

Session I

**Mountain Development:
The Need for Enabling Policies**

Sustainable Mountain Development: Reflections on Supporting the Development of Inclusive and Pro-Environment Policies in the Himalayas

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Introduction

Developing effective policies suited to the diverse conditions of mountain areas such as the greater Himalayan region depends on the ideas policy makers bring into the process. Understanding the nature of the problem and the kinds of possible solutions held by diverse stakeholders (from government official to local farmer) exert a significant impact on whether the proposed policy is feasible, adopted, equitable, or environmentally sustainable. The actors involved in policy change will almost always have differing and often conflicting perspectives and interests. The ability to introduce change that key actors can support is shaped not only by the nature of the solutions introduced but also by the processes used to develop and introduce them. All these factors are critical to whether a policy can actually work, and whether it can work for the benefit of poor and excluded communities as well the environment.

The most effective policies, with equity and positive environmental outcomes, are developed by involving diverse stakeholders every stage of the process. The framework or paradigm used to understand the problem empowers local actors to find a workable solution that fits their unique conditions rather than just imposed solutions developed by outsiders. The institutional rules governing the implementation of policy are developed locally taking into account the interests of stakeholders, including the poor and the socially excluded. In effective policies, these rules are flexible enough to be adapted by households and communities to their diverse conditions, while resilient enough to resist attempts by different stakeholders to bend the policies to their own benefit.

Relatively successful examples of sustainable mountain development policies in the Himalayas include community forestry and ecotourism. Following a brief discussion of the critical factors in policy development, reflections on these examples' key success factors are discussed along with lessons for the future. The discussion draws heavily on experience gained with colleagues while working at ICIMOD.¹

From research to policy

Most research-oriented policy development organisations such as ICIMOD try to map out a logical sequence to the development of policy. This starts with collecting and analysing knowledge about the problem, identifying options and strategies, and disseminating and advocating strategies to key policy makers and intermediary organisations in such a way that an enabling environment is developed, policies are adopted, and outcomes achieved. Such an approach is illustrated in the following chart (Figure 1).

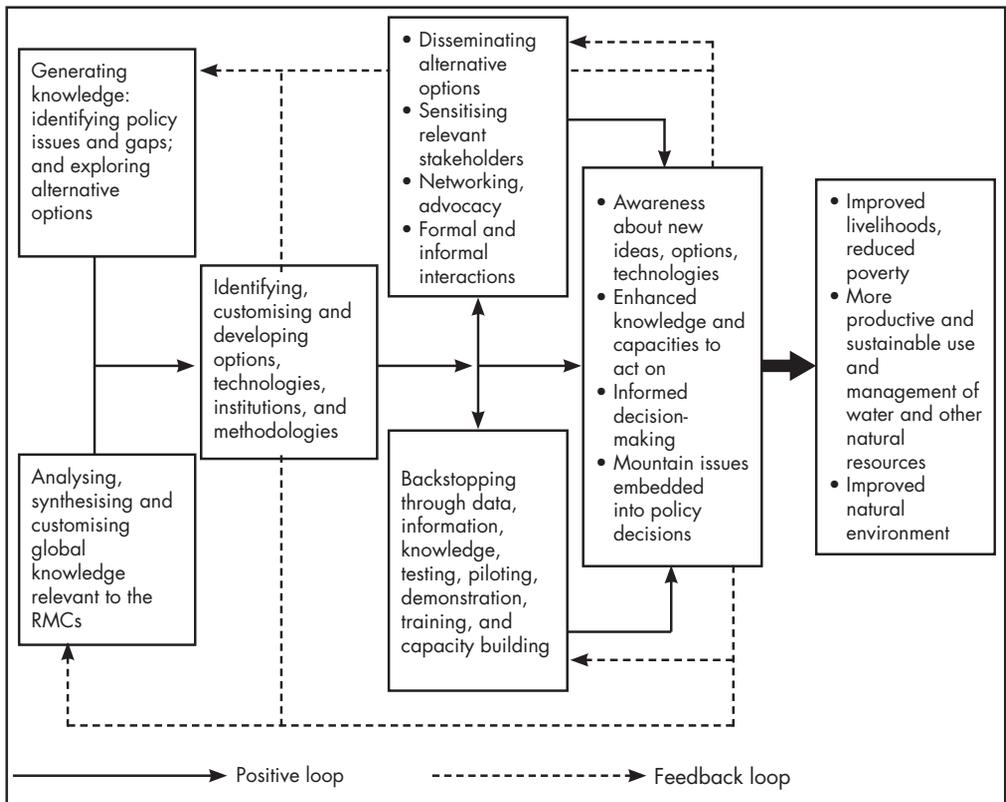


Figure 1: **A framework for policy development** (G. Rasul 2007)

Advancing from knowledge to policy, to implementation and impact, is a complex and uncertain process and rarely follows a linear roadmap (Blaikie and Sadeque 2000). Understanding the policy process helps to highlight the role of the different stages involved and the distance traversed from knowledge to outcomes.

¹ The author was Director General of ICIMOD from 2/2000 – 3/2007. This paper was expanded from his presentation at the workshop.

To be effective, the approach requires that:

- research is credible, applicable, adequately specific, and accessible;
- there is a compelling story to translate research into understanding;
- there are powerful examples in the region;
- there are champions and ownership driven by passion; and
- there is effective advocacy and lobbying by interest groups.

Adequate financial and human resources are also needed, and timing and luck are often more critical than is usually admitted.

Framing the policy question

Underlying this compressed version of an idealised policy formation process, we know that the shape of the policy question posed determines the shape of the answers obtained. Within the context of mountain policies, we find two differently shaped versions of the key development question which yields markedly different policy answers and requires different policy processes.

Question A - Are rural mountain people victims of poverty as a result of their own practices and outside exploitation, and trapped in self-destructive cycles (Figure 2) requiring rescue and massive inputs of paternalistic aid?

Question B - Are mountain people capable of improving their own condition, environment, and livelihoods, given appropriate facilitation and access to knowledge and resources (Figure 3)?

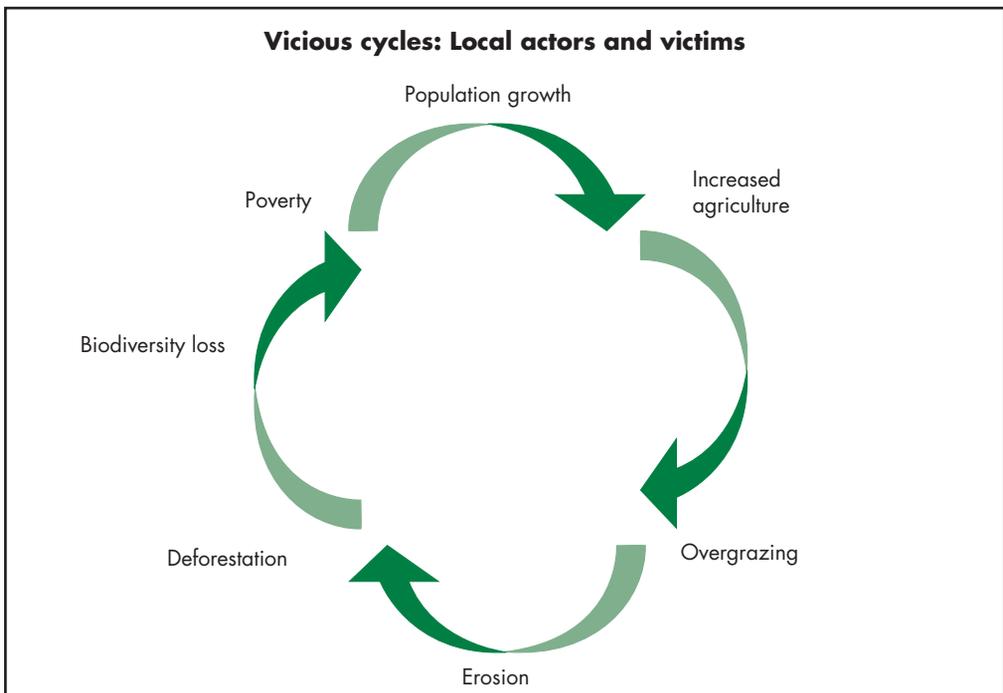


Figure 2: **Self destructive cycles, the traditional story: Question A**

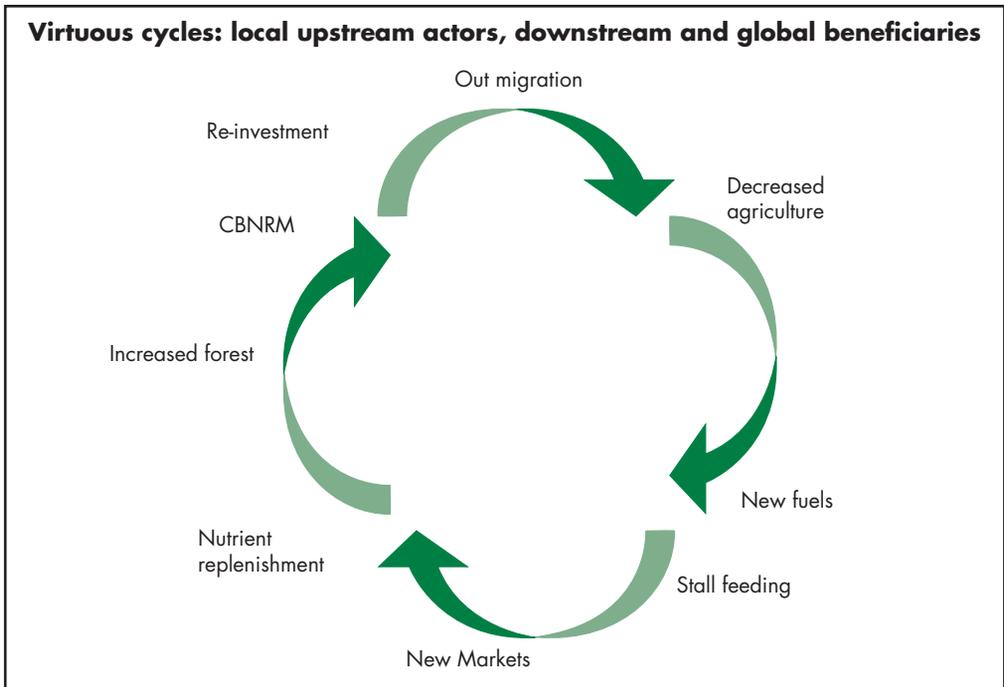


Figure 3: **Virtuous cycles, the alternative story: Question B**

In the classic version of question A, mountain people are caught in a vicious cycle in which they are the major actors and victims. They are often considered responsible for their poverty and the destruction of their environment. Their overexploitation of resources increases the mountain landscape’s physical vulnerability and their social, economic, and political vulnerabilities as well as downstream disasters. The future emerges as bleak, unless massive interventions are put in place to change agricultural practices, population demographics, and to slow down erosion processes.

The other story associated with Question B depicts a world of virtuous cycles where the primary actors are local mountain people, and the beneficiaries are expanded to include downstream populations benefitting from ecosystem services provided by improved watershed management. Understanding the causal chains triggered by such actions as outmigration from the mountains, widescale adoption of community forestry, stall feeding, and new dairy markets, yields a much different and more positive set of predictions for the future and the kind of policy support required to sustain it. Effective policy interventions focus on empowering local mountain people to create their own development. Benefits accrue not only to local and downstream actors but to the world at large through conservation of carbon and genetic resources.

There has been enough research to support both of these paradigms of environment and development. Both are true: while there tends to be more adherents to the traditional story of vicious cycles, there is increasing realisation that mountain people have also demonstrated the capability to act together to take advantage of favourable policies and drive development in positive ways.

Example 1: **Community forestry in Nepal**

The evolution of community forestry in Nepal is an example of a policy process that is yielding successful outcomes for institutional and environmental sustainability as well as for ecosystem services downstream and for global beneficiaries. Studies have examined the process and factors that have led to success, as well as debated the degree of inclusive equity obtained. Undeniably, community forestry has reversed deforestation trends in Nepal, and over the last 25 years has resulted in the formation of over 20,000 community forestry user groups managing over 1.2 million hectares of forest, with significant increases noted in community income, equitable access to forest products, increased environmental services, and biodiversity.

