

# Interpreting sustainable development

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**Abstract**—Over the past decade, the term “sustainable development” has emerged as the principal concept in the development field. The concept emerged in the 1970s and was first promoted in the international environmental and development communities with the publication of the “world conservation strategy” (1980). It was popularized by the Brundtland report, “Our common future” (1987). The Brundtland Commission defined sustainable development as “development which meets the needs of the present, without compromising the sustainability of future generation to meet their own needs”. The Earth Summit (1992) established “sustainable development” as the most important policy of the 21st century. Since then, the relationship between development and environment has been widely discussed and sustainable development is now an important part of the vocabulary of environmental policy research and analysis.

In this paper, we begin by tracing the evolution of the concept of sustainable development. Definitions of sustainable development in ecology, economics and sociology are then explored and discussed. This paper also examines the contribution that a broadly-based concept of sustainable development can make: as a goal, an attitude and as a guiding principle for integrating economic development and environmental protection.

**Keywords:** sustainable development; sustainable growth; environmental protection.

## 1 Introduction

Global environmental degradation is of concern to all countries. The widely publicized environmental crises and problems of the 1960s and 1970s encouraged many to fear that pollution had already jeopardized the future of the human race. More recently, the upward trend in atmospheric carbon dioxide and methane concentrations, stratospheric ozone depletion, the increasing rate of deforestation and loss of biodiversity has intensified these concerns. It is clear that no one country can respond to the environment challenge in isolation. Effective responses require action at the local, national, regional and international levels. To be successful, these actions must be part of a comprehensive, coherent and co-ordinated strategy. But experience shows that international action is more difficult where the need goes beyond analysis and research to involve joint management of commercially important resources, especially where national interests are in conflict with one another (Holdgate, 1982).

The environmental crisis is a direct result of a development path which is short term in vision and is based on economic and political competition between nations. There is a widespread agreement that global climate change and the depletion of the stratospheric ozone are primarily a product of modern industrial and agricultural systems. As White (1992) argues: “The environmental crisis is to a large extent to by-product of wealth, although those people who are still in poverty, yet increasing in number, do contribute to the crisis, especially to such impacts as

desertification and forestation ... these environmental changes cannot be reversed by the actions of the rich nations alone, as the poor nations are already significant contributors to global warming". Thus, the international community's responses to environmental problems, as well as the various conceptual and institutional frameworks devised to deal with them, have been significantly influenced and sharpened by the real or perceived conflict between environmental objectives and what are considered as the more pressing social and economic goals and priorities of society as a whole.

The 1972 United Nations Conference on the Human Environment in Stockholm was one of the milestones in the history of the environment as an issue on the international agenda. It also marked the beginning of an extended effort to secure the interest and participation of the developing countries, to overcome the limitations of the initial North-based formulae, and to seek more universally appealing definitions of the environmental problematique linked to the principal concerns of development. More importantly, the Stockholm Conference initiated the process of promoting a set of ideas that we have come to know as "sustainable development". Initially, this took the form of what termed "ecodevelopment", but the debate has since broadened with the effect that, as Lele(Lele, 1991) has stated: " ... over the past few years, sustainable development has emerged as the latest development catchphrase". Adams(Adams, 1993) has suggested that "the 1980s were the decade of sustainable development".

## 2 The evolution of the concept

The United Nations Conference on the Human Environment in Stockholm in 1972 marked a watershed in international concern on environmental protection. It not only legitimized environmental policy as a universal concern among nations, but was also an expression of a changing view of mankind's relationship with the earth and its environment (Sohn, 1973). This change took the form of a shift away from the view of an Earth of unlimited abundance created for man's exclusive use, to a "new environmental paradigm" which saw the planet as "an ultimately unified system of living species and interactive, regenerative biogeochemical process that may supply man's needs as long as he observes the system's rules"(Caldwell, 1990).

