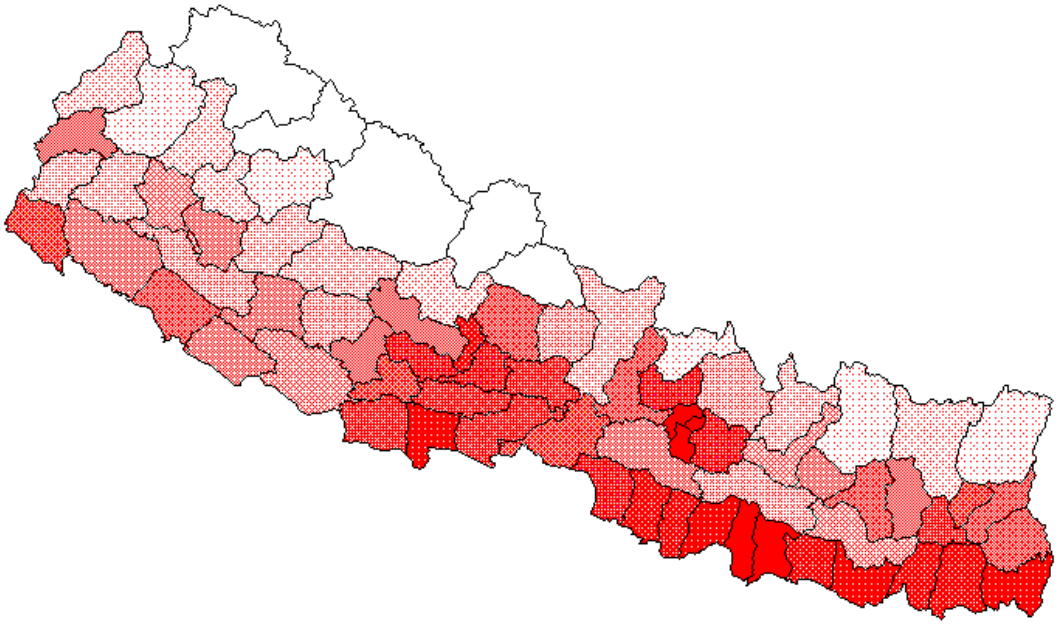
Asia-Pacific Regional Partnership
Towards the Realization of Sustainable Development: Role of Nepal



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1. Introduction

Nepal is a landlocked country bordered by India to the south, east and west and China to the north. Nepal is located at : 80°4' to 88°12' East longitude and 26°22' to 30°27' North latitude. The country has a land area of approximately 147,181 square kilometers, of which less than 25% (roughly 36795 sq km.) of total land is arable. The country supports a population of 20.54 million people (1993) with an average population density of 126 persons per sq km. Nepal is divided into 75 districts and three main geographical zones: Mountains, Hills and the Terai. The UNDP Human Development Index (HDI) places Nepal 149th in the world and second lowest in South Asia (above Bhutan, Maldives is not ranked) in Human development.

The Ministry of Population and the Environment was established on September 22, 1995. The mandate of the ministry extends to almost all areas concerning population and the environment. The major issues that the ministry will cover include: Population and it's management, reproductive health, environmental conservation, pollution control, environmental standards enforcement and monitoring and environmental impact assessment. The function of the ministry include policy formulation and implementation, dissemination of information, public awareness programs at national to local levels, coordinate among information units of the various ministries to avoid duplication of effort in environmental and population data and information, and represent the country or recommend experts to do so at international meetings.

The Environment Protection Council has been reconstituted to provide overall policy guidelines and directives to ministries and other agencies in the field of the environment. Recognizing that the environment is a multi-sectoral field, the council is made of various ministers, representatives of national commissions (including the planning commission, Chief Secretary and others), agencies and numerous experts in fields related to the environment. The chairman is the Prime Minister and the vice-chairman of the council is the Minister for Population and the Environment. The Ministry of Population and the Environment acts as the secretariat of the council.

