

# Sustainable Development

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The concept of sustainable development was popularized by the Report of the Brundtland Commission, *Our Common Future*, and the global conferences organized by the United Nations at Rio (1992) and Johannesburg (2002). The concept provides a bridge between the ecologist's view of natural systems as integrated wholes, of the engineer's willingness to intervene in these systems to meet human needs and the economists concerns about balancing costs and benefits and choosing optimally between alternatives. Add to this a concern for equity within and between generations and what we have is sustainable development.

The need for this bridge arose because nature has to be treated not just as an input but also as an object of value in its own right. There are also concerns about risks because the scale and depth of human interventions in nature have increased greatly after the industrial revolution. Between one-third and one half of the earth's land surface has been transformed by human action and more than half of all accessible surface freshwater is put to use by humanity. Human activity is leading to species loss, changes in the chemistry of the atmosphere and other irreversible changes in natural systems. The depth of intervention had increased with the introduction of genetically modified organisms and other exotic substances into the atmosphere.

The Report of the Brundtland Commission describes sustainable development as a goal when it posits the aim of policy as "*meeting the needs of the present without compromising the ability of future generations to meet their needs*"(*Our Common Future*, pg.42). But it also describes it as a process when it states that: "*Sustainable development is a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations.*"(*Our Common Future*, pg.46)

Development policy can be viewed as being derived from some process of optimal choice amongst policy options. The qualification 'sustainable' can be viewed as a constraint on this process specifying that the choices made should conserve some quantity, say, the natural resource base or the quality of environment or the discounted value of consumption. However 'sustainability' could also be viewed as a quality of the choices that emerge from an optimisation exercise when it stretches over many generations and a long period of time and which treat current and future needs in an integrated framework. Depending of course on the weights attached to current and future needs such a multigenerational optimum meets current needs and conserves the capacity to meet needs in the future.

The sustainable development path that emerges from such an optimisation exercise cannot conserve the quantity of every exhaustible or renewable natural resource. Every act of production or consumption necessarily uses up some natural resource and, as the second law of thermodynamics tells us, generates some waste. What 'sustainability' requires is that the generation, which thus depletes natural capital, compensates future generations by investing in activities that maintain the options required in the optimum path for meeting future needs. In this view it is not wrong to use up resources. But it is wrong to consume away the rent.

Environmental resources like biodiversity or the delicately balanced chemistry of the atmosphere are resources, which are critical to the maintenance of life on earth. In such cases the objective of sustainability would require conservation in a stricter sense since compensation to preserve options may not be possible.

A description of sustainable development in terms of the 'thought-experiment' of optimisation suggests an organised determination of interdependent choices of production and consumption. By implication it also presumes an ethically acceptable distribution of consumption within and between generations. But in practice these choices are made separately by millions of producers and consumers and, in the world of today, in a framework of relatively unconstrained markets. The departure of market outcomes from what the optimum path requires is the central problem of public policy at the local, national and global level. Hence sustainable development has to be thought of not just as a characterisation of an optimum path but also as a framework of norms or rules to guide atomistic decisions towards the optimum.

This more practical approach is reflected in the extensive work that has been done by economists on the valuation of environmental amenities, including the work on adjusting national accounts to reflect gains and losses in these amenities, social cost-benefit analysis of investment projects, and the analysis of economic instruments like pollution charges and emissions trading for controlling pollution. In a poor country like India, with a large agrarian population, the more practical dimensions of sustainable development have to focus much more on the nexus between poverty, ill health, population growth and the deterioration of land, water and biotic resources at the local level.

The actual practice of development policy is seldom as coherent as theory would require. Hence a looser use of the term sustainable development would simply require that policy planners and analysts are more mindful of the link between natural resources, production possibilities and distributive justice. Thus if a forest is to be protected or conserved the most useful points of intervention may be in energy policy or agricultural policy. Equally the goal of raising rural incomes may require more systematic attention to the protection of the resource base on which production and well being depend. How well has this nexus been reflected in Indian economic policy?

Planning in India was conceived as a way of using its natural endowment of land, water and mineral resources more intensively and this approach dominated the first three plans. The primary focus remained, in the words of the Third Plan (1961-66), "the maximum

*increase in production physically possible*” (Third Five Year Plan, Planning Commission, Government of India, 1961, Ch 2, para 6).

But even at this early stage the natural environment appeared in two ways. First the planners recognized the need to focus on conservation as a goal for soil and forests. Second, public works were always an important component of scarcity relief and the planners did try and direct these relief works to soil conservation, contour bunding and other local conservation activities. By the Third Plan the problem of uneven regional development was recognised, but the link with ecological disadvantages or neglect was not fully recognized. Towards the end of the plan and later the resource dimension of development did get some recognition when special programmes were formulated for drought-prone areas (particularly after the experience of the great drought of the mid-sixties), and also for desert areas and hill areas.

