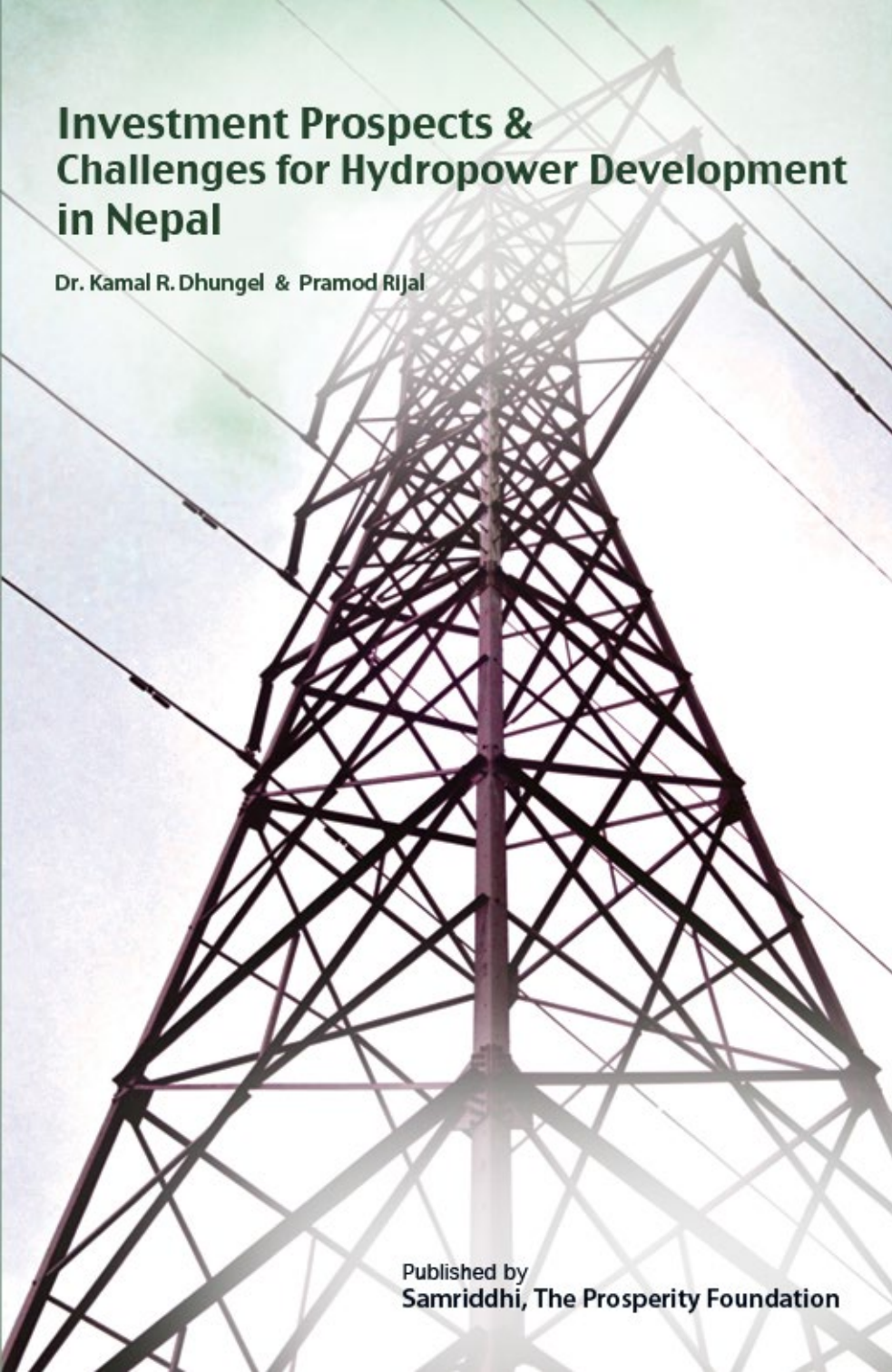
Investment Prospects & Challenges for Hydropower Development in Nepal

Dr. Kamal R. Dhungel & Pramod RIJal



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Acknowledgement

This detailed study report on hydropower, which is one of the five sectors on the Nepal Economic Growth Agenda (NEGA) Report, 2012, would not have been possible without the input and help from a lot of individuals and organizations. First of all, we would like to thank all the five research guides working with research assistants preparing five reports like this. We cannot remain without thanking the authors of this report, Dr. Kamal Raj Dhungel and Mr. Pramod Rijal for working on this study which remained a pillar behind the preparation the NEGA Report 2012.

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Preface

The Nepal Economic Growth Agenda (NEGA) Report, 2012, which aims at contributing to create an environment for making better informed policy decisions concerning Nepal's economic growth scenario took its first leap in 2011 by working on key sectors that have important roles in initiating growth in Nepalese economy. After rounds of individual and group consultations for months since early 2011, five sectors were selected which were Agriculture, Education, Hydropower, Infrastructure and Tourism. Studies on all the five sectors were then carried out for a few months by a Research Guide and a Research Assistant and five detailed reports like this were prepared. On the basis of these five detailed reports on the five sectors, a single Nepal Economic Growth Agenda (NEGA) Report 2012 was prepared which was released in July 2012 and was handed over to the Nepalese government. With this, we as a policy think tank are making an effort to initiate the necessary change in in the economy through the Nepal Economic Growth Agenda (NEGA), Report 2012.

This report, "Investment Prospects and Challenges of Hydropower Development in Nepal" is an outcome of the study conducted on hydropower for the Nepal Economic Growth Agenda (NEGA), Report 2012, carried out by our Research Guide Dr. Kamal Raj Dhungel and Mr. Pramod Rijal.

As the issue of economic growth is slowly finding its way into mainstream political discourse and discussion on priority sectors are ongoing, this report presents useful analysis on the current status and prevailing challenges in the sector. In this regard, the effort made through this publication takes the discussion one step ahead as it has made an attempt to look into the details and identify those constraints which have

been keeping the sector from growing. The study looks upon the sector from the perspective of economic growth and recommendations are based on how the sector can grow and consequently play a greater role in the larger economic growth of Nepal. Hence, the study has some key focus points.

Despite hydropower being one of the sectors of comparative advantage for Nepal, the country has been facing the worst form of energy crisis since the past decade. Apparently, the growth in the sector has been below expectation. Therefore, investment prospects and challenges was the key focus on this sector in NEGA, 2012. As big hydropower projects which are needed to fulfill the current energy demand of Nepal need investments as huge as NRs. 150 million per megawatt, the domestic investment is not sufficient and Foreign Direct Investment (FDI) is lagging owing to several reasons which are pointed out in this report. Hence, recommendations are proposed based on the specific challenges prevailing in this sector.

Overall the report outlines the key hurdles impeding growth and provides recommendations to remove the hurdles while introducing new ideas to build on the potential in this sector. With this, we believe this publication will be a key document to refer to in the process of policymaking to encourage growth. Samriddhi, The Prosperity Foundation will be publishing the Nepal Economic Growth Agenda on an annual basis highlighting important issues concerning Nepal's economic growth.

Abbreviations and Acronyms

ADB	Asian Development Bank
AEPC	Alternative Energy Promotion Center
BFIs	Banks and Financial Institutions
BOOT	Build, Operate, Own and Transfer
CFL	Compact Fluorescent Lamp
CIDA	Canadian International Development Agency
CIT	Citizen Investment Trust
CPA	Comprehensive Peace Agreement
DoED	Department of Electricity Development
DPR	Detailed Project Report
EIA	Environmental Impact Assessment
FDI	Foreign Direct Investment
FNCCI	Federation of Nepalese Chambers of Commerce and Industry
GDP	Gross Domestic Product
GMR	Grandhi Mallikarjuna Rao
GoN	Government of Nepal
GWh	Gigawatt-hour
IEE	Initial Environmental Examination
IFC	International Finance Corporation
IIDS	Integrated Institute of Development Studies
ILO	International Labor Organization
IPP	Independent Power Producers
IPPAN	Independent Power Producers' Association of Nepal
KREC	Khimti Rural Electricity Cooperative
kV	Kilovolt
kW	Kilowatt
MOE	Ministry of Energy
MOU	Memorandum of Understanding
NERC	Nepal Electricity Regulatory Commission
NEA	Nepal Electricity Authority

NEPSE	Nepal Stock Exchange
NISP	Nepal Irrigation Sector Project
NORAD	Norwegian Agency for Development Cooperation
NRB	Nepal Rastra Bank
MW	Megawatt
PPP	Public-Private- Partnership
PPA	Power Purchase Agreement
R-O-R	Run-of-River
SMEC	Snowy Mountain Engineering Corporation
UKHP	Upper Karnali Hydro Project
UNCTAD	United Nations Conference on Trade and Development
USSR	Union of Soviet Socialist Republics
VAT	Value Added Tax
WECS	Water and Energy Commission Report
WB	The World Bank

The Nepali year is based on the Bikram Sambat Calendar and is approximately 57 years ahead of the Gregogrian calendar (2062/1/1=2005/4/14)

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CHAPTER I

Introduction

Energy is a basic necessity for survival today as it is one of the building blocks of a modern society. The advanced tools and machines we use in our everyday lives require energy to run them. It is one of the key factors in industrial production as well as an input in agriculture sector. The banking, insurance, educational, health and other service sectors also require energy for their smooth operation. To sum it up, energy is a key factor in country's economic growth.

Energy is produced from mainly two sources, renewable and non-renewable. The energy which is generated from hydropower, solar, and wind is regarded as renewable energy. Similarly, fossil fuels such as coal, petrol, diesel, kerosene, gas and nuclear power are non-renewable sources of energy. Hydropower is the world's largest source of renewable energy and has an important role to play in terms of responding to challenges we currently face because of over dependence on carbon-based fuels. Harnessing hydropower will not only generate clean and carbon free energy, it will also help in controlling floods and providing water for drinking and irrigation.

Hydropower is one of the most efficient sources of energy known to mankind. A modern hydropower station can convert more than 95 percent of the available energy in the river into electricity compared to the best fossil fuel power plants which can do so only with 60 percent efficiency. But most conventional fossil fuel plants are less than 30 percent efficient. For instance, when coal is burned to generate power, two-third of its energy

is wasted (Canadian Hydropower Association, 2009). In addition to this, hydropower stations have a very long service life, which can be enhanced further through periodic renovation. 'DeCew Falls 1' in Ontario was commissioned in 1898 and is still operating today. Similarly, 'Beauharnois' in Quebec recently celebrated 75 years of operation.

Fortunately, Nepal is gifted with a huge hydropower potential which remains untapped. There are 6000 rivers and rivulets, largest among them flow from the Tibetan region of China or originate in the Himalayan region. These snow-fed glacial rivers are perennial and the steep gradient of the country's topography provide ideal conditions for developing hydroelectric projects. Various studies reveal Nepal can potentially generate up to 43,000 MW of economically and technically feasible hydroelectricity (NPC, 1985).

Energy is the power that drives the country's economy. It is indispensable force for driving all economic activities. The relationship between energy consumption and economic growth is positive and strong (Chinedu & Gbadebo, 2009). In Nepal's context, hydroelectricity is the only source of energy which has potential to fuel our economic growth. It can replace the expensive fossil fuels which the country is forced to import at expensive price and save us billions of dollars. Besides, it creates a sustainable industrial base that runs on clean energy and does not pollute environment. It is reliable, adequate and affordable source of energy which is essential for achieving growth.

Nepal does not have fossil fuel reserves or coal mines. It is not technologically advanced enough to develop a nuclear power plant. The development of alternative energy such as solar or wind is also limited due to high investments and low returns. Therefore, hydropower is the most viable option for Nepal. Due to its strategic location between two giant economies India and China, Nepal has a competitive edge in producing and selling hydroelectricity.

However, hydropower development is happening at a very low pace due to various challenges such as lack of investment, political instability, human resource constraints and lack of suitable plans and policies. Despite

the challenges, the government has been trying its best to formulate effective plans and policies to attract domestic as well as foreign investments in the hydropower sector.

1.1 Justification of the Study

Most of the developing countries are suffering from energy crisis, as generation of energy needs large amount of capital which the developing countries do not have and Nepal is no exception to this.

Demands and consumption of energy in Nepal is gradually increasing along with population growth and economic development. According to Nepal Electricity Authority (NEA), each year there is a 10 percent increament in the demands for electricity but, there are severe constraints on the supply side due to lack of sufficient funds, improper plan and policies, political instability, local level problems, bureaucratic burden and geological risk related to seismic conditions and sedimentation. For a poor country like Nepal, shortage of capital is the biggest challenge in utilization of natural resources such as hydropower because it is a capital intensive technology. According to Pradip Gangol, the Executive Manager of Independent Power Producer Association, Nepal (IPPAN), it takes NRs. 170 million to generate 1 MW of hydroelectricity in Nepal. The cost becomes higher if there are unforeseen problems like strikes and other infrastructural hindrances.

Thus, the mismatch between demand and supply of energy has led to severe energy crisis and as of now there are no other sources of which can fill this gap. As a result, large amount of foreign exchange is being spent in importing petroleum products from gulf countries and buying electricity at expensive rates from India.

The recent economic surveys reveal that Nepal spends revenue generated from all of its exports of goods and services to import only one good, i.e., petroleum products. In addition to this, NEA buys electricity from India at a very high price (NRs. 10.72 per unit) which has led to

increase in our trade deficit with India (Manandhar, 2011). This divide is getting wider each year because energy crisis is becoming more severe with continuous increase in demand. The deepening energy crunch has also resulted in plummeting industrial output, which adds to the debt and in the long run forces the industries to shut down. As more industries shift their units to India, Bangladesh and other countries, thousands become jobless, exports fall and there is a huge loss of revenue. Even the potential investors are put off by grim environment for business due to energy crunch.

