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Appraising Sustainable Development

Water Management and
Environmental Challenges



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Asit K. Biswas and Cecilia Tortajada
Third World Centre for Water Management
Atizapan, Mexico



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Preface

The book considers two challenging issues of the twenty-first century, the implementation potential of the concept of sustainable development, and its possible application to make water management more efficient and equitable. Both are complex issues, which have not been objectively and comprehensively examined thus far.

There is no question that the concept of sustainable development has been popular for nearly a quarter of a century. In fact, sustainable development has been so popular that to ask to what extent the application of this concept has improved resource management practices during the past two decades, or improved the quality of life of the poor people in the developing world, or improved environmental conditions, are now considered in many quarters to be equivalent of lese-majesty! In fact, many international organizations and most major foundations have programmes on some aspects of sustainable development. In spite of this popularity, however, one fundamental question which has never been asked, let alone answered, is if this popular concept has made any difference to the world, or if the world would be any different if this paradigm had not been in use?

The book attempts to answer the above question and many others in terms of water management. It is now widely believed that water is likely to be one of the most critical resource issues of the coming decade, or decades, both in terms of quantity and quality. Under the present management practices, many regions of the world are facing water scarcities, and most international institutions like the various United Nations agencies and the

World Bank, have claimed that these scarcities will escalate in the future, creating serious problems for the humankind as well as the environment. While many pronouncements have been made on the impending global water crisis, most of these have been made on the basis of forecasts based on unavailable and/or unreliable data, assumptions of primarily incremental changes in the current business-as-usual practices (inspite of the rhetoric that claims otherwise), incomplete and faulty analyses, and the absence of a realistic and forward-looking vision. Based on a comprehensive analysis of the current and the future trends, it can be said with considerable certainty that within the next two decades the following developments are likely to occur, which will influence the management practices in the water sector, through numerous direct and indirect pathways, some of which are predictable but others are not.

- The world of water management is likely to change more during the next 20 years compared to the past 2000 years;
- Many of these changes are likely to occur due to forces that are mostly outside the control of the water sector;
- While water scarcity will remain a problem in some parts of the world, it is unlikely to be of crisis proportions for the world as a whole;
- Water crisis is more likely to occur because of deterioration of its quality in nearly all over the developing world (for example, currently less than 10 per cent of contaminated water is properly treated in most developing countries), and non-availability of investment funds in a timely manner in developed and developing countries to manage all water quantity and quality issues properly. While the water profession and the media have focused almost exclusively on scarcity as the reason for a water crisis, real crisis is likely to be triggered by continuing water quality deterioration and lack of investment funds, none of which is receiving adequate attention at present.
- The complexities associated with water management will increase very significantly in the future.

- The potential impacts of technological developments in the water and related sectors, like biotechnology and desalination, have been mostly ignored at present, as well as the implications of globalization, communication and information revolution, and the use of different economic instruments for managing water.

It is safe to predict that the water problems of the future will become more and more interlinked with other development-related sectors like agriculture, energy, industry, transportation, and communication, and social sectors like education, environment, and health. There is no question that water policies and major water-related issues of the future should be assessed, analysed, and resolved within an overall societal and development context. Otherwise, the main objectives of water management, such as improved standard and quality of life of the people, poverty alleviation, regional income redistribution, and environmental conservation cannot be achieved.

While the challenges facing water management can be predicted with a fair degree of accuracy, a major unknown at present is how can these challenges be successfully met in a socially-acceptable, economically-efficient, and environmentally-friendly manner. A popular answer has been that these challenges can be met by applying the concept of sustainable development to the water sector. The book objectively analyses how realistic is this expectation, without any dogmas, preconceived ideas or hidden agendas.

What is sustainable development? There is no agreement at present as to what this really means. Dozens of definitions exist at present, but one that is now extensively used is by the so-called Brundtland Commission, which defined it as 'development that meets the needs of the present without compromising the ability of the future generations to meet their own needs'.

This definition, at least on a first reading, appears to be reasonable, equitable, and well-meaning. However, the question that arises is if this well-intentioned and feel-good definition has

any real meaning in terms of its application and implementation to improve existing water management practices, or if it is just a collection of good-sounding and trend words which collectively provide a somewhat amorphous definition which is of limited, or even of no help, to plan and manage water resources projects and programmes.

Objective and in-depth analyses indicate that, for all practical purposes, the definition formulated by the Brundtland Commission cannot be implemented, not just in the water sector, but also any other development sector. Not surprisingly, even though the rhetoric of sustainable water resources development has been very strong in numerous national and international forums during the past two decades, its actual use in the real world, irrespective of what it means, has been minimal, even indiscernible in most cases. In fact, based on evidences available at present, it can be argued that even if the paradigm of sustainable development did not exist, the world of water management probably would have looked very similar to what it is at present.

The concept of sustainable water development is now widely considered essential in most countries of the world, including international institutions. As noted and elaborated in this book, this is despite the fact that it is not operationally possible to plan, implement and manage a water resources system in such a way that it becomes inherently sustainable, however this may be defined right from the very beginning. Even after such widespread endorsement of the paradigm, it is still not possible to identify what are the parameters that should be measured, which will indicate a water resources system is sustainable, non-sustainable, or in transition between sustainability and non-sustainability.

The universal popularity of a vague concept that defies definition and implementation is not new in the area of resources management. For instance, during the twentieth century, many such concepts have come and gone, without leaving much of a footprint as to how resources could be efficiently managed on a long-term basis. In fact, it can even be argued that the vagueness of a concept to a significant extent increases its popularity, since

people can continue what they have been doing before, but at the same time claim that they are following the latest paradigm.

The fact that it has not been possible to operationalize this concept in over twenty years raises another fundamental question: is it an universal solution as its numerous proponents currently claim it to be, or is it a concept that has limited implementation potential, irrespective of its conceptual attractiveness and current popularity? Unless the concept of sustainable water resources management can actually be applied in the real world to demonstrably improve the existing water management practices, its current popularity and extensive endorsements by international institutions become irrelevant. Knowledge, fortunately, does not advance by consensus or popularity: if it did, we would still be living in the Dark Ages!

