

Chapter of the book *Appraising Sustainable Development: Water Management and Environmental Challenges*, edited by Asit K. Biswas and Cecilia Tortajada, 2005, Oxford University Press, New Delhi, pp. 1-17.

Sustainable Development: A Critical Assessment of Past and Present Views

Cecilia Tortajada

Introduction

As long back as more than three decades, the need for a different type of economic growth that is more efficient in terms of use of non-renewable resources and less harmful to the physical environment had been noted. It has been argued that such a new type of development process is necessary because of the limited availability of natural resources, as well as the limited absorptive capacities of the ecosystem to assimilate waste products (OECD 1979).

During the 1970s, major international organizations such as the United Nations Environment Programme (UNEP), expressed their concerns about the need for a new kind of development where the implications for rich and poor countries are recognized, which presupposes new directions for growth and development, nor their cessation, and which incorporates the environmental dimension, approached accordingly by industrialized and developing countries. However, since both the objectives of environmental and development policies are to improve the quality of life of the populations, environment should play a central role in development policies. It is essential to relate development to the opportunities and limitations created by the natural resource base to all human activities. New

patterns of development are necessary, because the previous or actual ones have resulted in environmental degradation, because of increasing social inequalities and because they have not met the expectations of the people in the developing world. Of course, necessary changes are immense and would require years to carry through. However, it is necessary to start (Tolba 1982).

There has thus been a long-term concern on the concepts of development, and less clearly, on the implementation and impacts of these concepts. For more than three decades, it has been argued that environment-related issues should be integral components of planning and policy-making because of their impacts on the quality of life of the populations. Such environmental concerns are not new: they have been around for decades, or even centuries, in one form or another. The main issue thus is not whether such concerns have existed, but rather to what extent they have been mainstream views, and whether these environmental issues have been taken into consideration in the planning and policy-making process of various countries. An objective assessment would indicate that there have been extensive and intensive discussions on the importance and relevance of environmental issues that are related to the development process. However, what has been actually achieved lags far behind the international rhetoric.

During these decades, the focus of discussions has changed, terminology and concepts have evolved, discourses on specific issues have ebbed and flowed, and new and modified paradigms have been proposed. However, development practices have had limited impacts on poverty alleviation, and the situation from an overall environmental viewpoint has been worsening continuously. In other words, national and international leaders and their institutions have not followed up their words with matching deeds.

One such example is the United Nations Conference on Environment and Development (UNCED) organized in Rio de Janeiro in 1992, where virtually all the leaders of the world supported the principle of sustainable development. Later on, in 1997, the implementation of the Action Plan approved by all the governments at Rio, known as Agenda 21, was assessed at a Special Session on Sustainable Development of the United Nations

General Assembly. According to this Special Session, implementation of the sustainable development concept required political commitments, from which the leaders have 'shied away'. This session was useful in the sense that 'it brought home the uncomfortable truth that sustainability requires changes to deeply rooted modes of political behaviour' (Jordan and Voisey 1998).

An important question then is how should the long-term development plans for countries and their populations be formulated and implemented, within which environmental aspects can be seriously considered? In other words, when if ever, will it be realized that the environmental aspects are intertwined with economic and social issues, which will certainly impact on the humans? (Hammond 1998)

Accordingly, it is necessary that the environmental thinking evolves and that it goes hand in hand with development policies. The environment needs to be recognized as an important factor which would assure the sustainability of the development processes themselves. However, this can only be realized if the environmental considerations go beyond discourses and statements, and become an integral component of the development process itself.

In terms of water policy formulation and implementation, most developing countries face fundamental problems that relate to issues as basic as the definition of goals and objectives (ECLAC 1998). Both the planning and management of natural resources, water included, are plagued and constrained by concepts that often cannot be implemented because they cannot be properly defined and thus operationalized. In spite of these shortcomings, governments often insist on paying homage to certain paradigms, irrespective of their implementation potential, simply because they are part of the current global thinking. For example, available evidences indicate that sustainability represents more of a concept than an implementable reality (Dragun and Jakobsson 1997; Meppem and Bourke 1999; Meppem and Gill 1998). Hence, it is somewhat unlikely that any government pursuing sustainable development, as it is defined at present, would be able to develop realistic plans that can be properly implemented.

