

Annex 1

Responses to Questionnaires

General

Extent of Problem

About 31 per cent of the land in the areas comprising the north-western Himalayas has been estimated to be degraded but certain pockets report much higher proportions. Such areas fall largely in non-agricultural tracts (reserve forests, protected forests, *panchayat* forests, wastelands, and pastures). Substantial parts of agricultural lands are also affected. The problem has assumed serious proportions, particularly in the mid-elevation zone (1,000–2,000 m) where population and livestock densities are relatively high.

The main factors causing degradation have been recognised as heavy rainfall, landslides and soil erosion, floods and drought, open grazing, lack of replantation activities after deforestation, fires, extension of agriculture to steep slopes, unscientific mining, lack of water-harvesting measures, and road and building construction activities in a manner unfriendly to the environment, all of which

threaten slope stability. Degradation is often proportional to the degree of slope, reduction and depletion of vegetal cover, biotic pressures, intensity of fires, etc.

According to the response of Dr B.M. Singh, Director of Research, Himachal Pradesh Agricultural University, there is a serious problem of land degradation in Himachal Pradesh. He reports, 'In one study in Kangra district, carried out on idle lands using parameters such as day moisture equivalent ratio, erosion ratio, and clay ratio, it was demonstrated that almost all the sample wastelands in 200 villages were highly erodible as per the various indices of erodibility and, consequently, needed appropriate management technology.' Another case relates to the catchment areas of major river systems of Himachal Pradesh, which has brought into focus the quantitative aspects of soil erosion. For example, in the higher Himalayan basins of Sutlej River (12,000 sq.km.), the sedimentation rates of Kinnaur and Spiti (tributaries) basins were found to be 157,000 m³/100 sq.km. and 95,000 m³/100 sq.km.. These are quite high

sedimentation loads. Further, of the annual sediments of B hakra reservoir an additional 52 per cent comes from high Himalayan basins. Likewise, the sedimentation rate of Giri catchment was found to be of the order of 66,400MT/100 sq.km. According to information received from the Chief Project Director, Watershed Management Project, Dehradun, in the project area, 16.8 per cent of the land suffered from severe erosion (E3) and 0.8 per cent area had been destroyed (E4). The proportion of severely eroded/destroyed categories varied from 4.6 per cent on agricultural lands to 16 per cent in forest lands and 66.9 per cent on blanks.

Impact of Policy Measures and Steps Taken to Bring about Improvements

Measures taken by government agencies include soil and water conservation, afforestation, bunding, development of horticulture, agricultural improvements, and use of alternative fuel supply sources. According to respondents the programmes have not been successful so far and/or the benefits accruing from these measures are too meagre as yet. One NGO has estimated the impact of government efforts at about five per cent in terms of area treated. The reasons for poor achievements, as reported, are as follow.

- Lack of funds for actual field work — the funds available are mostly consumed in payment of salaries to workers.
- Complex procedures are encountered for raising bank finances.
- Lack of coordination among government departments (Agriculture, Forest, Irrigation, Rural Development, etc)
- Focus not on people's priorities — people's priorities are mostly for the supply of water and inputs.
- Lack of people's participation — it is reported by government functionaries that people respond and cooperate only so long as employment opportunities, inputs, or subsidies are made available to

them on their doorsteps. After the project period is over, there are no institutional arrangements for maintenance nor are the people motivated or enabled to maintain the assets created.

- Uncontrolled and open grazing
- While controlled fires, as part of silvicultural practices, are beneficial, uncontrolled fires that recur repeatedly in the hills are extremely harmful to land stability.
- Lack of education
- Non-availability of skilled manpower
- Lack of an integrated watershed management approach — however, one view is that the importance of a watershed approach is now being increasingly realised, although it is still not widely practised.
- Socioeconomic constraints
- Misuse of funds meant for development

It was suggested that (i) sloped fields should be levelled to check erosion, (ii) spring sanctuaries should be established to prevent their drying, (iii) road construction technologies should be improved, and (iv) penal provisions should be provided in contracts for defective road construction. It was also suggested that there should be sustained afforestation programmes on vulnerable slopes and farm-forestry programmes should be fully supported for augmenting fodder and fuel supplies. Formation of land management committees and equitable distribution of benefits were also suggested.

