

Ecodevelopment;

An Imperative to National Development

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CONCEPTUAL BACKGROUND:

Ecodevelopment can be said as the concept of development, where environmental viability flourishes with development activity. The discussion for development or environmental quality which had been the focal theme in the early 1960s has been outdated and a new turn has taken place making the partnership between environment and development inevitable. The results of careless development patterns has exhibited so many repercussions in the life support systems in the biosphere. This has left a new mode of development pattern. This new mode of development, as it is also called an alternative pattern of development, takes care of human necessities and environmental capabilities while under going developmental activities. This concept of development is to a greater extent environmentally sound, economically feasible and socially acceptable. Further the core of eco-development is the meeting the needs of the present without compromising the ability of future generations to meet their own needs (WCED, 1987). The WCED further speaks of sustainable development as a process of change to meet the needs of the people as defined by them without lessening the potential of meeting their future needs, the needs of other societies or those of future generations (Lesh and Lowrie, 1990). Further the purpose of sustainable development has been clarified by Barbar B. Conable, President World Bank, as "reducing poverty and protecting the environment are two parts of the equation. If they are not carefully and accurately blended, that equation will be distorted and false. It must be noted that development that is not sustainable is not development at all, but only illusion of development.

To uplift the socio-economic conditions of the rural poor, without exerting much pressure on the environmental capabilities, eco-development approach can be guideline to enhance developmental activities in Nepal. Nepal is the region where environmental deterioration is going to be acute due to its diminishing resource base. Here development has become an essential factor to uplift the condition of rural poor. Among the different mode of development and eco-development can lead

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an appropriate development strategy. Now Nepal stands 5th in the row of least developed countries followed by Mozambique, Tanzania, Ethiopia and Somalia in the first order with 160 dollars per capita GNP [(World Bank, 1992); Asia week, Nov. 1992).]

ENVIRONMENTAL SITUATIONS OF NEPAL

Eckholo (1978) has aptly remarked "there is no better place begin with an examination of deteriorating mountain environment than Nepal. In probably no other mountain country are the forces of ecological degradation building so rapidly and visibly."

The Himalayan Kingdom, has undergone through serious ecological crisis, making difficult to survive in this rapidly developing world economic condition. The agro-based economy and heavy reliance on firewood and fodder coupled with rapid population growth have led to serious deforestation. The diminishing forest areas either for agricultural extension to meet the food requirement for 17 million population, or to provide fuelwood for cooking and heating as well as fodder for underfed livestock, have created great problems to maintain forest resources in sustainable condition (Mahat, 1986; Wyatt-Smith, 1982). In the rural economy of Nepal. The 3Fs, - food, fuelwood and fodder stand for the survival of the people, which are very much interconnected in subsistence hill economy. Food, fuelwood, and fodder crises have crippled the life support systems of the Nepalese people. The fragile ecological balance of the unstable mountain ecosystem is greatly upset by draining precious soil, which is the basis of agricultural productivity, by deforestation for agricultural extension and fuelwood supply and by the pressure of livestock population for fodder. All these situation are the result of deforestation as forest are the basic support of the environment as well as people. The rapid population growth with primitive technology has compelled the rural poor to be more aggressive to the already crippled environment as a result, the situation is getting worse day by day

HIGH POPULATION IN A DEBILITATED ENVIRONMENT

Population pressure has greatly impaired the sustaining capability of this mountain country. The population, 15 million in 1981 growing at a rate of 2.66 percent per year has become a burden to the fragile Himalayan state, where the sustaining capacity has been diminishing due to loss of top soil and limited economic opportunities. A small country of 147181 sq. km. in area, Nepal has to support 48 percent of its population in the Terai region, where economic

opportunities are strictly limited except agriculture. The hill region is pushing out its growing population because nothing except rudimentary farming can be done where productivity as already been declined. Nearly 90 per cent of the total population, which is solely dependant on land for surviving exert much pressure on agriculture and forest for their daily livelihood (Blakie 1987).

The ratio of persons per hectare of land is 1.07 persons but when only the agricultural land is taken into account the ratio rises to 7 persons per hectre. The ratio has great variation from 15 persons in the hill and mountain region to 4 persons in the Terai belt (Gilmur, 1984). But as present Terai areas are going to heavily exerted by population pressure. In the Nepalese hills, a number of natural resources are being threatened as population pressure increases.