In addition, the world is heterogeneous, with different cultures, social norms, physical attributes, climatic conditions, a 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 often differ from one country to another in very significant ways. Accordingly, and under such diverse conditions, one fundamental question that needs to be asked is that if it is possible for a single paradigm of sustainable water resources management to encompass all countries, or even regions, with diverse physical, economic, social, cultural, and legal conditions? Can a single paradigm of sustainable water resources management be equally valid for an economic giant like the United States, technological powerhouse like Japan, and for countries with as diverse conditions as Bhutan, Brazil or Burkina Faso? Can a single concept be equally applicable for Asian values, African traditions, Japanese culture, Western civilization, Islamic customs, and emerging economies of the Eastern Europe? Can any general paradigm be equally valid for monsoon and non-monsoon countries, deserts and very humid regions, and countries in tropical, sub-tropical, and temperate regions, with very

different climate, institutional, legal, and environmental regimes? The answer most probably is likely to be no.

In this book, some of the world's leading intellectuals and experts analyse the current status of application of the sustainable development paradigm to the water sector. The authors come from different backgrounds, expertise, disciplines and institutions from different parts of the world. Their overwhelming conclusion is that irrespective of the current popularity of the sustainable development concept, its application in terms of improving efficiency of water management has been minimal. This status is unlikely to change in the foreseeable future.

I would like to take this opportunity to pay tribute to the Sasakawa Peace Foundation of Japan, without whose support this analysis simply would have not been possible. When the Third World Centre for Water Management first decided to evaluate objectively and comprehensively the current status of application of sustainable development to the water sector, we were actively discouraged by most institutions. The head of a major international institution tried to dissuade the Centre from doing this study. His thesis was that the concept is so popular that it would not be desirable for our Centre to question it. His view was that 'even if you prove that its current status of application leaves much to be desired, the Centre will be the loser since some funding agencies may decide not to support its projects in the future'. The head of a major international foundation told me that for several years their institution has had a programme on sustainable development. He could not put forward any proposal which may question the concept, since his trustees may ask some very awkward questions, including the question 'if the emperor had any clothes'.

We thus applaud Sasakawa Peace Foundation for their support to this study, which most other institutions did not want to consider since the results could question the appropriateness and relevance of a sacred cow. We are especially thankful to Mr Akira Iriyama, President of the Sasakawa Peace Foundation, who in spite of his numerous commitments, participated in the entire workshop

which assessed the concept. We are also grateful to Dr Takashi Shirasu, who was the Senior Programme Officer when we started to discuss the project with the Foundation, for his intellectual support, and to Dr Mihaela Serbulea, who not only participated and contributed to the workshop but also was the programme officer responsible for the implementation of the project. This book simply could not have been produced without the intellectual support of Mr Iriyama, Dr Shirasu, and Dr Serbulea.

The workshop to review the papers was organized at the Alexandria Library in Egypt. We very much appreciate the support given to us by Dr Ismail Serageldin, President of the Library, and Dr Mahmoud Abu-Zeid, Minister of Water Resources and Irrigation of the Government of Egypt, to organize the workshop in Alexandria. Thanks to their support and outstanding hospitality, the workshop became a memorable event for all the participants.

Last, but not least, I would like to thank Dr Cecilia Tortajada and Ms Thania Gomez of our Centre for all the internal work which made the project so successful and productive. The excellent work done by my daughter, Andrea Lucia, for the proof-reading and indexing of this book is much appreciated. She certainly did a much better job than I would have ever done!

Asit K. Biswas, President
Third World Centre for Water Management
Atizapan, Mexico

Foreword

On behalf of the Sasakawa Peace Foundation, I am pleased to write the Foreword to this important book, which aims to reassess the applicability of the sustainable development paradigm to the water sector.

Being a layman on the water issue per se, I do not even pretend to know the current priority problems or non-problems of the water sector. For instance, I cannot tell which of the following arguments is valid. Some argue that water scarcity is the issue whereas others argue that the issue is not its scarcity itself but its mismanagement. Some documents state that more people are drinking clean water as compared to the number 20 years ago whereas others refute this claim. Also, we hear an argument that the issue lies not in water itself but in the order of priority to be put on water among other issues like environment, poverty alleviation, and human rights. Even within the water sector itself, a number of zero-sum kind of trade-offs between regions, countries, or social sectors within a country are witnessed. It will not be productive to continue with a list of these anecdotal examples since, supposedly, answers to these questions are all too obvious to the water specialists. Instead, I will briefly touch upon an overarching paradigm over these questions that is the core subject of this book, namely sustainable development.

As in the case of other buzzwords such as 'social capital', 'civil society', and 'human security', the term 'sustainable development' has been used for many years with varying definitions. For that matter, this paradigm has been used and valued because it can

have a number of interpretations according to various players who may have their own vested interests.

Let me elaborate this point a little further. When the idea of sustainability was first introduced to the field of fisheries much earlier, it appeared to be rather simple and practical, since it meant that the amount of catch should be equal to or less than its total reproduction rate. In comparison, when it was later widened and broadened by the so-called Brundtland Commission as 'the development that meets the need of the present without compromising the ability of the future generations to meet their own needs', it no more was meant to be a practical, operational definition. Rather, the words 'sustainable development' became the statement for the desirable future for mankind. It is natural then to expect this statement to mean 'all things to all men', which by itself is difficult to deny, and which will keep being an eternal goal for all. However, at the same time, we all know it is not too practical to expect this to be achieved today. Are there then any possibilities for the concept of sustainability to become practical and operational again?

I am reminded here of the words of Dr Norman Borlaug, the esteemed Nobel laureate agronomist, who once told me, 'sustainable development' means nothing unless three things are defined. These are: for how many people, with what living standards, and within what time period. The implication of his words seemed to me to be 'We cannot wait forever to achieve all mankind to enjoy optimum living standards. Instead, now is the time to agree upon a practical and operational definition of sustainable development. We cannot leave this paradigm to stay as an empty political slogan.'

I was pleased, therefore, to find the following lines in Prof. Biswas's paper (Chapter 3, 'Sustainable Development: Some Unanswered Questions'): 'In spite of the widespread use of the paradigm of sustainable water development, it has to be admitted that even after some 25 years of use, it has not been possible to define any water 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 is it possible to identify all the appropriate

parameters that should be monitored and evaluated to indicate the beginning of a transition process from sustainability to unsustainability, and vice versa. After some 20 years of practice, it is still not known how sustainability can be measured, analysed, judged, or implemented, in the context of water development. Such critical issues are not even raised at present, let alone discussed and solved.' If we were to discuss sustainable development in line with his discourse, no doubt the outcome will be very beneficial not only to water specialists, but also to all those, including myself, who are engaged in development at large.