The Fourth Plan (1969-74) marked a more substantial change, perhaps because of the influence of Mrs. Indira Gandhi who was the Prime Minister then. The chapter dealing with the long-term perspective has a separate section on environmental quality and comes close to articulating sustainable development as a goal when it speaks about the *“obligation of each generation to maintain the productive capacity of land, air, water and wild life”* (Fourth Five Year Plan, Planning Commission, Government of India, 1969, Ch. 2, para 46). Apart from setting up the institutional arrangements for environmental policy, the plan also launched social cost benefit analysis as a tool for project selection. It is worth noting that much of this took place several years before the Stockholm Conference on the Human Environment (1972) which Mrs. Indira Gandhi attended and where she made her famous speech about poverty being the worst form of pollution.

The Fifth Plan (1974-79) was dominated by the energy crisis of 1973-4 and, for the first time the planners discussed explicitly the concerns about depletion of non-renewable resources and spoke about optimum depletion rates, recycling and imports as an option for conservation. This focus on potential shortages of non-renewable resources continued in later plans.

The Sixth Plan (1980-85) sees the full flowering of sustainable development in the rhetoric of the plan. The statement of objectives includes, for the first time, a clear reference to the environment when it states that one of the objectives is: *“bringing about harmony between the short and the long term goals of development by protection and improvement of ecological and environmental assets”* (Sixth Five Year Plan, Planning Commission, Government of India, Ch. 3, para 9). The Plan contained a separate chapter on environmental programmes which states quite explicitly that *“a concern for environment is essentially a desire to see that national development proceeds along rational sustainable lines”* (Sixth Five Year Plan, Planning Commission, Government of India, Ch. 20, para 1). Note that Indian planners spoke about sustainable development before it was popularized globally by the Brundtland Commission.

The rhetoric of sustainable development continues in later plans but the issue however is seen mainly as a project design problem to be tackled through environmental scrutiny of

projects and social cost benefit analysis. In fact, with a growing emphasis on anti-poverty programmes delivering subsidies to individual households the area development focus was almost lost. Thus, over three decades after the environment finds a place in Indian planning, the Tenth Plan (2002-07) comes to the sad conclusion that: *“Ecological issues, unfortunately, have not been adequately incorporated into our development strategy, despite the fact that there has long been recognition of the importance of environmental and ecological factors in Indian planning and policy”* (Tenth Five Year Plan, Planning Commission, Government of India, 2002 Ch 1 para 13)

Fortunately for the country, innovative work integrating resource management and poverty alleviation was done by some NGOs, many of whom focussed on water management as the key to sustainable development. The work of the Centre for Science and Environment (New Delhi) and the Social Work Research Centre in Tilonia and of individual activists like P.R.Mishra at Sukhomajri in the Shivaliks and Annasaheb Hazare in Ralegan Siddhi in Maharashtra are some examples.

The greatest challenge of sustainable development in India in the near future lies in the rural economy. Public spending programmes for agriculture, and rural development must be organised around agro-climatic regions, an approach that started in the eighties but floundered thereafter. Irrigation planning must move away from civil engineering projects to becoming an element in integrated land and water management. Technological interventions must work with the climate and topography of each area and focuses on providing a sustainable livelihood for all. Employment guarantee and anti-poverty programmes must be folded into this. Such a transformation of public intervention will combine the compulsions of decentralisation, employment generation and environmental protection.

However with urbanisation and intensifying energy use sustainability will need to be factored into the policies that govern all sectors. In a market economy the most important challenge is to get prices right so that they reflect full social costs from the beginning to the end of production and consumption process, including, most particularly, the costs of waste disposal. Getting prices right must include measures that shift the burden of environmental management on to the account books of the entities that are responsible for the problem and have the capacity to pay. This is a formidable challenge in a situation where water, power and waste management services are heavily subsidised and where land and water markets are severely distorted and often inequitable.

As energy and material use intensify and as development brings into play new technologies, environmental risks will multiply. This will require stronger arrangements for technology assessment, for example for the testing and approval of new seeds, chemicals and pharmaceuticals and in the examination and approval of safety provisions. Codified standards and prior approval and consent can take care of many risks. But there will always be some residual risk involved. And this is where liability and compensation come in. In fact Indian law courts have perhaps done more to ensure greater attention, at least, to safety and environmental management, than the standards set by statute.

Looking beyond these national concerns countries like India will also have to take into account the consequences of global environmental changes, most notably in climate, and expect to contribute to sustainability at the global level. Hence these adaptive measures and potential global obligations must be taken into account in investments which are expected to last for decades.

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