEA premises, (towards southern end of the existing property) located at NEA head office, Durbarmarg. The project consists approximately rectangular building of 40 m x 29 m (Gross floor area just above 1100 m2 at the basement level). The building is of 16 floor + 2 attic floor above ground, double basement for parking. (Floor area approximately 16,000 Sqm).From the invited contractors, the pre-qualified contractors have been short listed and evaluation report has been prepared. PDD has applied for the construction license in Kathmandu Metropolitan City Office in this fiscal year. The construction of the building is planned to be started in the coming fiscal year 2073/2074.

Environment and Social Studies Department

Environment and Social Studies Department (ESSD) is one of the integral departments of Engineering Service Directorate of NEA. This department executes all activities related environmental and social aspects of hydropower and transmission line projects which are being planned, designed, constructed or operated by NEA. This department is a commercial wing 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), Resettlement Action Plan (RAP), Land Acquisition and Compensation Plan (LACP) studies along with environmental monitoring and implementation of mitigation measures and community support programs of hydroelectric, transmission line and distribution line projects.

During the fiscal year 2015/16, ESSD was actively engaged in environment and social studies, monitoring and protection of the environment. The department has successfully completed and get clearance from concerned ministry/ donor for EIA of 2 projects, IEE of 5 projects, IEE ToR of 3 projects, and social safeguard report (VDCP) of 1 transmission line projects. The environmental

studies conducted by ESSD in fiscal year 2015/2016 and their status are as follows:

1. Study Reports approved by Concerned Ministries

a. Ministry of Population and Environment

- EIA of Tamakoshi V Hydroelectric Project (87MW)
- EIA of Upper Trishuli 3'B' Hydroelectric Project (37 MW)

b. Ministry of Energy

- IEE of Tamakoshi-Kathmandu 400kV TL Project
- IEE of Chilime Trishuli 220 kV TL Project
- IEE of Kaligandaki Corridor (Dana-Kushma) 220 kV TL Project
- IEE of Kushma-Lower Modi 132kV TL Project
- IEE of Bhulbhule-Middle Marsyangdi 132kV TL Project
- ToR of Koshi Corridor (Basantapur-Change) 220kV TL Project
- ToR of Burtibang-Paudi Amrai-Tamghas-Sandhikharka-Gorusinghe 132kV TL Project
- ToR of Naubishe-Matatirtha 33kV TL Project

2. Study Reports Cleared by Donor Agencies

- VCDP report of Hetauda-Dhalkebar-Duhabi 400kV TL Project (World Bank)

3. Study Completed by ESSD

a. EIA Completed Projects

- Garjyang-Khimti 132kV TL Project
- New Modi-Lekhnath 132kV TL Project
- Supplementary EIA

b. IEE Completed Projects

- Kaligandaki Corridor (Kushma-New Butwal) 220kV TL Project
- Burtibang-Paudi Amrai-Tamghas-Sandhikharka-Gorusinghe 132kV TL Project
- Naubishe-Matatirtha 33kV TL Project
- Kushaha-Kataiya 132kV TL Project

c. ToR Completed Projects

- ToR of Lekhnath-Damauli 220kV TL Project
- ToR of Raxual-Parwanipur 132kV TL Project
- ToR of Butwal (Gorusinghe)-Lumbini 132kV TL Project

Public Hearing of Modi-Lekhnath 132kV TLP, Hemja, Kaski

- ToR of Kushaha-Biratnagar 132kV TL Project
- ToR of Dordi Corridor 132 kV TL Project

ESSD has been undertaking environmental monitoring and mitigation of three under-construction hydroelectric projects (14MW to 60MW), one rehabilitation hydro-project (144MW) and eight under-construction transmission line projects ranging 132kV to 400kV by establishing Environmental and Social Management Unit (ESMU) at project site. Under mitigation and enhancement programs, different activities were conducted in this FY 2015/16 and their status is as follows;

Kaligandaki A HEP Rehabilitation Project (144MW)

- The ESMU was established at Mirmi of Srikrishna Gandaki VDC, Syangja in Sept. 2015

Fishing Boat Handover to Bote Families, Syangja

- Under livelihood support program, ESSD distributed 4 fishing boat, 16 paddles and 16 life jackets and 17 fishing nets to 17 resettled Bote families on May 19, 2016.

Upper Trishuli 3"A" HEP (60 MW)

- The ESMU implemented 15 days, Agricultural Productivity Intensification Training for 60 people at Nuwakot and Rasuwa districts.

Participants of Agricultural Training Program in Nuwakot

Kulekhani III HEP (14 MW)

- A two-days training on Forest Management and Wildlife Conservation was organized for 21 participants of project affected forest user groups at Rastriya Secondary School, Bhainse.

Participants of Forest Management and Wildlife ConservationTraining, Makwanpur

Chameliya HEP (30MW) and Balanch Attariya 132 kV TL Project

- Furniture and necessary school equipment were provided to 20 schools of 5 project affected districts under school support program.

Hetauda-Dhalkebar-Duhabi 400 kV TL Project

- A three-day forest management and conservation program was organized at 10 places where a total of 250 people participated.
- A one-day social awareness program was organized at 8 different places in which a total of 428 locals participated.
- A one-day safety training was organized at three different places which benefitted a total of 53 participants.
- The Nagar Dihibar Temple required relocation due to construction of Dhalkebar substation of the 400kV Project. The relocation was started under the community support program.

Hetauda-Bharatpur 220 kV TL Project

- A one-day health and sanitation awareness program for project workers was organized at two places which benefitted 40 participants.
- Under the school support program, fencing of the Jutpani Secondary School was completed.
- A 1000 liter water tank with pipe connecting accessories were handed over to Shree Matrisahayog Rastriya Primary School of Birendranagar VDC.
- In order to improve the water supply system of the project affected community of Chainpur Kunaghari, a 7.5 HP motor and 630m pipe (2-inch) was provided to the community.
- Under community support program, the construction of a temple shed at Amritpani of Birendranagar VDC, Chitwan is nearly completed.

Relocation of Nagar Dihibar Temple, Dhalkebar

Fencing of Jutpani Secondary School, Jutpani VDC, Chitwan

Bharatpur-Bardghat 220 kV TL Project

- A three-day Forest Conservation Awareness Program was organized at two places- Gaidakot and Kawasoti of Nawalparasi. A total of 51 participants from the affected Community Forest Users Groups (CFUGs) attended the program.
- A one-day Wildlife conservation awareness program was organized at Gaidakot and Kawasoti municipalities of Nawalparasi for 50 participants from the project affected CFUGs.

Kabeli Corridor 132 kV TL Project

- Under the compensatory plantation, a total of 76,800 seedlings were planted in 47.13ha in Jhapa, Ilam, Panchthar and Terhathum.
- A seven-day agriculture training and assistance program was conducted in Ilam and Panchthar districts where a total of 94 locals participated.
- A three-day Livestock farming training and assistance program was conducted ion Ilam and Panchthar which benefitted 108 participants.
- A seven-day NTFP training was conducted at Birtamod and Phidim where 90 community forests users participated.

Distribution of piglet under the Livestock training and assistance program at Phidim

- One-day biodiversity conservation program and one day social awareness program were conducted. All 20 awareness program has been completed in project affected areas and out of 40, 37 biodiversity program has been accomplished.

Dumre–Damauli 132 kV TL Project

- School Support Program at 4 schools, Inter-School Quiz program at 6 Schools and pamphlet distribution program were carried out at different location of project affected areas.

Samundratar-Trishuli 3B Hub 132kV TL Project

- An ESMU has been set up at the project site in this FY 2015/16.
- One-day awareness programs were conducted at five different places in the project area. In each program, 25 people participated.

Bhulbhule-Middle Marsyangdi 132kV TL Project

- An ESMU has been set up at the project site in this FY 2015/16.

In addition to these activities, ESSD has published its first bi-annual newsletter (ESSD-Newsletter). The newsletter covers all the activities of ESSD carried out from January to June, 2016.

SOIL, ROCK AND CONCRETE LABORATORY

Soil, Rock and Concrete Laboratory (SRCL) established and developing as Geotechnical Department is under the Engineering Services Directorate of Nepal Electricity Authority. 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 2072/73

1) Geological and geotechnical investigation works of Tanahu Hydropower Project:
   This project is being developed by Tanahu Hydropower Limited; a subsidiary company of Nepal Electricity Authority (formally Upper Seti Hydroelectric Project) in Tanahu district. Geological and geotechnical investigation works including 500 m adit tunnel geological mapping, widening of existing test adit at power house (size 10 * 6* 4 m) and 142 m core drilling at dam site of the project has been completed in this fiscal year.
2) Geological and geotechnical investigation of Uttarganga Storage Hydropower Project:-
   In total 7.0 km geophysical survey (ERT) at Dam-site area, Surge tank area and Powerhouse area of Uttarganga Storage Hydropower Project (Phase I) has been completed in this fiscal year. The geotechnical investigation works includes core drilling of 75 m at proposed Powerhouse location and construction material survey has been completed in this fiscal year. MoU has been signed for additional core drilling works of Phase II (370 m).
3) Geological and geotechnical investigation works of Tamor Storage Hydropower Project:-
   The geotechnical investigation works includes core drilling of 50 m and construction material survey has been completed in this fiscal year. Core drilling of 650 m is in progress.
4) Geological and geotechnical investigation works of Upper Tamakoshi Hydroelectric Project:-
   Geotechnical investigation works includes exploratory borehole drilling of 270.60 m has been completed in this fiscal year.
5) Geological and geotechnical investigation works of Supper Dordi 'Kha' Hydroelectric Project:-
   Geotechnical investigation works includes borehole drilling of 140 m has been completed in this fiscal year.
6) Geological and geotechnical investigation works of Kaligandaki 'A' Hydroelectric Project:-
   Geotechnical investigation works includes borehole drilling of 200 m has been completed in this fiscal year.
7) Geological and geotechnical investigation works of Marsyandi Corridor 420 kV Transmission Line Project:-
   Detail engineering geological mapping from Dharapani, Manag to Markichok, Tanahu (82 km) at the scale of 1:1000 has been done by SRCL in this fiscal year.
8) Geological and geotechnical investigation works of Chilime – Trishuli 132 kV Transmission Line project
   Geotechnical investigation works includes bearing capacity calculation after dig test pit in this fiscal year.
9) Geophysical investigation works of Kulekhani I Hydroelectric Project:-
   Geotechnical investigation works includes 1500 m GPR and ERT survey at dam site has been completed in this fiscal year
10) Geotechnical investigation and Laboratory works of DCS, Maharajgung Branch:-
   Geotechnical investigation works includes dig of three test pit of dimension 3*3*3 m and laboratory test has been completed in this fiscal year.

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.

- Laboratory testing works (Uniaxial Compressive Strength, Point Load, absorption, Specific gravity and density test on Core samples) of Uttarganga Storage Hydroelectric Project.
- Construction Material Investigation and reserve quantity estimation of Uttarganga Storage Hydroelectric Project.

Core drilling at Dam site of Upper Tamakoshi Hydroelectric Project.

- Construction Material Investigation and reserve quantity estimation of Tamor Storage Hydroelectric Project.
- Laboratory test on core samples of Upper Karnali Project (GMR Pvt. Ltd.)
- Laboratory test works on Core samples of Upper Tamakoshi Hydroelectric Project.
- Laboratory test works of Chilime – Trishuli 132 kV transmission line project.
- Laboratory test works on soil samples of DCS branch Maharajgunj.

ERT Works at Uttarganga Storage Hydroelectric Project

- Laboratory test of various projects rock and soil core sample.
- Laboratory test works (Alkali reactivity (AAR) bar method and Prism method) on construction materials of Tanahu Hydropower Project, Tanahu.

ELECTROMECHANICAL DESIGN DIVISION

Electromechanical Design Division is established to provide technical supports for all electro-mechanical issues within Engineering Services Directorate. The issues range from the design of electro-mechanical and hydro-mechanical equipment of hydropower projects under various stages of study as well as electrical wirings for the project buildings. Apart from the design issues, this division also runs Central Workshop in Hetauda and produces concrete poles through its two plants, one in Kotre and other at Amlekhgunj. In Fiscal Year 2073/074, this division is planning to establish a new concrete pole plant in Eastern part of the country. This division is also studying for establishment of telescopic concrete pole plants in the near future.

CENTRAL WORKSHOP

Located at Bhairav Road, Hetauda-5, Makawanpur and established in 2055 BS, the Central Workshop has been contributing to Nepal Electricity Authority being an entity under Engineering Service Directorate with its purpose of repairing Distribution and Power transformer of Regional Offices of NEA, Power transformers of

Transformer Maintenance in Progress

various Hydropower Plants, testing of transformers and providing the available heavy-equipment on rent. Considering the increasing demand of electricity in Nepal and contributing to maintain best quality of supply, transformer itself being a major component of power system, the workshop has been striving to its best, using its available resources to meet time bound repair and testing services.

Major Accomplishment of FY 2072/073

- Repaired highest numbers of distribution transformer (433 numbers) till FY 2072/073
- Repaired 15 MVA, 132/11 kV Power Transformer of Bardaghat S/S, Butwal Regional Office.
- Tested highest numbers of transformer (2361 numbers) till FY 2072/073
- Completion of Transformer Test Bench Project

Kotre Pole Plant, Kotre

It is Located in Dulegauda-2 VDC, Kotre of Tanahun District and 180 km west from Kathmandu. Kotre Pole plant was jointly established by GoN and FINIDA in 2042 BS to implement for Pokhara Electrification Project. In FY 2061/062, it was

handover to Engineering Service Directorate. Since then, the plant was maintained and started to produce PSC pole commercially. Being a wing of Electro-Mechanical Design Division, now it has been running with separate Budget Centre to implement pole production and distribution activities. Currently, the plant has been producing 10.5 m & 8.5 m PSC Poles. In current FY, the plant is planning to procure a Truck with trailer for pole transportation, to construct an office building with cement storage building at Kotre, to procure and install a new concrete mix batching plant at Kotre, and to upgrade the plant with new 9m & 11m poles moulds. After the upgrading, the plant is expected to produce 62 poles per day.

Kotre Pole Plant Up-grading Progress

Pole Production Target for F/Y 2073/074

8.0 m Length PSC Pole:	6,880 Nos
9.0 m Length PSC Pole:	3,440 Nos
10.4 m Length PSC Pole:	860 Nos
11.0 m Length PSC Pole:	1,720 Nos
Total	12,900 Nos.

Concrete Pole Plant, Amlekhgunj

Located at Amlekhgunj road, Bara and established in 2051 BS, the pole plant has been contributing to Nepal Electricity Authority being an entity

The achievements of the workshop in the last three fiscal years are tabulated below:

S.N.	Description	F.Y. 2070/071	F.Y. 2071/072	F.Y. 2072/073
1	Distribution Transformer Repair	393	363	433
2	Power Transformer Repair	7	12	10
3	Transformer Testing	1250	1909	2448
4	Heavy Equipment (in Thousand NRs.)	-	4,543.08	5937.59
5	Turnover (in Thousand NRs.)	36501.77	38555.92	49760.24

Pole Production at Concrete Pole Plant Amlekhgunj

under Engineering Services Directorate with its objectives of producing of 8 m, 9 m, 11 m sizes PSC poles for distribution to Regional office of NEA and private firm as well. Since the permanent employees are not sufficient to meet the current production target, so daily wages employees are also involved. PSC polesare easy and convenient for handling especially to the rural area as well as town area where other supplement is not reachable. The main aim of the plant is to produce and maintain the best quality of PSC poles supply with manufacturing capacity of about14,000 poles per annum. The plant has been striving to its best using its available manpower and resources to meet time bound production and delivery of the poles.

NEA TRAINING CENTER

The term training refers to the acquisition of knowledge, skills, attitude and conception as a result of the teaching of vocational or practical skills and knowledge that relate to specific useful competencies. As human resource is one of the most important ingredients of any organization and for its development, training is indispensable for the survival and advancement of the organization. So investment in training is treated as corporate assets of organization.

For upgrading and enhancing the skill, knowledge and attitudes of human resources, NEA Training Center (NEATC) is another important Department which is providing need based short term trainings of 1 day to 21 days 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 was supposed to conduct 51 nos. of Training Programs to different business groups of NEA as per its yearly

Production, Revenue, Profit Chart

S.N.	TYPE OF POLE	F/Y 071/072	F/Y 072/073	REVENUE EARNED IN F/Y 072/073	PROFIT EARNED IN F/Y 072/073
1	8 m	9006	6212	8,11,99,654.74	1,02,46,345.25
2	9 m	4573	3563		
3	11 m	1213	1002		
Total		**14792**	**10777**		

Summary of trainings conducted on F.Y. 2072/73 by Training Center is presented below

List of Trainings conducted in the F.Y. 2072/73

S.N.	Name of Training	Level	Services	Days	No. of Trainees
1	Occupational Safety & Health	Asst.	Tech.	5	15
2	Operation and Maintenance of Hydropower Station (Advance)	Officer	Tech.	6	22
3	Primevera P6	Officer	Tech.	10	23
4	Training for Lathe Operators	Asst.	Tech.	6	15
5	Basic Auto CAD (2D)	Officer	Tech.	9	17
6	Arc GIS 10.3	Officer	Tech.	9	17
7	Maintenance of Hydraulic Systems (Basic)	Officer	Tech.	6	10
8	Advance Excel with VB (Basic)	Officer	Tech.	8	18
9	Vehicle Maintenance	Asst.	Tech. (Drivers)	12	21
10	Repair and Maintenance of Air Conditioning System	Asst.	Tech.	11	19
11	Inventory Management	Asst.	Account	6	20
12	MS Office Package (Basic)	Asst.	Admin / Account	13	18
13	Distribution Transformer Repair and Maintenance	Asst.	Tech.	10	20
14	Basic Fittings and Machining Process	Asst.	Tech.	12	13
15	Accounting System (Basic)	Asst.	Account	10	24
16	Fake Note Detection (11 nos. of Trainings Conducted in all 8 Regional Offices of DCSD)	Officer & Asst.	All	1	762
	Total				**1034**

calendar published. But due to various reasons (Massive earth quake, long term blockade in the country etc.) only 15 nos. of Training Programs for the staffs of NEA in different fields of specialization was materialized. In addition to this NEATC organized 11 nos. of one day Fake Note Detection Training (FNDT) to the staffs working in cash counters and other related staffs working in DCSD. This FNDT program was conducted in all 8 Regional Offices of DCSD. During the year under review, a total of 1034 participants participated in those training programs. In addition to training programs, NEATC provides seminar halls, class rooms, hostels and ground space on rental facilities to different users, groups/organizations etc. on their request. Engineering colleges, Political Parties, Film Shooting Unit and various organizations used the facilities available in the Training Center for various purposes. The total income generated from these services amounted to Rs.43,21,974.50. The Training Center has also provided space and services for various offices of NEA in its premises at Kharipati, Bhaktapur.

Renovation of infrastructures in NEATC, damaged by 2015 April's massive earth quake, is going on.

Group Photo after certificate distribution

Project Management Directorate

Project Management Directorate in the Nepal Electricity Authority Organogram has a role to facilitate projects funded by Asian Development Bank. It is responsible for preparation, procurement and construction of all new ADB projects starting with SASEC- Power System Expansion Project (RRP NEP 44219). In addition, PMD continues to coordinate, monitor and report the implementation activities of the projects that are being run under Energy Access and Efficiency Improvement Project (ADB Loan 2587, Grant 0182 and Grant 0183), Electricity Transmission Expansion and Supply Improvement Project (ADB Loan 2808, Grant 0270 and Grant 0271) and Project Preparatory Facility for Energy (PPFE).

PROJECTS BEING CURRENTLY EXECUTED BY PMD:

1. Samundratar-Trishuli 3B 132 kV Transmission Line

The Samundratar-Trishuli 3B Hub 132kV Transmission Line project is a must to evacuate power from different hydropower projects to be developed by IPPs in the districts of Nuwakot. The project includes construction of 26 km double circuit transmission line from Samundratar to Trishuli 3B Hub and new 132/33kV, 2x30MVA Substation at Samundratar, Nuwakot. Further, in coordination with ADB, the project financing agreement has been completed with European Investment Bank (EIB) to provide funding (Loan) of US$ 12.0 Million. The award of contract for the procurement of works for the construction of transmission line has recently been concluded. The project is expected to be completed by FY 2075/76.

2. Marsyangdi Transmission Corridor Project

Marsyangdi Transmission Corridor Project has been envisaged to evacuate approximately 1500 MW of power generated by various hydropower stations in the Marsyangdi River Corridor. The project comprises of construction of 115 km long Double Circuit Transmission Line from Manang (Dharapani) to Khudi (32km), Khudi to Markichok (53km),Markichok to Bharatpur (30km) and 220/132/33kV substations at Dharapani , Khudi, Udipur, Markichok and bay extension at Bharatpur Substation. The estimated cost of this project is US$ 100 Million which is being funded by EIB and GoN. The project is expected to be commissioned by FY 2075/076 (2018/019).

3. Marsyangdi-Kathmandu 220 kV Transmission Line Project

The objective of this project is to increase power evacuation capacity of the Marsyangdi Corridor which ultimately will reinforce the INPS. The cost of this project is estimated at US$ 50 Million, which is jointly funded by ADB, Government of Norway and Government of Nepal (GoN). Also, the project will construct 220kV Double Circuit, 85 km TL from New Marsyangdi (Markichok) to Matatirtha and 220/132kV substation at Matatirtha and bay extension work at New Marsyangdi (Markichok) substation. The contract for the construction of the transmission line has been awarded and the bid for the construction of substation has been invited. The project is expected to be commissioned by FY 2075/076 (2018/019).

4. Kaligandaki Corridor 220 kV Transmission Line Project.

The prime objective of this project is to increase power evacuation capacity of the Kaligandaki

River Corridor which ultimately will reinforce the INPS. The cost of this project is estimated to US$ 132.4 Million and is jointly funded by ADB, Government of Norway and GoN. The project is expected to be commissioned by FY 2075/076 (2018/019). Furthermore, the project includes construction of 38.2 km Double Circuit 220kV line from Dana (Myagdi) to Kusma (Parbat), 71.7 km Double Circuit 220 kV from Kusma(Parbat) to New Butwal S/S, 45 km Double Circuit 400 kV from New Butwal S/S to Bardghat (Nawalparasi) and 220/132/33kV substations at Dana, Kusma, New Butwal and Bardghat. The land acquisition for Kusma and New Butwal has been completed. The IEE of Dana-Kusma section has been completed. Further, the survey works of Kushma -New Butwal section has been completed.

The contract of transmission line for Dana-Kusma section with substation at Dana & Kusma has been awarded. The Invitation for Bid for the transmission line of Kusma- New Butwal section has been recently published.

5. Grid Substation Capacity Expansion Project

The objective of this project is to reinforce & upgrade various existing substations. The project has activities in following substations. i) Gandak Substation ii.) Butwal Substation iii.) Bharatpur Substation iv.) Kawasoti Substation v.) Damauli Substation vi.) Banepa Substation vii.) Dhalkebar Substation and vii.) Lahan Substation

The construction works is expected to be commissioned by FY 2074/75.

6. Distribution System Augmentation and Expansion Project

The main objective of this project is to construct twenty five new substations and upgrade eleven existing substations along with distribution lines at various locations of the country. Further, upon completion this project will increase the substation and distribution line capacity such that it can meet the increased demand. The cost of the project is estimated at USD 46 Million and is scheduled to be completed by FY 2074/75. The project shall increase electricity access to people with enhanced quality and reliability. The contracts have been awarded for all three Lots namely:

Lot 1: Expansion of Distribution Network in the Eastern Region including 13 substations, lines and transformers of this project have been awarded.