Each of the steps noted at the outset played a key role in bringing in a shift in thinking, legislation, and support, which has made the introduction of community forestry possible. Research focused on the use of forests for fuelwood, small timber, fodder, and food supplement, has brought in a new understanding of forests as a critical element in rural livelihoods rather than only a national income source from logging. Research into how communities could manage common property forests successfully while continuing to degrade open access and nationalised forests provided examples and a theoretical framework for developing new policies to shift use and management rights from the government to local communities. Innovative legislation was prepared, widely debated, and adopted. Highly committed individual forest officers and development actors provided advocacy and supported dissemination efforts that were effective through the timely release of popular books of ecological doom such as *Losing Ground* or the innovative film, 'Fragile Mountain' (Eckholm 1976). Multilateral and bilateral donors such as World Bank, the United Nations Development Programme (UNDP), the United States Agency for International Development (USAID), Swiss Development Cooperation (SDC), Danish International Development Agency (DANIDA), and others took the work of the Australian project to scale and provided the resources and long-term support essential for its success.

The ultimate success of community forestry in Nepal, however, was driven by the local communities – the main actors in adopting the new policy. Critically, their engagement only took place after a few key policy adjustments in the first few years of the programme. Initial legislation provided the means for turning over community forests to the administrative unit, then called the 'village panchayat' (now 'village development committee'). This unit usually included several villages and forests and there was little congruence between the administrative unit and the forest or its users. Initial legislation required that the panchayat first pay funds raised from the forest to the government, then apply for reimbursement the following year while claiming 75% of the returns from the government. When, on the basis of monitoring and research carried out by the project and government policy makers showing that these policies changed a previously resistant rural population into enthusiastic adopters, enabling changes were introduced to allow user groups made up of forest users to be legally registered as the direct recipients of community forests and the funds obtained from them. Once this framework was in place, applications for community forests started to pile up on the desks of forest officers, and still do – at rates beyond their capacity to process. A national Federation of Community Forestry User Groups (FECOFUN) was established with the help of ICIMOD and Ford Foundation, which provides for the first time in South Asia an organised advocacy and mutual self-help association representing millions of users. This group has withstood both insurgency and bureaucratic attempts to reduce its influence.

Several issues are not covered by this summary. The critical role of management plans and how they are developed and administered; the sets of new skills needed by both forestry and community personnel and training that could provide them; the role of markets and the mix of products suitable for harvesting and planting in community forests; and the degree of equity achieved when local elites seek resource capture. These are examples of policy issues that continue to need attention. These issues notwithstanding, it is clear that when local communities are enabled to take the driver's seat through supportive policies based on their own interests and practices success on a large scale is possible. The prevailing understanding of the role of forests in development and the role of local people in forest management had to change radically to enable effective policies to be developed.

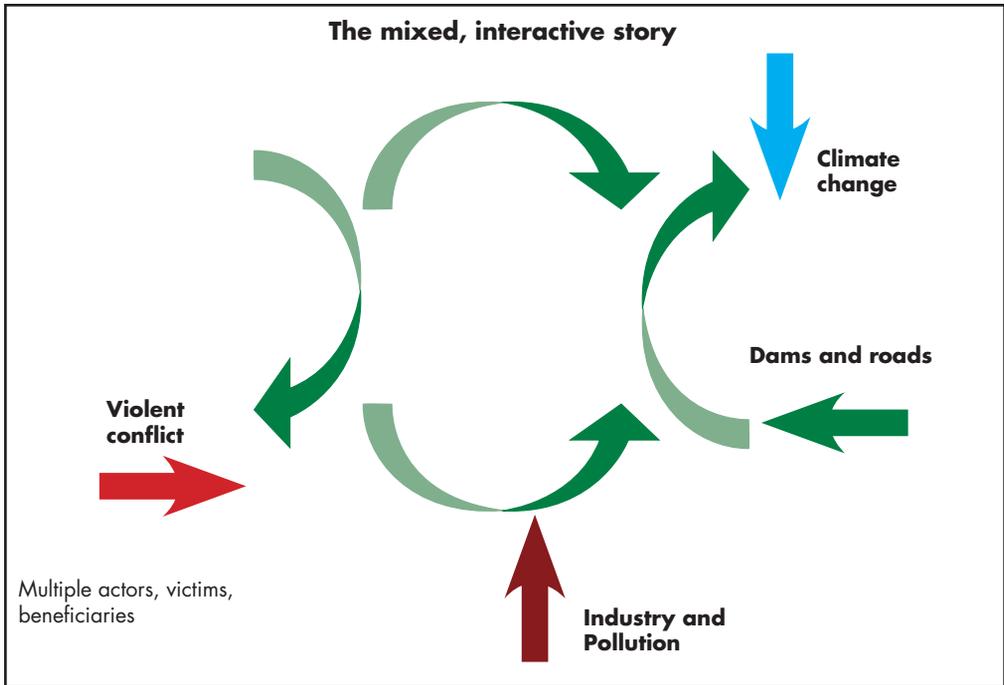


Figure 4: **New threats and dynamics with intersecting and interacting cycles: Question C**

In the world of Himalayan uncertainty (Ives and Messerli 1989), a mixed paradigm that recognises the truth of both these models but brings in the significant impacts on mountain livelihoods and the environment brought about by outside actors, is likely to be a closer approximation of the complex realities we find in the Himalayan region and mountains in general. This mixed interactive story recognises the effects of climate change, constructed infrastructure, globalisation, and rapid economic development, as well as widespread violent conflict. It demonstrates an understanding of mountain conditions subject to multiple actors, multiple beneficiaries, and multiple victims.

This approach modifies question B by adding the need to identify and deal with outside forces and opportunities, for example, climate change and remittances flowing in opposite ways. This formulation appears to provide a more realistic and fruitful basis for arriving at policies that are feasible, potentially positive, and equitable environmentally. This leads us to a more realistic formulation of the central policy question, one that enables policy solutions to be found that recognise mountain people as both actors and victims and also recognise the coexistence of destructive and constructive interactions. The question recognises that there are multiple actors and physical forces at work in the making of effective, equitable, and sustainable policy.

Question C - How can diverse mountain peoples be provided with opportunities to develop livelihoods and environmental security within the context of dynamic interactions in the mountains and with the world downstream and outside the mountain area (Figure 3)?

Example 2: **Ecotourism in mountain development**

Tourism in mountain areas required a similar shift in the prevailing underlying paradigm in order to develop policies that support poor mountain communities and the environment rather than the urban elites. Traditional commercial tourism, still widely practised in the Himalayan region, shapes policies to ensure that state and private tourism entities based in urban settings capture tourism benefits by requiring permits and fees levied centrally, group formation and pre-payment of costs, urban supply procurement, and international marketing networks. All of these mechanisms exclude local community operators. In addition, they do not provide a stake for local communities to encourage them to conserve the main products that mountain tourists are looking for: rich natural and cultural environments.

Practices introduced in Nepal and researched by ICIMOD professionals and other scholars have shown that alternative policies can shape mountain tourism to benefit the poor and the environment if done right (Banskota 1998; Chettri et al. 2005). These can cover pilgrimage and religious tourism as well as adventure trekking and mountaineering activities. Mountain tourism accounts for 15-20% of worldwide tourism revenues, or US\$ 70-90 billion per year. Mountain communities have demonstrated that they can be ideal service providers for mountain tourism, running lodges, homestays, and camp grounds, and working as guides, porters, and travel agents. Where policies and training have been introduced to support local communities such as in the Annapurna Conservation Area, or Yuksum area in Sikkim, India, ecotourism has increased substantially (Chettri et al. 2005). It has provided positive links to greenhouse production systems for vegetables, poultry and eggs, milk production, handicrafts, and other general supplies.

Ecotourism has also demonstrated that it can foster environmental protection. As the numbers of local residents benefiting from tourism activities increase, and as they get organised with appropriate policy support into informal associations (as has happened with community forestry) they have shown that they are capable of protecting the natural beauty and cultural heritage that attracts their clients.

As outside interventions increase, however – whether they are roads and vehicles, or plastic bags and increased garbage – new interactions are developing that will require fresh dialogues to develop workable policies. Local efforts are still the most critical for adapting policies that benefit poor locals and the environment and, as outside forces expand, innovative policies involving these stakeholders become even more critical. As in the case of community forestry, second generation issues require added capabilities on the part of local communities to deal with new technologies and political constituencies. Rapid expansion of mobile phones and the Internet provide new opportunities for marketing and advocacy for which local communities will need to acquire skills to realise these opportunities effectively.

Examples of policy gaps and opportunities in rangelands and shifting cultivation areas

While community forestry in Nepal, and ecotourism in Nepal, (Sikkim) India, and some other pockets of the Hindu Kush-Himalayan region, have changed prevailing paradigms to some extent and introduced policies that have partially succeeded in providing pathways to benefit the poor and the environment, there is considerable scope for continuing to adapt and extend these policies to benefit more countries and areas.

Surprisingly, however, the major domains of natural resource management are only beginning to be subject to a change in mindset in ways that can yield socially and environmentally beneficial outcomes. Management of mountain rangelands which cover over 65% of the

area of the greater Himalayan region, and shifting cultivation which covers vast areas of the eastern Himalayan and foothill regions, are characterised by a jumble of left-over policies mostly based on a paradigm of centralised government control. In most of these policies government responsibility is unclear and tenure rights are ambiguous and often conflicting. Very few nomads or shifting cultivators have tenurial security over the resources upon which they depend. Policies are geared, either directly or indirectly, to get them to change traditional practices and adopt either livestock rearing or settled agricultural practices suited environmentally to other ecosystems. There is little incentive for sustainable local community management. Changes such as construction of roads and other infrastructure on a wide scale; new markets and demand for meat, wildlife, and medicinal herbs; and aspirations of nomads and the youth for education, health, and modern amenities, offer opportunities to transform these negative cycles. Unfortunately, they are too often extra burdens and barriers to local people and encourage government to treat semi-nomadic peoples as though they were settled agriculturalists.

ICIMOD and partners' work in these areas has shown that there are real opportunities to find policy solutions that are beneficial to the poor and the environment (Miller and Craig 1997; Rasul 2005; Gyamtsho et al. 2006; Sharma and Kerkhoff 2006; Rasul and Karki 2007). As with community forestry and ecotourism, these opportunities depend on the central pillar of providing far greater ownership of resources (tenurial security) and putting local communities in the driver's seat. They also require extensive research and dialogue with the other actors and stakeholders – from the private sector to government agencies – to negotiate frameworks and actions that can facilitate more sustainable action.

Policies and institutions

As the preceding examples indicate, the interaction between policies and the institutions through which they have been created and implemented is complex. Policies provide the up front legal, programmatic, and organisational rules that try to shape individual and collective behaviour. Institutions provide the often hidden rules that determine social stratification and social dynamics, group and individual interactions, and the application of systems for organising behaviour sought by more explicit policies.

Different stakeholders and individuals play within and with the rules to either promote or resist policy adoption and implementation of policy. Stakeholder motivation depends largely on the prevailing institutional culture, the perception of benefit distribution to others and one's self, the degree of individual integrity, and the structure of implementation. Poor and marginalised mountain peoples, especially Dalits, excluded ethnic groups, and women, rarely have equal voice. As is the case in community forestry or successful ecotourism models, an enabling environment for appropriate policies are required that specifically target institutional constraints and opportunities and build group strength through associations and similar platforms for collective action. Since policies are intermediated by institutions, hidden institutions are as relevant to their success as explicit policies – a point too often lost in typical economic models for policy action.

Stakeholders' voices: lessons for increasing inclusiveness

It is crucial that the process of policy development and the institutional innovations introduced specifically address the concerns of and give voice to excluded groups. Mechanisms should be built to empower women and excluded groups to become full members of the community, with equal access to benefits. This is easier said than done. While the participatory approach can be effective in accommodating issues and opinions of dominant stakeholders, explicit measures are needed constantly to provide a more inclusive and level playing field for silent and vulnerable groups.

Some important lessons learned in making explicit provisions for greater inclusiveness are covered in the following passages.

