

The Role of Environmental Scarcity in Nepal's Maoist Insurgency

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Abstract

In 1990 Nepal established a democratic system of government. However, after six years of democratic politics, it became clear that inequitable political representation – along ethnic, religious, caste, regional, and gender lines – remained the norm, and that disproportionate power remained in the hands of a few new political elites. In February 1996, a radical leftist fraction, popularly known as the Maoists, presented the government with a list of 40 demands before launching a ‘People’s War’ in the Hills of Nepal. Analysis of the conflict reveals numerous factors contributing to the grievances of the Nepalese people, including inequitable socio-economic and political access, bad governance including widespread corruption, and poverty. Although these explanations sketch the national and international context in which the crisis evolved, they obscure the role of ecological and demographic forces. Research has shown that environmental scarcity, which includes but is not limited to population growth, environmental degradation, and inequitable resource distribution, can be a contributing factor to violent conflict. In addition, the social and economic repercussions of scarcity, which include migration, loss of livelihood, and constrained agricultural output can motivate grievances and lead to violence. Nepal’s Hill regions exhibit conditions of environmental scarcity and its social effects. In addition inappropriate development activities have further strained the relationship between farmers and the land.

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1 Introduction

In 1990, Nepal experienced the so-called People's Movement, or Jana Andolan, which eventually led to the collapse of the party-less Panchayat system of government, dominated by the monarchy, and reestablished a democratic political system. Initially, the restoration of the multiparty system raised peasants expectations (Karki, 2002:213). However, after six years of democratic politics, it became clear that inequitable political representation – along ethnic, religious, caste, regional, and gender lines – remained the norm, and that disproportionate power remained in the hands of a few new political elites. (GTZ, 2002:26). As a result, in February 1996, after issuing a 40 point list of demands, the Communist Party of Nepal – Maoist (CPN-M), under the command of Pushpa Kamal Dahal, or “Comrade Prachanda”, launched a “People's War” in the Mid-Western region of Nepal. The ultimate goal of the war, as specified by the party, is to overthrow the government and establish a democratic republic and a socialist society (HSPH, 2001:3). In addition the CPN-M is committed to bringing about a revolution in agriculture, highlighting issues of landlessness and poverty as a matter of political conviction and a means to gather support (Bray *et al*, 2002:5). Part of their plan is to confiscate land that is owned by feudal and bourgeois landowners and to redistribute it to landless and poor farmers (Ibid:6).

Since the conflict began, fighting has steadily escalated and in November 2001, the king declared a state of emergency, named the Maoists a terrorist organization and deployed the army against them (GTZ, 2002:9). As of December 2002, more than 7000 people, including police, army, farmers, and Maoists, had been killed in the conflict. The 10,000 strong army of the CPN-M have declared five of the 75 Nepalese districts “Liberated Zones” and are active in over half of the rest, installing parallel “People's Governments” in as many as 25 districts (Economist, 2001). Currently around 1.5 million people live in areas under Maoist control and the party draws additional support from the nearly 90 percent of the Nepalese 24 million citizens that live in rural areas. In this context it is worth noting that the Maoists are following the classic strategy of guerrilla warfare described by Mao Tse Tung in his Red Book. This means winning over the countryside, encircle cities, and eventually taking the war to cities (GTZ, 2002:10). In addition, Maoists are reported to have mustered considerable sympathy among students and in December 2000 were successful in enforcing a nationwide school strike, closing nearly 40,000 schools and affecting more than five million students (HSPH, 2001:7).

The conflict in Nepal has many dimensions. However, there is widespread consensus that the root causes of the conflict are related to grievances of inequitable socio-economic and political access, bad governance including widespread corruption, and poverty (HSPH 2001:4-5; GTZ, 2002:10). Although these explanations sketch the national and international context in which the crisis evolved, they obscure the role of ecological and demographic forces. Seven years before the outbreak of the insurgency Ives and Messerli (1989:209) concluded from their studies in Nepal that “the predominance of a rapidly expanding subsistence population in the face of a depleting natural resource base, extreme political uncertainty, if not widespread unrest, and actually warfare in limited areas, together with a lack understanding of the uncertainty, are all interlinked.” This conclusion coincides with the theories emerging from a relatively new field of conflict

studies which links environmental scarcity to violent conflict. In Nepal, the rapidly expanding population, continued degradation of forest and arable land, and an inequitable distribution of resources has impoverished peasants and steadily eroded their livelihood. However, the situation cannot be reduced to simple Malthusian concerns, where marginalized and subordinated peasants are the scapegoats for environmental destruction. Societal class relations and the existing power hierarchies that determine access to land have continued to ignore the subsistence needs of the peasants and instead cater to the elite – political leaders, bureaucracy, businesspersons and some ordinary citizens. Development activities continue, for the most part, to be centralized and positivist in character focusing on raising productivity without attending to the subsistence needs of the peasant farmer. Environmental scarcity in Nepal has contributed to social stress and economic hardship by engendering migration, reducing agricultural productivity leading to food shortages and intensifying poverty. Thus environmental scarcity has played an important causal role in raising the grievances of the Nepalese and inciting the Maoist insurgency.

The aim of this paper is to show that environmental scarcity can play a causal role in conflicts and to apply the theoretical understanding of scarcity's role to the situation in Nepal. Firstly, it will examine environmental security discourse focusing on the theoretical linkages between environmental scarcity, poverty and conflict in an agrarian based society. Secondly, it will carry out an empirical analysis to determine the extent of environmental degradation and its social repercussions in Nepal with the ultimate goal of finding a causal relationship between environmental degradation and conflict in Nepal. Essentially it lays out a theory that connects environmental scarcity to violence and seeks to use Nepal as a case study.

2 Methods and Material

The main sources used for the thesis can be broken into two categories, one related to the conflict discourse and the other empirical studies on the status of Nepal's environment, socio-economic, and political conditions. In the first category Homer-Dixon's *Environment Scarcity and Violence* (1999), is most critical. It is his work that has laid the initial theoretical foundations that surrounds this debate. In addition, the article "To Cultivate Peace: Agriculture in a World of Conflict" by researchers Indra de Soysa and Nils Petter Gleditsch from the International Peace Research Institute - in Oslo (PRIO) and Leif Ohlsson's "Livelihood Conflicts: Linking poverty and environment as causes of conflict" provided a framework for agrarian conflict.

The second category of material focuses more on Nepal. Ives and Messerli's *The Himalayan Dilemma: Reconciling development and conservation* (1989) and Blaike, Cameron and Seddon's *Nepal in Crisis* (1980), as well as Metz's paper entitled "A Reassessment of the Causes and Severity of Nepal's Environmental Crisis" (1991) were critical in obtaining an understanding of past environmental degradation in Nepal. These authors opposed the simplistic "Theory of Environmental Degradation", backing up their claims with empirical data to show that past and current government policies and well as

the socio-economic conditions of Nepal are more to blame for degradation than 'ignorant' peasants.

3 Analytical Framework

The analytical framework of this paper aims to establish the connections between environmental scarcity and violence and the role that ineffective and corrupt government and development programs can play in instigating the grievances of peasants. Poverty is presented here as a critical part of the causal relationship linking environmental scarcity to violence. Poverty and environmental scarcity work together in common and parallel mechanisms to increase the grievances of peasant farmers. At the root of the most conflicts is bad governance, but it is the social and economic effects that provide the sparks for grievances to escalate into conflict.

In his analysis referred to below, Homer-Dixon paints a broad picture of the causal role environmental scarcity plays in conflict. Agricultural dependence in developing countries is closely linked to basic human needs and it is significantly affected by environmental degradation. De Soysa and Gleditsch from PRIO examine the pattern of conflict with a focus on the role of agriculture. Ohlsson picks up where de Soysa Gleditch left off, but pinpoints loss of livelihood as the critical factor in instigating violence. Finally, ENCOP highlights the role that development failures play in marginalizing peasants and instigating conflict.

3.1 Environmental Scarcity as a cause of Violence conflict

In the decade that followed the collapse of the Soviet Union western experts in conflict studies increasingly probed security issues beyond the direct military threats presented by the Cold War. In recent years, prompted by continued economic underdevelopment and political instability, policymakers have focused their attention on the causes of internal conflict. Some experts believe that in the increasingly globalized world non-military problems such as mass movements of people, the widening economic gap between north and south, and environmental degradation could pose significant security concerns. A group of researchers at the University of Toronto, known as the Toronto Group lead by Thomas Homer-Dixon, are at the forefront of the burgeoning new area of conflict studies. The focus of their research has been to examine the relationship between environmental scarcity and conflict. In short they have sought answers to the following three questions:

- 1) Can environmental scarcity contribute to violent conflict?
- 2) If yes, how can it contribute?
- 3) Is this contribution important?

In general their research has found that while environmental scarcity is never the sole factor in instigating violence it can act "as a deep underlying stressor of social systems, and it produces its effects by interacting with contextual factors" (Homer-Dixon, 1999:7). Statistical analysis of data, conducted by the Toronto Group, from over one hundred countries, regarding land degradation, water pollution, and forest loss, shows a significant

correlation between environmental degradation and civil strife (Ibid:18). Similarly, Norman Myers (1989:23-41) argues that the two concurrent trends of environmental impoverishment and internal social upheaval “can hardly be coincidental”.

Environmental scarcity, as defined by Homer-Dixon (2000:151), “is caused by the degradation and depletion of renewable resources (say, a specific tract of cropland), the increased demand for these resources, and/or their unequal distribution. Population growth and increased per capita resource consumption can cause depletion and degradation, which can in turn produce a decrease in total resource supply or, in other words, a decrease in the size of the total resource ‘pie’”. He outlines the three major sources of environmental scarcity as:

- Supply-induced scarcity - insufficient supply due to degradation or depletion of a renewable resource.
- Demand induced scarcity - increased consumption of the resource due to population growth or rising per capita resource consumption.
- Structural scarcity – unequal distribution which gives relatively few people disproportionate access to the resource while subjecting the rest to scarcity.

He then highlights the two major interactions between these scarcities *resource capture* and *ecological marginalization*. *Ecological marginalization* occurs when grave inequality in resource distribution joins with rapid population growth to drive resource-poor people into ecologically marginal areas, such as upland hillsides, areas at risk of desertification, and tropical rainforests. Higher population densities in these vulnerable areas, along with a lack of the capital and knowledge needed to protect local resources causes local resource depletion, poverty, and eventually further migration, often to cities. *Resource capture* occurs when powerful groups within a society recognize that a key resource is becoming more scarce (due to both supply and demand pressures) and use their power to shift in their favor the regime governing resource access. This shift imposes severe structural scarcities on weaker groups (Homer-Dixon, 1999:15-16).

These scarcities and their interactions, argues Homer-Dixon, lead to migration and social problems such as decreased agricultural productivity, social segmentation, and disrupted institutions. The result of these adverse social effects caused by scarcity lead to violent conflict in the form of coup d’etats, insurgencies, and group identity conflicts where tensions rise along ethnic, cultural, or religious lines. Homer-Dixon (1999:7) acknowledges that environmental scarcity is not sufficient by itself to cause violence and concedes that when it does contribute to violence, research shows that it always interacts with other political, economic and social factors. Similarly, Michael Renner (1996:53) of the Worldwatch Institute writes that, “it maybe the social, economic, and political repercussions of environmental change – rather than the change itself – that are the most important determinants of conflict over the environment”. To explain why some societies do not respond to scarcity with violence or turmoil Homer-Dixon introduces the idea of *ingenuity*, which he says is ideas applied to solve technical and social problems. When people in a country lack the appropriate ingenuity they experience an *ingenuity*

gap, which opens the door for conflict and unrest (Homer-Dixon, 1996:25-27). Ingenuity is essentially the existence of stable and well functioning political, social, and economic institutions. Similarly, Jack Goldstone (cited in Percival, 1997:8) emphasizes the role of political, economic and social factors in conflict:

...in all the progress from poverty to riches, virtually all states have had to deplete and/or degrade their natural resources. Most of those states do not succumb to violent war or revolution in the process. Those that do succumb do not fall simply because they depleted or degraded their resources, or did so faster or more completely than others. Rather, civil conflicts arise because during the transition from poverty to riches they develop other problems – mishandling issues of equity, of regional or ethnic competition, or squandering resources in a manner that halts their growth.

