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# **The Green Roots of Red Rebellion: Environmental Degradation and the Rise of the Maoist Movement in Nepal**

Jugal Bhurtel, Ph.D  
Institute for Technical Training, Khatmandu, NEPAL

and

Saleem H. Ali, Ph.D  
School of Natural Resources, University of Vermont, USA

## **1. Introduction**

Nepal has been suffering from the worst crisis of its history since 12 February 1996. Since the onset of Maoist insurgency -- (the Maoists call it 'People's War')- more than 7000 people -- including state forces, insurgents and innocent civilians -- have lost their lives and many thousands are internally displaced in violent conflicts in the country<sup>1</sup>. The conflict was initiated from socially and economically deprived western hills of the Kingdom, but the web of violence swept through the entire country rapidly. On 26 November 2001 the state of emergency was imposed in the country. The government has deployed the Royal Nepal Army (RNA) to remote areas considered to be strongholds of the insurgents. However, several 'successful' attacks by the insurgents on many district headquarters and government infrastructure suggest that almost a year of SOE was anything but successful in curbing the violence in Nepal.

High profile visits to Nepal by the U.S. Secretary of State (January, 2002), followed by inspection of insurgency areas by the U.S. Ambassador to Nepal and U.S. military officials (April, 2002) "to evaluate the military needs of Nepalese government," highlight the international importance of the conflict<sup>2</sup>. These activities will have direct repercussion on Nepal's relations with its two giant neighbors- China and India. Political analysts fear that such international involvement and the severity of the ongoing civil war could be an indication that Nepal is fast becoming a 'failed state' and thus a playground of geopolitical actors.

### **1.1 Rationale**

The Maoist insurgency in Nepal has commonly been presented as a political and socio-economic problem<sup>3</sup>. Endemic and persistent poverty, inequitable distribution of wealth and lopsided regional policies, social injustice or political disparity, as well as chronic failure of governance at the center are perceived as the most visible and significant precursors of the armed insurrection in Nepal. There is no disagreement that destitution has been a major cause of numerous civil conflicts in many developing economies. However, political analysts generally limit their argument within these proximate issues and tend to ignore other causal linkages. Acceptance of political and socio-economic factors as ultimate causes of deprivation and conflict generally fails to provide tools much needed by the state to defuse a conflict. Since provision of physical infrastructure (classical interpretation of 'development') becomes the dominant strategy, policy makers fail to follow whether the lack of 'development' is the primary factor of persistent poverty, and hence rebellion, or are there underlying environmental issues that are often not elevated to the realm of 'high politics'?<sup>4</sup>

Ecologists and some scholars in security studies have argued that environmental degradation is the ultimate cause of civil strife in many parts of the world. However, their analyses are often not empirically grounded in the domestic politics of a region, and hence have not been widely accepted in policy-making circles. Anne Ehrlich et al. describe the pre-existing social, political, or cultural cleavages, regime types, and economic circumstances, as 'intervening variables' of the conflict, and analysts often interpret them as the conflict's immediate causes<sup>5</sup>. Political commentators both from Nepal and abroad on Maoist insurgency have concentrated only on these intervening variables. A web conference on the current crisis in Nepal organized by the Program on Humanitarian Policy and Conflict Research at Harvard University identified political and legal, social and ethnic, economic and regional and international political factors as the most significant aspects of insurgency in Nepal<sup>6</sup>. Similarly, one of the eminent political thinkers of Nepal, Nilamber Acharya, who was involved in the preparation of current constitution of Nepal in 1990, thinks that the Maoist rebellion is basically a political movement created by extreme poverty in rural Nepal and sustained by organizational skill and economic strength of Maoist<sup>7</sup>.

Exclusion from larger social, economic and political institutions may be a necessary but not sufficient cause of a conflict. In the context of Nepal, such analysis often fails to appreciate the complex inter-linkage between environmental degradation, prosperity, and poverty in the hills. Homer-Dixon hypothesized that "environmental scarcity simultaneously increases economic deprivation and disrupts key social institutions, which in turn causes 'deprivation' conflicts such as civil strife and insurgency"<sup>8</sup>. Moreover, according to him such civil conflicts particularly affect developing countries because of their over reliance on environmental resources<sup>4</sup>. The history of deprivation conflicts around the world indicates that rebellions are likely to occur in remote and marginalized regions, which are often plagued by erosion, resource degradation and depletion and hence increasing scarcity of renewable resources. With numerous examples of conflicts in many parts of the world, Myers noted that a decline in the environmental underpinnings of agriculture was a major or strong contributing factor of violence<sup>9</sup>. In fact, agricultural degradation is linked to the decade-long violence in one of the most prosperous states of India. Vandana Shiva traces roots of the Punjab tragedy -- commonly presented as an outcome of ethnic and communal conflict between two religious communities-- to the high political and ecological demands of the Green Revolution in India, which left the prosperous state with overextraction of natural resources, diseased soils, pest-infested crops, waterlogged deserts and disillusioned farming community that went violently against the centralizing state<sup>10</sup>.

In this paper we explore the causes accelerating the degradation of the environment that threatens the livelihoods of millions of poor people in the hills of Nepal. We argue that such environmental degradation coupled with demographic changes widened socio-economic disparities especially in the form of access to sufficient food and land among peoples in the Mid- and Far-western development regions of Nepal and indirectly led to the Maoists insurgency in these regions. Mounting massive anti-insurgency campaigns may provide an immediate relief from the present Maoists, but the mechanism that creates the phenomenon of red rebellion will continue to exist unless the root cause of the conflict is identified and addressed properly.

## **1.2 Methodological constraints**

Generally, social conflicts are the result of a series of causes, which are often inter-linked and trigger each other mutually. Hence, they cannot be explained with a mono-causal rationalization. As explained earlier, although environmental degradation plays a major role, it mostly remains at the bottom of a long chain of a cause-effect scenario of violence. Although the effects of ecological degradation on poverty and conflicts have long been debated, the evidence has been fragmented, owing in part to the poorly understood complexities of the issue. Moreover, it is difficult to establish an independent variable of the degradation with respect to which other variables change with time and finally lead to violent conflicts. Therefore, a quantitative demonstration of a direct link is hard to achieve<sup>4</sup>. It is even more complicated in a country like Nepal, where micro level studies are

rare and very limited number of research resources are available on the environmental degradation of the conflict zone. In absence of independent studies and reliable time series data, one has to rely on government statistics, the quality of which is not always fully reliable.

## **2. Background**

### **2.1 Geography of the Kingdom of Nepal**

Located strategically between China in the North and India in the East, West, and South, the small landlocked country of Nepal has a great variety of topography ranging from high mountains in the north to a narrow strip of a flat land in the south. Nepal comprises the middle third of the long sweep of the Himalaya, stretched between upper Indus River in Pakistan to Tsang Po and Brahmaputra Rivers in Tibet and India, respectively<sup>11</sup>. Due to vast topographical variation, Nepal has extremely diverse biogeographic belts of subtropical, temperate, subarctic, and even desert-steppe environments in its cross-section<sup>11</sup>. As a result the country is blessed with a unique biodiversity.