In pursuing this line of undertaking, I sense two elements that are crucial to the process. Again, I am referring to them not from the water-specific point of view solely, but rather from a general developmental perspective.

The first element is cultural diversity, or the differences in the ways and manners in which people place importance on various issues, that is, there is no single panacea that can treat all symptoms. There tends to exist, however, an innocent optimism that one successful *modus operandi* can and should work elsewhere, too. In some cases it extends even further to the belief in the single normative way of development. This may sound absurd, but we have witnessed many developmental experiments that have advocated one single prescription to a number of countries regardless of their differences in the system of governance, legal frameworks, decision-making processes, effectiveness of management among others. In the water sector, it is my hope that the water experts have not experienced too many such cases.

This element leads me to the second one. Let me go back to Norman Borlaug's comments mentioned earlier. For whom, with what level, and when is sustainable development to be realized? The well-being of future generations is important. We have to avoid deprivation of the wealth of our children, or grandchildren, or great-grandchildren. But it should not mean a total refusal to meet the pressing needs of our time. When we raise, or question, this issue in either-or format, we are already in the realm of political, not scientific, arguments. The need for an objective, non-dogmatic scrutiny of the developmental paradigm has been never stronger than today.

Without doubt, this exercise of reassessing the sustainable development paradigm is fruitful because, contrary to what many may believe, the articulation of and debate on paradigms and ideologies may be the quickest way to improve practical methods of development. And, in doing so, we will be eventually providing an answer to the three questions raised by Dr Norman Borlaug as mentioned above.

The Sasakawa Peace Foundation considers objective, critical, and comprehensive discussions of the priority development paradigms of the present, an important consideration for the future. The conceptual attractiveness of a paradigm is not enough: it must be applicable in the real world to improve the well-being of both the present and the future generations. We are thus pleased to support the activities that have led to the publication of this book. I am confident that the book will act as a creative eye-opener to many people.

Akira Iriyama, President
Sasakawa Peace Foundation
Tokyo, Japan

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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

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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

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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.

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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

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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

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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. Gallopin, 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.
- Söderbaum, 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.

Sustainable Development: A Flawed Concept

Morris Miller

'Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.'

Our Common Future, The World Commission on Environment and Development (WCED), Oxford University Press, 1987, p. 43.

'Sustainable development is ultimately a frustrating idea (when one tries) to turn it into a usable concept. But as a broad goal, sustainable development is useful. Like many important ideas, it is better than nothing for as long as there is nothing better.'

The Economist, in an editorial titled, 'Inheriting the Earth',
September 1992.

Nothing Better? Would a Rose by Another Name Smell Sweeter?

What we are referring to here is a phrase identifying an objective for a set of policies that focus on the relationship of development and the environment in the broadest sense of both those terms. In principle, there would not appear to be any reason to make an issue of the adoption of this terminology; it seems to accord with the traditionally accepted objective of public policy of enhancing the global public good *over the long term*. There are, however, reasons for suspecting that the sudden popularity of the change in usage from 'development as though the long-term

future mattered' to 'sustainable development' is not as innocent in its origins and in its impact as it might at first appear. Indeed, from the point of view of policy-making, there are reasons to believe that the newly-minted phrase is a flawed concept and, as such, not only unhelpful—which suggests neutrality—but damaging in its impact on designing and implementing effective policies of environmental management on the national and global scales. This assessment can be gleaned from a review of the history of the use and meaning of this concept, of its success and its shortfall, and the reasons for its lack of success in furthering the 'environmental cause', whose supporters first introduced the concept with this specific phraseology only a few years ago.

The concept of sustainability is, of course, not new and has long been explicitly associated with the management policies of the ministries responsible for fisheries and forests and other natural resources. However, the use of the word 'sustainability' in conjunction with the development process itself is relatively new. The first reference to the environment in a development context dates back to 1948 when Osborne, the founder and former president of The Conservation Foundation, wrote, in a book titled *Our Plundered Planet*, that the US should pursue 'the kind of development that can be sustained'.¹ It is, he wrote, 'the kind of development that makes sense'. Sensible or not, for many years there did not appear to be any uptake of the two words in combination either by governments or non-governmental organizations or other authors. There were statements linking the two as, for example, the 1971 United Nations document called the Founex Report, which noted that 'the recognition of environmental issues is an aspect of the widening of the development concept' and in 1976, a speech by the Executive Director of the United Nations Environment Programme (UNEP), Mostafa Tolba, that contained the statement, '*a new kind of*

¹ For a discussion of the history of the use of the concept of sustainable development, see the chapter in this book by Cecilia Tortajada, 'Sustainable Development: A Critical Assessment of Past and Present Views'.

development is needed . . . (that avoids) such serious environmental damage as to make development simply not sustainable. It was only in 1981 that the two words were melded into a phrase by a former President of the World Bank, A. W. Clausen, in a speech titled, *'Sustainable Development: The Global Imperative'*.

The linkage of the words, 'development' and 'sustainability' was made only on rare occasions over the next few years until, in 1987, a terminological phenomenon occurred, with a suddenness that has rarely been witnessed, when the phrase 'sustainable development' virtually displaced the traditional phrase 'development as though the long-term future mattered'. The watershed was the report of the World Commission on Environment and Development (WCED) (otherwise known as the Brundtland Commission after its chairperson) published in 1987 as a book titled *Our Common Future*, which became an almost instantaneous bestseller around the world. The extraordinary event is to be found in the rapid and widespread use of the two-word phrase 'sustainable development' by governmental agencies and non-governmental organizations to relabel themselves but also to attach the phrase to the title of their programmes and events as, for example, the United Nations Conference held in Johannesburg in 2002 that was titled 'Conference on Sustainable Development'. By the early 1990s, as Cecilia Tortajada points out in her recounting of the history of the phrase, 'sustainable development became "the" paradigm of development . . . with nearly all governments embracing (it) . . . with no serious discussion ever taking place as to how the concept could be operationalized'.

