Chapter 8

Environmental Concerns in Meghalaya

The key environmental concerns in Meghalaya constitute deforestation, fragmentation of forests, soil degradation, biodiversity loss and contamination and silting of water bodies. Unregulated, unscientific, and often illegal mining and logging, and the practice of short cycles of *jhum* are responsible for these. While unregulated and illegal activities are a result of an absence of clear resource use policies, including the land use policy, and lack of clarity in ownership rights of resources, the paucity of technical and other support for improvement in *jhum* cultivation, and an almost total absence of inputs emanating from research on small area and eco-friendly high yielding varieties of rain-fed crops has resulted in soil erosion, degradation, and low productivity. Contamination and silting of water bodies has been caused by unregulated and unscientific mining, forest clearing, and unsustainable short cycles of *jhum*.

8.1 Key Environmental Concerns

Deforestation

The loss of natural forests is a serious concern in Meghalaya. In addition to providing an economic and cultural backdrop for the lives of people, the vast forests in Meghalaya deliver an array of essential local and global environmental services, including water storage and filtration, soil stabilisation and carbon sequestration, prevention and reduction of floods, food, fodder, fuel, medicines, etc. However, the existence of clear and enforceable property rights in unreserved forests, which is central to effective ownership, remains a contentious issue in many areas. Substantial forest area is under the unclassed category, and is owned by private individuals, clans, village councils, district councils, and other traditional community institutions. The autonomous district councils (ADCs) control the unclassed forests, comprising 8,503 sq. km (96 per cent of the total forests). It is reported that local elites have often usurped and reallocated traditionally held community and tribal rights — rarely recorded in any official statute book — with predictable consequences in terms of local tensions and conflict, resulting in unplanned clearing of forests, with no planning or effort towards maintaining forests.

It is often quoted that the state, with about 69 per cent of its total geographical area under forest cover, is a forest-surplus region, but the quality of the forest has deteriorated, and dense forests with canopy closure of 40 per cent or more have been degraded into open forests or scrub. Since the state is predominantly mountainous, deforestation and the resultant loss of soil, especially in the hill areas, are leading to increased siltation of rivers and streams. The deep pools that are the favored habitats of many species are rapidly

becoming shallow and choked with silt, leading to a decline in habitat. At the same time, swamps, marshes, and other wetlands are increasingly being reclaimed for urban and agricultural expansion.

As far as global benefits from forests are concerned (carbon sequestration and protection of biodiversity), in principle these benefits should motivate at least some partial payments. The Twelfth Finance Commission has, again in principle, recognised the need to compensate states with forest cover for loss of revenue, loss of alternative economic activities, and higher cost of providing public services. It is important for the state to make a representation to the Finance and Planning Commissions collectively to receive the necessary compensation for providing a global public good.

Given that there is a trade-off between commercial and conservation benefits from forests even from a national perspective, Meghalaya should explore the possibility of resource transfers from the central government for the spillover benefits generated from forest conservation/opportunity cost of forest conservation. Estimation of these would, however, require detailed data which are hard to obtain.

In this context, it may be noted that the greatest gain in carbon storage and biodiversity would potentially come from protecting mature marginal frontier forests that would have been harvested without the offset payment. Therefore, payments to protect the full forest are not necessary because the volume at risk is mainly the forest at the margin.

This, however, should not be taken to underplay the socio-economic logic behind the idea of 'compensation and conservation'. Compensation should be paid because forest-rich states are also forest-dependent states. Loss of revenue from resources they possess affects them in two ways. One, they can hardly afford to budget for maintaining and enhancing their forest resources; besides, revenue compression leads to cuts in vital developmental expenditures. Two, since it is the poorest who bear the burden of conservation as their lives are crucially linked to both resources and services the forests provides, social and economic inequities widen and often find expression in extremism.

Shifting Agriculture/Jhum

Jhum is a prominent traditional agricultural land use type associated with the social framework of a large number of tribal communities in Meghalaya. Local terrain in the region coupled with dynamic practices (both in time and space) of shifting cultivation, and lack of cadastral maps make it difficult to provide accurate estimates of areas under such usage. In Meghalaya, over 7,000 sq. km is reported to be still under *jhum*. The *jhum* cycle used to be longer than 15 years, which enabled regeneration of forests before the same land was cultivated again. However, in the recent past, due to an increase in population, and social and other changes in the traditional way of life, the cycle has shrunk, in extreme cases, to as little as one to two years. As the *jhum* cycle becomes successively shorter, the *jhum* sites cannot remain under vegetal cover, and degrade relatively quickly.

