

# Population, Poverty and Environment



CHAPTER

13

## **CONTEXT AND RATIONALE**

---

*Poverty is a major cause and effect of global environmental problems... Many parts of the world are caught in a vicious downwards spiral: poor people are forced to overuse environmental resources to survive from day to day, and their impoverishment of their environment further impoverishes them, making their survival more difficult and uncertain (WCED, 1987).*

These statements by the influential World Commission on Environment and Development (WCED) succinctly capture the dominant viewpoint on the interactions between poverty and the environment. It is commonly believed that poor people are compelled to exploit their surroundings in an unsustainable fashion in order to secure their short-term survival. This exploitation, it is argued, further degrades the natural resource base on which the poor depend and leads to worsening poverty.

Although these viewpoints are intuitively plausible, more recent studies and empirical evidence have suggested that the interactions between poverty and the environment are much more complex than previously thought. The World Bank (WB), for example, has likened the poverty-environment interface to a conundrum; although several pieces of the picture have been identified – including a number of crucial links and features – the entire picture remains unclear (WB, 1997). Downward “spirals of need” may in fact be the exception rather than the rule; at the very least, it is necessary to identify the specific circumstances under which this traditional link between poverty and environment may operate, rather than assume without question that it operates at all times.

This chapter looks at the population, poverty and environment nexus in the Northern Areas. It begins with a brief review of the literature, and then presents a short profile of the current situation prevailing in the region. It goes on to identify some of the principal issues and concerns in NA, and describes a number of ongoing poverty alleviation and environmental management initiatives. In the final section, a set of strategic directions for the future is presented. The chapter is based upon the NASSD background paper by Iftikhar (2003).

## A Review of the Literature

### Population, Poverty and Environment Linkages

Over the last decade, there has been a considerable amount of theoretical and empirical research on the various aspects of the poverty-environment nexus. Ekbohm and Bojo (1999) have made a significant contribution to the debate by identifying the explicit and implicit hypotheses contained in the literature. These can be summarised as follows:

- n H1: Poor people are agents of environmental degradation;
- n H2: Poor people are the main victims of environmental degradation;
- n H3: Incomplete property rights reinforce a vicious cycle of poverty-environment interactions;
- n H4: Population growth causes both poverty and environmental degradation;
- n H5: Higher per capita income increases environmental pressure.

With respect to H1, Dasgupta (1997) challenges the argument that the poor degrade their environmental resource base because poverty forces them to discount future incomes at unusually high rates (see Bardhan, 1996). Dasgupta finds little empirical support for this argument; in fact, the evidence suggests that many poor people and societies have been able to generate remarkably stable and resilient institutions for coping with the income variability that being poor implies (Dasgupta, 1997; Ostrom, 1990; Swanson, 1995). Dasgupta argues that the root causes of environmental degradation more commonly lie in institutional failures, such as deficient agricultural policies, the lack of property rights for the poor and the breakdown of community resource management systems. DFID *et al.* (2002) highlight the low consumption and production levels of the poor, and argue that they have a relatively light environmental impact.

With respect to H2, there is overwhelming evidence in support of this hypothesis. Songsore and McGranahan (1993, p. 33) capture the essence of this argument by noting that “environmental risks go hand-in-hand with socio-economic deprivation”. Proponents of this hypothesis also argue that: poor people are more vulnerable to the loss of biological resources; extreme environmental stress can force the poorest to migrate; inequality reinforces environmental pressure; and government policies can create or reinforce a vicious cycle of poverty-environment interaction.

With respect to H3, there is also empirical evidence that supports the hypothesis that the quality of environmental management is correlated with security of tenure (Saxena, 1988; Hoy and Jimenez, 1996; Southgate, Sierra and Brown, 1989). However, there is a need to exercise extreme caution with respect to policy prescriptions. The issue is not about the privatisation of rights; rather, it is about community rights to manage common property resources (Dasgupta, 1997; Ostrom, 1990; Forsyth *et al.*, 1998). The literature suggests that the privatisation of common property resources works to exacerbate inequalities and hence degradation (Dasgupta, 1997).

H4 was first put forward by Malthus over two hundred years ago, and is probably the most contentious hypothesis of the five. Malthus postulated that population growth would tend to rise exponentially, while food production would tend to increase linearly. The net result of his analysis was that population growth would eventually outstrip the supply of food, resulting in famines, deprivation and chaos. A basic policy proposal stemming from this hypothesis is to limit population growth. Mink (1993), for example, argues that the deprived living conditions of the poor lead to lower productivity, which in turn provides an incentive for raising large families; this pattern, he asserts, subsequently contributes to poverty.



Born to be poor?

Others, however (such as Prakash, 1997), while recognising that population growth does exert pressure on productive lands and resources, argue that population increases do not – in and of themselves – cause damage. Rather, it is the complex and locally-specific social, economic, environmental and governance circumstances in which population growth takes place that are usually the driving forces behind poverty-environment interactions; these, in turn, can be strongly influenced by external policy and institutional factors (DFID *et al.*, 2002). There is, for example, considerable evidence to show that population growth in some parts of the world (e.g., Kenya) has led to the rehabilitation of degraded and formerly unproductive lands (Tiffen *et al.*, 1994). Similarly, research in the middle hills of Nepal has shown that farmers adopt organisational and land management practices to reduce the impacts of population growth and environmental change, such as by using local landslides to increase soil fertility (Ives and Messerli, 1989). Two simple questions come to mind: Would the environment cease to be degraded if population growth were checked? Would the environment cease to be degraded if poverty were reduced or eliminated? These two issues are explored in more detail in the sections below.

H5 is presented as a counter-hypothesis to H1. It looks at the macro-level relationship between environmental degradation in poor versus rich economies. While it is clearly recognised that some environmental problems tend to become worse with rising incomes (e.g., carbon dioxide emissions and municipal waste per capita), other problems commonly decline (e.g., sulphur dioxide emis-

sions). The key point here is that, rather than trying to apportion blame for environmental degradation on the poor or the wealthy, it may be more useful to identify the shortcomings of our economic and social systems, which fail to take into account the tremendous social costs of degradation. This will lead to an assessment of the principal causes of environmental degradation, such as market, institutional and policy failures.