The importance of social, political and economic factors in conflict generation are not in dispute. However, what Goldstone fails to recognize is that ecological transformation alters the sociopolitical structure of society, disrupts the productive relationships and ultimately has a negative affect on the established constraints on and mechanisms of social peace (de Soysa, 2000:113-128). Thus, societies that face an “ingenuity gap” and suffer from environmental degradation are caught in a negative feedback-loop. In addition, Martinussen (1997:155) claims that environmental problems in the developing countries are often manifested more intensely and more immediately than in the industrialized parts of the world because survival margins there are slimmer and even minor decreases in yield and productivity in an already low-yielding agriculture may have disastrous socio-economic effects.

In Homer-Dixon’s research he has outlined five social effects of scarcity that can either singly or in combination substantially increase the probability of violence in developing countries. They are:

- constrained agricultural productivity, often in ecologically marginal regions;
- constrained economic productivity, mainly affecting people who are highly dependent on environmental resources and who are ecologically and economically marginal;
- migration of these affected people in search of better lives;
- greater segmentation of society usually along existing ethnic cleavages; and
- disruption of institutions, especially the state (Homer-Dixon, 1999:80).

However, he points out that environmental scarcity is not a sufficient cause of any of these five social effects and scarcity always interacts with other factors to produce these effects. Interestingly, as the paper will later show, all five of these social effects can be seen in Nepal, many in substantial magnitude.

3.2 The Role of Poverty and Agriculture

While the research of Homer-Dixon and the Toronto Group has provided an understanding of how environmental scarcity can contribute to violent conflict it has generally neglected the relationship between environmental scarcity and poverty. However, others, primarily researchers at the International Peace Research Institute in Oslo (PRIO), have expanded on the environmental securities debate and examined the

interactions between poverty, environmental scarcity and violent conflict in their research. Carsten Rønnfeldt, a researcher at PRIO, states that, “in a subsistence economy...where people’s survival is highly dependent on these renewables (i.e. cropland, forests, water, etc.), the terms ‘environment’ and ‘poverty’ are intertwined” (Rønnfeldt, 1997:2-3). The researchers at the United Nations have also promoted the idea that rural poverty is not merely a socio-economic issue; it is also an ecological issue (Acharya and Wright, 2000). Valerie Percival of PRIO (1997) writes that:

Poverty and environmental scarcity are inextricably connected. The poor rely heavily on renewable resources – fuelwood, cropland, local water supplies – to meet their needs, which contributes to environmental scarcity. As renewable resources become increasingly scarce, people become more impoverished: farmers’ incomes fall, the nutritional status of the population is affected, and if food imports are required the country’s foreign exchange reserves may be exhausted.

While poverty can be an ambiguous concept with objective and subjective dimensions the current development discourse has acknowledged that in addition to social and economic poverty, there is ecological poverty. In order to achieve sustainable development, Acharya and Wright (2000:32) state that, “social capacity to relieve human poverty must be complemented by economic capacity to overcome income poverty and by ecological capacity to conserve and wisely use energy, raw materials, natural resources and basic global systems on which we depend”. Faber (cited in Shrestha and Conway, 1996:319) sees human poverty and environmental scarcity as two faces of a single process and writes that, “like human poverty, environmental crisis...stems from unequal distribution of land and natural resources. That environmental destruction should parallel the destruction of human lives is not coincidental”. This conclusion bears resemblance to Homer-Dixon’s concept of structural scarcity, where environmental scarcity is caused by inequitable resources distribution. Therefore, in a subsistence based economy the relationship between poverty and environmental scarcity is largely reciprocal. The references cited above show that there exists a substantial theoretical framework examining the links between poverty and the environment, but a comprehensive framework explaining the links between environmental scarcity, poverty, and conflict are still lacking (Rønnfeldt, 1997). The Brundtland Commission’s report on sustainable development, Boutros Boutros-Ghali’s *An Agenda for Development*, and recently the detailed scholarly studies of conflict by Paul Collier and Michael Brown have all cited poverty as a primary underlying cause of conflict and civil violence (de Soysa and Gleditsch, 1999:18). The Brundtland report expressed a need to gain a better understanding of how poverty, environmental scarcity and conflict interact, and noted that an understanding is needed of how “poverty, injustice, environmental degradation and conflict interact in complex and potent ways” (WCED, 1987).

In their article, “To Cultivate Peace: Agriculture in a World of Conflict” de Soysa and Gleditsch stress the importance of agricultural dependence in conflicts:

Most of the armed conflicts, whether domestic or international, are concentrated in regions heavily dependent on agriculture, such as South Asia, Central Africa, and parts of Latin America. In countries that have a low dependence on agriculture [...], we find only a handful of conflicts.

Indeed, only five out of 63 states who exhibit a low dependence on agriculture have suffered armed conflict after the Cold War (1999:17).

Furthermore they state that, “conflict-producing conditions that may emanate from agricultural and rural issues, such as land tenure conflicts, are manifestations of the incapacity of social and political systems to handle such crisis.” In addition degradation or depletion of the arable land not only diminishes economic productivity but also threatens the very survival of the agrarian poor. Dropping agricultural output can, in Homer-Dixon’s (1996:98) words, “weaken rural communities and institutions by causing malnutrition and disease and by encouraging people to leave; constrained economic productivity corrodes confidence in the national purpose and weakens the tax base; mass migrations of people into a region can disrupt labor markets, shift class relations, and upset the often institutionalized balance of economic and political authority among ethnic groups; and social segmentation can prevent the reform and development of new community-based institutions”. Thus, peasants faced with losing their livelihood and the hopelessness of surviving in the margins find themselves caught in vice between rising scarcities on one side and failed institutions on the other. Under these circumstances and left with few alternatives peasants are compelled to revolt. The conflict-producing conditions that result from agricultural and rural issues, such as land tenure conflicts, result from failure of the social and political systems to handle such crises. De Soysa and Gleditsch (1999:16) conclude that “the rehabilitation of agriculture is a central condition for development, reducing poverty, preventing environmental destruction and for reducing violence”. In other words, the impetus for violent action emanates from the same source as that which determines the conditions affecting agricultural growth and economic development.

When an agrarian economy is unable to absorb growing populations or it is unable to fulfill its traditional role because of environmental degradation, loss of livelihood results. Livelihood, argues Leif Ohlsson of the Swedish International Development Cooperation Agency (SIDA), is the missing link in explaining how poverty and environmental degradation can lead to conflict:

Poverty is increasingly caused by environmental scarcities of arable land and water, resulting in loss of livelihoods. One common denominator of the causes of conflict in many recent civil wars has been the loss of livelihoods which has had the result that young men are no longer able to reach the positions in life earlier generations of men could expect. Policy attempts to break the vicious path to conflict need to address both poverty and environmental issues. Reconstruction of exhausted environmental resources will work towards both these ends (Ohlsson, 2000:3).

Ohlsson maintains that it has been difficult to demonstrate that either poverty or environmental factors, in and by themselves, are strong determinants of conflicts. Poverty is widespread across the globe, in Africa, Asia and Latin America, and yet not all countries with large impoverished populations are experiencing widespread civil unrest. He claims, “it is the *rapid process of change* resulting in a sudden fall into poverty, more than the endemic condition of poverty, which creates the potential for what here are termed *livelihood conflicts*” (Ibid:3). The concept *livelihood conflict* would thus include but not be limited to cases where environmental degradation has negatively effected the agricultural productivity and/or forced farmers to leave there land. According to Ohlsson

the loss of livelihoods as a result of environmental scarcities of arable land and water was demonstrably one of the major factors that enabled the leaders in Rwanda to mobilize a large part of the population as perpetrators in the first full-blown genocide after the Holocaust.

3.3 Patronage, Feudalism, and Urban Bias

In contrast to the dependency and modernization explanations of the causes of poverty in the developing world, the political-economy perspective offers the theory of rent seeking, which blames distorted markets and dysfunctional political processes. Whereas dependency theory views exploitation as emanating from the outside, the rent-seeking perspective views exploitation as a result of internal processes (de Soysa and Gleditsch, 1999:20). In Nepal, anachronistic tenure arrangements are feudalistic in nature; this is compounded by a strong urban bias, rent-seeking activities by the elites, and inappropriate development actions. These factors have increased peasants grievances and provided an impetus for further environmental degradation. In the words of Stephen Knack and Philip Keefer (cited in de Soysa and Gleditsch, 1999:20), “rent-seeking and urban bias have implications for violence through the creation of patrimonial politics, patronage, and the destruction of social capital. Clientelism creates vertical ties of dependency between patron and clients at the expense of horizontal ties of association, which are the foundations of the effectiveness of government and the level of satisfaction with government performance”. Martinussen, who summarizes the various definitions of patronage given by theorists, says that:

The system of patronage...works by personal ruler doling out generously from public resources and benefits he controls. This patronage is extended to his own clan members and also to a selection of clan leaders whose political support is deemed necessary. The clan leaders can then, at their level within the power hierarchy, use some of their resources in a similar manner to ensure political backing from certain lower placed clan leaders (1997:193).

Homer-Dixon (1999:75) explains his concept of resource capture as being similar to, but narrower than, the political economists’ concept of rent-seeking behavior. In circumstances where elites are engaged in rent-seeking behavior, social capacity to manage environmental problems is weakened. As Wade (cited in Upreti, 2002:100) puts it, “protection of natural resources can’t take place without protection from rent seeking behavior”. In general, rent-seeking refers to attempts by individuals and groups to maximize economic “rent” by manipulating the laws and institutions governing the disposition of factors of production in a economy. According to this perspective, underdevelopment occurs because of the rent-seeking activities of well-organized interests who seek excessive profits through control of the market. Thus, the rural poor are systematically exploited by urban interests because they command few resources, are often illiterate, and are therefore unsuited for collective action (de Soysa and Gleditsch, 1999:31).

The primary motive of any government is to retain power. Governments, therefore, pander to bases of support among well-organized private interests such as urbanites and the rural elite. Michael Lipton, a British economist, coined the term ‘urban bias’ to refer

to development activities which favor cities. Martinussen sums up the process of urban bias, stating that a “concentration on urban development and neglect of agriculture have pushed resources away from activities where they could help growth *and* at the same time benefit the poor, and towards activities where they do either of these, if at all, at the expense of the other” (Martinussen, 1997:137). Researchers at PRIO, believe that the problems of urban bias and dysfunctional political processes are fundamental to stirring collective grievances arising from food shortages and underdevelopment and explaining violent conflict (de Soysa and Gleditsch, 1999:30). In addition as more of the rural poor flee to the cities they contribute to increased urban bias. This has grave consequences by lowering the incentives for food production, land reform, the development of agricultural infrastructure, education, and the alleviation of rural poverty (Ibid:32).