For administrative purposes, Nepal is divided into five development regions: Eastern, Central, Western, Mid-western, and Far-western; and each region is then divided into three ecological sub-regions: Mountains in the north, Hills in the middle parts, and Terai (flat land) in the south. Similarly, there are 14 zones in the country and each development region consists of two or more zones. Fragile highlands and mountains occupy two third of the country. In such harsh environmental and climatic conditions live more than 23 million Nepali people. The map of Nepal is shown in Fig. 1.



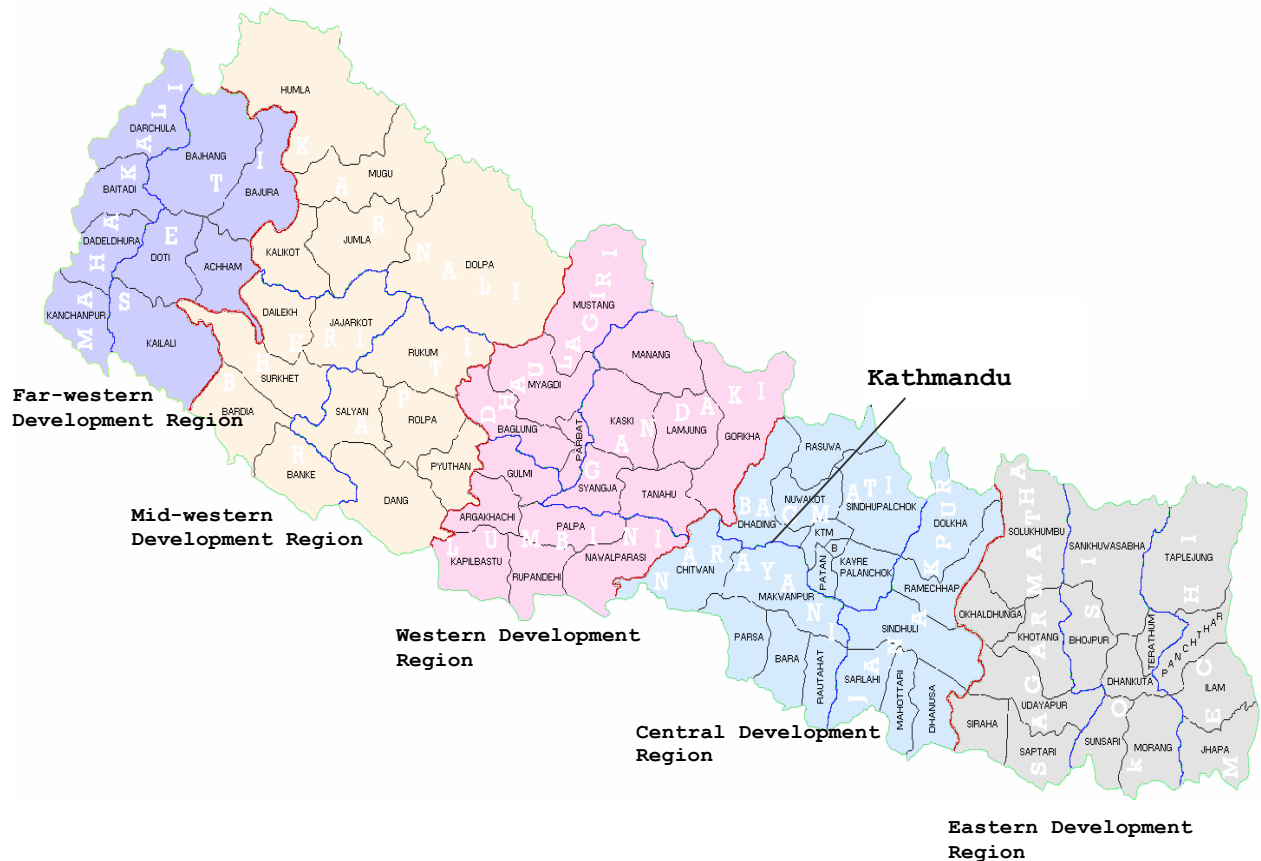


Fig.1 Development regions and districts of Nepal

## 2.2 A Brief Political History

Until recently Nepal was considered a peaceful Himalayan Kingdom. Apart from occasional tales of the Everest-conquering brave Sherpas and fearless Gurkha fighters, the country mostly remained in anonymity - a mysterious Shangri-la to the rest of the world. Unlike many of its counterparts in the subcontinent, Nepal did not have to endure the postcolonial trauma, as it was never colonized by foreigners. However, it had to go through a painful period of the autocratic Rana regime<sup>i</sup> that lasted for 105 years and its borders remained virtually closed for the first half of the 20<sup>th</sup> century. Although this isolation ended in 1951, it left the country with a devastating legacy of severe poverty, illiteracy, and backwardness, which hurt the kingdom even today.

The demise of Rana regime and a multiparty democracy, however, did not lead to a bright start for the country. The country made little progress in terms of tangible development. After almost a decade of power struggle and political experimentation, in 1959 a new constitution was finally promulgated and general elections for a national assembly were held in which the social democratic Nepali Congress (NC) Party held absolute majority. However, the political leadership could not take advantage of this unique opportunity. Instead, the political wrangling intensified in the kingdom, providing the monarchists with an opportunity to speculate that being an extremely poor country with a very low literacy rate Nepal still lacked political sophistication to remain a multiparty democracy. In addition, the Tibetan revolt against the Chinese in 1959-60 made the entire region politically volatile.

<sup>i</sup> Read Regmi, D. R.: A Century of Family Autocracy in Nepal, 2<sup>nd</sup> ed., Nepali National Congress, 1958.

Conservative forces went on to speculate that in such an externally volatile situation, Nepal would not remain a unified, non-aligned and independent state unless the king intervened to provide political stability and strong leadership. Consequently, on December 15, 1960 King Mahendra dissolved the parliament, disbanded all political parties, and new multitiered pyramidal party-less *Panchayat* System of governance was introduced, which was subsequently formalized by a new constitution in 1962. The constitution established the King as the head of state with sole authority over all governmental institutions, including the Council of Ministers and the parliament. Three decades of absolute monarchy, however, made little progress in dismantling the feudal structure of society; bringing development to the needy people of remote areas; and finding political reconciliation in the country.

During the autocratic *Panchayat* era “the top-down, donor-driven planning process lacked a connection with the local population in remote areas. Development projects were selected on an ad hoc basis, depending on the availability of external aid without regard to their overall integration, socio-economic justification, or long-range sustainability”<sup>12</sup>. Such an ad hoc arrangement of development, often made by autocratic and feudal bureaucrats, created disparities among the regions. The development gap between the mountains and the Terai regions, the eastern and western regions, and the urban and rural populations of the country widened. Forty per cent of the population was below the poverty line in 1975-76 and the proportion increased to 43% in 1984-85<sup>13</sup>.

Thus, the three decades of *Panchayat* System of governance, “tailored made to suit Nepalese condition and traditions”, as the Panchayat leaders loved to proclaim, miserably failed in both political and economic fronts. Outlawed political parties, such as Nepali Congress (NC) Party and several left parties united under a common banner of the United Left Front (ULF) continued their struggle to restore democracy, which culminated in a huge mass movement across the country in 1990. The *Panchayat* system was thus abolished and a shift to constitutional monarchy was achieved.