### New Thinking on Poverty

Sen (1981) has identified two essential questions regarding poverty: Who are the poor? And at what level is poverty defined? Conventional definitions of poverty have focused on income and consumption, as these were believed to be objective and subject to measurement. However, both income and consumption-based definitions of poverty have been widely criticised for not capturing all the elements of poverty. For example, there is a growing debate about whether income should be assessed in terms of flows (e.g., the sale of agricultural products) or assets (e.g., land that may be rented or used as collateral on loans) (Reardon and Vosti, 1995). Secondly, neither measurement includes the consumption of state-provided commodities (such as health and education) or common property resources (e.g., forests and rangelands). Thirdly, the measurements do not contain information about the distribution of income within the household (e.g., the proportion which is available to women). Fourthly, access to income does not necessarily indicate whether people have access to common public services, such as clean water, sanitation, education and health.

These concerns have led to the development of a different set of indicators, based on the fulfilment of basic needs and the quality of life. Although these indicators are more robust than the income-based definitions, they too have come under criticism. Among other weaknesses, they do not capture all the manifestations of poverty. They also tend to focus on inputs rather than processes and outcomes (Banuri and Khan, 2001).

In an effort to address these various shortcomings, another assessment methodology known as the sustainable livelihoods (SL) framework has been developed. The SL framework takes a broad-based approach to assessing deprivation, and in particular, emphasises the importance of vulnerability and powerlessness (Box 13.1). In this regard, it highlights net asset position rather than flows of income, and emphasises shocks (short-term impacts) rather than stresses (longer-term threats to income) (Chambers, 1983).

It is these broader concepts of livelihoods and well-being that tend to emerge from self-assessments, such as the participatory poverty assessment recently undertaken in Pakistan by the Asian Development Bank (ADB). The degree to which people draw on criteria other than income during these self-assessments of poverty can be striking (see Jodha, 1991; ADB, 2002). Of particular significance in the ADB assessment is the inclusion of environmental goods and services, which conventional definitions of poverty tend to overlook.

In summary, it is perhaps most meaningful and appropriate to define poverty in terms of vulnerability and to look at multiple dimensions of deprivation, including: lack of income and other material means; lack of access to basic social services such as education, health and safe water; lack of personal security; and lack of empowerment to participate in the political processes and decisions that influence one's life (DFID *et al.*, 2002).

### New Thinking on the Environment

In parallel with the development of new approaches to the issue of poverty, there has also been a corresponding change in the way in which environmental issues are viewed. Many of the environmental problems which once played a central role in the conventional "vicious downward spiral" paradigm are now being reassessed. Long-standing ecological concepts – such as natural vegetation climax and carrying capacity – are increasingly being challenged in the light of more recent research in the natural sciences.

Among the new concepts that are beginning to emerge are those which highlight non-equilibrium perspectives and the importance of variability over space and time. The concept of carrying capacity – which simply refers to the maximum population that can be sustained in a *given environment* (singular) – has also been called into question.

The concept is problematic because it simplistically focuses on a single number, and because humans are dependent on multiple *environments* (plural) in complex ways. It has been argued that the term is "meaningless because the consequences of both human innovation and biological evolution are inherently unknowable" (Arrow *et al.*, 1995).

Instead of carrying capacity, it may be more appropriate to focus on the resilience of the ecosystems on which humans depend. For example, in addition to focusing on the role of biodiversity in existing ecosystem functions, it is also important to develop an understanding of the role that biodiversity plays in helping ecosystems 'bounce back' in the face of shocks or stresses (e.g., climate change). This is the *diversity-resilience* linkage. Systems that are more diverse, it is believed, have a greater capacity to respond to such shocks, whereas those with low diversity are more likely to "collapse" and not recover (Holling *et al.*, 1994).

This concept is similar to that which is commonly used in a socio-economic context (Box 13.2). For example, someone saving for the future will often adopt a portfolio of assets ranging from cash with no rate of return to long-term investments. The aim of having a portfolio is to spread risk so that events that threaten one asset are unlikely to threaten others. A diverse array of species is similar to a diverse portfolio. The diversification of crops in farming is based on the same concept; farmers, for example, may choose to diversify their crops in order to reduce their risks, even though this may reduce overall productivity.

New environmental paradigms have also emerged within the social sciences. For example, old concepts, such as that of an aggregate environment in which "population" and "society" relate, are being challenged by new ideas about socially-differentiated environments. The new concepts recognise that people use and value elements of the environment in different ways; as a result, their definitions of environmental degradation may also vary.

### Access and Entitlements

For neo-Malthusians, the issue was straightforward: rapid population growth was seen as a direct cause of

#### Box 13.1

#### Vulnerability and Resilience

Vulnerability is a measure of the enforced exposure to critical stress or shock, combined with the restricted capacity to cope. It is important to note that vulnerability is a function of powerlessness: it is created as people face phenomena beyond their control, and at times, their understanding. Resilience is defined in one of two ways: the ability to withstand change; or the capacity to restore and replenish following some externally imposed shock.

Source: Source: WB, 1991.

poverty, malnutrition and hunger. The solution to this was equally simple: invest in family planning. Recent research at the global level, however, does not support these assertions. For example, those regions in which most of the world's population lives continue to experience rising per capita food production. Misguided agricultural and trade policies, coupled with poor food distribution, are now believed to be the root causes of hunger and malnutrition; rapid population growth is believed to exacerbate the situation by magnifying the impacts of bad policies (Merrick, 2002).

Sen (1981) has been instrumental in highlighting the crucial importance of *access* to food (rather than its production) in determining food security and the resilience of populations. Sen defines entitlements as actual or potential bundles of commodities that can be accessed by individuals; he argues that most famines are caused by *entitlement* failures, which in turn are caused by human political action.

More recently, authors such as Leach *et al.* (1997a; 1997b) have adapted Sen's entitlements approach. This approach, known as *environmental entitlements*, also shifts the emphasis away from a preoccupation with resource scarcity to the issues of access, control and management. One of the key aspects of this approach is that it looks at the role that formal and informal institutions play in shaping people's resource endowments and

entitlements, and hence, in mediating people-environment relations; in this approach, the relationship between poverty and environment becomes indirect (Leach *et al.*, 1997a; 1997b).

