Although I took up the Chairmanship of Nepal Electricity Authority very recently, I am honored to put a few words into its annual publication 'A Year in Review 2003/04'. This is a jubilant occasion for NEA marking the beginning of its twentieth year of service as an important partner in the economic development of Nepal. Since Nepal has an enormous hydropower potential, our prospects of becoming a prosperous country can be realized provided we tap this energy source prudently and efficiently at the earliest. As a leader of the country's power sector, NEA has the prime responsibility of taking necessary steps towards achieving this goal.
The past year has seen yet another period of political turmoil in succession. Despite this, NEA has spared no efforts to maintain a level of self-sufficiency in supplying electricity for which I must thank the NEA staff at all levels for their commendable performances.

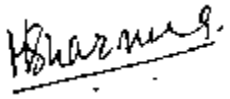
There has been a gradual change in local and global energy markets providing ample space for both the public and the private sectors. It is now being increasingly evident that the participation of private enterprises in the power sector can lead to better mobilization of resources to meet the ever-increasing domestic and regional power demand. The establishment of a few small and medium sized hydropower plants within the last decade have laid the foundation for private sector participation in Nepal. The continuing interest shown by both the domestic and foreign private investors is encouraging for Nepal's power sector although the current interest of the private sector is limited to small plants of capacities less than 10 MW only, probably because of the much higher investment needs of larger projects. The increasing demand of electricity can however be met only through a combination of both small and medium-sized projects. It is therefore pertinent for NEA to take up several medium sized schemes for implementation in the public sector with donor assistance.
Although the demand for power is rising every year, generation projects have not been implemented in tandem. The delays experienced in Middle Marsyangdi, the only public sector project presently under construction, is an example of the uncertainties faced even after a project enters the construction phase. Public sector generation projects take considerable preparation time before execution. The process of mobilization of resources for generation and other projects is also very time consuming and uncertain. Decisions for taking up such projects should therefore be made well in advance so that power plants come into operation in a timely fashion as per the system requirements. The identification and implementation of projects involving relatively low investments is the key to providing affordable electricity to the people of Nepal.

It is desirable for NEA to initiate and expedite joint venture power generation schemes. Considering NEA's limited resources for capital investments, financial resources available in the local market should be tapped for the equity contribution. The successful commissioning of the Chilime hydropower project under NEA-private partnership was indicative of the beginning of a new era of public-private sector cooperation in Nepal's electricity sector. This should act as a springboard for NEA to adopt an effective joint venture investment policy to meet the growing demand of energy in the country.

In order to further expand its services and improve its efficiency, NEA needs to develop a strong business culture. In line with this goal, NEA has moved ahead with structural and operational reforms in the form of internal unbundling. Considerable progress has been made to date in developing necessary byelaws and operational procedures to guide the efficient performance of its different business groups.

The demands made by rural electrification projects are a major challenge for NEA. It needs to implement profitable urban electrification projects while fulfilling its social responsibility of serving the rural population. To this end NEA has taken innovative steps to engender local community participation in electricity distribution and management. There have been encouraging responses from local community groups to this process.

I once again thank all the staff of NEA for their sincerest efforts in enhancing NEA's performance and providing better services to the consumers. I wish NEA all the best in its quest for a bright future where all its staff would draw a sense of satisfaction and pride through their services to the nation



Thakur Prasad Sharma
Minister of State for Water Resources and
Chairman, Nepal Electricity Authority

I feel privileged to present my third annual report to this General Meeting on the Nepal Electricity Authority (NEA) covering its nineteenth year of business corresponding to the fiscal year 2003/04 or Bikram Sambat 2060/61. NEA encountered numerous difficulties in its development, maintenance and service activities, in the year, as a result of the continuing insurgency. Damage to its assets, disturbances in development works, deteriorating industrial performance along with the burden of high cost of IPP energy had a collective effect on its financial health. Despite difficult times, this nineteenth year of business operation was a year of mixed achievements comprising of some gratifying successes coupled with some initiatives that were only partially successful. NEA, in its attempt to improve its performance continued with its reforms to increase efficiency, improve its financial health and provide prompt and quality service to its customers.

The Reforms Process

One of the successes recorded was in institutional reform. Following the creation of discrete entities of Generation, Transmission and System Operation, Distribution and Consumer Services, and Engineering Services as core business groups, further changes were made within NEA's corporate structure to achieve a higher degree of operational efficiency. In this process, a new Electrification group headed by a separate General Manager was carved out of the existing Distribution and Consumer Services business group. In addition, NEA merged two Deputy Managing Directors' offices providing central functions of Information Technology and Planning into a single entity. Of foremost significance in the progress of the reform process in the year was the formulation of three separate by-laws covering the operation of the three main business groups within NEA. These by-laws were approved by the NEA Board on July 23, 2004 and are:

Distribution & Consumer Services Business Operation By-Laws 2061
Transmission & System Operation Business Operation By-Laws 2061
Generation Business Operation By-Laws 2061

These by-laws are designed to help General Managers of the Generation, Transmission & System Operation, and Distribution & Consumer Services businesses improve their

performance as well as make them more accountable. By laying down definite and time-bound goals to be achieved under various performance indicators, the by-laws provide a results-oriented road map, while empowering the General Managers with the necessary authority to deliver results. They also help strengthen information management capabilities that are extremely vital for performance measurement and strategic decisions. The ultimate aim of these exercises is to direct and motivate staff behaviour consistent with organizational goals. The reform process will be deemed complete once all the core business groups conduct their businesses based on the performance indicators specified in these by-laws.

In the area of distribution, reforms went even a little further. The creation of twenty Distribution Centres (DC), with increased independence, authority and accountability in their operations was at the forefront of the reform process. DCs today cover over 75 percent of NEA's revenue generating activities. The performance auditing of these DCs conducted in the past showed encouraging signs in terms of loss reduction, revenue collection and an efficient way of providing services to customers.

Computerizing some of NEA's most important activities was another success story this year. Computerized systems were applied in inventory control, accounting and personal record keeping areas. Today, NEA's inventory level is about 1 percent of its assets. A reduction in inventory level by a mere 0.25 percent would result in a savings of nearly NRs. 200 million. The significance of the computerized inventory control system, which now covers 72 budget centres of NEA's business areas, cannot therefore be overlooked. Similarly, the poor performance observed in NEA's financial portfolio management is heading towards improvement with the application of computerized accounting systems, which are now in operation in most of its branches. The system enables efficient and timely transfer of resources to the centre where all the financial projections and activities are conducted. A Virtual Private Network (VPN) was also established in the year for the transfer of data between budget centers, four regional offices and the Central Office in Kathmandu. Likewise, development, movement and expenditure of the entire NEA personnel will be effectively controlled by the newly installed computer based personal databank, which now carries relevant data of all NEA personnel.

The Final Audit Report for the FY 2002/03 was obtained within the first six months of the following FY 2003/04. Similarly the tax audit for the FY 2002/03 was also completed in the following fiscal year and NEA's revenue details were successfully submitted to the Internal Revenue Department of HMGN. I consider this as another significant accomplishment in improving NEA's financial discipline.

Significant progress was made in the management of rural electrification in a sustainable manner. NEA's key focus in this arena has been the promotion of community group participation in the operation and maintenance of distribution systems. Out of a total of 155 registered applications from user groups, 10 agreements were concluded and are now functional. The first report that is coming out of the community users group that were handed over the operation and maintenance of distribution systems shows very encouraging results. The demand for energy meters in such areas where direct electricity line tapping was rampant has now increased drastically. At the same time, it has been reported that individual consumption has jumped from the earlier recorded monthly figure of 15 - 20 kWh to 40 - 73 kWh per household. This gives a clear indication of direct hooking by the rural consumers gradually becoming a story of the past and will contribute significantly to reducing non-technical losses that has plagued NEA for several decades. The 80 percent counterpart fund provision put in place by HMG/N to augment the community contribution of 20 percent of distribution extension project cost brought forth a substantial 65

applications. However, out of the 9 applications approved and 8 agreements concluded, only 1 has entered the implementation phase. On the whole, the response from communities from 38 districts of the country to this innovative concept shows promise in NEA's endeavor to accelerate the pace of expansion into the rural areas in a cost effective and efficient manner.

In order to appreciate and learn from the changing power sector scenario in the South Asian region, NEA continued to actively participate in the USAID sponsored South Asia Regional Initiative in Energy (SARI/E) program. This program seeks to provide energy sector leaders, policy makers and senior executives the knowledge they need to take steps to meet a rapid growth in energy demand in the countries of the region.

Operational Status

In the past financial year, the interconnected system peak was recorded on December 30, 2003 at the level of 515.24 MW registering a 9.55 percent increase over last winter's figure. During the past financial year, the electrical energy available for use within the NEA system totaled 2381.496 GWh, which was an increase of 120.36 GWh (5.32 percent) over the previous year's figure of 2,261.13 GWh. This comprised of 1345.654 GWh obtained from NEA's hydro generation and 9.920 GWh from NEA's thermal plants. A total of 185.647 GWh was imported from Indian State Electricity Boards in accordance with Power Exchange agreement between India and Nepal and 840.275 GWh was purchased from private generators.

Electricity sales totaled 1814.017 GWh, an increase of about 112.461 GWh (6.61 percent) over last year's sales figure. Internal sales within Nepal increased to 1675.114 GWh and accounted for 92.34 percent of the total sales and registered an increase of 165.744 GWh (10.98 percent) over last year's figure. Exports to India decreased to 138.903 GWh, a fall by 53.346 GWh over last year.
Over the past financial year, the number of customers grew by an estimated 90,089 (or 9.28 percent) over the previous year's figure to reach a total of 1,060,700. The domestic category accounted for 96 percent of the total number of customer, 37.72 percent of the sales and contributed to 38.32 percent of the revenue. The industrial category formed only 1.9 percent of the total customers, but accounted for 38.46 percent of sales and contributed to 36.75 percent of the revenue. Non-commercial category constituted 1.0 percent of the customers, accounted for 4.72 percent of the sales and 6.75 percent of the revenue. Likewise, the commercial category constituted 0.51 percent of the total customers, accounted for 5.82 percent of the sales and provided 8.17 percent of the revenue.

Core Business Groups

With the core business groups of the internally unbundled NEA now in place, the **Distribution and Consumer Services (DCS) business group**, which is in direct contact with customers, strived further towards providing better services. It initiated the reinforcement of 16 existing 33/11 kV substations to increase operational efficiency, reduce technical losses and enhance the quality of power supply to its customers. Apart from these reinforcement works, a contract was awarded for the construction of a new 32 MVA, 33/11 kV substation at Tanki Sinwari to relieve the existing Biratnagar substation and helpmeet the growing power demand in the area. Similarly, the construction of a 1.5 MVA substation in Dolkha is nearing completion. DCS also took new measures to foster good relations with its customers. Senior NEA executives visited high value clients with demand of 1.0 MVA and above in Kathmandu valley, Biratnagar, Birgunj and Bhairahwa, and had fruitful interactions with the management of these industrial and business institutions so as to understand problems experienced in the power supply and take appropriate measures to improve the quality of supply.

The Generation business group, despite improving its quality of supply, experienced a fall in demand for its energy during the year, as the continuing insurgency in the country further reduced industrial, commercial and tourism related activities. The problem was further aggravated by the "take-or-pay" basis of energy purchased from IPPs that severely constrained NEA's production capability. As a consequence, generation in most of the major hydropower plants except Kaligandaki 'A' fell compared to the past year. Thermal generation from diesel plants in Duhabi, Hetauda and Marsyangdi, however, rose to meet peaking needs of the system.

The Transmission and System Operation business group concentrated its energy towards completing ongoing projects at the earliest possible dates, improving the reliability of the national grid, boosting quality of supply and enhancing efficiency in system operation. The new Load Dispatch Centre (LDC), equipped with a computerized SCADA system, which came into full operation on January 15, 2004, has helped considerably in improving the efficient dispatch of power from different power stations. The LDC has improved the quality of power supply and is also expected to reduce system tripping. Additionally, it has enabled system operators to reduce the restoration time following a system collapse. With the recent availability of real time data and a better communication system, efficient coordination of shutdowns of generating stations and transmission lines for maintenance has become a reality. The year also saw the completion of the Grid Code that will enhance operational efficiency in dealings with grid users. In the current absence of an independent regulatory body in the country the application of this Grid Code will be confined to the core business groups within NEA. With some modifications, it could however, form a basis for power purchase agreements with IPPs and interconnection agreements with other users of the national grid.

he Engineering Services business group, with its long experience in the area of design and construction supervision of hydropower projects of a wide range of capacities, continued to operate as a profit centre under the NEA corporate umbrella. The group is guided by a Steering Committee and is chaired by its General Manager. Apart from providing fee-based consulting services to the different business groups of NEA, the Engineering Services also caters to the private sector. For instance, it conducted geological investigations for the Kahule Khola, Lower Molung small hydro project promoted by the private sector. The NEA Training Centre, a department under Engineering Services offers quality training to NEA staff at different levels. In line with its objective to operate on a commercial basis, the Training Centre, leased part of its physical facilities and services, at competitive prices, to private clients for conducting short-term seminars, training and other related activities.

Electrification Group

The Electrification group was established in light of the dire need for a separate entity to coordinate the substantial rise in planned financial investments in the expansion and management of rural distribution systems. This group, among other tasks, is to coordinate donor assisted distribution expansion projects along with managing small hydro distributed generation and community rural electrification activities. It is responsible for the planning, design and construction of distribution networks of up to 33 kV as well as the operation and maintenance of off-grid distribution networks. It also has the same responsibilities over small power plants through its Small Hydro and Rural Electrification and Community Rural Electrification departments. Currently some of its major activities include the construction of 2 isolated small hydro plants in the remote districts of Humla and Mugu and the erection of 33 kV transmission lines in the districts of Khotang, Okhaldhunga, Panchthar, Taplejung, Salyan, Rukum, Surkhet, Jajarkot, Rolpa, Lamjung, Manang, Dadheldhura, Baitadi and Khotang. It is also involved in several rural electrification, distribution and reinforcement

projects with financial assistance from donors such as the Danish Government and Asian Development Bank (ADB).

Improving NEA's Financial Health

NEA's financial position in the FY 2003/04 has not been as per expectations. An atmosphere of insecurity prevailing in the country slowed down economic activity, thereby dwarfing industrial performance. This, coupled with the rising cost of IPP energy could be attributed to NEA's disappointing financial health. The tourism sector, a significant revenue contributor, failed to regain its position as one of the country's major cash earners. This further contributed to the dampening of NEA's hopes of a pickup in revenue generation. The predicament was even more acute in rural areas as the deteriorating security situation made revenue collection almost impossible. The cumulative impact of this scenario was in the tune of almost Rs. 1.0 billion. Although NEA's financial health has been adversely affected the financial picture is not as bleak as it may appear as overall financial indicators in other areas have improved.