The country proclaimed the 1990 Constitution of the Kingdom of Nepal, drafted within a few months by representatives of the NC and the left parties. This is the legal base of Nepal's current political system and it not only enshrined fundamental human rights, but also brought sovereignty finally to the people. The constitution proclaims, “Nepal is a multiethnic, multilingual, democratic, independent, indivisible, sovereign, Hindu and Constitutional Monarchical Kingdom”<sup>14</sup>. Despite being the most democratic constitution the country has ever had, it was a result of a tripartite agreement and a series of compromises between the monarchists, NC and the ULF. It ignored the voices demanding a constitutional assembly and failed to recognize many distinct ethnic identities by institutionalizing a common culture of Hindu hegemonism.

The NC won the first elections held under the new constitution and United Marxist-Leninist (UML) became the formidable opposition in the parliament. The enthusiasm of the early 1990s was short-lived partly because expectations for political and economic progress were extremely high and partly because political leadership proved to be utterly unprepared and corrupt. All political permutations and combinations of governance among radically different political parties were experimented in the following 12 years in Nepal. All together Nepal has changed 11 governments in the last decade. Even the UML party formed a minority government in 1994, becoming the first communist party in the world to form a government in a monarchy. Amidst such political instability, economic development had to take a back seat. Donor-driven economic reforms and liberalization were conducted in great rush, which yet again proved to be devastating<sup>15</sup>. NC was blamed for abandoning its socialist agenda and rapidly moving towards a market economy. Hasty experimentation with market reform, however, did not help alleviate endemic poverty of the country.

Prosperity remains as elusive as ever. According to the World Bank, almost 50% of the Nepalese population survives below US\$1 a day<sup>16</sup>. The GDP growth rate in 2001 was below 1%.

The country remains dependent largely on subsistence agriculture. The share of manufacturing in the total economy is less than 10 percent of GDP. Increasing reliance on foreign assistance became the hallmark of successive and ineffectual governments. Economic inequality among various social groups in Nepal became wider and deeper. Leftist scholars in Nepal argue that the richest 10 percent of the population has control over 50% of the national income. To cope with abject poverty nearly one-third of the total labor force, especially from high mountains and hills, is forced to emigrate to India and other countries for low-paying jobs and some for services in Indian and British armies<sup>17</sup>.

## 2.3 The Maoist Insurgency

An ostensible alternative to the present predicament arose on 12 February 1996, when the Communist Party of Nepal (Maoist) or CPN-Maoist launched its so-called “People’s War” (*Jana Yuddha* in Nepali language) in the Mid-western hills to eliminate “feudalism and bureaucratic capitalism” from Nepal- a country which the Maoists think is still under “a semi-feudal and semi-colonial dispensation and thus has a *revolutionary objective situation*”<sup>18</sup>.

The insurgency was started with a 40-point demands presented to the government as a prerequisite for negotiation<sup>19</sup>. The ultimate goal was to “turn this beautiful Himalayan country into an invincible ‘red-fort’ and a shining trench of world proletarian revolution.”<sup>18</sup>. The experience of Sendero Luminoso in Peru seems to have provided many strategic lessons to the Himalayan Maoists<sup>20</sup>. Emulating the ‘Gonzalo Thought’ of the Sendero Luminoso movement, Nepalese Maoists - through their own ‘Prachanda Path’ (named after the leader of the movement Pushpakamal Dahal, a.k.a. ‘Comrade Prachanda’)- called for the “prolonged people’s war” that first liberates the poor villages from “a handful of ruling parasitic classes” and eventually surrounds and defeats the cities. This was precisely the kind of revolution that was employed by Mao in China<sup>21</sup>. It is important to note that the Mao’s original cultural revolution had appalling environmental consequences and indeed nature was abused quite perfidiously in that context, and hence we should not transpose any lessons from the Nepalese Maoist struggle to the original Maoist movement in China.<sup>22</sup>

Initially, the insurgents chose the Mid-western hills of Rukum, Rolpa, Salyan, Jajarkot and environs to begin their war because the location is remote and far from the capital and an oppressed ethnic population as an easy recruitment option for the Maoists exists in the region<sup>ii</sup>. While according to Nilamber Acharya even prior to the insurgency there was nominal existence of the state in that area and that could be the main reason why the violent struggle started from there<sup>7</sup>.

Armed assaults on police stations in rural districts, confiscation of property from oppressive landlords, and punishment of local ‘tyrants’ were the initial strategies that made the insurgents popular among the poor. Although the ethnic composition of the insurgents is not known, available evidences of the involvement of various ethnic liberation organizations such as Tharu National Liberation Front in the Terai region, Khumbuan Liberation Front in the eastern mountains, Newa Khala in the capital Kathmandu, and numerous faces of dead insurgents suggest that many Mongoloid ethnic groups (considered to be traditionally exploited by upper castes Brahmin and Chhetri or Thakuri) such as Magar, Rai, Limbu, Tamang, etc. and Tharus of Terai make up the core fighting cadre of the Maoist movement. Surprisingly, however, out of forty people recently listed by the government as the “top terrorists”, twenty-nine belong to the

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<sup>ii</sup> in the words of Comrade Prachanda “...[Western Nepal was chosen because] *geographically, there are no transportation facilities, there is no electricity, and communication is also very weak for the ruling classes.... people here are more oppressed by the ruling classes, and the government in Kathmandu is very far from here. And in western Nepal there are the Mongolian ethnic groups.... These nationalities are so sincere and such brave fighters-historically they have had this kind of culture. And upper caste chauvinism and feudal ties do not prevail in these nationalities*”<sup>20</sup>.

supposedly “oppressor” Brahmin and Chettri castes, including the supreme leader ‘Comrade Prechanda’ and one of the main ideologues of the movement Dr. Baburam Bhattarai<sup>23</sup>.

Interestingly, just like ‘Comrade’ Gonzalo of Sendero Luminoso movement, Nepalese Maoist leader Bhattarai has a doctoral degree from a reputed University. It indicates the involvement of highly educated middle-class Brahmins in the movement. Like Sendero movement, women and young people make up the core of Maoist militants. It is significant that observers think women now constitute a third of the Maoist movement in some of the most affected districts<sup>6</sup>.

Armed struggle by leftist parties is not a new phenomenon in Nepal. Inspired by the 1967 peasant uprising at neighboring Naxalbari in Darjeeling district of West Bengal, India (popularly known as the ‘Naxalite’ movement), many young leftist activists in the Eastern Jhapa District initiated the ‘class elimination of bourgeois’. Land reform was a core issue of that violence. However, the armed rebellion was quickly suppressed. Nevertheless, in spite of having a tradition of **factionalism** the communist movement survives and grows in strength in Nepal, because the slogan of utopian and egalitarian society remains highly appealing to illiterate and extremely poor masses of the country, especially in remote areas. However, poverty and disenfranchisement are penultimate causes and we argue that ever-increasing environmental degradation is the ultimate cause of the creation of the so-called ‘revolutionary objective situation’ in Far- and Mid-western regions for Maoists insurgents to grow and multiply.