Terminological changes in the form of new labels on ideas and related programmes may not appear to be of much consequence when, to all appearances, the labels mean the same thing. This would seem to apply to the substitution of a neat phrase 'sustainable development' for an awkward one, namely 'development as though the long-term future mattered'. Why then make a fuss? The question can be framed a different way: why was there a very sudden uptake of a new phrase to identify

a traditional and familiar way of identifying an objective of policy-making? It is worthwhile to make an effort to answer this question, in as much as in answering it we should be in a better position to judge (a) whether the idea of attaching a new label for an old objective has been an 'innocent' process, that is, its promotion has evolved without the aid of those in positions of power abetted by a politically and philosophically supportive media, and (b) if it has been so promoted, of course with subtlety, whether that support has a hidden agenda that favours the prevailing economic system and, in doing so, those in positions of power.

From the analysis of the impact of the terminological change, we could be in a position to assess whether the incredibly popular usage of the term has been helpful or harmful for the global society-at-large or whether it has been helpful for the special interests who desire to maintain the *status quo* of the prevailing economic system—albeit slightly modified—in their own interests. The change in terminology has likely been more harmful than helpful in so far as it has narrowed the focus of the struggle for a better environment that needs to be integrated with a global development process by which the poorest half of the world's population would be enabled to rise out of dire poverty. That equalizing attribute of a development process would make the most significant contribution to the legacy that could be left for future generations.

The next section considers the issue of whether the introduction of the new terminology has helped to alter the manner of development in any part of the world to a degree significant enough to accord the maintenance of environmental quality as high a priority as that given to the speed of growth in the aggregate and to the manner of growth that would further the objectives of equity and other attributes that are the desired characteristic of a humane world. In the following section of the paper we discuss the reasons why the new logo of 'sustainable development' has become so popular and, at the same time, so ineffectual in moving the environmental/equity agenda forward, but, at the

same time, effectual in giving the illusion of progress as rhetoric has been enabled to triumph over reality. In the final section, consideration is given to the issue of what should be done starting with the discouragement of the use of the 'sustainable development' logo that represents a distinctive brand of the development/environment nexus. Hopefully the reasons for making this recommendation would then be understood and, accordingly, also the reasons for making this fuss over the issue of terminology.

The Gap between Rhetoric and Reality: The Failure of the 'Sustainable Development' Logo to Advance the Cause

Complicated policies and arguments have little place in political discourse. The public has neither the background nor the patience to digest a complicated message, so the 'simplicity constraint' makes it more difficult to put together politically appealing reforms which are Pareto improvements. For academics, this is a hard pill to swallow: we pride ourselves in the subtlety of our arguments, not in their obviousness, in the cleverness of our solutions, not necessarily in their simplicity.

Joseph Stiglitz, 'The Private Uses of Public Interests: Incentives and Institutions', *Journal of Economic Perspectives*, Spring 1998.

A hard-headed assessment of the political scene over the past decade with respect to reconciling development with the maintenance of a healthy environment would reveal that the new terminology has not been successful in moving the environmental agenda forward, let alone, as fast and as far as its sponsors and supporters had expected and hoped. For many politicians, the media, and many others, the faith in the efficacy of the relabelling of the development/environment issue resided in the appeal of the convenience of 'sustainable development' as a neat phrase. The fact that this morphing process expunged the key words 'long-term future' did not seem to matter, especially as the meaning seemed clear. There was no claim by those who coined the new phrase or by those who used it so readily that the change in labelling was due to new facts or new insights from better analysis about the emissions of pollutants into the atmosphere,

except for one thing: the introduction of the 'bogey-man' factor in the form of a 'doomsday scenario', as the emissions of what were called 'greenhouse gases' were said to pose a threat to life on earth by virtue of their effect on the climate.

For the authors of the new phrase, this shift of terminology was needed to focus attention on the fact that the prevailing development policies and practices of almost all governments and international development institutions were not designed to accord a high enough priority to mitigating the harmful global environmental impacts of the development process. The quick adoption of a new terminology could logically be attributed to a widespread impatience with the slow pace and weak implementation of a full-scale environmental programme on a global scale and, to a lesser extent, on a national and regional scale. Accordingly, there was a need to introduce a shock factor. True, there had been wake-up calls in the early 1980s with the occurrence of a series of environmental disasters that were dramatic enough to have the names of their locales etched in the public's mind: Three Mile Island, Chernobyl, Bhopal, and others. With the attention span of both the public and the politicians being short and the immediate impact being geographically local and sporadic, the resulting widespread consternation did not translate into much action. In any case, dramatic environmental tragedies did not do much to stir the emotion of fear about an even more important phenomenon, namely, the slow insidious decline in the availability of land, air, and water as garbage disposal dump sites for pollutants.

An answer could be to focus on the threat of global climate change as a portending catastrophe of planetary proportions. Placing the environmental issue in the context of 'the very future of the Earth' and 'our future prospects' provides considerable drama—and pressure for action, even if that action is only identified as the symbolic gesture of signing an international protocol.² This would drive home the simple message about the

² A typical commentary is provided by Maurice Strong who headed the UN Conference on Environment and Development in 1972 in Stockholm and has been a 'senior adviser' to Kofi Annan, the UN's Secretary-General

imperative need to slow the build-up of greenhouse gases that were identified as the one set of pollutants that posed an end-of-life-on-the planet kind of threat. The beauty of this tactic was that the rest of the environmental agenda could piggy back on this issue. Thus 'sustainable development' became the banner under which the fearmongers marched with slogans that conveyed the simple message that the current manner and speed of development had ominous implications for everyone on the planet. Or, to put it in another way, the message was that the price of economic and financial progress on a global scale would be too high if the prevailing pattern and speed of development achieved by the present generation left a shameful legacy to future generations.