Foreseeing the necessity to secure country's energy needs, Nepal had opened its doors for domestic and international private investors in hydropower since 1992. Few foreign as well as national developers had invested in hydropower projects such as Khimti and Bhotekoshi which have been constructed and provide much needed electricity. However, this trend could not gain momentum due to a decade long armed-conflict coupled with some regressive energy policies by the subsequent government. The problem of severe energy crisis today is a mere consequence of bad polices and a decade long civil war.

Inspite of being an agrarian economy, about 1.2 million hectare of fertile land in Nepal lacks irrigation facility out of 2.5 million hectares (Ministry of Finance, 2011). Big multipurpose hydel projects can irrigate thousands of hectares of land alongside generating electricity. According to a study done by Dr. Narayan Prasad Bhattarai, 1.3 percent growth in electricity generation accelerates 1 percent growth in non-agricultural sector which means there is a high correlation between the use of energy and economic growth. With the utilization of hydropower, Nepal can accelerate its economic growth which has been stagnant at around 3-5 percent for more than a decade. But, for that it needs a stable political environment and huge investments.

After the signing of Comprehensive Peace Accord (CPA) between Maoists and the political parties in 2006, Nepal's decade long armed conflict came to an end. Subsequently, Indian, Chinese and other foreign companies have shown interest in investing in different sectors in Nepal

including hydropower. As a result, few agreements for the construction of Arun III, Upper Karnali and West Seti by Indian and Chinese investors respectively came about.

1.2 Status of Hydropower in Nepal

The generation of hydroelectricity in Nepal started from 1911 A.D, after the construction of Pharping Hydropower Station (500 kW) which was the second hydropower plant in Asia. It was followed by Sundarijal (640 kW) in 1935 A.D. Many hydropower projects have been constructed since, through bilateral and multilateral support that are now producing much needed electricity to keep the economy afloat.

Presently, the total installed capacity of Nepal's power plants is 705.56 MW including two thermal plants which produce 53.41 MW (NEA, 2011). There are 11 major hydropower projects producing 459.15 MW, 27 small hydroelectric plants of total capacity 13.844 MW and 23 isolated micro-hydro plants contributing 4.536 MW. Since the introduction of new hydropower policy in 1992, 23 projects have been developed contributing 174.526 MW electricity annually (NEA, 2011).

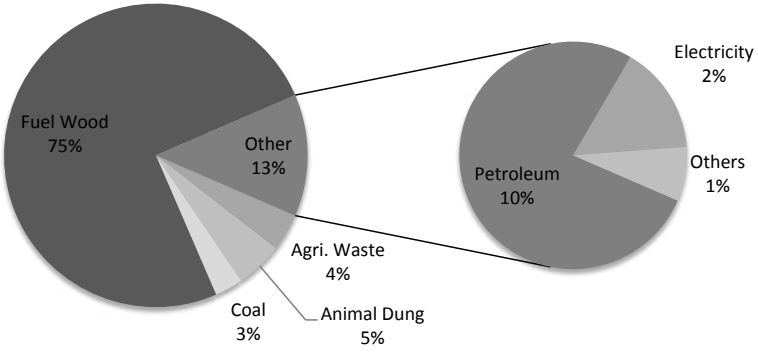
Except 92 MW Kulekhani reservoir project, all of the hydropower projects in Nepal are of run-of-river (ROR) type. These projects generate their full capacity only during the rainy season when the water discharge is high in the river. During the dry season, the fluctuation in the volume of water causes low electricity production. The total electricity generation during the rainy season peaks to 652.15 MW while it is much less during the winter when the snow dosen't melt and there is no rain (NEA, 2011). This causes shortage of 467 MW during the dry season which results in 14 hours' of load-shedding everyday, forcing industries to cut down their production.

Variation in power generation in different seasons is due to the nature of the existing hydropower plants. This obviously calls for seeking alternatives available in the same source of power. The construction of

hydropower projects based on the reservoir system will help to even the supply of electricity throughout the year. (See Annex I).

Although electricity has great importance in domestic as well as industrial sector, the chart below shows that its share is minimal in comparison to traditional sources of energy.

Fig. 1: Consumption of Energy in Fiscal Year 2009/10



Source: Economic Survey 2010/11

The share of traditional sources in energy consumption is 84% of which firewood alone contributes 75%. The remaining 10% comes from the use of fossil fuels. The unsustainable use of traditional energy that emits hydrocarbons among other things causes environmental pollution and stimulates climate change. Inspite of being a clean and inexhaustible source of energy, hydroelectricity amounts to a mere 2% of the total energy consumption. This does not reflect well on a nation which has second largest hydropower potential in the world.

This study has dealt with various investment prospects in hydropower after the end of armed-conflict and various challenges that still exist in its development.

1.3 Objectives

1.3.1 Overall Objective

The overall objective of the study was to identify various constraints and propose workable solutions in hydropower development for economic growth of Nepal.

1.3.2 Specific Objectives

The specific objectives of the study were:

- To appraise the existing policies
- To examine the investment trend
- To investigate the prospects and barriers in private sector investment
- To suggest policies for future action

1.4 Limitation of the Study

i. The study was mainly based upon secondary data.
ii. This study was limited to the study of projects of more than 1 MW capacity.
iii. The accuracy of the data related with private sector investments is questionable due to reluctance of the companies and the authorized bodies to share information.

1.5 Sources of Data

The present study is based on both, primary and secondary data. The secondary information was collected from Nepal Electricity Authority, Central Bureau of Statistics, National Planning Commission, and Ministry of Finance and Energy. The books, reports, published and unpublished

research papers were also used as sources of secondary data. The primary data, although they do not have significant role in findings of the study, were collected through key informant survey and are critical in designing the future plan and policies.

1.5.1 Analysis of data

Descriptive method was used for data analysis. Ratio and percentage were used to compare the information obtained from various sources.

CHAPTER 2

Review of Plans, Programs and Policies

Nepal adopted market led liberalized economy after the restoration of democracy in 1990. Since then a number of hydropower development policies have been formulated. The government has made rules, regulations and Acts, the main thrust of which is to increase private sector participation and bring in FDI in the energy sector. These include policy statements in periodic development plans, sub-sector policies, government orders, notices, Acts, regulations and laws passed by the legislature. In addition to these, action plans which are formulated to address current energy crisis are reviewed in this section.

2.1 Periodic Development Plans

2.1.1 First Five-Year Plan (1956-1961)

In the first five-year plan period, electricity development was fourth in the priority list. It occupied a prominent place amongst the infrastructures. The main objective of this plan was to generate 20 MW of electricity, which included both diesel and hydroelectricity. Nepal signed agreements with the USSR and India to construct hydroelectric projects like Panauti and Trisuli respectively. Agreement was also made with the British government for the construction of hydroelectricity project in Chisapani. The feasibility study of small and medium size plants were also included in the plan. For meeting the surplus demand, diesel plants were also set up to generate power (NPC, 1956).

2.1.2 Second Three-Year Plan (1962-1965)

The generation of electricity received high priority with the objective of producing 30 MW electricity from hydropower and diesel plants. The plan gave more emphasis on the establishment of diesel plants for meeting the immediate needs of residential and industrial areas in Kathmandu, Birgunj, Hetauda and Biratnagar. The development of transmission lines in various places started from this periodic plan. In order to produce more power to meet the domestic and industrial needs and for effective management of the distribution of power, a separate organization called Electricity Corporation was established in 1964 as a government enterprise (NPC, 1962).

2.1.3 Third Five-Year Plan (1965-1970)

This plan had given high priority to hydroelectricity generation along with development of transport and communication. The total budget allocated for electricity development in this period was NRs. 60 million. However, only 19 MW of electricity was generated during this plan period combining both hydroelectricity and diesel. This includes Trisuli (9 MW) and Phewa (1.088 MW) in Pokhara. Both of these projects were constructed with the assistance of India. During this plan period, Trisuli and Koshi projects were not generating power to their full capacity. The transmission lines from Kahtmandu to Birgunj (66 kV) were fully completed and Dharan-Dhankuta, transmission line was under construction in this period. In addition to this, locations of micro hydropower were also surveyed (NPC, 1965).

2.1.4 Forth-Five Year Plan (1970-1975)

The fourth plan had given more emphasis on transmission and network improvement, fixation of power tariffs, power purchase from India, setting up diesel plants to meet the demands of Bagmati and Narayani zones etc. Similarly, efforts were made to electrify at least one city in 12 zones out of 14 in the country. A policy was also formulated for power development which included provisions like construction of transmission

lines, small hydel projects, diesel installations and survey. Besides these, no specific energy policy was formulated in the plan. During the plan period, the total electricity generation from hydropower projects was 26.040 MW and from the diesel was 5.256 MW. Transmission line of 152.2 km length was also constructed during this period (NPC, 1970).

2.1.5 Fifth Five Year Plan (1975-1980)

In the fifth plan, policies were formulated to fulfill the short term and long term demands within the country first and to export surplus power to India. For the first time, special emphasis was given to rural electrification. To promote agricultural and industrial production, it also formulated a policy of fixing the tariffs on the basis of actual cost of projects. A policy was adopted, whereby, the government would produce electricity and handover the operation and distribution of electricity to other entities making them capable in business activities (NPC, 1975).

2.1.6 Sixth Five Year Plan (1980-1985)

Like previous plan periods, the sixth plan had also given emphasis on hydropower development. In this plan, several new projects were surveyed, new power stations and transmission lines were set up. The plan had also given emphasis to the development of micro hydropower projects in the mountains and remote areas. There was power crisis in the first two years of the plan period. Private sector was encouraged to invest in power because the growth in population and economic activities had led to growing demand for power. Due to lack of sufficient funds and other constraints, it was understood that the supply side of electricity would not increase with government's sole efforts. As a result, in the third year of the period, the addition of Kulekhani I power project (60 MW) and the addition of Devighat project (14.1 MW) eased the power crisis to a large extent. However, only 60.50 percent of the demand was met and the energy crisis had hit the industrial, agricultural, commercial and domestic sectors. Amid this, Jhimruk Khola project was started by Butwal Power Company in Pyuthan and other 24 small projects were also initiated in this plan period (NPC, 1980).

In addition to this, the Water and Energy Commission provided valuable assistance in research and standardization, determination of existing manpower, preparation of project profiles, study on the allocation of investment and other various aspects of project development. These activities were conducted with the help of Nepal and Canadian governments.

2.1.7 Seventh Five Year Plan (1985-1990)

The seventh plan period considered development of multipurpose projects along with electricity based transportation to substitute import of petroleum. The period also saw completion of other small hydroelectricity projects that were started during sixth plan period. The plan had also encouraged the private sector in the establishment and operation of micro hydropower plant, particularly in the rural areas. In the plan period, 720 km of transmission lines with a capacity of 132 kV was set up but the plan could not meet its target of 103.05 MW due to hindrances in implementation of programs (NPC, 1985). Many projects faced financial difficulties as they relied on more than one source of bilateral or multilateral financing and most bilateral or multilateral financing were strategic and not commercial.

2.1.8 Eighth Five Year Plan (1992- 1997)

This was the first plan by the democratic government which was formed after restoration of democracy in 1990. The plan emphasized on development of hydropower considering the inadequate government funding for electricity development and formulated a comprehensive set of policies for hydropower and energy development. Hydropower Development Policy 1992, Water Resources Act 1992, Electricity Act 1992 and Foreign Investment and One Window Policy 1992 were formulated to attract foreign as well as domestic investment from private sectors during this period.

The idea was to utilize indigenous skills and resources as well as foreign capital and technology which the earlier plans failed to do. Efforts

were also made to diversify the use of electricity, control the leakage and ensure reliable supply of electricity. Tariff rates were also changed to make them more realistic. The NEA was made responsible for making arrangements for the purchase of electricity from the private plants and transmission and distribution lines required for the purpose was set up. Nepal and India signed an agreement on Mahakali River Integrated Development Project which paved the way for foreign investment in large hydropower projects such as Pancheswar. There was also a power trade agreement with India following which Nepal imported more than 60 MW of electricity to reduce severe energy crisis.

In power generation, the 12.5 MW Jhimruck hydroelectricity project was completed and construction of 144 MW Kali Gandaki 'A' was started. By operating and strengthening of Trishuli-Devighat hydropower project, another 11 MW was added (NPC, 1992).

Despite these achievements, the biggest setback was the failure to initiate Arun III hydropower project due to environmental and political issues. The failure to arrange investments in West-Seti project by Australian multinational, the Snowy Mountain Engineering Corporation (SMEC) was another setback for Nepal's hydropower development (Nepalnews.com, 2012).

2.1.9 Ninth Five Year Plan (1997- 2002)

The plan enunciated a long term policy with a target of augmenting electric energy consumption from 1 percent to 3.5 percent in the next 20 years. The plan also laid emphasis on development of multipurpose projects like Koshi 4,700 MW, Karnali 10,800 MW and Mahakali 4,680 MW for domestic use as well as for export.

The major policy thrust of the plan included institutional reforms to attract private sector in power generation and distribution, and various programmes such as generation and supply of electricity, power transmission, system strengthening, feasibility study and design for rural electrification were carried out in this regard.

2.1.10 Tenth Five Year Plan Period (2002-2007)

The tenth plan laid emphasis on the construction of small, medium, large and reservoir type hydropower projects. The plan intended to promote integrated development of water resources involving private and public sector with emphasis on rural electrification and control of unauthorized leakage of electricity. Rural electrification has an important role to play in accelerating, agricultural growth and rural development. According to tenth five year plan, it required a huge investment to provide electricity services to the rural areas from the national grid system; therefore a decentralized renewable energy program was launched to benefit rural community.