### Conclusion

To summarise, this brief review of the literature suggests that conventional definitions of both poverty and environment are too narrow, and that there is a need for a broader spectrum of approaches. The literature also suggests that poor people are more often than not the victims – rather than the agents – of environmental degradation. The environment *does* matter to people living in poverty, and its degradation – as suggested by the evidence – impacts the poor particularly severely. This does not, however, mean that the poor are passive; to the contrary, the poor are often acutely aware of the dynamics of their situation and have developed a wide array of coping strategies.

## STATUS

### Population

Table 13.1 provides a summary of the population in the different districts and *tehsils* of the Northern Areas. According to the Population Census Organization (1998), the total population of the Northern Areas in 1998 was

### Box 13.2

### Two Examples of Risk Reduction through Diversification

Using an Islamabad-based businessman and a Northern Areas household as examples, this box seeks to illustrate the essence of the discussions so far on vulnerability, resilience and self-sufficiency.

The businessman, as an individual, seeks to develop a set of endowments of assets and resources within a specific context, which is influenced by local, national and even global factors. These assets might include human capital (e.g., university degrees), physical capital (e.g., a vehicle), financial capital (e.g., stocks, bonds, bank accounts, employment), natural capital (e.g., property) and social capital (e.g., the social networks in which he takes part). Together, these assets contribute to self-sufficiency, resilience and empowerment in a dynamic sense. By holding a diverse portfolio of assets, the businessman spreads his risks and protects himself against the shocks that may threaten one or more of his assets. Should he find himself out of a job, for example, he can use his financial capital to absorb the shock; by using his human and social capital, he can also overcome the long-term impacts of this loss. The presence of market, state and civil society institutions means that he can access resources from different spheres (e.g., commodities, jobs, state-provided services, legal rights and gifts). Hence, his endowments entitle him to access a variety of resources and contribute to his conception of livelihood security.

A Northern Areas farmer living in a relatively inaccessible, fragile and marginal mountain environment would adopt a different strategy in developing his set of endowments of assets and resources. If market and state institutions are generally weak, much of his strategy is likely to focus on building collective institutions (social capital). With an endowment of land, he may choose to diversify his farming practices (e.g., grow grain crops, vegetables and fruit trees), even if this leads to reduce productivity. This strategy would be supplemented by a local system of knowledge (human capital), which would be able to provide information about which crops work best, and why. If one crop fails, the shock could be absorbed by the availability of other crops. Moreover, by building social capital, a household's welfare could be supplemented by the availability of food in the community in times of crisis. The farmer would also be dependent on common property resources such as forests, rangelands and water. Collective institutions (of the poor) would also be needed to access, control and manage common property resources. In the literature, these are referred to as informal institutions that set the norms and rules for governing local natural resource management (Forsyth *et al.*, 1998). A major question that arises is: What are the implications for livelihoods and common property resources if the state supersedes local institutions and imposes its own norms and rules on access and control?

Source: Source: WB, 1991.

870,347; of this total, 122,324 people (14 per cent) were classified as urban, and 748,023 (86 per cent) were classified as rural.

The 1998 census suggested that the NA's annual population growth rate was 2.47 per cent, as compared to 2.6 per cent nationally. Average population density was 12 persons/km<sup>2</sup>, in contrast to the national average of 166 persons/km<sup>2</sup>. If the NA's uninhabitable areas (e.g., mountains and glaciers) are removed from the equation, population density rises to approximately 35 persons/km<sup>2</sup> – still far below the national average.

The age-sex pyramid for the Northern Areas (Figure 13.1) is particularly striking. It is estimated that nearly 50 per cent of the population is under the age of 15. Of the total female population, approximately 39 per cent is believed to be of reproductive age. This implies that – even if the NA's birth rate were immediately reduced to replacement level – the demographic momentum of the population would still result in more than a 75 per cent increase over the next two decades, before eventually beginning to stabilise. The lower levels of the pyramid can be likened to a wave, which is surging upwards and leading to inevitable population increases (Iftikhar, 2003).

## Poverty

### Income and Poverty Levels

There is very little information about the incidence of poverty in the Northern Areas. According to the Farm Household Income and Expenditure Surveys carried out by AKRSP between 1991 and 1997, 32 per cent of the population of the Northern Areas could be classified as poor, and nine per cent as very poor. Average household income was approximately PKR 10,000 per year, or less than 60 per cent of the national average (AKRSP, 2000a).

In 1998, a second study estimated that per capita income in the Northern Areas was PKR 7,500 per year, and suggested that 28 per cent of the population was below the poverty line. These figures can be compared with national statistics for the same year, which indicated that 31 per cent of Pakistan's rural population was below the poverty line and that annual per capita income was PKR 18,901 (Iftikhar, 2003).

Although data for the Northern Areas as a whole are generally lacking, more detailed records on the incidence of poverty in Gilgit District between 1982 and 1998 are available (Table 13.2). These data indicate that per capita