This legacy concept has proven to have great appeal, but it is important to note that this was not a new theme. In traditional environmental management policies, the key element of that legacy was generally identified in terms of the amount and quality of natural and man-made resources available for the use of future generations, including among the resources the still-remaining capacity of land, air, and water to absorb pollutants, that is, to act as garbage receptacles and thus to enable the maintenance of the quality of the environment. What was new was the shift of focus to two of the attributes of what constituted the legacy of a healthy environment, namely, the range of temperature variation and the stability of weather

and James Wolfensohn, the World Bank's President. Urging Canadians to support the signing of the Kyoto Protocol, he writes, 'surely in a matter as important as the very future of life on Earth, we cannot wait (to sign on) . . . Our place in the world and our ability to protect our interests and our future prospects depend on the influence we can have in co-operation with others through the multilateral framework that Kyoto provides' *The Globe and Mail* (Toronto), 'Don't blow it, Canada', 6 December 2002. (It might be noted that Canada accounts for only 2 per cent of global carbon emissions, but it is the example that is said to count to assure 'the very future of life on Earth.')

patterns. It did not seem to matter that all the proposed actions to tackle these two additional environmental 'bads' were virtually the same elements of the traditional environmental management programmes that have long been advocated and, to varying degrees, been implemented. This shift in focus did have one apparent effect in that it succeeded in putting a new label on old bottles as 'sustainable development' became the title of conferences and meetings, task force reports, and countless books, articles, and pronouncements and even of government ministries and departments and non-governmental organizations and of their programmes. There was, however, little to show for this enthusiasm for name-change beyond raising the decibels of the rhetoric of fear and the setting of specific environmentally-related targets for the near-term future without spelling out how these targets were to be achieved.

Despite the lack of progress and that of a road map to the desired future, there has been great public support for the environmental cause in vocal terms through demonstrations and in the purchase of publications devoted to the environment/development theme.³ Surveys of the views of the Americans, Australians, Canadians, Europeans, and Japanese began to

³ A sampling of the titles to be found in bookstores in the early 1990s illustrates this phenomenon:

Rescue the Earth! Conversations with Green Crusaders; The Eco-Wars: True Tales of Environmental Madness; The Fragile Environment; The Greenhouse Trap: A World Resources Guide to the Environment; On the Brink: Endangered Species in Canada; Endangered Species: The Future for Canada's Wildlife; The Global Ecology Handbook: What you can do about the Environmental Crisis; Ozone Crisis: The 15 Year Evolution of a Sudden Global Emergency; Population Explosion: Why Population is our #1 Environmental Problem; The Wasted Ocean; High-Tech Holocaust; Discordant Harmonies: A New Ecology for the 21st Century; When Technology Wounds: The Human Consequences of Progress; Making Peace With the Planet; Green Future, The Forest for the Trees? Government Policies and Misuse of Forest Resources; Blueprint for a Green Economy, Sustainable Development: Economics and Environment in the Third World.

consistently indicate that the majority of their population were more concerned about shortfalls in the implementation of 'environmental management' than they were about such issues as growth, inflation, unemployment, and poverty. There was also—not coincidentally—a significant rise in the global percentage of the non-governmental organizations, numbering more than 23,000 that took up 'the environmental cause' in its global dimensions (French 2000).⁴ The public's understanding of the ramifications of the so-called 'environmental issue' was hardly deepened by the tactics of the media and of the environmental non-governmental organizations, which, as *The Economist* (December 27th, 1997) observed

have a vested interest in supporting the most alarming versions of every environmental scare (since their) own incomes, their advancement, their fame and their very existence depend (on this tactic).

The author then commented favourably on a statement by H. L. Mencken, to the effect that

the whole aim . . . (of the politicians and the leadership of non-governmental organizations) is to keep the populace alarmed—and hence clamorous to be led to safety—by menacing it with an endless series of hobgoblins, all of them imaginary.

The nub of the difficulty would appear to be that despite the effort over the 1990s until the present to instil a sense of fear about the issue of 'sustainability', the overwhelming percentage of those who declare themselves to be supporters of 'sustainable development' have only a very vague idea about the meaning of the term and, most particularly, its implications with regard to the wide and deep range of political, social, and economic changes that such support implies, giving rise to a wide gap between word and deed. In the developing countries, not much is done about the issue of the environment since the issue hardly

⁴ According to French (2000), the number has increased from 2 per cent of this total in 1953 to 14 per cent by 1993, and it is likely to be much higher by now.

registers for the average citizen for the simple reason that, by virtue of their poverty, they have a pathetic degree of choice in their mode of living as sheer survival is a day-to-day challenge. This is especially so for those who live in the rural areas and are dependent mainly on subsistence agriculture for food and on forest scraps as fuel for cooking and heating.

It would be unrealistic to expect that people can do much about the environment unless and until they are able to escape 'the poverty trap' now, but also for their future development and, thus, for their communities. Political leaders may talk of promoting a type of development that is 'sustainable', but the question arises: what is it that is to be sustained, development or underdevelopment?

The weak follow-through on all the rhetoric has raised doubts about the sincerity and resolve of the supporters of 'sustainable development'. Such doubts are compounded by the disconnect between the characterization of the scale and urgency of what is required if an end-of-civilization denouement is to be avoided and the modest targets that have been set. It would seem the targets are set relatively low in recognition of 'political realism'. But what is, perhaps, more significant, the follow-up to all the large-scale UN conferences that were staged over the past two decades has been very weak. The targets and 'plans of action' have been mocked. This weak follow-up is illustrated by one glaring example: the Johannesburg conference's 'plan of action' contained proposals regarding such key measures as the shift to greater reliance on environmental-benign energy sources. These proposals were almost identical to those articulated 20 years earlier in the 'plan of action' of the 1981 UN Conference on New and Renewable Sources of Energy that was held in Nairobi—at which time, it should be noted, the issue of global climate change with its warming trend was not even on the agenda, nor mentioned as a serious problem in the voluminous studies that were prepared for the conference.⁵ It is worth considering the reasons for the

⁵ As the Assistant Secretary-General of that conference in Nairobi, this example of the lack of progress stands out as an illustration of the futility

fact that there is so little to show for the efforts of the so-called 'environmental movement' or 'greens' that has been marching under the banner of 'sustainable development'.

The Ambiguity and Operational Vacuity of 'Sustainable Development' as a Concept

Every environmentally aware politician is in favour of 'sustainable development' but what on earth does the phrase mean?

The Economist, September 1989

The ambiguity of the phrase that identifies 'sustainable development' as an objective of policy begins with its definition. On the face of it, 'sustainable development' seems a simple enough concept. Talking about the meaning of the concept, Robert Solow remarked,⁶

it is not clear (to me) that one can be more precise than that we, the present generation, should not satisfy ourselves by impoverishing our successors (that is) sustainability is an obligation to conduct ourselves so that we leave to the future the option or the capacity to be as well off as we are.