Perhaps the most significant result of the Stockholm Conference, apart from the effect it had on increasing international awareness, was the establishment of the United Nations Environment programmes. UNEP's principal contribution has been its role in organizing a series of United Nations Conferences in the environmental field, including the Regional Seas Programmes in 1974, the Habitat Conference on Human Settlements in 1976, the UN Conference on Desertification in 1977, and UN Conference on New and Renewable Sources of Energy in 1981. In addition, UNEP played a catalytic role in the preparation of the World Conservation Strategy in 1980 (Adams, 1992).

Although the linkage between environment and development was recognized as far back as the 1972 Stockholm Conference, "all too little progress had been made towards actual integration of environmental dimensions to development policies and practices"(Holdgate, 1982). The primary

accomplishment of the Stockholm Conference was “the identification and legitimization of the biosphere as an object of national and international policy (Caldwell, 1990). However, the countries at the Stockholm Conference were mainly concerned with the implications of environmental degradation on human health. Pollution of the global commons such as the air, water, seas and lakes dominated the discussion. Little attention was paid to the concept of “development” itself. At that time, the environment was regarded as only as passive tool for the development.

Following the 1972 Stockholm Conference, the links between economic development and environmental protection received much more attention, and this began to be reflected in the discussions and documentation of several international bodies. The World Conservation Strategy (WCS), published in 1980, was prepared by the International Union for the Conservation of Nature and Natural Resources (IUCN) with financial support by UNEP and the World Wildlife Fund. It emphasized that conservation of the resources of the biosphere is at the heart of environmentally-sound development.

The concept of sustainable development was probably first expressed as a strategic approach to integrating conservation and development in the WCS (Gardner, 1989). It effectively coined the term sustainable development, confining the discussion of economic development to the last section of the report (IUCN, 1980). In this section the emphasis was placed on raising finance for conservation objectives, rather than considering economic development and the environment together (Redclift, 1994). The strategy (IUCN, 1980) argued that: “...sustainable development must take account of social and ecological factors, as well as economic ones; of the living and non-living resource base; and of the long term as well as the short term advantages and disadvantages of alternative actions”.

The WCS marked an important watershed in thinking about the environment and development and was the first attempt to carry the concept of sustainable development beyond simple renewable resource systems. But it relied heavily on the ecologically-based concept of sustainable utilization. The political and economic forces behind unsustainable practices received very little attention (Redclift, 1987). O’Riordan (O’Riordan, 1988) argues that the WCS neglected the debate about basic needs, but it takes at least some account of political economy at the sub-national and international scales. To fulfill the goal of the WCS namely “the integration of conservation and development to ensure that modifications to the planet do indeed secure the survival and well-being of all people” (IUCN, 1980), the strategy suggested that the framework of sustainable development give conservation a high priority in the development process, and should integrate every stage of the conservation and development process, from the initial setting of policies through to implementation and operation. Thus, this integration should assist in resolving the conflict between conservation and development (Usher, 1992).

It was not long after the publication of the WCS that sustainable development became the dominant theme in the discourse of development planners, commentators and bureaucrats (Adams, 1992). The concept of sustainable development began to achieve the status of de facto official policy among governments generally as a consequence of its adoption by the World Commission on

Environment and Development (WECD), established in 1983 by the General Assembly of the United Nations, and the publication in 1987 of its report, *Our Common Future* (Caldwell, 1990).

Perhaps the most commonly accepted definition of sustainable development is the one proposed by the World Commission on Environment and Development (WCED). The Commission held hearing around the world and published a final report, *Our Common Future*, which suggested the need to integrate development with environmental protection so that humankind could achieve sustainable development that “meets the needs the present without compromising the sustainability of future generations to meet their own needs” (WCED, 1987). The report (WCED, 1987) argued that sustainable development become a goal for all countries in the world, suggesting that: “We came to see that a new development path was required, one that sustained human progress not just in a few places for a few years, but for the entire planet into the distant future. Thus ‘sustainable development’ becomes a goal not just for the developing nations, but for industrial ones as well”.

Although the Commission’s definition certainly presents the general idea and provides criteria for what sustainable development is, it makes no attempt to indicate how it might be achieved. For example, the definition only points out that the present generation should get as much as they can so long as future generations can get that much also. But it did not provide the answer to the question of how much that is, or should be, and how we know whether we have exceeded it (Norgaard, 1994).