Lot 2: Expansion of Distribution Network in the West Regions including 12 substations, lines and transformers

Lot 3: Reinforcement of distribution system including 11 substations upgradation

7. Project Supervision Consultant Project

The objective of this project is to undertake various Supervision and Procurement support of the High Voltage Transmission and Distribution system projects through a consulting firm for SASEC Power System Expansion Project like:

- Review and assist the Employer on approval of contractor's design in accordance with the Employer's requirements and technical specifications in the contract,
- Provide oversight of all aspects of the construction in order to assure that it is conducted properly in accordance with the contract
- Develop and implement a quality assurance program for review and approval of design; construction; monitoring schedule; inspection of materials before shipment, upon arrival and upon erection; review of documents to assure quality of delivered goods; comparison of as-built drawings to design; and in addressing shortcomings in any of these areas
- Supervise the testing and commissioning of all components of the lines, substations, SCADA, communications and protection to demonstrate their capability to meet warranted design criteria and addressing any lack of compliance(if any).

The Request for Proposal (RfP) for this consulting services has been invited to six shortlisted bidders. The consultancy works is expected to be commenced by November 2016.

8. Distribution System Master Plan Project

The principal objective of this project is to prepare a Rural Electrification Master Plan of Nepal (REMP-N) for the entire country, with emphasis on the generation and distribution of electricity for enhancement of livelihoods in the remote settlements of the country in an efficient way. A consulting firm will be engaged to work closely with NEA to develop the master plan. The overall objective of the assignment is to identify the least cost and economically viable means to reinforce, upgrade and expand Nepal's electricity system, including on- and off-grid, to achieve universal access to electricity 2025. The master plan will include policy recommendations, a comprehensive electrification and distribution augmentation program and detailed case studies.

The Expression of Interest (EoI) is in the process of being evaluated and the services is expected to be commenced by February 2017.

NEA's Subsidiary 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 scheme has an installed capacity of 22.10 MW, generating 20 MW based on the power purchase agreement with Nepal Electricity Authority (NEA). The project 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.

Chilime Hydropower Plant (CHPP)

In Fiscal Year 2015/2016 Chilime Hydro power Plant was able to transmit an excess of 15.52% of energy in addition to the deemed energy (132.795GWh) which was 4.46% greater than previous year.

The total delivered energy to NEA was 155.276 GWh

There were several NEA Outages occurred in this fiscal year due to grid failure by discontinuation of transmission line. Out of total 3647 MWh of outage the major outages were occurred on Ashadh which was 1669 MWh of energy loss.

Under the scope of Corporate Social Responsibility (CSR) activities in the fiscal year 2015-16, Chilime has spent almost 5.0 million in community and local development works like health, education, infrastructure, drinking water, irrigation etc.

Sanjen Jalavidhyut Company Limited (SJCL)

Sanjen Jalavidhyut Company Limited (SJCL), a subsidiary of Chilime Hydropower Company Limited (CHPCL) was established on 1st February, 2010 AD. SJCL is developing two hydroelectric projects, namely, Sanjen (Upper) Hydroelectric Project (SUHEP) (14.8 MW) and Sanjen Hydroelectric Project(SHEP) (42.5 MW) in cascade, with its own equity and loan from financial institutions of Nepal. Both the projects' financing mechanism is 50:50 Debt: Equity ratio. 51% of the equity part is invested by the promoters of the company, which is composed of CHPCL (38%), Nepal Electricity Authority (10%) and District Development Committee (DDC) and all 18 Village Development Committees (VDCs) of Rasuwa (3%). For financing the remaining 49% of the investment, SJCL will raise through share participation of the public, which is composed 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

- Consultancy Services: SMEC International Pty. Ltd., Australia has been undertaking the Detailed Engineering Design & Construction Supervision of both projects.
- Lot 2 Civil Works:
- Lot 2 Contractor for SUHEP is ECI-BGCCPL J/V and progress is as follows:
- Concreting on weir and undersluice are in

A= Construction of weir and undersluice, B= Inclined enstock Tunnel Construction Work,
C= Penstock Pipes at NHE, D=Turbine Assembly

progress. Desander construction works are in progress. Total 1143 m tunnel construction works are completed out of 2140 m which includes headrace tunnel, penstock tunnel, adit tunnel, surge shaft adit, aeration tunnel and valve chamber tunnel. 32m vertical Surge shaft has been break through. Desander RCC works are in progress, Valve Chamber with Penstock tunnel break through. Powerhouse excavation works in progress.

- Lot 2 Contractor for SHEP is SEW-TUNDI J/V and progress is as follows:
  - Total 905.5 m tunnel construction works are completed out of 5200 m tunnel which includes headrace tunnel, penstock tunnel, adit tunnels and aeration tunnel. The inclined portion of penstock shaft and HRT are in progress.
  - Powerhouse excavation almost completed.
  - Two Bailey bridge over Bemdang Khola and Chupchung Khola on the access road to project site has been installed.
  - Excavation of headworks area is in progress.
- Lot 3 Electromechanical Works: Lot-3 contractor for both projects is Dongfang Electric Corporation, China. Under this contract fabrication of electromechanical equipment in China are in progress. Factory Acceptance Test at Manufacture's premises by the Emlpoyer & Engineer is started.
- Lot 4 Hydromechanical Works: Lot-4 contractor for both projects is Nepal Hydro & Electric (NHE). Under this contract fabrication of hydromechanical components of both projects are in progress. Factory Inspection Works at Contractors premises by the Employer and Engineer are being started.
- Lot 5 Transmission Line Works: Detail Design of 132 kV transmission line works and IEE

works are in progress. Total 7 km 132 T/L upto Chilime Hub needs to construct under Lot 5. The construction of Chilime Hub & 220 kV T/L from Chilime-Trishuli- Mathatirtha is entire responsibility of NEA.

The projects have conducted numbers of activities at project affected areas under Corporate Social Responsibilities (CSR) such as providing teachers to the local schools, eye camp, Dental Camp, Construction of foot trails, providing toilets, drinking water etc. Moreover, project affected 18 households have been successfully relocated.

A total of 324.31 GWh of electricity will be added into NEA Grid upon completion of these two projects. The total cost of the two projects is NRs. 7.24 billion excluding IDC (2011 price level).

Rasuwagadhi Hydropower Company Limited

Rasuwagadhi Hydroelectric Project (111MW)

1. Introduction

Rasuwagadhi Hydropower Company Limited (RGHPCL), promoted by Chilime Hydropower Company Limited (CHPCL) and Nepal Electricity Authority (NEA), was established in Shrawan 17, 2068. The company is developing Rasuwagadhi Hydroelectric Project (RGHEP) having capacity of 111 MW in Rasuwa district. The project is accessed with Kathmandu - Trisuli - Rasuwagadhi road of 150 km North from Kathmandu. The project was planned to be completed in August 2017, but the devastating earthquake of April 2015 has severely affected the project construction works. After a continuous effort with series of discussions and meetings with the contractors, the project construction works has now been resumed.

2. Capital Structure of the company

The company has planned to manage the capital requirement for the construction of the project from debt and equity with ratio of 50:50. The debt requirement has been managed from Employees Provident Fund (EPF), under the long term loan agreement signed on 22nd Marg, 2068. The equity portion has the investment proportion of 51% promoter share and 49% public share. The promoter share comprises of 33% from Chilime Hydropower Company Ltd. (including 3% from VDCs and DDC of Rasuwa district) and 18% from Nepal Electricity Authority. The public share constitutes Depositors of EPF (19.5%), Employees of Promoter & Investor Institutions (4.5%), General Public (15%) and Local (10%).

3. The Project

The project is located in Thuman and Timure VDC of Rasuwa district. The headworks site is about 400m downstream from the confluence of Kerung and Lende khola which are the Boundary Rivers between Nepal and China. The project is a run-of-river type having installed capacity of 111 MW and the annual energy generation will be 613.875 GWh.

Key Features of the Project:

Type of Project:	Run-of-River(ROR)
Design Discharge (Q_{40}):	80.00m^3/s
Geology:	Quartzite, Migmatite and Gneiss Rock
Gross Head:	167.9 m
Headwork:	Overflow diversion Weir with Undersluice and Side Intake
Desander, Type and Size:	Underground (3 -125mx15mx12m)
Headrace Tunnel length and size:	4203m, dia. - 6m~7m
Powerhouse type and size:	Underground, 76.3m x 15.0m, 35.5m
Turbine, Type & No:	Francis, Vertical Axis & 3 Nos.
Turbine Unit Capacity	38.50 MW each
Generator, Capacity & No.:	3 phase Synchronous AC, 3x43.75 MVA
Installed Capacity:	111.0 MW
Annual Energy Generation	613.87GWh
Dry Months Energy	84.32GWh
Wet Months Energy	529.55GWh
T/L length, Voltage	10km, 132kV Double Circuit up to Chilime Hub

The construction of the project has been categorized into three different Packages (Lots). For the construction of Lot 1: Civil and

Headworks area of the project before April, 2015 earthquake

Hydro-Mechanical Works under Engineering, Procurement and Construction (EPC) contract model, contract agreement has been signed with M/S China International Water and Electric Corp. (CWE), on 5th January, 2014. Similarly, for Lot 2: Electromechanical Works, contract agreement has been signed with M/S VOITH Hydro Pvt. Ltd, India on 31st July, 2014. Lot 3: Transmission Line works includes construction of about 10 km long 132 kV double circuit transmission line. The project Consultant for Lot 1 & 2, M/S SMEC International Pty. Ltd., Australia has continuously supervising the construction works, reviewing the designs submitted by the contractors and co-coordinating the contractors for smooth operation of construction works activities.

4. Present Status of the Project

The work progress before April, 2015 earthquake was impressive and in line with the scheduled time as per PPA. However, after the hard time faced as a result of the aforesaid earthquake followed by the scarcity of construction materials and fuels due to the blockade, the Company has been successful in remobilizing the contractors and resumption of construction works of the project.

The progress summary of the major project activities are as follows:

4.1 Infrastructure works

- Because of the continuous landslides during rainy season, maintenance of the 16 km long 11 kV transmission line for the construction power of the project is continuously being carried out.
- The construction of Employer's Camp Facilities on Ghatte khola, Timure, was under construction and the major structural components were in final stage of completion before earthquake. However, due to the effect of Earthquake and continuous landslides from the nearby hilly terrain, the further construction works has been stopped. As an alternative, the construction of Employer's temporary camp facilities (Pre-fab buildings) on the right bank of the Bhotekoshi river near to Adit 2 was proceeded and the construction works is in progress.

4.2 Lot 1: Civil and Hydro-Mechanical Works

Works at Intake & Undersluice before Earthquake

Excavation works at R/B Intake cut slope

Almost all access tunnels (adits) has already been completed. The excavation and support works in

Rockbolts Grouting in Desander Operation Tunnel

Headrace tunnel from Adit-2.

the underground powerhouse and transformer cavern is ongoing. The pilot tunnel excavation using raise boring machine for vertical penstock shaft and surge shaft has been completed. The excavation and support works of headrace tunnel and underground desander is continue and the desander intake tunnel excavation and support works is in the final stage.

Excavation of undersluice/ intake area up to foundation level and jet grouting piles for foundation treatment had been completed before earthquake but it has been completely filled with debris after the earthquake. After this rainy season, the re-construction of new coffer dam and then the re-excavation for the foundation of intake and undersluice will be stated to proceed the construction of permanent structure at Headworks area

Inspection of headrace tunnel

Desanding Basin Cavern

The contractor has now concentrated in major underground works during this rainy season. Presently, the contractor has mobilized about 125 Chinese and 250 Nepalese manpower at site.

4.3 Lot 2: Electro-Mechanical Works

For the construction of Lot 2: Electromechanical Works, contract agreement has been signed with M/S VOITH Hydro Pvt. Ltd, India on 31st July, 2014. The contractor has been mobilised and the detail design and manufacturing of the project components is ongoing.

4.4 Lot 3: Transmission Line Works

Detail survey of 10 km long double circuit 132 kV transmission line has been completed and the detail design is in progress. Initial Environmental Examination (IEE) for Transmission Line has been approved. The process for procurement of contractor for this lot is in progress.

The overall progress of the project construction works is an approximately 30%.

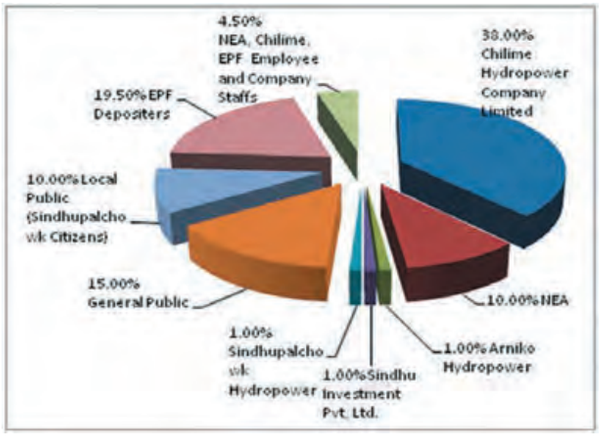
Madhya Bhotekoshi Hydroelectric Project (MBKHEP-102MW)

Madhya Bhotekoshi Jalavidyut Company Ltd. (MBJCL), a subsidiary of Chilime Jalavidyut Company Limited, is constructing Middle Bhotekoshi Hydroelectric Project (102 MW) located in Sindhupalchowk District of Bagmati Zone of the Central Development Region.

I. Capital Structure

The Company has planned to manage its capital requirement from Debt and Equity under the debt equity ratio of 50:50 excluding IDC cost. Financial closure has been made for the debt part which is managed through a long term loan agreement with the Employees Provident Fund (EPF)'s Office. The equity investment will be made from

51% promoter share and 49% public share. Details of shareholdings are as follows:



II. Major Project Activities

The activities of the project are highlighted below:

1. Land acquisition Activities:

Among the land required for construction and other purposes, the private land constitutes about 365 ropani for which the acquisition process has been completed and the compensations for 276.71 ropani has already been distributed. The estimated compensatory amount for private lands' acquisition stands at NRs. 86.5 Million out of which NRs. 55 Million has already been distributed. The leased private land for temporary usage stands at 160 ropani. The government land including community forest required for the project purpose is 14.69 hectares out of which 10.11 hectares lie in the three different community forest of Gati VDC, and 4.54 hectares lie in the Gaurishankar Conservation Area Project of Marming VDC.12.89 hectares of government land including community forest is required for short term lease (muck disposals) and only 1.80 hectares is necessary for construction of permanent structures like Headworks, Access Roads etc. The approval on the use of government land including community forest is being processed at Ministry of Forest and Soil Conservation (MoFSC).

2. Construction Activities

The Construction works are divided into following three contract packages excluding the construction of camp facilities for employer/consultant:

- Lot 1: Civil and hydro-mechanical works on EPC contract model.
- Lot 2: Electromechanical works on PDB contract model.
- Lot 3: Transmission line and substation on PDB contract model.

2.1.1 Construction of Camp facilities for Employer and Consultant

The construction of the camp facilities for the employer company and its consultant is near to its completion.

2.1.2 Lot 1: Civil and hydro-mechanical works

The contract agreement with the LOT 1 contractor was made on Jan 01, 2014 and the work commencement was provided on Feb 11, 2014. Major achievements by Contractor for LOT 1 are as follows:

- Adit-1 tunnel (250m long,5m diameter) completed by Himal Hydro on Jan 2013 is

Camp facilities for Employer and Consultant

Upstream Bailey bridge

being enlarged by Contractor for LOT 1 through lowering invert 1 meter;

- Excavation, invert lining, inlet portal and outlet structure of Diversion Tunnel completed;
- Geological boreholes completed;
- Construction of Access Roads to Adit-1, Adit-2 and Surge Tank accomplished;
- Adit-2 tunnel completed and HRT Excavation is being carried out;
- Power house excavation and support has been completed by 50%;

Diversion Tunnel

Adit -2 Tunnel Inlet Portal

Batching Plant at Chaku

Power House Excavation

Batching Plant at Head Works is in operation & Camp facilities for Contractors completed;

Aggregate crushing plant is being installed, New Laboratory Building is in completion stage.

The work progress of the Contractor for LOT 1 is slow due to series of natural disasters like Jure landslide of Aug 02, 2014, followed by the great earthquake of April 25, 2015 and series of

Diversion Tunnel

Diversion Tunnel Outlet Portal

Diversion Tunnel at Chaku

Batching and Crushing Plant at Site no. 10

aftershocks thereafter. The six months and long unofficial economic Indian Blockade continued from September 2015 and the recent flash flood of July 5, 2016 too added to the existing woes.

2.1.3 LOT 2 Electromechanical Works

Contract agreement was made with M/s Andritz Hydro Private Limited, India on July 10, 2014 effective from September 09, 2014. The detailed design is almost completed and manufacturing of major components/equipment are in progress.

2.1.4 LOT 3 Transmission Line and Substation:

The project has obtained the survey license for 220 kV Transmission line from powerhouse to Barhabise substation hub and the topographical survey works for transmission line is completed.

III. Construction planning and scheduling

The planned commercial operation date of the project is June 15, 2017. However, construction activities of project has been disturbed by social as well as natural calamities, and owing to these, the construction schedule is likely to shift by eighteen months.

UPPER TAMAKOSHI HYDROPOWER LIMITED (UTKHPL)

UTKHPL was established on 09 March 2007 as an autonomous public company for the construction and operation of Upper Tamakoshi Hydroelectric Project (UTKHEP) utilizing domestic financial resources. The majority shares (51%) of the company belong to NEA, Nepal Telecom (NT), Citizen Investment Trust (CIT) and Rastriya Beema Sansthan (RBS) with stakes of 41%, 6%, 2% and 2% shares respectively. The company has issued the shares to the contributors in Employees' Provident Fund (17.28%), NEA and UTKHPL staffs (3.84%) and staffs of debtor institutions (2.88%) in the Fiscal Year 2014/15. The remaining 25% of equity capital have been

allocated to General Public (15%) and Residents of Dolkha district (10%).

Project Features

UTKHEP, one of the national pride projects of Nepal, is located in Lamabagar VDC of Dolkha district in Central Development Region of Nepal. The project is a daily peaking run-of-the river project of installed capacity 456 MW with a live storage volume sufficient for four hours daily peaking operation in the driest month. The project will generate 2,281 GWh of energy annually with the available gross head of 822 m and design discharge of 66 m3/s. The major components of the project are as follows:

- 22 m high and 60 m long diversion dam integrated with 35 m wide intake;
- 225 m long and 26 m wide each twin settling basin;
- Headrace tunnel having inverted D-shape section with 6m x 6m size and length 8.45km;
- 3.6 m diameter penstock of length 1,134m;
- Powerhouse cavern (142m x 13m x 25 m) along with a transformer cavern (167m x 13m x 17.5 m);
- 3 km long tailrace tunnel;
- Electro-mechanical equipment consisting of 6 nos. vertical Pelton Turbines (rated power of 79.5 MW each), 6 nos. synchronous generators (rated power of 90 MVA each) and 18 (plus 1 spare) single phase transformers (rated capacity of 90 MVA each) ;
- 47 km long double circuit 220 kV transmission line from Gongar to New Khimti Sub-station.

Power Purchase Agreement (PPA) & Financial Arrangement

PPA for the project has been signed with NEA on 29 December 2010. As per the PPA, the average purchase rates have been fixed as NRs. 3.50 per unit for the base year (2010/11) and NRs 4.06 per unit at Commercial Operation Date (COD). After 9 years of COD with annual escalation of 3%, the average purchase rate will remain as NRs. 5.30 per unit throughout the tenure of PPA.

The project is being financed through debt-equity ratio of 70:30. The financial closure with all financial institutions has been concluded on 12 May 2011 for the required debt portion. As per the separate loan agreements, EPF will invest NRs. 10 Billion as loan and NRs 2 Billion as debenture in the project, whereas NT will invest NRs. 6 Billion as loan. Similarly, CIT and RBS will provide loans of NRs. 2 Billion each. Furthermore, Government of Nepal (GoN) has decided to provide loan upto NRs. 11.08 Billion as the gap funding during implementation of the project.

Project Status

The project is being implemented with four separate contract lots listed as below:

S.N.	Contract Lot	Name of Contractors
1	Lot 1 - Civil Works	Sinohydro Corporation Ltd., China
2	Lot 2 - Hydro-mechanical Works	Texmaco Rail & Engineering Ltd., India
3	Lot 3 - Mechanical and Electrical Works	Andritz Hydro GmbH, Austria
4	Lot 4 - Transmission Line & Substation Works	KEC International Ltd., India

J/V Norconsult AS (Norway) –Lahmeyer International GmbH (Germany) has been entrusted as the Engineer/Consultant for construction supervision of the Project. The project has achieved overall physical progress of 80.5% by the end of the fiscal year 2072/73 (2015/16). The breakdown of progress in major Civil Works is as follows:

SN	Project Components	Progress
1	Headworks Concrete	85.3%
2	Headrace Tunnel Excavation	81.2%
3	Adit/Other Tunnels Excavation	99.2%
4	Powerhouse/Transformer Caverns Excavation	100.0%
5	Tailrace Tunnel Excavation	100.0%
6	P/H and Transformer Caverns Concrete	81.7%

The Lot 2 Contractor has installed second stage embedded parts such as guide frames, sill beams and wall plates of stoplogs and radial gates No. 3 and 4 of the dam. The Contractor has completed all design and fabrication works except for some additional works required after design modification. The Lot 3 Contractor has installed spiral distributors and guide bearing housings in all six units. The Lot 4 Contractor has completed 68 % (87 out of 127) of tower foundation works and erected 38% (48 out of 127) of towers of transmission line. The design and manufacturing of most of equipment to be installed in the New Khimti Sub-station has been completed.

Impact of 2015 Earthquakes and Strikes in Southern Border

The devastating earthquake of 25 April 2015 and subsequent aftershocks have severely affected the project, which was progressing normally until then. In particular, the project access road from Singati to Lamabagar (29 km) was heavily damaged. The earthquake and subsequent aftershocks damaged 5 buildings completely and 3 buildings partially, which were built before the main construction works. The landslides and flashflood as consequences of the earthquakes eroded storage yard of Lot 3 Contractor sweeping away some containers with electro-mechanical equipment and washed away the Bailey Bridge at Gongar.

No significant damages have been observed on permanent structures of the Project including tunnels and caverns except cumulative vertical settlement of 19 cm in the dam/intake. The Consultant, JVNL has submitted the report presenting the factual observation and remedial measures for the displacement at the dam site. The Panel of Experts (PoE) comprising five international experts from USA has given the final report offering additional insights and recommended actions as may be appropriate to advance the project and reduce future risks in the dam.

The earthquake and its consequences such as landslides, rock falls and flood with debris flow during the monsoon have created significant risks to safety and security of workforce of all Contractors. With realization of risky situations in the project area, all Contractors, after notifying Force Majeure condition, evacuated their staffs and labours from the Site immediately after the earthquake. Though the contractors intended to resume the works after the monsoon of 2015 with improvement of safety conditions at Site, the strikes and blockades in the southern border of the Country disrupted the essential supplies of fuels and construction materials and thereby further impacted on the resumption of the construction works.