Problems in the Implementation of Agrarian Reforms

Land reforms were introduced in the NWHRI to provide land for tillers and the landless. These reforms have succeeded but not wholly. According to one view, in the Uttar Pradesh hills, the implementation of land reforms resulted in fragmentation of holdings as no minimum or floor size of land holdings was prescribed. At the same time, the land ceiling laws have not been enforced

strictly as local revenue officials function under the influence of vested interests. At present, landlords are not interested in giving uncultivated lands to sharecroppers. Tracts of slopy uncultivable wastelands (often common lands) have also been allotted to landless farmers. This has further aggravated the problems of land degradation. These lands should have been developed as forests, pastures, and grasslands. All this has resulted in many tracts becoming cultivable wastelands. It is alleged that there appears to be lack of political will to implement land reforms honestly. The staff, too, does not put in whole-hearted efforts in the face of the pressure of vested interests. Implementation of land reforms in Himachal Pradesh and Jammu and Kashmir has, however, been reported to be comparatively more successful although some problems exist.

Support of Communities, NGOs, and Other Institutions

The support of local communities, NGOs, and institutions has either been low (except in small pockets) or it is confined to the matter of resolving conflicts relating to agricultural lands. Normally, policies are framed at the state level and programmes are handed over to local administrative units for implementation without involving them or the beneficiaries in policy formulation. The approach is top-down. In the Doon Valley Watershed Management Project, however, there is strong emphasis on community participation. Participatory rural appraisal, entry-point activities, development of local-level institutions, creation of revolving funds, training in income-generation activities, formation of women's self-help groups, etc are suggested strategic approaches. The support of the community, it is suggested, should be institutionalised. Joint forest management is also being attempted in some areas. People are required to manage their forests within the framework of *panchayat* rules. This programme/

policy began in recent years and has still to be institutionalised with success and impact. The principal causes of failure of the *panchayat* forest system can be traced to duality of control, lack of technical management capacities, and problems of red-tapism that cause delays in giving usufruct to local communities. Moreover, blanket bans on the felling of green trees above 1,000 m in the Uttar Pradesh hills has left little incentive for resident villagers to support forestry. As joint forest management is a comparatively new concept, particularly in the Uttar Pradesh hills, the implementing agencies report that it is too early to evaluate the system. Some NGOs and agencies, such as Uttarakhand *Sewa Nidhi* (UKSN), Vivekanand Laboratories, Pantnagar University (Ranichoura Campus), and others are, however, making laudable efforts in small pockets. It is suggested that efforts should be made to intensify and operationalise people's participation and to infuse refinements in the development processes with respect to joint forest management. People, it is said, must perceive joint forest management to be beneficial to them. Only then can it succeed.

Training of Beneficiaries and Workers, and Strengthening of Infrastructure

Presently there are some ongoing training and extension programmes, but these are inadequate and are confined to a few project areas. Their inadequacy is that they are mostly suited to, and are largely confined to, male workers. In the hills, women play an important role and, therefore, it has been suggested that training programmes should be more women-centred and should mainly be field-oriented. It is further felt that many trainers are not conversant with local problems and cannot generally speak the local language. There is paucity of publicised literature for land, water, and forest management in the languages understood by farmers. In order to make training more

meaningful, the contents and methods should be made appropriate for village conditions. However, there are some exceptions. For example, in the Doon Valley Project, training has been given high importance, and adequate in-house and other arrangements have been made for the purpose.

Acceptance of Government Measures by Principal Stakeholders

Acceptance of government programmes by various stakeholders depends on perceptions about the fulfillment of their needs. Each group seems to be self-focussed in approach and accepts the measures so long as these suit them. Cultivators welcome land development measures for which they do not have to pay in the short run. Cattle owners and grazing communities welcome fodder and pasture development programmes but hate grazing restrictions and are even willing to flout them. With some exceptions, generally, there is apparent lack of structured interaction between government agencies and target groups. The rules of rotational grazing are transgressed and recommendations for stall-feeding of animals ignored. Land reforms are welcomed by cultivators but opposed by landowners. Restrictions imposed with the intent of protecting national parks, sanctuaries, and biosphere reserves are resented by the pastoral Gujjar (a cattle-rearing tribe), owners of animal herds, and other cattle-rearers, especially by people who had access to the usufruct of forests before the areas were notified as national parks or wildlife sanctuaries. This is a real problem in all hill states in the NWHRI. Vested interest groups oppose development efforts for their own selfish ends. Programmes that offer subsidies are welcomed and people cooperate as long as subsidies are available, but their attitudes change if and when subsidies are withdrawn or reduced. Subsidies thus have a negative impact on many situations in the long term. The prevalent motivation is cash/kind subsidy instead of programmes. Plan-