- **Identify real users** - It is important to understand the real users of resources who may or may not be within the traditional or administrative boundaries, whether on the micro- or macro-scale. At the local level, user groups are an effective starting point, but issues of natural resource management in the mountains of the Himalayan region are often linked to transboundary networks and need to be addressed at a multi-state level as they affect the livelihoods of people across countries. The benefits must be shared with legitimate owners and users through delegating judicial rights. There is, however, always the danger of elite capture of resources and power while marginal sectors continue to suffer poverty and injustice. Stakeholder power imbalances need to be redressed by putting the interest of voiceless and marginalised community members first in the process of intervention.
- **Differential impacts of technology choices on stakeholders** - The choice of technology often determines which group of stakeholders will benefit and who will lose. For example, plantations of fuelwood, fodder, and non-timber forest product species tend to skew the benefits towards women and the poor. Mono-culture timber plantations are often subject to capture by the elite. Similarly, tourism policies that insist on large groups and tour buses direct the market towards richer urban companies while policies enabling individual tourists (free independent tourists or trekkers - FITs) to make their own arrangements, direct the benefits towards local buses, lodges, guides, and porters. Ultimately, the degree to which a technology or policy is more inclusive and equitable depends on the degree to which resilient and adaptive local institutions are developed through an inclusive process and empowered to make key decisions about implementation. Details make the difference.

Lessons

Without doubt, good empirical research is critical in developing sound mountain development policy, here defined in terms of a pro-poor and pro-environment orientation. As the examples of community forestry and ecotourism in the Himalayan region illuminate, good research is a function of not only scientific rigour but, even more importantly, the ability to ask the right questions. Policy solutions are generally adopted and effective if they understand the critical need to put local communities in the driver's seat, legally and institutionally. Mountain policies need to recognise and provide appropriate returns to multiple stakeholders, but they are generally only inclusive and sustainable if they provide a level playing field for excluded groups through the choice of pro-poor technologies and institutions with accountability.

Policy innovations, building on the positive attributes of existing institutions that support a culture of collective behaviour, are more likely to be adopted and maintained. As outside threats and opportunities arising from rapid infrastructural development, new markets, new technologies, and new aspirations and social norms, intervene more strongly within the local mountain communities, the importance of resilient local institutions and supporting legislation continues to increase. ICIMOD and The Mountain Institute's (TMI) experience in a number of fields has shown that successful examples abound in the Himalayan region and that the opportunity to expand appropriate mountain policies is both vast and urgent.

Active government and academic and NGO partnerships, with an understanding of and mandate for mountain policy analysis and support, are essential to meet the mountain policy challenge. New information technologies and computer-based analytical programmes such as GIS provide unprecedented tools for researchers and policy analysts, but will only be useful if accessible and used by a rural population increasingly literate in terms of technology. It is this partnership between those with research and policy literacy and local communities and individuals who must be responsible for driving and carrying out mountain policies that will allow this challenge to be met in ways that can be both equitable and sustainable.

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Policy and Institutional Reforms in the Context of the Hindu Kush-Himalayas: A Review of Experience in the Context of ICIMOD

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Introduction

In the past, there has been considerable focus on economic policy and related institutional reforms. The conventional model of economic, policy, and institutional reforms has a standard set of prescriptions: establish property rights, enforce contracts, remove price distortions, maintain macroeconomic stability, remove restrictions on trade and industry and, with a little bit of good luck, account for uncertainty. The economy should move ahead predictably and vigorously. Policy and institutional reforms face a number of significant difficulties. While it is a favourite topic for multilateral and bilateral agencies including academics, most governments see this as an intervention into their territory (Blaikie 2006). Many of the recent policy and institutional reforms also focus on removal of government control to promote liberalisation and privatisation of the economy. The government is not about to fade away completely, however, and as a matter of fact, given the marginal impact on poverty of liberalisation policies, there is already some softening for the state through advocating engaged governance (Khan 2003). This paper reviews policy and institutional reforms in the context of policy and institutional reforms in mountain areas.

The changing context of mountain policies and institutions

In the competition for resources, unless highlighted by some natural event, mountain areas tend to fall back to their remote, inaccessible, tribal, and minority status. Clearly, the work thus far has not identified one characteristic or unique feature that will help policy makers modify their traditional way of thinking and looking at mountains. As the review clearly shows, policy and institutional changes in mountain areas have been influenced by changes in the prevailing development thinking about a particular area, sector, or resources. The impact of these changes, however, may not be due to anything specific to the mountains but rather to other changes in the economy and society.

From biophysical to people focus

For a long time, biophysical processes dominated the research agenda in mountain areas. Earthquakes, glaciers, storms, climatic changes, geological structures, hydrology, vegetation identification and mapping, were among the common research areas. With increasing development activities in mountain areas, the research agenda has also gradually moved towards people in the mountains (Rosser 1983). If at first researchers had found mountain people to be destroying their environment, more intensive studies have revealed them to be in fact guardians of the environment. Both of these positions have influenced forest policies and institutional reforms in the region (Blaikie and Sadeque 2000). While there are many inappropriate indigenous practices throughout the mountains, many potentially valuable areas of indigenous knowledge and activities have also been identified (Jodha and Shrestha 1994).

Disciplinary to interdisciplinary

With increasing development focus on mountain areas and people, many complex questions are being raised. A soil erosion problem is linked to deforestation and farming practices, and this is further related to population growth, gender roles, land policies, tenure, and market prices (Schrier et al. 1995). In the field of watershed management new research has helped to alter predominantly engineering-oriented, structure-based government interventions to include biological solutions that are implemented through participatory methods.

Upstream-downstream relationships

In the past, many important decisions regarding mountain areas were dominated by the needs of downstream and urban areas. Water resources projects were implemented for the benefit of the plains and urban areas. Mountain forests were mostly used to meet the timber needs of the plains (Jodha 2000). Dams built during the fifties and sixties were primarily oriented to serving the needs of the plains, so much so that, in many areas where dams were built, local people did not even have electricity until very recently. Little attention was given to the needs of upstream people. River training and watershed management activities were also limited to protecting the immediate structures around the dam (Bandyopadhyay and Gyawali 1994).

Projects to integrated approaches

More research is calling for a change from a narrow sector-based project intervention method to the adoption of integrated approaches which are based on participatory planning and management. Many development activities were in fact carried out as single projects. The multiplication of projects had reached a point where projects appeared to be working against each other. Similar types of project were being recycled over and over again. Rapid changes in projects limited the time horizons of many organisations to project periods, making it difficult to focus on development of longer-term capacities. Projects also reinforced many inter-organisational rivalries and rigidities. While the proposal for integrated approaches made a lot of sense, these have been difficult to organise and implement in practice (Pradhan 1985).

Forestry and watershed development

The prevailing position regarding forests during the sixties was that deforestation was caused by farmers who did not care much about the environment and were relatively ignorant about the consequences of removing trees on their farms, about water supplies, and about overall watershed conditions. This thinking resulted in widespread extension of government control over forests in the late fifties and sixties (Gilmour et al. 1988). It did not take long to see the consequences of this decision, and it resulted in widespread deforestation even in areas that had well protected forests in the past. Communities had, in fact, protected their forests relatively well in the past, and it was only after government interference that deterioration occurred. Similar experiences were observed in erosion control practices in the public sector, with check dams and structures which were not effective and sustainable. A closer study has revealed that many farmers were forced to cut down trees because of various taxes and levies (Mahat et al. 1984).

There is also considerable debate about the link between deforestation in the Himalayas and downstream flooding, particularly in Bangladesh. A similar position has been observed in the Yangtze River Basin where the main reason given for downstream flooding was the reckless deforestation in the upper reaches of the Yangtze (UNEP 1999). While some argue that mountain people are recklessly destroying their environment and causing significant downstream damage, others maintain that mountain people are not only the custodians of their environment, they also contribute to downstream services by protecting water, forests, soil, and biodiversity and, hence, need to be compensated for their environmental services (Pratt 2002).

Rural development, poverty, livelihoods, and social exclusion

Many attempts have been made to address poverty in mountain areas, but these have failed mostly from lack of enabling policies, dominance of a public sector approach, and lack of political commitment. While district-based integrated rural development programmes have been launched as part of devolution, a decentralised community participatory approach is receiving priority in the present context (Dhungel and Shrestha 2006). Poverty is still widespread although recent data shows some decline. The Poverty Reduction Strategy Programme (PRSP) has focused on improving livelihoods and removing social exclusion of different groups in the country (NPC 2005). These are some of the situations in which policies and institutions are changing with time and external environments.

Mountain agriculture

The bulk of mountain people continue to depend on mountain agriculture. It would, therefore, be reasonable to assume that this was a high research priority. This has not been the case, however, and it is only recently that research programmes have begun to look at some of the specific aspects of mountain agriculture. Even teaching about mountain agriculture was conspicuously absent (Banskota and Partap 1996). Comparative reviews of experience in other contiguous mountain areas reveal that there was no comparative advantage for food grain production in many areas of the upper slopes (Jodha and Shrestha 1994). Slowly,

cultivation of high-value crops is replacing food grains throughout the mountains where access has improved and farmers have had opportunities to link with wider market economies.

ICIMOD's contribution to policy and institutional reforms

Overall and sector aspects of policy and institutional reforms

ICIMOD's major contribution has been in the areas of promoting better understanding of mountain environments and strengthening the capacities of some organisations in the HKH countries. This includes providing training in GIS and RS applications and mountain risk engineering. Some of the other popular ICIMOD subjects, such as seabuckthorn and sloping agricultural land technology (SALT), appear to have been sidelined. It is important to note that all the above have strong components of technology. The exposure and training that has gone along with support in kind for capacity building has contributed to improving capabilities in beneficiary organisations. What impact this has had on the work of different organisations in their national contexts has yet to be documented. The contribution of policy and institutional reforms from the above is indirect and quite difficult to assess.

Looking at some of the recent important publications of ICIMOD, it is evident that there is no shortage of proposals for policy and institutional reforms (Gyamtscho et al. 2006). Regional knowledge centres are needed with the necessary infrastructure and competence to evaluate or even participate in global programmes and to transfer important information from the national and local levels to the regional and global levels and vice versa for proper verification of ongoing processes (Messerli 2006).

In his keynote speech, Phrang Roy of IFAD (Roy 2006) points out the challenges of making institutions work in the interests of the poor and women, creating enabling conditions for the poor to help themselves, ensuring the enhancement of women as agents of change, and restoring peace through promotion of social justice, human rights, and elimination of unequal power and development relationships. Siddique (2006), discussing integrated water and resource management, emphasises the need to develop alternative institutional models to public sector management of water resources. As Upadhayay (2006) points out:

"policies are only as good as their positive impact and impacts are positive only when policies address the specific factors that constrain sustainable land use in mountain areas. Many public institutions that provide agricultural and forestry services in rural areas have tended to neglect mountain areas. They are poorly oriented towards addressing the unique problems of mountain areas."

Tone Bleie (Bleie 2006) highlights the role of transboundary conservation in not only promoting water and biodiversity conservation, but also in conflict prevention and reduction through building confidence and recognising common economic and political interests, and by reducing mistrust and easing acute memories of past grievances. Facilitating scaling up at the local, national, and sub-regional levels; the struggle for institutional power for grassroots movements, and democratising decision making will remain the major challenges in this arena.

The Director General of ICIMOD, in his introduction, points out that “past efforts have failed to deliver the level of livelihood improvement, of hope, peace, and security that our mountain people want and deserve. Redouble our efforts and learn how to make them more effective; redesign, empower, and bring self-respect, and give voice and dignity to mountain people (Campbell 2006). The framework of mountain specificities and their imperatives (Jodha et al. 2003) raise interesting policy-related questions. While farmers have started to innovate, they require policy changes and research support to optimise the benefits.

Micro lessons for policies and institutional reform

The project, ‘People and Resource Dynamics (PARDYP) in Mountain Watersheds of the Hindu Kush-Himalayas’ has been the most carefully organised of ICIMOD’s field research projects. Carried out in five countries of the HKH, it has carefully built the credibility of working with farmers in the watersheds and responding to farmers’ priorities while carrying out different research activities (White and Bhuchar 2005). When it comes to making any claims for macro level policy or institutional recommendations, however, it is complex.

Another interesting aspect of policy and institutional reform is that whereas problems may be common on a wide scale, the actual solution requires fairly specific local modifications. Pokhriyal (2005), while discussing the new institutional imperative to improve livelihoods based on land resources writes:

“the consolidation of fragmented and distantly located land parcels could be seen as the fundamental institutional reform for marginal mountain farming in Uttaranchal... The initiative for land consolidation was taken around 1975 and in the last 25 years almost all the land of villagers has been included in the consolidation frame... The success was due to local leaders who constantly motivated the people and demonstrated the economic viability of a ploughing unit... Women gained the most from these efforts, as they could save time for household activities and caring for their children...major areas related to agriculture and other primary sector activities have been legally assigned to the local government”.