The forest for fuelwood supply and ecological stabilization, agricultural land for food supply and forest and pasture fertility for fodder and compost production are dwindling to keep pace with increasing human numbers, they need careful attention. Population density in the highlands rather than development levels exerts pressure on ecological stability. The dominating force is the conflict between the increasing numbers of people at a minimal standard of living and the limited local resources. The quest for food, fuelwood and fodder must be balanced with the regenerative capacity of the land, for this sustainable growth of population number is the main imperative (Mauch, 1983).

The Himalayan ecology is young and fragile. The pressure of humanity upon it is great. Even where the population is small in relation to its total area, it is very great in relation to its cultivated area. Therefore, crop cultivation and search for fuelwood for household energy keep creeping further and faster up the steeper slopes. The vertical encroachment causes loss of precious forest, then loss of soil and ultimately results in a crippled economy in a debilitated environment (CERES 1986). It is a high time therefore that closer attention be given to the existing situation in each land use category. The basic principle of ecodevelopment should be land use zoning consistent with the ecological requirements. Each ecological land use zone requires different treatment depending upon the existing situation and emerging trends on the one hand and future demands on the other.

AGRICULTURAL SITUATION OF NEPAL

The main emphasis to develop agriculture in the country is to increase the rate of agricultural productivity so as to provide more gainful employment opportunities and equitable distribution of development benefits among the rural poor in different regions. But a rugged topography, poor infrastructure facilities,

and limited cultivable areas are the main obstacles that hamper hill and plain agricultural development in Nepal. The situations have been worsened by the socio-economic problems, where the majority of the population live below the poverty line.

The agricultural systems are on subsistence level. Almost all of agricultural production is consumed locally, and the farming systems make little use of non-locally produced agricultural inputs. Everyone in the Nepali villages participates in agricultural work, but majority of the farmers do not produce enough to fill their food needs. At the regional level, many hill areas have become food deficit areas. The number of food deficit districts have grown sharply from 31 in 1976 to 49 in 1980 out of 75 districts of Nepal. On the basis of current trends per capita consumable food production declined from 133kg. in 1979 to 119 kg. in 1987 giving an average from 254 to 226 days of minimum subsistence for year.

In reality, all the major crops which the Nepalese population depends for subsistence, are now failing to keep pace with the requirement of growing mouths. The productivity of the land is decling both in the hills and in the plains although land from the plains to the area above 4000 metres is put under cultivation. The interrelationship between population growth, the extension of cultivation into marginal land, declining yields and environmental deterioration has become the crucial problem, under which the Nepali agriculture has to undergo. Agricultural productivity has declined as more and more marginal lands are brought into cultivation. Agricultural development can not be brought about by farmers themselves because of their limited resource and modern knowledge. As it has been clear from experimental trails that a considerable scope exists for yield improvement with the adoption of better varieties of water management, nutrient supply and pest control measures. Soil fertility in the hills can be maintained by the recycling of organic residue, supplemented by farmyard manure and compost. The use of chemical fertilizer is extremely low, average 3 kg per hecter in Nepal. Hill farming is compost based and research is needed to improve the technique of producing good quality compost and use of organic manure. Since leguminous crops play significant role in maintaining soil fertility, it is also important to better varieties and improve their agronomic practices.

In the context of Nepalese agricultural condition, ecofarming practices can alleviate the pressure on cultivated land and can be helpful in maintaining environmental quality. Ecofarming, an ecological sound agricultural method uses the soil more rationally than do the convention agricultural practices. The method is less capital intensive, but more labour intensive, which is quite

method is less capital intensive, but more labour intensive, which is quite beneficial to Nepalese agricultural practices where labour has to be utilized more efficiently expending less capital.

THE SITUATION OF FUELWOOD SUPPLY

In Nepal, farmers make up about 95 percent of the population. The rural population uses 95 percent of all wood taken from forest as fuelwood. Moreover, nearly 87 percent of total energy consumption for the whole country is in the form of fuelwood. There is a direct link between the welfare of local communities and the use of forested land to fulfill fuelwood requirement. Fuelwood is the main source of energy used in Nepal and continues to be the main source for the most people particularly rural people for the foreseeable future. For the Nepalese rural economy the second energy crisis, i.e. the fuelwood crisis is much more acute than the first energy crisis i.e. the high price of petroleum, becomes more acute because most parts of the country are still outside the sphere of modern development which based on fossil fuel. The human energy spent on the procurement of fuelwood is of the greatest concern for the village people. The lowest per capita oil consumption of 24 kg. shows heavy dependence on fuelwood (UNDP, 1992).