NEA's total revenue increased over the figure for the previous year by only 7.46 percent to NRs. 12,384.62 million. NEA's net fixed assets increased to reach an estimated NRs. 57,598 million. Expenditure in generation increased by Rs. 1,282.66 million over last years figure to Rs. 6,518.17 million. In transmission it increased by Rs. 35.119 million to Rs. 208.40 million. Similarly distribution expenditure increased by 7.46 percent over last years figure to Rs. 1,352.92 million. Administration expenses however decreased by Rs. 156.50 million to Rs. 368.51 million.

While a natural step to improve NEA's financial position is to enhance its efficiency, its present health has been observed to be heavily dependant on external factors beyond its control. Despite an operational profitability of Rs. 1.78 billion in the year NEA registered a net loss after tax of NRs. 1788.869 million. This is largely because most of its generated revenue went towards payments to IPPs and HMGN. About 44 percent of the total revenue generated was utilized in purchasing energy from IPPs and almost 36 percent to HMGN in form of interest, principle and royalty. Company overhead expenses consumed about 11 percent and only 9 percent went towards operation and maintenance needs leaving NEA an extremely narrow leverage for any substantial gains from efficiency enhancement. It is therefore now obvious that an effective solution to bolster its financial health lies in addressing the issues of IPP power and the burden of interest levied by HMGN on external grants and soft loans re-lent to NEA. The cost of procurement of goods and services for a project implemented by NEA under grant assistance to HMGN exceeds normal procurement costs by at least 30 percent. HMGN has in the past remunerated the cost of capital associated with grant assisted development projects towards normal procurement costs and could be applied once again to address this problem. In the case of IPP power, loan swapping could be a prospective solution to reduce energy costs. NEA is also seeking alternative means to mobilize the domestic capital market in order to ferret out much needed resources for investment. Floating power bonds with government guarantees to tap the huge remittance money that is available in the market is one option. The exploitation of this domestic capital market could not only meet the investment requirement of the power sector but would also help reduce the cost of generation. This will subsequently facilitate a reduction in the current tariff. Realizing its own limited scope for improvement in its financial position, NEA therefore intends to approach HMGN with a position paper addressing these issues.

Status of Major Projects under Execution

NEA continued to invest in generation, transmission and distribution capabilities in line with its goals to reach a larger section of the populace. Resources available from its own internal

funds and from others such as HMG/N, Multilateral Development Banks and Bilateral Donors have been used to reinforce and expand its services.

Despite some security related delays experienced in the year as a consequence of the insurgency, the 70 MW Middle Marsyangdi Hydroelectric Project (MMHEP), undertaken with a grant assistance of Kreditanstalt fur Wiederaufbau (KfW) of Germany, registered considerable progress towards completion by December 2006. As part of resettlement and mitigation program, MMHEP continued its income generation oriented training and community awareness programs focusing on horticulture and public health. In addition the Neighbourhood Support Program continued its developmental activities in the 9 Village Development Committees neighbouring the MMHEP in the fields of health, education, water supply, sanitation, roads and electrification.

The construction of the first 220 kV transmission line in the country stretching from Khimti to Dhalkebar and then, at a reduced level of 132 kV, beyond Dhalkebar towards the Indian border was initiated with the financial assistance of International Development agency (IDA). This 220 kV transmission line will not only improve power evacuation from the Khimti power plant, provide a direct route for export to India and improve the quality and reliability of supply in the eastern regions of the country but also in the future, evacuate power from the proposed 250 MW Upper Tamakoshi and other hydropower projects that have been identified in the vicinity. Similarly the Government of Japan has expressed interest in assisting with the construction of another 220 kV line connecting Hetauda and Bardhaghat for improving power evacuation from the existing Kaligandaki Hydropower Plant. A Japanese mission was in Nepal for the technical and cost appraisal of this project. These two 220 kV transmission lines will irrefutably strengthen the capabilities of the national grid.

Despite delays in implementation, the anticipated completion date of the rural electrification program subscribed in the ADB financed Rural Electrification, Distribution and Transmission Project is well within the new schedule. In addition to providing transmission and institutional support, the project will develop the distribution system to connect about 123,382 rural households of 277 Village Development Committees (VDCs) in 22 districts of central, eastern and western Nepal. Another distribution and rural electrification project financed through a Danish grant to supply electricity to about 64,000 households in 33 VDCs and 2 municipalities in the districts of Kailali and Kanchanpur progressed satisfactorily and is expected to be completed by 2006. The project is unique in its objective to hand over operation of the system, once complete, to load-centre based users' cooperatives.

The preparation of a bankable feasibility report for the implementation of the 250 MW Upper Tamakoshi Hydropower project was initiated with financial assistance from the Government of Norway. An earlier feasibility study by NEA found a high Benefit to Cost Ratio along with a strong Internal Rate of Return making this project extremely attractive.

System Demand and Resource Mobilization

One of the foremost concerns for NEA is the lack of investment from both the private as well as the public sectors. The reluctance of the private sector in investing in development projects in an adverse security situation is understandable. Donors also shy away from contributing towards public sector investments due to the country's current security situation. Because of lack of investment in generation, other development activities could also not be conducted as desired. Private sector investment was virtually nil in the past two years and public sector funding was available only for ongoing projects with no new commitments made.

Load forecast, generation expansion and capacity balance studies conducted in February 2004 show an impending deficit in the system in the year 2005/06 and 2007/08. In order to meet the projected capacity shortage in 2005/06 that is in the order of just 12 MW, NEA has already initiated the process of refurbishing and enhancing the capacity of the Devighat and Sunkoshi hydropower power plants. For the next shortage in 2007/08 which is again expected to be in the order of about 15 MW, we are encouraging the Chilime Hydropower Company to develop at least one 10 MW plant in the upper reaches of the existing Chilime plant and then add another 30 MW in the same system by the year 2008/09. Our generation expansion planning from then onwards includes several medium sized hydro projects to be commissioned through the private as well as NEA-private sector joint ventures from 2008 to 2010. Nepal's second storage plant in the public sector, the 122 MW Upper Seti project is planned for commissioning by 2010/011. The hitherto imbalance in supply and demand can be attributed to the dominance of run-off-river (ROR) daily pondage hydropower plants in the Nepal power system which has difficult periods of acute capacity shortages during the dry seasons when the system demand rises sharply while the wet seasons see a glut of surplus energy. By the commissioning of Upper Seti we expect this imbalance to be eradicated and the system to have the required capacity and energy to meet the projected demand in 2011 /012. Immediately after Upper Seti, we are planning to commission the 250 MW Upper Tamakoshi project in 2011 /012 with public- private sector participation. We are therefore confidant that our generation planning is pragmatic.

In face of NEA's extremely limited investment capability the support of HMGN, Donors and Lending Institutions in realising even the most modest development plans cannot be overemphasized. The Government of Japan has shown keen interest in financially supporting the implementation of the 122 MW Upper Seti Hydroelectric project and the 220 kV Hetauda- Bardhaghat transmission line. The World Bank's assistance is already effective for the Khimti-Dhalkebar 220 kV line along with the reinforcement and expansion of distribution systems. It is also providing technical support to strengthen NEA's financial management and accounting systems. ADB's commitment for disbursement for the Rural Electrification and Transmission project is also in place. Similarly USAID continued providing technical support in NEA's efforts in finalising its Grid Code, an IT road map and report on organization structure of comunity user's group best rural electrification programme. It also continued helping in NEA's efforts towards human resources development through its SARI/E and Partnership programs. Likewise HMG's assistance to shore up NEA's development efforts continued on an annual basis.

Acknowledgements

In conclusion, I wish to take this opportunity to extend my sincere thanks to all associated with NEA's activities during the past year. I wish to express special gratitude to the NEA Board for steering NEA through difficult times. I also thank His Majesty's Government of Nepal for the unending support and continued contributions to our development efforts. Thanks are also due to Bilateral Donors such as Germany, Japan, Norway, Denmark, Sweden and USA and development banks such as the World Bank, Asian Development Bank, Japan Bank for International Cooperation and Kreditanstalt fur Wiederaufbau for their contribution in our development and institutional strengthening activities. My sincere thanks go to the entire staff of NEA at all levels for their continued hard work and determination. My appreciation goes to all the Trade Unions of NEA for their critical but constructive support. I wish to express my special thanks to those who have stood by me in times of trial. From my past affiliation with NEA for over thirty years I cannot restrain myself from expressing my appreciation of the spirit of teamwork that is inherent in its culture as a means to achieve results. This acknowledgement would be grossly incomplete without thanking our valued customers for bearing with us and sharing some turbulent times together. We feel confident that with the conceived reforms in place NEA will be able to

provide our customers with a marked improvement in the quality and reliability of supply and services.
Thank you.

Dr. Janak Lal Karmacharya
Managing Director

The Generation Business Core Group has started its operations with a business orientation. It began installing meters to have clear and accurate data of the energy fed to the transmission system of Nepal Integrated Power System (INPS) and also to the local supplies along with the station consumption to calculate the loss in powerhouses operating under NEA.

Most of the hydro and thermal power stations of NEA are operating smoothly under the guidelines and dispatch instruction of the Load Dispatch Centre. In the fiscal year 2003/04 the Marsyangdi Hydropower Station faced a severe flood, causing the submergence of all the equipment installed in the sub-ground level including the A/C plant, D.C. batteries and others. Because of the flood, the Marsyangdi powerhouse could not generate at its full capacity for nearly four months.

As planned, the study for the rehabilitation and upgrading of Sunkoshi and Devighat Hydropower Stations have been completed and accordingly works shall be taken up in fiscal year 2004/05. Due to excessive wear and tear of turbine and its component parts due to sand/silt erosion and cavitations, a three year action plan for overhauling of turbines installed in Kaligandaki 'A' hydroelectric plant has been prepared. To carry out the repair and maintenance work of the turbines, Japan Bank of International Corporation (JBIC) has extended its financial support.

With an average plant factor of 33.92 percent and an availability of 95.45 percent, NEA energy generation during FY 2003/04 was 1363.445 GWh which is 8.03 percent less than the generation of the previous year. The reduction in generation is mainly because of the take and pay condition with the IPPs. The total contribution of the generation from the plants owned by NEA to the total supply of electrical energy was 57.30 percent.

The performances of NEA's major generating stations are as follows:

Hydro Generation

Kaligandaki 'A' Hydroelectric Power Station

Kali Gandaki 'A' Hydro Electric Project was inaugurated on January 22, 2003 by His Majesty King Gyanendra Bir Bikram Shah Dev. The power plant has generated 1171.148 GWh of energy till mid of July 2004 since it's commissioning in March 2002. During the fiscal years 2001/02, 2002/03 and 2003/04, it has generated 117.253, 512.625 and 541.270 GWh of energy respectively.

The power plant has been under regular monitoring and inspection during the period. Turbine Unit No.1 of the plant was shut down during September 2003 for inspection and turbine disassembly and assembly training program for operation and maintenance staffs

was conducted. During inspection of the turbine and its accessories, severe erosion and cavitational damages of the turbine base material Cr/Ni 13/4 were observed on the turbine runner and its component parts. The damage occurred due to the presence of heavy sediments in the river water during the rainy season. The damaged turbine runner and its component parts such as its upper and lower facing plates, guide vanes and guide vane lower bushes were replaced by spares available at site. It was a good opportunity for the maintenance staffs involved in the repair job to gain experience in such responsible jobs at site. Similarly, inspections of Unit No.2 and 3 turbines were also carried out and their condition were found to be critical due to excessive wear by sand/silt erosion. With financial support from Japan Bank of International Cooperation (JBIC) a three year action plan for overhaul of the turbines by procuring additional high wear resistant coated spare parts to replace heavily damaged turbine component parts for sustainable operation has already been prepared.

Electrical and mechanical preventive scheduled maintenance works of other equipment were also performed during the fiscal year. Cleaning of cooling tubes of 18 numbers of generator air coolers and cooling tubes of thrust and turbine guide bearing coolers were carried out successfully. Repair of damaged Sill Beams of diversion dam radial gates No. 2 and 3 were carried out during the period of December 2003 to January 2004. In the same period repair of the under sluice gates No. 1, 2, 3, 4, 7 and 8 were also completed.

Damaged concrete ogee surfaces of radial gate Nos. 2 and 3 were repaired by application of wear resistant epoxy material Sikadur. In gate number two 8,604 kg of Sika-41 and 92.43 kg of Sika-53 were consumed to cover an area of 159.4 m2. Likewise in gate number three 6,882 kg of Sika - 41 and 120 kg of Sika-53 were consumed to cover 169.55 m2.

Marsyangdi Hydropower Station

Marsyangdi Hydropower Station generated 247.29 GWh of energy in the year. Compared to 333.921 GWh of the previous fiscal year, this is a reduction of 25.94 percent. Power generated from Marsyangdi contributed to 18.3 percent of the total hydropower generation of NEA during the year. Main cause of the reduction in generation can be cited to the take-or-pay condition with IPPs. Another reason of the reduced generation was flooding of the powerhouse on 30th July 2003 due to flash floods in Ruwa Khola situated near the powerhouse. The flood caused the ground level of the powerhouse to be completely filled with water disrupting the generation. Also there was an accumulation of boulders and debris in the draft tube due to which the generation of the powerhouse was considerably affected. The powerhouse had to be shut down for ten days in the lean season of March 2004 for cleaning of the boulders and debris lying inside the draft tube.

The protection work at the bank of Ruwa Khola near the powerhouse was also completely damaged by the flood. The bank protection structures are currently under repair and are expected to be completed in the coming fiscal year 2004/05. The crossing near the colony and the bank of the Khahre Khola at the weir site was also damaged by the same flood, which was repaired, and necessary protection works were provided. Besides these, major repair and maintenance work of the radial gate nos. 1 & 5 and the ogee surface of gate nos. 4 & 5 were also accomplished. The shaft seal cooling water line and the control protection electrical line to the surge tank, which were also completely damaged by the flood, were repaired and replaced by new lines.

The old and damaged inverter and braking isolator was replaced by a new set. Similarly for a steady and reliable operation of the units, three new digital governors were installed in

place of the old electronic governors. Other regular and preventive civil as well as electro-mechanical maintenance works were carried out as per the scheduled plan.