What this suggests is that important institutional changes can also take place at the local level, with local initiative and effort. The focus at the top to bring about changes may not always be necessary and researchers must devote more time to finding local solutions to many seemingly intractable problems.

Debate about policy and institutional reforms

The second part of this paper outlines the comments by different professionals on the enormously complex interactions of factors behind policy and institutional reforms. The third part reviews some of the changes noted in policy and institutions in the region in different sectors – including the most recent responses to conflict and social exclusion through the poverty reduction strategy programme (PRSP), governance reforms and livelihood support programmes, and a brief review of ICIMOD’s output with regards to the policy and institutional (PI) recommendations. Except for conflict, the other reforms may be considered neutral with

respect to political stability and longevity of its system incumbents in the short run. The fact that conflict has escalated in spite of the many changes in policy and institutional approaches suggests that much of the reforms may have been cosmetic and window dressing without any significant impacts.

Endorsing Himalayan degradation

Many new insights have occurred concerning the relationship between environment and poverty at the micro level (Reardon and Vosti 1995) as well as about the consideration of the environment as part of an entitlements system (Forsyth et al. 1998). Both poverty and the environment contain complex sub-components, with each interacting to produce different impacts on outcomes. The extent to which these are relevant for mountain communities and their environment must be assessed. More micro- and meso-level studies are needed that can contribute to formulating a robust macro-level understanding for policy and institutional reforms.

The mountain perspective and mountain specificities revisited

The Mountain Perspective Framework conceived by Jodha (1992) was an important development in the early years of ICIMOD's work in integrated mountain development. The Mountain Perspective Framework is useful as an advocacy tool for mountain development and a methodology for developing better understanding of mountain economies and the environment. Rasmussen and Parvez (2002) point out that the relative status of mountain countries in different income categories is not as bad as the general literature from ICIMOD makes it out to be. If the lowlands depend on mountains, mountains also depend on lowlands. Mountain areas tend to benefit quite significantly from overall growth in the countries concerned through the possibility of increased investments, more demand for mountain resources, markets for mountain labour, and diversification of livelihood opportunities for mountain people. They emphasise that analysis of mountain areas should not be limited to the mountains alone but be undertaken in a broad context of country-wide economic growth and its increasing linkages.

Barbier and Homer-Dixen (1996) point out that in many countries resource scarcity itself could be the problem for policy and institutional failures and conflicts. Resource scarcity causes social conflicts and leads to disruption in the institutional and political environment, severely constraining the capacity to promote social and economic progress. This can be seen as an environmental perspective on progress and underscores the fact that, for various reasons, deterioration in the environment may be responsible for poverty, conflict, and policy and institutional failures.

Review of land policies in the HKH countries

Blaikie and Sadeque (2000), in a comprehensive review of land policies in the context of forests, agriculture, and protected areas, point out that it may be premature to condemn past land policies in mountain areas. Conservative and strongly protection-oriented policies may not have been the best but, in their absence, there might have been even greater deterioration of the mountain environment. Organisations like ICIMOD must discover the extent to which

this is happening and how more could be done. Development must find more effective ways to deal with these challenges in mountain areas. They advocate that:

“Decentralisation and local participation, of course, are no panaceas, but to continue with centralised state-driven policies is not appropriate...and less and less practical.”

Compensation for upland services

In the context of global environmental security, the role of freshwater dependence of lowland communities on mountain areas has been identified as a critical issue (Koch-Weser and Kahlenbom 2006). To date, there are only few cases of compensation for upland services provided to the lowlands. They emphasise the need for environmental service agreements in mountain areas and a careful study of legal and institutional frameworks required is needed to implement payment for environmental services.

On the question of environmental services, Pratt (2002) discusses typologies that link services and linkages in mountain areas. The author discusses four typologies for classifying mountain areas, and these are: (i) low environmental service value and poor linkages to downstream populations and the mountains; (ii) low environmental service value and strong linkages (because of minerals); (iii) high environmental service value (rich biodiversity, ecotourism potential, and so on) and poor linkages; and (iv) high environmental service value and strong linkages. Considerable work remains to be done along these areas which are critical for the sustainability of mountain areas.

Where do we go from here?

The review, so far, is quite discouraging for policy and institutional reform work. This is why it is most challenging and important for ICIMOD to continue working in this area. The next issue is to learn from ICIMOD's rich experience in development, in working together with governments, in building community and NGO groups, and in working together with donors and partners. It may be useful to record that until recently large parts of the HKH region were not linked to ICIMOD. It was only through patience and building trust among member governments that the HKH region is now open to ICIMOD. The work in policy and institutional issues, sensitive as it is, needs to be disaggregated, debated, negotiated, and desensitised so that we can arrive at a win-win situation. ICIMOD must build an inventory, a live memory of its policy learning events.

There is an issue of internal capacity for policy and institutional analysis and proposals for reforms. Workshop outputs or its recommendations are only starting points. Given the sensitivity and difficulty of work related to policies and institutions, it is useful to have a proper orientation. ICIMOD must invest in building this capacity. The role of the ICIMOD Policy Unit is particularly important as a repository of the history, lessons, events, conditions, key players, policy environment, policy actors, policy drivers and breakers in the HKH region. While at times special reviews like the one on land policies (Blaikie and Sadeque 2000) are helpful for overall learning, the role of the unit should be to provide policy and institutional analysis and guidance to other projects, both in and out of ICIMOD. This unit should be able to guide the other programmes so that they are properly informed about these changes and

their implications. It should also help to identify potential entry points for new policies and institution-related analyses and reforms. The impact of policy interventions may be complex and may take time, but these interventions have to be continued employing new frameworks, capacities, and resources.

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Policy Issues for Sustainable Natural Resource Management in the Indian Himalayas: Participation, Decentralisation, and Regional Cooperation

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Introduction

About 150 million people live in the mountains of the Hindu Kush-Himalayas which include all or parts of Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan. This paper discusses how policy in the areas of devolution and participation has influenced the relationship between poor people and natural resources and how, in the future, policy might increase their influence to an advantage. In particular, the paper suggests ways of strengthening people's control that are inclusive and which support conservation. This requires us to examine policies formulated by ministries other than those dealing with natural resources. In other words, the key to sustainable natural resource management (NRM) may lie outside sectoral policies and in strengthening decentralisation and making forest services more effective, service-oriented, and pro-poor. In the absence of such reforms, options of joint management or privatisation are not likely to work. Since such policies are country-specific, the paper concentrates on policy issues in the Indian states, with examples drawn from other Himalayan countries. The paper also discusses how ICIMOD can facilitate regional cooperation in the Indian Himalayan Region (IHR).

The people of the IHR, as elsewhere in other mountain ecosystems, are heavily dependent for their livelihoods on their immediate natural resources and production from primary sectors such as agriculture, forestry, and livestock. The dependency of the continually growing population on finite resources, the lack of viable technologies to mitigate mountain specificities, and increased production to meet the demands, are depleting resources, increasing the marginality of farmers, and ultimately, promoting poverty. As natural areas are transformed into agricultural land, the growing scarcity of indigenous plants and animals can mean a loss of natural safety nets in times of stress and, consequently, increased vulnerability to price shocks, cyclical food shortages, and natural catastrophes. Reduction in the density of forest cover, accelerated soil erosion, increased siltation of water bodies, drying-up of springs,

replacement and disappearance of species, and increased ratio of energy expended in fodder and fuel collection and agricultural activities, and increasing drudgery for women and children, are among the tell-tale symptoms of environmental ill health.

One should acknowledge that improved livelihoods and enhanced conservation are not necessarily coincidental. Opportunities for win-win solutions can be limited, and in many cases there are trade-offs between the two goals. Therefore, the challenge is to discover such options that complement the two objectives of reducing poverty and conserving natural resources, establish their feasibility through field projects, and upscale successful models through networking and advocacy. How does one achieve better ecosystem management? What is its potential for poverty reduction? What governance changes are required to route environmental income to the poor?

It is well established in the literature that forests are overexploited because of the absence of clear tenurial rights. Forests and grazing lands become open access properties and the lack of clear property rights leads to their overuse. Even poor farmers maintain private lands, but where property rights are not clear, such as over encroached or common lands, degradation is common.

It follows that problems associated with degradation of common grazing lands and forests are more a result of the absence of clearly and equitably defined common property rights and weak institutions rather than due to low discount rates for the future in the case of the poor, as generally viewed. The poor overexploit natural resources because of the lack of other livelihood options. Poverty can force people to exploit natural resources unsustainably; for example, cultivation on steep slopes, which often leads to erosion and declining yields over time. In this context, it is meaningful to examine property rights to forests in the HKH region.

Rights and ownership patterns

For resource-dependent people and communities, it is not only resource scarcity per se that leads to livelihood insecurity but insecure rights to resources regardless of whether they are scarce or abundant. Tenurial insecurity may exist in a variety of situations, of which three are fairly widespread in the Himalayan region. First, when the government is not able to enforce its property rights and free access to government lands is quite common. Second, when there are no property rights and the resource is an open access one. Third, when there is conflict between law and policy, or between customary practice and formal law. Open access is as iniquitous (and injurious to the environment) as an ill-managed government or industrial monopoly. In addition, effective management by local people cannot be taken as an automatic outcome of the transfer of resources to them; rather, it is a process that needs support from donors and civil society, at least in the initial stages, in order to build the capacities of local people. The effectiveness of management will also depend on the nature of the resource.

The government generally owns forests in the western Himalayan states. In the eastern Himalayan region, however, forests are outside government control. North East India is unique in having separate land tenure systems from the rest of India. Out of the total forest cover in this area, about 35% belongs to the government as reserved forests, protected forests, and protected areas, and the government controls them. Forests belonging to district councils, village communities, and private parties in states in the North East have their own status and are managed differently. In Arunachal Pradesh, indigenous people living traditionally acquire their rights over as much land and forests as they inherit. In Manipur, over 60% of the total forest area is still unclassified. In Meghalaya, 73% of the land falls under community ownership. In Mizoram, about 51% of the forests are unclassified and 11% of the forest area is controlled by the district council. Most of the unclassified forests are owned by village councils. In Nagaland, about 93% of the total forest area is still unclassified. In most tribal groups, immovable landed property is in four categories: (1) private land, (2) clan land, (3) morung land, and (4) common village land. Most unclassified forests belong to one or the other of these categories. Jhum or land for shifting agriculture does not belong to individuals. It is the property of the entire community and the people living in the village.

Whereas the Forest Department controls almost 80% of the total area declared as forests in Uttaranchal, this percentage is only 5% in Meghalaya, and most of the forests are settlement areas of tribal communities. The difference in ownership, however, has not made much difference as far as degradation is concerned. In actual practice, most forests in both states are de facto open access, and hence subject to overexploitation.

Even when the Forest Department (FD) has the legal right to forests in western Himalayan states, the villagers' access to forests and development of forest goods and services are mediated by a complex web of rights, notifications, legislation, regulations, management arrangements, institutional influences, and markets. This tends to dilute the Forest Department's control over forests and converts them into open access lands.

The case for public management of forests hinges on a number of factors. First, forest management is associated with a wide range of externalities as forests provide external benefits to the rest of the ecosystem. Second, forestry professionals often argue that forest management requires a level of professional training and scientific competence that lies outside the capacities of rural farmers and forest users. Third, the time horizons for forest management favour public ownership and public investment. Finally, professional management will allow for major economies of scale and a longer-term planning framework. Given the ease of access to forests, indiscipline, and the sociopolitical culture, it has been impossible in practical terms for the Forest Department to enforce its property rights. To do so would require people not to interfere with state-owned property and a symbolic presence of forest staff would be sufficient to caution them against doing so. Such conditions do not exist in India today. The strong case for exclusive government management becomes diluted because the government is not in a position to enforce its property rights. Forests are subject to intense pressure from human beings, livestock, and urban markets.

Creation of private tenure: should leasing be encouraged?

If state control over forests is inefficient, it could be argued that a radically different approach to the system of property rights is needed. Conventional wisdom in economics favours the establishment of well-defined private property rights over resources. Such rights are clearly specified, exclusive, and secure, and therefore reduce uncertainty in interaction and induce individuals to internalise externalities. Leasing of forests, however, even in favour of the poor, may not be advisable in India as it has several other implications.