tations are welcomed but restrictions on the use of forest products are not accepted. Village leaders are reported to favour measures that bring more money to them and enhance their clout. The blanket ban on felling of green trees above 1,000 m is unpopular. It is considered by the NGO as well as foresters to be unscientific and in disregard of silvicultural requirements. A different, but perhaps more balanced, view is that there is initial resistance wherever wrong practices such as open and uncontrolled grazing, lopping of trees, and felling of trees for fuelwood are checked. Once the benefits of better management through sustained efforts become visible people accept the change. However, great persuasive efforts are required to convince the people.

Impact of Growth of Tourism and Economic Activities on Ecosystems and Lands

There is near unanimity amongst those who have responded that unplanned and uncontrolled growth of tourism, as has generally been the case, damages hill lands and environment. Examples of pollution, caused in Nainital, Bhimtal, Ranikhet, Valley of Flowers, Dal Lake surroundings, and Kullu-Manali areas through the growth of mass tourism have been cited. It has also been emphasised that properly developed, decentralized, and regulated tourism will not be harmful. Instead, it would create employment opportunities and would be beneficial to hill people. A cautious growth path has been suggested with the following measures.

- Non-degradable litter, such as plastic packaging, polythene, glass, and tin containers, etc, should not be thrown around helter skelter. Use of polythene bags should be banned.
- Only vehicles tested for pollution should be permitted. Trekking and travel on foot should be encouraged.
- Sale of land to non-residents should be banned or discouraged.

- The hotel industry should be taxed by levying cess to build up an ecological fund.
- A proper infrastructure should be developed considering the carrying capacity of specific tourist locations and areas.
- There should be eco-guidelines for builders and road engineers, and they should be rigorously enforced.
- There should be environmentally friendly systems for disposal of garbage — including recycling or composting.
- There should be stringent laws to check pollution of land, rivers, and air.

The general view of NGOs working in the field is that tourism should be organized on the principles of eco-tourism.

Examples of Successful Control of Soil Erosion and Land Degradation

- Sukhomajri area in the Siwaliks, Haryana
- A project near Jhansi under Dr Hazra
- Successful demonstrations by the G.B. Pant Institute of Himalayan Environment and Development, Almora
- The Khulgad Catchment Area Project undertaken by CHEA, a local NGO
- Efforts by the Uttarakhand *Sewa Nidhi* (UKSN), Mirtola Ashram, Ahuora and Sarla *Bahen Ashram* (Pithoragarh) in imparting environmental education have been cited as commendable.

Suggestions for Protecting Biosphere Reserves, National Parks, Sanctuaries, Wildlife and Biodiversity

- Generally speaking, the respondents feel that hill people are eco-friendly and do not consciously destroy the biosphere. The use of forest products should be regulated and restricted, but with a human face and taking local people into confidence and motivating them. Alternative fuel sources should be made available where traditional rights and concessions are withheld or reduced.
- Degraded community forests should be

handed back to people's institutions and joint forest management should be expanded as a policy.

- Forest lands (other than those degraded) should be developed as forests, wildlife, and gene bank parks and strictly administered without biotic interference.
- Uncultivable lands and agricultural wastelands should be developed as grazing areas so that pressure on forests is reduced.
- Educational programmes should be organized to improve awareness about the issues relevant to biosphere management and human interaction. These can lead to a check on the number of animals in an area and on open grazing. Focus areas may be closed by rotation.
- Training programmes should be arranged for workers to develop their skills and understanding of biosphere issues. Such programmes are equally important for users, communities, and their leadership.
- There should be strong interaction and collaborative arrangements should be evolved among governments, NGOs, and the people living around biosphere reserves.
- Users' rights should be maintained to the extent possible in forest areas. Village institutions should be given the responsibility of managing and conserving the resources under joint management arrangements.