Kulekhani I Hydropower Station

Kulekhani I Hydropower Station generated 159.63 GWh of energy in fiscal year 2003/04. Compared to 170.03 GWh of the previous fiscal year, this is a reduction of 6.12 percent. Generation from Kulekhani I contributed to 8.46 percent of the total generation of NEA owned hydropower stations. The approach road to Kulekhani I from Bhimfedi and also from Nibuwatar which were badly damaged during the previous year, were partly repaired so as to facilitate the regular movement of vehicles. The chiller plant of the A.C. system of the underground powerhouse that was not working for the past three years was replaced by a new one. Besides these, regular and preventive maintenance works of the electro-mechanical equipment of the powerhouse and other repair and maintenance works of civil structures were completed.

Kulekhani II Hydropower Station

Kulekhani II Hydropower Station generated 67.85 GWh of energy in fiscal year 2003/04. Compared to 74.12 GWh of the previous year, this is a reduction of 8.46 percent. Generation from the powerhouse contributed to 5.02 percent of the total generation of NEA owned hydro power stations.

During the year, inspection of the units was carried out along with repair & maintenance of unit no. 1, control valve and replacement of carbon ring in both the units. Besides this, regular and preventive repair & maintenance works of the electro-mechanic components and civil structures were carried out as planned.

Trishuli Hydropower Station

Trishuli Hydropower Station generated 97.86 GWh of energy in fiscal year 2003/04. Compared to 117.646 GWh in the previous year, this is a reduction of 16.82 percent. Generation from the powerhouse contributed to 7.24 percent of the total generation of NEA owned hydro power stations.

Two old and damaged digital governors in unit nos.1 & 2 were replaced by new governors along with major overhauling of unit nos. 5 & 6 during the year. A new 5 MVA 66/11 kV transformer was installed replacing the old transformer for local supply. A new 11/0.4 kV, 600 kVA transformer was installed for efficient operation of the dredging machine. A faulty 6.6 kV circuit breaker was replaced by new one and all of the 6.6 kV circuit breakers were repaired and maintained with the help of experts from the respective manufacturers. Besides this, regular and preventive repair and maintenance works of the electro-mechanical components and civil structures were carried out as planned.

Devighat Hydropower Station

Devighat Hydropower Station generated 70.53 GWh of energy in the fiscal year. Compared to 83.195 GWh in the previous year, this is a reduction of 15.22 percent. Generation from the powerhouse contributed to 5.22 percent of the total generation of NEA owned hydropower stations. Regular and preventive maintenance works of electro-mechanical components and civil structures were carried out during the year. Also a team of experts

from BHEL, India was invited to the powerhouse for preparing a detailed report for the rehabilitation and upgrading of the powerhouse. The rehabilitation and upgrading works are to be started from fiscal year 2004/05 to contribute in meeting the additional demand of electrical energy in the INPS.

Sunkoshi Hydropower Station

Sunkoshi Hydropower Station generated 50.414 GWh of energy in the year. Compared to 52.79 GWh in the previous year, this is a reduction of 4.5 percent. Generation from the powerhouse contributed to 3.73 percent of the total generation of NEA owned hydropower stations. Major overhauling of unit nos. 1 & 2 was carried out during the year. Besides this, regular and preventive repair & maintenance works of electro-mechanical equipments and civil structure were also carried out. Major rehabilitation and upgrading of Sunkoshi hydropower station is planned to be taken up in fiscal year 2004/05.

Modi Khola Hydropower Station

Modi Khola Hydropower Station generated 47.98 GWh of energy in the fiscal year. Compared to 54.38 GWh in the previous year, this is a reduction of 11.77 percent. Generation from the powerhouse contributed to 3.55 percent of the total generation of NEA owned hydropower stations

During the year regular and preventive maintenance of the electro-mechanical works were carried out as planned. Regular and preventive maintenance of the powerhouse and that of the civil structures were also carried out to obtain full generation. Repair and maintenance of the protection works were carried out at the downstream of the headworks, which were washed away by the previous year flood creating a serious threat to the intake structure itself.

Gandak Hydropower Station

Gandak Hydropower Station generated 8.48 GWh of energy in the fiscal year. Compared to 27.08 GWh in the previous year, this is a reduction of 68.69 percent. Generation from the power house contributed to 0.62 percent of the total generation of NEA owned hydro power stations. The main cause of low generation from this powerhouse was the problems that appeared in the units as well as in the 132 kV circuit breakers that lasted for four months. Two old and faulty 132 kV circuit breakers were replaced by new 132 kV SF6 breakers.

The servomotors, excitation system, governors of all units were thoroughly repaired and maintained. Tender was awarded to CWE, China on competitive basis for the supply, delivery and installation of one set of governor and excitation system to replace the existing faulty system. The governor and excitation system will be supplied and installed in fiscal year 2004/05. Beside this, regular maintenance works of the electro-mechanical components and hydraulic structures were also carried out.

Puwa Khola Hydropower Station

Puwa Khola Hydropower Station generated 32.015 GWh of energy during the fiscal year. Compared to 25.76 GWh in the previous year, this is an increase of 24.28 percent contributing to 2.36 percent of the total generation of NEA owned hydropower stations.

Regular and preventive maintenance works of electro-mechanical components and civil structures were carried out as per the schedule.

Seti-Fewa Hydropower Station

Seti-Fewa Hydropower Station generated 9.21 GWh of energy in the fiscal year. Compared to11.14 GWh in the previous year, this is a reduction of 17.32 percent. Generation from the powerhouse contributed to 0.68 percent of the total generation of NEA owned hydropower stations.

During the year major overhauling of unit no 2 of the Seti powerhouse was carried out successfully and the unit started generating in full capacity. The protection works in Fushre Khola for Fewa Hydropower station was also completed as recommended by the Engineering Services of NEA. Besides this cleaning, repairing and maintenance of power canal was also carried out. With these maintenance works the Fewa powerhouse started generating after seven months of shut down due to the damages and deposition of debris in the Fewa canal. Regular and preventative maintenance works of electro-mechanical equipment and civil structures were also carried out.

Panauti Hydropower Station

Panauti Hydropower Station generated 3.814 GWh of energy in the fiscal year. Compared to 1.42 GWh in the previous year, this is an increase of 168.59 percent. Generation from the powerhouse contributed to 0.282 percent of the total generation of NEA owned hydropower stations. During the year, major overhauling of unit no 3 was carried out successfully and the cleaning, repairing and maintenance of power canal was also carried out. All the three units started generating in full capacity. Regular and preventative maintenance works of electro-mechanical equipment and civil structures were also carried out as planned.

Chatara Hydropower Station

Chatara Hydropower Station generated 4.29 GWh of energy in the fiscal year. Compared to 0.98 GWh in the previous year, this is an increase of 337.76 percent. Generation from the powerhouse contributed to 0.317 percent of the total generation of NEA owned hydropower stations. Due to the problem faced in the application software controlling the governor, its unit no. 1 was not in operation. Recently L/C has been opened for the spare parts of unit no 1 from VA Tech, Germany. Regular and preventative maintenance of electro-mechanical works were carried out successfully.

Sundarijal Hydropower Station

Sundarijal power station has been functioning at its full capacity for the last 70 years since its commissioning in the year 1934 A.D. It generated 4.16 GWh of electrical energy in the fiscal year. Compared to 3.16 GWh in the previous year, this is an increase of 31.65 percent. Generation from the powerhouse contributed to 0.31 percent of the total generation of NEA owned hydropower stations. Regular and preventive maintenance works of electro-mechanical equipment and civil structures were carried out during the year.

Thermal Generation

Duhabi Multifuel/Hetauda/Marsyangdi Diesel Plant

These plants operate only when the demand exceeds the supply. Accordingly Duhabi Multifuel plant generated 8.72 GWh of energy in the year, an increase of 110.12 percent as compared to 4.15 GWh in the previous year. This was mainly because of the increase in demand in the eastern region and to maintain the voltage level. Similarly Hetauda and Marsyangdi Diesel Plants generated 1.091 GWh and 59.51 MWh of electrical energy respectively. The regular and preventive maintenance of the units at all of the three power stations were carried out as per the schedule.

Major Projects

Chameliya Hydroelectric Project

Chameliya Hydroelectric Project (CHEP) is a 6-hour daily Peaking Run-off-River (PROR) scheme with an installed capacity of 30 MW and average annual energy generation of 184.21 GWh. The project lies about 950 km west of Kathmandu in Chameliya valley of Darchula District in Far Western Development Region. In December 2001, the Detailed Design and Tender Document preparation work of this project was completed with the grant assistance from Korea International Co-operation Agency (KOICA).

Construction of access road needed to develop the project is in progress. Earthworks and structural works of 17 kilometres out of a total of 18 kilometres of the road have been completed. Local transportation services are in operation on the road. Out of seven bridges on the access road, construction of two has been completed and other two are under progress. Out of 20 numbers of buildings proposed for camp facility, construction of four numbers of buildings was completed. The Environmental Impact Assessment (EIA) study as per the Environment Protection Rule 1997 (First Amendment 1999) of the project and 132 kV transmission line route corridor is in progress. The detailed survey of 35 km long 33 kV (Gothalapani, Baitadi to Balanch powerhouse site) transmission line for construction power supply was completed.

Kulekhani III Hydropower Project

Kulekhani - III Hydropower Project is located at about 40 km south west of Kathmandu. This project lies on the right bank of Rapti River near Hetauda-Bhaise road at the Bhaise Village Development Committee of Makwanpur District. It will mainly utilize the tailrace water from the Kulekhani - II hydropower station. A 50 m high dam will be constructed in Yangran Khola for the storage of around 0.5 million cubic meter of water after connecting it by a 3.5 km tunnel to the tailrace water of Kulekhani - II and Khani Khola. The stored water will be conveyed to an underground powerhouse by a 4.5 m diameter and 400 m long headrace tunnel to generate 45 MW of peak power and 47.8 GWh of energy.

Middle Marsyangdi Hydroelectric Project is a daily pondage run-of-river scheme with an installed capacity of 70 MW and an average annual energy generation of 398 GWh. This Project is being funded by KfW (Germany), HMG/N and NEA. The estimated cost of the Project is about 13.65 billion rupees.

The project site is about 170 km west of Kathmandu, in Lamjung District. The dam site is located at a narrow gorge of Marsyangdi River near Phaliasangu in between Udipuir VDC and Chiti VDC. The surface powerhouse site is at the right bank of the Marsyangdi River at

Siudibar, Bhoteodar VDC. The Project utilizes a gross head of 110 m and discharge of 80 m3/s for driving two Francis Turbines of 36 MW capacity each. The Project has a peaking capability for 5 hours even during the dry season. The major components of the project are: 62 m high, 95 m long combined concrete gravity and rock fill dam with concrete spillway capacity of 4,270 m3/s, three 12 m x 19.5 m spillway gates, a 1.6 million m3 capacity reservoir, three underground desanding caverns (15 m x 100 m x 25.1 m each) with two basins in each cavern to flush 95% of 0.2 mm particle size by vertical flushing (BIERI) system, a 5.4m diameter 5,210 m long concrete lined power tunnel, a 20 m diameter and 45 m high surge tank, a 450 m long penstock, and a 41 km long single circuit 132 kV transmission line.

Fichtner Joint Venture (FJV) is responsible for carrying out the detailed design and construction supervision of the Project. TAEC-NESS Joint Venture, the consultant who carried out the Environmental Impact Assessment (EIA) is monitoring the environmental mitigation plan during the construction.

The construction of the Project commenced from June 25, 2001. The civil contractor of the project, Dywidag-Dragados-CWE JV (DDC JV), is presently carrying out excavation works for dam, surge tank, desanding caverns & power tunnel, concreting works at powerhouse sub-base, u/s wing walls, tunnel lining works for diversion tunnel, etc.

During the year, progress in construction of the project was severely hampered. Most of the night shift works could not be carried out due to imposition of curfew at the project area. In addition, various incidents of security lapses have resulted in suspension of blasting in underground works since 21 September 2003. Further, due to security related incidents that led to death of two workers in ambush the contractor suspended the work temporarily from 6 October 2003 as per the Engineers instruction. To resume the works a number of meetings were held at different dates with high level Royal Nepal Army officers, CDO, Secretary of Ministry of Water Resources, NEA management, DDCJV and FJV. Efforts were made to provide additional security forces in order to restart the works. The contractor unilaterally terminated the contract from 13 November 2003 stating that the payment of duly certified amount was not deposited in its bank account on time. Several meetings were held between KfW, Fichtner J/V, NEA and DDC JV to resume the works. Finally, a MoA (Memorandum of Agreement) was signed in Kathmandu on 20th January 2004 to complete the project with the commissioning

of all three units by December 2006. Accordingly, project works resumed from February, 2004.

By the end of June 2004, in the headworks area, about 83% of the excavation works have been completed. Similarly, excavation of intake tunnels and valve chamber have completed, power tunnel excavation have finished up to about 36%, about 54% of desanding caverns excavation and about 90% of upstream wing walls have completed. About 3% of surge tank excavation has finished. In the powerhouse area, about 58% concreting works has been carried out after finishing the excavation works. Two major key dates, namely, readying for draft tube installation and penstock manifold were met.

As for the status of the other lots, Mechanical Equipment (Lot M) Contractor Voith Siemens Hydropower Generation GmbH & Co. has procured about 85% of the material and manufacturing is in progress. Installation of Draft tube No 1 has been completed and that of Draft Tube No 2 is about 80% complete. Testing and commissioning of 132 kV GIS switchgear equipment (Lot SS2) at the existing lower Marsyagndi power station has been completed by Alstom Energie-technik GmbH in January 2004. The contractor of Electrical Equipment (Lot E) ALSTOM Power Generation AG has started procurement of the generator-embedded parts in Switzerland, and they are planning air shipping it at site. The local agent (NHE) is continuously carrying out the supervision of the vertical uplinking of the Earthing straps at powerhouse. For the Transmission line (Lot TRL) project is awaiting concurrence from KfW to negotiate with the lowest bidder SAG. The 132 kV Substation/Switchyard (Lot-SS1) Contractor, ALSTOM Energie technik GmbH, has finished fabrication works of 3 out of 7 single phase generator transformers and 1 three phase 5 MVA transformer in Naini, India. Lot HSS (Hydraulic Steel Structure) Contractor VA-Tech Hydro has started to ship the steel plates to the site and will start fabrication of penstock. Also, NHE has started fabrication of other equipments at their workshop in Butwal.