First, a great deal of private land, often owned by the poor, is already uncultivated in India but may be suitable for trees. In semi-arid regions, a substantial proportion of private land is either lying fallow or produces very low yields. In addition, more than five to six million hectares of land has been leased to the poor in the last two decades. The total area of degraded private land is estimated at 35 M ha, which is comparable to the area of degraded forests. Clearly, the first priority should be to address impediments to reforesting this land. Hence, there is no case for further privatisation unless suitable technological and institutional arrangements are put into operation to place huge area of degraded private land under trees or agroforestry.

Second, privatisation may encourage the poor to plant short-term exotics, or use land for agriculture. Both forms of land use are environmentally undesirable for degraded land in the uplands. Limited market demand is another constraint, amply demonstrated by the phenomenon of a eucalyptus glut in north and west India. What is appropriate is to cultivate degraded public lands with grasses, shrubs, bushes, or slow growing multipurpose trees which, although yielding only low-value output, are environmentally more sustainable. This option, however, does not bring returns commensurate with the individual efforts expended, hence, the poor are unlikely to use leased lands for shrubs and bushes only.

Third, the number of poor families is large and privatising in favour of some while ignoring others is likely to result in social tensions. Fourth, villagers have rights of collection in most degraded forests, thus privatisation would be against existing settlement laws and will be opposed by other villages with usufruct rights in these forests. Fifth, forest management has considerable potential for scale economies and, given the ecology of most Indian forests, the area required to carry out satisfactory work is relatively large.

Sixth, the agricultural economy of the uplands is heavily dependent on forests for energy supplies in the form of fuelwood and fodder for livestock and, ultimately, for soil fertility in the form of leaf litter and animal manure. Each hectare of cultivated land requires a sufficient area of uncultivated vegetated land for these needs. Privatisation of public lands may not be conducive to fulfilling the complementary role between private property resources (PPR) and common property resources (CPR) essential in upland economies.

Lastly, several watershed areas are a part of such lands and require comprehensive, integrated land-use planning. Creating private rights may delay the implementation of such a plan, as securing the willingness of landowners is time consuming.

Joint Forest Management: reasons for limited success

Realising these realities, the Government of India introduced people's participation in forest management by issuing a Joint Forest Management (JFM) resolution in June 1990, making it possible for the Forest Department to involve people in forest management. Has the adoption of JFM resolutions by the state government brought about major changes in the prevailing relations between the state and the people on FD lands, or does the new policy herald the beginning of a new era of people's power? The short answer is no, at least not in the near future. There are several reasons why JFM has not resulted in sustained improvement.

Although the concept of JFM is based on a philosophy of care and share, this is often not reflected in the right regime, leading to potential socioeconomic conflicts. There is no one-to-one correspondence between forests and villages, as the traditional rights of communities are quite contentious in India: these can be categorised into four groups.

1. More than one village has rights to the same forest.
2. People living far away from forests have customary rights.
3. New settlers have no traditional rights.
4. Migratory communities are outside the control of village bodies.

No doubt, many donor-assisted projects have had some success, but this has not been sustained. When a project brings new funds and opportunities of wage employment to a village, it is greeted with enthusiasm which is interpreted as support for the JFM methodology. Poor farmers are able to shift pressure to other forests which are not under JFM. The project area, hence, looks greener, but at the cost of a non-project area which is not visited.

Protection of a degraded area under JFM often increases women's drudgery, as they have to travel greater distances than before to collect their daily requirements for fuelwood and fodder. Despite its good intentions, community forest management has often burdened women with additional hardships, or the hardship is imposed on younger women. Women also have to switch over to inferior fuels like leaves, husk, weeds, and bushes.

JFM has also failed to pay proper attention to the poorest forest-dependent communities such as artisans, head loaders, and 'podu' (shifting) cultivators. The best friends of the Forest Department are the village elite who dominate JFM committees. They do not depend on the forest resource and benefit most from protection in several ways. Apart from the long-term benefit of groundwater recharge that helps the farming community more than the landless, the elite also look for leadership in controlling JFM funds that bring contracts and commissions. The Forest Department, being new to interacting with people, is making the same mistakes (of identifying the interests of all with the interests of the elite) committed by the development departments in India in the sixties and seventies. Clearly, forest service needs to be sensitised to the realities of the rural social structure.

The success of JFM depends to a great extent on the capability of the group to handle community matters. Most state government orders lay down the rule that all voters in the village should be members of JFM committees and that the executive committee should give

representation to women and landless persons. In practice, the larger village body is non-functional, the better off are in positions of leadership, and the chairperson, often male, is selected by the Forest Department on the basis of his proximity to them. The forest guard, as ex-officio secretary, keeps tight control over records and the amount of money received. In many villages, people have no idea how much money has been allocated to their committee, or how it is put to use.

This is not only the case with JFM, but is true of most other village institutions (panchayat raj institutions [PRIs], watershed committees, primary cooperative societies, to name a few) in India. These are dominated by the elite and serve their interests and the interests of their political bosses. Even the self-initiated community forest protection groups, although better than the JFM groups in letting the people have their say, do not always represent the interests of poor people or women.

Emergence of community cohesiveness and participation cannot always be taken for granted, even when people face distress. Moreover, the balance of power between the Forest Department and communities has always been a sensitive, unresolved issue.

Decentralisation

If joint management has not worked, would it be better to transfer control to local bodies so that they can manage the resource sustainably? This has been tried in the northeastern states, but has not worked. We discuss the case of Meghalaya below.

Councils parasitic and redundant

Under the Sixth Schedule of the Constitution of India, autonomous district councils (ADCs) were constituted for the tribal areas of Meghalaya, with the power to make laws for management of land, forests, shifting cultivation, appointment or succession of chiefs or headpersons, inheritance of property, marriage and divorce, social customs, and any matter relating to village or town administration.

The three main tribes of Meghalaya had vibrant and functioning traditional democratic institutions such as the customary council of the village durbar, where all adult members of the village met and decided collectively about all matters connected with their welfare. The Sixth Schedule was to protect these institutions; unfortunately the functioning of the autonomous district councils has had just the opposite effect. These councils, rather than working with the traditional committees, decided to have their own bureaucracy dominate over the traditional institutions and put them in a subordinate role.

The district councils have passed a large number of Acts, laws, rules, and regulations, but implementation is weak with the result that such rules and regulations often result in harassment of local people and delay. The council could not properly implement and control illegal felling of trees, and wanton destruction of forests has continued throughout the last three decades. This is not only because of lack of staff or management capabilities; often the council succumbs to pressures from contractors. For instance, contractors had, from time

to time, asked for special permission from the council to remove undersized timber claiming that the immature trees were felled by the natural impact of mature trees when the latter were felled. The result was that the removal of undersized timber carried on as usual. The possibility of corruption among contractors and the council staff cannot be ruled out.

Three decades ago, there was better leadership and some of the councils did show commitment to tribal welfare. Ultimately, however, human weakness and greed for money and power watered down the enthusiasm and enchantment with which the councils were started. Funds were diverted for salaries and did not reach the field. A power struggle over chairmanship and wooing members ate away development funds. The secretariat is overstaffed and corruption among the members has percolated down to the entire department. There has been a lot of deforestation of unreserved forests with the council's collusion and no measures have been taken to regenerate them.

Strengthening the panchayats in India

Elsewhere in India, democratic decentralisation has been achieved by creating self-governance institutions at the district, block, and village levels. As forests are to be managed on a long-term basis, their management has to be in the hands of statutory bodies which, in the Indian context, are the panchayats. At present, however, there are limitations to forests being managed by village panchayats. Two conditions are needed for success: first, local bodies must have a high degree of managerial capability (success in enforcing unpopular decisions) and an equally high degree of concern for the poor and for equity (inclusiveness in decision making); second, an oversight mechanism must be in place and hand holding with panchayats, and this role needs to be provided by the Forest Department. A high degree of flexibility as well as credibility and faith in grassroots' functionaries are needed.

The creation of panchayats raised hopes initially, as decentralisation was expected to achieve an increase in economic efficiency, more accountability, improved resource mobilisation, lower cost of services, and greater satisfaction of local preferences. Studies show that, although some village-level panchayat leaders have done commendable work, PRIs (panchayati raj institutions) on the whole have not benefited the people to the extent of the funds provided by the government. Their record in empowering excluded people is disappointing.

The picture is worse at the sub-district and district levels. Elected members of the PRIs at these levels behave more or less like contractors as there is no village institution that level to put moral pressure on them. The members of these institutions look upon devolved funds as the equivalent to quota funds, and the district and the block presidents distribute these funds equally among the members. They, in turn, choose contractors and the nature of schemes. Schemes that offer maximum commission and least risk of verification such as earth work, which is often done by machines but is shown to be performed by fake labourers are preferred.

Panchayats at all levels are mostly busy implementing construction-oriented schemes as they promote contractor-wage labour relationships. These do not require the participation of the

poor as equals; on the other hand, they foster dependency of the poor on elected leaders and government staff. In such a situation panchayat activities are reduced to a collusion between politicians and the block engineers. The panchayats are not active in education, health, self-help groups, watershed management, nutrition, pastures, and forestry programmes, through which people come together as equals and work through consensus. Recommendations for improving their performance are given below.

Change the financing system

Considerable amounts of money flow to the panchayats from the government. The panchayats hardly raise internal resources such as taxes and revenue from common pool resources and, instead, depend upon external funding. The current system of funding is reinforcing dependency on government funding and is the source of much corruption in local institutions. It is necessary to reconsider the current funding system. More emphasis should be given to panchayats generating internal revenue at all three levels with matched funding from the government. This would introduce more flexibility in the way the panchayats use their resources.

Tamil Nadu, for instance, collects land tax through the government machinery and transfers 85% to the collection to the panchayats. It will be more cost effective if the entire burden of collection is shifted to the village panchayats. Today, the PRIs hesitate to levy and collect taxes, as they prefer the soft option of receiving grants from the government. This must be discouraged. The more dependent a PRI is on the mass of its citizens for financial resources, the more likely it is to use scarce material resources to promote human development and reduce poverty. External funds with no commitment to raising internal funds make PRIs irresponsible and corrupt.

The share of the panchayats in state revenues should be improved. The formula of transfer should no doubt give weight to population and poverty, but it should also give weight to pro-poor performance in looking after common property, whether this is water or land. State grants should be given to them only when the PRIs are able to collect a minimum percentage of the taxes assigned to them. The flow of funds from the government should also be dependent on good work or mobilisation carried out by them.

Decentralisation that actually works for the poor is more the exception than the rule. It requires, at the minimum, that local institutions, whether they belong to official government institutions like village councils, or informal institutions such as user groups, cooperatives, or watershed committees, are accountable to their low-income constituents. This accountability needs to be measured periodically and should influence the flow of funds.

The situation in other countries

In Nepal, the success of community forestry has been confined to the mid-hills and did not spread to the Terai region or the high mountains. When community forestry was being promoted in the hills the major objective was the protection of a dwindling, degraded resource. At that time it was not anticipated that forests could rejuvenate and provide

significant economic returns. The potential for economic returns from community forestry has understandably made the government cautious about replicating the community-based hill model in the rich forest resources in the Terai.

Even in the midhills the elite still dominate decision making, and the lack of supportive community-based policies is said to have turned community forestry into committee forestry. In 2002, the Nepal Biodiversity Strategy (NBS) is said to have undermined community approaches to biodiversity conservation. Notably, the Local Self Governance Act (LSGA) still has several provisions that contradict community forest user group (CFUG) rights established by the Forestry Act of 1993. Decentralisation and devolution policies strengthen the local elite rather than equitability among NRM stakeholders and newly-formed policies often run counter to the more traditional forms of local natural resource governance.

In the Chittagong Hill Tracts of Bangladesh, formal institutions promoted by the government are replacing the traditional authority structure.

In China, devolution policies included the transfer of forest management from collectives to households. Families now enjoy the flexibility to plant fruit trees or timber, bamboo, and other species on leased lands. Villagers or communities participating in the management of state forests, however, did not enjoy the full scope of decision-making rights that they did in household-based management and collective management. There is very little space in China for villagers to influence policy-making and policy implementation. The government is also said to have a preference for large-scale 'demonstration' type projects because they are perceived to generate quick economic gains.