The Brundtland Commission is very important in the study of sustainable development. First, it put environmental issues firmly on the political agenda. This also encouraged the UN General Assembly to discuss environment and development as a single issue, largely because the Commission had its origins in the Assembly itself and not in the periphery of UNEP and IUCN. Second, it attempts to recapture the “spirit of Stockholm 1972”. It places elements of the sustainable development debate within the economic and political context of international development, in its broadest sense (WCED, 1987). The essentially reciprocal links between development and environment are drawn out more explicitly in the Commission’s report: “Many forms of development erode the environmental resources upon which they must be based, and environmental degradation can undermine economic development” (WCED, 1987). Redclift (Redclift, 1987) commented that when “the full document, *Our Common Future*, is published in early 1987 it will be worth serious attention, not only because of the evidence it is likely to provide of the links between poverty and the environment in developing countries, but also because it is mark of the seriousness of the problem that a group of mainstream political leaders should have helped to put such a document together”. Nonetheless, it remains unlikely that “the developed countries (or even the developing ones) will put into action the measures advocated by the Brundtland Commission”.

The Brundtland Commission adopted a multilateralist and interdependent approach to environmental problems (Adams, 1993). This concept involves not only the management and conservation of the natural resources-base, but also the social, institutional, technological and cultural changes involved. It stresses that continued economic growth in the developed world may

well depend on the progress made by developing countries. As the World Conservation Strategy emphasized, this progress is likely to be the only means whereby developing countries gain the resources for environmental conservation. The main message of the Brundtland report is that concern for the economy and concern for the environment should not be seen as being in opposition. Protection of the environment is an essential condition for sustainable development. The emphasis is now on the development of the planet as a whole. The report has been criticized in that it still lies centrally within the existing economic paradigms of the industrialized North. The environment is basically an economic resource and economic growth is the most prominent feature of its policy objectives (Chatterjee, 1994).

However, this prescription is based on an economic and not an environmentalist vision, even though debates within and about environmental economics have been central to the debate about sustainable development itself. Economic growth is seen as the only way to tackle poverty, and hence to achieve sustainable development objectives.

The 1992 United Nations Conference on Environmental and Development in Rio de Janeiro followed the same approach as the Stockholm Conference and produced new cornerstones for responding to problems of environment and development. The achievements of the Rio Earth Summit included the adoption of conventions on climate change and bio-diversity, and a non-legally binding statement containing principles on management conservation and sustainable development of all types of forests. The conference also adopted (1) the Rio Declaration on Environment and Development containing 27 principles; (2) Agenda 21, which is the plan of action for sustainable development for the twenty-first century and beyond, establishing specific programme areas described in terms of the basis for action, objectives to be achieved, activities to be carried out and means of implementation; (3) the institutional arrangements in the form of the Commission on Sustainable Development; and (4) a funding mechanism for the implementation of Agenda 21.

The 1992 Earth Summit was a historic event. More governments participated than in previous environmental conferences. Furthermore, 15000 representative from 6500 non-governmental organizations held their own forum to deal in a comprehensive manner with the two interrelated issues of environment and development (Blowers, 1993). It brought out the debate about sustainable development at the highest levels and resulted in the establishment of the high-level commission on sustainable development.

The Rio conference achieved important progress by concluding the Convention on Biodiversity and the Framework Convention on Climate Change. These two valuable instruments will strengthen and develop the norms of international environmental law. The Convention on Biological Diversity embodied appropriate guidelines for the rational management and use of resources for present and future generations. It provides a framework for achievement of improved living standards without degrading the natural resource base. Meanwhile, the Convention on Climate Change is of critical importance to the world.

The Rio Declaration and Agenda 21 established a new dimension of long-term international political and moral commitments. Even though certain provisions of these documents may not fully meet our expectations and may not cover all major ecological threats, they do represent an

important step forward(Chatterjee, 1994).