The urgent need to move from concept to implementation of any paradigm is of utmost importance to the water professionals. Global

paradigms like sustainable development and integrated water resources management are unquestionably conceptually attractive but their actual implementation in operational terms has left much to be desired. It is thus essential to objectively analyse their applicability: conceptual attractiveness alone is not a solution. Rather than ignoring the need for alternative conceptual frameworks which are implementable, individuals and institutions collectively should welcome constructive analyses and criticisms of the existing mainstream approaches. Some of the current conceptual frameworks and theories on water development should thus be carefully analysed and, if necessary, reconsidered. Such analyses and open discussions can only be beneficial to the water profession, resulting also in more efficient water management.

The objective of this chapter is to analyse the effectiveness of some global paradigms in the field of water, as well as the possibility of moving from concept to implementation, in terms of improving water management processes and practices. Many concepts are used extensively at present, for example sustainable development, environmental sustainability, integrated water resources management, or integrated river basin management. However, this chapter will focus only on the concept of sustainable development.

In spite of the current popularity and widespread mention of the concept of 'sustainable development', its origin is not well known. Thus, a brief review of its origin and its evolution is presented. The analyses show that even though many developing countries have adopted the global views in theory, they still need to strengthen their institutions, implement legislations, develop long-term policies, and build administrative, technical, and management capacities so that at least, significant parts of the theories can actually be translated into effective practices.

Sustainable Development

Evolution of the Concept

Even though the concept of sustainability has been used extensively since the mid-1980s, the idea is not new. For example, the term 'sustainability'

has been widely used in fisheries and forestry for nearly a century to define long-term management techniques for harvesting reproducible natural resources. Thus, terminologies like maximum safe yield have been common for many decades in the fields of fisheries and forestry.

Contrary to the popular view, the concept of sustainable development did not start with the publication of the report of the World Commission on Environment and Development (WCED, or the Brundtland Commission Report) in 1987. In fact, by the mid-1980s, well before this report was published, the concept of sustainable development had already become popular, initially through the work of the UNEP, and later by the activities of the World Bank.

The earliest reference to the concept of sustainable development, as well as the use of this terminology, goes back to at least over half a century. It is possible that other authors may have used this terminology before 1948, even though no such reference was found during the course of research for this chapter.

In 1948, Fairfield Osborne, the founder and the then President of the Conservation Foundation, wrote in his book *Our Plundered Planet*:

We are rushing forward unthinkingly through days of incredible accomplishment ... and we have forgotten the earth, forgotten it in the sense that we are failing to regard it as the source of our life.

Osborne was concerned with the 'accumulated velocity with which (man) is destroying his own life sources.' He insisted that the only kind of development that makes sense is 'development that can be sustained'.

Intellectually, however, the concept of sustainable development was promoted by the UNEP, which was established in Nairobi, Kenya, as a direct result of the United Nations Conference on the Human Environment that was held in Stockholm, Sweden, in June 1972. A small group of environmental scientists, meeting in Nairobi in 1975, under the aegis of UNEP, extended the concept of sustainability from fisheries and forestry to the development process itself.

Shortly after this meeting, in 1976, Mostafa Kamal Tolba, the then Executive Director of UNEP, in an address in London pointed out (Tolba 1982):

A new kind of development is needed because it is essential to relate development to the limitations and opportunities created by the natural resource base to all human activities. It is also required because it is now clear that past patterns of development in both developed and developing countries have been characterized by such serious environmental damage that they are simply not sustainable.

Tolba (1982) then went on to argue:

The most pressing objective of environmental management is to meet basic human needs within the potentials and constraints of environmental systems, including natural resources. Environmental management brings two new dimensions to the development process: it broadens the concept to include environmental quality, and it expands it in time to include development over the long-term on a sustainable basis.

Tolba's eloquent arguments for a new form of development process that is sustainable over the long term touched a chord in the environment movement. In 1981, A. W. Clausen, the then President of the World Bank, gave a major statement on 'Sustainable Development: the Global Imperative' (Clausen 1981). A year later, during the commemoration of the tenth anniversary of the Stockholm Conference, in Nairobi on 10–18 May 1982, the world community of states unanimously recommended 'sustainable socio-economic development'. The Nairobi Declaration, that resulted from the commemorative meeting, concluded by urging (Tolba 1988):

... all Governments and peoples of the world to discharge their historical responsibility, collectively and individually, to ensure that our small planet is passed over to future generations in a condition which guarantees a life in human dignity for all.

In 1987, in its report entitled 'Our Common Future', the WCED recommended the concept of sustainable development, which it loosely defined as 'development that meets the needs of the present without compromising the ability of the future generations to meet their own needs'.