Forests

Problems Experienced in the Management of Forests

The origin of these problems lies in human and livestock population increases, poverty, lack of employment opportunities, and want of education and awareness. People have enjoyed traditional rights in the use of forest products; but it is a feeling in certain quarters that rights and concessions given in the days of low population pressure way

back in the past cannot be continued if biodiversity is to be preserved. While demands of the local population are increasing, the process of degradation of forests continues. Socioeconomic complexities leading to unchecked human interference create problems in management. While people are not permitted to use trees growing on their land, a question that is commonly asked is why should the tree be planted at all if it cannot be harvested? In the prevailing social milieu, restrictions imposed by forest laws are often not respected by people. Adequate funds and staff are not available. The staff are not adequately trained. There are hardly any community institutions made responsible for equitably sharing forest produce. *Panchayat(s)*, which manage community forests, are not adequately trained, funded, or equipped and lack expertise. Forest fires cause extensive damage. Election to forest *panchayat(s)* are not regularly held. Many *panchayat(s)* are non-functional. The vital help of local communities is not available for protecting forests against fires. It is alleged that forest mafias are damaging forests through unauthorised felling under political protection.

Traditional Rights and Concessions

Local populations have had traditional rights and concessions in the use of forest products—fuel, timber, fodder, herbs, etc. These exist even in reserved forests and have been codified in forest laws, rules, and orders. People can gather dead or diseased wood or silviculturally available trees. Governments have powers to withdraw concessions under certain conditions. Since concessions have continued to exist, they are equated with rights and any attempts at withdrawal or reduction are resisted. Although these rights were envisaged for a fixed population (and not a growing one) and they are not transferable, pressures mount owing to expanding demands in the wake of growing population. People have greater freedom to use forest produce in

community forests but use of certain products is prohibited. It is generally felt that the actual demands made by people are excessive and cannot be met without damaging forests. The problem arises from the fact that ‘rights and concessions’ relate to the point in time of settlements. Relevant laws do not take into account subsequent increases in demand.

Suggestions for Improving Management of Forests

- Forest laws should be strictly enforced in reserved and other forests.
- People’s fora/institutions should be organized in and around reserved and other forests, national parks, and sanctuaries to ensure equitable distribution of forest produce. People should be involved in forest management.
- People should be made aware of the dangers of degradation of land and forest fires.
- Extra fire guards should be provided during the fire seasons. Fire regulations should be enforced.
- Forest *panchayat(s)*, village development committees, and village forest development committees should be organized where they do not exist to manage community forests. These bodies should have the freedom to manage the revenues accruing from community forests. They should be strengthened and empowered to manage grazing lands.
- Use of alternative sources of energy, fuel, and fodder should be encouraged.

Holdings

Agricultural Holdings

Fragmentation of land holdings is a severe problem. Land productivity is low. A large livestock population is being maintained. Generally a pair of bullocks is a must for hill farmers. In these areas, mechanisation

does not have much scope. A large livestock population causes overgrazing, threatening soils on hill slopes. The solution lies in shifting to horticulture as has been done in Himachal Pradesh. Mechanisation, even on a limited scale, wherever possible, can help to reduce livestock population. Development and use of garden tractors can be helpful in this respect. Consolidation of holdings has been advocated. It is suggested that consolidation should be taken up separately for the lands in valleys (irrigated land) and hillside fields and terraces (mostly rainfed). A voluntary agency, CHEA, has reported failure in its attempt to consolidate in an experimental area owing to lack of interest on the part of the district administration. It is recognised that consolidation of holdings in hill areas is much more difficult than in the plains, but some voluntary consolidation attempts have been encouraging in Kumaon. A further suggestion is to undertake farm forestry and horticulture between agricultural fields and, thus, to make winter grass available. Such experiments, it is reported, have been successful in Khulgad Catchment Area (Almora).

Absentee Landlords

Many areas in the hills remain uncultivated since landowners migrate to other places in search of employment or better earning prospects and only females, children, and old people are left behind to cultivate land. Transfer of land to outsiders, other than kith and kin, can cause serious problems owing to tenancy laws. It has been suggested that laws should be amended to ease the leasing of land to sharecroppers while maintaining the rights of landowners. Ways should be found to enable actual cultivators to raise loans against the 'tenanted' land and landlords should be deemed to be the sureties automatically. Irrigated land owned by absentee landlords can be usefully brought under cultivation (on a rental basis) while the unirrigated land should be brought under horticulture. Marginal lands

can be brought under plantation of environment- and cultivator-friendly species such as oak, willow, etc or fuelwood species.