Agenda 21 is a comprehensive collection of provisions embodying a programme of future action to promote sustainable development during the twenty-first century. The agenda shows that preservation of the environment cannot be separated from the elimination of poverty and hunger, reductions in the rate of population growth and improvements in public services(Sitarz, 1993). Its most important provisions is to call on governments and United Nations bodies to report periodically and publicly on implementation. One watchdog of this process will be the new Commission on Sustainable Development(CSD) which Rio Conference representatives agreed to establish. But to fully implement all of the proposed programmes and activities, an estimated \$ 600 billion will be needed annually (Maumoon, 1992). Clearly, activities to promote sustainable development require time and huge investments. The cost and the volume of resources allocated to the environment will be determining factors in the implementation of sustainable development. Failure to meet the financial requirements of Agenda 21 will lead only to further degradation and unsustainable development. As Thomas Caroline (Thomas, 1994) has commented: "the record of the Rio summit in terms of rich country commitments is poor; consider the lack of specific policy commitments in all the UNCED agreements, the lack of new finance, the lack of far-reaching technology transfer, the lack of attention to fundamentals like debt repayment and terms of trade". Therefore, developed and developing countries must show courage and decisiveness in making commitments of financial resources commensurate with their means.

Conflicts between North and South were still a central theme at the Earth Summit Conference. Developing countries were unreceptive to arguments that they should modify their development paths unless assisted by additional financial aid and technology transfer from the developed countries. They also expect major reduction in the share of resources consumed by, and atmospheric pollution attributable to the North countries. Conversely, the developed countries for the most part still resist higher taxes, higher costs, restrictions on cars, modes of consumption and other impacts on their living standards required to ensure sustainable development (South Commission, 1990). Clearly, agreements will certainly be required among the developed countries if there is to be any significant redistribution of resources from rich to poor countries to facilitate sustainable development strategies. As Blowers(Blowers, 1993) comments "it is a moral issue and is at the hear of social conflicts between and within countries. While removing conflict, between the North and South, will obviously be politically important in creating the conditions for cooperation, changes in economic practice are also needed".

In the past, there was considerable concern that economic growth and environmental protection were incompatible. But now, all countries recognize that economic benefits cannot be achieved in the long term unless development takes account of environmental impacts. It is important to realize that there is a need to link the sustainability of economic development with the sustain ability of the environment. Many governments continue to respond to economic and cultural pressures by seeking short-term benefits even when policies are clearly not sustainable.

The progression from Stockholm to Rio has been a journey of enlightenment which reflects the philosophical growth in the understanding of the environment, involving a shift from a reactive

approach to proactive one (Nazim, 1993). The 1972 Stockholm Conference indicated that it was imperative for the world to take action to reduce environmental degradation. The Brundtland Commission and the Earth Summit, together pointed out a new imperative: sustainable development. The inextricable links between environment and development must be the guiding principle for assuring the survival of the human race and a sustainable quality of life.

Environment and development are two sides of the same coin. In order for development to be sustainable, it must be based on a proper regard for every aspect of the environment. If the benefits of economic growth are eroded by the costs imposed on health and the quality of life by environmental pollution, this cannot be called development. On the other hand, environmental degradation can undermine future productivity and the development of ecosystems on this planet. So policies that are justified on economic grounds alone cannot deliver substantial environmental benefits. Under contemporary economic regimes the pressure on the environment comes from both North and South countries alike. The problem must be addressed by the adoption of sustainable practices in all countries. Such a shift must be fundamental and will call for a new policies in urban development, industrial location, housing design, transportation and the choice of agricultural and industrial technologies (Blowers, 1993).

### 3 Interpreting sustainable development

The linkages between economic growth and environment were initially explored and discussed in the early 1970s. The literature on sustainable development has proliferated. Development is a difficult and complicated concept and sustainable development even more so. Sustainable development has been given different meanings by different people; environmental planners, ecologists, economists and activists. In many ways, the term sustainable development has become devalued and is now a cliché.