By the end of the plan period, Nepal was generating 527.5 MW of electricity out of which 412.5 MW was generated from public sector and 115 MW was produced from private sector. This was only 0.63 percent of country's total potential. This underutilization has severely affected the overall development of the nation. The development of electricity requires huge investment from various sources which the government was unable to channel into the sector due to its commitment in other areas. The Electricity Act, 1992 could not be amended to revise the royalty that the government received as per the Hydroelectricity Development Policy, 2001. Similarly, the private sector of Nepal was not able to invest such a large amount of capital in one project for a long period and Foreign Direct Investment (FDI) remained low due to the inefficiency of the one window policy.

In addition to this, the NEA could not recover huge amounts of outstanding electricity bills from government agencies, corporations and municipalities. As a result, it could not invest required amount of capital in already identified potential projects (NPC, 2002).

2.1.11 Three Year Interim Plan (2007-2010)

During three year interim plan, the production target was 105 MW including private and public sector. The total contribution from the private sector was estimated to be 20 MW while developing remaining 85 MW from

public entities. The micro-hydro projects were also given special emphasis as its contribution was expected to be around 20 MW. However, none of the targets were met and the capacity of electricity power generation was not sufficient to meet even the domestic demand in the absence of effective investment plan. Similarly, the single window system was not implemented properly and private sectors continued to hold licenses instead of producing power.

The rise in government's regular expenditure and siphoning of budget into non-productive sectors cut public investments in the projects as well. As a result, the possibility of exporting electricity and its contribution to overall economic development of the country continues to remain elusive. An amendment in the existing Electricity Act, 1992 and effective implementation of Hydropower Development Policy, 2001 can be a step forward in realizing this elusive dream (NPC, 2007).

2.1.12 Three Year Plan (2010/11-2012/13)

The ongoing plan has set a target of generating 282 MW of hydroelectricity to reduce power cuts upto 12 hours. It has given special encouragement to not only public and private sectors but combination of both as Public-Private Partnership model. A total of 700 km long new transmission lines will be set up during this plan period. Similarly, reach of hydropower services will be increased up to 65% from 56% (NPC, 2010).

However, the trend analysis shows that like earlier plan, none of the targets will be met within this plan period. The government has not been able to make required amount of investments in this sector because the demand for its presence has increased in all spheres of life. So, the role of private sector becomes even more crucial in this field. The domestic private sectors have relatively low capital base to invest in large and storage-type reservoir projects which is why foreign investors like India and China that have shown keen interest in hydropower development must be encouraged. But the ambiguities in foreign direct investment policy, red tapism, unclear labor laws and fluid political situation has hindered institutional private investments in Nepal (NPC, 2010).

2.2 Hydropower Development Policy 1992 and Electricity Act 1992

The major objectives of the Hydropower Development Policy 1992 was to supply electricity as per the demands in urban and rural areas and meet the energy needs required for industrial development in the country. The rationale of this policy was (a) to make alternative arrangement to meet the interim demand, (b) to meet demand of hilly and remote Himalayan regions which are deprived of electricity from national grid, and (c) to extend distribution system in rural areas. The policy intended to limit private sector participation in hydropower projects to 100 MW and favored public sector for projects bigger than 100 MW.

The Hydropower Development Policy 1992 and Electricity Act 1992 were very progressive as they provided excellent incentives to develop hydropower in Nepal. The power developer could get generation license validity of 50 years, income tax holiday of 15 years, income tax (when applicable after 15 years) at the rate of 10% below prevailing corporate income tax, energy rate to allow 25% return on invested share capital, 1% customs duty only on imported goods for the project, exemption on import license and exemption on sales tax.

Two major projects with foreign investment (Khimti - 60 MW, Bhotekoshi - 36 MW) and few projects with local finance such as Indrawati Project were able to reap the benefits of this progressive policy. But this Act was formulated mainly for small hydropower projects and could not address various issues related to large hydropower projects which are mainly constructed for export purposes.

2.3 Hydropower Development Policy 2001

An open and liberal policy formulated after restoration of the democracy in 1990 had started giving positive results in hydropower development. Foreign as well as domestic investors were attracted to the sector after enactment of Electricity Act 1992. The Hydropower

Development Policy 2001 was introduced to give continuity to the trend with following objectives:

- To generate electricity at low cost,
- To provide reliable and quality electricity at a reasonable price,
- To link electrification with the economic activities,
- To extend rural electrification, and
- To develop hydropower as an export commodity

In order to fulfill these objectives, for the first time the planners came up with the concept of BOOT (Build, Operate, Own and Transfer) in developing infrastructure projects. The concept provides adequate incentives to the developers of big infrastructure projects and has successfully been implemented in other parts of the world.

According to this concept, the developer builds, operates and owns the project for a given period and then transfers it to the domestic government in good condition for free after the completion of the license period. Moreover, to ensure smooth transition of management, the licensee has to involve the government in the operation of the project two years prior to the completion of license period. Another new feature of the policy is construction of multi-purpose infrastructure which is related to development of hydroelectric plants with irrigation, flood control and drinking water projects.

Furthermore, the policy guarantees that none of the hydropower projects, transmission as well as distribution system constructed by private sectors will be nationalized. It has also provided exchange facilities to the foreign nationals, firm or company to repatriate their investment in foreign currency at the prevailing exchange rate. Other facilities to the foreign investor are provided according to the prevailing Foreign Investment and Technology Transfer Act. Similarly, a registration fee of 0.0001 percent is

charged for the registration of deals related to a foreign loan for investment on projects concerning hydropower generation, transmission and distribution.

The policy has made a provision of issuing four kinds of license related to survey, generation, transmission and distribution with Department of Electricity Development (DoED) as a responsible authority. The survey license of a hydropower project up to a maximum capacity of 10 MW is issued within 60 days and the licenses of all other types are issued within 120 days of the submission of all the details. If the application for generation license is not made, the ownership of the survey report is devolved on the government. For a hydropower project of more than 10 MW catering to the internal market, license is issued on a competitive basis through invitation of proposals. In case of hydropower projects of more than 100 MW with explicit purpose of exporting license is issued through invitation of proposals or through negotiation with the applicant. However, no license is required for hydropower project upto a capacity of 1 MW. Such hydropower projects are required to register with the District Water Resources Committee before commencement.

The new Hydropower Development Policy of 2001 has made some significant changes in tax and customs policy. The income tax of hydropower generation, transmission system and distribution system is as per the Income Tax Act. The Value Added Tax (VAT) is not imposed on the industrial machineries, equipment and spare parts imported after the permission. Only one percent customs duty is charged for the import of devices, equipments, machineries, and spare parts during the construction phase. This is applicable if the value of such spare parts is not more than twenty percent of the total value of the devices, equipment and other machineries that are imported.

For hydropower projects of 1 MW to 10 MW, the company has to pay a royalty of NRs. 100 per kW per year for the first 15 years and NRs. 1,000 per kW per year after 15 years of operation. Similarly, energy royalty of 1.75% and 10% has to be paid to the government up to 15 years and after

15 years of operation respectively. The royalty charges increase with the increase in the capacity of the projects which is listed in Annex II.

The policy has also made institutional arrangements for the development of hydropower. The existing Electricity Tariff Fixation Commission was developed as a regulatory body whose main functions were to fix electricity tariffs, monitor and supervise the safety of the electric system, prepare grid codes, and to protect the interest of consumers.

In case of export oriented trade, there is a provision that GoN could use or purchase 10 percent of produced electricity. This condition aims to reassure that the investors who are exporting electricity also have access to internal market.

The government has made amendments to the Hydropower Development Policy 2001 and prepared a new bill for the Electricity Act that was pending in legislative parliament. The new Electricity Act is especially important to help in construction of multipurpose projects which include irrigation, fisheries, flood-control and water-ways schemes along with electricity generation. The new Act is also supposed to solve the problem of developing transmission lines for mega hydropower project such as West-Seti where both parties share responsibility of constructing transmission lines. As Nepal goes into the federal structure, the responsibility of producing electricity should be given to the private sector, while the state should set up transmission lines and distribution should be done by the local bodies. (Karobar, 2012, April 5)

The new policy, however, contains some controversial clauses and has discontinued various incentives provided by the earlier one. It has proposed reducing hydropower generation license validity from 50 years to 35 years, increasing royalty payment, scrapping income tax holidays and bringing the hydropower projects under the usual corporate tax net. This undesirable shift in policy has discouraged domestic and foreign investors to invest their capital in Nepal and is indirectly responsible for the rise in load-shedding. This provision has also made Nepalese market less attractive

in comparison to India and Bhutan because they have less administrative hassles and better investment environment. In 2006, GoN introduced a new law making VAT payment mandatory for hydropower projects above 3 MW. It has caused 13 percent escalation in investment level. Inconsistent policies like these will do little to attract investment because investors feel less secure about government's long term commitment.

The major characteristics of hydropower policy of 2001 are given in the table below:

Table 1: Characteristics of Hydropower Development Policy 2001

Items	Hydropower Dvelopment Policy 2001
Validity of generation License	35 years
Royalty	NRs. 100-200/kW per annum & 1.75-2% of average sale for 15 yrs. NRs. 1,000-1,500/kW per annum & 10% of sales after 15 yrs.
Income Tax	As per prevailing of Income Tax Act.
Customs/ Sales Tax	1% customs duty. No VAT as long as VAT is not changed on electricity
Land	Private land acquisition as per Land Acquisition Act 1977 (2034 B.S.). GoN land to be available on lease throughout license duration.
One window policy	Provided by Department of Electricity Development
Geological/ hydrological risk	Compensation provided by extending of license period upto a maximum of 5 yrs.
Cost of resettlement	Developers bear cost of resettlement
Cost of security	Developers bear cost of security
Institutional Provision	Formation of Regulatory body Nepal Electricity Regulatory Commission (NERC) Study body-WECS Promotional body- Department Of Electricity Development (DoED) Electric energy management institution.

Source: Policy documents and an article written by Bijay Man Serchan

2.4 Nepal Electricity Regulatory Commission Bill 2064 (2007/2008)

The electricity regulation bill which is expected to facilitate production, transmission, distribution, trading, and management of electricity in a transparent manner is in limbo after dissolution of the legislature parliament. The bill would also help to balance supply and demand, to set electricity tariffs, to develop competition in the electricity market and to protect consumer rights. With the enactment of this bill, electricity market is expected to develop into a competitive environment where stakeholders' rights are protected and electricity is made accessible at an affordable price (WECS, 2010).

2.5 National Electricity Crisis Resolution Action Plan 2008

The government introduced a 38-point Electricity Crisis Resolution Action Plan in Poush 2065 (2008) with immediate, short-term and long-term programmes. The major highlights of immediate programmes were determining a Power Purchase Agreement (PPA) at flat rate for projects up to 25 MW, 7 years' income tax holiday and waiver from the need to conduct Environmental Impact Assessment (EIA) for projects expected to go for implementation by Chaitra 2068 (2011). Such projects were required to do Initial Environmental Examination (IEE) only. The plan also scrapped the provision requiring Forest Ministry's permission for constructing hydropower projects of less than 50 MW if they started construction within 2009-2012, except for the projects inside national parks and reserves.

The plan also foresaw a need to import more power from India. Within a period of two months, 20 MW and 40 MW were imported via Tanakpur and Kataiya respectively. The government made a decision to immediately improve four transmission lines from India to import another 65 MW in order to solve acute power crisis in Nepal. In addition to this, the government had provided various subsidies for building 200 MW thermal

power plants and encouraged power generation through captive plants. The plan had also given equal importance to reducing power consumption through the use of low energy consumption bulbs, implementing a code of conduct to save energy and raising public awareness for demand management. For cutting consumption, the government banned the use of power for hoarding boards and promoted the use of compact fluroscent lamp (CFL) bulbs through "buy one get one free" schemes and scraped all taxes on the import of such lamps. Various tasks such as reducing technical loss and controlling theft of electricity through cooperation of political parties, the public and local administration were included in the short term plan. The long-term programmes are mainly focused on construction of high capacity transmission lines between India and Nepal and large multi-purpose projects such as 127 MW Upper Seti, 245 MW Noumure, 6000 MW Pancheshwar and 10,800 MW Karnali-Chisapani. The financial restructuring of the Nepal Electricity Authority (NEA) was also included in the plan.

2.6 Ten Years Hydropower Development Plan 2009

Government of Nepal formed a task force under former energy secretary Mr. Somnath Paudel in December 2008 to formulate programs for developing 10,000 MW in 10 years to provide relief to the consumers, concerned industries and businesses against the ongoing energy crisis in the country.

The task force, in its report pointed out the importance of developing hydropower and the systematic ways to do it in Nepal. It recommended reserving small hydropower projects up to 50 MW for domestic investors and suggested building cost effective projects under Public-Private Partnership, so that people could use electricity at an affordable price. The task force had identified various projects to generate 10,000 MW electricity and gave a detailed plan on mobilising local, national and international investment. The report also warned about severe energy crisis in the days to follow and the need for high level political consensus to address the situation through subsequent governments.

2.7 Twenty Years Hydropower Development Plan 2009

The Twenty Years Hydropower Development Plan was made by a taskforce which came up with a detailed plan to generate 25,000 MW of electricity in 20 years. The taskforce was formed in July 2009 under the coordination of engineer Kishor Thapa, Secretary at WECS. The team of 12 members included experts from both private and public sectors. This taskforce was given a mandate of identifying possible hydropower projects which could be built by government itself or under Public-Private Partnership mode, setting priority on the basis of national interest and finding tentative costs and preparing action plan.