In Bhutan, governance of forest and water resources under state ownership are devolved to an elected Council of Ministers, and there is little widespread community involvement in management processes as community forestry has not been widely implemented. In part, the Department of Forests (DoF) embarked on policy implementation slowly because they were unconvinced that communities have the capacity to manage the resources well and feared that this would result in overexploitation. There are no examples of 'official' community forestry practice in Bhutan aside from customary management regimes. In addition, most forestry officials were trained to operate under conventional, centralised management practices and had not been exposed to participatory community forest management practices.

The Forest Department's inflexible approach

Failure of JFM is often attributed to the inflexible and landlord-like attitude of the Forest Department, which is unwilling to pass on real power to the village bodies. If the contribution of the Forest Department to the failure of the Joint Forest Management programme is to be assessed objectively, it may be worthwhile to study how the Forest Department compares with other cases of NRM management where FD is not involved, such as the following.

- Public health engineering department (PHED) water boards for rural water supply
- Irrigation department for surface irrigation
- Rural development and agriculture in watershed development
- Revenue department for common lands

For instance, between 1970 and 1998, with a view to improving the productivity of crop lands in monocropped regions in India, roughly 16.5 million ha of land were placed under watershed management, yet the net gain in cultivated land has been nil. The government has spent more than Rs 21.95 billion on drought-prone area programmes (DPAP), and yet drought-prone areas increased from 55.3 m ha in 1973 to 74.6 m ha in 1995. Most government watershed development investments have yielded disappointing results despite vast resources allocated to date. This shows that the lack of sustainability of land-based programmes are rooted in factors other than the rigidity of the Forest Department, as it plays an insignificant role in the implementation of watershed-based programmes. The main factor is the weak capacity of local communities which have to manage and maintain local resources, and poor delivery on the part of government institutions – whether in watershed activities or in forest management.

Institution building

Local collective action has been undermined in the last thirty years by a number of political and economic processes. Village societies have become heterogeneous, and market forces have commercialised the erstwhile subsistence economies integrating them with urban and national economies. Possibilities for migration and mobility tend to work against cooperation. This adversely affects the sustainability of people coming together for a common cause.

The wider political economy of development in India does not often support community empowerment despite the rhetoric; it favours individual advancement and dependence on the bureaucratic and political elite. Although rural development programmes in health, irrigation, drinking water, and schools, require a strong village community, socioeconomic developments in India in the last four decades, starting with the green revolution, have unfortunately stressed the household-based approach as opposed to the community-based one. People in the villages tend to see themselves as households and seek vertical alliances with those with power over rural society rather than trying to build horizontal ties within the village. They see more advantage accruing to them from hobnobbing with block officials, the revenue inspector, or the MLA, and little in developing village cohesiveness and capabilities.

Anti-poverty programmes such as Indira Awaas Yojana (a programme that gives \$400 to a poor villager to build a house), increase the dependence of the poor on the village elite and the petty bureaucracy, at the same time, making them compete among themselves for limited favours from the government. This adversely affects the coming together of people for a common cause. The programme benefits them individually but disempowers them collectively. Therefore, no project that aims at generating social capital can be successful in isolation in the long run unless all development programmes follow the community approach.

Mobilising investment resources alone is not enough to guarantee management success. Programmes that fail to address the institutional issues of resource management necessarily fail or perform poorly, and this is true of resources managed by the state or by people's groups, whether rich or poor. This issue is particularly salient in the case of resources that require collective management, and these constitute most of the resources in the mountains. The fact

that organising costs tend to be consistently underestimated suggests that part of improving the management of the mountain environment for and by poor people lies in reorienting state policy-making bodies and line agencies towards new structures of governance.

Increasing the organisational capacity of the villages so that their management is both equitable and effective is, therefore, not an easy task. It takes time to mobilise a village community into a coherent and empowered group, and the project must allocate sufficient time and start this as early as possible. Greater transparency within village groups, and between the local leadership and the wider group membership, is essential to ensure that marginalised groups benefit from participatory forest management. At the same time, efforts need to be built to improve the effectiveness of government departments including the Forest Department. This requires improved governance, productivity, and accountability of the government machinery. Conversely, over the last two decades there has been a sharp decline in the quality of services provided by the government to its citizens, especially the poor.

Both a top-down and a bottom-up approach are needed. Strong support from the top political or administrative levels is essential to provide legitimacy and priority to an outcomes orientation and to make sure that it will actually happen. Unless there is support throughout the system, and particularly at the middle-management levels, a bottom-up approach runs the risk of becoming a mere reporting exercise rather than representing an actual change in thinking or management.

Good governance is undermined by lack of transparency, weak accountability, poor organisation and lack of technical capacity, lack of responsiveness, inefficiency, and poor motivation. The problem of bad and declining governance is more alarming in the northeastern states of India. The main manifestations of weakening governance is an increasingly politicised administration, administrative fragmentation, an expanding civil service squeezing resources for investment and operations and maintenance, and poor management of expenditure in the context of an unsustainable fiscal position.

Many reforms are needed to improve personnel policies, shift attention from input controls to monitoring of outcomes, measure people's satisfaction, and increase transparency at all levels. Some aspects of governance reforms have immediate political costs and are, therefore, difficult to introduce, but several processes and procedures of government can be changed without hurting the political elite and can be undertaken in the short run. For instance, the training syllabus of the forest service could include more human and natural resource interactions. Financial procedures could be improved also so that there is certainty of funds at the village level for watershed and land-related programmes.

Regional cooperation

Regional cooperation is needed to protect the environment as well as to fight poverty. The best way is to protect the asset base of the poor and expand it. In practical terms, this would mean the following.

- Prevent land alienation of indigenous and other poor communities.
- Strengthen community forest management.
- Ensure that water is not privatised by rich farmers and that it stays as a community resource.
- Support participation of the poor in decisions affecting their livelihoods.
- Promote access of the poor to markets.
- Ensure that involuntary displacement due to development projects does not lead to pauperisation.

The following are the main issues for which we need to promote regional cooperation.

- The conditions under which sustainable forest management leads to improved livelihoods, and vice versa, need to be assessed.
- The socially optimal allocation of forests to different uses (i.e., conservation, forest production, and smallholder agriculture) needs to be considered.
- The conditions under which decentralised forest management leads to sustainable forest management need to be assessed.
- Appropriate sets of incentives need to be developed when there is a mismatch of objectives among decentralisation, forest management, and livelihood improvement programmes.
- Policy analysis to identify constraints, contradictions, and gaps in the policy environment, concentrating initially on areas where improvements can be made without challenging vested interests, should be conducted.
- Success stories should be built upon (i.e., successful pro-poor innovations and partnerships) and relevant policy and institutional issues should be noted and pursued.
- Research findings should be disseminated through appropriate forums and aimed at key policy and decision makers (including donors).

ICIMOD should study how large water-related projects, especially dams and hydel power stations located in the hills have helped or harmed local people and in what manner their interests can be safeguarded. Water is essential for the sustenance of local people, but often its management is obscured by political boundaries and a legacy of mistrust. This is one sector where we urgently need regional cooperation.

Most of the Himalayan forests are outside protected areas. ICIMOD should pay more attention to conservation of biodiversity outside protected areas.

One of the most important roles that ICIMOD can play in Himalayan environmental governance is to provide up-to-date information about critical issues. Governments would then turn to ICIMOD to research problems that stand in the way of effective decision-making. Thus, ICIMOD should be dedicated to the production of accurate, up-to-date research and data on the most pressing environmental issues.

Conclusion

Policy frameworks followed by the Himalayan states should be reoriented to establish that environmental conservation must go hand in hand with economic development because any economic development that destroys the environment will create more poverty, unemployment, and disease and, thus, cannot be called economic development. It may just be a transfer of resources from the poor to the rich. This is because the poor depend on nature for their daily survival. For them the gross natural product is more important than the gross national product. Environmentally destructive economic development will impoverish the poor further and destroy their livelihood resource base. Even when the intentions of government are good, the translation into practice is tardy because of the institutional factors we have described.

There should be regional cooperation to promote environmental management and economic development as mutually supportive aspects of the same agenda. In particular, agricultural policy in the hills needs to incorporate environmental concerns. A poor environment undermines development, while inadequate development results in a lack of resources for environmental protection. The vicious cycle of this interrelationship between poverty and the environment could be broken down through redistribution of economic opportunities and empowerment of communities. This is where participatory community-based development programmes appear to be the most effective entry points for reversing trends. The two goals of environmental protection and poverty alleviation reinforce each other, just as there are some programmes that address the issue singly. Ecological poverty may, in fact, be the starting point for dealing with economic poverty. Removal of poverty, nevertheless, is not a necessary precedent for checking environmental or resource degradation. Similarly, there are poverty alleviation programmes that are neutral to the environment. Therefore, the two objectives can be pursued independently of each other, but the most effective way of addressing both is to approach them simultaneously.

Lastly, it is particularly important that we continually assess the impacts of actions against expressed goals. What is really happening to the poor? What is happening to the environment? What have the impacts been? Who will better tell us what has happened to the rural poor than the people themselves? All this suggests that participatory assessment and participatory evaluation are important components of pro-poor environmental management.

Integrated Water Resource Management in the Ganges, Brahmaputra, and Meghna River Basins in South Asia: Prospects and Challenges

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Introduction

Freshwater systems all over the world continue to undergo natural changes in terms of quantity and quality. These changes are accelerated in South Asia by increases in human exploitation of water resources caused by increasing population pressure and rising levels of urbanisation and industrialisation. Growing concern for environmental degradation has increased pressure on water resources. In many regions of the world, these pressures are intense within national borders and even more intense in the case of international rivers where two or more countries share the same river basins. Growing competition for water resources in international rivers across several countries is expected to intensify the potential for acute upheaval and conflict in many regions. South Asia is not an exception. This issue calls for integrated water resource management and basin-wide development within countries as well as beyond country boundaries.

The Ganges, Brahmaputra, and Meghna (GBM) river systems constitute the second largest hydrologic region in the world. The three river systems, with a drainage area of about 1.75 million square kilometres and an average runoff of around 1200 cu km, stretch across the Tibetan Autonomous Region of China, Bhutan, Nepal, India, and Bangladesh. All three river systems originate from the Himalayan and Vindhya ranges outside Bangladesh, but they fall into the Bay of Bengal through a single outlet, the Meghna estuary, over Bangladesh. Average rainfall in the Ganges varies from 35 cm in the west to 250 cm in the east; in the Brahmaputra it varies from 250 cm in the north to 200 cm in the south. The Meghna Basin receives the highest rainfall intensity in the world of around 1100 cm at Cherapunji. These river systems are not only rich in land and water resources, they are also rich in ancient civilisations on fertile agricultural flood plains. About 10% of the world's population of over

half a billion lives in the GBM basins. The region contains the largest number of the world's poor, about 40% of the total number of poor in the developing world.

At present, irrigation is the main consumer of water. With rapid industrialisation and urbanisation in South Asian countries and the implementation of poverty alleviation programmes, water demands for domestic, industrial, and environmental needs are increasing rapidly. Increasing population and growing concern about the environment have aggravated the situation. There is growing tension among countries of the region over sharing water from the international rivers, especially during periods of lean flows. In this respect, river-basin planning and management, with due consideration to the potential environmental impacts, is a concern to riparian countries in the GBM basins.

Regional cooperation in the GBM river basins is important for integrated water resource management in the basins. Despite some developments, the GBM's abundant human and natural potentials have not been harnessed creatively and cooperatively. Development in the GBM basins must be people-oriented, ensuring regional equity and social justice for all sections of the population.

Why integrated water resource management?

If effective and lasting solutions to the water problems are to be found, a new water governance and management paradigm is required. Such a paradigm is encapsulated in the integrated water resource management (IWRM) concept which has been defined by the Global Water Partnership (GWP) as a 'process which promotes the coordinated development and management of water, land, and related resources in order to maximise the economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems' (TEC-2000).

Integrated water resource management explicitly challenges conventional water development and management systems. It commences with the recognition that traditional top-down, supply led, technically-based and sectoral approaches to water management are imposing unsustainably high economic, social, and ecological costs on human societies and on the natural environment. If they persist, water scarcity and deteriorating water quality will become the critical factors limiting future economic development, the expansion of food production, and the provision of basic health and hygiene services to millions of disadvantaged people. Business as usual is neither environmentally sustainable, nor is it sustainable in financial and social terms. The traditional paradigm of publicly financed and managed low-cost or no-cost recovery provision of water services is beyond the financial capacity of most governments. Under investment and exacerbated conflicts over the allocation of water goods and services are inevitable, with potentially disastrous economic and social consequences. The IWRM perspective is explained in Figure 1.