3.4 The Role of Development in Environmental Scarcity

At the Swiss Environment and Conflicts Project (ENCOP) researchers have added to the environmental scarcity and conflict debate by examining the role that large scale development projects can play. ENCOP researchers site what they term center-periphery conflicts, as being predominantly triggered by mega-projects aimed at agricultural export, irrigation, and mining, whereby marginalized groups are cast in the role of victims of modernization. Furthermore they state that a center-periphery conflict is escalated when the promises of development do not materialize or even turn into their opposite. The victims of modernization regard themselves as materially, socially, culturally and spiritually worse off than before, a self-evaluation which often turns out to be correct (Ohlsson, 1999:45-6). Shiva, too, has long claimed that misguided development, what she calls ‘maldevelopment’, can lead to violence. She defines maldevelopment as a, “violation of the integrity of organic, interconnected and interdependent systems, that sets in motion a process of exploitation, inequality, injustice and violence” (Shiva, 1988:5-6). Researchers at ENCOP have determined five conditions in which environmental factors may result in open conflict. One of these modes is termed *Trapped development* which they say occurs when maldevelopment or faulted development creates a situation where depleted resources further marginalize peasants. Trapped development contains elements of 1) population increase under conditions of lack of social and economic institutions which might divert the pressure on renewable resource in a productive direction; 2) commercialization of agriculture; and 3) a crisis for subsistence agriculture (Ohlsson, 1999:47).

4 Background

The geography, caste system, and diverse ethnic makeup of Nepal are briefly discussed below. To date the majority of the fighting has occurred in the Hill regions. This paper contends that this is mainly due to the environmental scarcity, but historically guerrillas choose hill and mountain regions for fighting due to their relative inaccessibility and ability to provide a refuge. The ethnic make up and caste system are briefly discussed because later it will be shown that the less privileged castes and marginalized ethnic groups make up a large contingency of the rebel force. This section seeks to provide the

reader with a more detailed account of where the war is being waged and who is fighting it.

4.1 Geography

For a small country, Nepal has great physical diversity, ranging from the Tarai Plain - the northern rim of the Gangetic Plain situated at about 300 meters above sea level in the south - to the almost 8,800-meter-high Mount Everest in the north. From the lowland Tarai belt, landforms rise in successive hill and mountain ranges ultimately reaching the Tibetan Plateau beyond the Inner Himalayas. Nepal commonly is divided into three broad physiographic areas: the Mountain Region, the Hill Region, and the Tarai Region (see Figure 1).



Figure 1. Map of Nepal showing the three geological regions: Mountains in the north, Hills in center, and Tarai in the south.

All three parallel each other, from east to west, as continuous ecological belts, occasionally bisected by the country's river systems. The hill ranges historically have been the most heavily populated area. Despite heavy out-migration, the Hill Region still comprises the largest share of the total population. The hills have been sculpted into a massive complex of terraces and are extensively cultivated. The Tarai Region is a lowland tropical and subtropical belt of flat, alluvial land stretching along the Nepal-India border, and paralleling the Hill Region. It is the northern extension of the Gangetic Plain in India, commencing at about 300 meters above sea level and rising to about 1,000

meters at the foot of the Siwalik Range. The Tarai serves as the country's granary and land resettlement frontier; it is also the most coveted internal destination for land-hungry hill peasants.

4.2 Ethnic Groups and the Caste System

Despite recent laws aimed at ending discrimination and achieving a more horizontal distribution of wealth, Nepal remains very stratified by ethnicity and caste. Nepalese population can be classified into three major ethnic groups in terms of their origin: indigenous Nepalese, Indo-Nepalese, and Tibeto-Nepalese. In the case of the latter two groups, the direction of their migration and Nepal's landscapes appeared to have led to their vertical distribution; most ethnic groups were found at particular altitudes. The first group, those of Indo-Nepalese origin, inhabited the more fertile lower hills, river valleys, and Tarai plains. The second major group consisted of communities of Tibeto-Mongol origin occupying the higher hills from the west to the east. The third and smallest group consisted of a number of tribal communities, such as the Tharus and the Dhimals of the Tarai; which may be remnants of indigenous communities whose habitation predates the advent of Indo-Nepalese and Tibeto-Mongol elements (Library of Congress, 1991).

Although the Indo-Nepalese migrants were relative latecomers to Nepal, they have come to dominate the country socially, politically, economically, and numerically. Largely because of the superior formal educational and technological systems they brought with them, they have managed to achieve early dominance over the native and northern migrant populations (Library of Congress, 1991). Nepalese of Indian origin usually constitute a significant portion of the local elites and are often the largest landowners in an area. Other ethnic groups, including those of Indian origin that settled in the Tarai plains, have been peripheral to the political power structure (Ibid).

An integral aspect of Nepalese society is the existence of the Hindu caste system, which is modeled after the Brahmanic system of the Indian plains. The Hindu or *Varna* caste divisions are Brahman (priests and scholars), Kshatriya or Chhetri (rulers and warriors), Vaisya (merchants and traders), and Sudra (farmers, artisans, and laborers) and then there are the outcastes (untouchables or Dalits) (Ibid). Originally caste was defined by one's work but over time it became hereditary. The caste system in Nepal did not exist prior to the arrival of Indians. The establishment of the caste system became the basis of the emergence of the feudalistic economic structure of Nepal where the high-caste Hindus began to appropriate lands, particularly the more accessible lowlands which were easily cultivated and more productive. Much of this land belonged to tribal groups but their claims of ownership were ignored. Though untouchability and discrimination on the basis of caste was formally outlawed by the 1963 National Code and the Constitution of 1990, it still prevails widely in Nepalese society (UNDP, 1998:188; Upreti, 2002:89).

5 Empirical Analysis

Before determining the causal role that environmental factors have played in the Maoist insurgency it is necessary to assess the extent of the environmental scarcity in Nepal.

Because most of the fighting has taken place in the hills, it is this geographical region that will be examined most extensively. In accordance with the work of Homer-Dixon this section will examine three types of environmental scarcity, demand-induced scarcity, supply- induced scarcity, and structural scarcity. In addition it will examine the role that development has played in creating scarcity, and give evidence to suggest that environmental scarcity is contributing to negative social effects such as migration and constrained agricultural output.

Hill agriculture takes on many forms according to altitude, latitude, longitude, and social group, but it is basically a form of mixed farming, including arable cultivation (of cereals and tubers), animal husbandry, and intensive use of forests (Ives and Messerli, 1989:44). During the 1970s and 1980s scientists and ecologists rang the alarm bells claiming that Nepal's hills would be completely devoid of forests by the year 2000. The Theory of Himalayan Environmental Degradation (Figure 2) held that exploding peasant populations in the hills, largely as a result of modern health care, were causing mass deforestation to obtain fuelwood, fodder, and increases agricultural land on which to grow food.

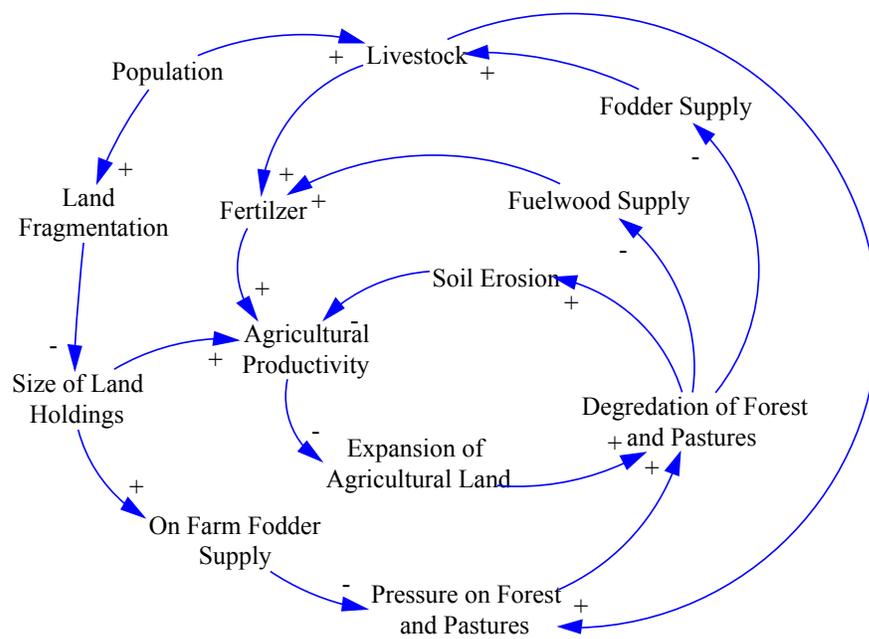


Figure 2. Population-crop-livestock-forest interactions in the Nepalese Hills.

This process created a vicious circle in which peasants cut agricultural terraces on steeper and more marginal land, which lead to increased soil erosion which in turn lead to another round of deforestation. As forests grew thinner and more isolated, peasants were forced to use dung for fuel. Consequently, another vicious circle is linked to the first one: terraced soils were deprived of natural fertilizer – the animal dung now being used for fuel, thus depriving the agricultural terraces, in many cases, of their only source of fertilizer lowering crop yield. Also, the ensuing weakened soil structure further augment

the incidence of landslides. Finally, even more trees are cut on more marginal and steeper slopes to make room for more agricultural terraces to feed the increasing substance population (Ives and Messerli, 1989:73-5). *In Nepal in Crisis*, Blaikie, Cameron, and Seddon (1980:16-17) sum up the problem like this:

Arable land requires a net transfer of fertility from the forest by the transport of leaves and grass either to the field directly or more usually as fodder to stall-fed animals, whence it is distributed as farmyard manure to the fields. If this transfer does not occur in sufficient quality to maintain nutrient levels and structure in the soil, a decline in fertility will occur. The usual response to such a decline even with a constant population, is to clear more forest for arable land to maintain total output, but with population increasing at about 2.4 percent per annum the destruction of forest cover gives rise, very rapidly, to an extremely precarious ecological situation.

In the mid-1980s scientists were essentially broken into two schools of thought: one which continued to support the classic theory of Himalayan degradation, and the other which believed that the interactions were much more complex and included socio-economic interactions as well as development activities, markets, and political climate among the factors contributing to the environmental degradation. Opponents of the theory do not deny that deforestation and soil erosion are occurring as a result of peasants' subsistence activities but they see it as one part of a larger problem or an effect rather than a cause. In a comprehensive study carried out by N.S. Jodha, he singled out market forces as the key factors underlying most of the proximate causes of environmental changes associated with the theory (Jodha, 1995). Ives and Messerli, in *The Himalayan Dilemma: Reconciling Development and Conservation* (1989), charge that the bulk of the literature that depicts the imminence of environmental catastrophe in the Himalayan region has tended to confuse cause and effect and has largely missed the essential historical depth. In addition they claim that that environmental crisis has been exacerbated by development agencies who view the subsistence farmer as part of the problem and not part of the solution. Finally, they concluded that the causes of the crisis are not environmental but relate to the social, economic, institutional, and political situation of the Himalayan region. Ultimately the environmental effects are the same but clarity on this point is necessary to respond in a more rational and effective manner (Ives and Messerli, 1989:211).

Shrestha and Conway (1997:316), when writing about Nepal, noted that a coherent theoretical framework which can explain the environment-poverty axis and peasant-state relations is lacking. They sought a framework which went beyond the Malthusian view that population growth is the cause of both poverty and environmental degradation. They claimed that a framework that did not first analyze local peasant ecologies and peasant resource use and subsistence was essentially a misdirected exercise.