**Table 13.1** Population of the Northern Areas (1998)

District	Tehsil	Population				
		Urban	Rural	Male	Female	Total
Baltistan	<b>TOTAL</b>	<b>26,023</b>	<b>188,825</b>	<b>114,917</b>	<b>99,931</b>	<b>214,848</b>
	Skardu	26,023	55,215	44,000	37,238	81,238
	Rondu	0	34,375	17,964	16,411	34,375
	Gultari	0	11,966	6,688	5,278	11,966
	Shigar	0	45,322	23,881	21,441	45,322
	Kharmang	0	41,947	22,384	19,563	41,947
Diamir	<b>TOTAL</b>	<b>16,575</b>	<b>187,016</b>	<b>105,443</b>	<b>98,148</b>	<b>203,591</b>
	Astore	0	71,666	37,603	34,063	71,666
	Chilas	16,575	56,157	37,575	35,157	72,732
	Darel/Tangir	0	59,193	30,265	28,928	59,193
Ghanche	<b>TOTAL</b>	<b>12,883</b>	<b>75,483</b>	<b>45,585</b>	<b>42,781</b>	<b>88,366</b>
	Khaplu	12,883	51,464	32,831	31,516	64,347
	Mashabrum	0	24,019	12,754	11,265	24,019
Ghizar	<b>TOTAL</b>	<b>10,142</b>	<b>110,076</b>	<b>59,248</b>	<b>60,970</b>	<b>120,218</b>
	Punial	10,142	27,631	18,173	19,600	37,773
	Ishkoman	0	18,406	9,206	9,200	18,406
	Gupis	0	29,648	14,793	14,855	29,648
	Yasin	0	34,391	17,076	17,315	34,391
Gilgit	<b>TOTAL</b>	<b>56,701</b>	<b>186,623</b>	<b>128,028</b>	<b>115,296</b>	<b>243,324</b>
	Gilgit	56,701	88,571	77,359	67,913	145,272
	Aliabad	0	32,219	16,404	15,815	32,219
	Gojal	0	14,446	7,444	7,002	14,446
	Nagar-I	0	28,825	15,347	13,478	28,825
	Nagar-II	0	22,562	11,474	11,088	22,562

Source: PCO, 1998.

income had risen from 46 per cent of the national average in 1982/83 to 68 per cent in 1997/98. Perhaps even more importantly, the data suggest that only 23 per cent of the district's population was below the poverty line (AKRSP, 2000a).

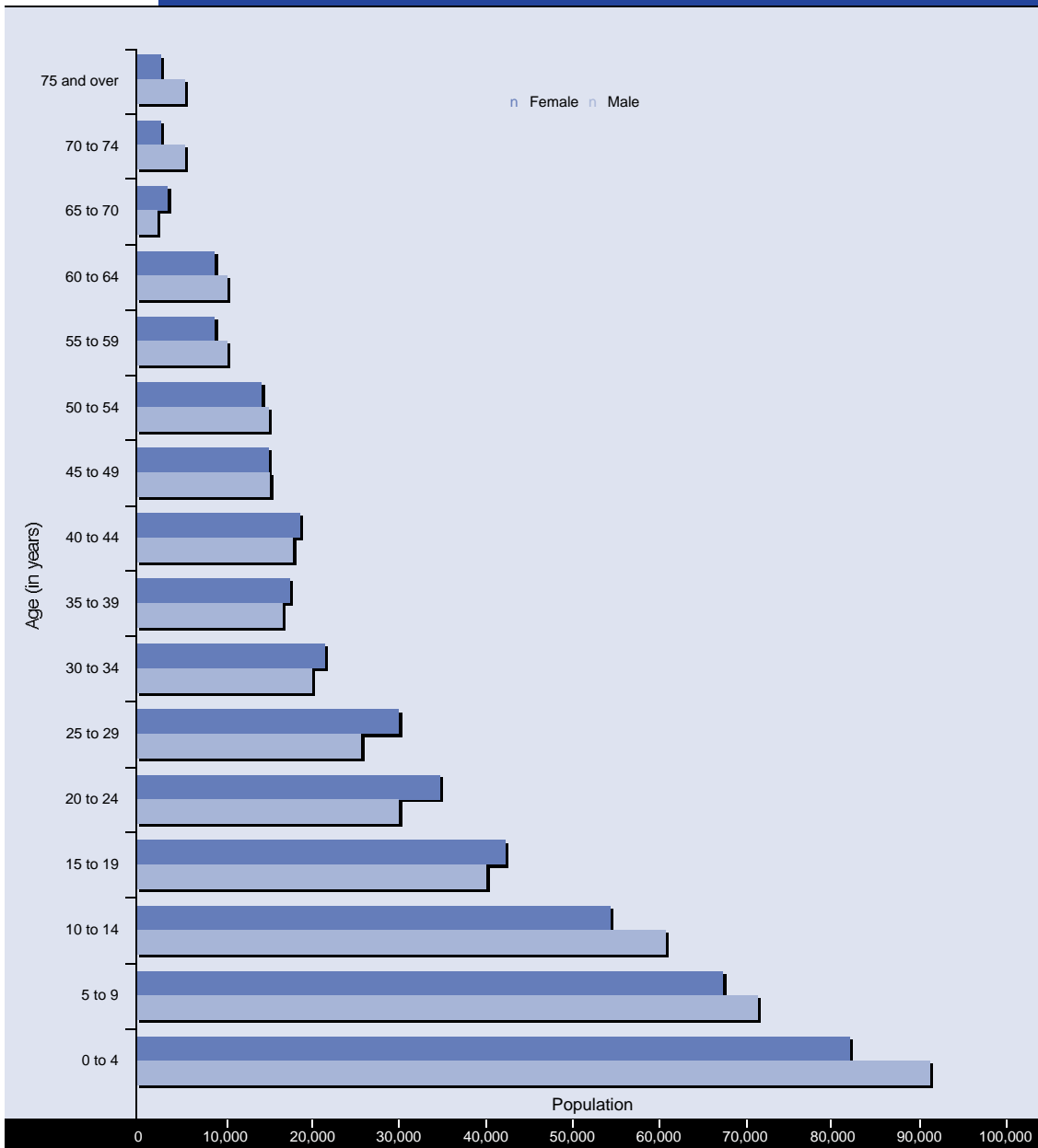
The results of these various studies are striking, since they suggest that the proportion of the population living below the poverty line in the Northern Areas is similar to – or perhaps even lower than – the national figure. This is surprising, because the perception of mountain areas is that they are among the poorest regions in Pakistan.

Papola (2002), however, points out that these figures may be misleading. He notes, for example, that mountain inhabitants have a greater need for high caloric intakes, protective clothing and permanent shelters; as a result, many families that are believed to be above the poverty line may in fact be unable to fulfil their basic needs.

### Poverty and “Mountain Specificities”

Jodha (1992) and others have argued that the discussion of poverty and livelihoods in mountain areas should be shaped by the geophysical characteristics (“mountain

**Figure 13.1** Estimated Age-Sex Pyramid of the Northern Areas\*



Source: Iftikhar, 2003.