Works after 2015 Earthquakes

After remobilization in January 2016, the Lot 1 Contractor has been carrying out the

reestablishment of their camp facilities and other infrastructures in the site. Constructions of two pre-fab buildings and one kitchen building and rectification of one building at Gongar are in progress under separate national competitive biddings. Additional protection works are being undertaken along Tamakoshi River and Gongar Khola in order to protect the camp areas and access road. The public access road from Singati to Gongar, which was temporarily opened for light vehicles only, has been strengthened with the retaining structures for ply of heavy vehicles. The track from Gongar to Lamabagar was also opened except for the section of about 400 m at Kavre Cliff, where the base of the road was even washed out by the landslides triggered by the earthquake. Construction of 330 m long road tunnel (plus 30 m adit tunnel) has been initiated at that section, of which about 15m has already been excavated.

Pilot shaft excavation of Upper Penstock Shaft (UPS) from bottom and concreting upto machine hall floor levels powerhouse are being continued. The Lot 1 Contractor has handed over the site to the Lot 2 Contractor for erection of branch penstock pipes. The access to the tailrace outlet has been reestablished for the installment of the tailrace flap gate.

A temporary diversion was made across Sunkoshi River at Khadichaur to facilitate the transportation of heavy consignment of hydro-mechanical and electro-mechanical equipment. The Lot 2 Contractor has transported all branch pipes as well as a section lower bend to the project site, whereas as the Lot 3 Contractor has temporarily

stored the heavy transported electro-mechanical equipment at the yard nearby powerhouse of Sunkoshi Power Station of NEA. The Lot 4 Contractor is continuously being engaged with the remaining foundation works and erection of towers for the transmission line.

Project Cost & Schedule

The approved cost estimate of the project prior to bidding of different construction lots and consultancy services in different stages was 456 MUS$ excluding Interest during Construction (IDC). The project cost has been forecasted as 492 MUS$ as of May 2016 because of increase in time and scope of works and also risks arisen due to various reasons such earthquakes and design modification etc.

In accordance with the Contractor All Risk (CAR) insurance policy, the Lot 1 Contractor as the insuring party has lodged the interim claim of about 2.5 billion Rupees for recovery of losses and damages due the devastating earthquake. The loss adjusters from PICC (China), the reinsuring company, have made numerous field visits for the assessment of the actual losses and damages. The Lot 1 Contractor has received about USD 2.4 million as an advance payment for rectification of losses and damages caused by the earthquake. Similarly, under Erection All Risk (EAR) insurance policy, the Lot 3 Contractor has received the interim payment of USD 3 Million for placing the order of lost and damaged electro-mechanical components of the project.

In consideration of the delay of at least one year due to the earthquakes and blockade in the border, the project is expected to be commissioned in the fiscal year 2017/18.

Rolwaling Diversion Scheme

As the second stage development of UTKHEP, UTKHPL intends to implement Rolwaling Diversion Scheme in order to generate additional 167 GWh of annual energy mainly during the dry season. The contract agreement has been signed with Lahmeyer International GmbH with association of Total Management Services (P) Ltd. and ITECO Nepal (P) Ltd. on 15 February, 2015 for Detailed Engineering Design and Preparation of Bidding Document of Rolwaling Diversion Scheme. Though the services were suspended for six months due to the earthquakes and blockades in the southern border last year, the detail design work is in final stage after completion of all required field investigation comprising topographical survey, geological mapping and ERT surveys, hydrological and GLOF investigation and socio-economic surveys. The consultancy services are expected to be completed by August/September of this year.

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 located 150 km west of Kathmandu on Seti River near Byas Municipality of Tanahu District.

The Project is a storage type hydropower project with an estimated average annual energy generation of 587.7 GWh (Years 1-10) and 489.9 GWh (Year 11 onwards). The project is designed for peaking up to six hours in dry season. 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 approximately 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 etc.

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 36.4 km. Additionally; the Project will electrify villages through its Rural Electrification (RE) Program in 17 VDC areas with two new 33/11 kV substations.

The project is being co-funded by Asian Development Bank (ADB), Japan International Cooperation Agency (JICA) and European Investment Bank (EIB). Loan agreement for an amount of US$ 150 million was signed with ADB on February 21, 2013. Similarly, loan agreement for an amount of US$ 183 million was signed with JICA on March 13, 2013 and loan agreement with European Investment Bank (EIB) was signed on May 7, 2013 for an amount of US$ 70 million, which further increased to 85 million. Fund from GoN and NEA will be used for the preparation of preconstruction infrastructures.

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 project is planned to commence the construction work in 2017 and will be completed in 2022.

Contract agreement was signed with project supervision consultant (PSC) M/S Lahmeyer International-Manitoba J/V ("the Consultant") in June 29, 2015 for project supervision works. The Consultant will work for twelve years in the project. Project is pre-qualifying the potential contractors for 'Head works' through Package-1 and 'Waterway, power house and related equipment' through Package-2. Evaluation of pre-qualification for both packages has been recently completed and evaluation report of Package-1 has been forwarded to ADB and that for Package-2 has been forwarded to JICA for their concurrence. Construction works under Package-1 and Package-2 is planned to commence from August 2017.

In addition to above activities, the Project is conducting the construction works for preparatory infrastructures like access road to dam and power house from Prithivi Highway, camp facilities for Employer and Consultant and 33/11 kV substation and 33 kV transmission line for construction power. The project has recently completed the demarcation survey for the identification of land parcels to be acquired and procedure for land acquisition in reservoir area will commence soon. Likewise, construction of permanent bridge over Seti River was completed in 2015.

Proposed Dam site of
Tanahu Hydropower Project

RCC Bridge over Seti River

Tanahu Hydropower Project has obtained generation license from Department of Electricity Development (DOED) for 127 MW and now the project is conducting Supplementary Environmental Impact Assessment (SEIA) through Environment and Social Service Department (ESSD), Nepal Electricity Authority to upgrade the generation license to 140 MW. The project also has applied

Under construction access road to Powerhouse site.

Under construction sub-station for construction power

Awarded by 'Exemplary Contribution to Improved Project Management Award'

for construction license for the construction of Damauli Bharatpur 220 kV transmission line.

Additionally, the Project was awarded by 'Exemplary Contribution to Improved Project Management Award' in January 2016 from GON/Ministry of Finance and Asian Development Bank among the ADB funded projects in Nepal.

TRISHULI JAL VIDHYUT COMPANY LIMITED

Trishuli Jal Vidhyut Company Limited (TJVCL) is a joint venture company of Nepal Electricity Authority (NEA) and Nepal Doorsanchar Company Limited (NDCL) having equal equity share participation apart from other equity share holders. The main objective of this company is to develop the Upper Trishuli 3B Hydroelectric Project (37 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 Upper Trishuli 3A HEP.

The equity share structure of the company is as follows:

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

Project Status

The feasibility study of the project has completed by Nepal Electricity Authority in fiscal year 2007/08. TJVCL has carried out the review of the project and updated the project parameters based on the site condition. The company TJVCL has completed the detail engineering design of the project by its own engineers in the fiscal year 2012/13.

The company has targeted to commission this project by the end of year 2019 AD. The current status of the project is as follows:

- 85% of the construction work of camp facilities has been completed.
- The Power Purchase Agreement (PPA) with NEA is in final stage
- The progress is in final stage for the project financing with the financing institutions such as a) Rastriya Banijya Bank, b) Nepal Bank Limited c) Hydropower Investment and Development Company Limited (HIDCL) d) Agricultural Development Bank e) Rastriya Beema Sansthan and f) Rastriya Beema Company Limited.
- VDCs of Nuwakot and Rasuwa district has started depositing the share amount for their promoters' shareholder participation.
- The International consultant "ELC Electroconsult SpA. Italy in association with Soil Test (P.) Ltd. Nepal" has reviewed the design documents and tender documents prepared by TJVCL and provided recommendations.
- Prequalification of the bidders for the EPC construction of Upper Trishuli 3B HEP has been completed. Preparation of tender documents is in final stage.
- 45% of the construction of Test adit tunnel has been completed.
- The EIA of Upper Trishuli 3B Hydroelectric Project (37 MW) has been approved by the Ministry of Environment.
- The MoU between NEA and TJVCL for the construction of 3km transmission line through Trishuli 3B Hub Project has been signed. As per MoU 45% of the total cost shall be shared by NEA and 55% by TJVCL.

POWER TRANSMISSION COMPANY NEPAL LIMITED (PTCN)

Power Transmission Company Nepal Limited (PTCN), a subsidiary of Nepal Electricity Authority (NEA) was established with the main objective of development of high voltage transmission interconnection between Nepal and India for the mutual interest and benefit of both the countries.The company's 50 % share belongs to NEA, 14% to HIDCL, 26% to PGCIL, India and 10% to IEDCL, India.

The 42.1 km section of Dhalkebar- Muzaffarpur 400kV double circuit Transmission Line lying with in Nepalese territory was successfully constructed by PTCN and commissioned in February 2016.

NEA is presently drawing 80MW from India through this line initially charged at 132kV voltage level. Upon the completion of full-fledged 220kV substation at Dhalkebar, this line is expected to be charged at 220kV by December 2016 and quantum of power to be imported from India will be enhanced.

Inauguration of Dhalkebar - Muzzaffarpur Transmission Line

Dhalkebar-Muzzaffarpur 400kV Transmission Tower near to Dhalkebar Substation

Central Activities

INTERNAL AUDIT DEPARTMENT

The Internal Audit Department, guided by the Audit Committee and led by the Director is responsible for the planning, implementation and monitoring & evaluation of financial, technical and management audits based on enterprise risks. The department performs the aforesaid audits on quarterly basis and reports to the Audit Committee and Managing Director of NEA. Among these audits, financial audit is performed basically to help the final audit which is mandatory by law, and other audits are performed to evaluate the directorate-wise performance and to support managerial decision making.

The division-wise summaries of the audits performed during FY 2015/16 are given in the following paragraphs in brief:

Audit Committee

As per international practices and to provide independency to the internal audit system as well as corporate governance, NEA has incorporated the concept of Audit Committee consisting of three members, headed by a member of the NEA Board and two peripheral sectorial experts. The committee is responsible for reviewing the accounts, financial statements and reports of final audit and conducting internal audit functions.

Financial Audit

The financial audit covers the audit of internal control system, compliance with existing rules and regulations, financial discipline and fairness of financial statements. During FY 2015/16, the annual audit of FY 2014/15 was completed and annual audit report was submitted and half yearly financial audit for FY 2015/16 were carried out in 187 out of 216 (including project offices) budget centers of NEA .

Technical Audit

The technical audit covers the audit of technical norms and standards, guidelines, energy balance, preventive as well as breakdown maintenance, condition monitoring and electricity loss. The division carried out technical audits of 37 offices during FY 2015/16, which was in excess of the initial target of 35.

Management Audit

The management audit covers the review and implementations of managerial plans, policies, procedures, programs and targets, procurement management, organization structure, job analysis, accountability and monitoring & evaluation. The division carried out management audit of 24 offices including Regional and Directorate offices during FY 2015/16.

Risk Management Unit

The Risk Management Unit has been established in Internal Audit Department to collect risk information based on risk indicators and analyze and link them with other activities of the entity.

Capacity Building

A customized training program was conducted for senior and junior officers in New Delhi by the Institute of Cost Accountants of India during June-July 2016 to enhance their auditing skills and transfer professional knowledge related to COSO based internal auditing, operational audit, risk based internal audit and other issues of internal audit.

The main hurdle faced by the Internal Audit Department is the quantitative as well as qualitative deficiency in manpower. The department also lacks the required support like equipment, vehicles to carry out internal audit effectively.

Monitoring & Evaluation

Internal Audit Department was involved in M/E of rectification of internal audit non-compliances. Scope for further improvement in this sector had been recommended to Audit Committee and Managing Director of NEA on timely basis.

NEA BOARD MATTERS

The Minister of Energy Mrs. Radha Kumari Gyawali was chaired the NEA Board till Bhadra 10, 2072. Energy Secretary Mr. Suman Prasad Sharma has been chairing the NEA Board since Poush 10, 2072 and then Finance Secretary Mr. Lok Darshan Regmi joined the NEA Board since Bhadra 10, 2072 as an ex-officio member.

During the Fiscal Year 2072/73, altogether 19 Board meeting were held. Many important decisions relating to employee services by laws, dedicated supply, bulk energy supply and other significant board decisions in this period under review.

LOSS REDUCTION DIVISION

Loss & Leakage Control Activities

The Loss Reduction Division led by Manager is entrusted with the responsibility to control the electricity theft, energy leakage and loss. Division has been conducting activities that involves inspection of energy meters and responsible for conducting field raid operation as and when required. Division is dedicated towards supporting additional revenue generation by controlling electricity theft, pilferage, tampering, demand leakage, CT/PT outage, loss due to oversized transformers in LT consumers, wrong MF calculation, and even with wrong connection.

Target of Loss Reduction Division of FY 2072-073

In the fiscal year 2072/073, Division had set target to inspect 500 consumers with TOD meter installed and 250 consumers with whole current meter installed under different Regional offices and thereby recover 15,00,000 units. The major concern has been given to Industrial Consumers. Division has also set target for monitoring, inspection and data download of rural community consumers. Beside the annual target, Division has also conducted activities as directed by Managing Director, NEA, as and when required. The Division has also aimed at the control of stock units, theft, demand leakage and pilferage in energy meters.

Major Activities and Achievements of FY 2072-073

TOD meter

This year Division has performed its monitoring and inspection activities to the consumers of 30 different Distribution Centers of Distribution and Consumer Services Directorate of NEA. This year around 845 TOD meters have been inspected, out of which 53% were found with remarks. The major Remarks found during inspection were Reverse unit, C.T./P.T outage, wrong MF calculation, Inappropriate Time-Slot, Display outage of meter and Pilferage of energy meter. In few consumers, Demand leakage and direct tapping from the secondary side of transformer was also observed. Among the TOD meters inspected, 46 were found with either CT or PT outage, 1 meter was found in Stop Mode, 5 meters had display outage, 4 had inappropriate time slot, 3 consumers were observed to have been billed using incorrect multiplying factor and 4 consumers were found with electricity theft. This year a total of 17,66,914 units was found in reverse. The total units to be billed or to be verified for billing by concerned Distribution Centre are around 58,50,864 units. Furthermore, total units of twelve TOD meters which are found with outage are still to be calculated by concerned Distribution Centre which are not included in the above calculation.

Whole Current Meter

A total of 275 Whole current meters were inspected this year, 78% of which were found with remarks. The major Remarks found among the Whole current meters were demand leakage due to oversized fuse or MCB or No MCB at all,

This year following units are recommended for billing by the Division to concerned Regional Offices and Distribution Centre:

S.N.	Regional Office	Number of Whole Current Meter inspected	Number of TOD meter inspected	Approximate Units to be billed (Reverse)	Approximate Units to be billed (Outage)	Remarks
1	Biratnagar	102	305	500342.4	96940	4-Outage not quantified. 1-Display out, 4-Inappropriate time-slot, 3-Wrong MF calculation
2	Janakpur	16	37	206858.6	1994	1-Outage not quantified. 2-Display out, 3-Theft
3	Hetauda	64	187	258801.6	1304687	6-Outage not quantified. 1-Stop Mode, 1-Theft
4	Kathmandu	17	76	130397.2	341031	4-Outage not quantified. 2-Display out,
5	Pokhara	8	20	293887.7		5-Outage not quantified.
6	Butwal	56	159	358956.4	501756	
7	Nepalgunj	12	61	17670.53	1837541	1-Outage not quantified.
Total		**275**	**845**	**17,66,914**	**40,83,949**	

**Total units to be billed should be verified by concerned Distribution Centre and report to Division if already billed.

Pilferage of meter, stock units and under billed demand charge.

In addition, during the "Special Theft Control Campaign" conducted in the month 2073 Baisakh, Jestha which continued in Ashad, Division continuously coordinated with Regional Offices and Distribution Centre in loss, leakage and theft control activities. 1248 people were detained and 1047 equipments confiscated in hooking control action from which Nrs. 1,48,91,249 was collected. From the Action taken against 285 meter bypass cases and 78 demand leakage cases, Nrs.27,38,314 and Nrs.6,12,537 was collected respectively. A total of NRs.1,82,42,101 was collected till the end of Ashad from these cases. Furthermore, the Division also conducted raid activities as per the complaints received from public.

Administration Directorate

Administration Directorate is responsible for human resource management, logistic support, property management, public relations enhancement, legal service and recruitment& promotion related activities of the organization. This Directorate is lead by Deputy Managing Director and supported by four departments, namely, Human Resources Department, General Services Department, Legal Department and Recruitment Department. Each department is led by a Director.

HUMAN RESOURCE DEPARTMENT

Human Resource Department is basically responsible for human resources management activities like- manpower planning; preparation of Job Description (JD) and Job Specification (JS) based on Job Analysis (JA); staff welfare; disciplinary actions; employee's transfer associated activities etc. This department is also responsible for conducting training (except in-house trainings), seminars, workshops and sponsorship of educational program intended to human resource development.

The total numbers of approved position in NEA stand at 11,142 whereas working staff by the end of F/Y 2015/16 remained 7,984. Remaining vacant positions are in the process of recruitment. During the year under review, 496 employees got retirement and this retirement comprises of compulsory retirement- 290; voluntary retirements-55; terminations from job 14; resignation- 97 and 40 employees passed way during service life.

Regarding the Departmental Action activities, 21 employees were suspended from the job; promotion of 1 employee and annual increment (grade) of 3 employees were withheld.

Employees Status FY 2015/2016

Level	Service	Approved Position			Existing situation			
		Regular	Project	Total	Permanent	Periodical	Daily wages / contract	Total
Managing Director		1	0	**1**	0	1	0	**1**
DMD (Level-12)		9	0	9	6	0	0	**6**
Officer Level (Level 6-11)	Technical	1248	113	1361	1048	0	1	**1049**
	Non-tech	582	23	605	556	1	0	**557**
	Total	1830	136	1966	1604	1	1	**1606**
Assistant Level (Level 1-5)	Technical	5883	0	5883	4165	22	39	**4226**
	Non-tech	3284	0	3284	2119	12	15	**2146**
	Total	9167	0	9167	6284	34	54	**6372**
Grand Total		**11006**	136	11142	7894	**35**	**55**	**7984**

Description of employees by the end of review period is given in the table above.

Staff welfare loan including land/ house purchase, house maintenance, social events& rituals was agreed to 742 employees amounting Rs. 93,475,543.Where as 474 earthquake and other natural disaster hit employees benefited with soft loan of one lakh each totaling amount 45,812,800. Likewise, Natural disaster grant was provided to 1081 employees, mostly earthquake victims, at the rate of 20,000 each amounting total sum of Rs. 21,620,000. Life insurance scheme of organization benefited 464 employees with amount of 179,154,516.

During the period under review 10 employees had

been granted accidental insurance amount and 1036 got medical facilities amount altogether 29,903,860. Kaj Kiriya Anudan given away to 404 employees and 14 employees had been provided medical assistance for treatment of 'Hard Disease'.

GENERAL SERVICE DEPARTMENT

General Service Department (GSD) is basically responsible for vehicle management; logistic support and security management of corporate office; Record keeping, safeguarding of related documents and provide necessary support to concerned offices for defense against encroachment and misuse of land property. The Department is also entrusted with responsibility of events management; coordination of NEA publication Vidyut and public relation and public grievance handling functions. In the year under review 495 grievances were lodged through toll free number, SMS and other channels. Out of those, 478 complaints were settled.

NEA has 31457-13-2-3 Ropani land spread all over the country. Similarly NEA has 912 vehicles in service throughout the country. Of which, 790 are in running condition.

RECRUITMENT DEPARTMENT

Recruitment Department is basically responsible for recruitment and promotion of the employees. The major functions of this department are syllabus preparation and update; vacancy announcement; examination conduction and selection of competent and deserving candidate. Similarly, it furnishes staff promotion function through internal competition and performance computation to upgrade competent and high performer employees. During the year in review period, 17 people selected as successful candidate passing through the various level examinations and recommended for appointment in NEA's permanent service at various positions. Likewise, 809 employees of different levels were recommended for promotion to higher level. Of them, 264 employees were promoted on seniority basis; 343 on performance evaluation basis; 75 on internal competition and 127 employees were promoted under special provision

LEGAL DEPARTMENT

The Legal Department is responsible for dealing with legal matters. It provides legal advice to the NEA management where and when necessary. The Department also involves in various negotiations for power purchase and contract agreements. Another vital area of its participation is to defend legal cases of NEA in different courts of the country and abroad for dispute resolution. The Department also provides legal assistance through the representation to the various committees formed for formulation of rules, regulations, procedures etc of the organization.

During the year under review, the Department provided 132 numbers of legal advices to the NEA Management & other departments. Out of 137 cases registered in different courts of the country, 52 verdicts came in favor of NEA; 12 gone against NEA and 73 cases are waiting for courts judgment. Department is also actively participating in arbitration deed to resolve the disputes mostly related to project construction contracts.

Finance Directorate

The Finance wing, headed by a Deputy Managing Director (DMD), is responsible for carrying out overall financial and accounting functions of NEA. Key responsibility areas include revenue administration, accounting system operation, budgetary control and treasury management. The finance wing is also responsible for financial planning, control and monitoring at corporate level of decision-making process. Two functional departments, namely Accounts Department and Corporate Finance Department, are structured to support the finance wing. Accounts Department is responsible for consolidating overall accounts within NEA and prepare sentity financial statements. It also deals with the statutory audit, taxation issues, follow up and settlement of internal and external audit qualifications. Likewise, Corporate Finance Department is entrusted to carry out various functions relating to revenue, budget, and treasury management. Both Departments are headed by an individual Director responsible for its functional areas of operation and report directly to the DMD, Finance. A separate project office, Institutional Strengthening Project, has been placed in operation to implement Integrated Financial Management Information System (IFMIS) under Accounts Department.

NEA experienced another distressing year in terms of energy generation of its own hydropower plants. NEA's only one Reservoir Plant Kulekhani could not be operated in its full capacity due to the non-availability of required water volume. It was measured about 10 meters below the design scale, which decreased its generation by 27.3 GWh as compared to previous year 2014/15. Similarly, Kaligandaki 'A' power plant, having three units of generators, had to be closed alternatively for scheduled preventive maintenance, which was pending since long. This shut down of power plants compelled its annual generation to stay at 750.82 GWh which is 170.15 GWh less than the previous year's generation. Rest of the plants also generated less than their target generation due to extended dry season prevailed in the country. During the year under review, NEA's Diesel Plants were not operated as per the target, resulting the total thermal generation to almost nil. Because of the above-mentioned reasons, the total generation of NEA plants decreased to 2,168.56 GWh as compared to 2,365.64 GWh in the FY 2014/15.

During the period under review, power purchase from Independent Power Producers (IPPs) within Nepal also declined to 1,173.14 GWh against the target purchase of 1,416 GWh. The reason behind this decline was caused by non completion of Bhote Koshi Power Plant (45MW) rehabilitation works which was damaged by massive earthquake of May, 2015 in Sunkoshi river basin and others plants situated in the largely earthquake affected areas also. Most of the power plants damaged by earthquake were not placed in operation and still waiting for major rehabilitation activities. Therefore, Power purchase from IPPs decreased by 7.55% as compared to actual purchase in the year 2014/15.

Regarding the power purchase from India, NEA purchased 1,758.41 GWh as compared to the import of 1,369.89 GWh in corresponding year 2014/15. However, NEA met the targeted level of imports from India because of the completion of Dhalkebar - Bhittamod 400 KV Cross Boarder Transmission Line that came into commercial operation from 19th February 2016. Though the system voltage of Dhalkebar - Bhittamod Transmission Line is 400 KV , currently NEA is importing power at 132 KV level to the tune of 80 MW only.