That commonsense definition is so general that it hardly sheds much light on the reasons for the term having had such a widespread appeal and what it implies in terms of policies and programmes, let alone institutional changes of a systemic nature. Those who have attempted to be more precise in their interpretation of the definition have found that they were entering into a hornet's nest of controversy as to what the

of large-scale conferences in terms of actionable proposals that are, indeed, activated. For a discussion on this issue, see Miller (1994).

⁶The reference to Solow's views is from his lecture titled 'Sustainability: An Economist's Perspective' delivered in 1991 at Woods Hole Oceanographic Institution. He added that he thought it was difficult to apply the principle to the problem of saving for the benefit of future generation. This is taken up later in this paper.

definition means and whether it has any operational merit. For some the definition assumed the status of the holy grail no matter what it meant, and for others who were skeptics or critics—including myself—it has been characterized as an oxymoron, a word defined by the American Heritage Dictionary of the English Language as a 'rhetorical figure of speech or writing in which the epigrammatic effect is created by the conjunction of incongruous or contradictory aims'⁷ or, more charitably, 'vacuous', which the dictionary defines as 'devoid of meaning; synonym: empty'. The unflattering characterization of 'sustainable development' as an oxymoron that implies emptiness or being devoid of meaning is perhaps too weak a condemnation when confusion and false assumptions about each of the meanings of these words and their relationships confound effective policy-making.

The confusion is evident on an examination of the range of definitions put forward by reputable economists and others. As early as 1992, John Pezzey, in a World Bank publication titled 'Economic Analysis of Sustainable Growth and Sustainable Development' (Environment Working Paper No. 15), listed definitions of 'sustainable development' compiled from many sources. This prompted one commentator who reviewed Pezzey's manuscript to make the obvious comment that 'sustainable development is one of those catchphrases that mean different things to different people'. And the list of definitions has since grown a lot longer. The result of this plethora of definitions and their seeming contradiction in meaning, scope, and implications for action is that the public understanding about what is involved in its pursuit is very weak, both as to what the end goal looks like and about how to be involved as a citizen taxpayer, organizational supporter, and/or as a voter. The ambiguity and complexity can be illustrated by a few examples beyond the simple commonsense comment of Professor Solow cited above.

⁷ The Oxford English Dictionary goes further in its definition of oxymoron, adding, 'literally self-contradictory or absurd'.

In his article titled 'Towards a Sustainable World', David Pearce (1996), stated that sustainability would call for 'investing in the environment to ensure that the stock of environmental assets is not reduced overall'. In another journal article titled 'Sustainable Development: An Overview', he interpreted this phrase to mean

leaving the same or an improved resource endowment as a bequest to the future . . . (that is) the total stock of all forms of wealth (including environmental wealth) must not be depleted.

Robert Repetto (1989), differed by stating that sustainable development does not mean the preservation of the current stock of natural resources or of any particular mix of human, physical and natural assets (since) as development proceeds the composition of the underlying asset base changes.

Robert Solow (1992) entered into this terminological fray on the side of Repetto when, in a lecture presented at the fortieth anniversary of a Washington-based non-governmental organization named Resources for the Future, he observed that the duty imposed by sustainability is . . . not to consume humanity's capital in the broadest sense . . . (and in that way) bequeath to posterity, whatever it takes to achieve a standard of living at least as good as our own.⁸

His definition provides an excellent illustration of the slippery nature of the concepts of 'sustainability' and of 'development' and of their relationship to each other when they are used to provide a basis for policy-making. This slipperiness can most clearly be shown by trying to determine what is meant by the objective and by the actions that are called for.

With regard to the objective of achieving 'a standard of living at least as good as our own', we need to seek clarification about

⁸ Solow (1992) on the subject of sustainability long predate the introduction of the phrase, 'sustainable development'. The first of his articles to focus on the subject with the word 'sustainability' was 'Sustainability: An Economist's Perspective' for the Woods Hole Oceanographic Institution.

the point of reference suggested by Solow. It would be a dubious achievement if one takes that to mean a standard of living enjoyed by those living in our prevailing economic, financial, and political system where half the inhabitants on this planet earn less than \$2 per day, with all that that extreme deprivation implies. If the reference to achieving 'a standard of living at least as good as our own' is meant to suggest that *all* of humanity achieve the average living standard of those in the richer industrialized part of the world, we come up against impossibly severe environmental limits when the richer 20 per cent of humanity politically and socially for those richer 20 per cent of humanity who now utilize about 80 per cent of the capacity of the planet's air, water, and land. Those who use a very disproportionate percentage of the absorptive capacity of the planet's air, water, and land as a garbage receptacle cannot be expected to accept this objective when it implies so radical a change in lifestyle.

With regard to the stipulated actions that are called for, namely, 'consume humanity's capital' and '(do)whatever it takes', we need to also seek for clarification about the operational guidelines. For example, would it be along the lines of 'the Rule' elaborated by Hartwick (1977) that pertains to how much needs to be saved from the use of natural resources that would be depleted and that then needs to be invested in reproducible capital so that the total returns could be sustained over time?⁹ The difficulty as to what this implies operationally is not hard to imagine when the very concept of a 'natural resource' is very ambiguous, that is, its definition itself very much depends on technological change and the ways in which the various economic systems use and could use these technologies, which, in turn, is dependent on other variables. Or to cite another example, do we follow 'the rule for achieving sustainability' set forth by James Roumasset, that can be characterized as gobbeldygook:¹⁰

⁹ Hartwick, (1977). This issue is elaborated in Anand and Sen (1996).

¹⁰ Roumasset (1990, p. 40).

in order to maximize the sustainable consumption of the future, broadly defined to include environmental amenities, the rule is to deplete resources and accumulate capital until the rate of return of saving a unit of a resource is equal to the rate of return on capital, (a rule that) calls for more discrimination in distinguishing between efficient and wasteful uses of the earth's bounty. But depletion is not a sufficient metric of waste or even non-sustainable use (as) . . . waste is not the necessary consequence of economic development but of inappropriate institutions, infrastructure and economic policies (that adhere to) the central criterion for using resources in a sustainable manner (which is) to deplete resources stocks only when the contribution these resources make to current income, including capital formation, is greater than the opportunity cost in terms of future benefits foregone (that) does not mean depletion per se should be interpreted as non-sustainable.