Note: \*The pyramid has been extrapolated from the age-sex data for the districts of Ghizhar (PCO, 2000a) and Gilgit (PCO, 2000b). Age-sex data for the remaining districts are not yet available.

specificities”) of these regions. Mountain specificities play a crucial role in conditioning the socio-economic situation of mountain inhabitants, and include: inaccessibility; fragility; marginality; diversity; comparative advantage; and niche. The first three factors are negative aspects that constrain development, while the last three are potentially positive aspects of mountain environments.

### Fragility

Like other mountainous regions, the Northern Areas are prone to natural hazards such as landslides. These hazards not only make the lives of local communities insecure and vulnerable, but also, threaten livelihoods by destroying agricultural lands, crops, livestock and houses.

### Marginality

Only two percent of the Northern Areas is believed to be cultivable. Many households own less than one hectare of land (Tulachan, 2001) and much of this land is of limited productivity (Papola, 2002).

### Inaccessibility

Inaccessibility affects the NA's communities in three distinct ways. In the first instance, access to some biological resources (such as forests) has become increasingly restricted, as state bodies have taken over the role of natural resource management from local institutions. Secondly, local communities lack access to markets, technologies and credit; this makes it difficult for them to sell their products down-country, and to obtain inputs and services that could enhance their productivity. Thirdly, because of the region's physical isolation and relatively small population, it has not been able to influence national socio-economic or political processes in its favour; this has been further exacerbated by a misperception within central government that the Northern Areas lack development potential.

Despite these constraints, recent research in and adjacent to the Northern Areas has demonstrated that the region is progressing, both economically and socially. Some of the factors contributing to these trends include (Iftikhar, 2003):

- n The development of the Karakoram Highway, which

has led to a dramatic improvement in access;

- n The evolution of a development paradigm that places significant emphasis on the role of NGOs and civil society;
- n The existence of a political vacuum which has created a space for NGOs and the donor community, particularly in addressing issues such as floods, deforestation and rangeland degradation;
- n The initiation of the Aga Khan Rural Support Programme and a range of other projects which address both livelihood and conservation issues;
- n The NA's social capital and relatively non-hierarchical social structure, which have provided particularly good opportunities for collective action;
- n A national Gross Domestic Product (GDP) growth rate of 6.5 per cent in the 1980s and 1990-92. This has enabled many NA inhabitants to seek employment down-country, and to send remittances back to the Northern Areas.

### Poverty and Natural Resources

Table 13.3 summarises the major sources of household income in the Northern Areas in 1990/91. The table indicates that, in the three sample districts, “farm income” constituted 57 to 69 per cent of total household income. With the increase of out-migration (and the subsequent remittances to NA) and the diversification of livelihood options, these figures may currently be lower. Nevertheless, the table clearly demonstrates the critical role played by natural resources in the livelihoods of the NA's poor, as well as the nature of the threat posed by natural resource degradation.

As discussed in Chapter 10 on energy, only 42 per cent of the NA's households currently have access to electricity; the availability of natural gas is also very limited. As a result, the residents of the Northern Areas are critically dependent on fuel wood for both cooking and heating. There is no information available on the amount of fuel wood that can be sustainably provided by the NA's forests. However, the national Household Energy Strategy Study (HESS) calculated that Pakistan consumes some 51.29

**Table 13.2 Per Capita Income in Pakistan and Gilgit, 1982-97**

	Pakistan			Gilgit District		
	1982-83	1990-91	1997-98	1982-83	1990-91	1997-98
Per capita income (PKR)	4,131	9,170	18,901	1,905	5,628	12,853
Per capita income expressed as a proportion of the national average (%)	100	100	100	46	61.3	68
Proportion of the population living below the poverty line (%)	—	23.5	31	—	—	23

Sources: Bhatti, Tetlay and Malik, 1994; AKRSP, 2000a.



million cubic metres of fuel wood per year, whereas the estimated sustainable supply is believed to be only 6.51 million cubic metres (cited in Iftikhar, 2003). This shortfall in the supply of fuel wood has serious repercussions for both forests and the livelihoods of the poor; it also has serious repercussions for Pakistan's national forest and energy policies.

In summary, the mountain environment of the Northern Areas provides the poor with critical biological and natural resources to support their livelihoods. These resources include arable land and water for food and nourishment; pastures for livestock; and forests for fuel wood and timber. But this is only part of the picture; the poor also rely on the environment to provide a range of essential ecosystem services, including:

- n pollination of food crops;
- n watershed protection and the maintenance of hydrological regimes;
- n maintenance of soil fertility (e.g., through nutrient cycling);
- n maintenance of waste sinks, which break down pollutants.

#### Poverty, Environmental Degradation and Health

Environmental degradation – including air pollution, water contamination and inadequate sanitation – also has major implications for health and poverty. As discussed in Chapter 15 on environmental health, the poor are particularly vulnerable to diseases such as shigellosis, hepatitis, cholera, malaria, typhoid, tuberculosis and chronic respiratory infections. Although data for the Northern Areas are scarce, it is clear that water and sanitation-related diseases affect tens of thousands of people in the region each

year. Within Pakistan, it is estimated that water-related diseases contribute to 30 per cent of all hospital cases and up to 60 per cent of recorded infant deaths.

The severity of the problem is also indicated by global statistics. Each year, air pollution is believed to cause some 2.7 million deaths world-wide; 80 per cent of these deaths occur among the rural poor in developing countries. An estimated three million people die each year in developing countries from water-related diseases such as cholera, the majority of whom are children under the age of five (Murray and Lopez, 1996).

#### Poverty and Education

Education plays a vital role in poverty alleviation, through the development of human capital. It also plays an important role in women's empowerment as well as reproductive choice. Although the literacy rate in the Northern Areas remains below the national level, substantial progress has been made; the latest figures suggest that the male literacy rate has now reached 40 per cent, and that female literacy stands at 25 per cent (PCO, 1998). This progress can be attributed to the economic and social factors highlighted above (e.g., the opening of the Karakoram Highway), and to the efforts of the government and NGOs such as the Aga Khan Education Services, Pakistan (AKESP). Both sets of factors have contributed to making education accessible to the NA's communities.