Porritt (Porritt, 1992) identified approximately 85 definitions of sustainable development. For example, environmental planners, such as Bartelmus, define sustainable development in terms of conserving stocks. This differs from the conventional economic approach to resources and the environment which are seen as important ways of generating income: "sustainable development is development that maintains a particular level of income by conserving the sources of that income: the stock of produced and national capital" (Bartelmus, 1987). Chambers (Chambers, 1988) advocated a human-focused approach to sustainable development, or so-called "sustainable livelihoods" arguing that: " ...sustainable livelihood security is an integrating concept... livelihood is defined as adequate stocks and flows of food and cash to meet basic needs. Security refers to secure ownership of, and access to, resources and income-earning activities, including reserves and assets to offset risk, ease shocks and meet contingencies. Sustainable refers to the maintenance or enhancement of resource productivity on a long-term basis."

Barbier views sustainable development as sustainable economic development which refers to the optimal level of interaction between three systems: the biological, the economic and the social-a level which is achieved "through a dynamic and adaptive process of tradeoffs" (Barbier, 1989).

Pearce argues that "sustainable economic development involves maximizing the net benefits of economic development, subject to maintaining the services and quality of natural resources over time" (Pearce, 1990). Environmental economists have given much attention to placing a numerical value on environmental costs and benefits, even though this is controversial (Redclift, 1991).

Jacobs, Gardner and Munro (Jacobs, 1987) suggested that "sustainable development seeks... to respond to five broad requirements: (1) integration of conservation and development, (2) satisfaction of basic human needs, (3) achievement of equity and social justice, (4) provision of social self-determination and cultural diversity, and (5) maintenance of ecological integrity". However, they did not provide an effective framework for analysis. The current popular definition of "sustainable development" was elaborated by the World Commission on Environment and Development (WCED) in *Our Common Future* (WCED, 1987), in 1987: "Sustainable development is development that meets the needs of the present without compromising the sustainability of future generations to meet their own needs". It contains within it two key concepts: the concept of "need" in particular the essential needs of the world's poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organization on the environment's sustainability to meet present and future needs.

It emphasizes the importance of long-term considerations in the development process and draws attention to the needs of people in the present as well as those of future generations. It also suggests that all countries, developed or developing, market-oriented or centrally planned, should more concerned about their goals for economic and social development in terms of sustainability. Pearce describes this report as the key to establishing the concept of sustainable development as "the basis for integrative approach to economic policy in the coming decades" (Pearce, 1989).

The Brundtland Report lists specific ways of achieving sustainable development, but these statements do not really add substance to our understanding of how this can be done. Jacob (Jacob, 1994) argues that one consequence of this looseness is that not only does sustainable development permit multiple interpretations, but it also fails to provide a clear boundary between itself and the conventional understanding of successful development that it is intended to replace.

In addition, it attempts to draw out the message that "sustainable development involves more than growth. It requires a change in the content of growth, to make it less material- and energy-intensive and more equitable in its impact" (WCED, 1987). But the general definition of sustainable development adopted in the report does not make it distinct from sustainable growth, and even its message is somewhat confused. In fact, without a clear idea as to what is entailed by terms such as the quality of growth, conservation, essential needs, and conservation, it would be difficult to move from general objectives for sustainable development to practical reality (Lele, 1991).

Sustainable development has gained remarkable currency in the 1990s, not because of its analytical power, but because of "its tradability, and the facility with which it could be used to package diverse and sometimes radically opposing concepts" (Adams, 1993). In fact, sustainable development is more of a slogan than a tight theoretical concept.

Neo-classical economists, like Pearce, Markandya and Barbier (Pearce, 1990) provide a simple



definition of sustainable development, and elaborate a set of "minimum" conditions for development to be sustainable, the condition being based on the requirement that the natural capital stock should not decrease over time: Sustainable development is a situation in which the development vector  $D$  does not decrease over time ... we suggest that the sustainability be defined as the general requirement that a vector of development characteristics be non-decreasing over time, where the relevant time horizon for practical decision-making is similarly indeterminate outside of agreement on intergenerational objectives ... the key necessary conditions as "constancy of the natural capital stock" (or) the requirement is for non-negative change in the stock of natural resources and environmental quality.

However, it has generated much debate on how to keep the "constancy of natural capital stock" because our understanding of the life support functions of our natural environment is not perfect, because of our inability to substitute for these functions and because of the irreversibility of some forms of environmental degradation.