The report revealed that the current average consumption rate of electricity per person was 67 units which is less in comparison to other Asian countries. It stated that 90 percent of energy in Nepal was used for domestic purposes and if electricity generated from hydropower would be used for cooking and heating purposes, deforestation and large amount of money spent for importing petroleum products would be controlled.

The taskforce divided projects in different time frames such as 5, 10, 15 and 20 years. According to the report, 2,057 MW of electricity would be generated in the first 5 years (2009-2014), out of which 170 MW would be exported while the remaining would be used for domestic consumption to address the existing problem of power cuts. Likewise, 12,423 MW would be generated between 2014-2019 in which 8,093 MW would be used for internal market and the remaining 4,330 MW would be generated for external market. In the third time frame from 2020-2024, 5,114 MW of electricity would be generated from 15 different projects such as Dudhkoshi (300 MW), Pancheswor (2,940 MW), Naumure (245 MW) and others. And lastly, from 2024-29, multipurpose projects such as Sunkoshi-2 (1,700 MW), Karnali-Chisapani (10,884 MW), Saptakoshi (3,450 MW) would be constructed generating 18,034 MW.

The taskforce has also presented a tentative financial statement for the period. The total amount of US$ 33,611 million will be needed until

2019. For the first five years, US$ 5.04 billion will be required and for the next five years additional US$ 28.66 billion will be needed. For the execution of 20 years plan, more projects need to be identified and detailed financial analysis is required. Human resource of high skilled, semi-skilled and low skilled nature must be developed which require induction of formal university course on hydropower and related subjects as soon as possible. Similarly, the availability of construction materials, equipments, industries related to repair and maintenance, infrastructures like roads and bridges as well as comprehensive rehabilitation policy for displaced people also play a vital role in realizing this plan.

As per the report, the target will be achieved after completion of three mega multi-purpose projects namely Pancheshwar, Karnali-Chisapani and Saptakoshi within the 20 year span. The report also stresses on the need to take transmission line projects simultaneously ahead with the construction of hydropower projects. It suggests Public-Private-Partnership (PPP) model as best suited for materializing this target as the business environment for FDI is still not favorable and government alone cannot undertake such huge projects, neither can domestic private sector.

2.8 Load-shedding Reduction Action Plan 2012

The government has declared a Load-shedding Action Plan in March 2012 in order to solve the perennial problem of energy crisis in Nepal. According to it, the government will ensure availability of loans at concessional rates, raise the Power Purchase Agreement (PPA) rate, waive value added tax on construction materials and delay charges. The hydropower projects which are being developed by Independent Power Producers (IPP) that are under construction and those who have already signed the PPA with the Nepal Electricity Authority (NEA) but are yet to start construction work can get the benefit of these facilities. These facilities were given to projects because the increase in interest rate and existing PPA rate make the development of hydropower infeasible.

According to this plan, the government has decided to raise the PPA rate by 20 percent. It means the projects that signed the PPA at NRs. 7

per unit in the winter and NRs. 4 per unit in the summer will increase to NRs. 8.4 and NRs. 4.8 per unit respectively. A total of 26 such projects will get waiver on VAT on construction materials and the delay charge if they complete the projects within April 2015. After the introduction of these concessional provisions, it is expected that 200 MW-250 MW electricity will be added in the next three years. The 10-point action plan also has plans for expanding transmission lines, increasing electricity imports from India, managing resources for reservoir-type hydropower projects and other projects being developed by the NEA.

2.9 Provisions of Power Purchase Agreement (PPA)

It is mandatory to sign a Power Purchasing Agreement (PPA) before the construction of any hydropower project. Total capacity of power purchase agreement signed between the private power producers and NEA so far has reached 1,186.702 MW (DoED, 2012). Out of this, projects such as Khimti, Bhotekoshi and Chilimi are already supplying total of 179.971 MW. NEA offers flat rate for the projects upto 25 MW. Previously, the rate was NRs. 4 and NRs. 7 per unit in rainy and summer seasons respectively. However, the NEA has raised the PPA rates by 20% according to which, the producers will be paid NRs. 4.80 per unit in rainy season and NRs. 8.40 in dry season. As a result, NEA signed PPA worth 714.77 MW during the year 2010/11 after increase in PPA rate. This is almost double the total capacity of Power Purchase Agreement (PPA) signed in the past. However, the rates are still not attractive enough and the process is still very complicated and tedious. If the process is shortened and PPA rate is adjusted according to the recommendation of IPPAN i.e. NRs. 5.99 per unit and 5% increase for nine consecutive years, more than 170 power companies will go into construction immediately generating 589 MW in period of three years (IPPAN, 2010, July).

Besides these, the projects already in construction phase must be given the benefit of revised PPA rates. The total capacity of such projects is 541.5 MW and their development has been affected due to increase in project cost. The cost of construction materials such as cement, iron and

wage of labour have all increased, the banks and financial institutions are unwilling to finance projects at the present PPA rates and the interest rates have gone up from 11% to 16%, which make the projects commercially infeasible. By denying the projects under construction the benefit of revised PPA rates, NEA has done little to help realize government's target to rid the country of load shedding in the next 4.5 years (IPPAN, 2010, May). The decision will also put off domestic and foreign investors from investing in the hydropower sector.

Independent power producers blame that NEA is providing lower PPA rates to small projects compared to the larger ones. According to Economies of Scale rule, small power projects are more expensive than large projects, which imply that smaller projects should get higher PPA rates than the larger ones. However, larger projects like Chilime and Misti Khola get higher rates of NRs. 6.49 per unit and NRs. 6.46 per unit respectively compared to smaller ones (The Rising Nepal, 2011, June 6).

2.10 Tax Policy

The income tax for the hydropower sector is the same as prevailing Income Tax Act. However, 10 years of complete income tax holiday and 50% waiver for the next 10 years is provided for all hydropower plants. There is only 1% customs duty and no VAT is charged on electricity (Ministry of Energy, 1993). But new taxes are imposed and/or changes are made in the tax structure each year by the government through budget for each fiscal year. Such changes in the legislation pose serious risk for the developers in terms of their returns. However, NEA has agreed to make necessary adjustments to the negotiated tariffs in order to ensure that the impact of changes in legislation on the developer is zero.

The Global Competitiveness Report 2008–2009 found that only 4.4% of investors cited tax administration as a constraint, while only 2.0% considered the tax rates to be a major constraint to growth and inclusiveness (Porter & Schwab, 2008). The 2008 Enterprise Survey had similar findings, with respondents ranking the tax burden as 9th out of 16

constraints (ILO, ADB & FNCCI, 2008). This may be because businesses have found ways of avoiding taxes and it may be a constraint only for new investors, both domestic and foreign. The cumbersome procedures for assessing and paying taxes may be disincentive for paying taxes and may create an opportunity for rent seeking.

According to finance bill 2011/12, independent power producers will get VAT exemption on construction materials and subsidy on compensation payment for project delay if project is completed within 2014. Similarly, the government is going to provide concessional loan of NRs. 20 million for the hydropower projects up to 1 MW (Aarthik Abhiyan Daily, 2012, March 23).

As such, Nepal's income tax, corporate income tax, and value-added tax rates are among the lowest in the region but paying them is also one of the most tedious tasks which certainly needs to be sorted out.

CHAPTER 3

Investment in Hydropower Sector

A country needs to have at least 30 to 40 percent savings of its national income to achieve higher rates of economic growth, but Nepal's Gross Domestic Savings was as low as 9.4% in 2006 against the investment rate of 24 percent. There has been no improvement in this rate in recent years either. So, nearly 70% of the development expenditure is met by foreign aid, but even the aid utilization has been poor (Jha, 2012). Although Nepal could harness its 42,000 MW of hydroelectricity potential, it needs at least US$ 100 billion in investments which the government cannot make on its own (IPPAN, 2005). So, there is no alternative to attracting private sources of investment, especially foreign direct investment (FDI). Getting the foreign and domestic private producers to invest in Nepal's hydropower is essential for achieving higher rates of economic growth. Increasing energy consumption and exporting surplus energy could prove critical in poverty reduction as it helps in raising valuable capital which can be used for welfare programs targeting unfortunate sections of the population.

3.1 Contribution of Government Sector Investment

Past development trends particularly before 1990, indicate that foreign investment in the form of development aid and donations has played a dominant role. It implies that domestic investment has no significant role in the development of hydropower. Domestic investment has only complemented foreign investment. With combined investments from government and bilateral and multilateral foreign sources through

loans or grants, 530.9 MW was generated as of April 2012 (NEA, 2011). To this effect private sector's role in producing hydropower was not tangible. According to Pradip Gangol, the Executive Manager of Independent Power Producers' Association, Nepal (IPPAN), the total cost of already constructed hydropower project is NRs. 150 million per MW. If we multiply the total amount of electricity generated from hydropower by the government with this amount, the total investment of government in generating hydroelectricity can be calculated to amount to NRs. 79,635 million. The government has also made a huge investment in constructing transmission lines, infrastructure and other regular expenditures. This investment has largely been possible with the help of various donor agencies like World Bank (WB), Asian Development Bank (ADB), and also through the medium of bilateral assistance from the countries like India, the USSR and others.

However, this level of investment is not enough to meet the current demand of electricity in the domestic market. So, the role of private developers and investors is highly needed.

3.2 Contribution of Private Sector Investment

With the restoration of multi-party system in 1990, several policies have been designed to attract private sector investment. A series of hydropower development policies are in effect. The recently revised Hydropower Development Policy 2001 allows greater private participation in power sector—generation, transmission and distribution—with the objective of facilitating improved access to underserved areas (UNCTAD, 2003). Bhotekoshi and Khimti Power Projects are major foreign invested joint venture power projects already operating in the country (Rana & Pradhan, 2005). These projects are contributing to meet the growing demand for power. But foreign investment is decreasing over the years due to various challenges in hydropower sector as described in chapter iv.

As of April 2012, as many as 100 different firms have taken approval to invest their capital in hydropower projects in Nepal (see Annexes). Out

of them, 22 projects have been completed and the electricity generated from them is supplied to the national grid. There are 24 projects which are under construction and 6 others have been planned and proposed (NEA, 2010).

3.2.1 Contribution of Domestic Private Sector (Pre-Conflict and Conflict Period)

The involvement of domestic private sector in development of hydropower in Nepal accelerated with privatization of Butwal Power Company in January 2003. It played an instrumental role in establishing Himal Hydro and General Construction Company and Nepal Hydro and Electric Ltd. with a target of developing Nepal's indigenous capacity in hydropower development (Butwal Power Company, 2012). More than 20 hydropower companies invested their capital in different projects until the year 2007 (See Annex III-a & III-b). The total volume of fixed and working capital is given below in the Table 2.

Table 2: Approved Investment of Domestic Private Sector, 1993-2006

(Amount in Millions NRs.)

Date	Fixed Capital	Working Capital	Total Capital
1994	4,500.00	0.00	4,500.00
1997	409.17	12.00	421.17
1998	1,053.50	76.50	1,130.00
1999	1,890.77	103	1,993.77
2000	8,124.4	1,321.22	9,445.62
2001	1,180.28	118.3	1,298.58
2002	3,860.63	84.26	3,944.89
2003	671.89	65.11	736.99
2006	822.19	46	868.19

Source: Department of Industries, 2012, May

According to Table 2, domestic private sector investment began in hydropower projects of more than 1 MW since 1993. The highest volume of domestic investment was in 2000, after which there has been a gradual

decline in the following years. A decade long insurgency and some bad policies made investing in Nepal a risk. Moreover, construction activities were regularly suspended due to difficulty in transporting explosive materials necessary for making tunnels and electro-mechanical works under the ground. The government had made a rule that such explosives would only be transported under the permission and supervision of Nepal Army, which further discouraged potential investors.

3.2.2 Contribution of Domestic Private Sector (Post-Conflict Period)

After the completion of comprehensive peace agreement in November, 2006, about 21 domestic companies were motivated to express their interest to make investments in hydropower projects within 2010 (See Annex III-a). The year wise investment made by domestic private sector is given in Table 3

Table 3: Approved Investment of Domestic Private Sector, 2007-2011
(Amount in Millions NRs.)

Date	Fixed Capital	Working Capital	Total Capital
2007	534.75	475	1,009.75
2008	6,115.17	46.82	6,161.99
2009	2,790.21	1,069.96	3,860.17
2010	6,181.46	762.19	6,943.65
2011	70,694.89	994.57	71,689.46

Source: Department of Industries, 2012, May

Table 3 shows that there has been a gradual increase in investments from private sector in hydropower development. The amount of capital investment was the highest in the year 2010 and so were the development activities. There is high degree of fluctuation in the amount of investment, which shows that the situation is still very volatile and there is sharp reaction to even small changes in the economy and political situation.

A series of hydropower friendly policies were formulated to cut load-shedding hours by giving tax discounts and other necessary benefits which resulted in many domestic hydropower players making their investments in development of hydropower. In the year 2011, twenty-nine different companies initiated their investment procedure in this sector (See Annex III-c). This trend continues in the year 2012 as well with 7 companies officially approaching the government with their investment plans. (See Annex III-d).

3.2.3 Contribution of Foreign Direct Investment (FDI)

In the case of developing countries, Foreign Direct Investment (FDI) will have a dual role. First, it will bring in much needed capital and second, it will bring the best practices in terms of technology and management. Nepal needs both if it hopes to transit into a modern economy. Therefore, FDI has a great role in this transition and Nepal has the potential to attract more overseas' investments in hydropower due to the unique business prospects it offers. These include a growing domestic energy demand and huge market on both sides of the borders (UNCTAD, 2003). But it requires a long-term commitment from the host country as it is difficult for the foreign investors to recoup their initial investments in the short run. Besides, it requires stability in politics and consistency in policy making and planning. In addition to this, the legal framework of the host country should be transparent and procedures simple and hassle free.