Even though the WCED report made continual references to sustainable development, it was totally silent on how the concept could be operationalized. Sustainable development was expected to be achieved in an unspecified and undetermined way, some time in the future. Nor did the definition include the realization of an equitably distributed level of economic well-being, without which no development can be sustained over the long term. The issue of equity is especially important for developing countries (Biswas 1997).

The United Nations General Assembly considered both the WCED report (1987) and a report on 'Environmental Perspective to the Year 2000 and Beyond' prepared by UNEP (UNGA 1987). In the General Assembly Resolution 42/186 of 1987, it noted that 'different views exist on some aspects' between the WCED and UNEP reports. It, however, welcomed:

... as the overall aspirational goal for the world community the achievement of sustainable development on the basis of prudent management of available global resources and environmental capacities and the rehabilitation of the environment previously subjected to degradation and misuse ...

Following the work of the UNEP and the WCED, and the passing of the above-mentioned United Nations General Assembly Resolution, sustainable development became 'the' paradigm for development. The various United Nations agencies, all the development banks and the bilateral aid agencies, and nearly all the governments, embraced the paradigm of sustainable development, even though it was never properly defined, except in a broad and general way. Additionally, no serious discussion ever took place as to how the concept could be operationalized in the real world, so that a development process could be planned and managed from the very beginning in order for it to become inherently sustainable.

The ideological debate about ways of integrating environmental considerations into policy-making also did not start with the publication of

the UNEP and the Brundtland Commission reports. During the 1970s and 1980s, attempts were made to articulate alternatives to an almost exclusive reliance on conventional indicators such as economic growth in terms of gross national product (GNP), balance of payments, employment, index of inflation, etc. Among other catchwords, 'qualitative growth' was one of the first to signal a new direction of societal interest. It was argued that growth exclusively in terms of GNP for some activities was incompatible with environmental goals, while growth in other activities (with related goods and services) was basically beneficial (Söderbaum 1998).

The Discourse

As mentioned before, in response to the perceived threat of impending ecological crisis during the post-1970 period, a dominant environmental discourse constructed itself. Certain words were favoured for evoking images of consensus, unity, and common purpose, like sustainability, diversity, democracy, community, globalization, and environment (Bourke and Meppem 2000). As a consequence, the concept of sustainable development, as well as the mechanisms to address it, became very important issues. So far, however, there is still no agreement even on the meaning or definition of sustainable development. Thus, it is not surprising that little consensus exists with regard to formulating and operationalizing sustainable development policies, except in broad and general terms (Biswas 1996; Dragun and Jakobsson 1997; Goodland 1997; Meppem 2000; Meppem and Bourke 1999).

The ongoing debate about sustainable development and its various meanings is considered to be very much ideological (Söderbaum 2000). The diversity of discourses on sustainable development may not necessarily reflect conflicts over content, but on interests and in opinions on the processes through which the different sectors of the societies want to assure that their own needs and interests are represented in the development decision-making. Thus, sustainable development may not refer to a quantifiable goal that can be achieved at any specific moment in time: it may refer instead to the possibility of establishing a balance between environmental, social, and economic interactions. This process, at

least in theory, is expected to improve the quality of life of human beings, and simultaneously maintain the integrity of the environment.

Sustainable development may be considered to be more of a desirability with regard to future human development, in which case it may represent a constraint to the present development. Sustainable development may assure certain life opportunities in the future, but at the cost of the modification or sacrifice of life opportunities in the present. The concept of sustainable development at the first instance may appear somewhat simple, but in reality it is very complex. This is because it is expected to result from a series of decisions taken by several generations of human beings in different parts of the world, at different levels of governments, with changing socio-economic conditions, differing cultural values, uncertainties, and socio-economic goals which are seldom shared by all the members of the different societies, since people tend to work at the individual level (Dourojeanni 1999). In addition, the nation-states have their own interests, which may vary with time. This complexity may result in a permanent gap between the current understanding: and the one necessary to address evolving economic, social, and environmental planning and management issues comprehensively, as well as the institutional, legal, and even participatory considerations.

Working with the concept of sustainable development means embracing ambiguity, since it deals with societal values, which are diverse, and may often vary with time. If the conflicts in interpretations of sustainable development reflect the diversity of the concerns and interests of the populations in time and space, it is fundamental then to learn how to accommodate the politics of these divergent claims for attention. Additionally, if the relations between citizens and the private and public sectors are increasingly interdependent, necessary processes and policies should be developed in order to approach the various interests from an integral viewpoint (Meppem 2000; Meppem and Gill 1998).