Despite this increase in import, total energy available in the NEA's system increased only by 1.89% over the previous year's figure of 5,005.70 GWh to reach 5,100.11GWh which is 8% less than the targeted level. Out Of the total available energy, NEA's own generation, local IPPs and import from

India constitute 43%, 23% and 34% respectively. NEA billing records showed only 3,746.00 GWh supplied to its consumers and station consumption and rest of the units assumed as technical and non-technical loss. During the year, total energy sales remained stable as compared to previous year sales of 3,743.71 GWh. The resulting system losses slightly increased to 25.78% from 24.44% in the FY 2015/16.

NEA's consumers increased from 2.83 million to 2.97 million including community and bulk buyer during the year. The domestic consumer category, which holds 2.78 million consumers, continued to be the largest consumer category with 94.18% share of entire consumers. Domestic and Industrial consumer category contributed 45.96% and 31.13 % to the gross electricity sales revenue respectively. Rest of the consumer category contributed remaining 22.91% of gross sales revenue.

Despite negligible increment in sales, NEA increased its total revenue from sale of electricity to 32,210.05 million in FY 2015/16 from NRs. 30,798.67 in FY 2014/15. NEA's total income including income from other services reached to NRs. 34,709.94 million as compared to NRs. 33,285.03 million in the previous year. The growth in the overall revenue income is about 4.28% as compared to corresponding year. Out of the total gross revenue, NEA allowed NRs. 665 million as rebate in order to encourage consumer to pay their bills earlier than credit period. Income from other service such as surcharge, dividend, interest, lease rent, sale of goods and service charge amounted to NRs. 3,164.88 million.

Power purchase cost remains dominating cost factor into the NEA's overall operating expenses since long. NEA's overall operating expenses increased from NRs. 32,217.75 million in FY 2014/15 to NRs. 38,678.21 million for the year 2015/16. The increase in the expense is about 20.05 % as compared to the previous year. The power purchase cost continued to be the largest cost component of the total operating expenses. NEA paid NRs. 24,235.71 million to the IPPs and for import from India during the FY 2015/16. Energy from power purchase constitute 57.48 % of the total available energy for which NEA has paid 75.24% of gross electricity sales revenue. The power purchase cost itself increased by 26.16% for the FY 2015/16 due to increase in volume of import and to some extent of normal price escalation. Other operating expenses included generation, transmission, distribution, and administration that amounted NRs. 1,463.50 million, 684.39 million, 6,267.46 million and 1,409.09 million respectively. During the year under review, power demand for cooking purpose increased heavily due to the shortage of cooking gas especially in Kathmandu valley. This unexpected power demand overloaded the distribution system, which ultimately contributed to increase repair and maintenance cost for distribution networks.

Continued growth in long-term borrowing compelled interest costs to increase by 4.84% over the previous year's figure to reach NRs. 4,896.39 million. Likewise, depreciation charge on fixed assets increased by 4.31% that accounted NRs. 3,620.56 million in the FY 2015/16. NEA incurred foreign exchange translation loss of NRs. 880 million in FY 2015/16 due to appreciation of Japanese Yen vis-a-vis Nepali Rupees for the loan taken on Kulekhani Disaster Prevention Project. NEA estimated provision of NRs. 2,050.00 million towards long term employee liabilities in respect of gratuity, pension, medical facilities and accumulated leave facilities under employees' benefit plan scheme.

NEA experienced another year for its deteriorating operational and financial results. Continued disparity in power purchase cost and electricity sales tariff directed NEA to incur a net accounting loss of NRs. 11,794.66 million (Provisional) for the year under review. NEA received NRs. 3,960 million from GoN as reimbursement of financial loss on power purchase from India for the year 2015/16. However, this reimbursement has been received as an equity investment. So that it could

not be deducted from the power purchase cost of NEA. Had the reimbursement deducted from expenses, the net loss for the year would have been decreased from NRs. 11,794.66 million to NRs. 7,834.66 million.

The total receivables at the end of FY 2015/16 remained NRs. 10,549.65 million, which is equivalent to 122 day's sales revenue. During the year, revenue collection in Tarai region was obstructed due to agitation for a period of five months, which resulted increase in average collection period. Out of the total receivables, street lights dues of Municipalities and VDCs stood NRs. 3,390 million at the end of FY 2015/16.

Net carrying amount of property, plant and equipment reached to NRs. 87,462.68 million at the end of the FY 2015/16. During the year, NEA completed various distribution system reinforcement and rural area electrification projects resulting in capitalization in non- current assets under the category of property, plant, and equipment. Property, plant and equipment constituted 50.88% of total non-current assets of NEA.

NEA invested significant amount of resources in various projects relating to generation, transmission and distribution during the review period. Capital work in progress, the second largest element of non-current assets, figured to NRs. 67,745.11 million with addition of NRs. 14,337 million during the FY 2015/16. The sources of investment included government equity and loan, foreign loan and grants and NEA's internal cash generation. The major investment is in hydroelectricity projects, namely Chameliyagadh (30 MW), Kulekhani III (14 MW) and different transmission line projects of various voltage level and rural community electrifications in the various VDCs of the country.

NEA's investment in subsidiaries, associates, joint ventures and others reached NRs. 20,200.91 million in the year 2015/16. During the year, NEA increased its investment in subsidiaries and other companies by NRs. 2,650 million. NEA holds 11.58 million equity shares at a cost of NRs. 489.60 million in Chilime Hydro Power Company Limited (CHPCL), a subsidiary company of NEA. The total market value of the shares stood NRs. 16,675.20 million at the end of FY 2015/16. CHPCL has four under construction generation projects scaling to 270MW namely Upper Sanjen HEP (14.8MW), Sanjen HEP (42.5MW), Middle Bhotekoshi (102MW) and Rasuwagadhi (111MW). NEA maintains 10% equity of each company, Sanjen Hydro Power Company Limited and Middle Bhotekoshi Hydro Power Company Limited and 18% equity of Rasuwagadhi Hydro Power Company Limited. During the year, NEA invested NRs. 100 million in Middle Bhotekoshi Co. LTD and NRs. 340 million in Rasuwagadhi Hydro Power Co. LTD. Total equity investment in Middle Bhotekoshi, Sanjen and Rasuwagadi reached to NRs. 570, NRs. 365 and NRs.1,165 million respectively. NEA received 12% cash dividend and 15 % bonus share from CHPCL and 20% cash dividend from Butwal Power Company Limited. During the FY 2015/16, NEA, with its promoter Nepal Telecom, Citizen Investment Trust and Rastriya Beema Sansthan, invested NRs. 2,000 million by procuring under budgetary program from Nepal Government towards the loan capital for Upper Tamakoshi Hydro Power Company Limited under subsidiary financing agreement. NEA holds 41% interest in equity share capital in Upper Tamakoshi Hydro Power Co. Ltd. At the end of the FY 2015/16, total investment in Upper Tamakoshi Hydro Power Company Limited reached NRs. 4,341.90 million as equity and NRs. 9,790.76 million as long-term loan.

Other investment of NEA includes equity investment in Khumbu Bijuli Co (NRs. 20.65 million), Salleri Chaylsa Hydro Electric Co. Ltd. (NRs. 11.63 milion), Nepal Engineering Consultancy Service Center Ltd. (2.28 Million), Nepal Hydro Lab Pvt. Ltd. (NRs.1 million), Power Transmission Company Nepal Limited (NRs. 130 million) and Butwal Power Company Ltd. (NRs. 16.01 million). NEA has not received any dividend except CHPCL and Butwal Power Company Limited (BPCL). During

the year, NEA invested NRs. 3 million in Trishuli Hydro Power Co. Ltd, NRs. 190 million in Tanahu Hydro Company Ltd and NRs. 12.11 million in Cross Border Power Transmission Company LTD. Additionally, NEA maintained its loan investment of NRs. 567.13 in Power Transmission Company Nepal LTD at the end of FY 2015/16. NRs. 150 million has been deposited in CIT against the future liabilities incurred towards employees benefit plan that amounted to NRs. 1,263.68 million at the end of the FY 2015/16. Similarly, NEA holds deposit of NRs. 10 million in NEA Retirement Fund scheme as an equity capital.

Government of Nepal (GoN) provided NRs. 8,230 million as long-term loan from local source to invest in different projects relating to generation, transmission, and distribution. Likewise, NEA received around NRs. 4,000 million as long-term loan from the donor agencies in the FY 2015/16. At the end of the financial year, total long-term borrowings from GoN, the main source of project financing, reached to NRs. 110,483.07 million from NRs. 98,253.08 million in FY 2014/15. During the FY 2015/16, NEA received NRs. 4,022 million from GoN as equity investment in various generation, transmission and distribution projects.

During the year, NEA paid NRs. 960 million as royalties and NRs. 2,040 million as interest on long term loan to GoN treasury.

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) (6%), Debt Service Coverage Ratio (DSCR) (1.2 times), Average Collection Period (ACP) (<3month). In FY 2014/15, NEA achieved RoR (2.54%), DSCR 0.41 and ACP 3.71 months which all are below the required covenants level.

NEA repeatedly proposed for upward revision of electricity tariff to Electricity Tariff Fixation Commission (ETFC) in order to meet revenue requirement based on cost of service of NEA since 2012/13. Finally, ETFC has increased electricity tariff by about 19% on an average with effective from 16 July, 2016. NEA hopes this revision will contribute significant sales revenue to improve financial health of NEA from FY 2016/17. However, there is still a huge gap between cost of sales and retail tariff.

Mr. Sudarshan Raj Pandey and Mr. Parakram Nath Sharma, Fellow Chartered Accountants, appointed by the Office of the Auditor General, jointly completed the statutory audit for the year 2014/15. Office of the Auditor General has reappointed the same Auditors for third consecutive year to perform statutory audit for the Year 2015/16.

NEA's income tax assessment up to the FY 2010/11 has completed by Large Tax Payer's Office. However, NEA has filed petition for administrative review against tax assessment order for the FY 2009/10 to Inland Revenue Department. Similarly, NEA had appealed to the Revenue Tribunal against the assessment order given by Large Tax Payer's office for the year 2005/06 and 2006/07. Revenue Tribunal has settled the NEA's appeal but Large Tax Payer's office has not finalized reassessment of the same settlement.

Long pending audit qualifications of NRs. 0.42 million has been settled during the FY 2015/16. NEA expects to settle remaining balance of NRs. 1.15 million by next year, which is being brought since FY 1993/94.

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, accounting and internal control system.

Nepal Electricity Authority
Highlights of FY 2015/16

Description	FY 2016*	FY 2015	Increase(Decrease)	
			Amount	%
Revenue				
Net Sale of Electricity (M.NRs.)	31,545.05	30,168.77	1,376.28	4.56
Income form other Services (M.NRs.)	3,164.88	3,116.26	48.62	1.56
Total Revenue (M. NRs.)	**34,709.94**	**33,285.03**	1,424.90	4.28
Operating Expenses:				
Generation Expenses (M. NRs.)	1,463.50	1,383.95	79.55	5.75
Power Purchase (M. NRs.)	24,235.71	19,210.19	5,025.52	26.16
Royalty (M. NRs.)	997.50	892.46	105.04	11.77
Transmission Expenses (M. NRs.)	684.39	579.63	104.76	18.07
Distribution Expenses (M. NRs.)	6,267.46	5,341.48	925.98	17.34
Administration Expenses (M. NRs.)	1,409.09	1,339.02	70.07	5.23
Depreciation Expenses (M. NRs.)	3,620.56	3,471.02	149.54	4.31
Total Operating Expenses (M. NRs.)	**38,678.21**	**32,217.75**	6,460.46	20.05
Operating Surplus (M. NRs.)	**(3,968.28)**	**1,067.28**	(5,035.56)	(471.81)
Interest on Long-Term Loans (M. NRs.)	4,896.39	4,670.21	226.17	4.84
Foreign exchange translation losses (Gain)	880.00	(523.17)	1,403.17	(268.20)
Provision for Employee benefits	2,050.00	2,050.00	-	-
Prior years Income(Income) Expenses	(50.00)	(383.08)	333.08	(86.95)
Net Income (Loss) (M. NRs.)	**(11,744.66)**	**(4,746.67)**	(6,997.99)	147.43
Long-Term Loans (M. NRs.)	110,483.07	98,253.08	12,229.99	12.45
Net Property, Plant & Equipment (M. NRs.)	87,462.68	86,439.05	1,023.63	1.18
Number of Consumers	**2,969,576**	**2,833,043**	136,533	4.82
Total Sales of Electricity (GWh)	**3,746.00**	**3,743.71**	2.29	0.06
Internal Sold/Utilised (GWh)	3,742.74	3,740.54	2.20	0.06
Annual Average Consumer's Consumption (kWh)**	1,261.46	1,321.44	(59.99)	(4.54)
Average Price of Electricity (NRs./kWh)	8.60	8.22	0.37	4.56
Peak Load Interconnected System (GWh)	1,385.30	1,291.10	94.20	7.30
Total Available Electric Energy (GWh)	**5,100.11**	**5,005.70**	94.41	1.89
NEA Hydro Generation (GWh)	2,168.49	2,365.64	(197.15)	(8.33)
Thermal Generation (GWh)	0.07	1.24	(1.17)	-
Purchased Energy (GWh) - India	1,758.41	1,369.89	388.52	28.36
- Nepal (Internal)	1,173.14	1,268.93	(95.79)	(7.55)
Average Power Purchase Rate (NRs./kWh)***	8.27	7.28	0.99	13.56
Exported Energy (GWh)	3.25	3.17	0.08	2.62
Self Consumption (GWh)	39.27	38.54	0.73	1.90
Net System Losses (Percentage)	25.78	24.44	1.34	5.48
Note: *Provisional figures				
**on internal sales				
***on total purchase				

Nepal Electricity Authority

Statement of Financial Position as at July 15, 2016

(NRs. in million)

Particulars	2016*	2015	2014	2013	2012	2011	2010	2009	2008	2007
Assets										
Non Current Assets										
Property, Plant & Equipment	87,462.68	86,439.05	84,238.72	83,873.47	85,460.71	84,725.47	83,105.63	81,238.50	52,030.28	51,781.76
Capital Work in Progress	67,745.11	58,052.39	46,993.93	39,843.17	29,905.45	22,832.03	17,040.47	13,550.46	35,699.71	29,145.19
Investments	20,200.91	17,550.91	12,288.26	6,807.56	5,049.17	4,855.07	3,445.74	2,501.14	2,043.52	1,012.99
Total Non-Current Assets	**175,408.70**	**162,042.34**	**143,520.91**	**130,524.20**	**120,415.33**	**112,412.57**	**103,591.84**	**97,290.10**	**89,773.51**	**81,939.94**
Current Assets :-										
Inventories	3,323.58	3,169.78	2,859.44	3,043.02	3,033.83	2,502.93	2,431.99	2,159.12	1,800.13	1,498.45
Trade and other Receivables	10,549.65	9,927.45	9,015.61	7,930.03	6,693.17	6,871.19	6,097.74	4,854.02	5,721.08	5,151.41
Cash and Cash Equivalents	11,063.47	10,621.60	6,121.57	4,714.98	2,697.48	2,016.58	1,244.65	1,724.76	1,337.15	1,447.58
Prepaid, Advances, Loans and Deposits	4,085.63	3,782.99	3,644.70	3,300.57	4,222.65	2,976.82	4,585.60	2,495.13	2,319.72	2,225.53
Total Current Assets	**29,022.33**	**27,501.82**	**21,641.33**	**18,988.60**	**16,647.13**	**14,367.52**	**14,359.98**	**11,233.03**	**11,178.08**	**10,322.97**
Total Assets	**204,431.03**	**189,544.17**	**165,162.24**	**149,512.80**	**137,062.46**	**126,780.09**	**117,951.82**	**108,523.13**	**100,951.59**	**92,262.91**
Equity and Liabilities										
Capital and Reserves										
Share Capital	54,381.99	49,275.07	44,510.75	37,364.90	31,422.44	25,694.81	38,651.77	33,659.46	28,609.97	26,382.18
Reserves and Accumulated Profits:										
Reserve	2,021.88	2,021.88	1,908.53	1,721.41	1,706.03	1,677.55	1,631.30	1,497.85	1,407.83	998.92
Accumulated Profits (Loss)	(37,596.09)	(25,751.42)	(20,238.58)	(13,238.16)	(9,866.97)	0.00	(21,022.36)	(14,098.83)	(8,985.61)	(6,650.04)
Total Equity	**18,807.78**	**25,545.52**	**26,180.69**	**25,848.15**	**23,261.50**	**27,372.36**	**19,260.71**	**21,058.48**	**21,032.19**	**20,731.06**
Non-Current Liabilities										
Borrowings	110,483.07	98,253.08	82,691.67	75,034.89	68,909.20	62,631.85	58,231.66	53,788.45	51,368.84	47,616.15
Deferred Tax	693.20	693.20	693.20	693.20	693.20	693.20	693.20	693.20	791.01	848.40
Total Non-Current Liabilities	**111,176.27**	**98,946.28**	**83,384.87**	**75,728.09**	**69,602.40**	**63,325.05**	**58,924.86**	**54,481.65**	**52,159.85**	**48,464.55**
Current Liabilities										
Borrowings	-	-	700.00	1,200.00	3,500.00	790.00	1,280.00	250.00	1,140.00	0.00
Sundry Creditors and Other Payables	53,087.52	45,742.90	37,637.22	33,019.22	29,137.09	27,825.95	32,909.45	29,402.22	24,534.17	22,374.17
Provisions	21,359.45	19,309.45	17,259.45	13,717.34	11,561.47	7,466.73	5,576.80	3,330.78	2,085.38	693.13
Total Current Liabilities	**74,446.97**	**65,052.36**	**55,596.67**	**47,936.56**	**44,198.56**	**36,082.68**	**39,766.25**	**32,983.00**	**27,759.55**	**23,067.30**
Total Liabilities	**185,623.25**	**163,998.64**	**138,981.55**	**123,664.65**	**113,800.96**	**99,407.73**	**98,691.11**	**87,464.65**	**79,919.40**	**71,531.85**
Total Equity and Liabilities	**204,431.03**	**189,544.17**	**165,162.24**	**149,512.80**	**137,062.46**	**126,780.09**	**117,951.82**	**108,523.13**	**100,951.59**	**92,262.91**

Note:- *Provisional figures -

Nepal Electricity Authority

Income Statement for the year ended July 15, 2016

										(NRs. in million)
Particulars	**2016***	**2015**	**2014**	**2013**	**2012**	**2011**	**2010**	**2009**	**2008**	**2007**
Net Sales	**31,545.05**	**30,168.77**	28,205.70	25,354.62	20,088.64	17,946.82	17,164.60	14,405.93	15,041.39	14,449.73
Cost of Sales :										
Generation	1,463.50	1,383.95	1,886.51	1,604.31	1,147.69	929.56	1,541.27	1,119.71	979.76	855.64
Power Purchase	24,235.71	19,210.19	17,041.53	13,572.46	11,948.41	10,493.74	9,746.57	7,691.28	7,437.04	6,967.58
Royalty	997.50	892.46	888.67	890.49	941.60	854.76	849.77	796.12	839.18	970.47
Transmission	**684.39**	**579.63**	**519.45**	**416.74**	**421.38**	**345.96**	**337.73**	**328.16**	**274.85**	**240.88**
Gross profit	4,163.96	8,102.54	7,869.54	8,870.62	5,629.56	5,322.80	4,689.26	4,470.66	5,510.56	5,415.16
Other Income	3,164.88	3,116.26	2,156.90	1,868.37	1,695.42	1,382.94	1,188.27	1,601.67	934.66	1,016.61
Distribution Expenses	6,267.46	5,341.48	4,575.15	4,087.97	3,685.15	3,004.18	3,091.21	2,575.09	2,110.01	1,834.39
Administrative Expenses	1,409.09	1,339.02	1,239.19	1,327.50	973.38	866.74	789.52	651.69	683.98	479.60
Interest Expenses	4,896.39	4,670.21	4,234.51	4,039.65	3,885.49	3,594.01	3,668.65	2,492.55	2,274.37	2,385.41
Depreciation	3,620.56	3,471.02	3,296.62	3,228.68	3,175.80	3,031.33	2,902.92	2,361.20	1,895.17	1,856.47
Loss (Gain) on Foreign Exchange	880.00	(523.17)	(52.77)	(652.14)	896.57	85.01	28.67	813.96	484.10	(493.39)
Provision for losses and write offs	-	-	-	-	547.79	323.68	112.36	959.68	168.51	102.56
Provision under Employees' Benefits Plan	**2,050.00**	**2,050.00**	**3,542.11**	**2,112.74**	**4,106.68**	**1,890.01**	**2,246.02**	**1,246.00**	**1,354.00**	**-**
Net Profit/(Loss) before Tax	(11,794.66)	(5,129.76)	(6,808.36)	(3,405.41)	(9,947.88)	(6,089.22)	(6,961.82)	(5,027.84)	(2,524.92)	266.73

Note:- *Provisional figures

Significant Accounting Policies

For the year ended July 15, 2016 (Ashad 31, 2073)

CONSTITUTION AND OWNERSHIP

Nepal Electricity Authority ('NEA') was incorporated on Bhadra 1, 2042 (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, and became necessary to achieve efficiency and reliable service.

The principal objectives of NEA include generation, transmission and distribution of adequate, reliable and affordable electric power by planning, constructing, operating such facilities in Nepal's power system both interconnected and isolated.

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.

b. 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.

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

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

e. 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 cash basis will not be materially different from the current practice.

f. 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.

1.2.1 Functional and Presentation Currency

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

1.3 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%

However, allocation of proportionate overhead to CWIP has been discontiued from the current year in order to comply with NAS.

1.4 Depreciation

Depreciation is provided on Property, Plant and Equipment, except land, on straight-line method, based on 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	2.5%
(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 equipment 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. Bonus shares issued by investee companies have not been accounted in books. However, total number of bonus shares received has been disclosed with initial investment.

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 Finance Cost

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 are classified as current liabilities.

Finance costs that are directly attributable to the construction of a qualifying asset are included in the cost of that asset irrespective of the physical progress. Other borrowing costs are treated as an expense in the period in which it occurs.

1.11 Foreign Currency Loans

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

1.13 Provisions

Provisions are recognised when the Authority 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, Retirement 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.

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

Grants-in-Aid received from the GoN or other Agencies 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 Ashad End (Mid-July) has been recognised on estimated basis. Revenue from sale of electricity is shown net of rebate.
b. Rebate on payment before due date, surcharge on delayed payment etc. are accounted for on cash basis.

1.18 Income from Other Sources

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, is recognised on cash basis.
d. Penalty chargeable on late commercial operation date (COD) under power purchase agreement (PPA) are accounted for 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.