### 3. Environmental dimension of poverty in Nepal

#### 3.1 Fragile Mountain Environment

Although the degree of reliance on the environment for survival varies from place to place, there is no ecosystem, which is “free of pervasive human influence”<sup>24</sup>. Human dependence on the environment is clearly pronounced in the hills of Nepal. Being a land-locked country with two-third of its area covered by geologically young mountains severely constrained by rugged terrain and limited resources, the lives of many Nepalese people living in remote and hilly areas totally hinge on natural resources that the surrounding ecosystem offers. Almost 80% Nepalese population is rural and subsistence farming is the major occupation. Hence, constant modification of the environment is inevitable. However, mountains and hills are sensitive to any changes because of their “specificities” such as inaccessibility, fragility, marginality, diversity, human adaptability and unique niche advantages<sup>25</sup>. Sensitivity to changes tends to increase with increasing altitudes in mountains.

Environmental carrying capacity of mountain regions is extremely low and, therefore, with repeated, high-intensity use of limited resources the chances of irreversible damage to the environment remain high<sup>26</sup>. Proximate causes of depleting limits of fragile mountain habitats in Nepal could be a variety of human interventions, such as overextraction of mountain resources, overcropping and overgrazing, disappearing traditional techniques of agriculture and dwindling niche advantages<sup>25</sup>. As a consequence, deforestation and soil degradation, erosion, flooding, landslides are becoming frequent, while necessary crop yields are declining.

Ever increasing demand for food for growing population exerts tremendous pressure on available land. Little agriculture is possible in high mountains, while the middle mountains occupying more than 60% of Nepal’s total land area offer only 35% of cultivated land<sup>12</sup>. Possibilities of farming in Nepal are limited by physical factors such as inadequate precipitation, low temperature, the mountains terrain, and thin and infertile soils<sup>12</sup>. Scarcity of irrigation water and poor soil quality limit the prospect of cropping intensification in many parts of the country<sup>27</sup>. Some recent data suggests that more than 20% area of the country is already under cultivation and it is estimated that approximately 33% of land area could be potentially cultivated if irrigation and soil fertility management facilities were provided<sup>12</sup>. However, provision of irrigation in many



parts of the country is financially not practical and available irrigation facilities are rudimentary. Hence, agriculture in Nepal remains heavily dependent on Indian Monsoons, which result from complex interacting phenomena and are thus highly unpredictable. Expansion of agricultural land is practically not feasible anymore, as most agriculturally suitable lands have already been brought under cultivation. Hence, encroachment of forests remains the only available option<sup>28</sup>.

### 3.2 Deforestation

The livelihood of rural poor completely depends on forests and hence forests of Nepal are one of the heavily exploited natural resources. Population growth, growing livestock numbers, and poor management are all contributing to forest degradation in Nepal. Historically forest management was not a priority of the state since the population was small and forest resources were abundant. In the hills the conversion of forests into farmlands was encouraged and remaining forests were managed by the local populations through various arrangements developed indigenously<sup>29</sup>. User rights, consensus on resource use, control of access by humans and livestock, and a balance between protection and utilization were the common characteristics of indigenous forest management systems that had effectively ensured a sustainable use of natural resources in the country.

Available literature on the rate of deforestation in Nepalese hills is conflicting. Despite spending a large chunk of budget on forestry management, the country still does not have an exact figure of forest resources and the rate of their disappearance. The most widely used 1986-Land Resource Mapping Project (LRMP) survey is too old to be useful. Deforestation in Nepal, however, is generally regarded as quite alarming. The 'State of the Environment 2001' report published by the United Nations Environment Program indicates that within the last 15 to 16 years the country has lost 24 per cent of forest coverage. Respective figures for Mid- and Far-western regions are higher at 28 and 31 per cent. Only 38 per cent of forests in the Mid-western region are physically reachable by local people<sup>30</sup>.

Rural populations depend on forests for fuelwood and fodder supply, and during the time of severe food deficit forest provides coping means to earn money or barter food. In 1998, approximately 80% of energy demand of the country was fulfilled by fuelwood. People are more dependent on fuelwood in the hills. Per capita fuel wood consumption in the Hills is estimated to be 640 kg/person/year, much higher than that in the Terai at 479<sup>30</sup>. Similarly, between 1985 and 1998, the overall population of livestock in the country increased by 20%. Grazing areas, however, remained constant in the same period putting more pressure on available forests. In the hills and mountains of Nepal, from 1984 to 1996, the population of cattle, buffaloes, and goats increased by 5.77, 8.30, and 9.37%, respectively, while that of sheep declined by 2.53%<sup>31</sup>. It is estimated that forest feed used by livestock in hills and mountains are 42 and 33%, respectively<sup>30</sup>.

Due to these reasons, the pressure on forests in all parts of Nepal increased sharply over the years. According to an estimate only about 29% of the total area of Nepal is under forest coverage at present. The forest area declined considerably since 1966, while at the same time the area of shrubs or degraded forests increased remarkably. The annual deforestation is estimated to be 2.3 per cent in the hills, and 1.3 per cent in the Terai<sup>30</sup>. The change in forest coverage in Mid- and Far-western development regions of Nepal is alarming. The UNEP report indicates that within 15 to 16 years these two regions lost 31 and 28% of their forest coverage, respectively. Both these records are higher than the national average of 24% (Table 1)<sup>30</sup>.

Table 1 Change in forest and shrub cover by development region (in thousand hectares)<sup>30</sup>

Development regions	1978/79		1994		Change (%)	
	Forest	Shrub	Forest	Shrub	Forest	Shrub
Far- western Development Region	989.5	60.4	687.4	263.9	31	337
Mid-western Development Region	1,649.7	77.3	1,192.4	442.0	28	472
Western Development Region	924.0	137.3	734.3	256.9	21	87
Central Development Region	1,104.9	222.8	918.6	233.8	17	5
Eastern Development Region	948.7	192.1	736.1	362.6	22	89
Total	5616.8	689.9	4268.8	1559.2	24	126

Nevertheless a remarkable paradigm shift in policy from 'state-controlled' to 'community managed' forests especially in the hills promises to halt further deterioration of forest resources. The number of so-called forest users' group (FUG) has steadily increased over the years. As of 18 June 2002 the total number of FUGs in Nepal was 11,147 covering the forest area of 860,000 ha and affecting 1,222,831 households, which is almost 28% of total number of households in the country<sup>32</sup>. However, in spite of concerted support from a number of international donor organizations, of the total forest area only 14% could be handed over to the community. Studies are also available to indicate that FUGs are generally controlled by local village elites<sup>29</sup>. Moreover, the concept of community forestry is primarily based on equal and not equitable sharing of forest resources. Therefore, despite being presented as one of the most successful stories of community management by both the Nepalese government and NGOs, the sustainability and real benefits of community forestry program to the most disadvantaged members of communities are still doubtful. The state machinery does not have the resources to monitor these area regions if they do not receive assistance from donor agencies. Due to the same reason community forestry program cannot be expanded as rapidly as desired by numerous user groups waiting for government approval.