Many researchers have transcended the narrow Malthusian view and included social and political factors in their assessment. John Metz (1991:813) found that in regards to Nepal, "the relationship between environmental degradation and the size of the human population is not linear, but is structured by social institutions which express the power relations of various groups within the society. Both environmental degradation and rapid population growth are fostered by poverty". Similarly, Seddon (1983:32) criticizes researchers who blame Nepal's environmental degradation on population stating that,

“the conclusion...that it is population growth that is largely responsible for the growing poverty of the mass of the Nepalese people – is a gross over-simplification and ignores the crucial fact that demographic change, like material deprivation or poverty, is a social product, conditioned and determined in the last analysis by the economic and social structures of the state”. Metz’s and Seddon’s assessment points to the fact that CPN-M insurgency is not due to a ballooning population nor to overall environmental scarcity but inequitable social and political institutions.

In addition the steadily deteriorating food balance and degraded ecological conditions resulting from population pressures apparently challenge the proposition (Boserup, 1965) that a growing population could stimulate agricultural and economic development. Thapa and Weber (1989:56), contend that “Boserup’s theories related to population growth as an impetus for agricultural intensification, are unsuited to Nepal due to the physical conditions of the mountains.”

5.1 Demand-Induced Scarcity: A Growing Population on a Limited Land Base

“The more children, the more wealth,” so goes a proverb still popular in the hills of Nepal. From 1971 to 2001, the population of Nepal more than doubled, from 11,500,000 to more than 23,000,000 with an average annual growth rate of 2.6 percent. At the current rate of growth, the population in Nepal is expected to reach 32.2 million by 2016 and 62 million by 2050. The expanding population has increased pressure on already scarce land and led many Nepalese to migrate from the hills to the forested Tarai area. However the proportion of out-migrants compared with the sheer size of the hill population is relatively small, resulting in a increasing man-to-land ratio (Thapa and Weber, 1989:60). Of all the land in Nepal only 18 percent of total land area is considered arable, 70 percent of which is in the Tarai. The average per capita land holding is only 0.17 ha per capita or about 0.9 ha per household. However, this figure is misleading as the majority of households subsists on about half that (Lumsalee, 2002:3). In addition land is highly fragmented, and it is not uncommon for a hectare to be broken into six or seven parcels making agriculture extremely inefficient. The 2001 census found that for the first time the population in the Tarai plains exceeded that of the hills (Table 1).

Table 1. Population by Region

	1952/4	1961	1971	1981	1991	2001
Mountain	5,349,988 ^a	5,991,297 ^a	1,138,610	1,302,896	1,442,306	1,687,859
Hills			6,071,407	7,163,115	8,413,449	10,251,111
Tarai	2,906,637	3,421,699	4,345,966	6,556,828	8,635,342	11,212,453
Total	8,256,625	9,412,996	11,555,983	15,022,839	18,491,097	23,151,423

Source: Based on information from CBS (1991, 2001) and Thapa and Weber(1989).

a. Statistical data for Mountains and Hills prior to the 1971 census was not separated.

Still, the population in the Hills continues to grow at a rate of 2.0 percent per year. While the population continues to grow the cultivable land has been exhausted. Consequently the size of the land holdings continues to decrease and more peasants are forced to encroach into marginal land to eking out a living. With the natural carrying capacity of

the Hills now thought to be exceeded, much of the ecological damage on the hills can be attributed to population growth (Thapa and Weber, 1989; Ives and Messerli, 1989; Blaikie *et al*, 1980). Densities of 12-18 persons per cultivable hectare in the hills are among the world's highest and are sustained by terracing the steep slopes. Considering the low agricultural productivity and agricultural densities many people in the hills are not able to obtain an adequate subsistence level (Lumsalee, 2002:3). Indeed, high population growth rates in rural areas and lower agricultural productivity have contributed to an increase in the absolute numbers of rural poor, particularly in remote and isolated districts inhabited by specific ethnic groups.

Along with the growth of the human population of Nepal, the livestock population has also been expanding. Reasons for the livestock expansion include religious and legal reasons, increasing requirement for draught power and manure for agriculture, and also owing to the demand for cash to compensate for the decline in income from crop production (Thapa and Weber, 1989:59). In spite of a livestock population growth rate of only 0.17 per cent per year livestock density per unit of cultivated land in Nepal reportedly is the highest in the world a phenomenon which is attributed to the sharp increase in the absolute number of the country's human population (ICIMOD, 1986). The estimated carrying capacities of the open grasslands and forests in the middle hills are only 0.54 and 0.31 large livestock units per hectare, respectively, whereas the 1989 stocking rates were reported at 7 and 2.8 large livestock units, respectively, per ha, or 13 and 9 times greater than the carrying capacity of those types of land (Thapa and Weber, 1989:60).

5.2 Supply-Induced Scarcity: Deforestation and Soil Erosion

In 1995, Millette *et al*, concluded that Nepal was in a condition of endangerment, which he defined as “a situation in which the trajectory of environmental degradation threatens in the near term (this and the next generation) to preclude the continuation of current human use systems and/or levels of human well-being, given feasible adaptations and societal capabilities to respond”. This conclusion indicates that the population of Nepal will have to produce more on a shrinking and degrading resource base. The primary mechanisms of Nepal's declining resource base are deforestation and soil erosion. Peasants depend on forests for fodder for their livestock, fuelwood, building materials, and fertilizer for the fields. As the quality of the forests decline so does the livelihood of the peasants. In addition inadequate government fertilizer distribution and increased use of biomass for fuel and stall-feeding has limited nutrient replacement. Irrigation has been limited by inefficient operation and maintenance of government schemes and low returns on private investments because of the highly fragmented landholdings (Acharya and Wright, 2000:41).

5.2.1 Deforestation

The hill and mountain ecological zones, where the Maoist conflict is most acute, are suffering from increasing environmental hazards, notably deforestation, soil erosion, landslides, flash-floods and desertification (Thapa and Weber, 1989:49). However the concept of “deforestation” in much of Nepal, with scattered patches of woodland within

the agricultural landscape, is very different to the large-scale clear cutting which takes place in the Amazon (Soussan *et al*, 1995:5). The Theory of Environmental Degradation, which blamed peasants for rapid deforestation in the Hills of Nepal failed to address past and historical incentives to clear land. Many researchers now agree that deforestation in the hills and mountains has historical roots and that most hill forests were converted to agriculture and pasture prior to 1960 (Metz 1991, Ives and Messerli, 1989, Blaikie *et al*, 1980).

In the 18th and 19th centuries land, specifically arable land, provided the primary source of income for the State. Consequently, the forms of land tenure and taxation policies ensured a progressive conversion of forest to cropland. Arable land was taxed in such a way that half the crops produced were forfeited either to the state, or to the landholder who had been allotted the land in recompense for services to the State. To ensure acceleration in the rate of conversion from forest to arable land the King declared that newly cleared forestland could be farmed tax-free for three years (Ives and Messerli, 1989; Metz, 1991; Upreti, 2002). Then in 1957, the government of Nepal nationalized the forests, thus effectively removing the mechanisms of local village conservation. The nationalization of the forests created a fear that government was going to take the forestland away from the people. Consequently, many people cleared forest areas and claimed them as privately owned agricultural land (Bajracharya, 1983:1069; Metz, 1991:807-8). These historical trends of deforestation led Mahat *et al* (1987) to conclude that prior to 1960 all the better quality forestland had already been converted to arable land. Current deforestation in the hills, he says, is taking place on marginal slopes with poor soils. Thus, the long-term loss of forest resources is primarily a result of government policies rather than high population densities. Interestingly, while the conflict continues to be waged primarily in the Hills and Mountains and has not yet spread to many of the Tarai regions, it is the Tarai where the most substantial deforestation is occurring. Evidence is overwhelming that as much as 90 percent of deforestation in the Tarai results from commercial logging, followed by state-sponsored agricultural land expansion, including ranching (Shrestha and Conway, 1997:319).

Since the 1970s there have been many development activities attempting to reduce the rate of deforestation and rejuvenate previously degraded forests. Some have met with success, others have not. In general, despite pockets of well maintained, community managed forestry programs, forest degradation continues. This is exemplified by the fact that in the mid-1980s, approximately half of the forests in the mountains of Nepal had only 10 to 40 percent of their normal crown cover (Metz, 1991:807; Kuchli, 1997:67). In addition in the 15 year period from 1979 to 1994 total forest cover shrank almost 25 percent (Table 2). During this same period, in the 51 Hill districts that were analyzed by photo-point sampling, forest cover has declined from 34.2 percent in 1978-1979 to 23.7 percent in 1992-1996, a 2.3 percent annual rate (Jica, 1999:18).

Table 2. Change of Forest and Shrub coverage in Total Area (%)

Title of Study	Land Resource Mapping Project (LRMP) 1978-79	National Remote Sensing Centre (NRSC) 1984	Master Plan for Forestry Sector (MPFS) 1985-86	National Level Forest Inventory (NFI) 1994
Forest	38.0	35.9	37.4	29.0
Shrub	4.7	-	4.8	10.6
Total	42.7	-	42.2	39.6

Source: Jica (1999:18)

The cause of the recent deforestation in Nepal can be attributed to fuelwood collection, livestock grazing (and/or fodder collecting), and clearance for agricultural land. The most significant factor is a cause of contention as some (Mahat *et al*, 1987) sight livestock grazing, some sight agricultural expansion (Bajracharya, 1983), and others including the UNEP (Planetark, 2001) sight fuelwood gathering. Fuelwood demand is high because the majority of rural Nepalese rely on it for cooking and heat. The FAO (1999) reports that up to 83 percent of the country's energy consumption comes from fuelwood. The extreme poverty of Nepal makes artificial fertilizers cost prohibitive and the majority of subsistence farmers continue to rely on forest residues and manure. This traditional method of farming requires between 3.5 to 6 hectares of forestland to support each hectare of cropland, though actual figures are expected to vary with altitude and with each specific annual agricultural cycle (Ives and Messerli, 1989:45). The total land in the Hill area is estimated 11.1 million ha. The total forest area is 2.9 million ha and the total shrub area is 1.57 million ha, covering 26.1 percent and 14.2 percent of the total land area of the Hill area, respectively (HMG, 1999). Agricultural land in the hills is estimated at 970,000 ha or 8.8 percent of the total hill land (Sharma, 1999:2). Thus, according to these numbers, there are currently 3 hectares of forestland for every hectare of agricultural land, which is lower than the required 3.5 to 6. Though the actual deficit may be higher because much of the existing forest is located in remote areas and is too inaccessible for regular use. In Millette *et al*'s detailed study of three villages in central Nepal's hills he found that between 1954 and 1991 overall cultivated land expanded by 157 percent while forest and shrub/pasture land decreased by 44 percent and 69 percent respectively. Over this same period, a 30 percent increase in land fragmentation took place, and individual plot sizes decreased by 20 percent (Millette *et al*, 1995). While one case-study does not provide macroscopic picture and there are villages who have undertaken successful community managed forestry programs, Millette *et al*'s study coincides with the overall trend.

5.2.2 Soil Erosion

Soil erosion occurs when land is stripped of vegetative cover, overgrazed or tilled and exposed to rain, wind, and runoff. Highland soils are particularly vulnerable to erosion, because the gradient of the land makes it easier for wind and rain to dislodge soil particles. Erosion reduces soil depth, the diversity of soil biota, and water infiltration and

holding capacity. Nepal is especially susceptible to soil erosion because its topography is such that 13 percent of the land slopes by 8-30 degrees and 66 percent of the land slopes by over 30 degrees (Sah, 2002). Deforestation is accelerating the rate and intensity of erosion. A study by the World Resource Institute and International Institute of Environment and Development concluded that as much as 240 million metric tons of soils are washed out of Nepal each year (cited in Thapa and Weber, 1989:49). The primary effect of soil erosion is soil loss and nutrient leaching, resulting in reduction of land productivity. A study in the mid hills of Nepal revealed a soil loss of 20 tons/ha/year from rain fed marginal land, with a nutrient loss of 300 kg of organic material, 15 kg of Nitrogen, 20 kg phosphorus and 40 kg potash (Sah, 2002). More than half of these losses occur during pre-monsoon (May-June) when ground covers are absent, and losses are mostly through leaching than through surface run-off (Ibid). The erosion reduces crop productivity and destroys the already scarce agricultural land. Studies report that soil loss has reduced land productivity by 35.2 percent and 21.8 percent in the Siwaliks and the middle Mountains (both considered hill regions), respectively (Panday, 1997).