ANNEX-1

ELECTRICITY TARIFF

TARIFF RATES

1. Domestic Consumers

(a) Service and Energy Charge (Single Phase)

kWh (Monthly) Units	5 Ampere		15 Ampere		30 Ampere		60 Ampere	
	Service Charge	Energy Charge	Service Charge	Energy Charge	Service Charge	Energy Charge	Service Charge	Energy Charge
0-20	30.00	3.00	50.00	4.00	75.00	5.00	125.00	6.00
21-30	50.00	7.00	75.00	7.00	100.00	7.00	150.00	7.00
31-50	75.00	8.50	100.00	8.50	125.00	8.50	175.00	8.50
51-150	100.00	10.00	125.00	10.00	150.00	10.00	200.00	10.00
151-250	125.00	11.00	150.00	11.00	175.00	11.00	225.00	11.00
251-400	150.00	12.00	175.00	12.00	200.00	12.00	250.00	12.00
Above 400	175.00	13.00	200.00	13.00	225.00	13.00	275.00	13.00

(b) Service and Energy Charge (Three Phase)

Low Voltage (230/400 V)

kWh	Up to 10 KVA		Above 10 KVA	
	Service Charge	Energy Charge	Service Charge	Energy Charge
Up to 400	1100.00	12.50	1800.00	12.50
Above 400		13.50		13.50

(c) Service and Energy Charge: Three Phase

Medium Voltage (33/11 KV)

kWh	**Up to 10 KVA**	
	Service Charge	**Energy Charge**
Up to 1000	1100.00	11.00
1001-2000		12.00
Above 2001		13.00

Billing Method (For 5 Ampere)

S. No.	Electricity Consume Block	Rate Rs. Per Unit	Billing Method
1	Up to 20 units	3.00	Minimum Monthly Service Charge Rs. 30.00 for up to 20 units and Energy Charge Rs. 3.00 per unit
2	21 to 30 units	7.00	Minimum Monthly Service Charge Rs. 50.00 and Energy Charge per unit Rs. 3.00 for per unit up to 20 units and Rs. 7.00 per unit for 21 units to 30 units
3	31 to 50 units	8.50	Minimum Monthly Service Charge Rs. 75.00 and Energy Charge per unit Rs. 3.00 for per unit up to 20 units and Rs. 7.00 per unit for 21 units to 30 units and Rs. 8.50 per unit for 31 units to 50 units
4	51 to 150 units	10.00	Minimum Monthly Service Charge Rs. 100.00 and Energy Charge per unit Rs. 3.00 for per unit up to 20 units and Rs. 7.00 per unit for 21 units to 30 units and Rs. 8.50 per unit for 31 units to 50 units and Rs. 10.00 per unit for 51 units to 150 units

5	151 to 250 units	11.00	Minimum Monthly Service Charge Rs. 125.00 and Energy Charge per unit Rs. 3.00 for per unit up to 20 units and Rs. 7.00 per unit for 21 units to 30 units and Rs. 8.50 per unit for 31 units to 50 units and Rs. 10.00 per unit for 51 units to 150 units and Rs. 11.00 per unit for 151 units to 250 units
6	251 to 400 units	12.00	Minimum Monthly Service Charge Rs. 150.00 and Energy Charge per unit Rs. 3.00 for per unit up to 20 units and Rs. 7.00 per unit for 21 units to 30 units and Rs. 8.50 per unit for 31 units to 50 units and Rs. 10.00 per unit for 51 units to 150 units and Rs. 11.00 per unit for 151 units to 250 units and Rs. 12.00 per unit for 251 units to 400 units
7	Above 400	13.00	Minimum Monthly Service Charge Rs. 175.00 minimum charge and Energy Charge per unit Rs. 3.00 for per unit up to 20 units and Rs. 7.00 per unit for 21 units to 30 units and Rs. 8.50 per unit for 31 units to 50 units and Rs. 10.00 per unit for 51 units to 150 units and Rs. 11.00 per unit for 151 units to 250 units and Rs. 12.00 per unit for 251 units to 400 units and Rs. 13.00 per unit for above 400 units

Similarly, billing will be made for 15, 30 and 60 Ampere.

2. Other Consumers

2.1 Low Voltage (230/400 V)

Consumer Category	Tariff Rate	
	Demand Charge	Energy Charge
	Rs. per KVA/ month	Rs./unit
1. Industrial		
a) Rural and Domestic	60.00	7.80
b) Small Industry	110.00	9.60
2. Commercial	325.00	11.20
3. Non-Commercial	215.00	12.00
4. Irrigation		4.30
5. Water Supply		
a) Community Water Supply	155.00	5.20
b) Other Water Supply	230.00	7.20
6. Temple		6.10
7. Street Light		
a) Metered		7.30
b) Non-Metered	2475.00	
8. Temporary Supply		19.80
9. Non-Domestic	350.00	13.00
10. Entertainment Business	350.00	14.00

2.2 High Voltage

Consumer Category	Tariff Rate	
	Demand Charge	Energy Charge
	Rs./KVA/month	Rs./unit
A. High Voltage (66 KV or above)		
1. Industrial	240.00	7.50
B. Medium Voltage (33 KV)		
1. Industrial	255.00	8.40
2. Commercial	315.00	10.80

3. Non-commercial	240.00	11.40
4. Irrigation	55.00	4.80
5. Water Supply		
a) Community Water Supply	220.00	6.00
b) Other Water Supply	220.00	6.60
6. Transportation		
a) Trolley Bus	230.00	5.60
b) Other Transportation	255.00	8.60
7. Non-Domestic	350.00	12.55
8. Entertainment Business	350.00	13.50
C. Medium Voltage (11 KV)		
1. Industrial	255.00	8.60
2. Commercial	315.00	11.10
3. Non-commercial	240.00	11.50
4. Irrigation	55.00	4.90
5. Water Supply		
a) Community Water Supply	220.00	6.20
b) Other Water Supply	220.00	6.80
6. Transportation		
a) Trolley Bus	230.00	5.60
b) Other Transportation	255.00	8.80
7. Temple	220.00	9.90
8. Temporary Supply	330.00	12.00
9. Non-Domestic	350.00	12.90
10. Entertainment Business	350.00	13.90

Under Non-Domestic: Embassy, Foreign Mission, INGO, Private Campus, Star Hotel, Shopping Mall etc.
Under Entertainment: Cinema Hall, Fun Park, Theater etc.

3. Time of Day (ToD) Tariff Rate

a) Electricity Tariff Rate from Baishakh to Mangsir

Consumer Category	**Tariff Rate**			
	Demand Charge Rs. per KVA/ month	**Pick Time (17.00-23.00)**	**Off Pick Time (23.00-5.00)**	**Normal time (5.00-17.00)**
A. High Voltage (66 KV or above)				
1. Industrial	240.00	9.30	4.15	7.50
B. Medium Voltage (33 KV)				
1. Industrial	250.00	10.20	5.25	8.40
2. Commercial	315.00	12.30	6.75	10.80
3. Non-Commercial	240.00	13.20	7.00	12.00
4. Irrigation	55.00	6.30	3.15	4.70
5. Water Supply				
a) Community Water Supply	220.00	7.30	3.60	5.90
b) Other Water Supply	220.00	10.20	5.25	8.40
6. Transportation				
a) Trolley Bus	230.00	7.00	3.70	5.50
b) Other Transportation	255.00	9.35	3.70	8.40
7. Street Light	80.00	8.40	3.50	4.20

C. Medium Voltage (11 KV)				
1. Industrial	250.00	10.50	5.40	8.55
2. Commercial	315.00	12.60	6.90	11.10
3. Non-commercial	240.00	13.50	7.15	12.25
4. Irrigation	55.00	6.40	3.50	4. 75
5. Water Supply				
a) Community Water Supply	220.00	7.45	4.40	6.10
b) Other Water Supply	220.00	10.50	5.40	8.50
6. Transportation				
a) Trolley Bus	230.00	7.15	4.20	5.60
b) Other Transportation	255.00	9.65	4.20	8.50
7. Street Light	80.00	8.80	3.75	4.40
8. Temple	220.00	11.30	5.15	9.10
9. Temporary Supply	330.00	14.40	6.60	11.75

b) Electricity Tariff Rate from Paush to Chaitra

Consumer Category	**Tariff Rate**		
	Demand Charge Rs. per KVA/ month	**Pick Time (17.00-23.00)**	**Normal Time (23.00-5.00)**
A. High Voltage (66 KV or above)			
1. Industrial	240.00	9.30	7.50
B. Medium Voltage (33 KV)			
1. Industrial	250.00	10.20	8.40
2. Commercial	315.00	12.30	10.80
3. Non-Commercial	240.00	13.20	12.00
4. Irrigation	55.00	6.30	4.70
5. Water Supply			
a) Community Water Supply	220.00	7.30	5.90
b) Other Water Supply	220.00	10.20	8.40
6. Transportation			
a) Trolley Bus	230.00	7.00	5.50
b) Other Transportation	255.00	9.35	8.40
7. Street Light	80.00	8.40	4.20
C. Medium Voltage (11 KV)			
1. Industrial	250.00	10.50	8.55
2. Commercial	315.00	12.60	11.10
3. Non-commercial	240.00	13.50	12.25
4. Irrigation	55.00	6.40	4.75
5. Water Supply			
a) Community Water Supply	220.00	7.45	6.10
b) Other Water Supply	220.00	10.50	8.50
6. Transportation			
a) Trolley Bus	230.00	7.15	5.60
b) Other Transportation	255.00	9.65	8.50
7. Street Light	80.00	8.80	4.40
8. Temple	220.00	11.30	9.10
9. Temporary Supply	330.00	14.40	11.75

4. Community Wholesale Consumer:

Voltage Level	Energy Charge (Rs./unit)
a) Medium Voltage (11KV/33KV)	
Upto (N* x 30) units	4.25
Above (N* x 30) units	6.00
b) Lower Voltage Level (230/400 Volt)	
Upto (N* x 30) units	4.25
Above (N* x 30) units	6.25

N*= Total Number of Consumers of a Community Group

Notes:

a) Low Voltage refers to Electricity Supply of 230/400 V, Medium Voltage refers to 11 KV and 33 KV and High Voltage refers to 66 KV or above.

b) 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/07.

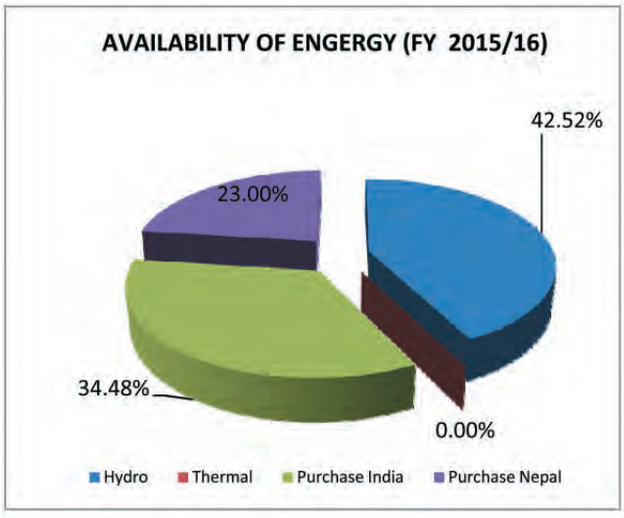
c) 10% rebated in total bill amount will be given to the Government of Nepal approved Industrial Districts, if the bill is paid within 21 days of billing date.

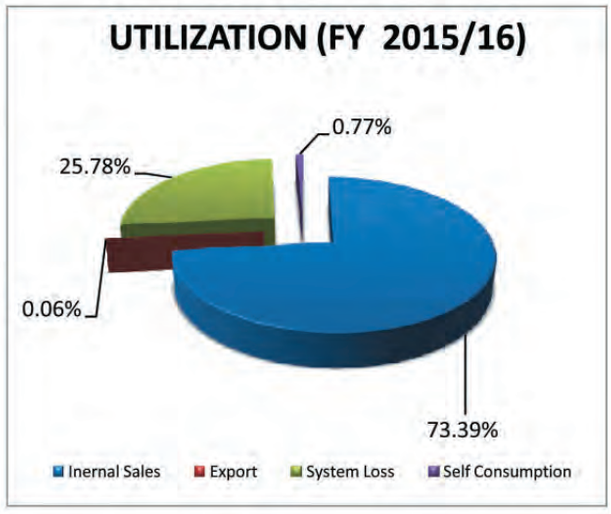
d) If the Crematory House, Governmental Hospital and Health Centers (except Residential Complex or part thereof) under the Government of Nepal pay the bill within 21 days, 20 percent rebate will be given in total bill amount.

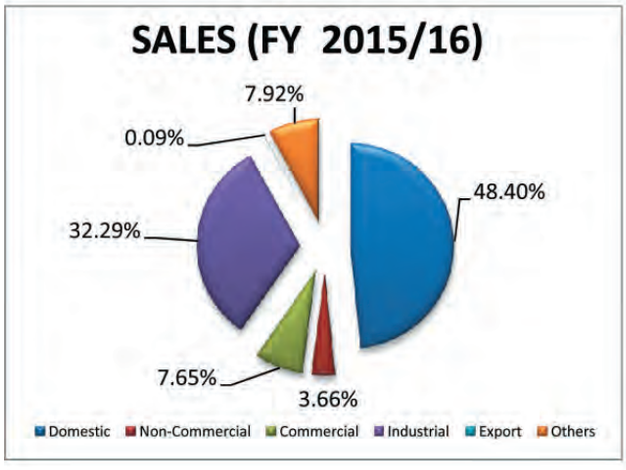
e) Consumers supplied at High Voltage (66 KV or above) and Medium Voltage (33 KV and 11 KV) should compulsorily install ToD Meter.

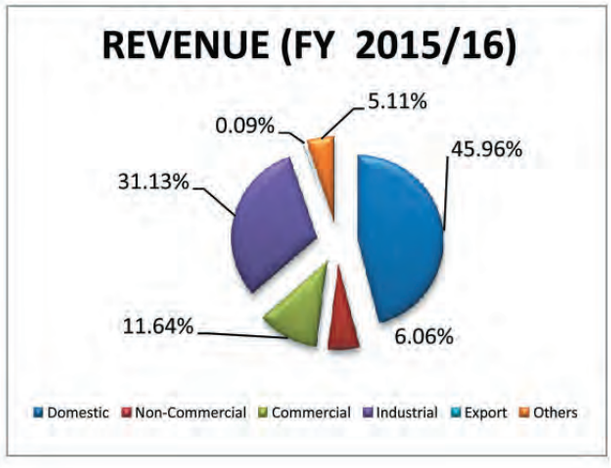
f) If New Additional Consumers applying for 11 KV supply are to be supplied at 33 KV, they will be charged as per 11 KV Tariff Structure.

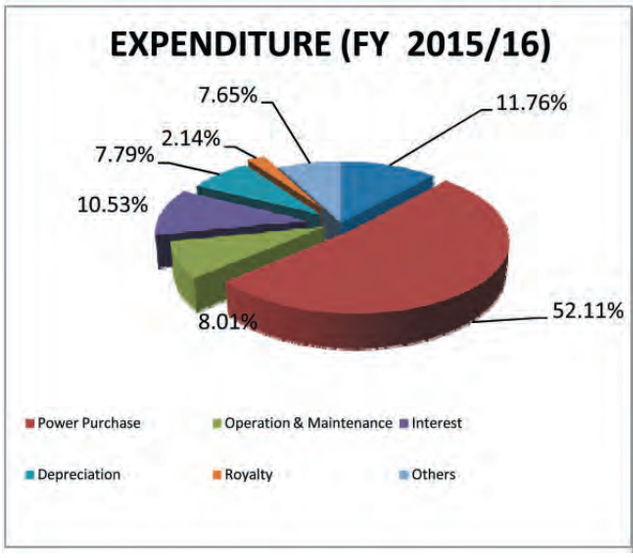
Statistics & Schematics

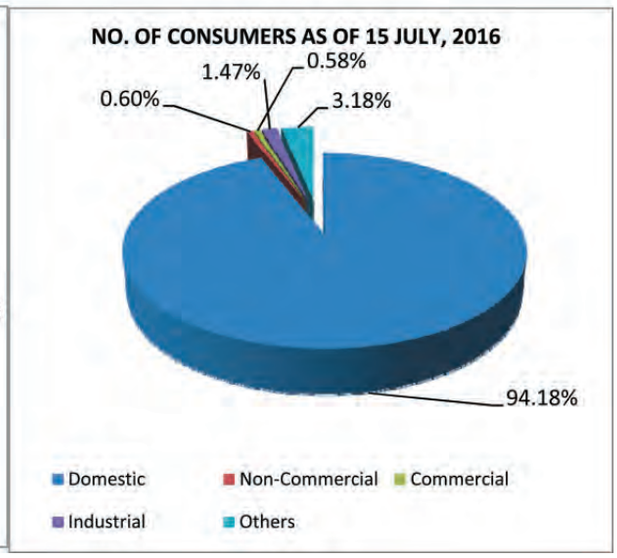




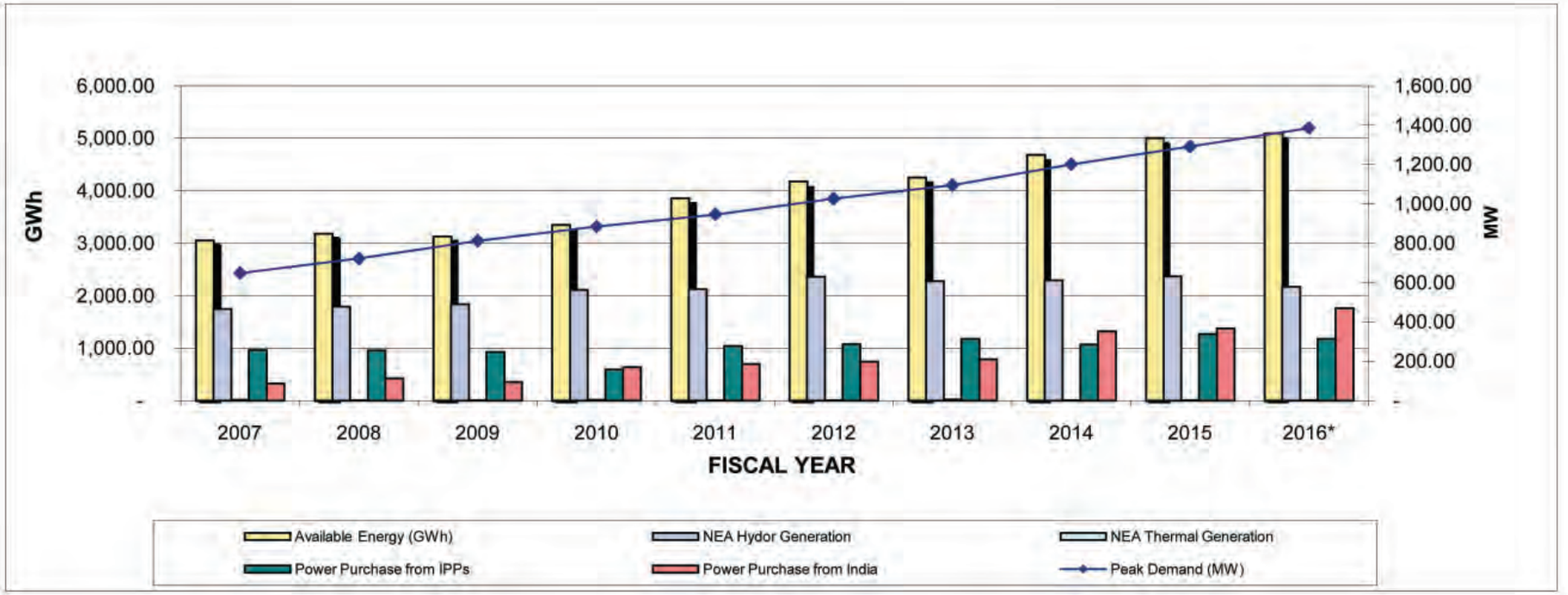








Total Energy Available & Peak Demand

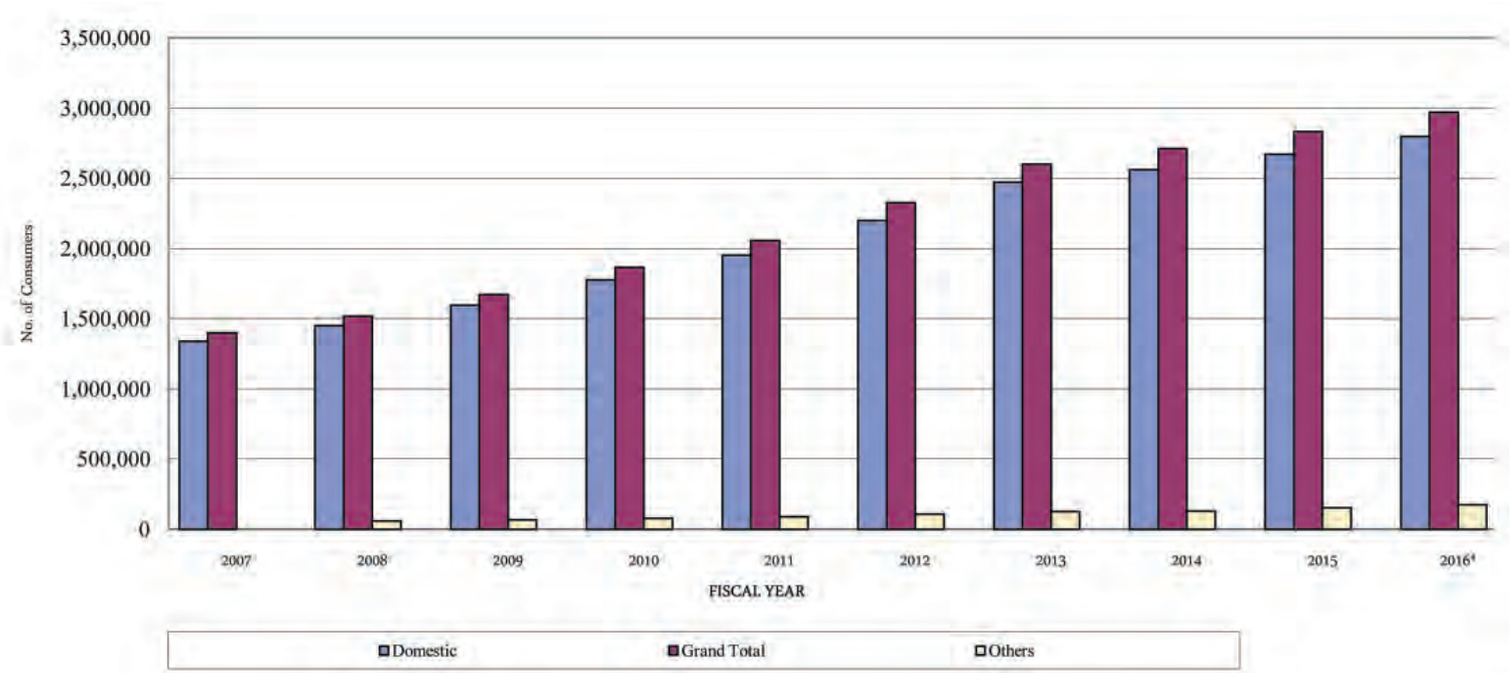


Particulars	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016*
Peak Demand (MW)	648.39	721.73	812.50	885.28	946.10	1,026.65	1,094.62	1,200.98	1,291.10	1,385.30
NEA Hydor Generation	1,747.42	1,793.14	1,839.53	2,108.65	2,122.08	2,357.43	2,273.11	2,288.23	2,365.64	2,168.49
NEA Thermal Generation	13.31	9.17	9.06	13.01	3.40	1.56	18.85	9.65	1.24	0.07
NEA Generation Total (GWh)	**1,760.73**	**1,802.31**	**1,848.59**	**2,121.66**	**2,125.48**	**2,358.99**	**2,291.96**	**2,297.88**	**2,366.88**	**2,168.56**
Power Purchase from India	328.83	425.22	356.46	638.68	694.05	746.07	790.14	1,318.75	1,369.89	1,758.41
Power Purchase from IPPs	962.26	958.42	925.74	591.43	1,038.84	1,073.57	1,175.98	1,070.47	1,268.93	1,173.14
Power Purchase Total (GWh)	**1,291.09**	**1,383.64**	**1,282.20**	**1,230.11**	**1,732.89**	**1,819.64**	**1,966.12**	**2,389.21**	**2,638.82**	**2,931.55**
Available Energy (GWh)	**3,051.82**	**3,185.95**	**3,130.79**	**3,351.77**	**3,858.37**	**4,178.63**	**4,258.08**	**4,687.09**	**5,005.70**	**5,100.11**