### 3.3 Soil Degradation

A direct consequence of high population growth is rapid expansion of agriculture in environmentally sensitive and marginalized steep slopes and former forest areas. And also it causes constant fragmentation of agricultural lands as discussed earlier. Cultivation in numerous, fragmented and terraced plots in hills and mountains are not suitable for agriculture and can yield very little. Already in the 1960s Bishop had observed rampant erosion from fields carved from hillsides that had an angle of slope of more than 40° at elevations as high as 3700 meters<sup>11</sup> in Karnali. Erosion of soil from poorly managed slopping terraces was reported to be 20 to 100 tons per hectare a year. Expanding area of shrubs is an obvious example of land degradation in Mid- and Far-western mountains of Nepal. Increasing livestock population in the hills exerts tremendous pressure on grasslands, shrubs and degrades forests. A study conducted in 1985 suggested that soil erosion rates in over grazed hills below 1000 m were more than 200 tons/ha/year, which means a huge amount of organic matters, minerals, and nutrient loss and thus a big loss of potential grain production. Five tons per hectare of soil loss is equivalent to 75 kg/ha of organic matter and 3.8 kg/ha of nitrogen<sup>30</sup>. It is estimated that from entire Karnali River catchment basin, 1.7 mm of topsoil is removed annually<sup>11</sup>. Back in 1960s, Bishop had found that farm soil in Karnali had decreasing pH value and thus increasing need of lime application<sup>11</sup>. In high mountains of western and mid-western Nepal overgrazing is the major cause of soil erosion and desertification.

### 3.4 Demographic changes and shrinking per capita cultivated land

Demographic changes in Nepal are astounding. The country has witnessed almost three-fold increase in its population since 1952/54 -- from 8.5 million in 1952 to 15 and 18 millions in 1981 and 1991, respectively. The 2001 census shows that it has crossed the 23 million mark with a

doubling time of just 29 years<sup>33</sup>. The current population growth rate is 2.24%. At a fertility decline scenario similar to the median experience of many Asian countries, Nepal's population is expected to reach about 60 million by the end of the next century<sup>34</sup>. In addition, a very high in-migration from northern India facilitated by a common culture and an open border further raises the growth rate of the population in southern Nepal. Being a country with limited resources, Nepal certainly does not have the means to cope with such a Malthusian increase in population.

Terai bears the major burden of country's population with a constant migration of upland people, but the demographic changes in mountains and hills are also significant. In almost half a century since 1952/54, the hill and mountains witnessed a 100 percent increase in population<sup>17</sup>. Currently, the population distributions in mountains, hills and Terai are 7.3, 44.3, and 48.4%, respectively<sup>33</sup>. The distribution of population in ecological regions of Nepal is depicted in Fig 2. Although demographic changes in Mid-western and Far-western hills and mountains is not alarming (total 12.9%), rugged mountains and harsh climate limit the area suitable for habitation and cultivation in those regions. Yet the regions are heavily dependent on agriculture. In the three western most regions farm population constitutes some 95% of the total population<sup>35</sup>. Hence, it is necessary to view population density in relation to arable land. The area of arable land in Nepal increased from 2,287,500 hectares in 1981/82 to 2,323,400 hectares in 1991/92. During the same period the population increased from 15 million to 18.5 million and the average land holding size declined from 1.13 ha to 0.96 ha<sup>35</sup>. Farm sizes are much smaller in the western part of the country. In districts like Achham in the Far-western hill, the average land holding size is incredibly small at just 0.28 ha<sup>35</sup>. An agricultural holding is equivalent to a farm household and the average farm household in rural Nepal as per the 2001 census is 5.7 persons, whereas in Far- and Mid-western region the sizes are 6.19 and 6.22, respectively<sup>36</sup>.

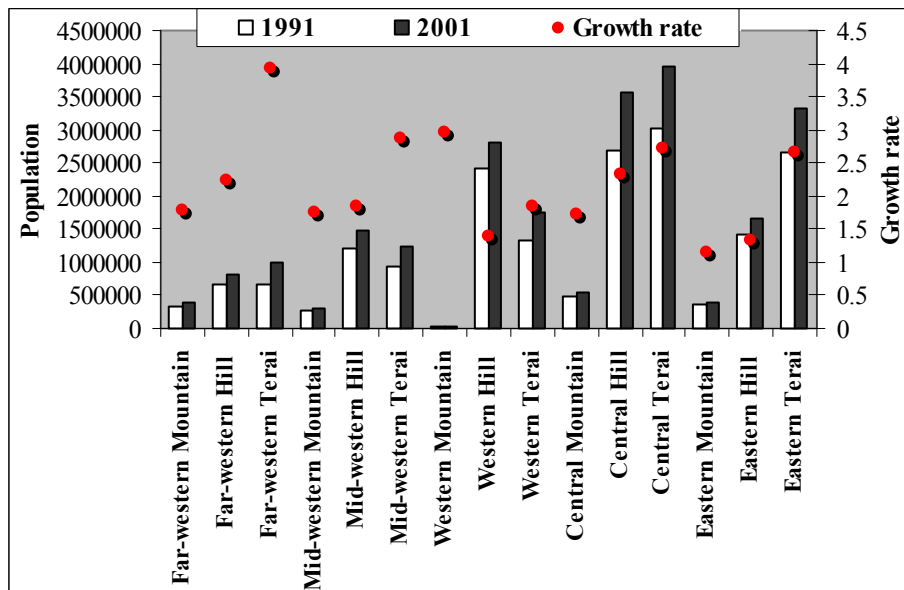


Fig. 2 Population distribution and growth rates in ecological regions of Nepal<sup>33</sup>

The arable land area in the mountain increased from 115,700 ha in 1981 to 162,300 in 1991, while during the same period it increased from 856,500 to 871,300 ha in the hills<sup>35</sup>. The 1991 agricultural census shows that more than 43% of land holdings were less than 0.5 ha and more than 69% were less than 1 ha. The per capita agricultural land declined from 0.16 ha in 1980 to 0.13 ha in 1999<sup>37</sup>. Bishop's research in Karnali zone (comprising of Humla, Jumla, Mugu, Dolpa and Kalikot districts in Mid-western Development Region) showed that due to very high population growth the per capita *khet* (irrigated land on which paddy can be grown) holding was only 0.1 ha/person in 1968<sup>11</sup>. The current value is considerably lesser than that.

Agricultural density of population is a better indicator of pressure on land in different parts of Nepal (Fig 3). Assuming that most agriculturally suitable lands have already been brought under cultivation, the increase in population to 23 million in 2001 must have increased the agricultural density to the threshold level in almost all parts of the country. If we exclude the central hill districts, where the capital Kathmandu is located, then the highest densities are found in Far and Mid-western hills and mountains. In 1991 the average density of population in one square km of arable land was 879, while in 2001 it increased to 1066. And in 1991 in Mid- and Far-western mountain regions it was 1102 and 1235, while in 2001 it increased to 1353 and 1438, respectively. Similarly, in Mid- and Far-western hills regions the densities increased from 1072 and 1411 to 1292 and 1695, respectively. The densities in districts like Accham, Bajhanng, Dailekh, Kalikot, Rukum, Mugu, Rolpa, and Jajarkot - vary from 1100 to almost 2300 persons per square kilometer of cultivable land. Incidentally all these districts are located in Mid- and Far-western hills and mountains and most affected by the insurgency in terms of total number of victims. Furthermore, the density becomes extremely high in irrigated land. Bishop reported that already in 1968 the average population density per km<sup>2</sup> of *khet* was 9,000 in Karnali zone<sup>11</sup>.