Land and property acquisition as well as the resettlement at various construction sites is about 98% complete. The project has also carried out income generation oriented training program and community awareness program focused on public health and traffic safety to the members of the project affected families and the local people of the project area. The Neighborhood Support Programme (NSP) of the project is supporting the development activities of nine Village Development Committees (VDCs) in the vicinity of the project area by carrying out various activities in five key areas of Health, Education, Water Supply & Sanitation, Roads and Electrification.

Transmission and System Operation (TSO) as the grid owner looks after transmission developments and operation and maintenance of the high voltage transmission network and grid

substations. Within the TSO, the System Operator is responsible for managing the operation of the entire Integrated Nepal Power System (INPS) of the country.

With the core businesses of the internally unbundled organization fully in place, the TSO concentrated its effort on three fronts covering earliest completion of ongoing projects, improvement in reliability of the grid and quality of supply and efficiency enhancement in system operation and development of new projects.

In this year NEA has completed the NEA Grid Code. This will help to enhance operational efficiency and install professionalism in its dealings with the grid users by creating a level playing field for all the users, irrespective of whether the parties belong to the NEA or not. In the absence of a regulatory commission, the Grid Code in the present form will basically be an internal document. Nevertheless, it can still form a basis for power purchase agreements with IPP's or interconnection agreements with other users of the grid.

With the USAID support under SARI/E programme., NEA has developed the final model for determining the transmission price of energy at different voltage level. The transmission price will form the basis for calculating wheeling charges for any generator who wishes to utilize the service of the grid to sell their energy in bulk.
The new Load Dispatch Centre has also come into full operation in the year.

Transmission Line / Substation Construction Department

Transmission Line and Substation Construction Department is responsible for new construction and reinforcement of transmission line and grid substations of 66 kV and higher voltages. Construction of Panchkhal substation, expansion of Modi Khola substation and reinforcement of New Chabel substation have been completed in the year. Steady progress was made in the implementation of World Bank (IDA) funded Khimti - Dhalkebar 220 kV transmission line project. Efforts are also underway to secure funding from Japanese Bank for International Cooperation (JBIC) for the construction of Hetauda - Bardghat 220 kV transmission line.
K-3 Substation Project

Under this project, a new 66/11kV substation with a capacity of 2 x 22.5 MVA will be constructed inside the Sinha Durbar premises and will be connected to the existing Teku substation through 66 kV double circuit underground cable. Constructed with grant assistance from the Government of Japan, the project is expected to be completed by March 31, 2005 at an estimated cost of US$ 13 million.

Thankot-Chapagaon-Bhaktapur 132 kV Transmission Line Project

The aim of the project is to complete the southern part of the planned 132 kV transmission ring around the Kathmandu Valley. After completion, this will not only cater to the growing demand in the Valley but also reduce system losses and enhance the power system reliability in the region. The project is being funded jointly by Asian Development Bank (ADB), Organization of Petroleum Exporting Countries (OPEC), His Majesty's Government of Nepal and Nepal Electricity Authority. The estimated cost is about US$ 17 million and the project is expected to be complete by 2006/07.

Hetauda-Dhalkebar & Butwal-Bardaghat 132 kV 2nd Circuit Transmission Line Project

It constitutes of 174 km of 132 kV 2nd circuit stringing on existing transmission line towers from Butwal to Bardaghat and from Hetauda to Dhalkebar and extension of substations at Hetauda, Dhalkebar, Butwal and Bardaghat. The project is funded jointly by HMG and NEA. Out of the 174 km stringing works to be implemented, 167 km stringing was completed in December 2000. The remaining 7 km works in Hetauda has been held-up due to problem encountered in the right of way on land, which had already been acquired some 20 years back by NEA. The project is estimated to cost US$ 4.05 mililon.

Birgung Corridor 132 kV Transmisson Line Project

The scope of this project covers the construction of 20 km long double circuit 132 kV transmission line from Pathlaiya to Parwanipur and the construction of a new 132 kV substation in Parwanipur with 2 x 18/22.5 MVA transformer capacity. The project will not only cure the overloading problem of the transformers in the Birgunj corridor, but also facilitate exchange of power between Nepal and India through the planned Parwanipur-Birgunj transmission line. NEA is funding the total project cost of NRs. 204.17 million. This project has entered into its construction phase and is scheduled to be completed by June 2006.

Khimti-Dhalkebar 220 kV Transmission Line Project

This will be the first 220 kV transmission line in the country. Its immediate objective is to improve the reliability of power withdrawal from Khimti-1 HEP, provide a direct route for export via Dhalkebar substation and improve the voltage problem in the eastern region. In future, the line will also be used to evacuate power from the planned 250 MW Upper Tamakoshi HEP and other power plants that have been identified in the Khimti region.

The project comprises of a 75 km long 220 kV transmission line on double circuit towers from Khimti HEP to Dhalkebar along with a 132 kV line bay extension at each end. Till Upper Tamakoshi or a similar large generating station is connected to this line, only one circuit with ACSR BISON duplex conductor will be strung under the present scheme and charged at 132 kV level. The cost of the project is estimated at US$ 22 million and it is funded jointly by IDA, HMG/N and NEA. The project is estimated to be completed in fiscal year 2006/07.

Butwal- Sunauli 132 kV Transmission Line Project

This project has been developed as an exchange link to encourage power exchange with India. It comprises of a 25 km long 132 kV double circuit transmission line and extension of two line bays at Butwal Substation. The construction of this project has been hampered because of some problem with Environment Impact Assessment (EIA). Financed jointly by HMG/N and NEA the project is scheduled for completion in fiscal year 2005/06 at an estimated cost of US$ 2.2 million.

Parwanipur-Birgunj 132 kV Transmission Line Project

The aim of the project is to establish a 60 km long 132 kV power exchange link with India through Birgunj in Nepal. After completion, it will help to enhance the existing level of power exchange between Nepal and India. The estimated project cost of US$ 2.8 million is being funded jointly by Asian Development Bank (ADB), Organization of Petroleum Exporting Countries (OPEC), His Majesty's Government and Nepal Electricity Authority. The project is expected to be complete by 2006/07.

Dhalkebar- Bhittamod 132 kV Transmission Line Project

The construction of this power exchange link will be very beneficial for power export because of the proximity of Dhalkebar substation to the Khimti region, where a number of potential hydropower projects have been identified including Upper Tamakoshi HEP. Under this Project, a 45 km long double circuit 132 kV transmission line along with the extension of two line bays at Dhalkebar substation will be constructed at an estimated cost of US$ 6.18 million. EIA study of this line is in the final stage. To be financed by IDA, HMG/N and NEA, the project is scheduled for completion in fiscal year 2006/07.

Chandranigahpur Substation Project

This project is designed to meet the increasing demand of Chandranigahpur, Harsa, Haripur, Gaur, Simraungadh and Nijgadh areas. This will reduce system losses and improve reliability and quality of supply in those areas along with Birjung, from where they are being fed at present. Under this project, a new 132 kV substation will be constructed at Chandranigahpur. The project is estimated to cost US$ 7.24 million. NEA has requested IDA for financial assistance for the implementation of the project.

Grid Operation Department

Grid Operation Department is entrusted with the important task of operation and regular maintenance of the high voltage transmission lines and substations. The Department focused its attention mainly on three tasks namely augmentation of transformer capacity to relieve overloaded transformers, boosting voltage through the installation of compensating devices and improving reliability of the grid. In this context, 83 MVA of transformer capacity was added to the system at different voltage levels and capacitor banks were installed at Birgunj(10 MVAr) and Duhabi (30 MVAr) to improve the voltage problem in these areas. Interruptions due to transformer maintenance were reduced by the employment of regenerating plant for transformer oil filtration, which processed some 54,000 litres of transformer oil.

Load Dispatch Center

With the completion of long-awaited new Load Dispatch Centre (LDC) in Siuchatar, NEA has achieved a major accomplishment. Constructed under KfW grant, the new LDC has been supervising the operation of the INPS since the middle of January 2004.

The limited data (total around 100) that were used in the old LDC and that also from only 5 stations have been replaced by a computer based SCADA system that collects a total of around 5,272 numbers of data from 40 stations spread around the country. The system also provides the functionality of remote control of circuit breakers, network analysis, load frequency control and integrated telephone system throughout the INPS.

One of the main activities during the year was to train the staffs for operating the new LDC. With the availability of real time data and better communication system it has been able to enhance the availability of power stations and transmission lines through improved coordination of shutdowns. The number of total system collapse was also brought down, though marginally, during the post new LDC period but the duration of these outages, except for two events that were caused by delayed black start, came down from 350 minutes in the last fiscal year to 196 minutes in the same period. It is envisaged that with

the NEA Grid Code to come into effect at the beginning of the next fiscal year the improvements will be significant in coming years.

The Distribution and Consumer Services (DCS) Business Group is mainly responsible for planning, design, construction, operation and maintenance of the distribution system up to 33 kV voltage level. It is also responsible for consumer services such as new connections, meter reading, billing and revenue collection. DCS is providing its services to the consumers through two Departments, four Regional Offices, twenty Distribution Centers and forty-three Branch Offices spread over the length and breadth of the country.

During the FY 2003/04, the total internal energy sales was 1675.114 GWh which accounted for 92.34% of the total sales. This is an increase of 165.807 GWh over the last fiscal years figure. The revenue for FY 2003/04 is Rs. 12,384.421 million which is about 7.46% more than that of last fiscal year.

The number of consumers at the end of FY 2003/04 was 1,060,700, an increase of 9.28% over the previous year. The domestic consumer category accounted for about 96.0% of the total number of consumers, 37.72% of sales and 38.32% of revenue. The industrial consumer category accounted for only 1.9% of the total number of consumers but its contribution to sales and revenue are 38.46%, 36.75% respectively. The commercial consumer category accounted for only 0.51% of the total number of consumers but contributed 5.82% of the total sales and 8.17% total revenue respectively. Likewise non-commercial consumers constitute 1.0% of the total number of consumers and contributed 4.72% of the total sales and 6.75% to the revenue.

Distribution Centers

In continuation of its reform process, NEA has so far implemented a profit center strategy in twenty of its distribution branch offices to run them more effectively on a semi-autonomous model. In order to regulate the Distribution Centers by allocating specific mandate, responsibilities and authorities, the NEA Board has approved the Distribution Center By-laws on February 10, 2003.

The main responsibilities of the Distribution Centers are as follows:

- to adhere to the commercial principles as specified in Nepal Electricity Authority Act, in the execution of their works.
- to provide prompt services to the consumers in a simplified manner.
- to develop a system for result oriented performance.
- to mobilize the manpower most effectively in fulfilling the organizational goals.
- to provide reliable, safe and quality power supply to the consumers.

So far, NEA has established the following 20 Distribution Centers:

1. Kathmandu Center
2. Kathmandu East
3. Kathmandu West
4. Kathmandu North
8. Thimi
9. Biratnagar
10. Itahari
11. Janakpur
15. Bharatpur
16. Ratnanagar(Tandi)
17. Pokhara
18. Butwal

5. Lalitpur
6. Pulchowk
7. Bhaktapur
12. Rajbiraj
13. Hetauda
14. Birgunj
19. Bhairahwa
20. Nepalgunj

The Distribution Centers are evaluated for each Performance Audit Period (PAP) on a half yearly basis based on following performance indicators:

1. Loss Reduction
2. Average Collection Period
3. Stock Turnover Ratio
4. Capital Works Progress
5. Connection Period
6. Reporting and Data Management

The performance evaluation of all the Distribution Centers for the first Performance Audit Period (February 2003 to July 2003) was carried out and subsequently audited by the auditors supported by the NEA management. The results of the performance evaluation were quite encouraging. The most noteworthy achievement was a considerable reduction in system losses. Thirteen DCs were qualified to receive cash incentives for their staffs during the first Performance Audit Period in the year 2002/03. Similarly, the performance evaluation of the Distribution Centers in the first Performance Audit Period of the year 2003/04 is being finalized.

Distribution Centre Monitoring Department

This department monitors, coordinates, and supervises activities of these distribution centers.

Technical Services and Commercial Department

This department is responsible for the planning and design of distribution system for new extensions as well as reinforcement of distribution system. In addition, it monitors system losess and look after commercial matter such as tariff, billing, etc.

This department is engaged in programming, installation, downloading, data analysis and providing training for Time of Day (ToD) meters. It has under taken a public awareness activities by running a weekly FM programme called "Bidhyut Sewa" which covers public awareness on proper usage of electricity, electrical safety, drives against electricity pilferage, rules and regulations related to electricity distribution, consumer queries and complaints.

Distribution District Profit Center Project

To further improve the performance of distribution centers, this project has been under taken. This project is a component of Rural Electrification, Distribution and Transmission Project, which is being implemented with financial support from Asian Development Bank (ADB). Under this project, consulting services will be provided to strengthen the Distribution Centers of NEA to operate them in a commercial manner with an ultimate goal of achieving self-sufficiency. The project activities will also focus on improving financial sustainability of DCS in terms of better service quality, reliable power supply, increased revenue and cash-flow, cost reduction through better management, increasing operational efficiency and loss

reduction. The consulting services will assist the NEA's initiation to establish Distribution Centers by reviewing their activities and providing appropriate technical support to them.

Computerized Billing Project

Currently, NEA is using different computerized billing systems. The dBase IV based computerized billing system is a full fledged computerized billing system but other systems were basically designed as revenue accounting and auditing system. The dBase system uses non relational data base and it is very slow in performance. Under this project which is a component of Rural Electrification, Distribution Project, an appropriate computerized billing system will be selected and implemented in 15 large branch offices by June 2005. In the remaining Branch Offices, NEA will implement it gradually on its own. The consultant has already submitted inception Report on 12 July 2004.

The Computerized Billing Project is being implemented to help maintain accurate records of consumers, meters and revenue accounting, reduce non-technical losses and account receivables and expedite reporting. It will also help in reducing operational expenses and improving NEA's relationship with the consumers.

Other Major System Reinforcement Works

In Biratnagar area, a new 33/11 kV substation with two 16 MVA transformers is being constructed at Tanki Sinwari. The contract has been already awarded and it will be completed in 15 months time period. The completion of this substation will greatly relieve the existing Biratnagar substations and will help to meet the growing power demand in the area. Similarly, under Tanahun Branch Office, a 6/8 MVA, 33/11 kV transformer will be added at Dumre substation and the switchgears at Ambu Khairani are being reinforced. The tender evaluation is in process and the works will be completed within 12 months from the date of Contract Agreement. Likewise, the construction of 1.5 MVA, 33 / 11 kV substations in Dolakha near Charikot is nearing completion and another 1.5 MVA, 33 / 11 kV substation at Jiri is planned for construction in the near future.