Because of the hilly terrain, settled cultivation is practiced only in a small portion of the total cultivated land, mostly confined to the valleys. In view of the high labour cost and energy input involved in terrace cultivation, and in absence of other viable alternatives to shifting cultivation, the majority of the population of the state continues to depend on shifting cultivation for their subsistence livelihood. Frequent shifting from one land to the other for practicing *jhum* has adversely affected basic life support systems such as vegetation and soil. The decline in the area under natural forests, the fragmentation of habitat, local disappearance of native species, and invasion by exotic weeds are some of the ecological consequences of shifting agriculture. Due to shifting cultivation on steep slopes, downstream siltation of water bodies is apparent in many districts.

The following categories of *jhum* have been identified in the north-east:

(i) **Long cycle *jhum***: This is still practiced in the remote, sparsely populated areas of the Garo hills of Meghalaya and parts of Nagaland. Such *jhum* is generally sustainable and is the best cropping method in areas where flat land is not available. The practice has survived the test of time and it enables the people to live in harmony with nature;

(ii) **Stressed *jhum***: With an increase in population, villagers are forced to reduce the fallow period (even to as little as two years), which is insufficient for natural regeneration to take place, and has resulted in land degradation. This type of *jhum* is neither productive nor sustainable and is mainly found in the West Khasi Hills of Meghalaya; and

(iii) **Modified *Jhum***: This includes land-levelling, bunding, cultivation of multiple crops including leguminous varieties with traditional crops in the *jhum* fields (such as green peas in Pomlakarai, Meghalaya, and indigenous kolar beans and rajma in high-altitude villages of Nagaland where rice cannot be grown). Such practices maintain soil fertility, and help augment household incomes.

Interventions for improvements in *jhum* through developmental projects have been made in the states of Nagaland (through NEPED — Nagaland Environmental Protection and Economic Development — with support from the India-Canada Environment Facility), Meghalaya, Manipur, and the hill districts of Assam (NERCORMP — North-Eastern Region Community Resource Management Project by IFAD and NEC). Improvements in livelihoods through the promotion of tree husbandry and cash crops have been achieved by NEPED, while institution building and microfinance are NERCORMP's achievements. Such programmes to manage *jhum* through land-levelling, contour-bonding, and multiple cropping offer great opportunities. The success of these programmes has shifted the focus from the total replacement of *jhum* to an improvement in traditional practices.

Mining Activities

Meghalaya has rich mineral deposits. Important mineral resources found in the state are coal, limestone, feldspar, quartz, glass sand, sillimanite, clay, and kaolin. Of these, coal is found in every district in the state, has low ash content, and is very high in calorific value, although it is also high in sulphur content. Meghalaya has estimated coal reserves of 559 million tonnes (MT), spread over an area of 213.9 sq. km (approximately 1 per cent of the total geographical area of the state). The Garo Hills district has the maximum coal reserves of 390 MT, followed by West Khasi Hills (98 MT), Jaintia Hills (39 MT), and East Khasi Hills (31 MT). Despite its large reserves of coal, domestic consumption is low due to the absence of industrial activity; consequently the state is a large exporter of coal. This is the case with limestone, too.

Unscientific methods used in coal mining have caused land and water degradation, besides causing damage to roads, and health hazards to labour engaged in mining and local residents.

Meghalaya has huge limestone deposits. Limestone caves, apart from their significant tourism potential, could be a precious economic resource for the people. Limestone mining too has had adverse outcomes for land, forest, and water resources. Unregulated mining carried out on private and/or community land, without the necessary measures to control and mitigate the adverse environmental impacts, has had a negative effect.

We endorse the suggestion of the government of Meghalaya to make environmental clearances mandatory for mining, irrespective of size. (At present, this is not essential for areas less than 5 ha.) This should be supplemented with measures to promote education and awareness campaigns about adverse environmental impacts and low productivity of using unscientific methods of mining.