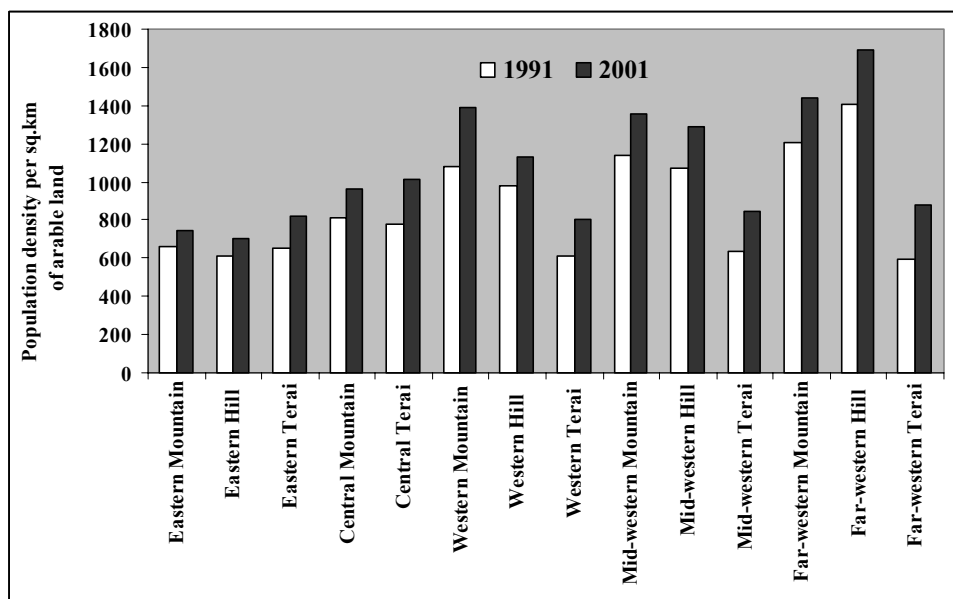


Fig. 3 Distribution of population density on cultivated land among the ecological regions of Nepal (Central Hill region is excluded)

Land ownership is another important issue in Nepal. Available statistics indicate that almost 40% of households is effectively landless or have landholding less than 0.5 ha<sup>38</sup>. In Far-western mountains and hills the percentages of marginal households (those with less than 0.5 ha of land) are 57 and 61%, respectively, while in Mid-western mountains and hills the respective figures are 55 and 48%. In Accham, Bajhanng, Dailekh, Kalikot, Rukum, Mugu, Rolpa, and Jajarkot- the districts regarded as severely affected by the insurgency- the percentage varies from 48% to 85%<sup>38</sup>.

#### 4. Consequences of environmental degradation for mountain population

Increasing population and constant loss of renewable resources has a huge negative impact on mountain people. It exerts high pressure on stagnant or declining production system, which in turn changes resource use pattern with adverse effects on the environment. That leads the vicious cycle of 'environmental degradation and overextraction'. As discussed earlier, in the hills of Nepal agriculture is constantly being extended to steeper and fragile slopes and to far and marginal lands previously kept under forests or pasture. Food production, however, is declining.

Although agriculture sector in Nepal has been the first priority sector of development since the initiation of planned development in the mid-1950s, land productivity remains stagnant indicating land degradation and excessive use of natural resources<sup>13</sup>. Since possibility of agricultural expansion is limited due to above-mentioned reasons and available technology is primitive and at subsistence level, food production in Nepal has not kept up with the population growth. Expansion of agricultural to marginal lands did manage to increase the total production of major crops, but their yields declined or remained stagnant over the years. In the early 1960s, the per hectare yields of Nepal's major crops such as paddy and wheat were significantly higher as compared to those of other South Asian countries, while at present the scenario is just opposite<sup>39</sup>. Rice and wheat yields are slowly increasing but they are mostly grown in Terai region. The stagnant maize production is of concern for residents of the hills.

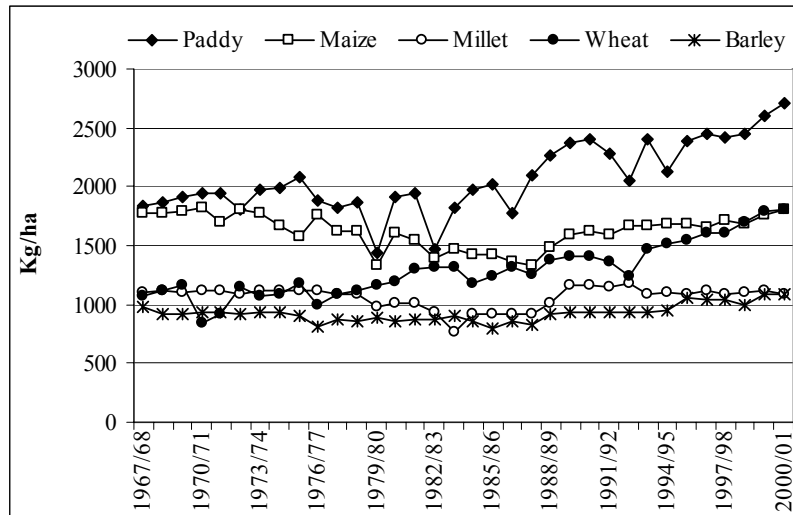


Fig. 4 Yields of major crops in Nepal<sup>40</sup>

Various studies have documented that crop productivity has declined due to land degradation. Besides, fragmentation of cultivable land into smaller pieces has limited mechanization in farm production<sup>37</sup>. As a consequence, during the last 20 years, Nepal has transformed from a net exporter of food to a net importer<sup>41</sup>.

Available statistics on food and agriculture shows that since 1989/1990 most of the years had food deficiency<sup>42</sup>. Out of 75 districts of Nepal, 55 districts representing all geological regions of Nepal had negative food balance in 1995<sup>17</sup>. The production and requirements of major crops (rice, maize, wheat, millet, and barley) are depicted in Fig. 5.