Bottlenecks for its Implementation

To design appropriate policies for sustainable development, the goals must be expressed in terms of specific indicators. However, these choices are to

a certain degree subjective by nature, and are dependent to a great extent on the cultural preferences and interests of an individual, a community, or a country. This implies that different societies, with differing social, economic, and cultural conditions, may choose different sustainability criteria and may even select different paths to sustainability (Raskin et al. 1998). Thus, one of the greatest difficulties in achieving sustainable development lies in the lack of indicators for its measurement, since none of the three objectives of sustainable development (economic, environmental, and social) is currently measured using compatible parameters. The indicators used to quantify the economic, social, and environmental objectives do not have a common denominator, nor do universal conversion formulae exist: economic growth is measured using economic indicators, social equity is determined on the basis of social parameters, and environmental protection is measured on physical and biological terms. Given the absence of suitable indicators, and the fact that each of these objectives is measured according to different criteria, it does not seem that it would be possible to interlink the three objectives in a single plane. Quantification of economic, social, and environmental objectives may not be possible, unless compatible quantifiable parameters are available for all the three sectors (Dourojeanni 1997).

At the same time, sustainable development would not be achieved if emphasis was placed on either of the economic, social, or environmental objectives at the expense of the others. Thus, the stakeholders must contribute simultaneously to economic growth, social equity, and environmental protection, most likely through trade-offs, negotiations, and by modifying everyday practices. The agreements between the various stakeholders are likely to be more productive, equitable, and workable if there is an understanding of the actual value of the specific resources and products for each one of them (Dourojeanni 1997). However, values are often subjective, and hence inter-comparison of subjective values can be a most difficult task under the best of circumstances.

Further issues confronting sustainable development are the risks and uncertainties that are inherently associated with complex systems. For example, it is now universally accepted that food production must be maximized to feed an expanding population base in developing countries.

Accordingly, resources such as land and water must be used intensively to maximize food production. Hence, a fundamental question, for which there is no clear-cut answer at present, is up to what level can the food production system be intensified, in terms of land and water, without sacrificing sustainability? There are other difficult questions as well. For example, in the area of water, what early warnings could indicate the beginning of a transition process from sustainability to unsustainability? What parameters should be monitored to indicate that such a transition is about to occur, or indeed is occurring? Existing knowledge bases and databases are inadequate even to identify all the relevant parameters that could indicate passage from one stage to another. Thus, concurrently it is not possible to accurately detect, much less predict, the transition of a sustainable system to an unsustainable one and vice versa (Biswas 1996).

In order to formulate and implement sustainable water development policies, the developing countries require much more knowledge, expertise, data, and information than they currently possess. Thus, one of the first priorities should be to broaden their knowledge and information bases in the technical, economic, social, and environmental fields. Research, training, and capacity building, both for individuals and institutions, should be developed, keeping in mind the type of environmental problems that are likely to be faced during the process of water development over the course of the next several decades. Developing nations should base their development agendas on their own administrative, technical, scientific, and economic capacities. For water development to be more effective, disciplines should be approached from a broader perspective, and knowledge should be developed in such a way that it will be useful to decision makers outside the academic and research fields (Serageldin et al. 1998).

In terms of technology, it is important to remember that while it may have a major impact on the global development process, it may not necessarily solve demographic, social, and environmental problems. The impacts of technology often depend upon its social context, in terms of whether, when, and how it is used. Technological innovations may have important economic effects like lowering costs through improved efficiency, making alternatives possible which were not feasible before, and

accelerating economic growth. However, the development of new technology is often less important than its appropriate use. Whether technology will solve all, or most, water-related problems remains to be seen, since social factors have the definitive say in its implementation, and it may take decades for new technology to be adopted, and for societies to benefit from it (Hammond 1998).

The integration of the environmental concerns in development planning would require specific actions at the national levels. Some of the major policy areas may include location (or relocation) of industries, land use policies, community development, etc. Proper planning of infrastructure is important so that individual development projects are integrated within an overall framework for regional development planning and management. The social benefits and costs of projects, including their favourable and unfavourable impacts on the environment and the populations, should be fully reflected in these policies. Too often the negative impacts of many projects have been ignored in the initial planning stage, and so the awareness of the society of many of the environmental disruptions resulting from these projects has come at a very late stage, when the construction has already been completed, and the adverse impacts have already surfaced. Cost-effective alternatives available at such late stages to take ameliorative measures are likely to be limited. Accordingly, it is important to analyse comprehensively both the favourable and the unfavourable social and environmental impacts before implementing development projects, so that the society may be able to compare them against the economic and social benefits expected from the project. Feasible alternatives can then be considered (Modak and Biswas 2001; Tortajada 2000).

