

Sustainable Development

Environmental sustainability (ES) implies sustainable levels of both production (sources) and consumption (sinks). The priority of development should be improvement in human well-being – poverty reduction; increased literacy; and reduced hunger, disease, and inequality. However, these goals cannot be achieved unless ES is the baseline. Although environmental sustainability continues to be a major issue of this debate, there is increasing consensus that, besides environmental sustainability, economic and social or institutional sustainabilities are also important in achieving sustainable development. The very life support system has to remain intact to improve the well-being of the people. However, it is the people who need to take the action and, hence, environmental sustainability without the involvement of the people is not meaningful. It has been realised that improving the well-being of human beings cannot be seen in isolation from the maintenance of a clean and healthy environment and without improving social relationships between individuals.

There are four kinds of capital; namely, natural, human, physical (or man-made), and social. ES requires a definition of natural capital and its maintenance. Natural capital is defined as the stock of environmentally-induced assets which provide a flow of useful goods and services, and sustainability implies the maintenance of these assets. Economics has paid little attention to natural and social capital, and today it is becoming more and more evident that the limiting factor to economic development is natural capital, which has become scarce.

Environmental Sustainability

The definition of ES has to be based on the maintenance of natural capital, hence the input/output rule (source and sink). Thus, on the output side, waste emission from a project or action being considered should be kept within the assimilative capacity of the local environment, without unacceptable degradation of its future waste absorptive capacity or other important services. On the input side, harvest rates of renewable resource inputs should be within the regenerative capacities of the natural system that

generates them. Both these principles also provide the scale of the environment, and economic activities should not expand beyond the scale of the environment, as dictated by the input and output rules.

The scale of the human economy has exceeded the regenerative and assimilative capacities of the environment. Both sources and sink functions are becoming more limited than ever before. Economic growth cannot be considered to be infinite as it is a function of throughput. Throughput, or the flow of materials and energy from the environment for use by human beings, is then returned to the environmental sinks and wastes (Goodland 1995, Munasigne and Shearer 1995). Throughput growth translates into increased rates of resource extraction and pollution, and this scale has exceeded environmental capacities. Human activities have become unsustainable as populations are living off inherited and finite capital, and the losses are not being taken into account. Hence, with regard to environmental sustainability it is essential to:

- encourage growth of natural capital by reducing the current level of exploitation;
- relieve pressure on natural capital by expanding cultivated natural capital; and
- increase the end-use efficiency of products and extend the life cycle, durability, and recyclability of products in order to improve overall efficiency.

Environmental sustainability seeks to improve human welfare by protecting the sources of raw materials used for human needs and ensuring that the sinks for human wastes are not exceeded. All human economic subsystems must be kept within the scale of the overall ecosystems. This means that, on the sink side, all waste emissions must be within the assimilative capacity of the environment and, on the source side, harvesting rates of renewable resources must be kept within regenerative rates. Economic and social sustainabilities thus depend on environmental sustainability. What is needed in the face of uncertainty and risk is to use the precautionary principle – be conservative and exercise prudence.

Economic Sustainability

Economic sustainability can be defined as maintenance of capital: *“the amount one can consume during a period and still be as well off at the end of the period.”* However, when environmental, human, and social capital are also considered, this definition of capital provided by Hicks needs to be extrapolated upon (Goodland 1995). Clean air, forests, soils, and so on are forms of natural capital which can deteriorate. Life-supporting systems are shrinking as economic growth expands. The life support system and nature’s sink functions are finite and cannot expand with economic growth. As a result, the scale of the environment in terms of life support and its sink function is finite and this needs to be taken into account. Economics has a tremendous difficulty in evaluating natural capital, intangibles, and inter-generational and common access resources. The precautionary principle should be used routinely and should err on the side of caution in the face of uncertainty and risk. Today this definition would have to incorporate

a much wider definition of capital-beyond human-made capital- and should be able to brace all three forms of capital (natural, social, and human).

Man-made capital is not independent of natural capital. The issue is whether the extra productivity in man-made capital outweighs the extra natural capital used in the production of man-made capital. To say man-made capital is more productive than natural capital, i.e., environment, is to ignore the multiple functions of the environment. Life support and waste assimilative functions are not substitutable. Hence, improvement in living standards can only be achieved by increasing natural capital. Development and environment (natural capital) are thus to be viewed as complementing assets in order to ensure economic sustainability, especially in the early stages of development. Although the degree to which man-made capital can be a substitute for natural capital and vice versa (or between development and the environment) tends to increase with the level of development, they can be substituted for each other only up to a limit and only for certain environmental functions. Hence the need to identify the limiting factors to economic sustainability and the scope for dealing with them through management and technology become important.