In general, agricultural output, in both volume and value terms, is well below its potential. Paddy yields, which were once the highest in South Asia, are now the lowest. Nepal's per capita production of staple food grains is actually declining because intensive cropping has reduced soil nutrients. Many farmers report significant declines in crop yields and availability of compost (Millette *et al*, 1995:371). However the reduced yield are not only a result of a decline in soil nutrient status but also the increased use of marginal lands (Millette *et al*, 1995; Ives and Messerli, 1989).

5.3 Structural Scarcity

Two hundred years after Thomas Malthus classic, 'An Essay on the Principle of Population' (1798), the present study is squarely positioned within a framework of Malthusian concerns. Neo-Malthusians maintain that finite natural resources place limits on the growth of human population and consumption, if these limits are exceeded, poverty and social breakdown result (Homer-Dixon, 1999:29). In contrast economic optimists claim that economic institutions that function well, especially markets, provide incentives to encourage conservation, resource substitution, development of new sources of scarce resources, and technological innovation (Ohlsson, 1999:1-9). The debate between these two camps has been raging on for years, but a third, and less recognized group, the distributionists, have recently added their two cents to the largely sterile debate. The distributionists claim that the real problem is misdistribution of resources and wealth, noting that poverty and inequality are causes, not consequences, of high population growth rates and practices that deplete resources (Homer-Dixon, 1999:35-7).

Structural scarcity is caused by unequal distribution that concentrates resources in the hands of some groups and subjects the rest to greater than average scarcity. Homer-Dixon (1999) states that every society has rules and laws that define the limits and nature of ownership of things such as farmland. These property rights affect how resources are distributed among different groups in the society, and they often change as a result of large-scale development projects or new technologies that alter the relative values of

resources (Homer-Dixon, 1994). In Nepal the persistence of a semi-feudal agrarian system encourages agricultural underdevelopment and maintains unequal land distribution including the existence of a large landless class (Upreti 2002:15; Karki, 2002:201). Land is the economic backbone of Nepal. However, due to the vertical social structure and highly stratified economic condition, large portions of land have been accumulated by local elite (Karki, 2002:203).

In Nepal, land distribution is very skewed (Table 3), 40 percent of agricultural households hold use just 9 percent of the total agricultural land, while the top 6 percent occupies more than 33 percent of the total. Gross disparities in land ownership are one of the major causes of poverty, injustice and social discrimination (Upreti, 2002:15). The proportion of landless, at 10 percent, has remained relatively steady for the past 20 years despite land reform measures undertaken by the Nepalese government (Ives and Messerli, 1989:106; Shrestha, 2002). This structural scarcity of land for poorer farmers arises from the domination and manipulation of land-tenure arrangements by a wealthy elite of agricultural producers. It is reinforced by the political hegemony of this elite, by the economies of scale and by corrupt and inequitable credit and social-spending programs managed by the state. This control permits them to secure political support and to enforce the regime of unequal land distribution.

Table 3. Distribution of landholding by region and land-size.

Hectare	MOUNTAIN		HILL		TARAI		NEPAL	
	% of households	% of land owned	% of households	% of land owned	% of households	% of land owned	% of households	% of land owned
>0.1	5.5	0.5	7.0	0.5	9.7	0.4	7.5	0.4
0.1-0.2	11.2	2.4	10.6	2.0	8.0	1.0	9.6	1.5
0.2-0.5	26.4	18.2	30.8	13.4	21.6	12.4	26.7	9.4
0.5-1.0	29.0	30.0	29.0	26.4	21.6	12.4	20.6	19.2
1.0-3.0	16.3	35.9	21.2	42.4	32.9	44.3	25.5	43.0
3.0-5.0	1.1	5.9	1.6	7.6	5.7	17.3	3.2	12.6
5.0<	0.5	7.1	0.5	7.7	2.8	19.4	1.5	13.9
Total	100	100	100	100	100	100	100	100

Source: Central Bureau of Statistics (1991)

In the past, Nepalese political systems relied on a patronage system, where rulers used land as a means of maintaining functionaries for the consolidation of power and maintaining good relations with family members, close allies, members of the nobility, military personnel, civil employees, royal courtiers and potential foes (Acharya cited in Upreti, 2002:99). The current day Nepal that Upreti (2002) describes has changed little. He reports that the elite, particularly the formal power holders, still maintain a dependent structure so as to get the most benefit from the system. Furthermore, in rural Nepalese society chains of relationships exist which have an exploitative structure and at the local level these elite fulfill their interests through power.

Concentrations of land in the hands of a few elite classes and severe exploitation of the peasantry through excessive labor expropriation have been a characteristic of the Nepalese political economy throughout history (Karki, 2002:203). Using land as political collateral was supposed to have ceased after the Land Act of 1964, the Landless Problem Resettlement of 1976 and the Nepalese Constitution of 1990. Despite the facts that a democratically political system is operating in the country, that democratically elected political parties are ruling the country and that a progressive constitution exist in Nepal, the governing practices are still undemocratic (Upreti, 2002:89). It is now evident that rural landlords, senior civil servants, political leaders and ruling elites, got maximum benefit by exploiting such government initiatives and very few real landless people benefited from the reforms. In fact, since the shift to a democratic system of government, the exploitation of peasant farmers and the struggle for land rights by landless peasants has increased (Ibid:106). Thus, while the constitution as a whole provides a framework for democratic governance at the macro level, it is silent on many critical domains of participation, e.g., local self-government and devolution of power, leaving the leaders of political parties free to interpret devolution and decentralization in a manner that suits their parochial interests. As a result, local bodies still exist as extensions of the central administration rather than as autonomous institutions of local self-government accountable to the electorate (UNDP, 1998).

In general land settlement and the reform processes in Nepal have been highly politicized, working to safeguard the economic and political interests of politicians and senior bureaucrats (Upreti, 2002:106). The *Kamaiya* (bonded labor) system and other feudal practices were theoretically abolished after the 1990 revolution but as Karki (2002:95) explains, “Nepal functions as an agrarian society were even though people own the land the true owner is the state and a feudalistic mode of production still exists”. Though many types of bonded labor arrangements exist in Nepal, generally the feudalistic practices in Nepal amount to sharecropping systems where peasant labors are indebted to their landlord and work the land for him and retain some portion of the yield. Early attempts by the democratically elected government to reverse this legacy through economic development projects and legislation which give mountain communities legal rights to forest products are often sabotaged by residual elite control, corruption, and political factionalism (Metz, 1991:813). In addition, many development initiatives and poverty eradication programs have failed primarily because of the persistence of the feudalistic system (Karki, 2002:18).

Several foreign aid and Nepalese political scientists, thinkers, and analysts now say that the eruption of the Maoist movement is the result of successive failures of the government to govern the country according to the ideals of the constitution (Upreti, 2002:103). Similarly, researchers at the International Peace Academy cite the persistence of the *Kamaiya* systems, landlessness and the unfair practices connected with it as the pivotal in creating the rural unrest that fuels the insurgency (Bray *et al*, 2002:14).

5.4 Poverty and Maldevelopment in Nepal

In addition to the three types of environmental scarcity discussed above, this section focuses on further ecological impoverishment as a result of poorly planned economic development activities. In Nepal where 81 percent of the population make their living from agriculture and related activities, most of which is subsistence based, rural poverty is largely an agricultural issue (Acharya and Wright, 2000:40). Therefore, as the environment deteriorates, so does agriculture and the livelihood of the subsistence farmer. The solution to this problem, as seen by many positivistic development organizations, including the government of Nepal, is to shift to a production based economy in order to generate income. But, because of their natural and manmade handicaps, mountain areas tend to interact with mainstream markets on unequal terms. The whole process amounts to over extraction of mountain resources with adverse environmental and economic effects (Jodha, 1995).

Nepal remains one of the poorest countries in the world. Per capita income was estimated at US\$200 in 1995, which placed Nepal at the bottom of the list – the ninth-poorest country in the world, the poorest outside of Africa. Estimates of the incidence of poverty vary depending on the methodology used, but are generally close to 50 percent (Prennushi, 1999; NPC cited in Upreti, 2002). According to the 2001 UN Human Development Index (HDI), Nepal ranks 129th out of 162 countries assessed, falling within the category of “low human development”. Despite the country’s planned development efforts since the 1950s, the basic indicators of life and economy have in most cases deteriorated or remained almost unchanged (Shrestha and Conway, 1997:327). Although the World Bank, International Monetary Fund (IMF), Asian Development Bank, and UNDP have been active and despite the presence of over 40,000 NGOs, the past 20 years in Nepal has seen poverty and food insecurity grow increasingly worse (Upreti, 2002:108). The degree of deprivation is most severe in the remote hilly regions of the country (UNDP, 1998:209).

One reason for deepening poverty, according to Shrestha and Conway (1997:314), is growing ecological impoverishment. They blame the ongoing development activities for progressively eroding the environmental resource base of peasants and forcing them into a situation of grinding poverty, with few alternative means of subsistence. During the 1970s, the much hyped Theory of Himalayan Environmental Degradation blamed peasants for deforestation and soil erosion in Nepal. Consequently, in the 80s and 90s development organizations working in Nepal worked to diffuse the crisis by changing the agricultural and animal husbandry practices of Nepal’s peasants. But by doing so they undermined the subsistence ecological system in which peasants are engaged in a symbiotic production relationship with nature and domestic animals. Many now contend that environmental degradation in Nepal is due more to land tenure, government policies and general character of natural economic development than to population growth (Soussan *et al*, 1995:7).

Shrestha and Conway blame this development failure on a “blind acceptance of Western values” which they say, “undermined the bedrock of the country’s agrarian economy and subsistence: the peasant ecology” (Shrestha and Conway, 1997:314). Peasant’s

socioeconomic viability is intrinsically intertwined with the long range sustainability of their local environmental resource base, especially cultivatable land and forest resources. Similarly, Upreti (2002) claims a livelihood perspective which generates and sustains anti-poverty effort is needed rather than a productivity oriented approach. There is evidence to suggest that the productivity oriented achievements do not address the widening gap between the rich and poor, unemployment and degradation of the natural resource base. Upreti states that these problems are not only creating inequality but also fuel the conflict between the rich and poor, claiming the Maoist movement as an example of such a conflict (Ibid:100). Shiva (1988:12), who obtained much of the empirical evidence which shaped her theories in north India, an area which shares many similarities to Nepal, claims that, “the creation of inequality through economic activity which is ecologically disruptive arises when inequalities in the distribution of privileges make for unequal access to natural resources – these include privileges of both a political and economic nature”. Contrary to the development activities of Nepal, researchers, including Michael Lipton and T.W. Shultz, have argued that agricultural development can be an end to itself, and as a means to relieve rural poverty and contribute to the improving living conditions of peasants and landless whom with the current distribution of land and other assets, are cut off from participating fully in the ‘conventional’ types of development processes (Martinussen, 1997:136-7). Per Pinstup Anderson notes that “in most low-income developing countries, growth in the agricultural sector, whether through food or non-food agricultural commodities, is the most effective and often the only viable lead approach to sustainable economic growth and poverty alleviation” (cited in Homer-Dixon, 1999:88). Consequently, if environmental scarcity constrains agricultural production, it may have a large effect on a country’s overall economic development. Similarly, Shrestha and Conway (1997:315) claim that the official population, development and environmental policies fail to recognize what they term peasant ecology and instead, “continue to view peasant ecology as an anachronism in the age of modernism, as a hindrance to progress and prosperity. Consequently, these policies act to foster the growing alienation of peasants from land, an integral component of the peasant ecology”. Acharya (cited in Upreti, 2002:103) claims that centralized planning has persisted as the basis for national resource allocation. This he says, “is inherently incapable of responding to specificity of local needs and priorities, especially of people below the poverty line. Due to government and donor focus on economic development objectives there has been little attempt to effectively integrate poor people’s concerns and conservation objectives in the economic objectives Nepalese development (Upreti, 2002:10).