Other Initiatives

NEA's top management team headed by the Managing Director visited various Regional Offices, interacted with the local staffs and reviewed the progress of the works in personnel management, auditing, status of audit irregularities, financial management reforms and other related problems and issues. Matters related to loss reduction, collection of receivables, fixed assets and accounting were also discussed and instructions were given to enhance efficiency of work performance by reducing power system losses, decreasing average collection period and collecting arrears from the consumers.

In order to foster its good relationship with the consumers, NEA's high-level executives also visited large consumers in Kathmandu Valley, Biratnagar, Birgunj and Bhairahwa, with approved power demand of 1000 kVA and above and had fruitful interaction with top-level management of the industrial and business entities. DCS will make all possible efforts to solve the problems of the consumers and try to provide them better services.

Meanwhile, DCS is striving hard to reduce power system losses, increase collection of receivables including the outstanding dues of Street Lighting.

The Electrification Group is responsible for the operation and maintenance of small hydropower plants, isolated distribution networks and rural electrification. The major functions of this group is to:

plan, design and construct distribution networks up to 33 kV voltage level
operate and maintain off-grid distribution networks and small hydropower plants
read meters, bill and collect revenue and
implement all electrification projects up to 33 kV.

Under the Electrification Group there are Small Hydro and Rural Electrification Department and Community Rural Electrification Department. The major projects under these departments are as follows:

Kailali Kanchanpur Rural Electrification Project
Rural Electrification, Distribution and Transmission Project
Rural Electrification and Distribution System Reinforcement Project
Sindhu- Dolkha Distribution line extension Project
Mid and Far Western Rural Electrification Project
Distribution and Rural Electrification Project

Small Hydro Project (SHP) and Rural Electrification Department (RED)

The SHP and RED are responsible for the construction, operation and maintenance of isolated small hydropower plants, execution of rural electrification and extension of the national grid to remote and difficult hilly regions along with the establishment of distribution systems to provide electricity to the rural population.

The operation and maintenance works of the department cover 27 districts in 12 zones of the kingdom and are carried out by 26 small hydropower plant branches, 2 solar plant branches and 5 distribution branch offices. Out of 26 small hydropower plants, 8 have been leased out to private firms and 3 have been leased out to the consumer communities, which operate under the guidelines set forth by NEA.In the fiscal year 2003/04 the normal activities of this department were partially affected due to the adverse security situation in most of the hilly and remote areas of the country. The progress in construction works of small hydropower projects and transmission and distribution lines were also affected. SHP and RED have carried out the following projects during the fiscal year 2003/04.

Heldung Small Hydropower Project (Humla District)

The actual work of this 500 kW project commenced in fiscal year 2001/02.The tender for engineering, procurement and construction on turnkey basis has been awarded and letter of credit for electromechanical works has been opened. The work of the project is in progress and is expected to be completed by fiscal year 2004/05 at a total cost of about Rs.129 million. The following civil structures have been completed:

Intake structure
Gravel Trap
Headrace Canal
Fore bay

Gamgad Small Hydro Power Project (Mugu District)

The actual work of this 400 kW project began in fiscal year 2001/02.The tender for engineering, procurement and construction on turnkey basis was awarded to the contractor. The project is scheduled to be completed by fiscal year 2004/05 at a cost of about Rs.161 million.

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

The major works of the project consist of the construction of 29 km of 33 kV transmission line, 25 km of 11 kV and 20 km of 0.4 kV distribution line and two 33/11 kV substations of 1.5 MVA capacity. Out of the two substations the tender for engineering, procurement and construction for one substation at Okhaldhunga was awarded to the contractor. A total of 600 poles for the transmission line have been erected and stringing of conductor for a length of 10 km was completed. This project was started in fiscal year 1999/00 and is scheduled to be completed by 2005/06 at an estimated cost of Rs 132.7 million.

Ilam -Phidim -Taplejung 33 kV Transmission Line Project (Panchthar and Taplejung Districts)

The major works of the project include the construction of 90 km of 33 kV transmission line and 33/11 kV substations of 1.5 MVA capacity each in Phidim and in Taplejung districts. Out of the 90 km long 33 kV transmission line, 44 km transmission line works has been completed. This project was started in fiscal year 1999/00 and is expected to be completed by 2004/05 at an estimated cost of Rs. 144.5 million.

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

The major works of this project are the construction of 50 km of 33 kV transmission line and two 33/11kV substations of 1.5 MVA capacity each at Sheetalpati and Musikot. Out of the 50 km long transmission line, pole erection for a distance of 30 km and stringing of conductor for 15 km was completed in fiscal year 2003/04. The project was started in fiscal year 2001/02 and is scheduled for completion by 2005/06 at an estimated cost of Rs. 142.5 million.

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

The major works of this project are the construction of 70 km of 33 kV transmission line, 45 km of 11 kV and 45 km of 0.4 kV distribution line and one 1.5 MVA, 33/11kV substation. Out of the 70 km long 33 kV transmission line, the construction of 30 km transmission line was completed in the year. The project was started in fiscal year 2001/02 and is expected to be completed by 2005/06 at an estimated cost of Rs. 142.5 million.

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

The major works of this project are the construction of 45 km of 33 kV transmission line, 50 km of 11 kV and 50 km of 0.4 kV distribution line and a 1.5 MVA, 33/11 kV substation. The pole erection and conductor stringing work for a distance of 10 km was completed in the year. The project was started in fiscal year 2001/02 and is scheduled for completion by 2005/06 at an estimated cost of Rs. 120.5 million.

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

The major works of the project are the construction of 90 km of 33 kV transmission line, 53 km of 0.4 kV distribution line and a 1.5 MVA, 33/11 kV substation. Out of the 90 km long transmission line, pole erection work for a distance of 24 km was completed in the year.

This project was started in fiscal year 2001/02 and is expected to be completed by 2005/06 at an estimated cost of Rs.80 million.

Dadeldhura -Baitadi 33 kV Transmission Line Project

The major works of the project include the construction of 14 km of 33 kV transmission line, 15 km of 0.4 kV distribution line and a 1.5 MVA capacity sub station. Out of the 14 km of 33 kV transmission line, pole erection work for a distance of 10 km and stringing work for 1 km was completed in the fiscal year 2003/04. This project was started in fiscal year 2001/02 and is expected to be completed by 2004/05 at an estimated cost of Rs 33.1 million.

Rasuaghat -Khotang 33 kV Transmission Line Project

The major works of the project include the construction of a 33/11kV, 1.5 MVA substation at Rasuaghat of Khotang district and 90 km of 0.4 kV distribution lines. The tender for the supply and construction of 1.5 MVA capacity substation on a turnkey basis has been awarded to the contractor. This project was started in fiscal year 2001/02 and is expected to be completed by 2005/06 at an estimated cost of Rs. 106 million.

Jiri -Khimti 33/11 kV Substation Project (Terhathum District)

This project was started in fiscal year 2001/02 and is expected to be completed by 2003/04. The tender for the supply and construction of a 33/11 kV, 1.5 MVA substation has been awarded to the contractor on a turnkey basis. This project is estimated to cost about Rs.25 million.

Small Hydropower Master Plan Project

To assess the potentiality of Small Hydropower Projects, the Small Hydro Power Master Plan Project was initiated in 1990. Followings are the major works carried out under this project in the fiscal year 2003/04:

a) Feasibility study of 3000 kW Sharda Khola SHP in Salyan district
b) Detail Engineering Design of 2500 kW Inwa Khola SHP in Panchathar district
c) Inventory Study of 400 kW Julu Khola SHP in Manang district
d) Inventory Study of 1000 kW Salakhu Khola SHP in Nuwakot district
e) Inventory Study of 800 kW Liping Khola SHP in Sindhupalchowk district

Damages In Small Hydropower Stations

Out of 26 Small Hydropower Plants that have been operating in various districts of the kingdom, several plants were damaged so far due to the Maoist insurgency. A number of them have been partially repaired and some of them are still to be repaired. The operational status of the Small Hydropower plants and substation damaged earlier are as given below:

Only one unit in operation of Phidim SHP (240 kW)
Repairing of Taplejung SHP (125 kW) completed
Only one unit in operation of Bajhang SHP (200 kW)
Only one unit in operation of Jumla SHP (240 kW)
Only one unit in operation of Achham SHP (400 kW)
Only one unit in operation of Darchula SHP (300 kW)
Repairing of Piluwa 33/11 kV substation completed
Repairing of Udipur 33/11 kV substation completed
Only one unit in operation of Bajura SHP (200 kW)

Major Maintenance Works carried out in Small Hydropower Stations and Substations:

a. Rehabilitation of Manang Small Hydro power Plant (80 kW). Rehabilitation works include replacement of old generating set and installation of electronic load controller.
b. Installation of Electronic Load Controller in Chame Small HydroPower Plant.

c. Repairing of three 250 kW Generating Units of Tatopani Small Hydro Power Plant, Myagdi.
d. Upgrading of Baglung Substation from 1.26 MVA to 2.13 MVA (630 kVA+1500 kVA).
e. Installation of 33/11 kV, 630 kVA Transformer at Baaisjaangar, Lamjung 10 km away from Udipur Substation.
f. Relocation of 33/11 kV, 630 kVA (2X315 kVA) Transformer from Larjung Substation to Kobang, Mustang.

Mid and Far Western Rural Electrification Project

This project will carry out rural electrification in Surkhet, Dailekh, Achham, Doti, Dadeldhura, Baitadi and Bajhang districts. The project is scheduled to commence in FY 2004/05.The National Planning Commission and the Ministry of Water Resources have already given consent letter for the project and the Ministry of Finance has decided to seek support from Swedish International Development Agency (SIDA) for the implementation of the project. SIDA appointed a consultant and a more detailed project report has been prepared. An agreement between HMGN and SIDA for financing the project is expected soon. On completion of the project, Users' Groups will be responsible for the operation and maintenance of the distribution system in the project area. The scope of the work of the project includes the following:

17,200 new consumer connections
installation of a 132/66 kV, 10 MVA transformer at 132 kV Ataraia substation, Kailali.
installation of a 66/33 kV, 3 MVA transformer at Syaule, Dadeldhura
construction of 225 km of 33 kV, 665 km of 11 kV and 835 km of 0.4 kV lines.
installation of seven number of 33/11 kV and 370 number of 11/0.4 kV transformers.

Kailali Kanchanpur Rural Electrification Project

The project was started in 1999 with DKK 66.3 million grant assistance of the Danish Government and NRs 669 million of HMG/N and NEA The project will supply electricity to thirty three VDCs and two municipalities of Kailali and Kanchnapur districts. Around 64,000 households will benefit from this project, which is expected to be completed in 2006. So far construction of three number of 3 MVA, 33/11 kV substations at Lamki, Attariya and Lalpur, 173 km of 11 kV line and 456 km of 400/230 V lines in one hundred and nineteen load centers have been completed. Poling work is in progress in other areas. After completion of the project, load center based users' cooperatives will take over the responsibility of operation and maintenance of low voltage lines and distribution transformers.

Rural Electrification, Distribution and Transmission Project

Rural Electrification, Distribution and Transmission Project is being implemented with a loan assistance of US$50 million from ADB and US$ 10 million from OPEC fund. NEA and HMG/N are funding the local component of US$ 34.5 million.
The main objectives of the project are:

- to enhance NEA 's distribution and transmission system capacity to evacuate power from the existing and upcoming hydro power plants
- to extend the distribution system in rural areas to supply electricity to rural communities and improve economic conditions and living standards
- to meet the increased load growth and supply new consumers within existing service areas
- to develop the transmission system in the Kathmandu Valley and an inter-connection line with India.
- to reduce losses and improve the overall efficiency of the system
- to help distribution centers run commercially and maintain their consumer records and revenue accounting accurately
- to update fixed assets record scientifically

The project, which covers the Eastern, Central, and the Western regions of the country, consists of the following five components:

i) Rural Electrification and Distribution System Reinforcement (RE/DSR)

The scope of the project includes electrification of around 123,382 rural households of 277 Village Development Committees (VDCs) in twenty-two districts of Eastern, Central and Western regions of Nepal to enhance economic development in the rural areas. Rural Electrification (RE) will encourage the substitution of imported kerosene and diesel fuel by electricity. RE in some districts will also support irrigation tube well pumps for agricultural development. The Distribution System Reinforcement (DSR) program will improve the distribution systems and hence reduce losses, enhance reliability and serve the expected load growth for next four to five years in twenty-three districts of the country.

The project status is as follows:

- Land acquisition for thirteen out of fourteen (except Gorkha district) new 33 kV substations construction sites are completed.
- Planning, economic analysis and detail engineering survey works for previously proposed thirty districts have been completed.
- Final IEE reports for thirty seven districts are in the process of approval from the concerned ministry.
- Scooping and TOR of EIA studies for nine VDCs of Kaski districts under Annapurna Conservation Area Project have been completed.
- Construction of boundary walls at new substation sites of Rangeli of Morang district and Fattepur of Saptari district were completed in the FY 2003/04. The construction of boundary walls and other miscellaneous structures will be completed at nine other new substation sites of Ilam, Birat Chowk, Yadukuha, Aurahi, Bhiman, Simranghad, Mukundapur, Jitpur and Milanchowk in the year. Boundary walls and other miscellaneous structures at substation site of Devdaha of Rupandehi district and additional store construction in a building at Butwal are in progress.
- The materials required for RE and DSR are divided into 11 lots/ 21 packages, out of which
    - Contract Agreement has been executed for 7 Packages amounting 7.42 Million US$.
    - Notification of Award has been issued to execute the contract for a Package of ABC Cables and Hardware amounting 4.94 Million US$.
    - Three Packages namely Substation, MCCB and Panel Boards and Concentric Cables amounting 9.88 Million US$ are under different stages of evaluation.
    - The bids under ICB have already been invited for a package of PSC Poles and Energy meters & MCBs (3 Packages) amounting 3.24 Million US$.
    - The tender for ACSR Conductor (1Package), Meter boxes (1 Package), Tools and Equipment (1 Package) and Vehicles (3 Packages) amounting 7.54 Million US$ are yet to be invited.
    - Contract has been executed with Amalekhgunj Pole Plant, NEA to supply 8 & 9 m PSC Poles amounting NRs. 5,78,87,833.74.

ii) Transmission Line

The scope of work for this component includes:

- Construction of 26 km of 132 kV lines around the southern side of Kathmandu Valley from Matatirtha to Bhaktapur to complete the 132 kV Ring around Kathmandu Valley.