8.2 THE WAY FORWARD

- We endorse the recommendation of the Report of the Task Force on Hilly Areas[32] that the Natural Resource Analysis and Advisory Centre (NRAAC) should be upgraded, or a new institute should be established with the following mandate: The institute should have full digital data on the resource base of the hill states/regions; it should be able to analyse data to detect changes or see trends; and should be able to guide policy makers and planners on any activity that is likely to affect any resource or the environment of the region. Consultation with this body should be mandatory before any major activity in the state/region is undertaken. For effectively carrying out all the recommendations, and to support their planning as well as for much needed monitoring, all hill states need to join in and establish a user friendly digital databank (spatial and non-spatial).

[32] Planning Commission (Government of India) 2010.

- It is essential to formulate and strictly implement a land-use policy specific to local conditions that takes into account the fragility of the region and local customs. This would require, among other things, documentation of present land use and ownership patterns. The plan must prioritise zoning of regions to clearly demarcate what activities are permitted and in which areas. Simultaneously, extensive grassroots-engaged programmes to develop region-specific skills, technology, and education must be launched.
- In order to effect sustainable forest management practices in community forests, specific areas of intervention, and the extent of these interventions need to be carefully identified. A people friendly policy needs to be developed by the government that would ensure a favourable environment for government and community participation in conserving community and private forests. Areas where facilitation is required, areas where regulatory mechanisms are to be instituted, and strategies for strengthening traditional institutions for effective forest management need to be identified for formulating an effective and implementable community forest policy for the state. While identifying such areas of intervention, sensitivity regarding autonomy of traditional institutions should be kept in mind. The fear of land alienation due to government interference in people's minds and the issue of possible alteration of land ownership must be given top priority while undertaking such an exercise for developing an appropriate policy.

  There is a need to promote scientific forestry in community and private forests, as this is a viable strategy to ensure the continued existence of forests. Given the limitations of state forest departments in terms of staffing vis-à-vis the large forest areas under community/private ownership, it is desirable to train representatives of traditional village level institutions on various aspects of modern scientific forestry which would complement their traditional knowledge and experience in forest management.

  Rewards as well as compensation mechanisms should be put in place at the national level to acknowledge and maintain the flow of life supporting ecosystem services from hill states to the rest of the country. For the maintenance of forests, incremental compensation should be provided based on scientific norms.

- Interventions are also required to manage, improve, and supplement *jhum* to help minimise erosion and silt flow; facilitate functional land consolidation; and regulate mining irrespective of size to reduce environmental degradation. Areas where shifting or terraced agriculture is practiced should be earmarked for unique crops, organic agriculture, horticulture, agro-forestry, and for introducing better management practices.

The practice of *jhum* could be reduced by:

(i) Providing alternative employment opportunities such as handicrafts through cottage industries; encouraging cooperative efforts for carrying out forest based activities like basket making, rope making, cane furniture making, processing of minor forest produce, honey collection, etc.; popularisation of new land based activities such as fisheries and horticulture. However, these will have to be made commercially viable by providing proper marketing facilities; and

(ii) By forming village forest committees for the protection and development of degraded forests. These committees may be able to generate employment opportunities during the lean season through various forestry and other land based activities. Grassroots level organisations such as self-help groups have been effective in working out alternative livelihood strategies and thus, reducing the area under shifting cultivation.

- Industrial zones should only be located in non-fragile areas, and should include only those activities which are favourable to the local environmental and resource conditions, such as processing non-toxic, locally available raw materials, and investment that generates local employment. There is good potential in the state for the development of small and cottage industries. This will add value to locally available raw material, mainly based on forest, plant, animal, and mineral wealth. This will also provide dispersed employment.
- The adoption of scientific mining and compliance with a well-designed environmental management plan under the EIA notification should be able to check environmental problems relating to mining to a great extent. However, the challenge is that neither the EPA 1986 nor the EIA notification 1994 is applicable to all these areas.

In view of the enormity of the environmental concerns, besides revenue implications for the state, environmental clearance should be made mandatory for mining in the state irrespective of size. (At present, this is not essential for area less than 5 ha.)

Owners of the mines and people engaged in the activity and living locally should be educated about the environmental consequences of unscientific mining. A well thought out and planned awareness programme should be undertaken for all the stakeholders. For this, a nodal agency needs to be identified and adequate resources should be provided for such programmes.

There is a dearth of appropriate technology for rehabilitation of mine-affected areas, which are site-specific. Therefore, a comprehensive programme of technology development for eco-restoration of these areas needs to be taken up. Besides, existing technologies should be applied immediately for the rehabilitation of mined areas. Social issues and human health problems in mining areas also need to be addressed.