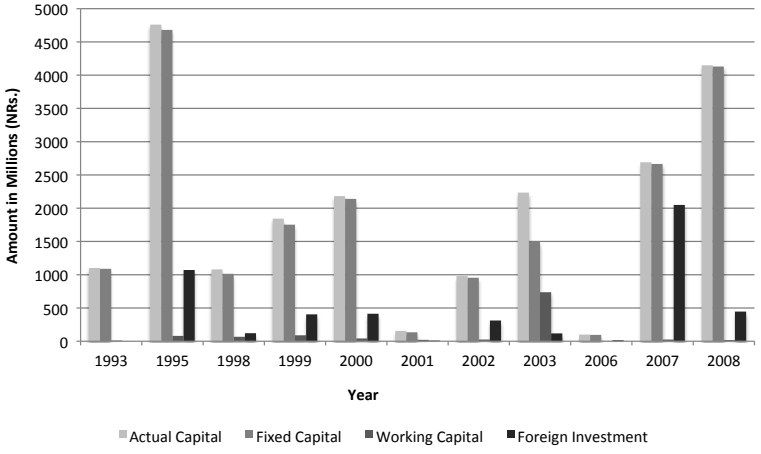
In this regard, the Foreign Investment and Technology Transfer Act of 1992 is outdated and must be revised to suit the present needs of the economy (Rijal & Deoja, 2009). The government should reformulate the FDI and technology transfer policies based on past experience, keeping in mind the dynamism of the global economy. The reforms should also target deep-seated administrative practices to change the attitude towards doing business.

Nepal's FDI has grown only marginally at the rate of about US$ 8 million annually. The FDI inflow is very low in relation to the size

of population (UNCTAD, 2003). But many companies have come forward with their interest in the country's energy sector which offers a comparative advantage. The names of foreign companies along the name of their Nepalese partners and the amount of investment from 1993-2008 are listed in Annex IV-a. Most foreign companies prefer to work in co-operation with domestic partners as they are less familiar with national laws, rules and regulation.

The trend of FDI investment in Nepal's hydropower during the period 1993-2008 is given in Fig. 2.

Fig. 2: Approved FDI in Hydropower Sector, 1993-2008



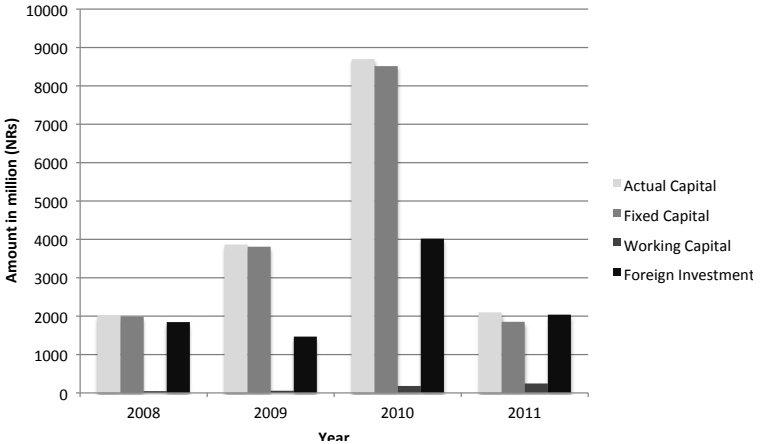
Source: Department of Industry, 2012, May

Fig. 2 shows that the volume of FDI was highest in the years 1995 and 2008. The main reason for this was the construction of Khimti and Bhotekoshi in 1995. So, the level of investment was relatively higher in this year. However, the flow of FDI was negatively affected by armed-conflict and political instability it ensued. Prior to the escalation of the conflict, FDI in all sectors was rising and had nearly tripled between 1995 (2051 B.S.) and 1997 (2053 B.S.). However, it started to decline thereafter, with several

years of negative flows. Yet, there has been some amount of FDI flowing in hydropower sector over the years as it is one of the most promising sectors in Nepal (UNCTAD, 2003).

Comprehensive Peace Agreement (2006) and Constituent Assembly (CA) elections (2008) brought hopes and optimism resulting in an increased flow of private investments in 2008. However, the CA was unable to pass the new electricity bill, and the bill is now in a limbo after dissolution of the house. This has affected the inflow of FDI which is shown in Fig. 3 (See details in Annex IV).

Fig. 3: Approved FDI in Hydropower Sector, 2009-2012



Source: Department of Industries, 2012, May

Fig. 3 shows that the volume of FDI in the year 2010 was high, after Nepal was declared a new republic nation but the trend could not continue in the following year. Countries like Nepal have great need of FDI to accelerate economic growth through investments in infrastructures like the construction of hydropower projects. Realizing this fact, the government established Nepal Investment Board under the chairmanship of the Prime

Minister. The board will play an instrumental role in attracting large volume of foreign investments in different sectors including hydropower which has been declared a priority sector for investments.

The figures presented above show that some FDI was attracted in hydropower with number of approved projects, but not all FDI inflows have been captured and the actual disbursement has remained very low as there have been unnecessary delays in the construction of projects due to tedious process in completing the feasibility study, Power Purchase Agreement (PPA), and Environment Impact Assessment (EIA).

3.3 Contribution of Government, Private and Donors' Investments

Government, private sector and donors have made investment according to their capacities in developing Nepal's hydropower. The projects like Trisuli (9 MW) and Pokhara (0.5 MW) were built under bilateral assistance from India. Similarly, Thadokhola (0.4 MW) and Panauti (2.4 MW) were completed under assistance of the British and the Russian assistance respectively. Other projects like Kali Gandaki (144 MW) and Puwa (6 MW) were completed with the help of various donor organizations including The World Bank and Asian Development Bank.

Similarly, famous projects like Khimti (60 MW), Bhotekoshi (36 MW) and Indrawati (7.5 MW) were built under domestic and foreign investments. It is interesting to mention here that the total budgetary spending on security forces during the ten years of insurgency totaled a whopping NRs. 107.8 billion. If this money had been spent on developing hydropower projects, Nepal would have had a 525 MW additional electricity by now (Shakya, 2009).

The overall investment trends in hydropower sector from 1992-2010 has not been encouraging when measured in terms of GDP (see Table 4).

Nepal's expenditure in electricity in terms of GDP has been very low and has not exceeded 1.1 percent in the last two decades, except in the fiscal

year 2009/10.The percentage change over the years has remained low and was negative in the fiscal year 1994/95, 2001/2, 2002/3, 2005/6 and 2006/7.

This is due to lack of sufficient capital, skilled human resources and lack of visionary policies. As a result, even the available resources are being invested in an unproductive sector. In an average, the cost of generating a kilowatt of electricity ranges from US$ 2,000 to US$ 3,000 depending on the location, size, topographical structure, access to road and other prerequisites.

Table 4: Investments of Government, Private and Donor Communities

(in NRs. 10 million)

Year	GDP	Expenditure in Electricity	As % of GDP	As % Change over the Years
1992/93	28,644.9	222.91	0.778	57.600
1993/94	30,911.5	231.22	0.748	3.728
1994/95	31,840.7	176.49	0.554	-23.670
1995/96	33,668.1	321.02	0.953	81.891
1996/97	35,358.6	444.73	1.258	38.537
1997/98	36,559.2	470.47	1.287	5.788
1998/99	38,234.8	481.13	1.258	2.266
1999/00	40,574.6	553.79	1.365	15.102
2000/01	41,342.8	681.37	1.648	23.038
2001/02	41,409.2	439.53	1.061	-35.493
2002/03	42,969.9	388.16	0.903	-11.687
2003/04	44,865.4	474.62	1.058	22.274
2004/05	46,316.5	721.91	1.559	52.103
2005/06	48,043.5	625.64	1.302	-13.335
2006/07	49,365.1	545	1.104	-12.889
2007/08	52,226	584.76	1.120	7.295
2008/09	54,196.4	607.33	1.121	3.860
2009/10	56,348.8	1,250.34	2.219	105.875

Source: Economic Survey of Various Years

3.4 Prospect of Hydropower (Including case studies of Khimti & Chilime)

3.4.1 Chilime Hydropower Project

Chilime Hydropower Project is a model project of Public-Private Partnership in hydropower development in Nepal. It was developed by Chilime Hydropower Company Limited (CHPCL), a subsidiary company of NEA. The majority of shares, i.e. 51% belong to the NEA, 14% has been distributed to the general public, 10% to the locals of the project region and the remaining 25% is owned by the staffs of the company. There are 4,000 shareholders with authorized capital of NRs. 1,000 million and issued capital of NRs. 960 million.

The project is located in Rasuwa district with installed capacity of 22.1 MW. It is pondage Run-of-the River (R-O-R) type. This project was built and commissioned on August 25, 2003. The plant is now in the eighth year of commercial operation.

Besides contributing to Nepal's energy sector, the project is equally devoted towards fulfilling its social obligations. As a part of its Corporate Social Responsibility, the company provides NRs. 2.5 million annually to the affected VDCs of Rasuwa district through local committee for improving access to education, health, drinking water, irrigation and electrification. The support is not limited to the project affected areas, as the company has also been involved in the development activities in remote areas of the district.

Chilime is a perfect example of how to develop a capital intensive hydropower project in a country where there is inadequacy of resources. The responsibility and risks are transferred in such a way that maximum efficiency is achieved with expected improvement in management and technology. This partnership allows scarce resources to be channelized for welfare programs that help in poverty reduction by bringing socio-economic growth with a level of empowerment among local communities.

Despite all these benefits, the electricity from Chilime is generated at a low cost but it is distributed at an equally expensive rate to Nepali consumers (Karobar Daily Newspaper, 2012, April 5).

NEA has a conflicting role as a buyer of power and as a joint-venture partner in the power generation (UNCTAD, 2003). But this kind of model of development in hydropower generation is best suited for the country as it shares risks as well as profit between private and public sector. This was the first project to mobilise local capital, local skill and local labour for electricity generation. Besides the above mentioned benefits, the Chilime model helps in equitable distribution of wealth because general and local people can also become partners and get return in accordance to their investment.

3.4.2 Khimti Hydropower Project

The project is located in Dolakha and Ramechhap district of central Nepal. It has an installed capacity of 60 MW and was built under financial support from ADB, IFC-The World Bank, NORAD, Nordic Development Fund and Export Finance.

Construction works for the project started in 1993 but the work gained momentum only after financial closure in June 1996. The project was completed in May 2000, ahead of its schedule despite serious geological, logistical and other local problems. The environmental impact of the project is very minor and the project has been praised for its excellent compliance with health, safety and environmental standards. Cooperation between the management and the workforce during construction of the project was also extremely good.

In continuously meeting its annual operational targets, the Khimti hydropower plant has made a profound impact on the lives of the local people in Dolakha district, where its power plant is located. Only fifteen years ago, the area was one of the most remote and underdeveloped districts. People were compelled to live in a total darkness and child mortality rate

was double the national average, but today the villages in Dolakha have good schools and a hospital built with the help of Himal Power Limited, the company which owns the project. The village where the plant is located has a network of cable and internet connection. This progress has been made due to company's sincere commitment to community development. The most recent example of this is the transfer of two mini-hydro plants to the Khimti Rural Electricity Cooperative (KREC)—a local initiative supported by the company. These plants will distribute electricity to around 8,000 households.

However, despite these positive outcomes NEA suffers cumulative loss of NRs. 2,370 million annually purchasing electricity generated from Khimti and other project Bhotekoshi because both the projects have done PPA in dollars and everytime there is an increase in exchange rate, the price of electricity per unit goes up making the project expensive for the country (Dulal, Karobar Daily, 2012, April 4).

But the project has succeeded in sending message to the private investors that it is possible to build big infrastructural projects in Nepal and make profit. If Nepal depends only on foreign aid and grant, it will develop dependency syndrome, so it is essential to achieve economic progress by attracting private investments, domestic and foreign like in Khimti to create employment, utilize natural resources, share benefits with the local people and cut national imports of petroleum products.

CHAPTER 4

Challenges for Hydropower Development

Dilemma over the development of hydropower, a promising sector of Nepalese economy exists in an intellectual horizon as well as in political dimensions. The efforts to harness huge potential that exists have been unsuccessful in the last five decades, mainly due to the deep-seated mistrust between Nepal and India after the construction of Koshi and Gandak barrages. As a potential investor and market, India's role in Nepal's hydropower sector is undeniable but despite several rounds of talks and agreements over the years, the two countries have not been able to come to a long term agreement.

Amidst the situation, this sector also faces various other challenges, mostly related with policies and their effective implementation. The Electricity Act of 1992, which is a major guiding document, was revised in the form of a new electricity bill. But the bill was pending in the Constituent Assembly for the last four years and is now in limbo after its dissolution (IPPAN, 2010, May). The need of the hour is to create a conducive environment with political stability for effective policy formulation and materialization of all the projects in the pipeline.

Nepal faces a daunting challenge in terms of technology, skilled manpower and financial resources to provide adequate, quality and affordable energy to its citizens in a sustainable manner. The major challenges in hydropower development in Nepal are explained as follows:

4.1 Political Constraints

There is a strong and positive association between economic growth and political stability. Political stability and policy consistency play a vital role in development of infrastructure. It is unfortunate that in the last two decades, the country went through a bloody war, the local bodies have been without representation for the last ten years and none of the elected government was able to complete its full tenure. The frequently changing governments and volatile political situation causes inconsistency in the policy and shifts in priority of the government.