All this scarcely comprehensible jargon and the troubling questions leave unanswered how we would determine such things as 'the rate of return on capital', 'efficient and wasteful use', 'depletion', and especially 'the opportunity cost in terms of future benefits foregone' and 'the rate of return of saving a unit of a resource'. In effect, the theoretical literature on the 'optimal rate and manner of growth' provides little help to those who have the responsibility to frame appropriate developmental and environmental policies. To top it off, the policy-maker is left virtually clueless as to how to proceed in the real world when the frontiers of sustainability are shifting so fast and so far thanks to the unprecedented pace of scientific and technological advances in what is referred to as 'the information age' or 'the knowledge economy'. The fact is that human ingenuity in science and technology and in social and cultural adaptation is continually moving the frontiers or limits of economic possibility thereby, precluding a precise definition of 'sustainable development' in real contextual terms that are of relevance for policy-makers. In brief, we are left virtually clueless as to how the term 'sustainable development' could be—or should be—interpreted for use in the policy-making process. Sceptics and critics of the 'sustainable development' concept simply claim that it falls short or fails on grounds of logic and applicability in the real world.

It might be pertinent to note what these sceptics and critics have to say. Terence Corcoran, wrote this about the concept:¹¹

never have two words been used so much with so much inconsistency . . . For the most part, nobody seems to care what the words mean, or whether they even have any real meaning . . . It is fast becoming a landfill site for every environmental idea . . . Have we reached a point where 'sustainable development' has become a hazardous concept?

Other critics of the concept of 'the sustainable development movement' make similar charges—though in a more temperate manner—to argue that not only is the term devoid of meaning and operationally vacuous, but that the use of the term as an oft-repeated phrase is very injurious in as much as it has thereby become a cliché, overused in public discourse to the point where it has become irksome and without any meaningful meaning.¹² A sampling of the commentary of such critics would indicate why the phrase is believed to be unhelpful, immoral, and an oxymoron, among other epithets.

Herman Daly has expressed strong doubts about growth being compatible with the maintenance of environmental quality. In his view, the concept of 'development', if it implies change would be acceptable, but would be unacceptable if development was to be defined as expansion of the global economy: growth should then be regarded as an 'economic oxymoron'. He assails the Brundtland Commission for accepting

¹¹ 'Sustainable Development: A Dumpsite for Ideas', *The Globe and Mail* (Toronto), 23 March 1990.

¹² *The New York Times Manual of Style and Usage* defined a cliché as 'words or phrases that are all things to all men, the good ones lending a helping hand but adding insult to injury, the bad ones being beneath contempt'. This is taken from an interesting column by Robert Fulford in *The National Post* (9 July 2002) in a column titled, 'Giving clichés short shrift: they are a crime against language'. He cites *The War Against Clichés* by Martin Amis, who has charged that 'they deaden prose and also information, discussion and the people who use them, and they limit and enclose thought, forcing it down predetermined channels'.

the premise of global growth by a factor of five to ten that, he believes, 'would move us from unsustainability to imminent collapse', and notes that

sustainable growth is the buzz word of our time (but) is hollow political verbiage, totally disconnected from logical and physical first principles when the aggregate economy is assumed to grow forever (Daly and Cobb 1990).¹³

This puts the emphasis on the environmental limits to growth, that is a variant of the Malthusian thesis (about which more later).

This dismal view of 'development as growth' has also been expressed by Ezra J. Mishan, who has been the most articulate spokesman for a school of thought that challenges the facile assumption that development in the form of growth is even desirable, let alone sustainable. Given not only its adverse impact on the environment but, more particularly, its adverse impact on a host of social and cultural attributes that constitute a 'civil society', he is sceptical about any concept of growth that could court 'ecological disaster' and that is treated as synonymous with progress in human well-being, at least in the industrialized countries that he refers to as 'the West'.¹⁴

Speaking not so much as an economist but as an ordinary citizen, there are several considerations that prompt me to doubt whether further economic growth in the West has much, if anything, to add to human happiness or to the good life . . . Several other considerations suggest that further economic growth is likely to be positively detrimental to human welfare .

¹³ Daly and Cobb (1990) define the desirable and necessary objective as the attainment of a condition that is called 'a steady-state', that is, a state of affairs where growth stops when it reaches 'an optimal scale relative to the ecosystem, that is, the economy should be considered a steady-state subsystem of the environment . . . (Yet) the concept of optimal scale of the aggregate economy relative to the ecosystem is totally absent from current macro theory'.

¹⁴ Mishan has written several books on welfare economics (Mishan 1969a, b, c). Among his professional articles, the most relevant one for our purposes is Mishan (1993) from which the quote has been taken.

... (for to) support a policy of drifting along with the current economic momentum is tantamount to a posture that implies a willingness to run some risk of ecological disaster at a time when, to say the least, there is no presumption of any significant gain in welfare from further economic growth.

Another critic, Michael Redclift, writing in his book, *Sustainable Development: Exploring the Contradiction* (1987),¹⁵ concurs that the concept of development needs to be defined in a particular way if, in talking of sustainable development, we are to avoid 'the substitution of moral convictions for thought':

the constant reference to 'sustainability' as a desirable objective has served to obscure the contradictions that 'development' implies for the environment Environmental change should be understood as being a social process, inextricably linked with the expansion and contraction of the world economic system Therefore, 'development' must be subjected to redefinition since it is impossible for accumulation to take place within the global economic system we have inherited without unacceptable environmental costs. Sustainable development, if it is to be an alternative to unsustainable development, should imply a break with the linear model of growth . . . that ultimately serves to undermine the planet's life support system.

Ignacy Sachs of the L'École des Hautes Études en Sciences Sociales makes much the same point about the inherent contradictions in the narrow interpretation of the concept of 'sustainable development' that is current in political circles:¹⁶

Once again the politicians have seized on the language of sustainable development while emptying it of meaning, replacing any reference to economic growth with the term 'sustainable development' as the situation in social terms has been greatly deteriorating over the last five years It can never be said too often: there can be no sustainable development so long as the social crisis persists The path to the future seemed laid out with the heads of state committing to Agenda 21 at the Rio conference where

¹⁵ p. 199. His book explores the theme of how the development process poses problems for sustainability under capitalism with its many inequitable features.