## ISSUES AND TRENDS

As discussed in the earlier sections, there is considerable empirical evidence to suggest that the poor suffer disproportionately from environmental degradation. But why

**Table 13.3** Household Income in Selected Regions of the Northern Areas, 1990-91 (in PKR)

	Gilgit	Baltistan	Astore
Crops	16,235	9,402	8,137
Livestock	8,264	4,996	10,056
Fruits	2,962	3,089	346
Vegetables	2,413	1,862	528
Forestry	3,218	2,362	272
Poultry	914	386	269
Other *	2,596	613	8,516
Gross Farm Income (GFI)	36,602	22,710	28,124
Farm cash costs	- 6,845	- 4,483	- 9,246
Net farm income	29,757	18,227	18,878
Other household income	23,712	10,351	20,916
Gross Household Income (GHI)	60,314	33,061	49,040
GFI as per cent of GHI	61%	69%	57%
GHI per capita	5,628	3,617	5,405

Source: WB, 1996.

\* Income from "other" sources in Astore includes PKR 5,739 for "grass" sales, which is 20 per cent of farm income.

Syed Sajjad Imran



Who is responsible to provide me basic amenities?

does the environment tend to be so pervasively degraded, given its importance for both social and economic development? Rather than developing a simplistic, mono-causal explanation of environmental degradation that focuses on poverty and population growth, it may be more useful to ask: What kinds of human actions lead to environmental degradation? And why are these actions undertaken?

In seeking an answer to these two questions, the issue of *incentives* becomes a key concern. Incentives are determined by a complex set of economic, social and cultural factors. If it emerges that people have an incentive to degrade the environment – because of distorted valuation and pricing systems for natural resources, poorly-defined property rights, weak institutions or misguided national economic policies – then the underlying reasons for environmental degradation become clearer.

Many conservationists are increasingly beginning to appreciate the importance of directly addressing the causes of environmental degradation. For example, they have found that – unless attention is focused on the causes of biodiversity loss – the establishment of national parks and protected areas is often unsuccessful in the long-term. However, alternative conservation initiatives in Pakistan have tended to focus on community-based natural resource management. These initiatives are themselves still in a nascent stage and based on over-simplified assumptions about poverty, livelihoods and communities. These issues are explored in greater detail below.

## The Causes of Environmental Degradation in the Northern Areas

### Market Failure

One of the major factors leading to the degradation and depletion of biodiversity in particular and natural resources in general is the under-pricing and under-valuation of resources. There are many reasons why such under-pricing tends to occur. For example, a decentralised market system has difficulties with the pricing of public goods and common property. A public good is one that is characterised by non-rivalry and non-excludability; this means that the benefits which accrue to one person will not diminish the benefits that accrue to another, and that the good cannot be expropriated for use by a single individual or group. In such cases, each individual will act as if the good were valueless; this leads to less than optimal production, more than optimal consumption, and hence, to over-exploitation and destruction. This is a classic case of market failure.

At the macro-economic level, Pakistan's system of national accounting does not take environmental values into consideration. At the local level, environmental goods and services are under-valued, with the net result that there is a lack of incentives for people to make rational choices. Although the NA's rural poor rely heavily on ecosystem goods and services, their poverty and lack of say in decision-making mean that the value they place on these benefits remains ignored.

Under-pricing and under-valuation lead to a singular reliance on natural resource extraction, at the cost of a

degrading resource base. Resources are seen only as inputs to the economic system, and are valued only for their direct contributions to human production and consumption. Forests, for example, are valued largely for their timber, whilst freshwater ecosystems are often valued primarily for their fisheries potential. As a result, the total economic value of natural resources is ignored. Commercial level extraction tends to dominate, at the expense of other, less tangible values or wider socio-economic development goals. When natural resources and the environment are under-valued in this way, conservation becomes difficult to justify in the face of other (often unsustainable) land and resource uses that appear to yield greater and more immediate returns.

However, the use of broader-based environmental economic tools and approaches reveals that the non-market values, ecological functions and non-use benefits of natural resources are tremendous. This more complete approach clearly demonstrates the high economic costs and wide-ranging impacts of environmental degradation – costs that extend far beyond the loss of direct use values. The use of an environmental economics approach also highlights the fact that natural resources are much more than static reserves. Rather, they form a stock of natural capital, which if managed sustainably, can yield a wide range of direct and indirect economic benefits to human populations in perpetuity.

It is not sufficient, however, simply to demonstrate the true value of natural resources through the use of environmental economics and valuation techniques; these broader values and benefits must also be “captured” through the use of innovative economic and financial instruments (e.g., national accounting systems which reflect environmental considerations). This combination of “demonstration and capture” could play a significant role in placing the issues of mountain development and environmental sustainability firmly on the national agenda (Iftikhar, 2003).

### Policy Failure

Environmental degradation within Pakistan and the Northern Areas is often the result of macro-economic policy failure, such as the following (Iftikhar, 2003):

- n Although decentralisation, privatisation and devolution have enabled the NA's local communities to play a greater role in natural resource management, the austerity measures that have accompanied these processes (e.g., decreasing government budgets and expenditure) have led to negative effects on the environment;
- n Economic considerations are rarely internalised within national policies dealing with the environment and natural resource management. As a result, insufficient use is made of incentives and financial mechanisms to

address the root economic causes of environmental degradation;

- n The failure to recognise the total economic value of natural resources has led to sectoral economic policies which under-price the environment and value natural resources almost exclusively in terms of the raw materials they provide. For example, agricultural policies are designed to maximise yields and take little account of the costs of biodiversity loss, soil degradation or water pollution;
- n Natural resources are also deliberately under-priced, in an effort to promote their exploitation and stimulate development. For example, the provision of subsidies within the agricultural, water and energy sectors acts as a “perverse incentive” and encourages overuse and degradation;
- n Sectoral economic policies place considerable emphasis on formal sectors such as agriculture, energy and water; huge economic benefits accrue to these sectors. However, the costs of conserving the natural resources upon which these sectors depend are borne largely by local communities; this has grave distributional and external effects;
- n Lastly, the emphasis that has been accorded to the traditional economic sectors has led to the neglect of the environmental sectors. Government agencies charged with environmental protection and natural resource management tend to be poorly financed and understaffed. As a result, they rarely have the necessary capacity to fulfil their mandate effectively, leading to even further environmental degradation.