Jodha’s study, summarized in Table 4, found that many rural farmers are shifting production for local consumption to commercial production in the face of overall rapid population growth and dramatic changes in the environmental resource base. In addition he found that market mechanisms and development induced commercialization has focused on cash crops and pushed food crops to marginal areas. This has resulted in the relatively better land being used for cash crops (especially vegetables), while staple food crops are pushed to sub-marginal land with low productivity, compelling the extension of crops to still more sub-marginal lands (Jodha, 1995). The development induced

commercialization referred to by Jodha is a result of structural adjustment programs initiated by the World Bank and the IMF in 1991.

Table 4. Forces and Environmental Change in the middle mountain areas of Nepal.

Market forces: phase and features	Pressure (demand/supply) management strategies	Environmental implications
Early 20 th century		
a. Focus on state revenue by timber trade	Forests treated as 'inexhaustible' resources; timber trade without productive reinvestment	Heavy extraction of permanent vegetation in accessible locations
b. Local need-based exchange and upland/lowland linkages, petty trading, etc.	Niche/comparative advantage as basis of petty trade; exchange-based supplies supplemented local requirements; in accessibility restrained over extraction	Resource exploitation within limits.
Latter half of 20 th century: Commercialization as a part of transformation process		
a. Selective opening of areas, infrastructure, linkages with mainstream markets	Accessibility encouraging one-way flow of resources; unequal exchange for mountains; distance markets insensitive to local resources and local demand	Unregulated, over exploitation of resources; negative side effects of infrastructure and large scale programs to harness niches; reduced diversity of production activities; weakened regenerative processes, environmental backlash.
b. Development induced commercialization (institutions, technologies for cash crops, etc.)	Focus on cash crops, pushing food crops to marginal areas; highly extractive and inegalitarian development	
c. Concentration on mountain niches (timber, power, horticulture, tourism)	Heavy extraction on mountain niches with unequal terms of trade, indifference to side effects	

Source: Jodha (1995)

One remarkable fact about the ongoing 'people's war' is that it is being most intensely fought in its base, the Rapti Zone (See Figure 3), the very area where the USAID has launched its largest development project, a 15 year old economic effort promoting commercial farming and micro-level entrepreneurship (GTZ, 2002:57; Shrestha and Conway, 1997:319).

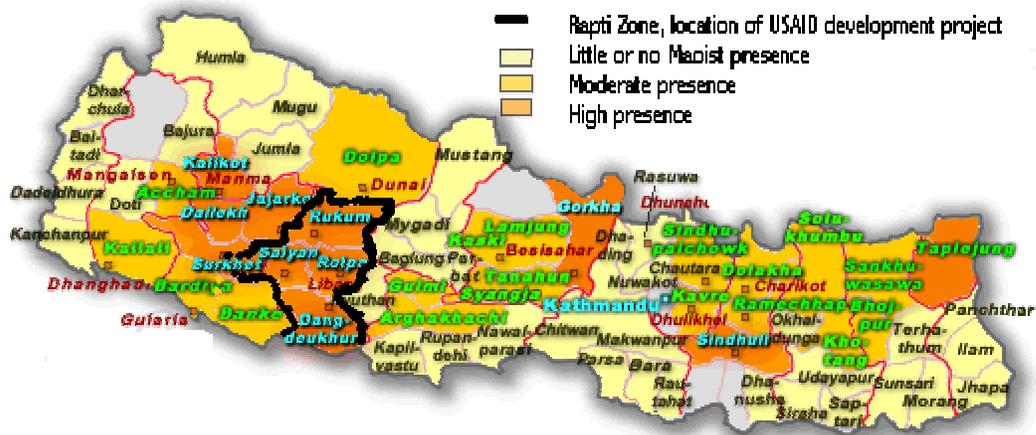


Figure 3. Location of the ‘people’s war’ by district.

Upreti (2002) notes that several conflicts have erupted because of technocratic, positivistic top-down, development interventions, which he says are designed to, “fulfill the vested interests of the vicious circle of technocrats-bureaucrats and politicians. Development funds are often doled out to party supporters, elite, relatives, and influential people is a well established reality in villages” (Ibid:125). In addition development institutions for external agencies are creating conflict due to their ignorance of local dynamics and top-down decision making. Research has shown that conflicts in Nepal escalate when development agencies enter a village setting (Kaplan, 1995).

5.5 Agricultural Productivity and Food Security

Soil erosion in the Hills of Nepal has progressively reduced the productivity of agricultural land. Low agricultural productivity means that farmers need to continually expand the cultivated land area in order to produce more to meet their subsistence requirements. This compulsion has contributed to encroachment on forest and other public lands and cultivation on steeply sloping and marginal lands that are too fragile (UNDP, 1998:209). In a comprehensive survey carried out in the Hills surrounding Katmandu, it was found that households produce no more than 4-6 months of food requirements and consequently two-thirds of adult males are forced to leave for seasonal employment elsewhere (Millette *et al*, 1995:317). Similar studies carried out by Ives and Messerli in the 1970s and 1980s, found that caloric intake in middle mountains was dropping from 1,596 kcal in 1977 to 1,426 kcal in 1983-84. Furthermore they projected it to drop to 1,299 kcal by 1989-1990. In contrast a 1999 a Nepal Living Standards Survey conducted by the World Bank found that the average caloric intake for the hills and mountain of Nepal was 1,805 kcal (met primarily through cereals, pulses and potatoes), which while is still short of the FAO recommended 2,124 kcal is a significant improvement (Prennushi, 1999:10). However there seems to be some contention on this point as Upreti quotes a coordinator of the National Alliance for Food Security in Nepal who states that Nepal’s food productivity index has not increased in 20 years and food insecurity is increasing all the time (Upreti, 2002:108). Moreover the Ministry of

Agriculture reports that the hill regions experienced a 383,000 megaton cereal defect (Table 5) in 1994-5 (Sah, 2002). Sharma (2002:2) contends that food insecurity has since worsened in remote areas due to the unrest in Nepal caused by Maoist insurgency, highlighting that at present, 45 districts out of the total 75 districts are classified as food deficit.

Table 5. Foodgrain Production, Requirement and Balance by Ecological Belt, 1994/95

Particulars	Mountain	Hill	Tarai	Nepal
Number of districts				
Food deficit districts (1991/92)	16	39	20	75
Food deficit districts (1994/95)	14	27	0	41
Mid-year population (million)	1.5	8.9	10.0	20.4
Total cereal prod ('000 mt)	194	1638	2264	4097
Requirement ('000 mt)	322	2021	1935	4279
Cereal Balance ('000 mt)	-127	-383	329	-181

Source: Sah (2002)

5.6 Migration

One of the social effects of environmental scarcity outlined by Homer-Dixon is Migration. He claims that “there is substantial evidence to support the hypothesis that environmental scarcity causes large population movement, which in turn causes group identity conflicts” (Homer-Dixon, 1994). Since the late 1950’s Nepal has experienced a high rate of internal migration from the Hill and Mountain regions to the Tarai. Prior to the 1950’s Nepal’s Tarai area was infested with malaria, but after a massive eradication program migratory movement from Hill and Mountain areas to Tarai started to increase. According to the Ministry of Population and Environment (2002), the major factors for these migratory movements included harsh condition in the Hills and Mountains, limited supply of arable land and lack of employment opportunities in these areas. This migratory movement of people from the Hills and Mountains to Tarai was also facilitated by the resettlement programs set up by the government in the late sixties (Karki, 2002:211-13).

Ever since the 1950’s the trend of internal migration has been increasing. In 1971, 445,128 people migrated within the country, which accounted for 3.9 percent of the total population. This increased to 929,585 in 1981, comprising 6.2 percent of total population, that is, it more than doubled in one decade. In 1991, volume of internal migration increased by 32.1 percent as compared to a decade back, bring the number of migrants (1,228,356) up to 6.6 percent of the total population (MOPE, 2002). During 1971-91, the

vast majority of the migrants that came to the Tarai were from the Hills (Figure 4).

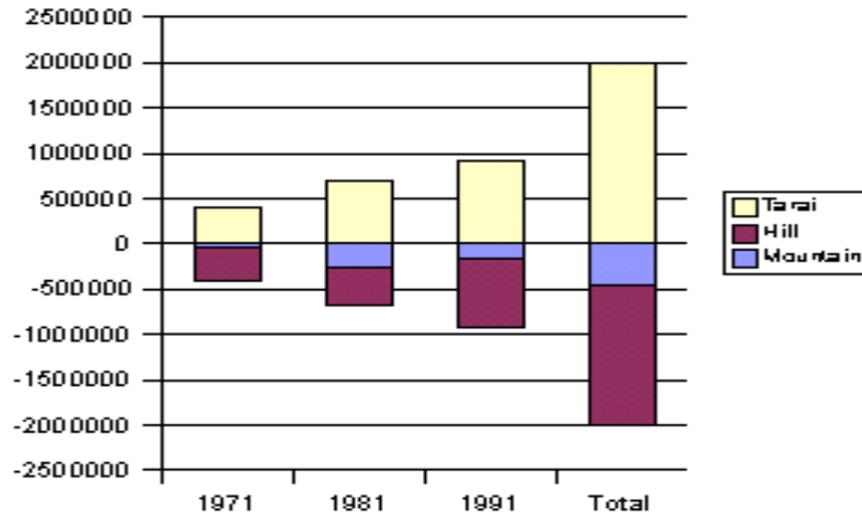


Figure 4. Internal Migration by Region 1971-1991*

Source: CBS (1995), Ministry of Population and the Environment (2002)

* Data from the 2001 Census on Migration is still not available thus it has not been incorporated in this paper.

When Ives and Messerli interviewed people in the hills, 60 percent of the sample cited their reason for leaving as not producing enough on land in middle mountains. Similarly, a survey conducted by Conway *et al* (2000:230), of 355 families that had migrated 48 percent said they left because they didn't have enough land, 15 percent because they were tired of landlords harassment, 14 percent were landless, 4 percent left due to environmental problems, 3 percent were evicted by the government, and 11 percent for other reasons. However, these figures could be misleading because not having enough land could actually mean not producing enough food. Ives and Messerli (1989:157) concluded from their study that out-migration from the hill regions is usually the result of abandonment of marginal land which cannot provide the minimum sustenance for enlarged families. Thus, the scarcity of land can be attributed to population and environmental factors. Similarly, the UNDP (1998:209) found that pressure on agricultural land has led to considerable deforestation and use of fragile slopes. Such ecosystem processes, they say, contribute to poverty and have also led to high rates of distress migration from the Mountains and Hills to the Tarai.