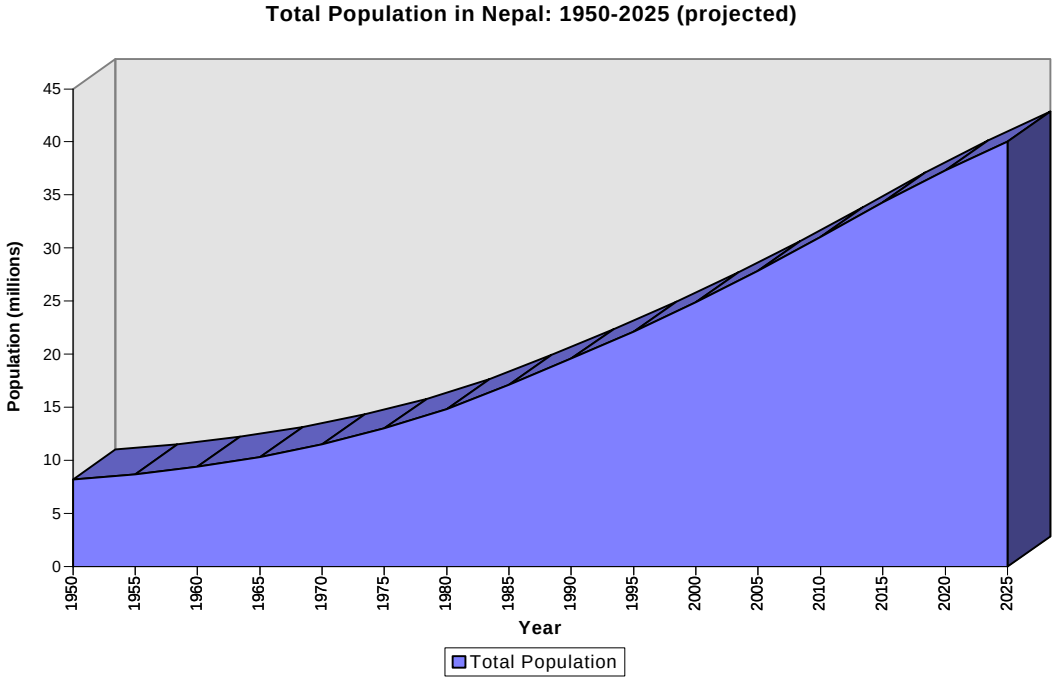
Action oriented programs have been initiated as envisaged in and recommended by the National Conservation Strategy and National Environment Policy and Action Plan. An umbrella type act for Environmental protection is being drafted and Environmental Impact Assessment (EIA) guidelines have been brought to use on a national level and for some sectors as well.

2. Emerging Issues

2.1 Population

Nepal has experienced a rapid growth in population over the last few decades. Total population rose from 8.1 million persons in 1950 to 14.86 million in 1980 to 20.5 million in 1993. The rate of population growth

has risen from just over 1% in the 1950s to just under 3% in the mid 1980s. The rate has declined somewhat over the last few years but remains growth over the last decade was just over 2.6%. The bulk of the population live in the Terai and Hills, with under 10% in the mountains. Recent trends in migration show an overall movement towards the Terai from both the mountains and hills. Population density is highest in the Terai, reaching 256 persons/sq.km. in 1991 (as opposed to 28 persons/sq.km. in the mountains). The rural population has grown more slowly than overall population, and urban population much faster. From 1950 to today, urban growth has not fallen below 4%, nearing 8% in the mid 1980s. Urban population remains a small part of Nepal's population, but it is growing rapid. Current population figures show Nepal's population at 20.54 million (1993), of which 90% resides in rural areas, with an estimated annual growth rate of 2.4%.



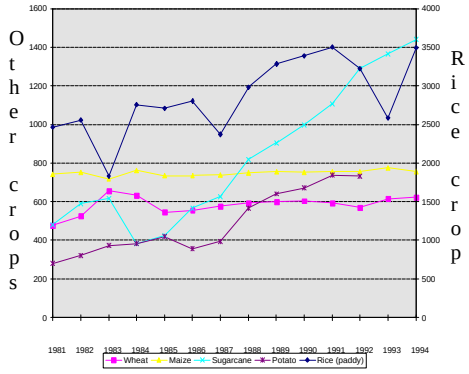
As population increases, it puts greater pressure on the natural resource base. This has led to unsustainable patterns of land use, most significantly for forests and land in the Terai. Forests are rapidly being degraded by over-use or cleared for other uses (settlement, cultivation). This is most serious in the Terai. Population pressure has led to marginal lands being used for agriculture, resulting in significant topsoil loss, particularly during the monsoon. There is also significant overuse of fertilizers and other agro-chemicals. This causes further loss in soil productivity and increasing pressure on the remaining land.