The increase in population number and clearance of the forest area have now forced the village people to undertake a day-long journey to collect fuelwood for their daily needs. On an average 250-300 man-days are required now to collect fuelwood for a family of 5 persons in the rural areas of Nepal. The situation varies from region to region and is even worse in some areas. The tedious task of gathering fuelwood for domestic purpose has compelled the villagers to burn dung and agricultural residues, which could be more useful for enhancing the soil fertility and providing fodder. Women are the first victim of the daily fuelwood collecting routines but they are least consulted persons in finding out alternatives.

The existing forest cover data of the country show great variation ranging from 37 percent to 15 percent (Agrawal, 1984; UNDP, 1992). The figures are challenged by researches and academicians (Thompson and Warburton, 1985). What is certain is that forest are rapidly receding. If the present ratio of deforestation continues, Nepal will face acute fuelwood shortage within 2000 A.D. The dependency on forest for fuelwood is in general higher in the hills in comparison to lowlands. Due to the technical uncertainty and more confusing forest definition, it is difficult to speculate what is happening in the forest areas of this Himalayan kingdom. So those who have taken trouble to know about forest realise that a forest in a bureaucratic map is not always the same thing as a forest on the ground.

There is a great variability regarding the estimates of fuelwood demand and consumption as well. A currently accepted per capita fuel consumption for Nepal is 1 cu.m. (640 kg.) per year. The estimates for the current mixed farming system in Nepal require not less than 3 ha. of forest area to support 1 ha. of cultivated land and a requirement of at least 0.3 ha. is estimated for fuelwood alone. Under these criteria most hill regions of Nepal are deficient in forest cover including shrubland. This can not meet the fuelwood demand of increasing population which at present stands for 17 million. The problems in general are related to a dwindling resource base and the degraded local environment.

FODDER SITUATION FOR LIVESTOCK POPULATION:

As livestock population occupies crucial place in the agro-based rural economy the fodder situation in the country is the least studied aspect of the economy. The country supports high density of animal population, as one of the highest density in Asia. The livestock sector is the most mismanaged portion of agricultural system. In the hills, livestock rearing is considered to be the second major economic activity contributing to 27 percent of the rural household income. But fodder supply is largely based on stall feeding from crop residues supplemented by leaf fodder and grass collected from the nearby forest and grazing in the depleted forest/land. The tremendous degradation of the forest area resulting from the livestock grazing is central to the misutilization of Nepal's forest lands. The negative impact of the livestock population on Nepal's fragile environment can not be denied, which is largely responsible for the situation of the 34 percent forest in degradation. The condition is quite worse in the middle mountains, where forest areas are in very poor condition. It is not surprising that the biomass estimated to be consumed by animals in Nepal is twice that used for fuelwood (SATA, 1982). Forest are subjected to heavy grazing pressure at all elevations. They provide leaf fodder which are cut and carried for animal feeding and animal bedding. Fodder collection from the forest is declining over time as the forest land decreases in area and productivity. The scarcity of feeding resources in the hills and mountains, has left farmers no alternative but extensively utilize such land for grazing. Overgrazing has led to many ecological imbalances as one-third of soil erosion in Nepal is reported due to excessive grazing. The present carrying capacity of livestock units per hectare is only 0.31 in the hill, but the current burden is nine times higher than the level. So, even a slight increase in the animal number will adversely affect the forest ecology.

The cultivation of fodder crops in Nepal is still an unknown practice.