The migrants from ecologically fragile regions are causing environmental problems elsewhere. The migration from the hills and mountains to the Tarai has caused deforestation and illegal squatting on the deforested land. According to the FAO (1999) estimate, about thirty-six thousand hectares of dense forestland is lost annually because

of squatters. In addition the FAO estimates that no more than 816,600 hectares of forest area remain in the tarai and less than half of this is suitable for cultivation. Thus, if migration into the Tarai continues at the rate of the last decade, all the good farmland will be occupied in little more than a decade.

6 Discussion

The causal relationships between environmental scarcity and conflict are shown in Figure 6. The diagram exhibits no direct relationship between environmental degradation and armed conflict. In other words the environmental degradation in Nepal has not compelled peasants to pick up arms against the state, but it has been a causal factor in elevating their grievance level. Like Homer-Dixon, this paper argues that environmental degradation is only one form of environmental scarcity along with increasing demand for natural resources and their unequal distribution. Still, environmental scarcity by itself is not likely to result in violent conflict. Rather it is the social and economic effects such as migration, loss of livelihood, reduced availability of food and poverty that raise grievances to a critical level which generates armed conflict. Nepal has long had a reputation as a peaceful country. However, although there have no cross border wars, natural resource conflict among farmers has been pandemic. The critical factor responsible for the organized violence instigated by the CPN-M was the continued inequitable political representation and corruption despite the shift from a monarchy to a democratically elected government.

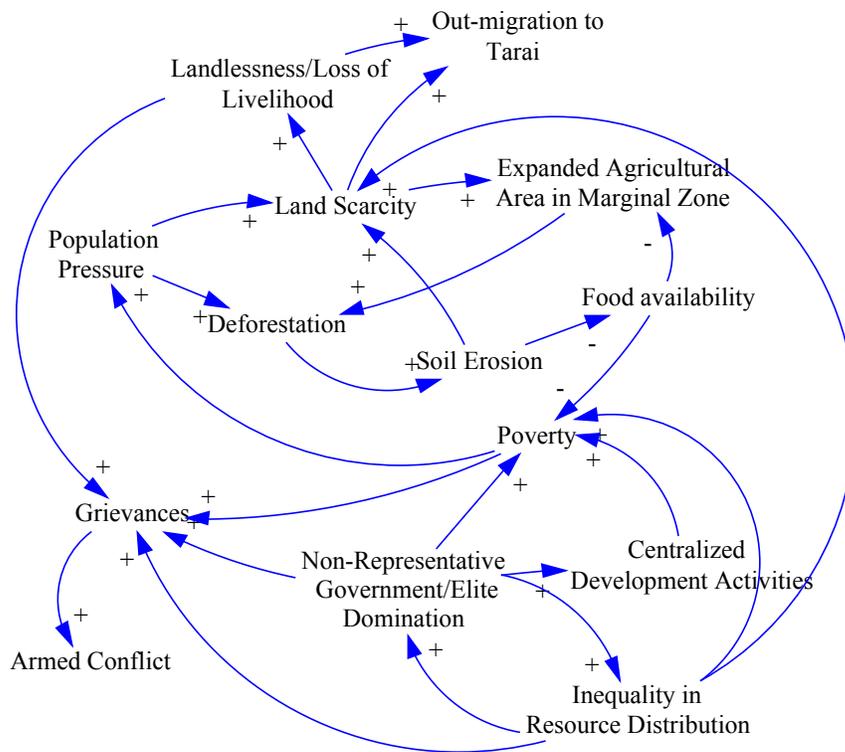


Figure 6. A causal loop diagram of the showing the causal relationships of factors leading to the insurgency.

Earlier in the analytical framework, Homer-Dixon, Ohlsson, and researchers at ENCOPI and PRIO were quoted as having presented theoretical evidence to suggest that environmental scarcity and its effects can result in conflict. Later, empirical analysis evidence was given to show the current state of Nepal's political environment, socio-economic conditions, and natural environment. Nepal is highly dependant on primary production to meet its subsistence needs and disruptions in this process, either by political, social, economic, or natural barriers without compensation results in increased incidence of poverty and heightened grievance levels.

6.1 Anatomy of a Conflict: Greed and Grievance

Parallels can be drawn between the situation in Nepal and those in the Philippines and Chiapas, Mexico. In both these countries unequal access to agricultural land and population growth led to migration to marginal hillsides, and erosion and deforestation contributed to economic hardship that spurred insurgency and rebellion (Homer-Dixon, 1999:77-8). This causal chain events, know by Homer-Dixon as *Ecological marginalization*, is clearly one of the factors that contributed to the Maoist insurgency. However, civil strife is a function of both the level of grievances motivating challenger groups and the opportunities available to these groups to act on their grievances. The probability of civil unrest is highest when multiple pressures at different levels in society interact to increase grievance and opportunity simultaneously (Homer-Dixon, 1994). Paul Collier, the director of studies at the Development Research Group at the World Bank, states that, "a useful conceptual distinction in understanding the motivation for civil war is that between greed and grievance. At one extreme rebellion might arise because the rebels aspire to wealth by capturing resources illegally. At the other extreme they might arise because rebels aspire to rid the nation, or the group of people with which they identify, of an unjust regime" (Collier, 2000:91-2).

Consider the long and bloody conflict between *Sendero Luminoso*, ("the Shining Path") and the Peruvian government. Both foreign counter-insurgency experts and the CPN-M themselves have drawn analogies between their movement and Peru's Sendero Luminoso group because of its radicalism and its high-altitude geographical background. Nepalese Maoists have even expressed solidarity with Sendero Luminoso via the websites of the London-based Revolutionary Internationalist Movement (Bray *et al*, 2002:9). However, although the Sendero Luminoso conflict is clothed in Marxist jargon and promises of economic and social emancipation for the Indian peasants of the Upper Hualaga valley, Sendero Luminoso seems to have been motivated mainly by the desire to profit from supplying cocaine to the drug cartels in Colombia and Peru (de Soysa and Gleditsch, 1999:19).

Discussion of economic opportunity (or greed) as a cause of conflict has arisen mainly in the context of natural resources endowment (Bray *et al*, 2002:10). Collier (2000:91-110) points out that insurgencies in Angola, Indonesia, Colombia, and Peru are largely based in economic opportunity despite what the Rebel leader might claim. Nepal, on the other hand, has few capturable resources that would make rebellion either viable or attractive. Rather, the circumstances in Nepal point to grievances as the major catalyst for conflict

(Bray *et al*, 2002:13). In addition, the origins of the conflict have a cross-cutting ethnic and caste dimension.

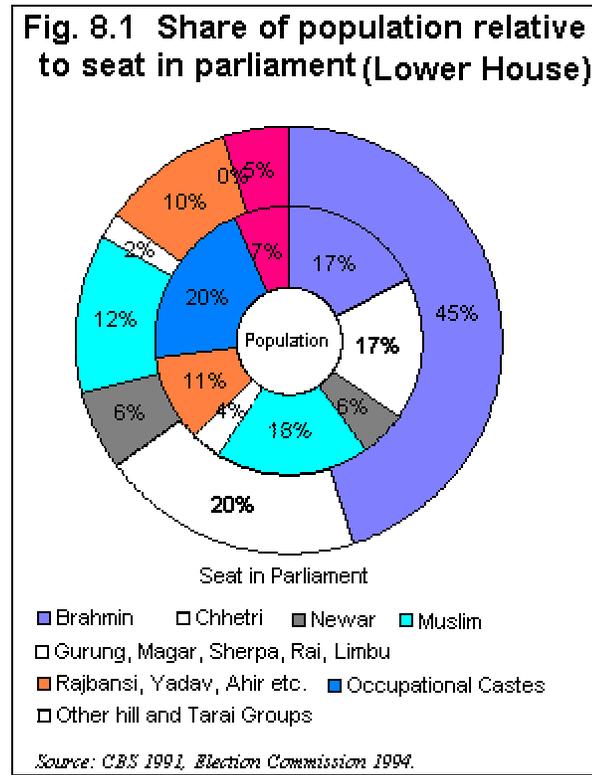
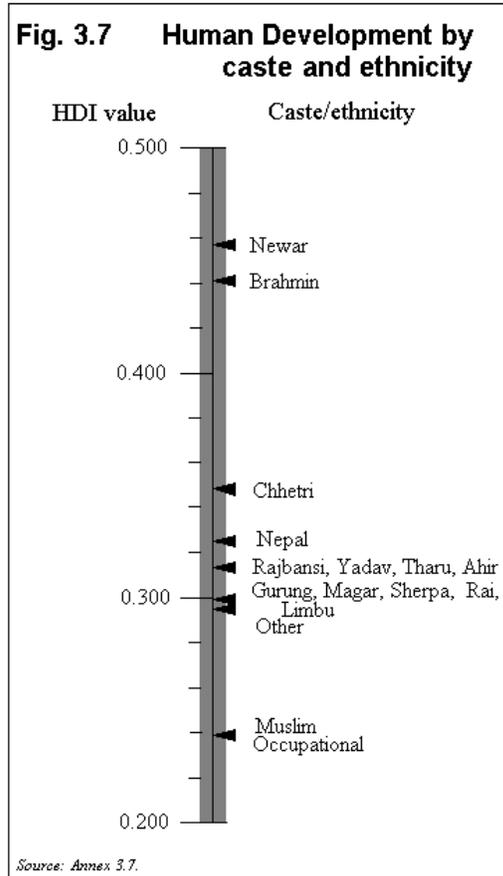


Figure 4 and 5. Living standards and political representation is proportionally better for those of the higher castes. Source: UNDP (1998).

The overlap between caste and ethnicity occurs because people from the less privileged castes in Nepal (the non-Bahun-Chettri-Newari peoples) often originate from different ethnic groups than those of the elite. In general the less privileged classes rank lower on the HDI (Figure 4), signifying that they have less opportunity for education, less available income, and because livelihood in Nepal is tied to the land, less land. In addition, the privileged classes retain the majority of the political power and the less privileged classes are grossly under represented (Figure 5). Since Nepal's civil war also has an ideological orientation, Maoism, it exhibits a strong element of class struggle and is an extension of political struggles against elite domination. Although the CPN-M's political analysis is based on class, it has proved skilled in exploiting discontentment among Nepal's less privileged ethnic groups, such as the Magars of Mid-Western Nepal (Bray *et al*, 2002:13). Likewise Homer-Dixon points out that, "at some point, the strength of grievances of disadvantaged groups may cross a critical threshold, and they will act violently against those groups perceived to be the agents of their economic misery or those thought to be benefiting from a grossly unfair distribution of economic

good in society” (Homer-Dixon, 1999:143). Among the marginalized and voiceless in Nepal are the women.

Women now constitute a third of the Maoist movement (HSPH, 2001:5-6). While the status of women varies among different ethnic groups, in general, Nepal is a strict patriarchal society where women are subordinate to men. Women receive less schooling, work longer hours, receive less education and despite new laws to the contrary have no proper rights to property. Consequently, among the 40 demands presented by the CPN-M to the government was a demand for equal rights to property for women. Women also bear the brunt of environmental degradation. In N.S. Jodha’s study of the Basmati zone in the middle mountains, he found that the average distance traveled to acquire one head load of fuel had increased from below one kilometer in 1950-52 to six kilometers in 1988-90. Similarly the average distance for fodder collection had increased from under one to four kilometers in 1950-52 to 1988-90, respectively. Because women are usually responsible for collecting environmental products such as fuel wood, leaf fodder, and water, they suffer proportionally worse as the environment deteriorates. In addition the increasing food insecurity pressures men to leave their farms for months at a time in order to find waged labor, leaving women to care for the children in increasingly impoverished conditions.