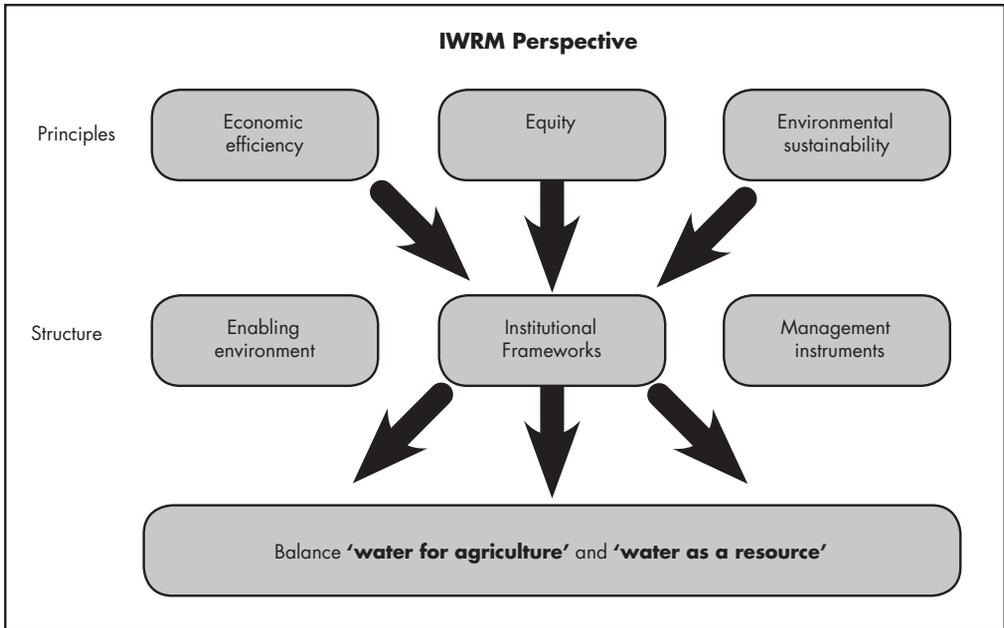


Figure 1: **Integrated Water Resource Management Perspective**

Common water issues in the GBM river basins

The common water issues in the GBM river basins are floods, droughts, riverbank erosion, sedimentation, water pollution, salinity intrusion, arsenic contamination in groundwater, and climate change (Siddique 2006). Floods are an annual and common phenomenon in the GBM basins. Loss of lives and assets due to floods in Bangladesh, India, and Nepal is huge.

Figure 2 shows the Ganges, Brahmaputra and Meghna river basins.

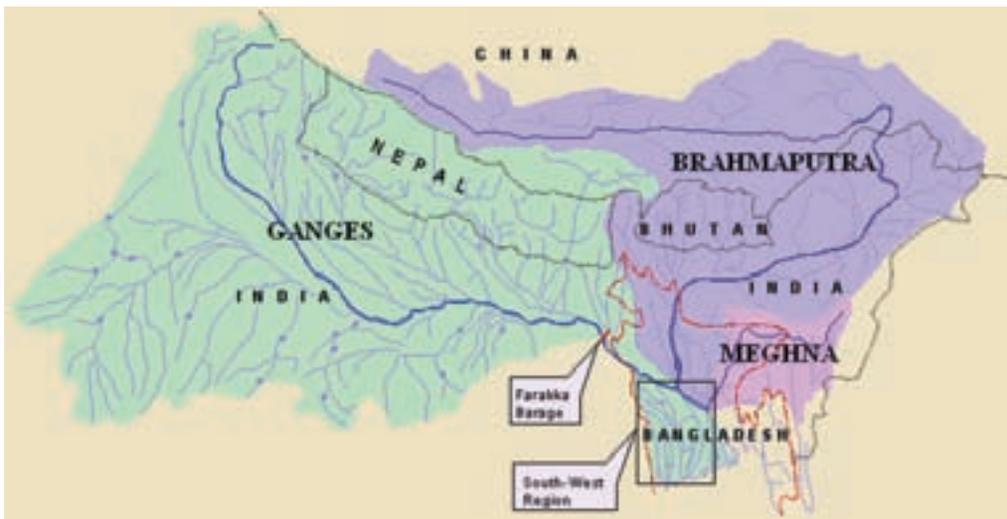


Figure 2: **The Ganges, Brahmaputra, and Meghna river basins**

Like floods, droughts are a common problem. The reduced flow of the Ganges during the dry season due to diversion in the upper catchment exacerbates the northward movement of the salinity front, thereby threatening the environmental ecosystem of the region. River bank erosion renders at least 20,000 families homeless every year in Bangladesh. According to the World Disaster Report, about 100,000 people suffered and 9,000 hectares of precious cultivable land eroded.



Figure 3: **River bank erosion**

Sedimentation

The Ganges, Brahmaputra and Meghna rivers carry enormous amounts of sediment load from the mountains to the plains, compounding the adverse effects of floods.

Water pollution in the basins is progressively increasing with withdrawals of water for various uses in the upper catchment, particularly in the Ganges Basin, leaving insufficient flows in the rivers for dilution of pollutants during lean periods. Increased use of agrochemicals and discharge of untreated domestic sewage and industrial effluents into the rivers have aggravated the problem. In recent years, arsenic in groundwater has caused panic in Bangladesh, India, and Nepal. In Bangladesh, 61 districts out of 64 are affected by arsenic in the water. This has been a national health hazard issue.

Like water pollution, salinity intrusion has become a serious problem, particularly in the coastal areas of Bangladesh. The reduced flow of the Ganges due to upstream diversion in the dry season has exacerbated the upward movement of the salinity front, threatening environmental balance in the region.

The impact of climate change in the GBM region could be significant. Monsoon rainfall could increase by 10-15% by 2030. Increased evaporation resulting from higher temperatures in combination with regional changes in precipitation characteristics (e.g., total amount, spatial

and seasonal variability, and frequency of extremes), might affect mean runoff, frequency, and intensity of floods and drought, soil moisture, and surface and ground water availability in the GBM countries. It could also increase the rate of snowmelt in the Himalayas and reduce the amount of snowfall if winter is shortened. In the event of climate change altering the rainfall pattern in the Himalayas, the impacts could be felt in downstream countries such as the northern part of India, and Bangladesh.

Prospects and challenges for integrated water resource management in the GBM river basins

The GBM river basins enjoy tremendous agroclimatic diversity, a rich fertile and arable land area of about 79 M ha, 2.6 billion tons of silt load, an enormous delta consisting of Bangladesh and part of the state of West Bengal in India, about 110,000 MW of identified hydropower potential with additional power through pump storage capacity, vast navigable waterways, varied forest resources including the largest mangrove forest in the world, a treasure house of biodiversity, and abundance in fish resources. Water is the most important natural resource in the GBM countries and can contribute towards shaping the future of millions of people living in the region. Integrated water resource management in the GBM rivers addresses the following areas.

1. Dry season flow augmentation and sharing of transboundary international rivers
2. Sharing of data and information about common rivers to facilitate flood forecasting and water quality control
3. Cooperative development of water resources

Dry season flow augmentation and sharing common rivers

Owing to the seasonal variability of water volume in the GBM river systems, the dry season flows of the GBM rivers, particularly of the Ganges, are inadequate to meet the combined needs of the region. As early as 1974, the Prime Ministers of India and Bangladesh had recognised the need to augment the dry season Ganges flow. The Ganges Water Sharing Treaty of 1996 also includes a provision for the two governments 'to cooperate in finding a solution to the long-term problem of augmenting the flows of the Ganges during the dry season'.

One possible option to substantially augment the Ganges which could benefit Nepal, India, and Bangladesh, would be to construct large storage areas on the Ganges tributaries originating in Nepal. Because of the availability of high water-holding capacity for monsoon flows in the potential reservoir sites of Nepal there is an excellent opportunity to create storage reservoirs. On the basis of studies carried out in 1983, Bangladesh proposed construction of seven large storage reservoirs at Chisapani, Kaligandaki 1, Kaligandaki 2, Trisulganga, Seti, Saptokosi, and Pancheswar in Nepal to augment the dry season flows of the Ganges by 1,670 cumecs (built at normal height) and 5,385 cumecs (with the storage reservoir at Chisapani, Trisulganga, Seti, and Sapta Koshi, built above normal heights). Studies indicated that construction of the proposed storage reservoirs were technically feasible. Moreover, the storage reservoirs would produce enormous amounts of hydroelectricity that could meet the power demands of the region. Another beneficial effect of the storage projects would be

significant flood mitigation in the downstream areas of the Ganges. According to studies carried out by the Institute for Integrated Development Studies, Kathmandu, the terrain of the northern and middle belts of Nepal offer excellent sites for storage reservoirs. The studies identified 28 potential reservoir sites, nine of which are classified as 'large', having a live storage capacity of over three billion cubic metres. A highly favourable project from this perspective is the Sapta Koshi high dam in Nepal, the revived third phase of the original Koshi project. The Koshi dam will have a significant storage capacity that should provide both North Bihar (India) and Bangladesh with a flood cushion and augmented dry season flows after meeting Nepal's full irrigation requirements. Bangladesh would receive an additional share of water (around 50000 cusec) during the dry season according to the provisions of the Indo-Bangladesh Water Treaty signed in 1996.

Nepal would also be the sole beneficiary from selling 25000 MW of electricity to India and Bangladesh. All three countries, India, Nepal, and Bangladesh would have to work together to develop this immense water potential and the hydropower prospects of the Ganges River basin. To make a beginning in this respect, the Third South Asian Water Forum (SAWAF-III), a regional water forum established under the Global Water Partnership (GWP)-South Asia Regional Water Partnership which includes Bangladesh, Bhutan, India, Nepal, Pakistan, and Sri Lanka, recommended at its regional forum meeting held in Dhaka in July 2004, the formation of a supra national body called the 'Ganges River Basin Organisation (GRBO)', with a political mandate to work on the integrated use of the Ganges River basin by the three countries.

In Bangladesh, there is a possibility to construct a Ganges barrage at Pangsha, 30 km upstream from the confluence of the Ganges and the Brahmaputra rivers near Aricha. This can resuscitate 28 rivers by diverting monsoon flood flows in the southwestern part of Bangladesh and provide a much needed freshwater balance to the Sundarbans.

China, Bhutan, India, and Bangladesh are the four riparian countries in the Brahmaputra basin. A storage project could be built in appropriate locations in this basin. It must be repeated here that storage reservoirs in the Himalayas would have to be multi-purpose in nature in order to be economically justifiable. Issues of population displacement and seismic hazards have often been raised against the schemes for large reservoirs in the Himalayas.

Sharing data and information for common rivers to facilitate flood forecasting and water quality control

Among the non-structural flood management approaches, the greatest potential for regional cooperation lies in flood forecasting and warning. Currently, bilateral cooperation exists between i) Nepal and India, ii) Nepal and Bangladesh, and iii) India and Bangladesh for the transmission of flood-related data. This cooperation needs to be strengthened. More reliable forecasts with additional lead-time would be possible if real-time and daily forecast transmissions could be made from additional upstream points, and even more frequently on the three rivers. Effective flood data-sharing arrangements are also necessary with the upper riparian countries of Nepal and Bhutan, to provide Bangladesh with more lead time to

undertake disaster preparedness measures. Increased lead time to ensure reliable forecasts can be achieved through the following arrangements.

- Three-hourly real-time daily forecast data transmission between May and October, irrespective of warning stage
- Real-time and forecast data transmission from upstream stations such as Mangy, Patna, and Allahabad on the Ganges; Guwahati, Tejpur, and Dibrugarh on the Brahmaputra; and Teesta Bazar, Gajaldoba, and Jalpaiguri on the Teesta
- Joint calibration of hydrodynamic simulation models by Bangladesh and India to improve the accuracy of lead-time and forecasts

Improvements in model development for effective flood forecasting in Bangladesh are possible if data exchange arrangements can be made with India in the following sectors.