The decade long conflict (1996-2006) had huge implications on both the public and private sector investment. The state resource was diverted from development to defense, while the private sector had no incentive to invest in a war economy. Even after the end of the conflict, the transition has been protracted and the economy continues to suffer due to vested interests of the political parties and a few greedy leaders. The omnipresent but obscure political situation, among other things, is a bottleneck in country's development which has severely hurt the socio-economic well being of large sections of the population (Dhungel, 2012).

4.1.1 Lack of Political Will

The government is preparing a new energy strategy to promote the power development, but its implementation is likely to remain a challenge unless there is a broader political consensus in the country. Two draft bills—the Nepal Electricity Bill and the Nepal Electricity Commission Bill—are awaiting approval from the legislative parliament. The proposed Electricity Act which will open private sector involvement in construction of transmission lines, address environmental issues and remove impractical land related barriers is pending in the Parliament since 2008. There are some clauses in Environment and Forest Guidelines such as plantation of 25 trees when 1 tree is cut down and compensation of 16 hectare of land when 1 hectare of forest land is destroyed during construction of transmission lines or which being used for hydropower project. In the meantime, the

government is focusing on repairing and upgrading existing generation, transmission, and distribution infrastructure (ADB, 2011).The best way to do this is by unbundling NEA. However, there is lack of political will to do so. Instead the government is planning to establish a separate company for the construction of transmission lines.

There are political problems in bigger projects as well, especially the ones with foreign investors. These projects are constructed with the intention to export power to India in future. This requires close coordination between the two governments and lot of homework. To be sure, there is a common understanding among all the political parties to develop hydropower as a leading sector to bring about economic transformation in Nepal, but there are problems when it comes to implementing this commitment. Such duality in policy and action at the political level are serious pitfalls in hydropower development.

4.1.2. Political Instability

It is unfortunate that hydropower is not treated as a commodity like other goods and services and is instead unnecessarily politicised. Plans and policies are not implemented with a seriousness of purpose and there are political and bureaucratic glitches at every step. As a result, the confidence level of developers is low which does not open new avenues for future. The pending bills related to hydropower development for years in the Parliament proves that it still has not got sufficient priority in the list of government agendas (IPPAN, 2010, July).

Political instability in the country was identified as a significant barrier by international investors and financial institutions (PBI & TMS, 2010). The biggest victim of such barrier was Arun III hydropower project which was shelved due to severe political opposition. The 201 MW project was in the pipeline under the investment of World Bank, but there was serious opposition from the environmentalists who filed a case in the Supreme Court asking the project to be scrapped. Had the project been allowed to go into construction, the country would not have reeled under

such a chronic power shortage and there would have been greater industrial turnover leading to growth. But, even today the political forces do not seem to have learnt their lessons from history (Mahat, 2012).

4.1.3. Socio-political Issues

Every private and public organization has a social responsibility. Most of the hydropower projects are built in rural and remote areas where majority of people are underprivileged. These people do not have access to modern amenities like electricity, communication, transportation, education and employment. As a result, when there is a development endeavor in these areas, people put forward various demands to the developers which are not always reasonable and sometimes more than what the project and investors can afford. To be fair, it is responsibility of state to fulfill those demands.

Some of the big projects like Kali Gandaki 'A', Mid-Marsyangdi have fulfilled the demands of the local communities to great extent but it is difficult for small projects of lower capacity to fulfill such higher expectation as they do have their own budget constraints. It is due to such constraints that entrepreneurs hesitate to invest in hydropower sector and as a consequence, Nepal has perennial problem of load-shedding. So, it is responsibility of the government to develop a policy to manage these expectations and restore faith of the investors.

In the proposed Electricity Act, local people are included as important stakeholders which give them incentive to cooperate with the project and make their expectations manageable.

4.1.4. Security Related Threat

On May 22, 2011 a group of locals vandalized and torched all three office buildings of the UKHP (Upper Karnali Hydro Project) asserting that the project was against the welfare of the local people and national interest. The UKHP is a project under construction with the support of

India's GMR-led consortium. This is not the first time the company has been under attack. Such attacks show that Nepal is not safe for construction of big capital intensive projects and also discourage international and local investors. If the government cannot come up with a way of dealing with such irritant, the country will have to reel under energy crisis for an indefinite period (Sharma, 2011).

With growing local expectations, the security threat to hydropower projects has increased. One way of addressing it is by improving the security arrangements on ground but in the long run the government will have to facilitate an environment of trust between the local people and the project proponents.

4.2 Financial (Investment) Constraints

Hydropower projects are capital-intensive business ventures, which are costly and risky. It takes time to bear returns from the investment due to longer gestation period, which means the cash flow is slow in the beginning. After a hydropower project is commissioned, first 12-15 years is mostly spent on debt servicing during which the cost of generation is high. But after that the investor starts getting solid returns on equity as hydropower project does not have other variable costs unlike in thermal projects. However, the investor is averse to such slow rate of returns and does not like to wait. Besides these, there are various constraints which have been categorically explained below:

4.2.1. Internal Sources

There are basically four kinds of sources in internal market.

4.2.1.1. Government of Nepal

The government has established Energy Ministry with a specific purpose of dealing with the energy crisis. The government also allocates budget for electricity generation through NEA which is the sole body for purchasing and distributing electricity in the country.

However, NEA cannot generate money by itself because it has a cumulative loss of NRs. 24 billion with average annual loss of NRs. 6 billion in 2011 (NEPSE News, 2011, Dec 12). NEA has demanded NRs. 30 billion to reduce its loss and purchase electricity but the government is planning to provide NRs. 20 billion. There is huge gap in demand and supply of government resource. This shows that the government is in no position to invest in big projects and will have to rely on private investments.

4.2.1.2. Financial Institutions

Nepal's financial institutions are classified into A, B, C, and D categories. The initial two categories of banks are interested in investing in the hydropower projects. Commercial banks which belong to "A" class, account for more than 80% of the assets in the banking sector (Nepal Rastra Bank, 2011). The deposits carry interest rates of 8-10% and typically demand deposits or fixed deposits for a period of one year with the interest spread over 4-5%. So, they have difficulty in funding the hydropower projects which need loan for 10-15 years. Besides, the lending rate is as high as 14% which is not feasible for projects with rate of returns around 18%. This means, even with all commercial banks put together, they cannot finance hydropower projects of more than 100 MW annually.

The central bank of Nepal has recently issued a circular that it will provide credit to Banks and Financial institutions (BFIs) at an interest rate of 6.5 percent which they will have to re-lend at not more than 10 percent (Nepal Rastra Bank, 2011). This refinancing facility is targeted to projects upto 25 MW and for the period of 6 months which is very short because gestation period of such projects is relatively longer. If these companies want to take loan for further time period, they are required to pay the initial principal amount with interest. Only then, will they be eligible for further loans. It is very difficult to return the loan in such a short period as these projects don't start to generate revenue during this time. However, more than NRs. 900 million have already been invested in the sector in the last 4 months using this facility (Adhikari, 2012).

4.2.1.3. Capital Market

The capital market of Nepal is in a nascent stage and not in a position to invest sizable amount of capital in a sector which has relatively high gestation period. Furthermore, the capital market of Nepal is not showing any sign of improvement as Nepal Stock Exchange (NEPSE) index dropped down to 298.98 points on March 30, 2012 from the highest 1175.38 in August 31, 2008. Capital market is very essential for long term economic growth of any country. The size of capital market in Nepal is very small because only about 12% of public limited companies registered with Office of the Company Registrar are listed in NEPSE. The number of listed companies in 2011 was 209. Among them, most of the companies are banks and financial institutions (NRB, 2011). The growth of banking and financial sectors will not be sustainable till there is growth of real sectors such as industries, hydropower projects, etc.

The co-operation and coordination between capital market and hydropower developers will be equally beneficial for both because hydropower developers are often unable to raise the 30% equity required by lenders. They want to raise the 30% equity by raising equity in the local market by listing with the Nepal Stock Exchange. If cash equity requirement is lowered with introduction of additional collateral and personal guarantees, there are more chances of construction of hydropower projects as financing is a critical barrier to greater development of hydropower.

4.2.1.4. Miscellaneous Sources (Pension Fund, CIT, Insurance, Army Welfare Fund, etc.)

The pension and insurance sector has traditionally provided funds to the banks instead of directly investing in the projects. This is mainly because they do not have an expertise in calculating risk factors. These sectors must be encouraged to invest directly into the projects by increasing their risk taking capacity. The investments of these structured funds in the credit institutions may also address a particular asset or risk. For example, the investment could be made to buy down high interest costs of the credit

institutions such that the blended cost of funds is lowered. These sources are also used to sanction extension of financing facilities to cover longer tenure for the credit institutions in case their liability portfolio is shortened due to change in business environment as is currently happening in Nepal.

4. 3 Transmission Line Constraints

Currently, lack of adequate transmission lines and insufficient capacity of existing and planned cross-border transmission lines are a major constraint in evacuation of generated power. Therefore, new cross-border transmission lines are essential for commercial viability of mega hydropower projects. Besides, they are important for importing electricity from India during dry season as well. If adequate transmission lines are constructed to import 150 MW of electricity from India during winter season, load-shedding will reduce to some extent.

There is a complementary relationship between power demand in India and Nepal's supply potential. If all projects which have completed PPA with the NEA are constructed in time, the country can export surplus electricity to India during the summer. Similarly, there will be surplus electricity in India during the winter due to low demand during which Nepal can import because most of its projects are R-O-R type and will not produce sufficiently that time of the year when the glacial rivers don't have sufficient water discharge. It will be a win-win situation for both the countries.

After the construction of cross-border transmission lines, Nepal's power procurement will increase from existing 100 MW to 250 MW, significantly reducing load-shedding. The Muzaffarpur-Dhalkebar corridor project was planned to materialize this potential but the construction has not started due to incomplete financial closure from Nepalese side.

There are also various impractical environmental and forest guidelines which hinder construction of the transmission lines. The process of getting forest clearances is tedious and there is dual provision

of reforestation. For every tree that is cut down, the project has to plant 25 trees and for clearing 1 hectare of land for transmission lines, the project has to compensate the forest department with 16 hectares (MoFSC, 1992 &1994). Similarly, the process of land acquisition for the project is very complicated and the affected people demand 100% compensation with ownership of land, while the Land Act only mandates payment of 10% (MoLD, 2000).

Six projects have been in limbo for years due to lack of transmission lines. Among them, the government has decided to start constructing lines for Khare Khola Hydro Electric Project (24.1 MW) and Singati Khola Hydro Electric Project (16 MW). But the remaining four projects namely: Maya Khola H.E.P (14.9 MW), Solu H.E.P (23.5 MW), Tallow Solu H.E.P. (82 MW) and Mewa Khola H.E.P. (50 MW) have still not started their construction works due to lack of transmission lines.

It is sad that the government has not taken concrete steps to resolve transmission related problems in the projects even at the time of severe energy crisis (Rajbhandari, 2012, June 10). Appropriate arrangements have not been made to introduce wheeling charge system in transmission lines. If this system is implemented, various industries such as cement, iron, steel etc. can directly buy electricity from the power producers at higher prices according to their requirements.

The production of hydropower is capital-intensive, which makes it risky for the developer to embark on new project, unless there is a long-term predictable and stable legal and regulatory framework (IPPAN, 2010, May). The government should develop a policy framework to encourage Public–Private Partnerships, clearly delineating public and private sector roles (ADB, 2011).

Establishing a separate body to foresee construction of transmission lines is a welcome step in this direction. The World Bank and the Asian Development Bank have also extended their support to the government in this effort (Karobar National Daily, 2012, April 5).

4.4. Absence of Storage-type Projects

The country currently has an installed capacity of 705.56 MW including thermal plant of 53.41 MW. All the hydropower electricity is generated through run-of-the-river projects except 92 MW Kulekhani hydropower project. The country's power demand normally is around 946.10 MW at 6:30 P.M. and there is deficit of 520 MW in the winter season (NEA, 2011). There is a great mismatch in demand and the supply in winter season as run-of-the-river projects generate less amount of electricity due to less water discharge in the rivers and the private sectors have not been too keen on investing in storage type hydropower projects due to high cost, longer gestation period and other local issues including that of environmental impacts and displacement. Even the banks find run-of-the-river projects more affordable and relatively risk-free for investment.

However, the demand pattern in Nepal is fluctuating and there should be combination of run-of-river projects and storage type projects to maintain a proper balance. The government has realized this fact and recently the Ministry of Energy (MoE) and China's Three Gorges Corporation have signed a Memorandum of Understanding (MoU) to construct 750 MW West Seti Project in a Private Public Partnership model with a minimum of 25 percent share of Nepal Electricity Authority and a maximum of 75 percent share of China's Three Gorges (Republica Daily, 2012, March 1).

4.5 Issue of License

Licenses are held by various individuals who are not actual promoters or who do not intend to build the projects. It is another existent problem in the development of hydropower sector.

Most of these licenses were issued in the year 2008 without adequate study. The studies reveal that majority of license holders have inadequate financial and technical knowhow essential for the construction of a hydropower project. They hold licenses not for generating electricity but

to sell them to potential developers at higher prices. The Department of Electricity Development (DoED) issued licenses to 188 companies in the category of 1-25 MW with combined generation capacity of 1,178.55 MW. Among them, the license validity of 165 companies has expired in 2011 and that of remaining 23 will expire in 2013.