A short-time horizon and, hence, a high discount rate is another central issue of concern for economic sustainability. A high discount rate discourages investment with long-term benefits (forestry projects) and promotes projects with greater short-run benefits but long-term costs. The implications of a high discount rate on sustainability are obvious, given the fact that policy planners rely on the discount rate as a policy tool for two dissimilar needs; namely, scale of investment as well as selection of most profitable projects (allocation). While lowering of investment is desirable for environmental projects, it is often based on the rate of return on sustainable use of capital. A poverty alleviation strategy is the key to encouraging sustainability, as it encourages policy-makers to discount less on future returns relative to present returns. Failure to grant property rights over resources is another limiting factor that has led to a short time horizon. The above issues underlying economic sustainability call for integrating economic and environmental policy actions in the decision-making process at different levels. Policy-makers, at the very least, need to be aware of these issues.

Social Sustainability

Social capital is created by establishing new relationships between individuals to facilitate collective action. Shared learning, the devolution of responsibility and mutual trust; the establishment of rules; how activities are undertaken, monitored, and enforced; and so on are forms of social capital. Social capital seeks to improve the ability of a community to make decisions, widen their choices, and improve their capabilities. Social capital implies the need for voluntary collective action and is, thus, about societal laws and regulations and the willingness of the society to obey them; and this can include coercion, delegation of authority, representation and voting, and direct participation. The different forms of collective decision-making by societies are through participatory institutions

where individuals act not in their self interests but in the interests of their community. Participatory institutions play an important role in social capital formation. How to promote and how to accumulate collective decision-making, public action, institutional capability, political participation, and leadership through all the intangible attributes of social capital, become important components. While people have good ideas about how to accumulate the other three forms of capital, there is lack of knowledge about accumulating and developing social capital. It is being increasingly realised that development programmes, including those related to resource conservation, need to address the diverse needs of local communities and individual experiences in order to achieve sustainability and self-reliance. The need to reduce poverty, promote employment, and bring about social integration to build civil society has already been formalised through an international consensus (World Summit on Social Development 1995). Like all other capital, social capital also depreciates and requires maintenance and replenishment through participation and is necessary for social sustainability.

In the formation of social capital, three processes appear crucial; namely, social experiment, social innovation, and social learning. Projects and programmes need to be treated as experiments which aim to test the viability of development options. Social experiment recognises that the process of development has to be found from within a given society but can vary across societies. Enough time has to be given for the experiment to work so that the society is able to deal with unpredictable options. This process inspires the society to set the stage for social innovations (Banuri et al. 1994).

Social innovations are experiments carried out by the society, within the context of their own values, traditions, and norms, which, in turn, enable them to develop their own solutions to emerging problems. Social innovations must also embody the principles of diversity, space, transparency, accountability, and equity. Finally, social learning requires that the society should take direct responsibility for the design and implementation of programmes and should also be allowed to set the conditions under which the activities are expected to proceed (empowerment).

Carrying Capacity

At the heart of sustainability lies carrying capacity. Carrying capacity is a complex terminology and, for operational purposes, could be defined as the 'maximum use of natural and cultural resources by the community and tourism of a given geographical area for Mountain Community Development (MCD) and mountain tourism development (MTD) without adverse impacts on the sociocultural, economic, or biophysical environments' (Figure 1). In other words, carrying capacity can be simplified to consist of three interrelated dimensions; namely, the environment, the economy, and the social and institutional aspects. However, there are difficulties in operationalising this concept and simplification becomes essential; hence, a critical factor approach is needed. The critical factors are meant to be crucial variables, the presence (success factors) or absence (failure factors) of which is vital for the attainment