According to feed resource under the present level of productivity and land use pattern, Nepal could maintain 2.78 million livestock units. Therefore, the current 5.2 million units are exerting an excessive burden on the land and the situation will be worse by the end of the century. The heavy livestock burden in the debilitated mountain environment can not meet the nutritional requirement of the animals. The increasing number of animals with constant dietary deficiencies and animal diseases put together, is reflected in the low dietary intake of animals' products 7 percent in the Nepalese nutritional needs for minimum substance

ECODEVELOPMENT TO BE IN APPLICATION

Food and fuelwood supply for daily life of the mountain people and fodder provision to the increasing number of livestock of quantitative growth need serious attention on how to tackle the situation in sustainable way. As people, forest, and domestic animals are interconnected in the economy that people and livestock are basically attached to forest, as they extract the basic needs to survive. But the pressure of man and his animals on the forest, pasture, and cropland has reached its saturation point. So the urgent task is to stop deforestation strictly and afforestation be launched in prompt way. Afforestation with a view to provide fuelwood and fodder requirement and afforestation on the deserted terrace lands can be feasible in many areas with people's participation. The rural people are the direct sufferer from deforestation, therefore the people would be ready to participate this project, if they are well motivated through ecodevelopment camps. Unlike world oil crisis, the fuelwood and fodder problems are highly localised in developing countries like Nepal, so the problems are subjected to local solutions.

In the country, like Nepal where development has to be carried on in the deteriorating environmental conditions, ecodevelopment calls for appropriate attention. People's participation in the forestry management to meet the basic needs of food, fuelwood and fodder provision without destroying further the existing ecological balance has to be the development guideline for the country. The immediate need is to preserve wherever forest remain, but the viable answer to the ecological imbalance is to adopt a new development strategy-ecodevelopment, in which man and nature co-exist in harmony. Proper land use zoning following the fertile river valleys should be implemented without delay so as to control the land misutilization. Agro-forestry and social forestry programmes have also the potentials of making important contribution in this aspect. The programme should be promoted through appropriate investment and encouragement of the people.

Agro-forestry remains a man made strategy, its results and success depends on the will and dedication of the people applying it.

Nepalese rural economy is mainly based on biomass production, so for the betterment of the condition of the rural poor, there is need to enhance the productivity of biomass on holistic approach. To take care of cropland, woodland and pasture land and their connectivity with food and energy, Agro-Silvi-Pastoral model of development seems to be one of the model for rural development. The application of this model will lead to self-sufficiency at the rural level while keeping environment healthy and sustainable (Khoshoo, 1986). At present the programmes launched by the government like community forestry, leased forestry etc. can be said to be beneficial, but how far the local people can be involve in those activities is of main concern (Water and Energy Commission, 1987). The encouraging attempt for this time would be to launch ecodevelopment camps in the various parts of the country to impart the environmental education to the rural people from the grass root level.

REFERENCES CITED

- Agrawal, G.R., (1984), *Perpectives for Development of the Himalayan Resources*. CEDA, Kathmandu.
- Blakie, D., (1987), *Nepal- A State of Poverty*. Vikas Publishing House, New Delhi.
- Chopra, R., (1986), *The View from Bhutan*. CERES, Vol. 19, No. 3, page 24-27.
- Eckholm, E.P., (1978), *Losing Ground-Environment Stress and World Food Prospects*. Worldwatch Institute.
- Gilmur, G.A., (1984), *People, Forest and Erosion-Experiences from The Middle Hills of Nepal*". Paper presented at the IUPRO Symposium, Hawaii.
- Khoshoo, T.N., (1986), *Environmental Priorities in India and Sustainable Development*. India Science Congress Association, New Delhi
- Lesh, D.R. and D.G., Lowrie, (1990), *"Sustainable Development: A New Path for Progress*. The Global Tomorrow Coalition, Washington D.C.
- Mahat, T.B.S., (1986), *Rural Energy from Forest Biomass in Nepal*. Energy from Mountain Districts, ICIMOD, Kathmandu.

Mauch, S.P., (1983), Key Processes to Stability and Instability of Mountain Ecosystems. Mountain

Research and Development, Vol. 3, No. 2, pp. 113-119.

SATA, (1982), Mountain Environment and Development, Kathmandu.

Thompson, M. and M. Warburton, (1985), Uncertainty on a Himalayan Scale. Mountain Research and Development, Vol. 5, No. 2, pp. 115-135.

UNDP, (1992), Human Development Report 1992. United Nations Development Programme, New York.

WCED, (1987), Our Common future. World Commission on Environment and Development.

WEC, (1987), Fuelwood Supply in the Districts of Nepal, Water and Energy Commission, HMG Nepal, Kathmandu,

World Bank, (1992), World Development Report 1992. World Bank, Washington D.C.

Wyatt-Smith, J., (1982), The Agricultural Systems in the Hills of Nepal. Occasional Paper, APROSC, Kathmandu.