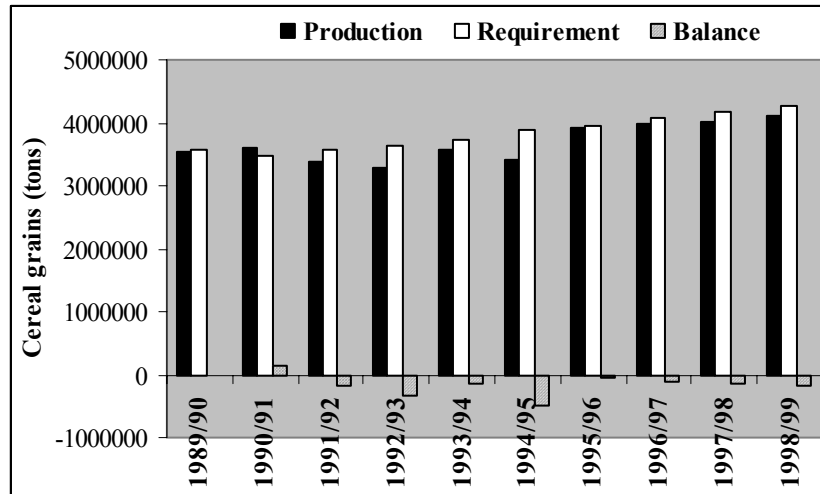


Fig. 5 Production and requirements of major crops in Nepal<sup>42</sup>

In the mountains and hills the deficit is particularly severe. Out of 16 mountain districts, 13 districts had negative food balance in 1985 that increased to all 16 districts in 1995<sup>17</sup>. Due to endemic food deficit, most of Karnali zone and the hilly parts of adjacent Mahakali zone suffer from regular famine like situation during the winter<sup>43</sup>. As compared to previous year the crop production in Bajura district is said to have declined by 60% in 2002<sup>44</sup>. The situation in other districts most affected by the rebellion is also not different. In aforementioned districts- Accham, Bajhang, Dailekh, Kalikot, Rukum, Mugu, Rolpa, and Jajarkot- the per capita food production in terms of caloric values (adjusted for adult equivalence) are 1197, 1060, 1556, 1270, 2966, 1773, 1845, and 2189 kilocalories/capita/day, respectively which are among lowest in the Kingdom<sup>45</sup>. The recommended adult caloric requirement for the Hills and the Mountains is 2,340 kilocalories in Nepal<sup>46</sup>. These values clearly indicate that excluding Rukum all other districts cannot produce minimum required food for survival. People in Far- and Mid-western hills and mountains are forced to spend the major part of their income on food.

Prior to the population explosion of 74,000 in 1920 to 132,000 in 1950 in Karnali zone, people used to have three meals (0.568 L each) of milled grain per day, which gradually decreased to two and some communities were forced to have only one daily meal during the period of preharvest even in the late 1960s. The entire zone produced only two-third of grain required for human consumption and the calorific requirement of an adult male was barely met<sup>11</sup>. In 1992, more than 30% of high mountain population was undersupplied, while in the hills and Terai, the figures were 47 and 23%, respectively<sup>13</sup>. Even in relatively prosperous Kaski district in the western hills, 41% of households surveyed (356) were less than six months self-sufficient and only 8% were found to have food surplus. A study conducted in 1996 found that over 63% of households in mountains and 55% in hills reported that their food consumption as less than adequate<sup>46</sup>. Due to severe food deprivation, malnutrition is prevalent among the children of low-income groups in the mountains and hills of Nepal. Five out of six children suffer from stunting in mountains. However, in addition to ecological degradation, the insurgency itself plays a detrimental role in declining land productivity as physically active population has been gradually migrating from the region to escape the terror from both the Maoists and government forces.

For people in mountains, livestock is second only to land resource for it provides a source of income, fertilizer, assistance in agriculture and transportation in some places, as well as means of coping in time of food deficit. During the time of severe food deficit, many communities trade their cattle for food grains. That is why the livestock population increased in the hills and mountains of Nepal<sup>40</sup>. However, researchers have shown that the local mountain communities are not benefited by the increasing livestock population. According to Tulachan "the *White Revolution*, in fact mostly benefited the comparatively well-to-do livestock rearers who happened to be located

in dairy areas in the plains and had access to modern technology<sup>31</sup>. Both men and animals compete for the same limited space available in the mountains. Livestock management is poor with overstocking and overgrazing as the dominant mechanism that again put more pressure on forests and pastures. Declining sheep population in high mountains might be a direct consequence of degrading pastures.

Depleting forest has a serious impact on women who are forced to spend more time in collecting firewood and fodder, which means less time available for agriculture and other income generating jobs. In some parts now firewood collection takes one day trip from farmstead<sup>11</sup>. In many other parts of Nepal, since firewood is no more available, poor people are forced to burn animal dung at the expense of their fertilizer needs. It has a huge negative impact on food production<sup>9</sup>.

As a consequence of soil erosion, subsistence farmers are regularly forced to abandon their farm terraces in many parts of hills. Forest depletion and soil degradation have intensified natural calamities such as flooding and landslides throughout the hills of Nepal<sup>25, 47</sup>. As compared to other hilly countries in the region, economic and human losses due to natural disaster are much higher in Nepal. Since 1990 to 1998, deaths due to natural calamities were 60 persons per ten million population in India. In Pakistan, China, Bhutan, and Myanmar the figures were 70, 30, 20, and 20, respectively, while in Nepal it was 350<sup>47</sup>. Apart from reducing the productivity of already poor lands, floods destroy infrastructure such as bridges that often disconnect an entire mountain region for months.

Due to extremely concentrated rainfall (up to 93% of annual rainfall occurs during June to September), devastating floods occur in the central Himalaya of Nepal during the monsoon months of June through September<sup>47</sup>. Destruction of footbridges that often provide the only link between remote mountain villages; demolition of irrigation diversions, mass-wasting by undercutting of steep, stream-adjacent slopes; and damage to floodplain agricultural land by erosion and sedimentation are some forms of damages caused by floods<sup>48</sup>. On the other hand the Mid- and Far-western regions of Nepal regularly suffer from drought and famine-like situation.

Compounded by all these factors, poverty in Nepal is endemic, widely varied among the regions and persistently increasing.

## **5. Situation of poverty across geographical regions of Nepal**

Much has been written on the situation of poverty in Nepal. The Human Development Report 2001 published by the United Nations Development Program (UNDP) recognizes Nepal as a country with "low human development". Life expectancy at birth in 2000 was only 59.5 years and almost 51% of adult population was illiterate. Furthermore, 47% of children under age 5 are underweight and almost 23% of them may not survive beyond the age of forty. Both infant and maternal mortality rates in Nepal are very high<sup>49</sup>. In summary, Nepalese people "... continue to suffer from low life expectancy, low literacy and living conditions that deny them dignity. In short, Nepal's levels of human development remain among the lowest in the world"<sup>49</sup>. That, however, is the national average. Poverty level is higher in mountain districts (56%) followed by Terai (42%) and hills (41%)<sup>17</sup>. The picture becomes gloomier in remote hilly areas of Mid-western and Far-western Development Regions. According to a study conducted using a composite index of 39 indicators covering Poverty and Deprivation; Socio-economic, Infrastructure and Institutional Development; Women's Empowerment; and Natural Resources Endowment and Management, etc. in all 75 districts showed that 17 of the 25 least developed districts fall in the Far and Mid Western regions. Wide variation in literacy rates, infant mortality rates, etc. were observed between Kathmandu and districts of Karnali Zone in the Mid-western region<sup>50</sup>. Karnali zone still does not have motorable road, which greatly hinders the economic development of entire northern part of Mid-western region. The hills and mountains of Far- and Mid-western development regions have one of the lowest HDI in the country (0.201-0.274); the GDP much

lower than the national average and life expectancy ranges between 42 to 46 years. These two regions have the lowest per cent of cultivated area (3-15%), but the possibility of its expansion is not possible because of rugged terrain (as indicated by the percentage of areas with slopes more than 30° and slopping terrace areas) and very high infant mortality rates due to severe malnutrition. Far from power center, they hills of Mid- and Far-western Development Regions remain neglected with a very low human development, deep gender disparity, high illiteracy and low life expectancy, low investment that inhibit their participation in economic, social, cultural, and political life<sup>49</sup>. A few environmental and social indicators of all ecological development regions of Nepal are depicted in Table 2.