Population growth and pressure are a serious problem in Nepal, especially in urban areas and the Terai. Realizing that the pressure created by population growth are a major factor in most of the undesirable environmental changes in Nepal, the Ministry of Population and the Environment in pursuing policies and action plans to raise public awareness of this problem must be increased, and programs to slow population growth (such as education on family planning) should be promoted

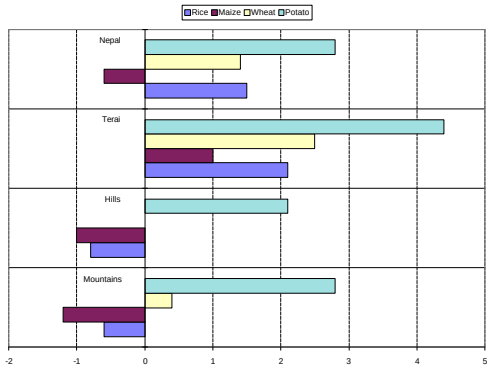
2.2 Agricultural Production

According to the available land use information, the pattern of land use has changed very little from 1961 to 1989. There have been notable increases in irrigated agriculture land and agriculture area and a noticeable drop in "other land". The main food crop produced in Nepal is rice(paddy), more than doubling the production of other food crops. Maize and wheat production remained fairly constant from 1981 to 1994, while sugarcane and potato showed a marked increase and rice was inconsistent but showed an average increase.

Per hectare production of all major crops except sugarcane is low. Rice production per hectare showed significant fluctuation over the period 1984-1994. Maize and wheat production per hectare declined over the same period. Sugarcane however showed a six fold increase during this period. In agro-chemicals use, K_2O used remained fairly constant while there was an upward trend in the use of P_2O_5. The use of Nitrogen increased quite steadily over the entire period, although there was fluctuation in the rate of the increase. These fluctuations seem to match quite closely fluctuations in the rate of increase in the production of sugarcane. Insecticide uses fluctuates, but shows an upward tendency until 1990, when it falls sharply.



Trend in Agricultural Production in Nepal
(000 metric tons)



Change in AAGR in Yields of Selected Crops
1975/6-1990/1

By and large, yield of many crops have declined in the Mountains and the Hills, though they have increases in the Terai. The increase in production in the Terai is mainly due to expansion of agricultural lands. The overall rate of growth in yields for Nepal has not kept up with the rate of population growth, resulting in reduced food supplies in some areas, leading to nutritional deficiencies. Adoption of high-yielding varieties (HYVs) with the improved husbandry practices could be considered to increase the crop production and retain the soil fertility.

Nepal is an agricultural country. The agricultural sector occupied over 20% of the total land area and it's contribution to GDP is over 40%. With the increasing population, agricultural production needs to be increased. Increased agricultural production can be achieved either by extension of agricultural land or increased productivity. Nepal, in the past, tried to increase it's productivity by introducing HYVs. Adoption of HYVs demand increased application of agro-chemicals and irrigation water. These activities leads to several adverse environmental consequences like salinization, land degradation, ground water depletion, surface and ground water pollution, and soil fertility decline. All these issues affects the food productivity and production.

Increasing land area is not a viable solution to increase food production in the future. Productivity needs to be improved, perhaps through the introduction of HYVs, farm mechanization or more efficient use of agro-chemicals.

2.3 Forest and Biodiversity

The forest plays an important role in the livelihood of Nepalese people as it is closely interlinked with agriculture and livestock sector. Moreover, over 75% of the population use fuelwood to meet their energy requirements specifically for cooking and heating. The annual per capita fuelwood consumption is about 708 kg in the hills and 689 kg in Terai. There is no other alternative source of energy available in rural areas leading to a high pressure on the forest resources. With the growing population, demand of food is ever increasing, accelerating the rate of encroachment of forest lands for agricultural production. Cultivation in the steep slopes is common in the hilly areas causing soil erosion, landslides and floods etc. The per capita forest is 0.26 ha in the hills and 0.11 ha in Terai which is far below than the national average of 0.37 ha. Due to this uneven distribution, all accessible forests in these regions are over-used. The average annual rate of deforestation between 1980 and 1990 is 1%, which is less than Bangladesh and Pakistan and higher than rest of the South Asian countries (Fig. 1). The data however, do not include the degradation of forests. The present average plantation rate, 6,100 ha. per year, is less than the deforestation which is taking place at the rate of 54,00 ha. per year. Forest area is decreasing while protected areas are increasing (Fig. 2).