Such writers advocate the use of market mechanisms to solve environmental problems. They also argue that the cause of currently unsustainable development policies reflects the failure of market mechanisms to allocate resources properly within and between generations. The suggested solution is to value the environment and incorporate cost-benefit analysis into decision-making structures (Pearce, 1989; Barbier, 1987). Although market incentives may be efficient and effective means of achieving environmental protection, economic efficiency is not, and should not be, a sole criterion for the selection of policy instruments. In addition, to suggest that all environmental problems are caused by market failures and can be solved by market forces is too simplistic, especially when the problem of an equitable resource allocation both among and within countries is taken into account.

Clearly, neo-classical economists have not only understated the importance of distributive factors. They also fail to pay attention to population growth, which is also a principle cause of environmental degradation in underdeveloped and developing countries (Goodman, 1991). Some economists argue that as environmental reform is going to be expensive, society needs a faster growth rate in order to pay for it. In other words, economic growth can finance investments in the environment. The Brundtland report champions this argument. At present, Gross National Product (GNP) is the usual indicator of economic growth, but it cannot be used to measure development. It not only excludes the "informal sector"—the economic activities which are not registered—but also neglects the destruction of nature and the environment. To achieve sustainable development, the value of nature and environment must be included in the costs of production. Otherwise, the price of a product reflects merely part of its social cost. It is difficult to convince consumers to buy products that are less polluting and destructive, which will then impose more pressure on enterprises to invest capital to curb pollution or produce environmentally friendly products.

The total valuation of the environment, either by contingent valuation method or willingness to pay techniques, would not accurately represent the consumer's willingness to pay for conservation. In particular, since the information in the market provided to respondents is

inevitably partial, the resulting prices of environmental conservation will not be the real prices necessary for cost-benefit analysis (Bowers, 1990). Thus, the economic analysis of pollution is in some crucial respects divorced from the problems of pollution as they occur in practice, especially as the external costs for pollution cannot be properly measured.

A questionable assumption of sustainable development is that Third World poverty is a direct cause of environmental degradation because "those who are poor and hungry will often destroy their immediate environment in order to survive (WCED, 1987)". Poverty should be relieved by economic growth, so the Brundtland Report emphasizes the importance of reviving growth in achieving sustainable development. The report suggests that: "a necessary but not a sufficient condition for the elimination of absolute poverty is a relatively rapid rise in per capita incomes in the Third World (WCED, 1987)". However, there has been growth for much of last three decades, and poverty worldwide has become worse. The trickle-down theory of development appears not to have worked. The most significant consequence of growth from the point of the environment is that, especially in recent times, it has created greater inequality within both rich and poor countries, and between them. The vast amount of research that has been done on the links between social and environmental phenomena suggests that both poverty and environmental degradation have deep and complicated causes (Lele, 1991). Therefore, this assumption oversimplifies their relationship. Thus, there is a need for deeper socio-political changes, such as land reform, rather than simply pursuing economic growth to protect the environment.

The emphasis of Marxists and Neo-Marxists on political struggles over the unequal distribution of resources between developed and developing countries suggests that the present unsustainable world order should be dramatically transformed and local relations of production and local environments be internationalized (Redclift, 1987). For example, the Northern countries account for about one-quarter of the world's population, but they consume three-quarters of the world's resources. An average person in the developed world uses eighty times as much energy as an inhabitant of developing countries. For example, the population of the United States has used much more energy in the past fifty years than humanity has burned up in its entire history (La Court, 1992). Goodman and Redclift (Goodman, 1991) examined environmental degradation in Latin America and suggested that "Sustainable development cannot be achieved in Latin America without achieving greater global equality, and more global responsibility."

Although Marxists and Neo-Marxists have pointed out the weaknesses of the neo-classical economic approach, they have also underestimated the importance of interdependence among nations in the contemporary context. There is a growing recognition that environmental conservation and protection require international partnership. The result is an increasing frequency of international negotiations. Increasingly, binding or non-binding conventions have been signed on issues of trans-boundary environmental protection, e. g. at the Earth Summit at Rio in June 1992.