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

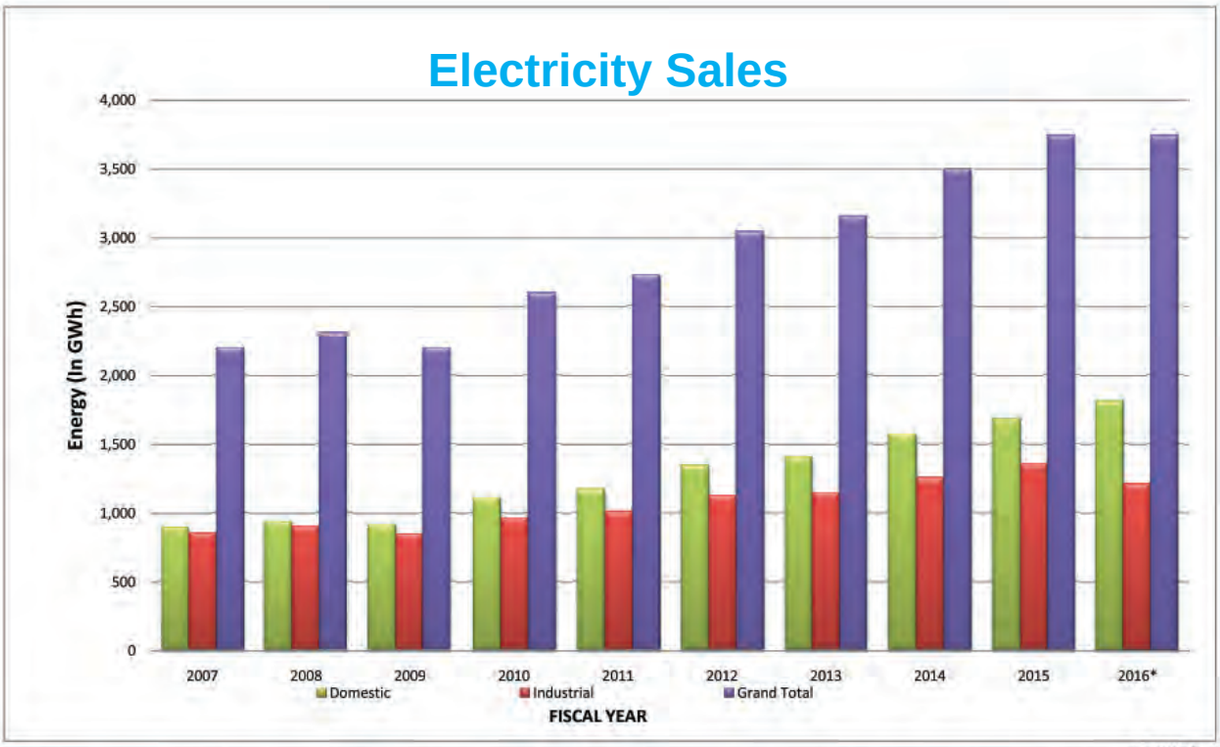
* Provisional figures

Growth of Consumers



Particulars	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016*
Domestic	1,339,253	1,450,254	1,595,015	1,775,571	1,949,530	2,198,680	2,472,264	2,558,726	2,671,039	2,796,621
Non-Commercial	10,215	10,556	10,518	10,952	12,520	14,055	15,179	16,155	16,717	17,732
Commercial	6,000	6,052	7,305	8,919	10,802	13,297	13,096	14,955	15,899	17,191
Industrial	24,089	25,548	28,559	29,410	33,030	36,409	37,498	40,265	41,825	43,639
Water Supply	414	434	584	609	688	860	834	1,141	1,266	1,426
Irrigation	13,183	18,614	22,335	32,089	42,494	53,165	51,520	71,845	77,066	83,283
Street Light	1,608	1,961	2,339	2,214	2,374	2,590	2,878	2,774	2,813	2,829
Temporary Supply	210	300	403	522	634	619	768	726	733	883
Transport	39	38	42	41	42	44	51	43	44	43
Temple	2,628	2,746	2,911	2,941	3,181	3,529	3,857	4,048	4,181	4,391
Community Sales	169	375	594	795	995	1,161	1,207	1,377	1,459	1,537
Total (Internal Sales)	**1,397,808**	**1,516,878**	**1,670,605**	**1,864,063**	**2,056,290**	**2,324,409**	**2,599,152**	**2,712,055**	**2,833,042**	**2,969,575**
Bulk Supply (India)	5	5	5	4	2	5	4	2	1	1
Grand Total	**1,397,813**	**1,516,883**	**1,670,610**	**1,864,067**	**2,056,292**	**2,324,414**	**2,599,156**	**2,712,057**	**2,833,043**	**2,969,576**

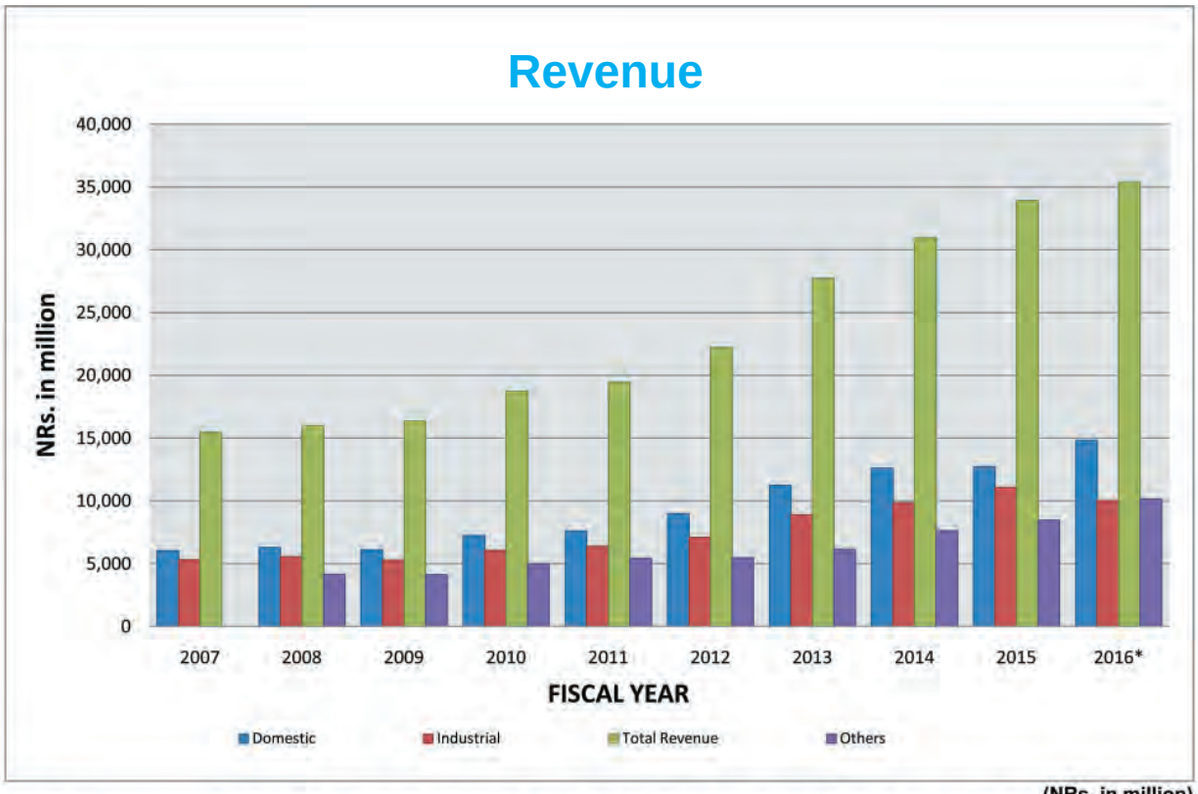
Note:- *Provisional figures



(in GWh)

Particulars	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016*
Domestic	893.27	931.35	908.67	1,108.87	1,169.31	1,342.67	1,401.64	1,571.39	1,679.35	1,812.90
Non-Commercial	100.52	109.93	98.89	103.47	109.49	115.68	115.21	126.64	130.53	136.92
Commercial	141.69	154.38	146.29	187.12	204.03	240.74	256.82	285.42	300.25	286.68
Industrial	849.13	901.09	845.68	960.43	1,001.73	1,123.94	1,141.07	1,251.69	1,352.15	1,209.57
Water Supply & Irrigation	47.96	46.86	48.14	55.98	82.80	64.59	72.55	82.52	86.56	100.62
Street Light	66.90	70.26	67.51	65.58	67.21	72.06	76.24	76.44	76.48	76.33
Temporary Supply	1.26	0.70	1.04	1.00	1.00	1.20	1.47	1.34	1.52	2.11
Transport	6.31	5.88	5.22	5.42	5.54	6.72	6.26	6.22	6.24	6.27
Temple	4.78	5.12	4.76	3.64	3.46	3.95	4.11	5.18	4.85	5.73
Community Sales	15.51	24.65	32.01	34.95	51.95	69.02	77.04	86.08	102.62	105.61
Total (Internal Sales)	**2,127.33**	**2,250.22**	**2,158.21**	**2,526.46**	**2,696.52**	**3,040.57**	**3,152.41**	**3,492.91**	**3,740.54**	**3,742.74**
Bulk Supply (India)	76.87	60.10	46.38	75.07	31.10	4.12	3.60	3.40	3.17	3.25
Grand Total	**2,204.20**	**2,310.32**	**2,204.59**	**2,601.53**	**2,727.62**	**3,044.69**	**3,156.01**	**3,496.31**	**3,743.71**	**3,746.00**

Note:- *Provisional figures

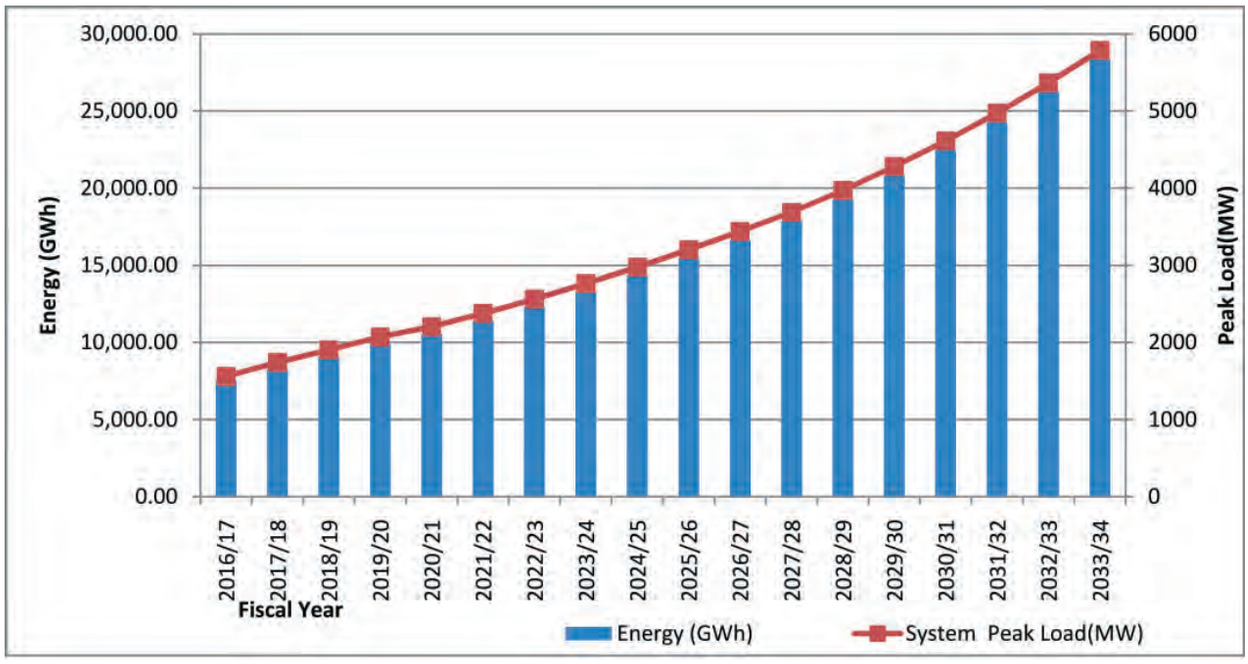


(NRs. in million)

Particulars	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016*
Domestic	6,021.40	6,297.65	6,100.65	7,252.06	7,602.34	8,967.77	11,247.77	12,622.11	12,706.55	14,805.27
Non-Commercial	940.20	982.08	900.75	983.63	1,020.51	1,091.52	1,355.17	1,486.63	1,644.45	1,952.90
Commercial	1,288.05	1,399.51	1,384.67	1,719.35	1,910.28	2,259.50	2,994.00	3,359.69	3,735.00	3,749.46
Industrial	5,300.91	5,544.80	5,264.33	6,060.20	6,378.25	7,102.37	8,885.21	9,844.18	11,064.84	10,026.59
Water Supply & Irrigation	214.18	204.67	215.62	353.14	250.60	294.82	389.34	418.20	480.71	528.26
Street Light	454.85	467.31	445.96	333.90	433.42	464.22	582.69	601.84	629.65	598.30
Temporary Supply	17.36	10.51	12.20	13.58	13.98	16.18	24.48	23.07	27.39	29.56
Transport	31.65	33.70	26.95	27.58	27.78	31.70	39.53	39.32	41.44	40.89
Temple	26.03	26.38	24.41	28.16	26.51	21.38	23.66	26.34	29.17	33.38
Community Sales	53.70	64.22	70.10	170.90	189.28	244.97	301.38	334.94	400.12	415.25
Total (Internal Sales)	**14,348.33**	**15,030.83**	**14,445.64**	**16,942.50**	**17,852.95**	**20,494.43**	**25,843.23**	**28,756.31**	**30,759.31**	**32,179.84**
Bulk Supply (India)	428.93	361.14	295.49	604.85	215.42	23.97	32.22	30.90	39.36	30.22
Gross Revenue	**14,777.26**	**15,391.97**	**14,741.13**	**17,547.35**	**18,068.37**	**20,518.40**	**25,875.45**	**28,787.21**	**30,798.67**	**32,210.05**
Income from Other Services	689.08	584.18	1,601.66	1,188.27	1,382.94	1,695.42	1,868.37	2,156.90	3,116.26	3,164.88
Total Revenue	**15,466.34**	**15,976.15**	**16,342.79**	**18,735.62**	**19,451.31**	**22,213.82**	**27,743.82**	**30,944.11**	**33,914.93**	**35,374.94**

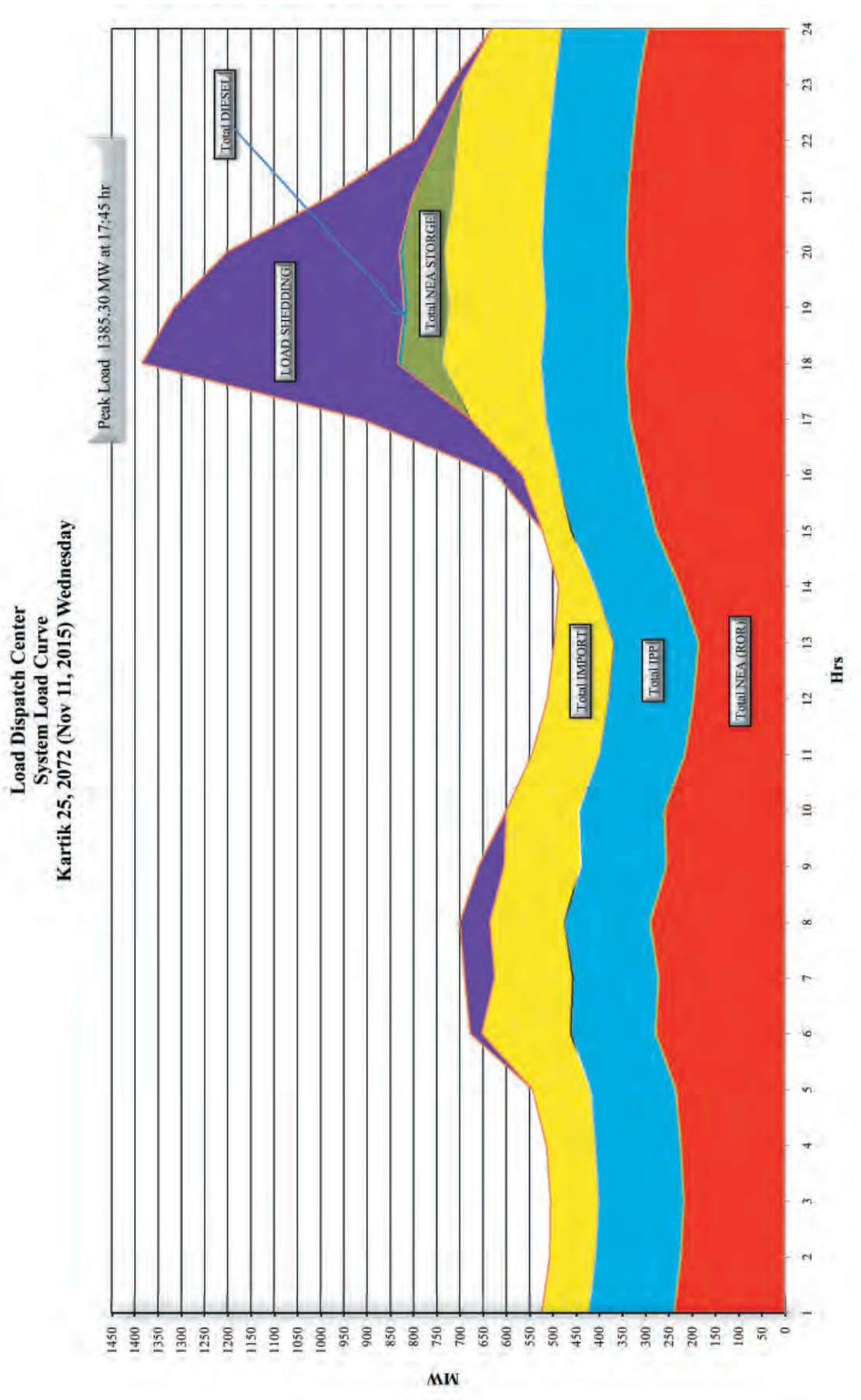
Note:- *Provisional figures

Load Forecast



Fiscal Years	Energy (GWh)	System Peak Load(MW)
2016/17	7,491.08	1559.7
2017/18	8,287.02	1742.2
2018/19	9,070.15	1903.3
2019/20	9,889.91	2071.5
2020/21	10,540.57	2203.8
2021/22	11,398.88	2378.9
2022/23	12,299.44	2562.1
2023/24	13,295.10	2764.5
2024/25	14,349.25	2978.3
2025/26	15,459.95	3203
2026/27	16,631.63	3439.5
2027/28	17,869.03	3688.7
2028/29	19,275.03	3971.7
2029/30	20,811.80	4280.7
2030/31	22,474.72	4614.4
2031/32	24,274.29	4974.9
2032/33	26,221.88	5364.5
2033/34	28,329.85	5785.3

System Load Curve of Peak Load Day



Electricity Generation Power Plants and Projects

Major Hydropower Stations		
S.No	Power Plants	Capacity(kW)
1	Kaligandaki A	144,000
2	Middle Marsyangdi	70,000
3	Marsyangdi	69,000
4	Trishuli	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	Ramechahap	150
27	Terhathum**	100
	Total	473,394

Small Hudropower Plants(Isolated)	
Dhankuta***	240
Jhupra(Surkhet)***	345
Gorkhe(Illam)***	64
Jumla**	200
Dhanding***	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)	324446
	Total Hydro(Nepal)	802,376
	Total Thermal(NEA)	53,410
	Total Sola(NEA)	100
Total Installed Capacity		855,886
Total installed Capacity(NEA & IPP)-Grid		851,250

Under Construction		Capacity(kW)
1	Upper Tamakoshi Hydropower Project	456,000
2	Tanahu Hydropower Project	140,000
3	Chameliya HEP	30,000
4	Kulekhani III HEP	14,000
5	Upper Trishuli 3A HEP	60,000
6	Rahughat HEP	40,000
7	Upper Sanjen	14,600
8	Sanjen	42,500
9	Rasuwagadi	111,000
10	Madhya Bhotekoshi	102,000
11	Upper Trishuli 3B	37,000
	Total	**1,047,100**
Planned and Proposed		**Capacity**
1	Upper Arun HEP	335,000
2	Upper Modi A HEP	42,000
3	Upper Modi HEP	18,200
4	DudhKoshi Storage HEP	640,000
5	Tamor Storage HEP	530,000
6	Uttar Ganga Storage HEP	300,000
7	Tamakoshi V HEP	87,000
8	Upper Bheri HEP	85,000
9	Chainpur Seti HEP	140,000
	Total	**2,177,200**

Note

** Leased to Private Sector

*** Not in Normal Operation

Existing High Voltage Transmission Lines & Substations

S.N	132 kV Transmission Line	Type of Ckts	Length Circuit km	Conductor Type	Conductor Size (Sq.mm)
1	Anarmani-Duhabi	Single	75.76	BEAR	250
2	Kusha-Katiya(India)	Single	15	HTLS, ACCR	
3	Duhabi-Lahan-Cha-pur-Pathaliya/Parwanipur-Hetauda	Double	598	BEAR	250
4	Hetauda-KL2 P/S	Double	16	BEAR	250
5	Bharatpur-Marsyangdi P/S	Single	25	DUCK	300
6	Hetauda-Bharatpur	Single	70	PANTHER	200
7	Marsyangdi P/S-Suichatar	Single	84	DUCK	300
8	Suichatar-KL2 P/S	Double	72	BEAR	250
9	Suichatar-Balaju-New Bhaktapur	Single	26.9	BEAR	250
10	New Bhaktapur-Lamosangu	Double	96	BEAR	250
11	Lamosangu-Khimti P/S	Single	46	BEAR	250
12	Lamosangu-Bhotekoshi P/S	Single	31	BEAR	250
13	Bharatpur-Damauli	Single	39	WOLF	150
14	Bharatpur-Kawasoti-Bardghat	Single	70	PANTHER	200
15	Bardghat-Gandak P/S	Double	28	PANTHER	200
16	Bardghat-Butwal	Double	86	BEAR	250
17	Butwal-KGA P/S	Double	116	DUCK	300
18	KGA P/S-Lekhnath	Double	96	DUCK	300
19	Lekhnath-Damauli	Single	45	WOLF	150
20	Lekhnath-Pokhara	Single	7	DOG	100
21	Pokhara-Modikhola P/S	Single	37	BEAR	250
22	Butwal-Shivapur-Lamahi	Double	230	BEAR	250
23	Lamahi-Jhimruk P/S	Single	50	DOG	100
24	Lamahi-Kohalpur-Lumki-Attariya	Partly Double	333	BEAR	250
25	Attariya-Mahendranagar-Gaddachauki	Single	49	BEAR	250
26	Marsyangdi -M. Marsyangdi	Single	40	CARDINAL	420
27	Damak-Godak	Single	35	BEAR	250
	Total		**2,416.7**		

S.N	400 kV Transmission Line	Type of Ckts	Length Circuit km	Conductor Type	Conductor Size (Sq.mm)
1	Dhalkebar-Muzzaffarpur Cross Border Line	Double	78	MOOSE	500