The main causes of forest degradation are conversion of forests to agricultural land and uncontrolled logging in the Terai region and over exploitation and grazing in the hilly region. In the past, resettlement programs by the government and illegal resettlement during the time of political unrest were two other factors responsible for deforestation. Habitat destruction, over exploitation, grazing and introduction of exotic species are the main causes for the loss of biodiversity.

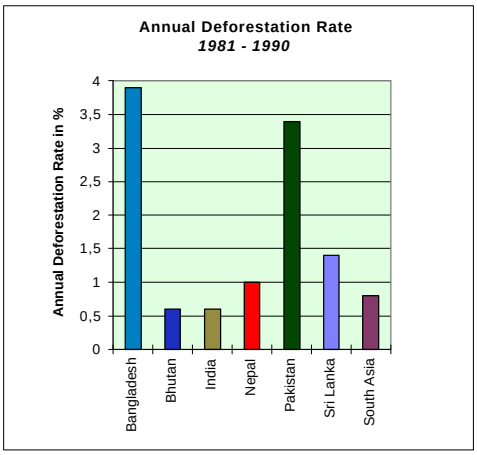


Fig. 1 Annual Deforestation Rate in South Asia

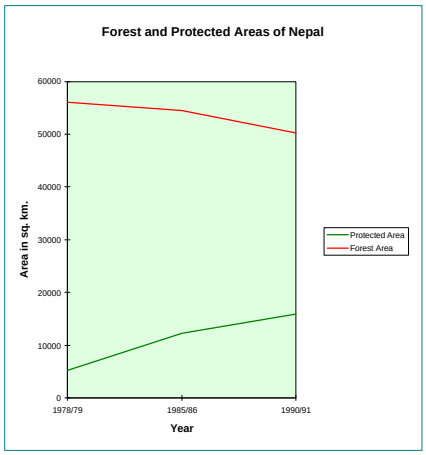


Fig. 2 Forest and Protected Areas in Nepal, 1978-1991

Formulation and implementation of the master plan for the forestry sector, implementation of community forestry program with the active participation of local people and increased interest from various interest groups to join in the forest conservation and management programs are positive aspects of forest management. Lack of full implementation of the master plan, legal enforcement and in-sufficient resources are the major weaknesses. An impressive network of protected areas (above the IUCN minimum percent criteria of 10%), involvement of NGO's and local people in the forest management are major strengths of

the conservation areas planning and management of Nepal. Lack of resources and intense pressure from the people in and outside the protected areas are major threats.

Active involvement of the people in the overall conservation and management of forest and biodiversity, revision of policies and plans according to the changing role of forests, enforcement of law and cross-sectoral linkages of the forestry sector with other sectors are in place for the effective forest management and biodiversity conservation in Nepal.