The effect of ecological destruction on women of subsistence populations received worldwide attention in the 70’s when women in the Himalayan hills of neighboring India, began the Chipko movement. The Chipko movement consisted of villagers, mainly women, who began hugging trees in order to prevent their destruction. The shift to commercial agriculture is further deteriorating the condition of women. Shiva (1988:7) notes “when commodity production as the prime economic activity is introduced as development, it destroys the potential of nature and women to produce life and goods and services for basic needs”. The development imposed upon the Nepalese has introduced western dualisms that have ignored women’s relationship with nature and neglected the value of what is traditionally considered women’s work, including subsistence agriculture, which though their role has been downplayed by most western development agencies is largely performed by women (Mellor, 1997). Interestingly, it has also been argued by some that egalitarian land distribution leads to better status of women in the rural areas and to protection of the environment (UNDP, 1998:214).

Researchers at The International Peace Academy have conducted a statistical analyses of the conflict in Nepal and have found a high correlation between the intensity of conflict (measured by the number of deaths in each district) and the regional UN Human Development Index (HDI) indices, this suggests that grievance and horizontal inequality play a vital role in determining the intensity of the insurrection (horizontal inequity arises between heterogeneous social groups bases on geography, ethnicity, religion or class). In addition there is a significant correlation between landlessness and marginal land holding and the intensity of the rebellion, point to land issues and associated malpractices as an even more significant factor in determining the insurgency’s depth (Bray *et al*, 2002:14).

6.2 Analysis of CPN-M's Demands

Although environmental scarcity or degradation was not highlighted by the CPN-M in their 40-point list of demands, some of the demands relate to rural poverty, landlessness, and resource inequity. Social and economic grievances of this nature are directly linked to environmental scarcity either as a cause or an effect. For instance demand number 25 states “In both the tarai and the hilly regions there is prejudice and misunderstanding in backward areas. This should be ended and the backward areas should be assisted. Good relations should be established between villages and the city” (printed in GTZ, 2002, translated into English). The term ‘backward’ is vague but de Soysa and Gleditsch (1999:18) note that heavy dependence on agriculture is usually associated with a ‘backward’ economy. Similarly Shiva (1988:12) writes, “Thus are economies based on indigenous technologies viewed as ‘backward’ and ‘unproductive’”. Assuming Shiva and de Soysa and Gleditch’s definition of backward is the same as Bhattaria’s, he apparently is addressing the government’s neglect of the subsistence farmers and the widely held view that agriculture for subsistence needs as opposed to production is backward. In addition, Bhattaria is apparently blaming this view on an urban bias, where the needs of the city are taking precedence over those of the rural zones. De Soysa and Gleditch’s also note that urban bias and dysfunctional political processes are fundamental to motivating collective grievances arising from food shortages and underdevelopment and explaining violent conflict. While many factors are involved in the persistence of underdevelopment and food shortages, it is certain that environmental degradation, namely deforestation and soil erosion, have contributed to falling agricultural productivity.

Demand number 26 of the CPN states that, “Decentralization in real terms should be applied to local areas which should have local rights, autonomy and control over their own resources.” This demand deals with elements of elite domination of natural resources and the large-scale development projects which ignore the needs, interests, knowledge and experiences of local communities. Often these development organizations meet their stated target, however, as Upreti (2002:) notes they have, “increased conflict because local rules and regulations were ignored or even replaced, certain groups were deliberately sidelined and worked in a top-down linear framework, overriding prior rights of local people”. Lack of property rights for forests have contributed to their degradation and depletion. Similarly demand number 27 states that, “Those who cultivates the land should own it. (The tiller should have the right to the soil he/she tills.) The land of the rich landlords should be confiscated and distributed to the homeless and other who have no land”. This represents the essence of the conflict. Land is life in an agrarian society. Without it people are forced to rely on wage earning opportunities, which for the most part do not currently exist in Nepal. Even though overall agricultural productivity is limited, the overall lack of food is caused more by inequality in land distribution. CPN-M demand number 33 states, “Fertilizer and seeds should be made easily and cheaply available and farmers should be given a proper market price for their production.” Taken at face value this demand indicates that peasant farmers are not able to afford fertilizer and their incomes and productivity are suffering. It also signifies that traditional method of maintaining fertility is running into resource constraints. In addition, because urban dwellers spend a large portion of their income on

food, and obviously prefer lower prices, they often lobby to have food prices set artificially by marketing boards, and imported food becomes cheaper as a result of artificially inflating the value to the local currency (de Soysa and Gleditsch, 1999:20). Thus, the large export-crop producers (mainly found in the Tarai region) benefit from the artificially inflated local currency, which provides incentives for the people to produce cash crops rather than food. This arrangement benefits the rural elite and the urban industrialists (Ibid:20).

6.3 The Relative Role of the Environment

In Dan Smith's article entitled *Trends and Causes of Armed Conflict* (2000), he concludes that the most war prone nations are those which are not quite autocratic and not quite democratic. He cited countries moving toward democracy as being the most prone to armed conflict. His analysis coincides with the situation in Nepal where here the recent establishment of a democratic government, heightened the peasants sense of deprivation.

Recently Homer-Dixon's argument that environmental scarcity leads to violence has come under increasing scrutiny by peace and conflict researchers. Many researchers claim that economic conditions continually emerge as the most explanatory causal factor in conflict (Hauge and Ellingsten, 1998). Indicators for low economic performance include GNP per capita, a disproportionately large agricultural sector, and a country's economic vulnerability to fluctuations in the world markets. However, while poor economic conditions and poverty are undoubtedly part of the causal relationship of violent conflict in Nepal, the motive for conflict appears different. Collier and Hoeffler (Cited in Smith, 2000) noted that, "even in poor societies, leaders are usually competing with one another for control of the available economic surplus, small as that may be. When the available surplus is small, as in poor societies or where there has been catastrophic slump, competition for it may be particularly intense, and a violent escalation will very likely result". He goes on to cite Angola, Burundi, and Rwanda as examples where this phenomenon has occurred.

Nepal, although desperately poor, does not fit this cycle of violence. In fact, since the insurgency corruption, especially in the Maoist controlled zones, has been controlled through greater transparency. In addition the Maoists have put pressure on national politicians to introduce social reforms, and socio-economic problems such as alcohol abuse, gambling and excessive interest rates of moneylenders have become more controlled (GTZ, 2002:11). Thus, the conflict in Nepal is not a result of leaders competing for the small economic surpluses but a genuine people's movement geared towards changing the political and social climate in an effort to obtain a more secure livelihood for the rural poor. Greed and economic opportunity has not played a central role in the pattern of violence in Nepal, although most analysts express concern over the possible splintering of the Maoist group, where rogue fractions could seek to profit from the violence.

Dan Smith (2000) sums up his article by stating that,

- Poor economic conditions are the most important long-term causes of intra-state armed conflicts today;
- Repressive political systems are also war-prone, especially in periods of transition;
- Degradation of renewable resources (specifically soil erosion, deforestation and water scarcity) can also contribute significantly to the likelihood of violent conflict, but are in general not as central to the problem as political and economic determinants;
- Ethnic diversity alone is not a cause of armed conflict, but parties to a conflict are often defined by their ethnic identities.

Despite the premise of this paper, the author does not necessarily disagree with Smith's analysis. It has also been argued here that ethnic, economic, and social factors have contributed to the causal chain of events leading to armed conflict in Nepal. However, the factors presented by Smith are nonspecific to various cases. The role of environmental scarcity or degradation of renewable resources in Nepal is more pronounced than the recent conflicts in Africa, while at the same time competition for economic resources among warring fractions has remained a very small part of the causal story. Part of the difficulty in assigning the relative weights to the various factors involved in instigating war is due the inter-relationships between the factors. For example, loss of livelihood, though likely to be classed as an economic factor, can be the result of environmental scarcity. The same can be said for poverty. Poverty is classically an economic concern. However, the UN and World Bank now acknowledge its social and ecological aspects as well. Thus, blurring the lines between the environmental and economic influences leading up to conflict. In addition, the point was made earlier that in a subsistence economy poverty and environmental degradation are largely synonymous.

7 Conclusion

Considering the political, socio-economic, and environmental conditions of Nepal it does not seem entirely implausible that armed insurgency has occurred. Continued elite domination, population growth, environmental degradation, and unequal resource distribution have all contributed to creating a condition of environmental scarcity. The social effects resulting from the environmental scarcity include poverty, loss of livelihoods, landlessness, food insecurity, and migration. Environmental scarcity has not been the sole factor in raising peasant grievances leading up to the Maoist uprising, and it is impossible to predict whether or not this conflict would have occurred if environmental scarcity had not factored into the equation. While the failure of the newly installed democratic government seems to have provided the spark for the conflict, years of poverty provided the fuel. Indeed it would be easy to chalk this conflict up as an agrarian class struggle where peasants, fed up with years of inequality, simply rose up against their oppressors. However, various researchers have shown that environmental scarcity was a contributing factor to violence in Rwanda, Kosovo, the Philippines, Mexico, Haiti and other intra-state wars. Experts agree that environmental scarcity always interacts with other political, social and economic factors to create a condition of large scale conflict. Many experts have down played the role of the environment in conflict, citing economic

and political conditions as the major contributing factors. However, Nepal does not exhibit the symptoms of a 'greed' motivated conflict, indicating that grievances of Nepalese peasants is the major motivation for violence. In this way, environmental scarcity has not taken a back seat to economic and political factors. Rather environmental scarcity, economic deprivation, and an unrepresentative government have worked in common or parallel causal mechanisms to raise peasants grievance level. For instance, past deforestation in Nepal was caused largely by government policies but it was the peasants who clear the land and now suffer from its affects. Also development schemes geared toward raising productivity have worked against the rural poor and lead to increased poverty and environmental scarcity. Very likely as long as the social, economic, and political disparities remain and the dominant classes retain their influential position, the peasantry, the landless and the disenfranchised will remain marginalized and conflicts will continue.

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Appendix 1: Calculating the Human Development Index (HDI)¹

The HDI is a summary measure of human development. It measures the average achievements in a country in three basic dimensions of human development:

- A long and healthy life, as measured by life expectancy at birth.

For Nepal, life expectancy at birth is 55 years. The index of life expectancy was calculated as:

$$\text{Life Expectancy Index} = [55 - 25] / [85 - 25] = 30 / 60 = 0.500$$

- Knowledge, as measured by the adult literacy rate (with two-thirds weight) and the combined primary, secondary and tertiary gross enrolment ratio (with one-third weight).

For Nepal, adult literacy rate is 36.72 percent and mean years of schooling is 2.254 years. The index for educational attainment has been calculated as follows:

$$\text{Literacy Index} = [36.72 - 0] / [100 - 0] = 36.72 / 100 = 0.367$$

$$\text{Mean Years of Schooling Index} = [2.254 - 0] / [15 - 0] = 2.254 / 15 = 0.150$$

$$\text{Educational Attainment Index} = 2 (\text{Adult Literacy Index} + (\text{Mean Years of Schooling}) / 3) = [2 (0.367) + 1 (0.150)] / 3 = 0.295$$

- A decent standard of living, as measured by GDP per capita (PPP US\$).

For Nepal, per capita PPP income was \$1186 in 1996, and thus its absolute value is used for the computation of Income Index which has been calculated as follows:

$$\text{Income Index} = [1186 - 100] / [6154 - 100] = 1086 / 6054 = 0.179$$

Human Development Index (HDI) is the unweighted average of life expectancy index, educational attainment index and income index, and is obtained by dividing the sum of these indices by 3.

$$\text{HDI} = [0.500 + 0.295 + 0.179] / 3 = 0.325$$

¹ Source: UNDP(1998:256-57)