We have argued that the conflicts between the North and South have not yet been solved even after two decades. In fact, the international division of labour, in which the South supplies the raw materials which the North then transforms into manufactured products, generates many important problems in both groups of countries. Some developed countries (e. g., Japan) while introducing

pollution control laws to protect their own environment have, on the other hand, encouraged the relocation of polluting factories to developing countries. Chemical wastes are dumped on land or at sea; or they are exported to the Third World or Eastern Europe. Between 1989 and early 1994, there were 299 known waste dumping incidents in Eastern and Central Europe, 239 incidents in Asia, 148 in Latin America and the Caribbean, 30 in Africa and 12 in the Pacific (Clapp, 1994). The Japanese aluminum and petroleum refinery industry has been relocated to Indonesia (Vieira, 1985). The South has also suffered pollution problems which are often caused by developed countries, but the main issues are related to the export of raw materials. One problem is that the local population no longer has access to its own resources, because these are taken exclusively for the foreign market. Natural resources are becoming exhausted. Desertification, deforestation and hunger are the result in many developing countries. In fact, the risks from environmental degradation are shared by rich and poor and alike. Therefore, international cooperation to deal with environment protection is essential.

There are three concepts-development, needs and future generation-that require clarification. Development is often confused with growth. The terms "sustainable development" and "sustainable growth" have remained vague. Growth is a quantitative increase in the physical scale of the economic system, while development is a qualitative improvement or unfolding of potentialities in social and cultural, as well as economic sectors. So, "sustainable growth" means that real GNP per capita is increasing over time and the increase is not threatened by feedback either from biophysical pollution (resource depletion problems) or from social impacts (poverty, social disruption). Sustainable development means either that per capita utility or well-being is increasing over time with free exchange or substitution between natural and man-made capital or that per capita utility or well-being is increasing over time subject to non-declining natural wealth (Pearce, 1989). Thus, an economy can grow without developing, or develop without growing, or both.

The conditions for achieving sustainable development differ from those involved in conventional economic development. Redcliff's definition of sustainable development, embraces the multiple dimensions of the concept, including economic, political, and epistemological aspects (Redcliff, 1991). There is a need for a completely new set of indicators for assessing it. While the quantitative dimensions of sustainable development (such as food intake, real incomes and life expectancy) can be captured by some indexes, it is much more difficult to capture the more qualitative dimensions such as cultural diversity, social cohesion and environmental quality improvements (Holmberg, 1992).

The matter is complicated further by the need to measure certain factors in relative terms. In particular, "needs" can only be measured in terms of relative scale; that is, they are essentially historically determined (Townsend, 1970). Therefore, the definition of needs depends on who defines them and the knowledge we have of them over time. Doyal and Gough (Doyal, 1991) pointed out that needs, like sustainable development mean different things to different people.

Sustainable development implies continuity of environmental quality as a "bequest to the future". Intergenerational justice is a cornerstone of sustainable development. To ensure that the needs of future generations are not compromised a minimum environmental capital stock must be

maintained. Environmental economists are attempting to find a common currency for intergenerational tradeoffs which involves assigning benefits and costs according to some representative set of individual preferences, and discounting costs and benefits accruing to future generations (Holmberg, 1992). But this argument is not uncontroversial. Capital growth to rationalize intergenerational discounting is suspect because the capacity of environment is inherently supply-constrained, for example, by the atmosphere's sustainability to absorb greenhouse gases or the extent of biological diversity (Thomas, 1992).

Furthermore, the preferences of an average member of the current generation is the sole or primary guide to intergenerational resource tradeoffs, but the trade off itself will only be experienced by future individuals. Thus, the current generation exercises influence over future generations in ways that are ethically questionable (De-Shalit, 1995). Many ecologists argue that certain environmental degradation is of an irreversible nature, and so no practical substitutes in natural life-support systems are possible (O'Neill, 1993). It is debatable whether any politicians would be willing to try to convince voters to forgo current benefits for the sake of generations unborn unless citizens themselves demand it and clearly support the principle of intergenerational justice.