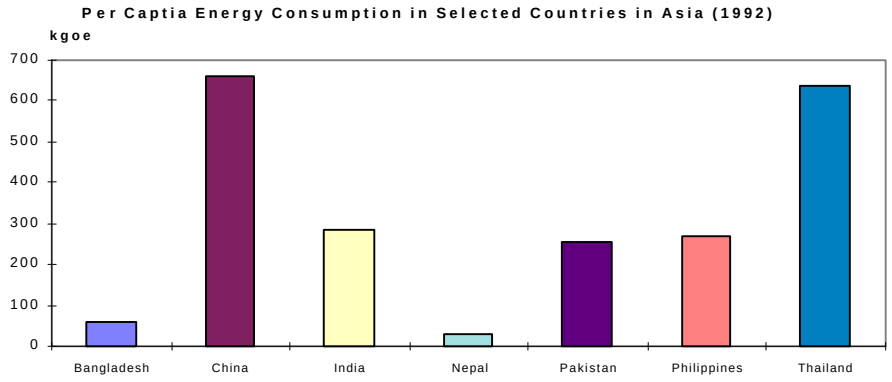
2.4 Energy

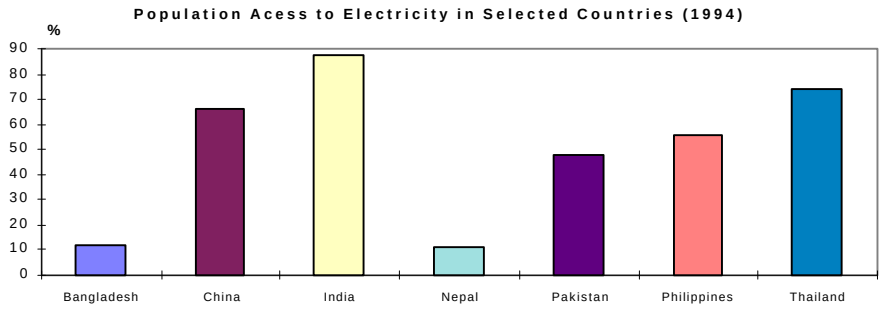
Nepal's energy sector is heavily dependent on traditional fuels such as fuelwood, agricultural residues and animal wastes. Currently, traditional fuels supply about 90% of the total energy requirements of the country while modern fuels (petroleum products, coal and electricity) account for the rest. In per capita terms, Nepal's consumption of modern (also often called "commercial") fuels is significantly less than almost all other Asian countries. Due to the low level of industrialization, most of the energy requirements in Nepal are associated with household activities like cooking, lighting and heating. The residential sector has by far the largest portion (92%) of the total quantity of energy used in the nation.

On the average, about one-fifth of the annual total development budget of the government has been spent on the energy sector. Most of the energy sector spending (about 70% or more) is related to the development or to the expansion of electric power system. The rest goes to forest development. In 1991/92, approximately one third of Nepal's export earnings had to be spent on importing petroleum products only. Considering that national output has been growing at the rate of 4 to 5% lately, such a development is likely to have severe implications on the balance of payments. In other words, unless future exports rise at the same rate as the import of petroleum products, the country will encounter the predicament of looming trade deficits.

More than 90% of energy comes from fuelwood. The contribution of fossil fuels is minimal. Hydropower could play a major role in fulfilling the energy requirement of Nepal in the long run.

Selected Energy Indicators: Where Nepal Stands





3. Conclusion

Hydropower generation is a key area for future development in Nepal. It will help to meet the energy needs of Nepal's rapidly growing population, as well the region (through exports to India and Bangladesh), without sacrificing the environment. As a clean, non-consumptive source of power, hydropower generation will help ease pressure on Nepal's forests and reduce pollution from fossil fuels by providing an alternative to fuelwood and fossil fuel use. At present only 232.3 MW, of a an economically viable and theoretically exploitable potential of 40,000 MW and 83,000 MW respectively, has been harnessed to date. This represents only 0.58% of the economically viable potential and 0.28% of the total theoretically exploitable potential hydropower capacity of the nation. With currently available technology and experience, the issues of land inundation and the relocation of residents associated with hydropower development should be satisfactorily resolved. His Majesty's Government of Nepal has taken active efforts to promote the sustainable development of the nation's water resources, involving both the public and private sector. This has resulted, for example, in the Kali Gandaki "A" hydropower project (144 MW, public sector) and the Khimiti hydropower project (60 MW, private sector) being ready to go into the implementation phase with two public sector hydropower projects, Modi Khola and Puwa Khola. This is directed towards meeting Nepal's energy needs, as well as providing a the energy base for industrial development, as well as exporting to the rest of the region, namely India and Bangladesh, where a market for electric power already exists.

His Majesty's Government of Nepal supports the Asia and the Pacific Regional Partnership. Nepal is currently a member of inter-governmental groupings such as the International Center for Integrated Mountain Development (ICIMOD) and the South Asia Environment Cooperation Programme (SACEP). Nepal has actively participated in Regional Meeting organized by ESCAP. Nepal as recently joined and supported the regional assessment network organized in partnership with UNEP's Environment Assessment Programme for Asia and the Pacific.