S.N	66 kV Transmission Line	Type of Ckts	Length Circuit km	Conductor Type	Conductor Size (Sq.mm)
1	Chilime P/S-Trishuli P/S	Single	39	WOLF	150
2	Trisuli P/S-Balaju	Double	58	DOG	100
3	Trisuli P/S-Devighat P/S	Single	4.56	WOLF	150
4	Devighat P/S-Balaju	Single	30	DOG	100
5	Devighat P/S-New Chabel	Single	33	DOG	100
6	Balaju-Lainchor	Single	2	PANTHER	200
7	Balaju-Siuchatar-KL1 P/S	Double	72	WOLF	150
8	KL 1 P/S-Hetauda-Birgunj	Double	144	WOLF	150
9	Suichatar-Teku	Single	4.1	BEAR	250
10	Suichatar-New Patan	Double	13	WOLF	150
11	Teku-K3 (underground)	Singlecore	2.8	XLPE Cable	400
12	Suichatar-K3	Single	6.9	XLPE Cable	250 & 500
13	New Patan-New Baneswor	Single	2.8		120
14	Bhaktapur-New Chabel	Single	23		250 &100
15	Bhaktapur-Banepa-Panchkhal-Sunkoshi P/S	Single	48		120
16	Indrawati- Panchkhal	Single	28		95
	Total		**511.16**		

EXISTING GRID SUBSTATIONS

132 kV SUBSTATIONS (CAPACITY IN MVA)

1	Mahendranagar	17.5	16. Kamane, Hetau	30.0	
2	Attariya	60.0	17. Shyangja	30.0	
3	Lumki	15.0	18. Dhalkebar	50.0	
4	Kohalpur	64.6	19. Lahan	63.0	
5	Lamahi	60.0	20. Duhabi	126.0	
6	Shivapur	35.0	21. Anarmani+Dama	90.0	
7	Butwal	126.0	22. Pokhara	60.0	
8	Bardghat	23.0	23. Lekhnath	12.5	
9	Kawasoti	30.0	24. Damauli	25.0	
10	Bharatpur	67.5	25. Lamosangu	30.0	
11	Hetauda	110.0	26. Bhaktapur	94.5	
12	Parwanipur	171.0	27. Balaju	90.0	
13	Chandranigahapur	60.0	28. Siuchatar	149.4	
14	Pathlaiya	22.5	29. Matatirtha	52.5	
15	Kusum	30.0			
	Total			**1,765.00**	

66KV SUBSTATIONS (CAPACITY IN MVA)

1	Birgung	85.0
2	Amlekhgunj	3.2
3	Simra	37.5
4	K-3	45.0
5	Teku	45.0
6	Patan	54.0
7	Baneshwor	36.0
8	Indrawati	7.5
9	Banepa	22.5
10	Panchkhal	10.0
11	Lainchour	45.0
12	New-Chabel	67.5
	Total	**458.15**

Under Construction & Planned High Voltage Transmission Lines & Substations

S.N.	132 kV Transmission Line	Type of Ckts	Length Circuit km	Conductor Type	Conductor Size (Sq.mm)
1	Thankot-Chapagaon	Double	57	BEAR	250
2	Chameliya-Attaria	Single	131	BEAR	250
3	Kohalpur-Mahendranagar 2nd Circuit	Double	190	BEAR	250
4	Mid. Marsyangdi-Dumre- Damauli-Marsyangdi	Double	76	BEAR	250
5	Kabeli-Godak	Double	145	BEAR	250
6	Singati-Lamosangu	Double	76	BEAR	250
7	Kusum - Hapure	Single	22	BEAR	250
8	Lamahi-Ghorahi	Single	19	BEAR	250
9	Samundratar-Trishuli 3B	Double	60	ACCC	
Total			**775.0**		
S.N.	**220 kV Transmission Line**	**Type of Ckts**	**Length Circuit km**	**Conductor Type**	**Conductor Size (Sq.mm)**
1	Khimti-Dhalkebar	Double	150	BISON	350
2	Hetauda-Bharatpur	Double	73	BISON	350
3	Bharatpur-Bardghat	Double	150	BISON	350
4	Koshi Corridor	Double	286	MOOSE	500
5	Marsyangdi-Kathmandu	Double	170	MOOSE	500
6	Kaligandaki Corridor	Double	219.8	MOOSE+HTLS	500
Total			**1,049**		
S.N.	**400 kV Transmission Line**	**Type of Ckts**	**Length Circuit km**	**Conductor Type**	**Conductor Size (Sq.mm)**
1	Hetauda-Dhalkebar-Duhabi	Double	570	MOOSE	500
2	Tamakoshi-Kathmandu 220/400kV	Double	170	MOOSE	500
Total			**740**		

PLANNED & PROPOSED

S.N.	220 kV Transmission Line	Type of Ckts	Length Circuit km	Conductor Type	Conductor Size (Sq.mm)
1	Lekhnath-Damauli	Double	80	MOOSE	500
2	Marsyangdi - Bharatpur	Double	230	MOOSE	500
3	Marsyangdi Corridorr	Double	180	HTLS	
4	Chilime-Trishuli	Double	80	BISON	350
Total			**570.00**		
S.N.	**132 kV Transmission Line**	**Type of Ckts**	**Length Circuit km**	**Conductor Type**	**Conductor Size (Sq.mm)**
1	Butwal-Lumbini	Double	44	BEAR	250
2	Dhalkebar-Loharpatti	Double	40	BEAR	250
3	Gulmi-Arghakhanchi-Gorusinghe	Double	220	BEAR	250
4	Ramechap-Garjyang-Khimti	Double	60	BEAR	250
5	Dordi Corridor	Double	32	BEAR	250
6	Modi-Lekhnath	Double	84	BEAR	250
7	Karnali Corridor	Double	120	BEAR	250
8	Bajhang-Deepayal-Attariya	Double	260	BEAR	250
9	Hapure-Tulsipur	Double	36	BEAR	250
10	Surkhet-Dailekh-Jumla	Double	214	BEAR	250
11	Kaligandaki-Gulmi (Jhimruk)	Double	86	BEAR	250
12	Solu Corridor (Katari-Okhaldhunga-Solu)	Double	180	CARDINAL	420
13	Baneshwor-Bhaktapur	Double	24	XLPE	800
Total			**1400.00**		
S.N.	**400 kV Transmission Line**	**Type of Ckts**	**Length Circuit km**	**Conductor Type**	**Conductor Size (Sq.mm)**
1	Hetauda-Butwal-Lamki-Mahendranagar	Double	1140	MOOSE	500
2	New Butwal-Bardghat	Double	90		
3	Kohalpur-Surkhet	Double	100	MOOSE	500
4	Bheri Corridor	Double	230	MOOSE	500
Total			**1560**		

UNDER CONSTRUCTION GRID SUBSTATIONS			**PLANNED & PROPOSED GRID SUBSTATIONS**		
1	132/33/11 kV Damak, Illam, Phidim, Kabeli	124.0	**Voltage Level**	**No. of Substations**	**Total Capacity (MVA)**
2	132/11 kV Chapali	120.0	Up to 400kV	5	2025
3	132/33/11 kV Matatirtha	52.5	Up to 220kV	18	3876
4	132/33 kV Hapure	30.0	Up to 132kV	21	917
5	132/33 kV New Marsyangdi	30.0	**Total**		**6818.00**
6	132/33 kV Singati	30.0			
7	132/33kV Mirchaiya	30.0			
8	132/33kV Ghorahi	30.0			
9	132/11kV New Bharatpur	30.0			
Total		**476.5**			

NEPAL ELECTRICITY AUTHORITY
POWER TRADE DEPARTMENT

IPPs' Hydro Power Projects (Operation) as of Ashadh 31, 2073

S.No.	Company	Projects	Location	Installed Capacity (kW)	Commercial Operation Date (COD)
1	Himal Power Ltd.	Khimti Khola	Dolkha	60000	2057.03.27
2	Bhotekoshi Power Company Ltd.	Bhotekoshi Khola	Sindhupalchowk	45000	2057.10.11
3	Chilime Hydro Power Company Ltd.	Chilime	Rasuwa	22100	2060.05.08
4	National Hydro Power Company Ltd.	Indrawati - III	Sindhupalchowk	7500	2059.06.21
5	Butwal Power Company Ltd.	Jhimruk Khola	Pyuthan	12000	2051
6	Butwal Power Company Ltd.	Andhi Khola	Syangza	9400	2071.12.22
7	Syange Electricity Company Limited	Syange Khola	Lamjung	183	2058.10.10
8	Arun Valley Hydropower Development Company (P.) Ltd.	Piluwa Khola Small	Sankhuwasabha	3000	2060.06.01
9	Rairang Hydro Power Development Co. (P) Ltd.	Rairang Khola	Dhading	500	2061.08.01
10	Sanima Hydropower (Pvt.) Ltd.	Sunkoshi Small	Sindhupalchok	2500	2061.12.11
11	Alliance Power Nepal Pvt.Ltd.	Chaku Khola	Sindhupalchok	3000	2062.03.01
12	Khudi Hydropower Ltd.	Khudi Khola	Lamjung	4000	2063.09.15
13	Unique Hydel Co. Pvt.Ltd.	Baramchi Khola	Sindhupalchowk	4200	2063.09.27 2067.07.28
14	Thoppal Khola Hydro Power Co. Pvt. Ltd.	Thoppal Khola	Dhading	1650	2064.07.13
15	Gautam Buddha Hydropower (Pvt.) Ltd.	Sisne Khola Small	Palpa	750	2064.06.01
16	Kathmandu Small Hydropower Systems Pvt. Ltd.	Sali Nadi	Kathmandu	250	2064.08.01
17	Khoranga Khola Hydropower Dev. Co. Pvt. Ltd.	Pheme Khola	Panchtar	995	2064.08.05
18	Unified Hydropower (P.) Ltd.	Pati Khola Small	Parbat	996	2065.10.27
19	Task Hydropower Company (P.) Ltd.	Seti-II	Kaski	979	2065.11.14
20	Ridi Hydropower Development Co. (P.) Ltd.	Ridi Khola	Gulmi	2400	2066.07.10
21	Centre for Power Dev. And Services (P.) Ltd.	Upper Hadi Khola	Sindhupalchowk	991	2066.07.22
22	Gandaki Hydro Power Co. Pvt. Ltd.	Mardi Khola	Kaski	4800	2066.10.08
23	Himal Dolkha Hydropower Company Ltd.	Mai Khola	Ilam	4500	2067.10.14
24	Baneswor Hydropower Pvt. Ltd.	Lower Piluwa Small	Sankhuwasabha	990	2068.04.01
25	Barun Hydropower Development Co. (P.) Ltd.	Hewa Khola	Sankhuwasabha	4455	2068.04.17
26	Nyadi Group (P.) Ltd.	Siuri Khola	Lamjung	4950	2069.07.30
27	United Modi Hydropwer Pvt. Ltd.	Lower Modi 1	Parbat	10000	2069.08.10
28	Bhagawati Hydropower Development Co. (P.) Ltd.	Bijayapur-1	Kaski	4410	2069.05.04
29	Synergy Power Development (P.) Ltd.	Sipring Khola	Dolkha	9658	2069.10.03
30	Ankhu Khola Jal Bidhyut Co. (P.) Ltd.	Ankhu Khola - 1	Dhading	8400	2070.05.05
31	Laughing Buddha Power Nepal (P.) Ltd.	Middle Chaku	Sindhupalchowk	1800	2069.11.15
32	Bhairabkunda Hydropower Pvt. Ltd.	Bhairab Kunda	Sindhupalchowk	3000	2071.02.22
33	Nepal Hydro Developer Pvt. Ltd.	Charanawati Khola	Dolakha	3520	2070.02.24

34	Laughing Buddha Power Nepal Pvt. Ltd.	Lower Chaku Khola	Sindhupalchowk	1800	2070.04.24
35	Bojini Company Private Limited	Jiri Khola Small	Dolkha	2200	2071.11.01
36	Sanima Mai Hydropower Limited	Mai Khola	Ilam	22000	2071.10.14
37	Prime Hydropower Co. Pvt. Ltd.	Belkhu	Dhading	518	2071.12.30
38	Mailung Khola Hydro Power Company (P.) Ltd.	Mailung Khola	Rasuwa	5000	2071.03.19
39	Aadishakti Power Dev. Company (P.) Ltd.	Tadi Khola (Thaprek)	Nuwakot	5000	2069.12.14
40	Joshi Hydropower Development Company Limited	Upper Puwa -1 Hydropower Project	Puwa Mahjuwa,Illam	3000	2071.10.01
41	Ruru Hydropower Project (P) Ltd.	Upper Hugdi Khola	Gulmi	5000	2071.12.09
42	Radhi Bidyut Company Ltd.	Radhi Khola	Lamjung	4400	2071.02.31
43	Api Power Company Pvt. Ltd.	Naugadh gad Khola	Darchula	8500	2072.05.02
44	Pashupati Environmental Eng. Power Co. Pvt. Ltd.	Chhote Khola	Gorkha	993	2071.03.09
45	Chhyangdi Hydropower Limited	Chhandi	Lamjung	2000	2072.12.13
46	Kutheli Bukhari Small Hydropower (P).Ltd	Suspa Bukhari	Dolakha	998	2072.06.06
47	Kathmandu Upatyaka Khanepani bewasthapan Board	Solar	Lalitpur	680.4	2069.07.15
48	Sanima Mai Hydropower Ltd.	Mai Cascade	Ilam	7000	2072.10.29
49	Panchakanya Mai Hydropower Ltd. (Previously Mai Valley and prior to that East Nepal)	Upper Mai Khola	Ilam	9980	2073.03.09
50	Sayapatri Hydropower Private Limited	Daram Khola A	Baglung	2500	2073.03.12
			TOTAL	**324,446.40**	

IPPs' Hydropower Projects (Under Construction) as of Ashadh 31, 2073

(Financial Closure concluded projects)

S.N.	Developers	Projects	Location	Installed Capacity (kW)	PPA Date
1	Sunkoshi Hydro Power Co. Pvt. Ltd.	Lower Indrawati Khola	Sindhupalchok	4500	2059.08.23
2	Eastern Hydropower (P.) Ltd.	Pikhuwa Khola	Bhojpur	2475	2066.07.24
3	Upper Tamakoshi Hydropower Ltd.	Upper Tamakoshi	Dolkha	456000	2067.09.14
4	Electro-com and Research Centre Pvt. Ltd.	Jhyadi Khola	Sindhupalchowk	2000	2067.01.30
5	Shibani Hydropower Co. Pvt. Ltd.	Phawa Khola	Taplejung	4950	2063.12.01
6	Nama Buddha hydropower Pvt. Ltd.	Tinau Khola	Palpa	990	2065.03.31
7	Garjang Upatyaka Hydropower (P.) Ltd.	Chake Khola	Ramechhap	2830	2065.11.06
8	Mai Valley Hydropower Private Limited	Upper Mai C	Ilam	5100	2068.12.23
9	Madi Power Pvt. Ltd.	Upper Madi	Kaski	25000	2066.05.21
10	Himalayan Hydropower Pvt. Ltd.	Namarjun Madi	Kaski	11800	2066.05.30
11	Sikles Hydropower Pvt. Ltd.	Madkyu Khola	Kaski	13000	2066.08.03
12	Jumdi Hydropower Pvt. Ltd.	Jumdi Khola	Gulmi	1750	2066.10.21
13	Barahi Hydropower Pvt.ltd	Theule Khola	Baglung	1500	2066.12.16
14	Hira Ratna Hydropower P.ltd	Tadi Khola	Nuwakot	5000	2067.01.09
15	Energy Engineering Pvt.ltd	Upper Mailung A	Rasuwa	5000	2067.03.25
16	Teleye Samyak Hydropower Company Pvt. Ltd.	Dhansi Khola	Rolpa	955	2067.04.12
17	Greenlife Energy Pvt. Ltd.	Khani khola-1	Dolakha	25000	2067.06.24
18	Sinohydro-Sagarmatha Power Company (P) Ltd.	Upper Marsyangdi "A"	Lamjung	50000	2067.09.14
19	Himalayan Urja Bikas Co. Pvt. Ltd.	Upper Khimti	Ramechhap	12000	2067.10.09
20	Mount Kailash Energy Pvt. Ltd.	Thapa Khola	Myagdi	11200	2067.10.11
21	Green Ventures Pvt. Ltd.	Likhu-IV	Ramechhap	52400	2067.10.19
22	Robust Energy Ltd.	Mistri Khola	Myagdi	42000	2067.10.20 2073.01.15
23	Daraudi Kalika Hydro Pvt. Ltd.	Daraudi Khola A	Gorkha	6000	2068.05.19
24	Manang Trade Link Pvt. Ltd.	Lower Modi	Parbat	20000	2068.05.20
25	Panchthar Power Company Pvt. Ltd.	Hewa Khola A	Panchthar	14900	2068.05.30
26	Sanjen Hydropower Co.Limited	Upper Sanjen	Rasuwa	14800	2068.06.23
27	Middle Bhotekoshi Jalbidhyut Company Ltd.	Middle Bhotekoshi	Sindhupalchowk	102000	2068.07.28
28	Chilime Hydro Power Company Ltd.	Rasuwagadhi	Rasuwa	111000	2068.07.28
29	Water and Energy Nepal Pvt. Ltd.	Badi Gad	Baglung	6600	2068.08.13
30	Sanjen Hydropower Company Limited	Sanjen	Rasuwa	42500	2068.08.19
31	Gelun Hydropower Co.Pvt.Ltd	Gelun	Sindhupalchowk	3200	2068.09.25
32	Dronanchal Hydropower Co.Pvt.Ltd	Dhunge-Jiri	Dolakha	600	2068.09.25
33	Mandakini Hydropower Limited	Sardi Khola	Kaski	4000	2068.11.11 2070.03.03
34	Dibyaswari Hydropower Limited	Sabha Khola	Sankhuwasabha	4000	2068.11.17 2070.08.19
35	Dariyal Small Hydropower Pvt.Ltd	Upper Belkhu	Dhading	750	2068.11.28
36	Himalayan Power Partner Pvt. Ltd.	Dordi Khola	Lamjung	27000	2069.03.01
37	Sasa Engingeering Hydropower (P). Ltd	Khani Khola(Dolakha)	Dolakha	30000	2069.03.25
38	Arun Kabeli Power Ltd.	Kabeli B-1	Taplejung, Panchthar	25000	2069.03.29
39	Rising Hydropower Compnay Ltd.	Selang Khola	Sindhupalchowk	990	2069.03.31
40	Khani Khola Hydropower Company Pvt. Ltd.	Tungun-Thosne	Lalitpur	4360	2069.04.05
41	Khani Khola Hydropower Company Pvt. Ltd.	Khani Khola	Lalitpur	2000	2069.04.05
42	Liberty Hydropower Pvt. Ltd.	Upper Dordi A	Lamjung	25000	2069.06.02
43	Hydro Innovation Pvt. Ltd.	Tinekhu Khola	Dolakha	990	2069.06.08

44	Salankhu Khola Hydropower Pvt. Ltd.	Salankhu Khola	Nuwakot	2500	2069.06.14
45	Moonlight Hydropower Pvt. Ltd.	Balephi A	Sindhupalchowk	10600	2069.07.14
46	Sanvi Energy pvt. Ltd.	Jogmai	Ilam	7600	2069.08.07
47	Sapsu Kalika Hydropower Co. Pvt. Ltd.	Miya Khola	Khotang	996	2069.08.10
48	Middle Modi Hydropower Ltd.	Middle Modi	Parbat	15100	2069.08.21
49	Reliable Hydropower Co. Pvt. Ltd.	Khorunga Khola	Terhathum	4800	2069.08.26
50	Rara Hydropower Development Co. Pvt. Ltd.	Upper Parajuli Khola	Dailekh	2150	2069.08.28
51	Lohore Khola Hydropower Co. Pvt. Ltd.	Lohore Khola	Dailekh	4200	2069.09.08
52	Dudhkoshi Power Company Pvt. Ltd.	Rawa Khola	Khotang	6500	2069.09.26
53	Universal Power Company Ltd.	Lower Khare	Dolakha	11000	2069.10.22
54	Mandu Hydropower Company Pvt.Ltd	Bagmati Khola	Makawanpur	20000	2069.10.7
55	Madhya Midim Jalbidhyut Company P. Ltd.	Middle Midim	Lamjung	3100	2069.10.23
56	Volcano Hydropower Pvt. Ltd.	Teliya Khola	Dhankuta	996	2069.10.25
57	Union Hydropower Pvt Ltd.	Midim Karapu	Lamjung	3000	2069.10.28
58	Bidhyabasini Hydropower Development Co. (P.) Ltd.	Rudi Khola A	Lamjung, Kaski	8800	2069.10.28
59	Himal Dolkha Hydropower Company Ltd.	Mai sana Cascade	Ilam	8000	2069.11.14
60	Molung Hydropower Company Pvt. Ltd.	Molung Khola	Okhaldhunga	7000	2069.11.21
61	Betrawoti Hydropower Company (P).Ltd	Phalankhu Khola	Rasuwa	13700	2069.12.06
62	Himalayan Urja Bikas Co. Pvt. Ltd.	Upper Khimti II	Ramechhap	7000	2069.12.09
63	Salmanidevi Hydropower (P). Ltd	Kapadi Gad	Doti	3330	2069.12.11
64	Dovan Hydropower Company Pvt. Ltd.	Junbesi Khola	Solukhumbu	5200	2069.12.29
65	Ghalemdi Hydro Limited (Previously, Cemat Power Dev Company (P). Ltd.)	Ghalemdi Khola	Myagdi	4000	2069.12.30
66	Bhugol Energy Dev Compay (P). Ltd	Dwari Khola	Dailekha	3750	2069.12.30
67	Tallo Midim Jalbidhut Company Pvt. Ltd.	Lower Midim	Lamjung	996	2070.01.19
68	Rairang Hydropower Development Company Ltd.	Iwa Khola	Taplejung	9900	2070.01.29
69	Tangchhar Hydro Pvt. Ltd	Tangchhar	Mustang	2200	2070.02.20
70	Abiral Hydropower Co. Pvt. Ltd.	Upper Khadam	Morang	990	2070.02.21
71	Manakamana Engineering Hydropower Pvt. Ltd.	Ghatte Khola	Dolakha	5000	2070.04.28
72	Essel-Clean Solu Hydropower Pvt. Ltd.	Lower Solu	Solukhumbu	82000	2070.07.15
73	Consortium Power Developers Pvt. Ltd.	Khare Khola	Dolakha	24100	2070.07.15
74	Upper Solu Hydroelectric Company Pvt. Ltd	Solu Khola	Solukhumbu	23500	2070.07.24
75	Singati Hydro Energy Pvt. Ltd.	Singati Khola	Dolakha	16000	2070.07.27
76	Idi Hydropower Co. P. Ltd.	Idi Khola	Kaski	975	2070.09.01
77	Puwa Khola-1 Hydropower P. Ltd.	Puwa Khola -1	Ilam	4000	2070.10.09
78	Buddha Bhumi Nepal Hydro Power Co. Pvt. Ltd.	Lower Tadi	Nuwakot	4993	2070.12.10
79	Mountain Hydro Nepal Pvt. Ltd.	Tallo Hewa Khola	Panchthar	21600	2071.4.9
80	Dordi Khola Jal Bidyut Company Ltd.	Dordi-1 Khola	Lamjung	10300	2071.7.19
81	River Falls Hydropower Development Pvt. Ltd.	Down Piluwa	Sankhuwasabha	9500	2071.10.18
82	Rangoon Khola Hydropower Pvt. Ltd.	Jeuligad Small Hydropower Project	Bajhang	996	2071.10.20
83	Peoples' Hydropower Company Pvt. Ltd.	Super Dordi 'Kha'	Lamjung	49600	2071.11.13
84	Research and Development Group Pvt. Ltd.	Rupse Khola	Myagdi	4000	2071.12.17
85	Nyadi Hydropower Limited	Nyadi	Lamjung	30000	2072.02.12
86	Kabeli Energy Limited	Kabeli-A	Panchthar and Taplejung	37600	2072.06.07
87	Upper Hewa Khola Hydropower Co. Pvt. Ltd.	Upper Hewa Khola Small	Sankhuwasabha	8500	2072.09.23
88	Suri Khola Hydropower Pvt. Ltd.	Suri Khola	Dolakha	6400	2072.02.20
89	Shiva Shree Hydropower (P.) Ltd.	Upper Chaku A	Sindhupalchowk	22200	2067.05.22 2070.11.04
90	Menchhiyam Hydropower Pvt. Ltd.	Upper Piluwa Khola 2	Sankhuwasabha	4720	2072.05.11
91	United Idi Mardi and R.B. Hydropower Pvt. Ltd.	Upper Mardi	Kaski	7000	2073.02.25
			Total Capacity	**1721532**	