As a result, real developers have not been able to acquire license for the project. They have been forced to buy licenses from these pseudo entrepreneurs at higher price (DoED, 2012). Similarly, in category of 25-100 MW, licenses for 51 different projects were issued out of which license validity of 33 companies has already expired and that of remaining 18 projects will expire in 2012. In this period, only six projects have gone into construction phase (DOED, 2012). This clearly shows us that there was a fault in the way these licenses were issued.

4.6 Regulatory Constraints

NEA has conflicting roles as a buyer and as a joint-venture partner in power generation. It also has a monopoly over transmission and distribution of power. If it can reorganize its institutional structure, perhaps creating independent organizations for handling different functions will be beneficial. This will unbundle its generation, transmission and distribution capacity and help it operate on a fully commercial basis. Furthermore, it will facilitate private investment in hydropower industry (UNCTAD, 2003).

4.7 Institutional Constraints

It may be a good idea to separate departments within Energy Ministry according to river basins. A separate department for Koshi, Karnali, Gandaki and Mahakali will help to facilitate development of each in its own ways.

Also, the Nepal Electricity Authority (NEA) has neither credibility, nor capacity to obtain private sector financing. By fiscal year 1999, its return in investment was only 0.3 percent. So, it is necessary to reorganize

NEA by creating individual organizations for handling different functions such as generation, transmission and distribution (UNCTAD, 2003, p. 52).

4.8 Policy Constraints

There is an inconsistency among various hydropower policies. For instance, the Electricity Act provides a production license period of 50 years, whereas the Hydropower Development Policy suggests only 35 years (Government of Nepal, 2011).

Besides these inconsistencies, hydropower sector has also become victim of political instability. The Electricity Act was kept pending in the Constituent Assembly for a long time and now with the dissolution of the house, its future is in limbo. Two draft bills—the Nepal Electricity Bill and the Nepal Electricity Commission Bill—were expected to resolve many policy constraints including the unbundling of NEA.

Similarly, there are various impractical environmental and forest guidelines which hinder construction of transmission lines. The policies related to the investment by smaller financial institutions like pension and insurance sectors are challenges. All these have been explained in detail above.

4.9 Local Issue

There are some projects like Sipring Khola HEP, Bijayapur HEP, and Lower Indrawati which were delayed due to local level problems. This has increased the overall cost of the project.

Similar local level obstacles were created during maintenance and operation of Khimti and Indrawati (Rajbhandari, 2012, June 10). Local people made high demands such as construction of road, bridges, schools and hospitals before the hydropower developers which were unreasonable for the project to meet. It is the responsibility of the Government to build

such infrastructures from royalty and tax paid by the developers and it must play a facilitating role in managing local resistance to the project.

4.10 Pricing Issue

The price of electricity has remained constant for over a decade in Nepal. The latest price adjustments were done in September 17, 2001 and in 2012. The cost of production due to higher inflation rate has forced the NEA to buy electricity at a costlier price from the developers, while selling it at the same price to consumers. If price is determined according to market conditions, the financial condition of the NEA will improve and it can pay a better price to electricity developers while sustaining itself.

CHAPTER 5

Conclusion and Policy Recommendations

5.1 Conclusion

Modern societies are often characterized by their extensive use of energy. From everyday activities like use of simple tools and machines to the running of large scale industries—the daily functioning of societies strongly relies on energy. Given its extensive use, energy plays a crucial role in economic development.

In the context of Nepal which is rich in water resources, hydroelectricity holds much potential that can meet the energy needs of the country. From the development of agriculture to the realization of larger industrial prospects, electricity comes across as being highly essential for achieving economic growth. As opposed to expensive fossil fuels hydropower constitutes a reliable, adequate and affordable form of electricity for Nepal.

In spite of this potential for hydroelectricity, Nepal reels under the present energy crisis. And the situation seems to be worsening, as clearly shown by the magnitude of daily power cuts. With the increasing gap between the demand and supply of electricity, the pressing question is how this divide can be bridged.

Efforts to bridge this gap was made as early as in the 1950s. With the formulation of the very first Five Year Plan (1956-1961) electricity

development was taken as an issue of priority in the domain of development planning in Nepal and has remained so through all the Five Year Plans that were to follow. Along the Eighth Five Year Plan, emphasis was given specifically to hydropower: comprehensive set of policies for hydropower and energy development—such as the Hydropower Development Policy 1992, Water Resources Act 1992, Electricity Act 1992, and Foreign Investment and One Window Policy 1992 were formulated. This was done with a view to attracting foreign and well as domestic private sector participants who would invest in the hydropower sector of the country.

At the start of the new millennium, an open and liberal policy in the form of the Hydroelectricity Development Policy 2001 was formulated. It not only emphasized increased generation of reliable and high-quality electricity at low cost, but also aimed at spreading the use of electricity to rural areas along with generating surplus for export. More recently, the Load-shedding Reduction Action Plan 2012 has been formulated to solve the problem of the perennial energy crisis that Nepal continues to face. However, in spite of the continued priority given to the hydropower sector the ambitious ideas of the official policy documents need to be implemented to avoid the energy crisis continues to tighten its grip.

The reasons for the lengthening of the crisis are manifold, as discussed in this book. Political instability and bottlenecks in decision-making are the primary reasons. Other reasons also apply, e.g., that politicians have not been able to supplement the existent Policy with an appropriate Act that would substantiate the enactment of the original policy. The lack of conducive environment for business has not only hindered Foreign Direct Investment (FDI) but has also deterred the entry of domestic private players. The Nepal Electricity Authority, plagued by its incapacities and being the largest player within the energy sector, continues to hold major shares over both the production and the transmission of electricity. This has also hindered the development of hydropower in Nepal.

In order to bring the country out of this severe energy crisis and move the economy away from the present state of underdevelopment, some concrete steps need to be taken. In the section that follows these steps have

been formulated as concrete recommendations, based on the underlying study.

5.2 Recommendations

5.2.1 The Electricity Act should be enacted to enable the Hydropower Policy of 2001 to come into action which will address the issues related to large scale projects not being covered by the existing Electricity Act of 1992. The new Act needs to introduce a competitive bidding with zeroing system to make related business deals transparent as grievances and dissatisfaction from political to local level start with non-transparent deals.

5.2.2 A flagship hydropower project needs to be initiated as a National Priority Project in cooperation of private sectors with uninterrupted flow of work. It will help develop at least one mega hydropower project of national interest to mitigate load-shedding.

5.2.3 A mechanism needs to be developed to differentiate the tariff rate and PPA rate according to demand depending on seasonal variation and different times of consumption in a day. This will help NEA from going into further loss. It will also help NEA raise its income hence increasing its ability to pay better prices to Independent Power Producers.

5.2.4 As the construction of transmission lines is one of the major hurdles in the sector, NEA should construct transmission lines in areas where it has promised and in places where Independent Power Producers (IPP) are developing hydropower projects so that power is generated within the estimated time.

5.2.5 Financial closure should be completed on the Muzaffarpur-Dhalkebar cross-border transmission line on the Nepal side to enable exchange of power between Nepal and India as the two countries have good prospects of trading electricity in the near future. The exchange of power will also help in energy security in both countries as their power relation is complementary to one another.

5.2.6 Expenditure on hydropower development has to be increased to at least 5 percent of GDP. Government should mainly focus on construction of transmission network. Such would encourage the private sector to take initiation in terms of projects. As of now, the expenditure on electricity has been less than 3 percent of the GDP; and only around 1 percent for the majority of those years.

5.2.7 The functions (generation, transmission, distribution and maintenance) of the NEA should be unbundled to make it more efficient, transparent, and accountable. This reform will help NEA move in the right direction and further develop the hydropower sector.

5.2.8 A coordination mechanism has to be developed within the government line agencies such as Ministry of Forest, Ministry of Agriculture Development, Ministry of Local Development, Ministry of Energy, etc. to solve the disputed issues of forest clearing, compensation of land, employment opportunities to local people and so on.

5.2.9 Wheeling charge system should be introduced in transmission lines so that various industries are able to buy electricity from power producers as per their requirement at the negotiated prices. After introduction of this system, private players will be interested and encouraged to construct transmission lines as there would be more avenues for profit generation.

5.2.10 Policies should be designed to facilitate investment by allocating a certain proportion of total deposits of banks and financial institutions for the development of hydropower projects as a priority sector of investment. Financial institutions should be encouraged to provide loans to the IPPs where the refinance facility should be extended up to 2 years (currently 6 months) for hydropower projects.

5.2.11 In order to balance power supply during winter season, storage type projects should be constructed with introduction of proper

resettlement policies. Such projects store water during rainy season and thus, help in irrigation of winter crops and also control floods.

5.2.12 Public Private Partnership Models such as Build Operate Own & Transfer system should be promoted as far as possible. However, as license holding is one the challenges in the sector, licenses should be provided after sound assessment and analysis of the power producers and in instances where the producers have been only holding the license without carrying out the development work on the project, licenses should be revoked. Along with this, a mechanism should be introduced in the licensing system whereby project durations are determined on the basis of the size, type (storage and R-O-R), orientation (export and domestic consumption) and level of investment.

5.2.13 Arrangements should be made to increase institutional efficiency of related entities (NEA, Department of Electricity Development and Ministry of Energy) to provide timely service to the power producers.

5.2.14 As security is a key challenge in developing hydropower projects, provisions to ensure security of projects under domestic and foreign investments should be introduced so that energy crisis could be solved.

5.2.15 Tax incentives should be provided for which the provision has to be clearly mentioned in the

Income Tax Act as well. Excise duty/VAT should be exempted while importing plants, machinery and other materials needed in the construction of hydropower projects.

5.2.16 Project Development Agreement (PDA) on large projects in pipeline should be immediately carried out (e.g. Upper Karnali, Arun III, West Seti, Tamakoshi III, etc.). It provides policy level stability to investors and ensures returns from their investment.

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Annexes

Annex I: Identified Potential Storage Type Hydropower Projects

S.N.	Name of the Projects	Capacity (MW)
1	West Seti	750
2	Budhi Gandaki	600
3	Kali Gandaki II	660
4	Karnali Chisapani	10,800
5	Pancheswor	6,480
6	Dudh Koshi	300
7	Kulekhani III	45
8	Andhikhola	180
9	Langtang Khola	218
10	Madi Ishaneswor	86
11	Upper Seti	122
12	Kankai	60

Source: Retrieved from http://www.ippan.org.np/HPinNepal.html on May 4, 2012

Annex II: Provisions Relating to Fees

a) Internal Consumption Hydropower Projects

S.N.	Electricity Capacity	Up to 15 years		After 15 years	
		Annual capacity royalty, per kW	Energy Royalty, per kWh	Annual capacity royalty, per kW	Energy royalty, per kWh
1	Up to 1 MW	-	-	-	-
2	From 1 MW to 10 MW	NRs. 100	1.75%	NRs. 1,000	10%
3	From 10 MW to 100MW	NRs. 150	1.85%	NRs. 1,200	10%
4	Above 100 MW	NRs. 200	2.00%	NRs. 1,500	10%
5	For captive use	NRs. 1,500	-	NRs. 3,000	-

b) Export-oriented Hydropower Projects

S.N.	Type	Up to 15 years		After 15 years	
		Annual capacity royalty, per kW	Energy royalty, per KWh	Annual capacity royalty, per kW	Energy royalty, per KWh
1	Export –oriented ROR project	NRs. 400	7.5%	NRs. 1800	12%
2	Export –oriented storage project	NRs. 500	10%	NRs. 2000	15%

Source: Hydropower Development Policy 2001, P. 26

Annex III: Investments from Domestic Private Sector in Hydropower Projects of 1MW and above

a) Investments from Domestic Private Sector, 1994-2003
(Amount in Million NRs)

Year	Company Name	Construction Address	Fixed Capital	Working Capital	Total Capital	Capacity (MW)
1994	Himal Power Ltd.	Dolkha	4500	0	4500	60
1997	The Gorkha Hydropower Pvt. Ltd.	Baglung	409.16	12	421.16	3
1998	National Co. Ltd.	Sindhupalchowk	1013.5	66.5	1080	5
1999	Dadi Project	Lamjung	40	10	50	2.8
1999	G-Tech Nepal Pvt. Ltd.	Kaski	1753.11	90	1843.11	14
1999	Khumbu Bijuli Company Pvt. Ltd.	Solukhumbu	137.66	3	140.66	14

2000	Annapurna Group Pvt. Ltd.	Kaski	44.40	1231.22	1275.62	10
2000	Thulo Dhunga Jal Bidhut Co. Pvt. Ltd.	Solukhumbu	3400	10	3410	24.7
2000	Bhotekoshi Power Company Pvt. Ltd.	Sindhupalchowk	4680	80	4760	36
2001	Neha Engineering & Consultancy Pvt. Ltd.	Dhading	150	100	250	20
2001	Sanima Hydro Pvt. Ltd.	Sindhupalchowk	394.55	4.18	398.73	1.2
2001	Hewa River Power Development Co.	Panchthar	635.73	14.12	649.85	5
2001	Chilime Jala Bidhyut Co. Ltd.	Rasuwa	2405	27	2432	22.1
2002	Thoppal Khola Co. Pvt. Ltd.	Dhading	198.23	2.23	200.46	1.12
2002	Madi Power Pvt. Ltd.	Kaski	3037.22	45	3082.22	19.2
2002	Kolfu Hydro Company Pvt. Ltd.	Dhading	400	31.14	431.14	2.23
2002	Sweta Shakti Co. Pvt. Ltd.	Chitwan	225.18	5.89	231.08	15
2003	Beverian Nepal Pvt. Ltd.	Lamjung	588.89	51.92	640.81	4.5
2003	Sunkoshi Hydropower Co. Ltd.	Sindupalchowk	83	13.18	96.18	4.5