Concluding Remarks

Sustainable development has been a powerful and all-embracing slogan during the past 15 years, mainly in the international political fora. Every government is for it, as are all the major international organizations and non-governmental organizations (NGOs) working on issues related to the environment. This is so in spite of the fact that there is no agreement as to

what is meant by sustainable development, whether it works, and if so, under what conditions, as well as what are its impacts (positive, negative, or neutral) on human lives, development indicators, and the environment. More important, this is true even though the concept of sustainable development, even several decades later, does not seem to have reached the policy-making level or have reduced the deterioration of the environment.

In addition, the world is heterogeneous, with different cultures, social norms, physical attributes, skewed availability of renewable and non-renewable resources, investment funds, management capacities, and institutional arrangements. The systems of governance, legal frameworks, decision-making processes, and types and effectiveness of institutions differ from one country to another in very significant ways. Furthermore, countries are at different stages of development, and thus their needs and requirements, which vary with time are also different. Accordingly, and under such diverse conditions, another fundamental question that needs to be asked is if it is possible that a single paradigm, that of sustainable development, can encompass all countries, or even regions, with diverse physical, economic, social, and cultural conditions. Is it feasible that a single paradigm like sustainable development be equally valid for technological giants like the United States and Japan, the world's most populous countries like China and India, and for countries as diverse as Burkina Faso and Mexico? Is it possible for a single concept to be equally applicable for Asian values, African traditions, Japanese culture, and Western civilization?

The point of departure for the development process is different from one country to another for technical, economic, historical, cultural, and other associated reasons. Regarding water resources, it is clear that each country needs to formulate its own water development strategies based on its specific conditions, requirements, and expectations. However, in many parts of the world, practices, processes, and legislations are being copied from other countries, without adapting them specifically to their own conditions. Institutional frameworks are being structured often according to the latest international thinking, without any detailed review of their applicability and usefulness within the national context.

In terms of environmental sustainability, irrespective of the rhetoric, and although most developing countries have tried to protect their image at the international level, and declare themselves to be for 'the environmental sustainability of water resources', poor management of water resources continues, and will continue, to have serious social, economic, and environmental implications at the local and national levels in both the short- and long-term future. Many times, such mismanagement has contributed to increasing poverty, and deterioration of the quality of life of the populations, especially in terms of health.

Many developing countries have claimed that the main constraint for fulfilling their commitments of Agenda 21 has been primarily lack of financial support. However, while lack of funds is certainly a problem, it seems that a greater limitation results from the absence of leadership, managerial and technical capacities, an almost exclusive top-down centralized approach, absence of stakeholder participation, and lack of any long-term vision in most fields, including water. Not surprisingly, progress in improving water management practices has been somewhat limited during the last 30 years in the developing world. In fact, much more could have been accomplished with the budgets that were available if the leadership had a clear vision as to what should be accomplished and their relative priorities. Not surprisingly, water problems of most developing countries have become more acute, especially in terms of water pollution.

Hence, regardless of the widespread use of the rhetoric of sustainable development and environmental sustainability, it has to be admitted that even after years of use, it has not been possible to define a development process which could be planned and implemented in such a way from the very beginning so that it could become inherently sustainable, however it may be defined. Nor has it been possible to identify the parameters that should be monitored and evaluated to indicate the beginning of a transition process from sustainability to unsustainability, and vice versa. After over 15 years of rhetoric, it is still not known how sustainability can be measured, analysed, judged, or implemented.

Any development expert knows, at least intuitively, that no single pattern of development is the most appropriate for all countries of the world at any specific point in history. There is no one single path to

development, which can be successfully followed by all countries at all times. Thus, the fundamental question that needs to be asked, and unambiguously answered, is whether it is possible that one, and only one, single paradigm, that of sustainable development, is valid for the entire world.