### Ambiguous Property Rights

Another major factor underlying the degradation of natural resources in the Northern Areas is the fact that the property rights of local communities are either unrecognised or unenforceable. The chapter on forests (Chapter 4), for example, points out that the property rights to the NA's forests are ambiguous and contested among a wide range of stakeholders, including individuals, local communities, forest contractors and the state. As a result, no one has an incentive to conserve or manage the resource; each group takes what it can, leading to degradation.

### Institutional Failure

The problems associated with ambiguous property rights are often exacerbated by institutional failure. For example, high timber prices can serve as an incentive either to cut trees or to plant them. If people's property rights are secure, and if the institutions responsible for forest management are strong, high timber prices should lead to more intensive afforestation efforts. On the other hand, if property rights are ambiguous, and if institutions are weak, the same prices are likely to lead to rapid logging and deforestation.

Over the years, the Northern Areas have witnessed the gradual erosion of local natural resource management institutions, as state bodies have taken over the role of managing natural resources and controlling access. In many instances, however, these state institutions have not had sufficient capacity to fulfil their responsibilities and have proven to be less effective than the traditional management systems they replaced.

### Uncertainty

Another factor influencing incentives is uncertainty, especially in the context of valuation and property rights. For example, if the price of timber is high but the owner of a forest is unsure about future property rights, there is an incentive to log the forest and to put the money in the bank, where financial assets are more secure. Although this decision is economically rational from the owner's perspective, it is likely to have negative and far-reaching social and environmental impacts.

### Social Factors

It is also important to consider the role of social factors in environmental degradation, including gender, poverty, inequity and governance:

In the Northern Areas, for example, poor women have often been responsible for the management of biological resources. When economic and social arrangements begin to deprive women of access to or rights over natural resources, degradation often begins to occur.

Poverty can also affect conservation, but needs to be seen in the context of incentives for individuals. In situations characterised by uncertainty and ambiguous property rights, the poor will have an incentive to fulfil their immediate consumption needs rather than conserve for the future. Nevertheless, the poor can and do design stable and resilient institutions to protect the environment. Collective institutions are often capable of undertaking sound natural resource management, particularly if they can demonstrate that restraint by one person will not be undermined by the actions of others.

Inequity is related to both gender and poverty. As mentioned earlier, the poor's access to biological resources has become increasingly restricted over time, and this has also meant that women have been deprived of their customary rights. Similarly, as state institutions as well as customary arrangements have broken down or become weaker, the poor have been increasingly excluded from access to environmental resources. As discussed in Chapter 4, rich and powerful groups have also tended to expropriate the use of forest resources, irrespective of environmental, social or economic costs. In the Northern Areas, for example, forest officials, local landlords, and powerful timber contractors have colluded to decimate the

forest resource while excluding local populations from all but a small fraction of the benefits.

Finally, there is the issue of governance, which cuts across all the factors mentioned above and compounds the vulnerability of the poor. Many of the government institutions in Pakistan are heavily centralised and in a state of decay. As a result, they are unable to manage the environment in a sustainable manner; they cannot be subjected to popular control or accountability, nor are they able to generate popular support for their functions. Several of the issues mentioned above, such as inappropriate macro-economic sectoral policies, the neglect of poverty-environment linkages, and the inadequate treatment of gender issues, are a direct result of governance failure (Iftikhar, 2003).

## The Causes of Poverty in the Northern Areas

### Economic Causes

Several important economic factors have contributed to poverty in the Northern Areas, including the following:

- n The recent slow-down in Pakistan's economic growth. Rasmussen and Parvez (2002), for example, have highlighted the growing inter-dependence between the highlands and the lowlands, and the ways in which this affects resource flows, demand, market access to highland products, labour migration and livelihood diversification;
- n International shocks. Events such as 11 September have negatively impacted the NA's tourist industry, and reduced the number of alternative income-earning options available to the poor;
- n Economic austerity measures. These have led to lower budget allocations for poverty alleviation programmes and other measures that benefit the poor.

### Governance

Governance factors contributing to poverty include:

- n The lack of strong pro-poor policies and institutional frameworks that reflect the realities and needs of the poor, especially those in mountainous regions such as the Northern Areas. Although a number of national planning frameworks (such as the Interim Poverty Reduction Strategy Paper) now draw attention to the need for "pro-poor growth", they fail to address many of the key poverty-environment linkages that matter most to the poor;
- n The social and political exclusion of the Northern Areas in national decision-making processes;
- n The lack of effective participation of poor and marginalised NA communities in regional/local policy and planning processes;
- n Corruption and political instability. These have led to decreased investments, poor growth, reduced public

expenditure on basic entitlements, low efficiency in the delivery of public services and a general lack of public confidence in state institutions, including those responsible for the maintenance of law and order;

- n The lack of an active role for civil society in creating a more favourable enabling environment for poverty-environment issues.

Many of these issues are explored in greater detail in the chapter on governance (Chapter 19).

### **Social Factors**

Numerous social factors also contribute to poverty. For example, the property rights of the poor to crucial resources (such as land, water and trees) have become increasingly restricted over time. As discussed earlier, property rights and entitlements are also characterised by inequity, ambiguity and conflict.

The poor also have limited access to a wide range of social services, such as education, health care and population planning services. The situation is exacerbated by gender inequalities.

### **Environmental Factors**

Deforestation, over-grazing and land degradation all affect the poor disproportionately, partly because they are dependent on environmental resources for their livelihoods, and partly because they have less capacity to protect themselves. For example, the Northern Areas are highly vulnerable to environmental disasters such as landslides and floods, whose frequency has increased over the years because of deforestation; these events threaten both the lives and the livelihoods of the poor.

## **Poverty and Environment Linkages**

The causes of both poverty and environmental degradation are interlinked and can therefore be addressed simultaneously; failure to do so will result in a tremendous waste of opportunity. For example, the Interim Poverty Reduction Strategy Paper states that it is the quality of economic growth (i.e., pro-poor growth) that matters if poverty is to be alleviated. This is indeed true. But if the IPRSP's definition of "quality growth" does not include environmental considerations, then the results are unlikely to be beneficial. If the growth process initially impacts positively on the poor but leads to degradation of the natural resource base over time, will the poor really be better off? The IPRSP also highlights the importance of improving access to health facilities. But if access to health care is enhanced without simultaneously addressing the root environmental causes of disease (such as contaminated water and indoor air pollution), then the benefits to the poor will be marginal.