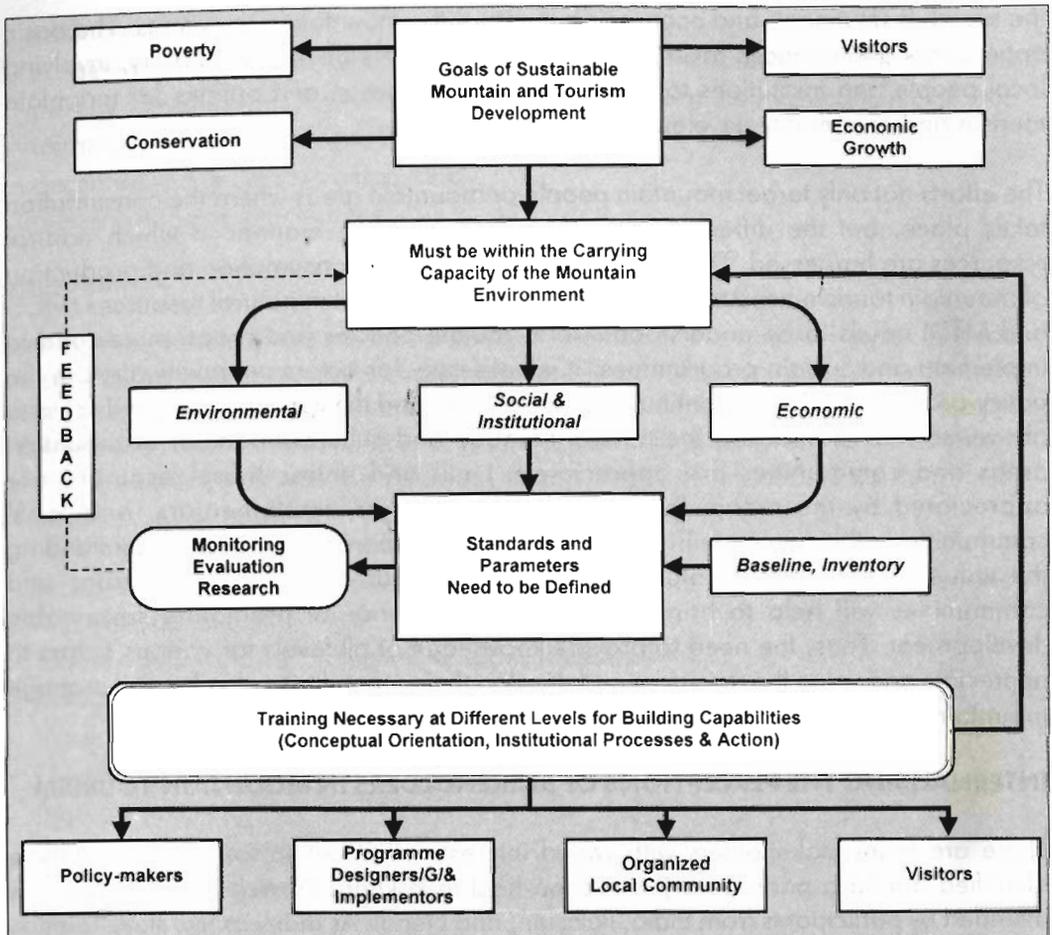


Figure 1: Essentials of the Carrying Capacity

of at least one element or object of sustainability and which also affects other aspects of sustainability. Thus, critical factors are those which need to be changed from their current stage, or, alternatively, conserved or protected in their current state, in order to increase the carrying capacity of the environment on the basis of predetermined standards. Critical factors can have negative or positive effects on both community and tourism and hence on natural resources. Negative factors (failure factors) result in overall deterioration in the state of MCD, MTD, and natural resources, whereas positive factors (success factors) improve their current state. The basic idea is to identify the most critical environmental, economic, and social factors and evolve a range within which changes brought about in these aspects will have the potential of being acceptable to policy planners and the concerned community at large and also contribute to the comprehensive process of mountain development.

Since people are a major component in the mountain environment, carrying capacity goes beyond the confines of the natural environment and includes, among other things,

the social, institutional, and economic aspects of the mountain populations. The basic approaches and methods taken in the case studies have been participatory; involving local people and institutions to assess the crucial issues in and options for mountain tourism and community development.

The efforts not only target mountain people or mountain areas where the consumption takes place, but the different levels that determine the manner in which natural resources are harnessed. The various actors involved in consumption and production of mountain tourism need to be identified and their interest in natural resources (MCD and MTD) needs to be understood. To formulate policies and programmes and to implement and sustain programmes, it is necessary for actors or stakeholders in the policy-programme-action continuum to first understand the modern concept discussed above, so that at all levels the natural heritage and cultural traditions of mountain areas and communities are appreciated. Until and unless these resources are appreciated by the actors (policy-makers, designers, implementors, and local communities), their value will not be understood. Appreciating and understanding the value of the unique natural and cultural resources of mountain areas and communities will help to bring about a better chance of promoting sustainable development. Thus, the need to provide knowledge at all levels for various actors to appreciate and value the resources and develop their capability to plan for and manage mountain tourism development.