References

- Biswas, A. K., 1996, 'Water Development and Environment', in A. K Biswas (ed.), *Water Resources, Environmental Planning, Management and Development*, McGraw Hill, New York.
- , 1997, 'Sustainable Water Development from the Perspective of the South: Issues and Constraints', in M. Abu-Zeid and A. K. Biswas (eds), *River Basin Planning and Management*, Oxford University Press, New Delhi.
- Bourke, S., and T. Meppem, 2000, 'Privileged Narratives and Fictions of Consent in Environmental Discourse', *Local Environment*, vol. 5, no. 3, pp. 299-310.
- Clausen, A. W, 1981, 'Sustainable Development: The Global Imperative', *Mazingira*, vol. 5, no. 4, pp. 2-13.
- Dourojeanni, A., 1997, *Management Procedures for Sustainable Development (Applicable to Municipalities, Micro-regions and River Basins)*, Economic Commission for Latin America and the Caribbean, United Nations, Santiago.
- , 1999, *La Dinámica del Desarrollo Sustentable y Sostenible*, Comisión Económica para América Latina y el Caribe, Naciones Unidas, Santiago.
- Dragun, A., and K. Jakobsson, 1997, 'Introduction, New Environmental Policy Dimension', in A. K. Dragun and K. M. Jakobsson (eds), *Sustainability and Global Environmental Policy, New Perspectives*, Swedish University of Agricultural Sciences, Edward Elgar, Cheltenham.
- ECLAC, 1998, *Reflections on Territorial Strategies for Sustainable Development*, Economic Commission for Latin America and the Caribbean, United Nations, Santiago.

- Goodland, R., 1997, 'Biophysical and Objective Environmental Sustainability', in A. K. Dragun and K. M. Jakobsson (eds), *Sustainability and Global Environmental Policy New Perspectives*, Edward Elgar, Cheltenham.
- Hammond, A., 1998, *Which World? Scenarios for the 21st Century, Global Destinies and Regional Choices*, Island Press, Shearwater Books, Washington, D.C., Covelo, California.
- Jordan, A., and H. Voisey, 1998, 'Institutions for Global Environmental Change', *Global Environmental Change*, vol. 8, no. 1, pp. 93-7.
- Meppem, T., 2000, 'The Discursive Community: Evolving Institutional Structures for Planning Sustainability', *Ecological Economics*, vol. 34, no. 234, pp. 47-61.
- Meppem, T., and S. Bourke, 1999, 'Different Ways of Knowing: A Communicative Turn Toward Sustainability', *Ecological Economics*, vol. 30, pp. 389-403.
- Meppem, T., and R. Gill, 1998, 'Planning for Sustainability as a Learning Concept', *Ecological Economics*, vol. 26, pp. 121-37.
- Modak, P., and A. K. Biswas, 2001, *Conducting Environmental Impact Assessment for Developing Countries*, Oxford University Press, Delhi.
- OECD, 1979, *Interfutures, Facing the Future, Mastering the Probable and Managing the Unpredictable*, Organization for Economic Cooperation and Development, Paris.
- Osborne, F., 1948, *Our Plundered Planet*, The Conservation Foundation, New York.
- Raskin, P., G. Gallop, P. Gutman, Al Hammond, and R. Swart, 1998, 'Bending the Curve: Toward Global Sustainability', A Report of the Global Scenario Group, Stockholm Environment Institute, PoleStar Series Report No. 8, Stockholm.
- Serageldin, I., T. Husain, J. Martin-Brown, G. Lopez Ospina, and J. Damlamian (eds), 1998, *Organizing Knowledge for Environmentally and Socially Sustainable Development*, Proceedings for a Concurrent Meeting of the Fifth Annual World Bank Conference on Environmentally and Socially Sustainable Development, Co-sponsored by UNESCO and the World Bank, World Bank, Washington, D.C.
- Soderbaum, P., 1998, 'Economics and Ecological Sustainability: An Actor-

- Network Approach to Evaluation', in *Evaluation Planning*, Kluwer Academic Publisher, The Netherlands.
- , 2000, *Ecological Economics: A Political Economics Approach to Environment and Development*, Earthscan Publication Ltd, London.
- Tolba, M. K., 1982, 'Development without Destruction', Address to Chelsea College in 1976, in *Development without Destruction: Evolving Environmental Perceptions*, Tycooly International, Dublin.
- , (ed.), 1988, *Evolving Environmental Perceptions, From Stockholm to Nairobi*, United Nations Environment Programme, Butterworths, London.
- Tortajada, C., 2000, 'Environmental Impact Assessment of Water Projects', *Water Resources Development*, vol. 16, no. 1, pp. 73-8.
- United Nations General Assembly (UNGA), 1987, Resolution 42/186, Environmental Perspective to the Year 2000 and Beyond, 11 December.
- WCDE, 1987, *Our Common Future*, Report of the World Commission on Environment and Development, Oxford University Press, Oxford.