- Expansion of existing substation at Bhaktapur and Balaju.
- Construction of new 132 kV switching station at Matatirtha and a new 132 kV substation at Harisiddhi.
- Construction of 15 km 132 kV double circuit lines from Parwanipur to Birganj for power export to India by increasing capacity of interconnected schemes.

The project completed the following works in the year:

- Nippon Koei Company was appointed as the consultant for this project in May 2003.
- Invitations for Tender for the supply and construction of 132 kV transmission line (Thankot-Chapagaon-Bhaktapur) and for 66 and 132 kV substations was published.
- Land acquisition for Matatirtha switching station and Harisiddhi Substation was completed.

iii) Computerized Billing Project

The Computerized Billing Project has been described under the Distribution and Consumer Services Business Group.

iv) Distribution Profit Center Project

The details about this project has been mentioned under the Distribution and Consumer Services Business Group.

v) Fixed Assets Revaluation Project

Under the Fixed Assets Revaluation component, consulting services will be provided to establish a computer based fixed assets register, improve accounting procedures to resolve issues raised by NEA's external auditors relating to revaluation of fixed assets and inventories and design an appropriate formula for annual revaluation of fixed assets on an interim basis.
The project completed the selection of consultant as per ADB guidelines. The successful consultant Ernst & Young of India has already started the physical verification of fixed assets of 11 generating power stations, 21 HV substations and a pole production plant. Currently the consultant is working on the development of an appropriate valuation methodology.

Community Rural Electrification Department

With the restructuring of NEA in 2003, a community based generation and distribution model was envisaged. This is grouped as individual, joint and collectives and are named as 'community based generation', 'community based rural electrification' and 'community based operation and maintenance' models.

In each model the primary condition to be fulfilled by a community is that, it should be a registered institution as provided by the laws and must be constituted from among the local electricity consumers. In all the models the community is responsible for the operation and maintenance of leased distribution system and should also be responsible for the payment of electricity consumed including both the technical and non-technical losses of the system.

The delivery mechanism is based on a participatory demand driven policy, where the rural community form an electricity distributing organization. The community establishes its own load centers wise organization. Subsidy is provided to rural electrification and the community has to buy electricity at a bulk rate from NEA. This allows the communities themselves to define the quality of service they require under their own financial responsibility.

NEA on the other hand has to supply power with a high degree of reliability and accountability. Establishment of productive end-use is critical for financial viability of the communities (in order to increase the load factor) with regular supply. The individual

communities are served by supporting organizations providing managerial, administrative and technical assistance. Members on voluntary basis with minimum overhead cost operate it.

Rural Electric Communities shall finally takeover leased ownership of the LV distribution system. They will be accountable to the society under which it operates. The organizations also take the decision-making responsibility and will be accountable for its performance. The community will also be accountable for the extension of rural electrification.
The salient features of community based on-grid rural electrification are as follows:

1. To develop a coherent framework and suitable concept for cost effective, technically and socially appropriate rural electrification, which is well managed by established user co-operatives in the rural areas to be electrified
2. To develop and establish user co-operatives to be able to maintain the low voltage distribution system from the load centres.
3. To support sustainable means for development of productive-end-use applications in electrified rural areas.
4. To construct cost-effective distribution infrastructure in rural areas, with the aim of connecting as many customers as possible within the framework of the budget available either provided from HMG/N and or other various donors.

The salient features of community based rural electrification are as follows:

1. Considering the expansion and operation of rural electrification under the concept of population's ownership, the government has made a provision of capital grant at the rate of NRs 75,000 per kW to the community which develops a hydro power project to generate up to 500 kW of electricity.
2. With the objective of ushering the policy further by encouraging the involvement of the population in the extension of rural electrification, HMGN has announced to provide 80 per cent of the capital cost of the rural electrification to the community.
3. To promote further activity by encouraging the involvement of the population in the operation and maintenance of distribution system, NEA has formulated "Community Electricity Distribution Regulation, 2060 to lease out the extended RE distribution system to the community.
4. The community based-organization can buy electricity in bulk from NEA and sell within its area utilizing the existing distribution network.
5. The rate of bulk purchase of electricity by community is settled through negotiation between NEA and community based organization and the retail tariff rate for end consumer is fixed by the "Electricity Tariff Fixation Commission" (ETFC).
6. Bulk meter is placed on transformer secondary side and constitutes the demarcation boundary to undertake the extension, rehabilitation, operation and maintenance work of the distribution system.

Engineering Services, the power development wing of NEA, has decades of experience in the field of design and construction supervision of hydropower projects from micro to mega level capacity. This wing was restructured into a business group to impart greater degree of commercial orientation and professionalism in its operations. A Steering Committee headed by the General Manager oversees the management of this business group, which comprises of four Departments, namely, Project Development Department, Soil Rock and Concrete Laboratory, NEA Training Center, and Environmental and Social Studies Department. Consistent with its vision, this business group is now all set to expand its services even beyond the borders of the country.

The services being provided by this business group include the following:

services related to project identification, feasibility study and detailed engineering design as well as construction supervision of projects related to generation, transmission and distribution of electricity.

services related to geological, hydro-sedimentological, geodetic investigation and drilling works.

construction material investigation and testing.

EIA and IEE study of hydropower projects, transmission lines, access roads and rural electrification.

training programs.

research and development works.

Project Development Department (PDD)

Major field of activities of this Department includes hydropower planning, civil engineering, hydrological studies, sedimentological studies, cost estimation, construction planning, survey engineering, system planning and power system study. Apart from the engineering services being provided to different departments of NEA, this Department has expanded its services to the private sector as well. At present, the Department is undertaking feasibility study of Lower Molung Khola Hydroelectric Project for the private sector power developer Shivaduti Power Company Pvt. Ltd. Similarly, the Department, in joint venture partnership with Water Resources Consult (P.) Ltd., has submitted technical and financial proposal for consulting services for the Lower Indrawati Hydropower Project promoted by Sunkoshi Hydro Power Company Ltd. Likewise, it is working with GEOCE Consultants (P) Ltd. and Germania Associates of India to participate in the bidding for the Detail Project Report updating of Tiuni Plasu Hydroelectric Project in Uttaranchal State of India. Other major studies undertaken by the Department are as follows:

Project Screening and Ranking Study

PDD has recently completed fine screening and ranking of several projects of which Seti-Trishuli Storage Project (142 MW) and Jhiku Khola Storage Project (50 MW) have been recommended for pre-feasibility study. Seti-Trishuli Storage Project identified in the Tanahu District of Western Development Region will require the diversion of the flow of the Seti River at Pughare to the Trishuli River at Gaighat and construction of a 100 m high rock-fill dam. The powerhouse site will be located at the right bank of the Trishuli River very close to the Mugling-Naryanghat highway and the intake/dam site will be located approximately 3 km north of this highway. It is assumed that the regulated flow from the Upper Seti and the Madi Ishaneswor Storage project will firm up this Seti-Trishuli Storage Project. The high dam will however inundate about 195 hectares of agricultural land requiring resettlement of about 200 households.

The Jhiku Khola Storage Project will be located in Kavre Palanchowk district of Bagmati Zone, with its dam site located at the gorge of Jhiku Khola about 1 km from the nearest road head. Natural head of 170 m, short access road, short transmission line and the proximity to the main load center of Kathmandu makes this project very attractive. The project will include 79 m high rock-fill dam, 2.9 km long headrace tunnel, underground surge tank, 186 m high drop shaft, 320 m long steel lined pressure tunnel and an underground powerhouse. This project will generate 63 GWh fully regulated energy during the dry season. Power will be evacuated by a 40 km long 132 kV transmission line to Bhaktapur substation. The project is estimated to cost about US$ 122 million.

Kankai Storage Project

The review of Kankai Storage Project, completed by PDD in April 2003, has recommended the project as one of the candidate storage schemes generating 90 MW of power and providing irrigation facility to 67,450 hectares of land on both sides of the river. The project will include a 90 m high dam with storage capacity of 925 million m3 of water, sloping intake, 30 m long low pressure tunnel, 283

m long steel lined pressure tunnel, 49 m high drop shaft and a surface power house with two units of Francis Turbine. A 5 km long 132 kV double circuit transmission line will be constructed to connect the Project with the existing 132 kV Duhabi-Anarmani Transmission Line in pie mode. The project will on an average generate a total of 247 GWh annually of which the dry season component will be 100 GWh. The Project has been evaluated as a power project without considering irrigation costs and benefits. With an estimated cost of US$ 143 million, a B/C Ratio of 1.3 and an EIRR of 14.3, the project has been found attractive.

Upper Tamakoshi Hydroelectric Project

PDD has undertaken the feasibility study of Upper Tamakoshi Hydroelectric Project in two phases of which the first phase was completed in 2001. According to the first phase study, the project will have an installed capacity of 250 MW generating, on an average, 1570 GWh of energy annually and will cost about US$ 280 Million. Subsequent to the first phase study, PDD also carried out additional studies relating to hydrology, sedimenta-tion, topographical mapping and environmental aspects of the Project. As a further development, an agreement was concluded between HMG/N and Government of Norway on May 14, 2003, pursuant to which the Norwegian government will provide a grant assistance of Norwegian Kroner 14.8 million for the preparation of a bankable feasibility report of the Project. The study is expected to begin by September 2003. As one of the most attractive projects studied so far, early implementa-tion of this Project would help curtail generation cost in future.

In the FY 2002/2003 PDD through its Electro-Mechanical Design Division also carried out detail design survey of Khimti-Dhalkebar 220 kV transmission line, feasibility study of North-South 132 kV transmission line, detail design of rural electrification in Nuwakot and Dhading districts, techno-feasibility study of five districts for rural electrification including distribution system reinforce-ment and post evaluation of Pokhara Rural Electrification Project. Similarly, the Central Workshop and the Concrete Pole Plant under this Division provided services of repair and maintenance of distribution and power transformers and manufacture and supply of pre-cast concrete poles to various branches of NEA respectively.

Soil, Rock and Concrete Laboratory

This Laboratory is an integral department of Engineering Services business group and has been providing services related to geological survey (geological mapping, geophysical survey and drilling), construction material investigation, hydro-sedimentological study, in-site & laboratory testing and geodetic investigation of various projects. Besides, the Laboratory is also carrying out testing works such as point load test, uni-axial test, index properties of different soil samples etc. on a regular basis for NEA and the private sector.

To highlight some of the works under-taken by this Laboratory, the following may be cited: surface geolo-gical mapping, core drilling and field investiga-tion carried out for Hewa Khola Project; surface geological investigation for Jhiku Khola Hydroelectric Project and Seti-Trishuli Storage Project; preparation of Interim Design Report for Inwa Small Hydropower Project; topographical survey of access road and bridges for Upper Tamakoshi Hydroelectric Project; geotechnical investigation for Middle Marsyangdi Extension Hydroelectric Project; environmental study works related to Butwal - Sunauli, Dhalkebar-Bhittamod, Parawanipur-Birgunj and Pathalaiya-Parwanipur 132 kV Transmi-ssion Line projects.

NEA Training Center

NEA Training Center is another important department under the Engi-neering Services business group, which has been providing need-based training to NEA employees with an aim to upgrade their expertise. Since FY 2002/03, the activities of the Center has been stream-lined along the commercial guidelines of the Steering Committee of Engineering Services Business Group. The Center also plans to run from next year training programs for clients outside of NEA. Recently, the facilities in the Center have been upgraded with installation of electrical and mechanical workshop equipment, hydropower

plant and sub-station simulators, fire-fighting equipment, central telephone exchange and standby diesel generating set. Various short-term training programs tailored to meet the needs of different wings of NEA were conducted successfully in 2002/03. The number of NEA employ-ees benefited by such training programs is summarized in the table.

Environmental and Social Studies Department

In 1987, NEA brought environmental studies into its fold of operation by establishing the Environmental Unit, the first of its kind under the public sector. Since then, environmental and social aspects of electricity generation, transmission and distribution projects have been an integral part of project studies undertaken by NEA. Considering the significance of the subject, the Unit was later elevated to the Department level. With recent restructuring, this Department is poised to extend its services to other institutions as well.

This Department so far has completed several EIA (Environmental Impact Assessment), IEE (Initial Environmental Examination) and ACRP (Acquisition, Compensation, Rehabilitation Program) studies of hydroelectric generation, transmission and distribution projects in accordance with the Environmental Protection Act, 1997 and Environmental Protection Rules, 1997 (First Amendment 1999). During FY 2002/03, the Depart-ment carried out the preparation of Scoping and TOR documents for EIA study of Hewa Khola HEP, K-3 Substation Project, Gongar-Khimti 220 kV Trans-mission Line Project, Khimti-Dhalkebar 220 kV Transmission Line Project and Rural Electrification of 9 VDCs of Kaski district located within ACAP. Other major works completed/coordinated by this Department includes environmental auditing of Kali Gandaki 'A' HEP, EIA study of Upper Tamakoshi HEP, and preparation of detail design and tender document of Gopling Tar Lift Irrigation Project.

Central Activities

NEA BOARD MATTERS

The gap formed with the resignation of the former Chairman, Mr. Sarvendra Nath Sukla, was filled after the nomination of Mr. Thakur Prasad Sharma, as the Minister of State for Water Resources and the new Chairman of the NEA board, on 6/07/2004 (22/03/2061). The appointment of the new Chairman rejuvenated the board as normal board functions, like board meetings, could be initiated after a gap of three months.

Reform process started in 2001/02, especially the Performance Regulations for the core business groups of Generation, Transmission and System Operation, Distribution and Consumer Services, were the foremost agendas put forward to the board for approval.

In addition to this, the NEA organisation was restructured, with the core business group of Distribution and Consumer Services being split with the activities related to Rural electrification being transferred to the new General Manager of Electrification, and Information Technology (IT) division being shifted from IT and Managing Director's Secretariat to the earlier Planning and Monitoring headed by a DMD.

Furthermore, Mr. Ratna Sansar Shrestha, the Board member representing industry, commerce and finance has resigned and Dr. K.B. Aryal, Secretary Ministry of Water Resources has retired. Their services have been invaluable to NEA.

PLANNING, MONITORING AND INFORMATION TECHNOLOGY

Owing to the greater demand for electricity and to meet the growing load, proper short and long term planning of generation, transmission and distribution projects have become a crucial aspect in NEA's investment decisions.

The planning, monitoring and information technology wing periodically evaluates and checks on the development projects executed by NEA for their timely as well as successful completion. It also facilitates major activities like import and export of power with India for mutual benefit and bulk purchase from the Independent Power Producers (IPPs), for promoting private sector participation in Nepal's hydropower development.