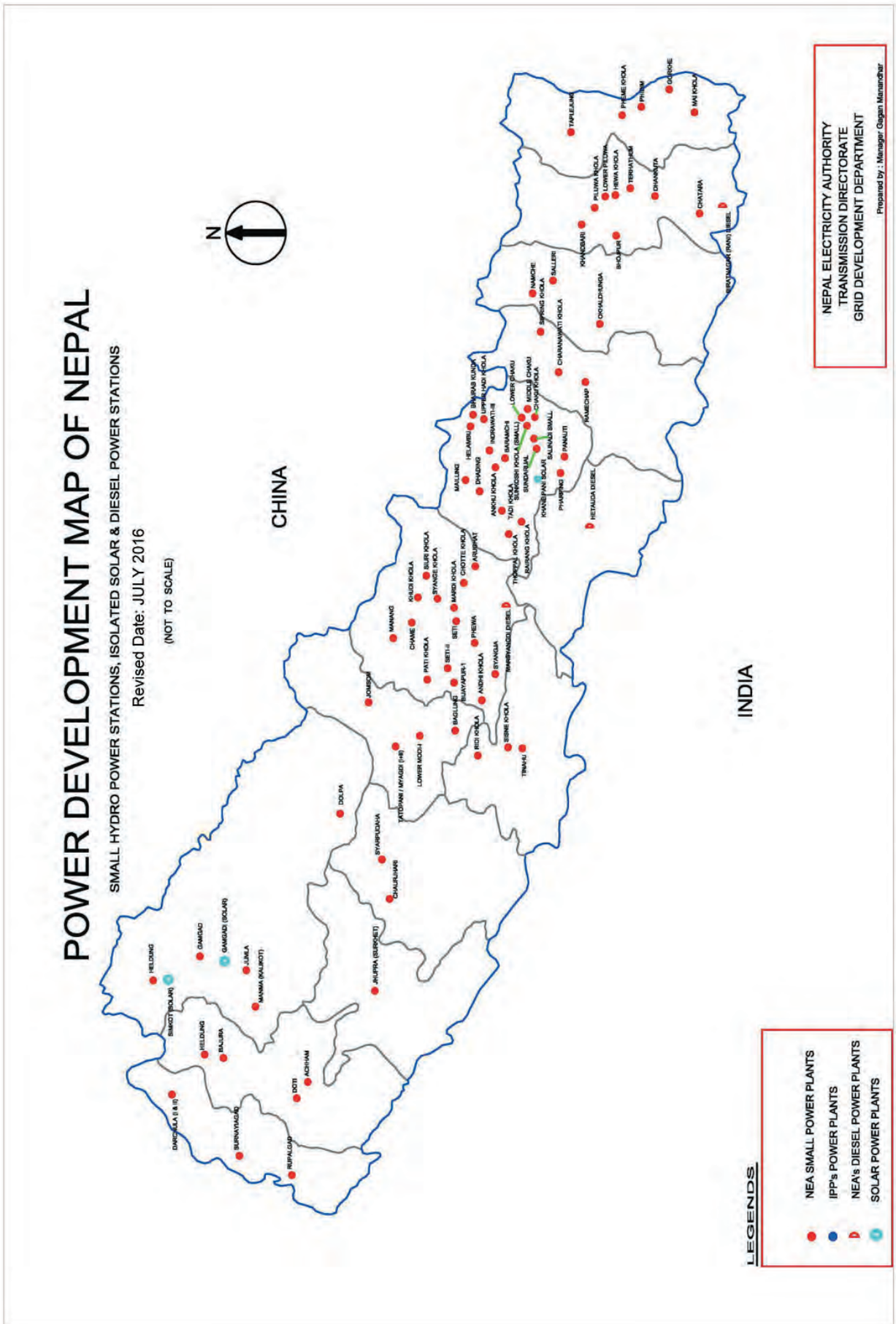
IPPs' Hydropower Projects in Different Stages of Development as of Ashadh 31, 2073

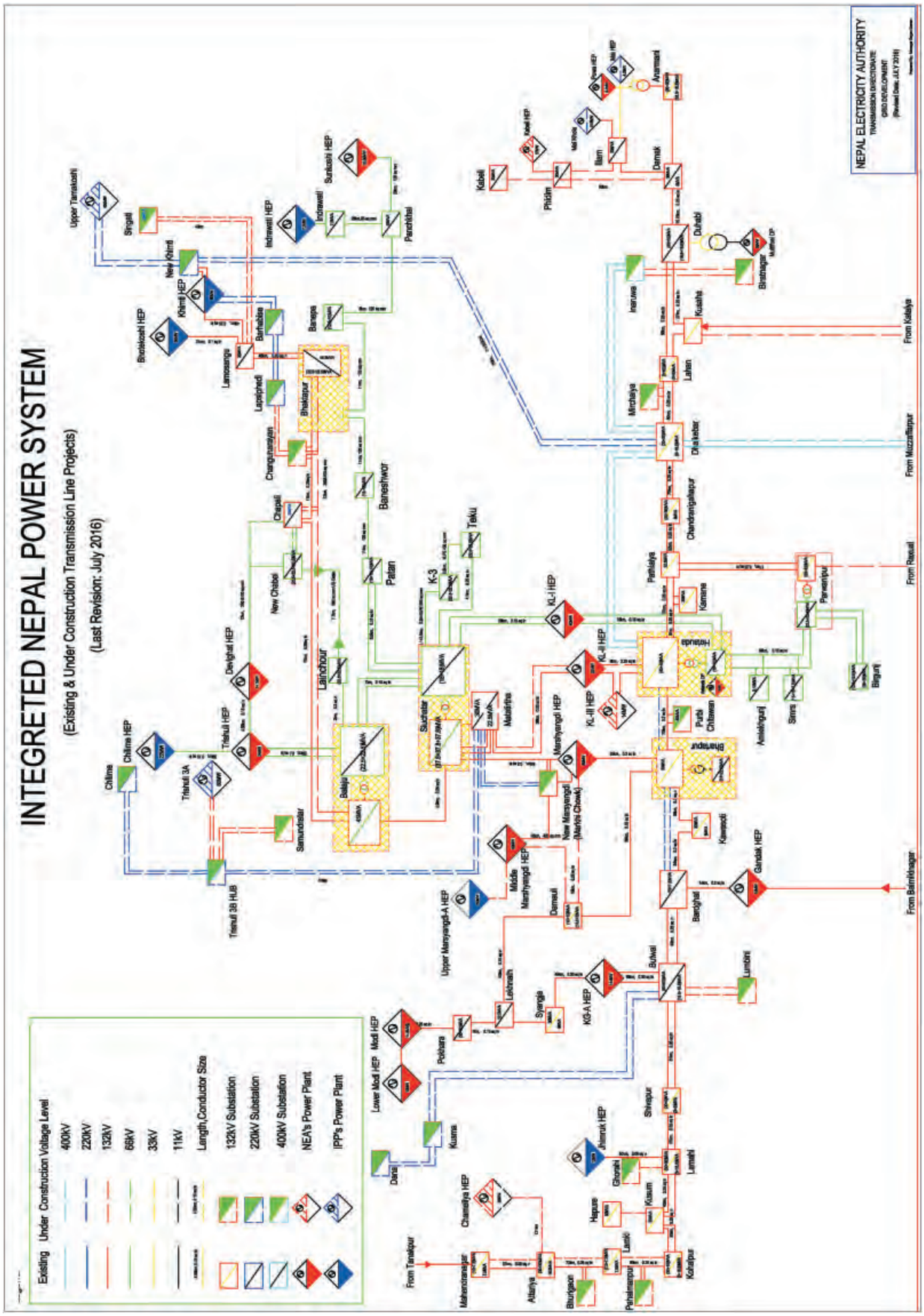
(Without Financial Closure)

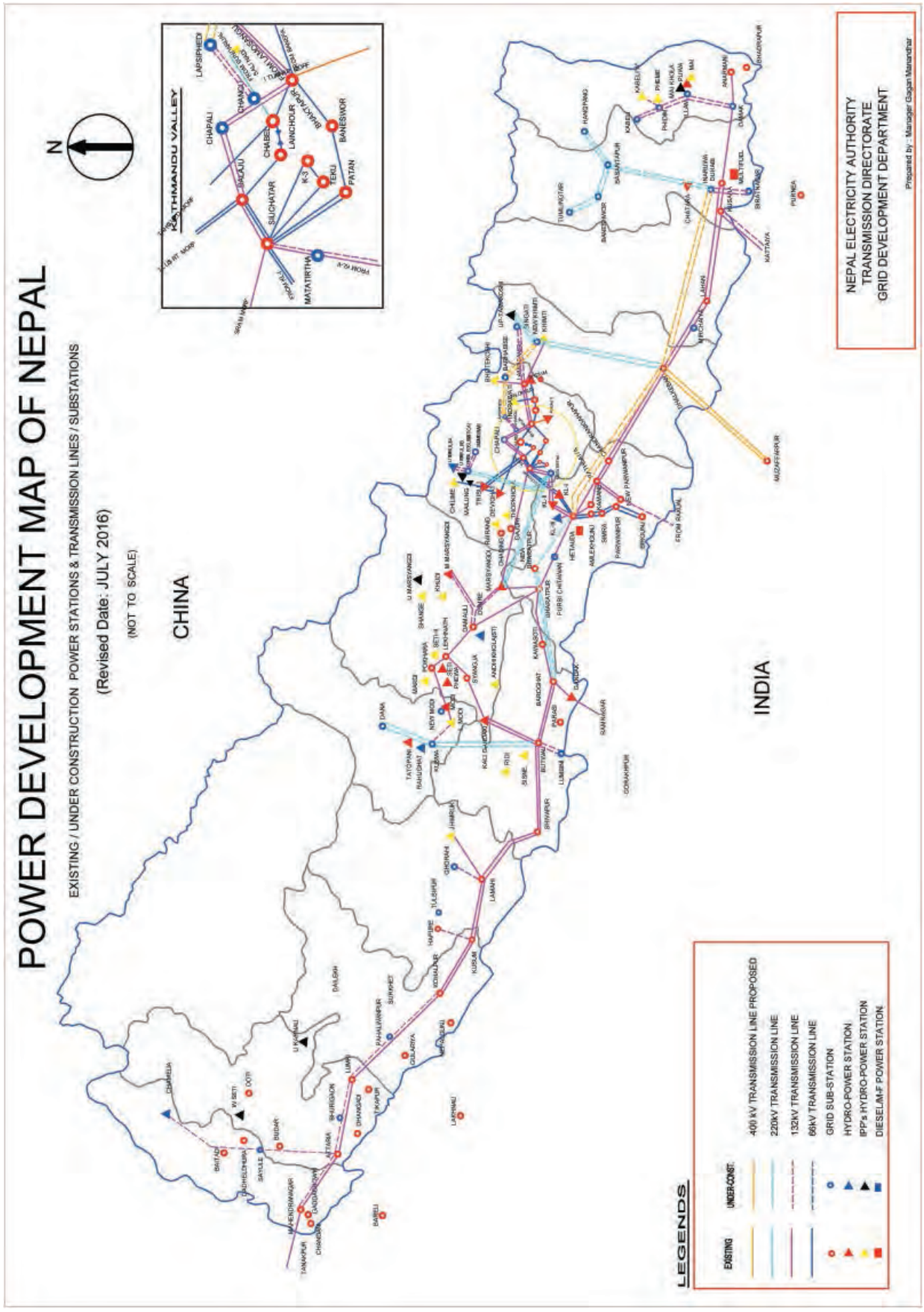
S.N.	Developers	Projects	Location	Installed Capacity (kW)	PPA Date
1	TMB Energietechnik	Narayani Shankar Biomass	Rupandehi	600	2063.10.25
2	Balephi Jalbidhyut Co. Ltd.	Balephi	Sindhupalchowk	23520	2067.09.08 2073.03.29
3	Ingwa Hydro Power Pvt. Ltd	Upper Ingwa khola	Taplejung	9700	2068.03.10
4	Molnia Power Ltd.	Upper Mailun	Rasuwa	14300	2068.05.23
5	Jywala Sajhedari Hydropower Company Pvt. Ltd.	Tame Khola	Dailekh	1250	2068.06.08
6	Suryakunda Hydroelectric Pvt. Ltd.	Upper Tadi	Nuwakot	11000	2068.12.03
7	Deurali Bahuudesiya Sahakari Sanstha Ltd.	Midim Khola	Lamjung	100	2070.02.20
8	Maya Khola Hydropower Co. Pvt. Ltd.	Maya Khola	Sankhuwasabha	14900	2070.08.30
9	Bidhyabasini Hydropower Development Co. (P.) Ltd.	Rudi Khola B	Lamjung and Kaski	6600	2071.4.20
10	Ludee Hydropower Development Co. Pvt.Ltd	Ludee Khola	Gorkha	750	2071.4.21
11	Rasuwa Hydropower Pvt. Ltd	Phalanku Khola	Rasuwa	5000	2071.08.24
12	Hydro Venture Private Limited	Solu Khola (Dudhkoshi)	Solukhumbu	86000	2071.11.13
13	Global Hydropower Associate Pvt. Ltd.	Likhu-2	Solukhumbu/Ramechap	33400	2071.11.19
14	Paan Himalaya Energy Private Limited	Likhu-1	Solukhumbu/Ramechap	51400	2071.11.19
15	Numbur Himalaya Hydropower Pvt. Ltd.	Likhu Khola A	Solukhumbu/Ramechap	24200	2071.11.22
16	Dipsabha Hydropower Pvt. Ltd.	Sabha Khola A	Sankhuwasabha	8300	2071.12.02
17	Hydro Empire Pvt. Ltd.	Upper Myagdi	Myagdi	20000	2071.12.17
18	Chandeshwori Mahadev Khola MH. Co. Pvt. Ltd.	Chulepu Khola	Ramechhap	8520	2071.12.23
19	Sanigad Hydro Pvt. Ltd.	Upper Sanigad	Bajhang	10700	2072.03.15
20	Kalanga Hydro Pvt. Ltd.	Kalangagad	Bajhang	15330	2072.03.15
21	Sanigad Hydro Pvt. Ltd.	Upper Kalangagad	Bajhang	38460	2072.03.15
22	Dhaulagiri Kalika Hydro Pvt. Ltd.	Darbang-Myagdi	Myagdi	25000	2072.04.28
23	Upper Syange Hydropower P. Ltd.	Upper Syange Khola	Lamjung	2400	2072.06.14
24	Peoples Hydro Co-operative Ltd.	Khimti-2	Dolakha and Ramechhap	48800	2072.06.14
25	Chauri Hydropower (P.) Ltd.	Chauri Khola	Kavrepalanchowk, Ramechhap, Sindhupalchowk, Dolakha	5000	2072.06.14
26	Pashupati Environmental Power Co. Pvt. Ltd.	Lower Chhote Khola	Gorkha	997	2072.08.04
27	Diamond Hydropower Pvt. Ltd.	Upper Daraudi-1	Gorkha	10000	2072.08.14
28	Makari Gad Hydropower Pvt. Ltd.	Makarigad	Darchula	10000	2072.08.29
29	Huaning Development Pvt. Ltd.	Upper Balephi A	Sindhupalchowk	36000	2072.08.29
30	Civil Hydropower Pvt. Ltd.	Bijayapur 2 Khola Small	Kaski	4500	2072.09.12
31	Multi Energy Development Pvt. Ltd.	Langtang Khola	Rasuwa	10000	2072.09.29
32	Yambling Hydropower Pvt. Ltd.	Yambling Khola	Sindhupalchowk	7270	2072.09.29
33	United Modi Hydropwer Ltd.	Lower Modi 2	Parbat	10500	2072.11.14
34	Syauri Bhumey Microhydro Project	Syauri Bhumey	Nuwakot	23	2072.11.16
35	Leguwa Khola Laghu Jalbidhyut Sahakari Sastha Ltd.	Leguwa Khola	Dhankuta	40	2072.11.21
36	Salasungi Power Limited	Sanjen Khola	Rasuwa	78000	2072.12.02
37	Sano Milti Khola Hydropower Ltd.	Sano Milti	Ramechhap and Dolakha	3000	2073.01.13
38	Ankhu Hydropower (P.) Ltd.	Ankhu Khola	Dhading	34000	2073.01.30
39	Myagdi Hydropower Pvt. Ltd.	Ghar Khola	Myagdi	8300	2073.02.11
40	Siddhakali Power Limited	Trishuli Galchi	Nuwakot and Dhading	75000	2073.02.20
41	Richet Jalbidhyut Company Pvt. Ltd.	Richet Khola	Gorkha	4980	2073.02.23
42	Him River Power Pvt. Ltd.	Liping Khola	Sindhupalchowk	16260	2073.02.28
43	Chirkhwa Hydropower Pvt. Ltd.	Upper Chirkhwa	Bhojpur	4700	2073.03.01
44	Rapti Hydro and General Construction Pvt. Ltd.	Rukumgad	Rukum	5000	2073.03.07
			Total Capacity	**783800**	

IPPs' Hydro Power Projects (Terminated Projects) as of Ashadh 31, 2073

S.N.	Developer	Project	Location	Capacity (kW)	Reason for Termination	Date
1	Kantipur Hydropower Company Pvt. Ltd.	Langtang		10000	Event of Default	2064.04.07
2	G-tech Nepal Pvt. Ltd.	Upper Modi		14000	Event of Default	2066.05.04
3	Beverian Hydropower Nepal Pvt. Ltd.	Lower Nyadi		4500	Event of Default	2066.11.14
4	Gorkha Hydropower Pvt. Ltd.	Daram Khola		5000	Event of Default	2067.01.26
5	Mansarowar Powers (P.) Ltd.	Golmagad	Doti	580	Event of Default	2070.02.08
6	Triyog Energy & Development Pvt. Ltd.	Middle Gaddigad	Doti	3500	Event of Default	2070.02.08
7	Shreerup Hydropower Co. (P.) Ltd.	Seti Khola	Chitwan	465	Event of Default	2070.02.17
8	Universal Power Company (P) Ltd.	Ladku Khola	Kavrepalanchowk	700	Event of Default	2070.02.31
9	Dupcheshowr Mahadev Hydro Co. (P) Ltd.	Middle Tadi	Nuwakot	5325	Event of Default related to Financial Closure	2070.02.31
10	Gayatri Hydro Power (P.) Ltd.	Charanawati	Dolakha	980	Event of Default	2070.11.08
11	Rshikesh Hydropower Pvt. Ltd.	Upper Jumdi	Gulmi	995	Event of Default related to Financial Closure	2070.12.20
12	L. K. Power (P.) Ltd.	Dapcha-Roshi	Kavrepalanchowk	5000	Application of Generation License terminated by DOED	2071.01.21
13	Eklekunda Hydropower Co.Pvt.Ltd	Dorkhu Khola	Nuwakot	990	Event of Default related to Financial Closure	2071.04.04
14	Upper Piluwa Khola Hydropower Co. Pvt. Ltd.	Upper Piluwa Khola	Sankhuwa Sabha	9622	Event of Default related to Financial Closure	2071.04.06
15	Baishno Devi Hydro Power (P.) Ltd.	Lower Sunkoshi -III	Sindhupalchowk	9900	Event of Default	2071.05.25
16	Annapurna Group Pvt. Ltd.	Madi-1 Khola	Kaski	10000	Termination of Generation license by DOED	2071.05.25
17	Welcome Energy Development Co. (P.) Ltd.	Lower Balephi	Sindhupalchowk	18514	Event of Default	2071.09.04
18	Swayambhu Hydropower Pvt. Ltd	Upper charnawati	Dolakha	2020	Auto termination due to financial Unclosure	2071.09.09
19	Midim Hydropower Pvt. Ltd.	Midim	Lamjung	3400	Event of Default related to Financial Closure	2072.01.17
20	Beni Hydropower Project Pvt. Ltd.	Upper Solu	Solukhumbu	18000	Event of Default related to Financial Closure	2072.02.03
21	Apolo Hydropower Pvt. Ltd.	Buku Khola	Solukhumbu	6000	Auto termination due to financial Unclosure	2072.02.20
			Total	**129491**		


POWER DEVELOPMENT MAP OF NEPAL
SMALL HYDRO POWER STATIONS, ISOLATED SOLAR & DIESEL POWER STATIONS
Revised Date: JULY 2016
(NOT TO SCALE)
N
CHINA
INDIA
NEPAL ELECTRICITY AUTHORITY
TRANSMISSION DIRECTORATE
GRID DEVELOPMENT DEPARTMENT
Prepared by : Manager Gagan Manandhar
LEGENDS
NEA SMALL POWER PLANTS
IPP's POWER PLANTS
NEA's DIESEL POWER PLANTS
SOLAR POWER PLANTS


INTEGRETED NEPAL POWER SYSTEM
(Existing & Under Construction Transmission Line Projects)
(Last Revision: July 2016)
NEPAL ELECTRICITY AUTHORITY
Existing Under Construction Voltage Level
400kV
220kV
132kV
66kV
33kV
11kV
Length,Conductor Size
132kV Substation
220kV Substation
400kV Substation
NEA's Power Plant
IPP's Power Plant


POWER DEVELOPMENT MAP OF NEPAL
EXISTING / UNDER CONSTRUCTION POWER STATIONS & TRANSMISSION LINES / SUBSTATIONS
(Revised Date: JULY 2016)
(NOT TO SCALE)
N
CHINA
INDIA
KATHMANDU VALLEY
LAPSIPHEDI
CHAPALI
CHABEL
LAINCHOUR
BANESWOR
SIUCHATAR
K-3
TERU
PATAN
MATATIRTHA
NEPAL ELECTRICITY AUTHORITY
TRANSMISSION DIRECTORATE
GRID DEVELOPMENT DEPARTMENT
Prepared by : Manager Gagan Manandhar
LEGENDS
EXISTING
UNDER-CONST.
400 kV TRANSMISSION LINE PROPOSED
220kV TRANSMISSION LINE
132kV TRANSMISSION LINE
66kV TRANSMISSION LINE
GRID SUB-STATION
HYDRO-POWER STATION
IPPs HYDRO-POWER STATION
DIESEL/MF POWER STATION

Proposed PH area Uttarganga

Dam Site of Dudhkoshi Storage Hydroelectric Project

NEPAL ELECTRICITY AUTHORITY

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