- River cross-section data of upstream stretches on the Ganges, Brahmaputra, Meghna-Barak, and Teesta
- Three-hourly water levels and daily forecasts for several upstream stations on the four rivers
- Daily discharge data from these stations and the outfalls of Koshi, Gandak, and Ghagra
- Daily rainfall data from several upstream stations in all the four systems: the Ganges, the Brahmaputra, the Meghna-Barak, and the Teesta
- Water-level discharge and rainfall data from representative stations along medium and flashy rivers in the northwest, north, and east of the country

Exhaustive sharing of data with India, Nepal, and Bhutan will enable Bangladesh to develop a dynamic river routing model for its river systems and this could generate a state-of-the-art flood forecasting scenario to benefit the flood-prone population of the GBM region.

Cooperative development of water resources

Development of hydropower and meeting the energy need in the GBM basins

Nepal is the lead country in the GBM region in terms of hydropower potential. Abundant rainfed and snowfed water resources and a topography with favourable relief provide an excellent setting in Nepal for ample and economic electricity. These resources are spread in the Koshi, Gandak, Karnali, and Mahakali river systems of the Ganges Basin. Theoretically, Nepal has a potential of about 83,000 MW and an economic potential of about 40,000 MW, Bhutan has a hydropower potential of about 25,000 MW, and India an identified potential of over 40,000 MW in the GBM region.

Nepal is the uppermost riparian country in the Ganges Basin. It contributes as much as 41% of the total runoff and 71% of the lean flows. Most of the flows (80%) occur during the four months of the monsoon and the rest occur in the other eight months. To derive the full and multipurpose utility from the waters of the Ganges, storage dams need to be established to control floods but to also yield substantial benefits from the development of hydroelectricity

and irrigation facilities. Monsoon storage can augment dry season flow, improve navigation, and help maintain the ecological balance of the region.

Water quality management and overcoming implications for water supply and health

Because of its geographical location as a downstream riparian state of three catchments (the Ganges, Brahmaputra, and Meghna), Bangladesh faces specific cross-border issues concerning water quality. Quality parameters that concern Bangladesh as well as the region include sediment load, industrial effluents, agrochemicals, and domestic waste. The probable causes are environmental damage in the upper catchments in China and India, where removal of vegetative cover has intensified gully erosion. Similar processes may also be active in the Nepalese Himalayas, triggering sediment load generation in the Ganges system. This problem can be addressed through regional initiatives within an appropriate institutional structure for integrated catchment planning and management. Pollution from industrial effluents, agrochemicals, and domestic wastes are diluted in the monsoon but often rise to alarming proportions in the low flow season, especially near densely-populated zones. Industries engaged in the production and use of chemicals, paper or pulp, sugar, dyes, and various metals as well as large urban centres near rivers discharging untreated wastes into them are often responsible for cross-border water quality problems by virtue of their location.

Countries sharing the GBM basin should review their existing water quality and pollution laws and make efforts to enforce the 'Polluter Pays' principle. At the regional level, several measures are needed over the medium and long terms to control water quality. These should include (a) standardisation of water quality parameters for different users, (b) coordination of water quality monitoring at cross border sites, and (c) a mechanism for data and information exchange about the status of pollution in the rivers.

Navigation improvement in GBM River basins to ease road transport

The Ganges, Brahmaputra, and Meghna-Barak have served as major arteries of trade and commerce for centuries. In recent years, their importance has diminished as traffic has moved from the waterfront to the alternative modes of road and rail corridors. The lower part of the GBM basin, however, is still dependent on waterways, especially in Bangladesh. Nonetheless, the GBM countries can look forward to rejuvenating this natural asset under an integrated and coordinated scheme for the development of inland navigation throughout the region.

As a landlocked country, Nepal has a vital interest in securing access to the sea through the rivers. The establishment of links with the inland water transport networks of India and Bangladesh would provide Nepal with access to the Kolkata (India) and Mongla (Bangladesh) ports. The strategy should be to ensure that structures constructed in water development projects do not impede the development of inland water routes. India has already designated the Ganges between Allahabad and Haldia (1 629 km) as National Waterway No.1 and the Brahmaputra between Sadiya and Dhubri (891 km) as National Waterway No 2. The maintenance and further development of navigable depth, navigational aids, and terminal

facilities would augment the navigation potential in the GBM region. India and Bangladesh have a bilateral protocol renewed every two years for using the Ganges, Brahmaputra, and Meghna rivers for water transit between West Bengal and Assam and to renew navigational routes in the Ganges connecting Aricha and Rajbari in Bangladesh with Murshidabad and Allahabad, ensuring year-round navigational flow along the Ganges.

The state of cooperation on the Ganges, Brahmaputra and Meghna rivers

Political mistrust among countries in the Ganges, Brahmaputra, and Meghna basins, which has lasted over half a century, the absence of enlightened leadership in the past, and serious differences in perceptions on development approaches are major impediments.

Sharing the riparian river waters has been a bone of contention between India and Nepal in the Koshi River Agreement which was signed on April 23, 1954. It involved a canal system, flowing channels on both sides, a barrage across the river, and a hydropower station. There was nationwide opposition to this agreement in Nepal on the following grounds: extraterritorial rights to India for an indefinite period, loss of fertile land in Nepal without equivalent gains in exchange, and the inordinate delay in payment of compensation to project-affected people (PAPs). The second joint venture between the two neighbouring countries was the Trisuli Agreement, signed on November 20, 1958, which again faced rough waters as is evident from the fact that its final phase was completed as late as 1971.

The problem with Bangladesh is one of sharing water from the common rivers. The major dispute is about the sharing of Ganges water during lean periods. India has constructed a barrage on the Ganges at Farrakka in West Bengal to divert water through the Bhagirati-Hoogly system to flush mainly the port of Kolkata. Bangladesh claims that there is not enough flow in the Ganges due to diversion of water through Bhagirathi-Hoogly and, at the same time, there is insufficient water to maintain agriculture, ecology, and the economy of areas downstream, particularly the southern delta area of Bangladesh. On 12 December 1996, Bangladesh and India signed the Ganges Water Sharing Treaty. The treaty provides Bangladesh with an opportunity to invest in long-term sustainable projects to develop freshwater resources in the Ganges. One big question about the treaty concerns the guarantee of minimum flow to Bangladesh.

The Mahakali Treaty envisages the construction of a 315-metre high dam called the Pancheshwar on the river which divides India and Nepal. The project is expected to generate 6480 MW of power to supply India's Northern Power Grid and to also provide the Gangetic Plains with large volumes of regulated water for irrigation. Nepal's first concern is the unequal sharing of the river's water, which gives Nepal 8000 cusecs against 16000 cusecs for India. Even though the sharing of water is unequal, Nepal has to bear an equal share of the investment. Nepal is also concerned that the treaty stipulates that Nepal sell its excess share of electricity to India but is completely silent over the modalities for fixing the price for this electricity.

A new area of concern has emerged for Bangladesh over the last couple of years. This is in connection with the proposed Indian River Link Project. The main objective of the project is to divert large volumes of water from so-called water surplus areas to water-deficit areas

in India. The Ganges and the Brahmaputra River basins have been identified as marginally surplus and surplus areas, respectively. Bangladesh has formally voiced its concern to the Indian side.

Nepal, being strategically located with India as its lower riparian neighbour, is also worried about submersion of vast areas within its territory along the Indo-Nepal border in case big dams and reservoirs are built across the border as envisaged by the River Link Project. These are some of the unresolved issues creating uneasy relations among neighbours in South Asia and preventing development of the vast potentials of the rich water resources of the GBM river basins.

Legal aspects of transboundary water resource management

- i) The Helsinki Rules on the Uses of Water of International Rivers, adopted by the International Law Association in 1966, state that all basin states of an international river have the right to access equitable and reasonable shares of the water flow.
- ii) According to the United Nations Laws on Human Environment about Hydrologic Regions, 'the net benefits of hydrologic regions common to more than one national jurisdiction are to be shared equitably by the nations' (UN 1972a).
- iii) The UN Convention on the Law of the Non-Navigational Uses of International Water Courses is a framework convention that aims to ensure the use, development, conservation, management, and protection of international water courses.
- iv) At the Stockholm Conference on the Human Environment in 1972, one of the principles laid down by the conference was that 'Every state has a sovereign right to exploit their own resources pursuant to their own environmental policies and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction' (UN 1972b).
- v) The Economic Declaration adopted by the Fourth Conference of Heads of States or Governments of Non-Aligned Countries held in Algiers, 5-9 September 1973, states that 'environmental measures adopted by one state should not adversely affect the environment of other states or zones outside their jurisdiction' (UN 1973).

Two hundred river treaties, about half of them in Europe, have been negotiated by countries for the management of this shared resource. Bangladesh, Bhutan, China, India, and Nepal are co-basins states of the Ganges-Brahmaputra-Meghna river basins. There is no reason why the water and land of this basin cannot be developed on a cooperative basis to solve flooding and other water-related problems in this region.

The role of international organisations in river basins management

In the past, international funding agencies have generally declined to provide loans for the development of international river basins unless the countries concerned have signed a mutually acceptable agreement. Without external financial assistance, however, developing countries have often been unable to construct capital-intensive water development projects along international rivers.

Here lies the principal challenge of the water profession in the 21st century: how to develop and manage international river basins like GBM sustainably and efficiently, in full agreement and cooperation among countries sharing the basin to arrive at a 'win-win' situation for all the parties concerned. These and other associated issues are likely to make water management processes complex in the future. Hydropolitics, both internal and external, in the management of international river and lake basins and aquifers is, thus, likely to become an increasingly important global issue in the coming decades.

South Asian water policies on integrated river basin management

The National Water Policy of India 2002 states that appropriate river basin organisations should be established for the planned development and management of a river basin as a whole, or of sub-basins where necessary. Special multidisciplinary units should be set up to prepare comprehensive plans taking into account not only the needs of irrigation but also the need to harmonise various water uses. Similarly, the National Water Policy of Bangladesh, as approved in 1999, states that basin planning provides the most rational basis for the development of water resources that are under the influence of one or more major rivers. International river basins such as the Ganges, Brahmaputra, and Meghna basins present special problems. It may take considerable effort and time for Bangladesh to work out joint plans with other riparian countries sharing the GBM basins besides India. As a long-term measure, it is the policy of the Bangladesh government to undertake essential steps to realise basin-wide planning for the development of resources of the rivers entering its borders.

Conclusion

Cooperation among countries of the GBM river basin region is needed for the common benefit of each nation through a water-based development of the region, focusing on issues not only of national concern and priority but also of regional relevance and applicability.

To derive the full and multipurpose utility from the GBM basins, water storage dams need to be set up to control floods as well as to derive substantial benefits from the development of hydropower and irrigation facilities. Monsoon storage can augment dry season flow, improve navigation, and help maintain the ecological balance of the region as a whole. Integrated water resource management through a basin-wide approach can help solve problems associated with flooding in the region. An integrated water resource management plan will help ensure coordinated and harmonious development of various sectors in relation to the regional responsibilities of the basins. These include irrigation and drainage, hydropower generation, navigation, drought control, watershed management, industrial and domestic uses of water, and recreation and wild life conservation, among others. This type of planning can ultimately help the people of the GBM basins to live in a better environment.

There is an enabling environment for basin-wise integrated water resource management. Statesmen, bureaucrats, scientists, and planners of all nations should sit together and go ahead with integrated basin-wise development in the region for the sustainable and equitable use of available water resources.

The way forward

- Multilateral regional cooperation is needed to manage the conflicts and constraints hindering maximum use of available water resources in the region, and unity of mind and a relevant policy with a shared vision is needed as follows.

“To achieve equitable and sustainable socioeconomic development for the people in the region without compromising the sustainability of the ecosystem through proper utilisation of water resources in the GBM basins.”

This is based on the principles of IWRM as defined by the Global Water Partnership.

- Operational mechanisms are needed for sharing meteorological, hydrological, economic, and environmental information among countries concerned. Considering the sensitivity associated with data and information sharing, this may not be an easy task; but it is essential in order to ensure long-term sustainable development of the region.
- Basin-wide master plans for GBM river basins should be developed.
- Formation of a Ganges River Basin Organisation (GRBO) with India, Nepal, and Bangladesh to ensure equitable and judicious sharing of the waters of the Ganges and an equitable share of its benefits upstream and downstream for all stakeholders by maintaining the three principles of IWRM – economy, equity, and environmental sustainability.
- International organisations or donor agencies should encourage the countries in basin-wide regional development in South Asia.

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