Common Lands

Most villages have some common lands for use of the community (e.g., as determined according to the settlement of the year 1880 in the Uttar Pradesh hills). *Panchayat* forests and civil and *soyam* forests are parts of common lands. Afforestation of these lands can provide fuel, grasses, and fodder to local populations. Portions of village common lands have been encroached upon either by influential people or by landless cultivators; such lands are no longer available for common purposes. One view is that there should be strict eviction proceedings in such cases and community forests should be grown there collectively under participatory management of the community. The other view is that the productive use of encroached land has been beneficial as it has, at least, checked degradation of the land, although the community has lost a part of its common property. The management of available common lands can be improved by handing over their planning, use, and maintenance to village *panchayat(s)* or other people's institutions, which should be strengthened and empowered. Such lands must be brought under productive uses such as afforestation, development of pastures, horticulture, etc. Weeds growing on common lands should be removed and useful species planted there. The choice of species should be left to people living around common lands. Equitable allocation of produce should be the responsibility of the village *panchayat(s)* that would be distributing produce from forests as well.

Water

Scarcity of water is a serious problem in the hills. Semi-urban areas, such as

Bhowali and Bhimtal in the Uttar Pradesh hills, have to be served drinking water through tankers during the summer. Although rainfall is plentiful in most areas (except in the westernmost reaches of the region and high cold desert areas) and there are numerous rivers and rivulets, springs are drying up and discharge in many rivers and rivulets has been going down. For improvement in water management, components of the hydrological cycle need be studied in terms of seasonal availability of water. In a study in Kumaon, it was found that water balance was negative for eight months in a year and that water was available as surface runoff for only four months a year. Irrigation is extremely important for hill areas, although possibilities are limited. Better use of existing irrigation potential can help transform the economy of the hills. If better water management is used, floriculture, horticulture, and cultivation of vegetables and other cash crops can be undertaken. It is reported that many storage tanks built under the schemes of five-year plans are lying unserved for want of repairs. If springs are harnessed, rainwater is harvested and stored, and existing gullies and canals are commissioned, some additional irrigation of crops can be undertaken. A local NGO, CHEA, is doing some pioneering work in

this respect in the Shitlakheta area of Almora district. Hill rivers can also be harnessed for generation of electricity by erecting hydro-electric dams and used for supply of drinking water besides providing some additional irrigation and scenic resources. Water conservation can be improved by better management of forest resources. It has been suggested that there should be afforestation around water sources and a chamber should be constructed along with filters and disinfection to make it safe for drinking purposes. Rainwater from rooftops can also be stored for domestic purposes by constructing storage tanks at intermediate levels. Catchment treatment plans should be developed to improve the recharge of water by adopting suitable bio-engineering measures. Community participation for management of springs and other water sources can further improve matters as demonstrated by *pani panchayat(s)* in some areas.

Annex 2

Selective Statistical Indicators of India

Area (sq.km.)	3,287,000
Population (millions) (1991)	846.3
Density of population (number/km ²) (1991)	274
Sex ratio (1991)	927
Life expectancy at birth (years) (1993)	60.7
Infant mortality (per thousand) (1990)	80
Population growth rate/year (%) (decennial 1981-91)	2.14
Literacy rate (%) (1993)	51
Occupational pattern (worker distribution) (%) (1991-92)	
Cultivators	38
Agricultural labour	26.09
Household industry	2.38
Other workers	32.81
Domestic production (sectorwise distribution) (%) (1990-91)	
Primary sector	33.1
Secondary sector	25.8
Tertiary sector	41.1
Gross national product (billion Rs) (1996-97)	11354
Per capita income in Rs (1995-96)	9321
Area under forests (million ha) (1997)	
reported	76.52
actual	63.39

Net sown area (million ha) (1990-91)	142.2
Net irrigated area(million ha) (1990-91)	47.43
Food grain production (million t) (1997-98)	194.1
Cropping intensity (1990-91)	130.4
Irrigation intensity (1990-91)	133.3
Per capita net cultivated area (ha) (1990-91)	0.17
Fertilizer consumption (kg/ha) (1991-92)	68.6
Average yield (kg/ha)	
Wheat (1991-92)	2394
Rice (1991-92)	1751
Per capita electricity generated (kMW) (1991-92)	270
Industrial production index (1997-98)	317.3
Agricultural production index (base year1981-82) (1997-98)	169.2
Electricity generated (billion kVA)	420.2

Source: Government of India documents

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