Table 2 Environmental and social indicators of development regions of Nepal

Ecological regions	Total number of people killed	Slopping terrace area (%)	Area with slopes >30° (°)	Cultivated area (%)	Marginal farm household (%) 1992	Food/cap (caloric values)* 1994	IMR 1996	HDI 1998
A	b	c	d	e	f	g	h	i
Eastern Mountain	188	20	79	6	33	2264	90	0.361
Eastern Hill	290	36	45	24	28	2675	71	0.358
Eastern Terai	156	1	11	61	25	2791	74	0.390
<b>Eastern Dev. Region</b>	<b>634</b>	<b>19</b>	<b>45</b>	<b>30</b>	<b>29</b>	<b>2577</b>	<b>78</b>	<b>0.370</b>
Central Mountain	176	16	72	9	46	1882	89	0.288
Central Hill	541	31	45	27	37	2465	75	0.376
Central Terai	181	2	16	48	34	3077	72	0.331
<b>Central Dev. Region</b>	<b>898</b>	<b>16</b>	<b>44</b>	<b>28</b>	<b>39</b>	<b>2475</b>	<b>79</b>	<b>0.332</b>
Western Mountain	0	24	88	1	36	4102	78	0.311
Western Hill	959	32	63	18	41	2564	83	0.354
Western Terai	51	5	21	46	27	2620	90	0.316
<b>Western Dev. Region</b>	<b>1010</b>	<b>20</b>	<b>57</b>	<b>22</b>	<b>34</b>	<b>3095</b>	<b>84</b>	<b>0.327</b>
Mid-western Mountain	610	54	83	3	55	1472	140	0.201
Mid-western Hill	2635	48	65	15	48	2339	127	0.274
Mid-western Terai	726	6	39	23	23	3125	98	0.304
<b>Mid-western Dev. Region</b>	<b>3971</b>	<b>36</b>	<b>62</b>	<b>14</b>	<b>42</b>	<b>2312</b>	<b>122</b>	<b>0.260</b>
Far-western Mountain	177	39	81	6	57	1417	145	0.220
Far-western Hill	390	35	63	15	61	1639	126	0.251
Far-western Terai	329	2	23	23	25	4200	112	0.316
<b>Far-western Dev. Region</b>	<b>896</b>	<b>25</b>	<b>56</b>	<b>15</b>	<b>48</b>	<b>2418</b>	<b>128</b>	<b>0.262</b>
<b>Nepal (total/avg.)</b>	<b>7409</b>	<b>27</b>	<b>51</b>	<b>24</b>	<b>39</b>	<b>2508</b>	<b>94</b>	<b>0.321</b>

\* includes paddy, maize, wheat, millet, barley, and potato.

b- figures as of 5 Feb 2003, INSEC<sup>1</sup>; c-f,h – NDI<sup>38</sup>; g- ICIMOD<sup>45</sup>; i- UNDP<sup>46</sup>

Poverty in Nepal is a complex phenomenon varying not only spatially, but also socially. Social aspect of poverty among various groups of people is a significant factor of stagnation in Nepal. Caste and ethnicity are two such strong factors. Ethnic diversity in Nepal is represented by Mongoloid tribal groups from the north-east, who speak Tibeto-Burman languages, and Caucasoid caste people from the south-west, who speak Indo-Aryan language<sup>51</sup>. Among the latter, lower caste people (*Dalits*) are generally the poorest and most vulnerable group of society, which does not have access to enough resources in most parts of Nepal. Population of *Dalits* below poverty line is more than 65%. According to Bishop, in Karnali zone in 1969-70 the upper two castes (Brahmin and Chhetri) had control over 87% of irrigated *khet*<sup>11</sup>. Similarly, among indigenous people, the proportion below poverty line varies from 45 to 71<sup>51</sup>.

Lower caste and indigenous people are often small land holders who gradually transform into landless workers relying on scarce wage employment. This tendency adds to the number of the rural poor. Fig.6 indicates the correlation between landless and marginal farm households and HDI in all districts of Nepal (excluding the three districts of Kathmandu Valley). The districts with lowest HDI have the highest number of marginal farmers and these are the districts where the insurgency was originated from and where the concentration of lower caste and indigenous people is the highest in the country.

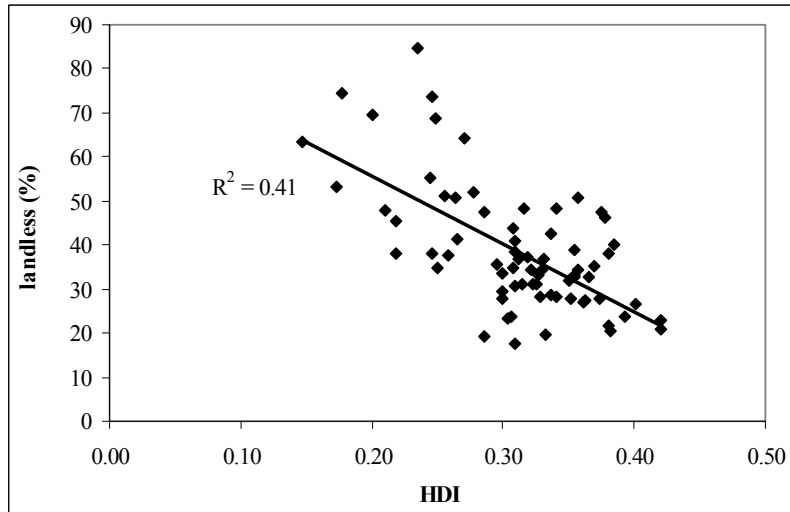


Fig.6 HDI vs landlessness in Nepal

In spite of having constitutional provisions, discrimination of lower caste people as untouchables still persists in Nepal. Due to low overall backwardness, the caste system is more pronounced in western Nepal. Nevertheless, caste and ethnicity do not seem to play a significant role in the insurgency in Nepal, because as discussed earlier most of the leaders of the movement belong to higher castes and ‘until the onset of current crisis, various ethnicity and castes lived together in near harmony’<sup>6</sup>.

## Conclusion

Indications, therefore, are there to suggest that the environmental degradation of the fragile hills and mountains could be the hidden and hitherto unnoticed ultimate cause of the Maoist rebellion in Nepal. The ecological degradation widened resource scarcity especially in the form people’s access to sufficient fertile lands in the Mid- and Far-western regions. When the resource is limited and widespread deprivation is prevalent, other socio-economic variables -- such as land tenure issues, resource capture by local privileged few, gender, caste and ethnic equations -- intervene. Such gradual loss of livelihood made people vulnerable to the exploits and rhetoric of Maoists, who offered an alternative (albeit violent). Policy interventions, therefore, should be directed towards rectifying the ultimate factor. Poverty cannot be alleviated without eradicating its ecological roots. The state needs to take immediate steps to identify and correct the causes of deforestation and soil degradation in the hills so as to restore agricultural productivity and create food security for mountain communities. Large-scale infrastructure development, as many researchers argue, does little help to mountain people because it is economically expensive and environmentally hazardous. Application of indigenous knowledge and appropriate techniques of natural resource management with due attention to mountain ecosystems would be instrumental in alleviating such stresses. We also recognize that the evidence presented thus far needs further analysis amidst multiple causality. Indeed, environmental degradation might be a necessary but not sufficient cause for conflict in this case as well. Nevertheless, the prevalence of these factors is certainly making the conflict more intractable and any lasting resolution effort will be well-served by considering environmental criteria.

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