## **PREVIOUS AND ONGOING INITIATIVES**

### **National Policy Initiatives**

#### **Interim Poverty Reduction Strategy Paper**

In November 2001, the Government of Pakistan released its Interim Poverty Reduction Strategy Paper. The IPRSP sought to bring an integrated focus to the many factors that have an impact on the poor, and in doing so, "to meet the twin challenges of reviving broad based equitable growth and reducing poverty" (GoP, 2001b). The core elements of the interim strategy included efforts to engender growth, implement broad-based governance reforms, improve social sector outcomes and reduce the vulnerability of the poor to social and economic shocks. However, many of the poverty-environment linkages that matter most to the poor (e.g., improved natural resource management, better environmental health and disaster preparedness) were largely overlooked. This reflects not only a lack of awareness of the important role of the environment in sustaining livelihoods, but also, insufficient capacity within government to integrate environmental concerns into poverty reduction initiatives.

The IPRSP has provided the basis for the development of the main Poverty Reduction Strategy Paper (PRSP), which is now being finalised by the Planning Commission (PC) and the Ministry of Finance and Economic Affairs. The PRSP represents a unique opportunity to develop an explicitly pro-poor policy framework that recognises the importance of the environment.

#### **The Biodiversity Action Plan**

In August 1999, the Biodiversity Action Plan was formally endorsed by PEPC. The BAP provides information on the status of biodiversity in Pakistan, identifies the causes of biodiversity loss and sets forth a wide range of proposals for action. Thirteen different articles of the Convention on Biological Diversity are explicitly addressed, making the BAP a particularly comprehensive and far-reaching document (GoP/WWF/IUCN, 2000).

The implementation of the BAP could play a formidable role in addressing poverty-environment linkages in Pakistan. For example, the BAP seeks to mainstream biodiversity considerations into all sectors, remove perverse incentives that encourage environmental degradation and establish a more effective legal framework in relation to access and benefit sharing. Implementation, however, has been slow, in part because of a lack of financial resources. The BAP also lacks mechanisms to ensure the effective management of trade-offs between conservation and development.

Serendip



Believing in future.

## National, Regional and Local Programmes

Many of the programmes and projects currently underway in the Northern Areas are seeking to address issues related to poverty, population and environmental degradation. Several different approaches are being used, including:

- n *Rural development approaches*, as exemplified by the Aga Khan Rural Support Programme. AKRSP has made an enormous contribution to both poverty alleviation and sustainable natural resource management in the Northern Areas. AKRSP can be seen as an effort to help the poor overcome their vulnerability by developing their individual and collective capacities. It does this by providing the poor with access to credit, encouraging savings, investing in skills development and human resources, supporting the construction of infrastructure and most importantly, investing in collective institutions. AKRSP's activities are described in more detail in many of the chapters of this report;
- n *Conservation and sustainable livelihoods approaches*. These initiatives have been pioneered by organisations such as IUCN and WWF, and include the Mountain Areas Conservancy Project, the NACS Support Project, and the project on Sustainable Resource Use and Biodiversity Conservation at Key Sites in the Northern Areas. Initiatives being undertaken by other organisations include HWP, the KVO Buffer Zone Project and the community-based fisheries project in Ghizar Valley. In general, these projects have sought to promote greater involvement of local communities in

wildlife management and to provide direct economic incentives for biodiversity conservation. Their activities are described in greater detail in Chapter 6;

- n *Sustainable health approaches*, such as the Northern Health Programme (described in Chapter 15);
- n *Population welfare approaches*, such as the Social Action Programme (SAP).

Strangely, although the Northern Areas are prone to disasters such as floods and landslides, there do not appear to be any programmes or projects currently addressing the issue of disaster preparedness.

## THE WAY AHEAD: STRATEGIC OPTIONS FOR THE FUTURE

As argued in the previous sections, poverty can best be defined in terms of vulnerability. The poor are vulnerable to environmental degradation through its impacts on their livelihoods and their health, and through their increased exposure to natural disasters such as landslides. *The principal thrust of a population, poverty and environment strategy in the Northern Areas, therefore, should be to help the poor reduce – and cope with – vulnerability.* This, in turn, implies that the poor should be empowered to play a much greater role in regional and local-level decision-making. Future poverty alleviation efforts should also seek to build on traditional knowledge systems and local coping strategies, not only because of their inherent value and effectiveness, but also as a means of bolstering poor people's confidence in their own abilities and judgement.

Among the options that should be considered are the following (Iftikhar, 2003):

- n Adopting a sustainable livelihoods approach as the principal framework in which to analyse mountain livelihoods and poverty issues. The starting point of the SL framework is the assets and strategies of the poor, not their deprivation. The key focus is on developing an understanding of the creative energies of the poor, and the ways in which people and communities develop strategies to make use of their existing capital to overcome vulnerability (Rasmussen and Parvez, 2002);
- n Developing pro-poor macro policies, for example, by ensuring that poverty-environment issues are included in the IPRSP, and by developing new legislation to address access and property rights, especially in relation to protected areas and forests;
- n Developing an enabling macro-economic framework, for example, by developing national accounting systems that reflect environmental values;
- n Enhancing regional and local governance systems, for example, by strengthening the access of the poor to resources, and supporting local community environ-

mental management and control. There is also a need to expand social protection in order to reduce the environmental vulnerability of the poor, for example, by strengthening disaster preparedness;

- n Creating pro-poor markets that bring value to environmentally-friendly products and services;
- n Protecting traditional knowledge;
- n Improving awareness of environment-poverty link-

ages, for example, by: designing and implementing a multi-faceted communications programme; incorporating environment-poverty issues in the teaching curricula; and encouraging the mainstream media to address biodiversity and livelihoods issues;

- n Encouraging and supporting further research into the population, poverty and environment nexus in the Northern Areas.