System Planning Department

The Load Forecast determines Nepal's long-term electricity needs. Based on this, the Generation Expansion Plan devises a sequence of probable projects to meet these needs. Based on both the Load Forecast and the Generation Expansion Plan, the Transmission Expansion Plan is devised to determine augmentation and expansion required in the NEA's transmission network.

The System Planning Department is mandated by the NEA Board to formulate NEA's long-term investment plans on generation and transmission. During the year under review the Department brought forth three important documents on:

Load Forecast
Generation Expansion Plan and
Transmission Expansion Plan.

All of these reports formed the basis for formulating NEA's Corporate Development Plan 2004.
In FY 2003/04, the department was also closely associated with the Japan Bank for International Co-operation (JBIC) team, for the "Sector Study of Power Sector in the Kingdom of Nepal" and with the International Resources Group (IRG) of USA for the "Asian Development Bank's Technical Assistance on Power Sector Reform in Nepal". With the JBIC team, the department was very much involved in the "Study on Long Run Marginal Cost of power supply" and the "Study on Rural Electrification Development". With the IRG study team, the department was involved in the "Study on Incremental Costs of Electricity Supply: 2004-2014".

The department, in conjunction with NEA's other departments, was also actively involved in a number of other important activities. Notable among them are; Indo-Nepal Power Exchange, power evacuation study for Upper Seti hydropower project and feasibility study of Upper Tamakoshi hydropower project.

The department also conducted on-the-job training for NEA engineers on Power System Simulation/Engineering (PSS/E) and Windmill software. These internationally acclaimed software are used by the department for transmission and distribution planning respectively.

Corporate Planning Department

The Corporate Planning Department, under the office of the Deputy Managing Director for Planning, Monitoring and Information Technology, undertook the following major responsibilities during the fiscal year 2003/04:

- Preparation of Annual Corporate Development Plan.
- Formulation of Annual Development Budget.
- Preparation of proposals for foreign assistance.
- Obtaining licenses from HMG/N for its development initiatives.
- Preparation of Action Plan for HMG/N's Budget Policies related to NEA.
- Preparation of Mid Term Expenditure Framework (MTEF) Paper for second MTEF Period (2003/04 - 2005/06) under projection of budget and targets.

Apart from the above tasks, the department has undertaken other activities, such as capacity building of NEA staff, coordination with governmental, non-governmental and foreign agencies and involvement in promotional activities. Participation in the Electro-Tech 2004 and Nepal Development Forum, by NEA, are examples of such initiatives undertaken by the department.

The Annual Corporate Development Plan was prepared in March 2004 including a separate version containing the summary of the original document. The Annual Development Budget was prepared for approval by HMG/N for the fiscal year 2004/05. In addition, NEA obtained two new licenses and renewed nine licenses from HMG/N for development works, during the year. Out of the nine renewals; five were for the distribution survey, two for the transmission survey and the remaining two licenses were for the generation survey. The new licenses obtained were for the generation survey of Upper Modi 'A' hydropower project and construction of Pathlaiya-Parwanipur 132 kV transmission line.

The year saw a continuation of capacity building measures for NEA staff, through various trainings, workshops, seminars and partnership programs. Altogether twenty-seven senior NEA officials took part in such programs, sponsored by USAID, under its South Asia Regional Initiatives/Energy (SARI/E) program in the region. Apart from the SARI/Energy program, a continuation was provided to the previous years partnership between NEA and the three energy utilities of USA viz., Puget Sound Energy, Seattle City Light and Tacoma Power. Six senior NEA executives visited Seattle city in USA to attend an executive exchange meeting in November 2003. One of the key objectives of these visits was to promote transfer of knowledge and experience to increase efficiency of NEA in a sustainable and environmentally friendly manner.

Power Trade Department

Power Trade Department came into existence following an organisational restructuring of NEA in FY 2002/03. This Department works under the Deputy Managing Director, Planning, Monitoring and IT, and its gamut of responsibilities includes processing of applications for the Power Purchase Agreements (PPAs), technical review of the proposals, negotiation and conclusion of power purchase agreements with the Independent Power Producers (IPPs) in addition to the coordination of the cross border power exchange/trading. One important duty of this Department is to propose various strategies and policies with a view to facilitate healthy growth of the private sector to the extent allowed by the technical and financial compulsions of NEA.

Now in the second year of its operation, this Department has been successfully discharging its duties and responsibilities as mandated by the directives of the NEA Board. Successful conclusion of the power purchase agreements with Bavarian

Hydropower Pvt. Ltd. (Lower Nyadi Hydropower Project, 4.5MW) and Annapurna Group Pvt. Ltd. (Madi-1 Hydropower Project, 10 MW) are the highlights of the effort put up by this Department in the year. Currently, technical review is in progress for 9 PPA proposals and the Department is working in concert with the developers of the Rairang Small Hydropower Project (500 kW) and Sunkoshi Hydropower Project (2.6 MW) to help smooth completion and commercial operation of these Projects. This department is also working to finalise the draft policies to facilitate power purchase from biomass power plants under the private sector.

This Department has also been providing support to the Corporate Finance Department for processing the power purchase invoices. Moreover, this Department is also playing a crucial role in the administration of the PPA through the Coordinating Committees and Operating Committees formed for the IPP projects in operation or nearing completion. Giving due recognition to its role, this Department will be further strengthened to upgrade its capability to cope with the growing number of applications for Power Purchase Agreements and the post agreement support requirement.

The Department, acting as the nodal point for NEA, is also engaged in clinching a long term deal with the Power Trading Corporation (PTC) of India for the sale of seasonal surplus of NEA on a 'as-and-when available' basis.

Monitoring Department

Apart from the functions of monitoring and evaluation, of projects, being executed by NEA, this department coordinates with various Government Agencies, such as, the Ministry of Water Resources, National Planning Commission etc, regarding the progress of NEA executed projects and their data and reports.

Information Technology

After the organisational restructuring in April 2004, the Information Technology (IT) that was under IT and Managing Director's Secretariat was shifted to Planning and Monitoring thus resulting in a wing Planning, Monitoring and Information Technology headed by a DMD. This division is responsible for undertaking all the activities concerned with information technology.
The following tasks are being undertaken by the information technology division at present.

Computerised Accounting and Inventory System

The computer Software for computerised accounting and inventory systems was developed in the FY 2002/03 with a motive to enhance NEA's organisational efficiency and effectiveness. In the process of implementation of the software, 30 budget centres were provided with the necessary hardware, software and orientation training in the FY 2002/03. Subsequently, additional 42 budget centres were provided with the same, this year. Computerised accounting and inventory system has been successfully introduced in 72 NEA budget centres till date and the system will be introduced in the remaining budget centres in the current fiscal year.

Personnel Data Bank

Software for the personal data bank has already been developed and all the relevant data regarding NEA personnel have been entered into the system. However, some data editing work is still going on at present.

Computerized Billing

The dBase IV based computerised billing system was implemented in 9 different billing centres in FY 2002/03. This year, it was introduced in Bhaktapur Distribution Centre.

The implementation of computerised billing system in the remaining distribution centres will be carried out by the Computerised Billing Project, under the Distribution and Consumer Services business group.

Virtual Private Network

Virtual private network (VPN), which was set up this year, links computers of different budget centres with the NEA central office and allows the flow of information from budget centres to NEA central office and vice versa. Thus, the necessary hardware has been set up at Biratnagar, Hetauda, Butwal and Nepalgunj regional offices as well as NEA central office. This has facilitated the transfer of data from different branches/budget centres of NEA to the nearest regional office through dial up connection and further transfer of data from the regional offices to the central office. This will certainly enable NEA to share information, monitor performance, establish accountability, maintain transparency, improve efficiency and above all build up a better organisational image.

With the help of these efforts carried out by this division, NEA will certainly be able to manage its finance, accounts, inventory, billing and personnel functions in a more efficient manner.

IT Road Map

With the technical support of USAID a road map for development of IT has also been completed.

FINANCE AND ADMINISTRATION

Corporate Finance Department

In FY 2003/04 the total sales (in units) of power in NEA increased by 6.61 percent over the last year. Similarly, internal sales recorded a growth of 10.98 percent, whereas electricity export decreased by 27.75 percent. Furthermore, NEA sold 1,675.114 GWh of electricity within the country and exported 138.903 GWh of electricity to Bihar, India.

In FY 2003/04, NEA served more than 1 million consumers covering 75 districts of the country. Out of the total 1,061 thousand consumers, 96 percent are domestic (residential). In comparison to FY 2002/03 the total number of consumers increased by 9.28 percent, with the increase in domestic, industrial, commercial and non-commercial consumers by 9.4 percent, 1.4 percent, 3.1 percent and 8.8 percent respectively. Domestic consumers' share in the total revenue is 38 percent whereas industrial consumers that comprise of only 1.9 percent of the total consumers, contributed 38 percent to the total revenue in FY 2003/04.

NEA's revenue from internal sale of electricity increased by 9.25 percent and amounted to NRs.11.4 billion despite a fall of NRs 0.11 (1.6 percent) in average revenue rate over the previous fiscal year. In export, NEA recorded an adverse result, a fall of 27.75 percent and 18 percent over the last FY in sales and revenue respectively. This has resulted in a loss of NRs. 770 million against the previously envisaged amount. However, NEA recorded increase of 8.7 percent, 10.1 percent and 9.6 percent in revenue collection over the previous year in domestic, commercial and industrial consumer groups respectively.

Income from other source increased to NRs. 570 million, compared to NRs. 513 million in the previous year registering an increase of 11.2 percent. Extra income, mainly from surcharge, other services and interest etc., contributed 4.6 percent to the total gross income, which stood at NRs. 12.4 billion in FY 2003/04.

During the year total expenditure increased to NRs. 14.2 billion mainly due to the increase in power purchase cost and interest cost. Power purchase cost increased to NRs. 5.3 billion compar-ed to NRs. 4.08 billion (30 percent) in the previous year. This accounted to 38 percent of the total expenditure and thus consumed 43 percent of the total gross revenue. Main reasons behind such high increase in power purchase cost are inclu-sion of Chilime Hydro Electric Project, additional power import in the eastern region from India and annual price escala-tion provisions in the power purchase agreements. Interest cost totaled NRs. 3.37 billion, which is equivalent to 23 percent of the total expenditure and 27 percent of the total income. In 2002/03 interest cost was only NRs. 2.97 billion, which showed an increase of NRs.396 million (13.3 %) over the year 2002/03.
Depreciation in historical cost was NRs. 1851 million, royalty NRs. 648 million, deferred revenue expenditure NRs. 305 million, provisions NRs. 10 million and foreign exchange fluctuation loss NRs.150 million. These altogether account to 21 percent to the total cost and consume 24 percent of the total income. These expenses are all uncontrollable. In FY 2003/04 these uncontrollable expenses consumed almost 95 percent of the total income of NEA, sustaining a loss of NRs. 1.788 billion.

During FY 2003/04, NEA's cost of service per KWh remained as high as NRs. 7.95 because of the above factors whereas revenue rate per KWh remained at NRs. 6.65 only. Other income registered NRs. 0.31 per KWh served. Thus NEA suffered a loss of NRs. 0.99 for every KWh served. This has adversely affected NEA's liquidity position and rate of return and self finance ratio. To overcome this problem, NEA has applied for tariff revision to Electricity Tariff Fixation Commission. As NEA regards tariff revision as a last resort, it has initiated various endeavors to cope with the problem of high cost of service. They include cost control, enhancement of collection efficiency, and reduction of system loss by establishing Distribution Centres. NEA's uncontrollable cost in 2003/04 stood at 82 percent of the total cost, which suggests there is not much room for substantial cost control without addressing the uncontrollable or fixed costs. In this connection NEA is planning to request HMG/N to reduce interest rates and issue power bonds to solve the liquidity problems. Nevertheless, these could be the only partial solutions to the problem of heavy financial loss.

In FY 2003/04 NEA's total capital expenditure stood at NRs. 6.86 billion as against the budgeted amount (including projects) of NRs. 7.52 billion indicating a decrease of 8.8 percent. Insurgency problem, delays in the disbursement of ADB loan and delay in awarding contracts mainly accounted for the above decrease.

In collection front, NEA collected 95 percent of the total internal sales. NEA's average collection period is around 3 months' sales equivalent. But for the Distribution Centres a target of 50 days has been fixed. It is expected that this will boost up collection efficiency and the average collection period (ACP) will be reduced substantially. The first performance evaluation of Distribution Centres has given a very good indication of that. Despite these efforts and enhanced efficiency in collection of bills, NEA is unable to collect large amounts from the local bodies. At present local bodies' outstanding electricity bill amount stands at around NRs. 1 billion. This has adversely affected the liquidity of NEA. However, the services to the local bodies have not been compromised. Similarly, efforts are being made to reduce the outstanding dues from HMGN's side also. Concomitantly, a total of NRs. 375 million of the outstanding dues, with respect to the streetlight, has been collected.

Treasury management has been made efficient by introducing various tools available. One of them is direct bank collection. There are 109 collection centres spread all over the country. Revenue from 46 collection centres was collected directly by banks, which accounted for about 75 percent of the total collection. This process speeds up the collection. Because of the timely collection, NEA could earn NRs. 22 million as interest in 2003/04 by keeping the money in Call and Time Deposits for short periods.

NEA is striving to improve its capability in financial management, accounting and auditing practice through utilization of various resources available in changed industrial environment of electricity business which encompass the strategic as well as operational issues and perspectives. An institutional sub- component of Nepal Power Development Project is working to acquire information, strategic and operational support to fulfill these goals. For more independent operation of core-business groups as well as Distribution Centres separate by-laws have also been drafted and finalised.

Finance and Accounts Department

NEA's net revalued fixed asset as of end of FY 2003/04 reached NRs.57, 597.67 million in comparison to NRs.56, 948.95 million as of end of FY 2002/03. Total revenue in FY 2003/04 was NRs.12,384.621 million as compared to NRs.11, 525.13 million of FY 2002/03, which is an increase of 7.46 percent. Total operating expenses under generation, transmission, distribution and administration are NRs.6,518.17, NRs. 208.40, NRs. 1,352.92, and NRs. 368.51 million respectively for FY 2003/04 and NRs. 5,235.51, NRs. 173.27, NRs. 1,258.97 and NRs. 525.01 million respectively for FY 2002/03. NEA suffered a net loss of NRs.1,778.9 million this year. NEA's financial performance has not been encouraging and is suffering a loss for the fourth year in row.