#### **4 Sustainable development as a policy objective**

Sustainable development has become one of the most widely used, development catchphases (Lele, 1991) and in practice most commentators use it loosely and in an pretheorised way. Some argue if a phrase becomes all things to all people, it may be soon be of no value to any (Holmberg, 1992). Because it is a term which is sufficiently empty, it can be used at will by different interest groups to convey their own meanings and intentions. Redclift observes that sustainable development "seems assured of a place in the litany of development truisms" (Redclift, 1987) and argues that "its very strength is its vagueness" (Redclift, 1987). O'Riordan and Paehle (Paehle, 1994) comment that it suffers from linguistic-logical contradiction. Some environmentalists regard the term as a license for economic growth (Adams, 1992). It cannot yet be defined with precision. We cannot "operationalise" it and say that if we attain a certain set of goals then we will have achieved it.

As Lele has argued, critiques of conceptual opaqueness and operation laxity of sustainable development carry some weight. He has suggested that if sustainable development is really to be "sustained" as a development paradigm, two apparently divergent efforts are called for: "making SD (sustainable development) more precise in its conceptual underpinnings, while allowing more flexibility and diversity of approaches in developing strategies that might lead to a society living in harmony with the environment and with itself" (Lele, 1991). However, the formulation of sustainable development requires a very broad and powerful consensus.

Nonetheless, we can be reasonably clear about what constitutes unsustainable development in many areas, and there are working concepts to guide policy, such as the idea of critical loads of pollution-thresholds beyond which the equilibrium of ecosystems would collapse. At present, the

sustainable development framework is in its initial stages of development. Therefore, not all the elements have been generated (Jacob, 1994). Conclusively, it is more useful to regard sustainable development not as a goal, but rather as a policy-making process through which “we can promote economic development that avoids irreparable damage to, and depletion of, natural resource stocks and critical ecological systems, and enhances or at least maintains the quality of the natural and built environments passed to future to future generations (Christie, 1994)”.

However, there has been a growing and common understanding that the challenge of sustainable development is to reconcile the objectives of promoting economic growth with protecting the environment (Bartelmus, 1994). Also there has been some recognition of the need to go beyond “end-of-pipe” solutions to industrial pollution, the inevitable consequence of which will be greater interference in the production process and in industrial activity generally, in order to minimize adverse economic and environmental costs (Vintern, 1994). But developing countries typically have weak regulatory systems with structural and institutional shortcomings and poor enforcement records (Owen, 1991). In the case of China, there are now signs that the country is catching up with other developed capitalist countries by recognizing the nature and magnitude of the environmental problems. Policy formulation operates entirely within the ideologies of sustainable development, in which any inherent incompatibility between economic growth and environmental protection is fallacious (Smil, 1993).

The Commission of the European Communities has identified the characteristics of sustainable development (Commission of the European Communities, 1992) as follows: It maintains the overall quality of life; It maintains continuing access to natural resources; It avoids lasting environmental damage.

Thus, sustainable development is a strategy for balancing economic growth and environmental protection or improving the quality of life while preserving environmental potential for the future. It does not mean leaving all of nature cordoned off and untouchable. Sustainable development has as its goal the creation of a decent standard of living for all, coupled with maintenance of the integrity of the environment. The key element of sustainable development is to recognize that “economic and environmental goals are inextricably linked” (National Commission on the Environment, 1993). Sustainable growth depends on a regenerative environment and resources to protect the environment will derive from viable economic strength. As the Rio Declaration on Environment and Development pronounced “in order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.”

## 5 Conclusion

This paper has examined “sustainable development” in different realms, with a view to understanding its emergence and evolution. In ecology, sustainable development has come to be associated with the protection of biodiversity. In economics, “sustainable development” is advanced by those who favour accounting for natural resources. In sociology, “sustainable development”

involves the defence of environmental justice and sustainable use of natural resources. It is fair to say that a considerable amount of interdisciplinary effort is needed if this abstract and vague concept of sustainable development is to be turned into a practical reality. However, the implications of sustainable development as guiding principle governing activity at all levels of a system related to economic development and environmental protection are profound when applied to reality. To achieve sustainable development, environmental protection must constitute an integral part of development process itself.

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