Note: Total Capital = Fixed Capital + Working Capital
Source: Department of Industries, 2012, May

b) Investment from Domestic Private Sector, 2006-2010
(Amount in Million NRs)

Year	Company	Address	Fixed Capital	Working Capital	Total Capital	Capacity (MW)
2006	Gandaki Hydropower Development Pvt. Ltd.	Kaski	493.19	22	515.19	3.1
2007	Himtal Company Pvt. Ltd.	Lamjung	10	440	450	250
2007	Green Ventures Pvt. Ltd.	Remechhap	245	5	250	51
2007	Barun Development Company	Jaljala 8	279.75	30	309.75	24
2008	Pashupati Engineering Power Company	Gorkha	46.6	3.4	50	96
2008	Welcome Energy Development Company	Phulpingdanda Batase	683.88	10	693.88	4.99
2008	Landmark Santoshi Company	Benighat Salang VDC	3390.98	7.13	3398.11	20.1
2008	Naulo Nepal Hydro Electric	Uiyalapu Gumda Thumi	488	12	500	65.6
2008	Balefi Jalbidhyut Company Ltd.	Sindupalchowk	1488	12	1500	20

2009	Lower Arun Hydro Electric Pvt. Ltd.	Mulpani, Mangtewa VDC	488	12	500	308
2009	Nikhil Jalshakti Pvt. Ltd.	Tatopani VDC 4	231	9	240	1.85
2009						
	Chaahare Khola Pvt. Ltd.	Ghormu/ Thanshi VDC	94	6	100	17.5
2009	Ambeshwor Engineering Pvt. Ltd.	Tukuche	194	6	200	100
2009	Aakhukhola Jalbidhyut Co. Pvt. Ltd	Tripureshwor	1046.34	14.34	1060.69	7
2009	Bhagwati Development Company	Pokhara 8	631.87	27.62	659.50	4.5
2009	Eastern Pvt. Ltd.	Bhojpur	105	995	1100	2.5
2010	Unique Hydel Pvt. Ltd.	Baramchi	444.56	4.82	449.39	4.2
2010	Mai Valley Pvt. Ltd.	Mabu, Mai Majuwa VDC	1526.63	14.56	1541.19	9.98
2010	Manang Trade Link Pvt. Ltd.	Chuwa Dewpur Bajung VDC	99.31	0.69	100	20
2010	Jywa Sajhedhari Pvt. Ltd.	Dailekh	200	10	210	6.2 GWh
2010	Sanima Hydropower Pvt. Ltd.	Chisapani, Dnabari VDC 5	2000	700	2700	15.6

Note: Total Capital = Fixed Capital + Working Capital
Source: Department of Industries, 2012, May

c) Investment from Domestic Private Sector, 2011
(Amount in Million NRs)

Year	Company	Address	Fixed Capital	Working Capital	Total Capital	Capacity (MW)
2011	Shiwani Hydropower Company Pvt. Ltd.	Chaksibote Dumrese VDC	340	10	350	5
2011	Nepal Hydro Developer Pvt. Ltd.	Bhimeshwor Na. Pa. 9, 10 & 11	580	20	600	3.52
2011	Hiraratna Pvt. Ltd.	Samudratar, Shikharbesi	340	10	350	5
2011	Nydi Ltd.	Lamjung	980	20	1000	20
2011	Molniya Power Ltd.	Danda Gau VDC 9	1460	40	1500	15
2011	Synergy Power Development Pvt. Ltd.	Kharer Gaurisankar VDC	380	20	400	10
2011	SN Power Holding Nepal Pvt. Ltd.	Bhimeshwor Menjung VDC	518	12	530	1759 GWh
2011	Electrocom & Research Center Pvt. Ltd	Pipaldanda Sanosiruwari 3	137	3	140	998 GWh
2011	Radhi Bidhyut Co. Ltd	Dhermu VDC 1,2 & 3	583.201	10	593.20	2561.98 GWh
2011	Tila Karnali Hydro Electric Company	Khadachakra, Daha VDC	1800	100	1900	97.28
2011	Ojoni Co. Pvt. Ltd	Jiri 3	342	3	345	2.4
2011	Energy Engineering Pvt. Ltd	Jorpati VDC 3	820	7.90	827.90	5
2011	Himalayan Power Partner Pvt. Ltd	Chiti VDC 1,2 & 7	3756.56	104.41	3860.97	5.75
2011	Laughing Buddha Nepal	Bhaming VDC 9	243.03	25	268.03	1.80

2011	Laughing Buddha Power Nepal	Bhaming & Fu Lingkati 9	287.29	25	312.29	1.80
2011	Sino Hydro Sagarmatha Power Co. Pvt. Ltd	Vulvule VDC 5 & 2	12355.31	22.8	12378.11	50
2011	Greenlife Energy Pvt. Ltd	Khare & Marbu VDC	2400	100	2500	25
2011	Satyam Urga Pvt. Ltd.	Jawalakhel	195	5	200	100
2011	Robost Energy Pvt. Ltd.	Nachryan VDC, Myagdi	5465.63	123.96	5589.6	42
2011	Mathillo Tamakoshi Ltd.	Lamabagar VDC 6	35171	119	35290	456
2011	Ruru Jalbidhyut Pariyojana Pvt. Ltd.	Harewa, Rupakot VDC	787.71	10	797.71	5
2011	Jumdi Pvt. Ltd.	Hasara VDC	291.66	10	301.66	1.75
2011	Tila Karnali Hydro Electric Co. Pvt. Ltd.	Khadachakra, Daha VDC	1800	100	1900	97.28
2011	Universal Power Company Ltd.	Suri & Khare VDC	230	20	250	8.26
2011	Assel Clean Solu Pvt. Ltd.	Garma & Tingla VDC	1875	25	1900	40
2011	Daraudikalika Hydro Pvt. Ltd.	Muchyok, Saurpani VDC	830	20	850	6
2011	Api Power Company Pvt. Ltd.	Dethala VDC	830	20	850	8.5
2011	Midim Pvt. Ltd.	Bhujung VDC, Lamjung	485	5	490	3.4
2011	Puwakhola One Pvt. Ltd.	Ilam Na. Pa, Santidanda	146.5	3.5	150	5.2

Source: Department of Industries, 2012, May

d) Investment from Domestic Private Sector, 2012
(Amount in Million NRs)

Year	Company	Address	Fixed Capital	Working Capital	Total Capital	Capacity (MW)
2012	Shiva Shree Pvt. Ltd.	Fulphingkatti, Marming VDC	2150	100	2250	22.2
2012	Dordi Jalbidhyut Co. Ltd.	Faleni, Dhodheni, Wansar	485	15	500	10.3
2012	Panchthar Power Co. Pvt. Ltd.	Bharpa, Yangnam, Nagin VDC	528	22	550	15
2012	Apollo Pvt. Ltd.	Goli, Rawadolu, Kumukastl	196	4	200	6
2012	Gelunkhola Pvt. Ltd.	Hagam, Barachi, Dhiche	490	10	500	3.2
2012	Rapti Hydro & General Construction Pvt. Ltd.	Shova Kanda VDC	245	5	250	5
2012	Union Pvt. Ltd.	Bhoje, Bhujung Karapu	366.1	5	371.1	3

Source: Department of Industries, 2012, May

Annex IV: Foreign Direct Investment (FDI) in Hydropower Projects of 1MW and above

a) FDI in Hydropower Projects, 1993-2008
(Amount in Million NRs.)

Year	Capacity (MW)	Nepalese Partners	Int'l Partners	Country	Actual Capital	Fixed Capital	Working Capital	Foreign Investment
1993	10-15	C. Group & N.E. Group	Monitor Int'l Pvt. Ltd.	UK	1100	1089	11	1.5
1995	2460 GWh	Himal Int'l Power Co. Ltd.	Resource Development Consultants	USA	4760	4680	80	1071
1998	5	N.B. Group Nepal	Lyse Craft D.A.	Norway	1080	1013.5	66.5	121.55
1999	14		China Guangxi Corp. Inc	China	1843.11	1753.11	90	404.1
2000	2.26	Munu Trading House Pvt. Ltd.	Waei Luoyang	China	146.95	141.87	5.08	22.04
2000	3	Arun Valley Hydropower Development Co.	Marushin Shitako Construct	Japan	274.99	269.99	5	21
2000	10	Kamal Bdr. Thapa & Annapur	Tong Da Eden Holiday Villa	China	1760	1727.90	32.09	369.6
2001	1.54	Lamjung Bidhyut Bikash Co.	S.C.P. Int'l Inc.	Canada	70	50	20	5
2001	1	Chandra Kumar Golchha	Macij Adam Koniuszewski	Poland	84.94	84	0.94	5

Contd...

2002		Anamal Prekash Singha	Luo Gaorang	China	94.45	33.93	60.51	60
2002	10		Hans Ober Veverisn	Germany	980	955	25	312
2003	102.82 GW	Shangrila Energy Ltd.	Interkraft Nepal A.S.	Norway	1500	778.91	721.08	76.68
2003	5	Moinia Power Pvt. Ltd. Inc.	Luo Baorong	China	734.39	719.28	15.11	41.43
2006	5	Ambika Shah	Hans Joseph Ober	Germany	100	96	4	15
2007	21.1	Santoshi Hydropower	Landmark Worldwide C.L	S. Korea	1990	1980	10	1990
2007	990 GWh	Brindaman Pradhanang	GMR Energy Limited	India	450	440	10	40
2007	51	Grin Menchars Pvt.Ltd.	Bhilwara Evergy Ltd.	India	250	245	5	19
2008	20.1	Santoshi Power Co.	Land Markpower	S. Korea	3398.11	3390.98	7.13	288.84
2008	4.99	Hari Bairagi Dahal	Neville Leslie Sareny	UK	700	693	7	144.16
2008	96	Pashupati Engeering Power Pvt. Co.	Aryantika Contractors	India	50	46.6	3.4	12.6

Source: Department of Industries, 2012, May

b) FDI in Hydropower Project, 2009-2012
(Amount in Million NRs.)

Year	Capacity (MW)	Int'l Partners	Country	Actual Capital	Fixed Capital	Working Capital	Foreign Investment
2009	300	GMR Energy Limited	Mauritius	500	490	10	365
2009	415.65 GWh	Patel Engineering Ltd	India	500	488	12	450
2009	482.0	SN Power Holdings	Singapore	530	518	12	530
2009	308	Brass Power Int'l	Brazil	500	488	12	500
2009	-	Mr. Om Prakash Ajmera	India	1500	1488	12	499.95
2009	60	Global Renewable Infrastructure	Canada	200	187	13	40
2010	1.752000 GWh	Aeither Energy Pvt. Ltd	India	170	169	1	27
2010	20	Ajax Infra P. Ltd.	India	1996	1966	30	900
2010	30	SCP international	Canada	3995.05	3955.15	39.9	1400
2011	40	Essel Intra Project Ltd.	India	1900	1875	25	900
2011	97.28	Ksk Energy Venture Ltd.	India	1900	1800	100	1520
2011	100	Raajratra Energy Holdings	India	900	885	15	198
2011		Kaligandaki Holding Pvt. Ltd.	Mauritius	200	194	6	200
2012	100	Tamakoshi Holdings Pvt. Ltd.	Mauritius	200	195	5	200
2012	212	Ksk Energy Ventures Ltd.	India	600	390	210	560
2012	100	Raajratra Energy Holdings	India	900	880	20	880

Source: Department of Industries, 2012, May

Samriddhi, The Prosperity Foundation an introduction

Samriddhi, The Prosperity Foundation is an independent, non-partisan, not-for-profit, research and educational public policy institute based in Kathmandu, Nepal. As the name suggests, Samriddhi works with a vision of creating a prosperous Nepal.

Initiated in 2007, it formally started its operations in 2008. The specific areas on which the organization works are:

i. Entrepreneurship Development
ii. Improving Business Environment
iii. Economic Policy Reform
iv. Discourse on Democracy

Centered on these four core areas, Samriddhi works with a three-tier approach—Research and Publication, Education and Training, Advocacy and Public Outreach.

As per the above mentioned four core areas, Samriddhi has been performing educational programs and researches—publishing several books, handbooks, articles and other publications. Samriddhi is also known for creating a discourse on contemporary political economic issues through discussions, interaction programs and several advocacy and outreach activities. With successful programs like "Last Thursdays with an Entrepreneur", it also holds regular interaction programs bringing together entrepreneurs, politicians, business community, bureaucrats, experts, journalists and other groups and individuals making an impact in the policy discourse. It also hosts the secretariat of the 'Campaign for a Livable Nepal', popularly known as Gari Khana Deu.

One of Samriddhi's award winning programs is a five day residential workshop on economics and entrepreneurship named Arthalaya, which intends to create a wave of entrepreneurship and greater participation among young people in the current policy regime.

The organization is also committed towards developing a resource center on political economic issues in Nepal with its Political Economic Resource Center (PERC). Besides this, Samriddhi also undertakes localization of international publications on the core areas of its work. Samriddhi was the recipient of the Dorian & Antony Fisher Venture Grant Award in 2009 and the Templeton Freedom Award in 2011.

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The NEGA Report 2012, being a consolidated document suggesting reforms on five key sectors of the Nepalese economy, is based on five detailed reports like this where the other four sectors are agriculture, education, infrastructure and tourism.

This study on hydropower has looked upon the sector from the perspective of economic growth and recommendations are based on how the sector can grow and consequently play a greater role in the economic growth of Nepal. Overall the report outlines the key hurdles impeding growth and provides recommendations to remove those hurdles while introducing new ideas to build on the potential in this sector.

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