In FY 2003/04, NEA invested NRs. 11,775.05 in capital works and projects. Out of which NRs. 1,030.1 million comprised of HMG equity, NRs. 4,258.24 million as HMG loan and NRs.6486.71 million as NEA's own internal resources. NEA's total borrowing stood at NRs. 49,542.0 as of end of FY 2003/04. In FY 2003/04, NEA contributed a total sum of NRs. 3744.17 million to the national treasury. Out of this, NRs. 1348.99 million is interest payment, NRs. 962.70 million loan repayment, NRs. 700.74 million royalty and NRs. 731.74 million towards corporate tax. The financial audit for FY 2002/03 carried out by M/s TR Upadhaya and Co. was completed within six months after the conclusion of the fiscal year. The tax audit for the fiscal year 2002/03, completed within six months after end of fiscal year 2002/03, were submitted.

NEA has successfully computerised its financial accounts and inventory management system in the 72 branch office out of 126 operational level offices. This will help to prepare financial account in due course of time and it will facilitate to complete the financial and tax audit at stipulated time. It will help financial reporting system of NEA and also help to comply the loan covenants of donnor agencies.

Interaction programs have been conducted in the regional offices on the subject of accounts, financial and audit issues. This program has helped to impart knowledge and create awareness in the issues of financial matters.

Human Resource Department

Under NEA's present Corporate Structure, the Human Resource Department has been entrusted with the following functions: Manpower Planning, Staffing, Training and Development, Employees Record Keeping, Staff Welfare, Disciplinary Actions and

Administrative Management.

The total approved positions at the end of the FY 2003/04 are 10,073, of which a total of 9,673 staffs are presently employed. During the year under review, 196 staffs were appointed in different levels, 98 were retired, 14 voluntarily retired, 24 resigned, 38 died and 162 Monthly wages/Daily wages staffs were terminated.

Under disciplinary actions, altogether 12 staffs have been cautioned, 3 have been denied promotion, 9 have been dismissed, 3 have been dismissed with ineligibility for future service and 7 have been suspended.

The recruitment of new staffs in different positions is underway. The written examinations for all technical and non-technical positions have already been completed. Similarly, the practical examinations for lower technical positions have been completed through regional offices.

The promotion process of employees is still being carried out. During the year, automatic promotion (those completing 12 years of service in the same position) of 100 officers and 48 assistants were made. Similarly, 313 officers were promoted, based on performance evaluations. The performance based promotion evaluation process of the assistant levels, and the internal competition promotion evaluation process for different levels are under-way.

In addition, new software for Personnel Management has become functional this year. It will help in efficient record keeping of employees and enhancing the existing Personnel Data Bank (PDB).
Job Description, for levels up to 8, has been revised this year based on the new organisational structure.

A total of 134 staffs participated in trainings, seminars, workshops, inspections and higher studies, conducted abroad, whereas, 169 staffs participated in such activities in different organisations within Nepal. In the same way, 386 officers and 458 assistant staffs received trainings from the NEA Training Centre.

Under the staff welfare program, additional financial support was provided to 5 employees for the treatment of serious illnesses like cancer, bypass surgery and other cardiac diseases. Similarly, under the Staff Welfare loan, 486 staffs received house/land purchase and construction loan, 1,113 received house maintenance loan, 958 received social activities loan, 606 received 3 months loan and 19 received natural disaster loan.

General Services Department

The General Services Department performs the functions of public relations, general administration, legal and arbitration, property management and procurement. It is also responsible for providing all administrative support to the central office as well as ensuring the security of its property.
Altogether 79 cases involving NEA were handled by this department's legal and arbitration division, out of which, NEA won 15 cases and lost 5. Remaining 59 cases are sub-judice. Some of the disputes related to contracts of projects that are under construction are being resolved through arbitration.
Security system has been strengthened this year with the construction of security posts and installation of the metal detector at the main gate.

INTERNAL AUDIT

In the year under review, the Internal Audit Department's Financial & Management Division carried out internal audit in 126 offices, Energy Division carried out internal audit in 17 offices, and Technical Division carried out internal audit in 34 offices. Internal Audit Department (IAD) has started interaction program with the concerned General Managers and Deputy-Managing Directors regarding the audit observation and reply of the audit report. During the course of interaction, the concerned General Managers expressed that IAD has become more effective this year. A team of 11 officers of IAD visited India to take part in a program related to internal audit organised by The Institute of Cost and Works Accountants of India. The program of in-house training for both officers and non-officers level on Internal Audit is in process.

See figure : No of Consumer per Employee
: No of Employees per Installed Capacity (MW)

Highlights of FY 2003/2004 in million NRS.

DESCRIPTION	UNIT	2004*	2003	INCREASE/DECREASE	
				AMOUNT	PERCENT
Total Revenue Net	**M.NRs.**	**12325.660**	**11525.118**	**800.542**	**6.95**
Net sale of Electricity	M.NRs.	11755.660	11012.618	743.04	6.75
Income from other services	M.NRs.	570.000	512.500	57.50	11.22
Operating Expenses (Including Dep.)	**M.NRs.**	**11758.545**	**9820.953**	**1937.59**	**19.73**
Generation	M.NRs.	6266.792	5235.513	1031.28	19.70
Transmission	M.NRs.	142.349	173.276	-30.93	-17.85
Distribution	M.NRs.	1224.918	1258.973	-34.06	-2.70
Administration	M.NRs.	1273.206	525.009	748.20	142.51
Depreciation++	M.NRs.	2851.280	2628.182	223.10	8.49
Interest on Long-Term Loans	M.NRs.	3369.200	2973.421	395.78	13.31
Net Income after interest before Tax	**M.NRs.**	**-1947.080**	**-455.900**	**-1491.18**	**327.08**
Longterm Loans	M.NRs.	50051.240	45344.770	4706.47	10.38
Net Fixed assets	M.NRs.	57597.670	56948.950	648.72	1.14
Number of costomers	Nos.	1,060,700	970,611	90089.00	9.28
Total Sales of Electricity	GWH	1806.751	1701.556	105.20	6.18
Internal Sale	GWH	1663.218	1509.370	153.85	10.19
Average consumer's consumption+	KWH	266.963	232.959	34.00	14.60
Average price+	NRs./KWh	6.64	6.60	0.04	0.61
Peak load interconnected system	MW	515.240	470.330	44.91	9.55
Total available Electricity Energy	GWH	2831.678	2261.130	570.55	25.23
Hydro Generation	GWH	1353.574	1478.045	-124.47	-8.42
Purchased Energy-India	GWH	183.724	149.882	33.84	22.58
-Nepal(Internal)	GWH	832.24	628.804	203.44	32.35

Exported Energy	GWH	143.533	192.249	-48.72	-25.34
Thermal Generation	GWH	9.871	4.400	5.47	124.34
Self Consumption	GWH	21.395	17.609	3.79	21.50
Net System Losses	%	23.17	23.66	-0.49	-2.07

Note:
* Provisional figures; Subject to final audit.
+ Internal
++ On revalued assets

Income Statement For the F.Y. 15 July 2004

Particulars	* 2005	**2004	2003	2002	2001	2000	1999	1998	1997	1996	1995
Sales	13018.05	11,755.66	11,012.60	9,476.20	8,160.80	6,856.00	5,396.70	5,082.50	4,767.50	3,728.90	3,218.50
Cost of sales	**7637.87**	**6,409.14**	**5,408.72**	**5,886.68**	**4,480.70**	**2,190.30**	**1,950.50**	**1,743.60**	**1,176.20**	**784.80**	**744.80**
Generation	7386.14	6,266.79	5,235.45	5728.73	4,343.40	2,068.53	1,849.32	1,642.82	1,098.82	729.86	700.11
Transmission	251.73	142.35	173.27	157.95	137.30	121.73	101.18	100.78	77.48	54.94	44.69
Gross profit	**5380.18**	**5,346.52**	**5,603.88**	**3,589.52**	**3,680.10**	**4,665.70**	**3,446.20**	**3,338.90**	**3,591.30**	**2,944.10**	**2,473.70**
Other income	627.00	570.00	512.50	459.50	593.10	356.40	384.70	350.20	316.30	283.20	245.00
Distribution Expenses	1438.57	1,224.92	940.88	1258.97	982.22	711.53	600.26	546.69	436.88	386.95	307.72
Administrative Expenses	838.04	968.19	264.03	525.00	850.08	703.47	629.24	564.21	445.12	402.75	320.28
Profit from operation	**3,730.57**	**3,723.41**	**4,911.47**	**2,265.05**	**2,440.90**	**3,607.10**	**2,601.40**	**2,578.20**	**3,025.60**	**2,437.60**	**2,090.70**
Interest	3342.80	3,369.20	2,973.40	1,395.50	1,188.20	1,244.30	1,141.20	1,317.20	1,207.50	813.50	797.00
Depreciation	1838.81	1,851.28	1,656.70	1,420.10	1,119.30	948.80	976.40	696.70	598.90	547.80	624.40
Profit/ losson foreign Exchange	150.00	150.00	0.00	271.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loss on fixed assets	-		191.50	37.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Deferred revenue expenditure writen off	350.01	305.01	411.08	512.50	426.90	440.80	236.80	270.10	188.70	204.40	162.00

Sub total	**5,681.62**	**5,675.49**	**5,232.68**	**3,636.70**	**2,734.40**	**2,633.90**	**2,354.40**	**2,284.00**	**1,995.10**	**1,565.70**	**1,583.40**
Profit/ loss from operation including interest+Dep.	***-1,951.05***	***-1,952.08***	***-321.21***	***-1,371.65***	***-293.50***	***973.20***	***247.00***	***294.20***	***1,030.50***	***871.90***	***507.30***
Prior years adjustment (net)	5.00	5.00	444.40	492.00	291.60	-216.70	-73.90	-91.70	-176.60	-99.00	-397.00
Net profit/ loss before tax	**-1,946.05**	**-1,947.08**	**-455.90**	**-717.40**	**-1.90**	**756.50**	**173.00**	**202.50**	**853.70**	**772.90**	**110.30**
Provision for Tax	0	-	1,497.80	143.30	49.10	571.40	263.50	28.80	146.30	74.40	3.90
Net profit/ loss after tax	**-1,946.05**	**-1,947.08**	**-1,953.70**	**-860.70**	**-51.00**	**185.10**	**-90.50**	**173.70**	**707.40**	**698.50**	**106.40**
Balance of profit asper last account	-3,661.98	-1,694.90	278.80	1,159.60	1,230.60	1,065.50	1,181.50	1,027.80	340.40	-338.20	-364.70
Total profit Available for appropriation	-5,608.03	-3,641.98	-1,674.90	298.90	1,179.60	1,250.60	1,085.50	1,201.80	1,047.80	360.40	-258.20
Insurance fund	20.00	20.00	20.00	20.00	20.00	20.00	20.20	20.00	20.00	20.00	80.00
Profit /loss transferred to balance sheet	**-5,628.03**	**-3,661.98**	**-1,694.90**	**278.90**	**1,159.60**	**1,230.60**	**1,065.30**	**1,181.50**	**1,027.80**	**340.40**	**-338.20**

** Provisional

* forecasted

Balance Sheet as at July 15 2004

Particular	** 2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994
Capital and Liabilities											
Capital and Reserve											
Share Capital	17996.97	16976.87	16601.3	15360	14634	13366	12324	10953	9231.6	8122.9	6796.7
Reserve and Accumulated	3637.2	5584.32	8153.	1049	1169	1204	1346	1474	1541	1419	1402

Profit	4		8	3	0	0	5	7	7	4.5	9.9
Secured Long term loan	50051.24	45344.77	41474.5	36708	30156	23824	20848	17403	14900	13367	12880.6
Grand Total	**71685.45**	**67905.96**	**66229.6**	**62561**	**56480**	**49230**	**46637**	**43103**	**39548.6**	**35684.4**	**33707.2**
Assets											
Fixed Assets	57597.67	56948.95	58538.2	37104	35196	31223	29891	28633	438.3	28414	26894.5
Capital Work in Progress	12945.98	8655.48	4837.8	23640	18947	16543	14179	11974.6	7362.7	5229.1	5439.3
Investment	713.01	613.01	553	517.1	521.1	326.1	247.7	150.6	54	30.5	356.7
Sub Total	**71256.66**	**66,217.44**	**63929**	**61261.1**	**54664.1**	**48092**	**44317.7**	**40758.2**	**7855**	**33673.6**	**32690.5**
Current Assets											
Inventories	1538.89	1017.22	1058.1	960.9	982.3	740	914.9	804	617.9	429.1	340.4
Sundry Debtors And Other Receivable	3773.16	3380.18	2284.9	1678.5	1525.5	1530.9	1435.4	1209.1	1040	682.6	569.9
Cash and Bank Balance	581.94	1076.15	664.6	1039.3	1321.3	1148.1	1632.3	1526.5	1244.8	1349.2	1131.2
Prepaid, Advance, Loan and Deposits	2593.57	2216.91	3314.4	2634.9	1932	1634.2	1709.6	1329	848.4	471.7	149.8
Total Currents Assets	**8487.56**	**7690.46**	**7322**	**6313.6**	**5761.1**	**5053.2**	**5692.2**	**4868.6**	**3751.1**	**2932.6**	**2191.3**
Less: Current Liabilities and Provision											
Sundry creditors and Payables	8442.68	5886.03	4703.9	5070.9	4488.5	4349.5	3555.7	2512.1	1475.5	1414.3	1184.6
Provisions	47.58	753.31	1244.2	1042.9	988.7	436.8	449.3	413.1	328.2	239.9	232.3
Total Current Liabilities and Provisio	**8490.26**	**6639.34**	**5948.1**	**6113.8**	**5477.2**	**4786.3**	**4005**	**2925.2**	**1803.7**	**1654.2**	**1416.9**
Net Currents Assets	**-2.7**	**1051.12**	**1373.9**	**199.8**	**283.9**	**266.9**	**1687.2**	**1943.4**	**1947.4**	**1278.4**	**774.4**
Deferred Expenditures (To be Written Off	201.23	506.82	916.5	978.6	1302.8	615	443.3	267.3	410.8	588.5	98.6
Inter Unit Balance(Net)	317.99	130.57	10.2	120.9	228.7	256.9	188.7	133.2	335.7	144.5	143.7
Total Def. Exp.& Inter.	**519.22**	**637.39**	**926.7**	**1099.5**	**1531.5**	**871.9**	**632**	**400.5**	**746.5**	**733**	**242.3**
	71773.18	**67905.95**	**66229.6**	**62560.4**	56479.5	**49230.8**	**46636.9**	**43102.1**	**39548.9**	**35685**	**33707.2**

**provisional

* forecasted