¹⁶ Sachs (1997).

the new paradigm of sustainable development was accepted. Five years later, it is time to drop our illusions

Wilfrid Beckerman, writing in an article in *World Development* (1992) titled 'Economic Growth and the Environment: Whose Growth? Whose Environment?', states that, in addition to being devoid of operational value, 'the concept of global "sustainability" that is so widely encountered these days is immoral'. His quarrel is with the juxtaposition of concern for *inter-generational* equity over that of *intra-generational* equity, a position akin to that of Ignacy Sachs and many others who deprecate the practice of treating environmental policy issues as a matter deserving priority ahead of policies focused on achieving social objectives, including poverty alleviation and 'good governance', without which no policies for human betterment could succeed over the long term.

Recognizing this line of criticism, the Administrator of the United Nations Development Programme (UNDP), James Gustave Speth, relabelled 'sustainable development' as 'sustainable *human* development'. In 1994, UNDP published a paper titled '*Sustainable Human Development—From Concept to Operation: A Guide to the Practitioner*' (Banuri et al. 1994), in which a valiant effort was made to move beyond the original definition enunciated in 1987 in the Brundtland report. According to this paper,

Sustainable human development (SHD) . . . is a new development paradigm that is more than simply the sum of human development plus sustainable development as it brings to the development agenda the need for special attention to social capital, i.e., voluntary forms of social regulation. SHD can, therefore, be defined as 'the enlargement of people's choices and capabilities through the formation of social capital so as to meet as equitably as possible the needs of current generations without compromising the needs of future ones'.

This broadening of the original concept from two to three words does, of course, add a dimension that is highly commendable in calling for redistribution from the rich to the poor and for participation by the poor. Tying the word 'human' to the concept of sustainability does, of course, introduce the idea of enhancement

of the capabilities of the population to lead more fulfilling lives and, thereby, raise their ability to generate higher incomes both now *and in the future*. But this effort to add the social element as a tag-on to environmental policy only succeeds in compounding the confusion as to the meaning of 'sustainable development'. Much more importantly, it also raises the question as to whether or not it would be preferable that environmental management policy be treated in the context of development policy as only one component among many, though admittedly a very important one, and that development policy treat the issue of global growth in a manner that gives due weight to both the short-term and the long-term future of a world that would merit the appellation 'civilization'.

The upshot of all this is that it is extremely difficult—if not impossible—to comprehend the concept of 'sustainable development' in a *meaningful* fashion when it means different things to different people. The concept does, however, convey a positive idea. 'What could be wrong with it?' is the usual response even from those who recognize its ambiguity and complexity and non-operational attributes. Thus 'sustainable development' may win support, but, as noted before in connection with the lack of progress of those who march under the banner of sustainable development in moving their cause forward, one has to ask: support for what in particular? When everyone is for a programme without knowing what it means, the enthusiasm is not likely to be translated into support for specific programmes and projects and for the necessary changes in institutions and policies and programmes that would be required. That suits the vested interests who wish to minimize any institutional changes to a tee: 'fine to talk the talk if it obviates the need to walk the walk'.

'Sustainable Development' as a Deflector from the Institutional Limitations of the Prevailing Global System

Environmentalism (as a movement) has been ameliorative and corrective—not a restructuring force . . . Responding successfully to the multi-faceted global environmental crisis will (therefore) be a difficult political enterprise Can we move nations and people in the direction of sustainability? Such a move would be a modification of society comparable in scale to only two other changes: the agricultural revolution of the late Neolithic and the

Industrial Revolution of the past two centuries, both of which were gradual, spontaneous and largely unconscious If we actually do it, the undertaking will be absolutely unique in humanity's stay on the earth.'

William Ruckelhaus, 'Towards a Sustainable World', *Scientific American* Special Issue: Managing Planet Earth, September 1989.

Over a decade ago, William Ruckelhaus, a former director of the U.S. Environmental Protection Agency, made the above statement during the period of the first surge of the use of the term 'sustainable development' but talked not of 'greenhouse gas emissions and climate change' but of 'the multi-faceted global environmental crisis'. Well before the new terminology took hold, the narrow focus on greenhouse gases and the dynamics of temperature levels as *the* global threat had begun to ring alarm bells. At the time Ruckelhaus was not alone in talking of change in radical terms; other 'eminent personages of the environment movement' declared that what was needed was the following:

- 'The needs and aspirations of today could be reconciled with those of tomorrow providing there are fundamental changes in the way nations manage the world's economy in human behavior, economics, politics or institutions of government' (MacNeill 1989).
- 'The challenge we now face is nothing less than that of creating a whole new approach to the goals of growth, to the processes of growth and to the systems of incentives and penalties which determine our patterns of growth (and this, in turn implies that) the real alternative to "no growth" is "new growth", (that is), a new approach to growth both in the industrialized and developing societies, the revamping of the present system of arrangements and institutions to better serve the interests and aspirations of the developing world.' (Strong 1977, p. 10).

And then there are the voices of the media joining the chorus and abetting it. This process of fanning the flames of concern and identifying the challenge in apocalyptic terms is typified by the comment in 1989 of John B. Oakes, who talked of environmental deterioration posing 'an even greater threat to life on this planet than the nuclear threat that it encompasses'. He goes on to say that authoritative sources are alleging that 'environmental changes

are putting the future welfare of human society at risk.... This is a war too important to be left to the politicians.' He did not include greenhouse gas emissions on the list of those very troubling environmental concerns!¹⁷

The dramatic choice of language in these messages could not have gone unnoticed, especially as these views were those of persons who could hardly be categorized as politically radical. It indicated that there was, indeed, a serious undercurrent of protest which, if neglected, could pose a threat to the established order of things. But there need have been little or no anxiety about the reverberations of these clarion calls for radical systemic institutional change since the calls were not accompanied by a commensurate political programme of action, and, more importantly, since every democratic political/economic system has built-in self-defense mechanisms that make systemic change very difficult to achieve.¹⁸ This defence takes two forms: (i) the constraining power of political correctness, and (ii) language change to soften the rough edges of the prevailing system. These are worth examining to explain why an ambiguous and vacuous terminology became desirable from the perspective of those who sought to minimize the pressure to do what might have been necessary if the challenge was to be addressed in a forthright and effective manner.

The Constraining Power of Political Correctness in Advancing Proposals for Action

William Ruckelhaus (1989) provides a good example to illustrate this point: after posing the challenge in transformational terms as 'a modification of society comparable in scale to only two other changes: the agricultural revolution of the late Neolithic and the Industrial Revolution of the past two centuries', he proceeds to

¹⁷ In an editorial in the 12 January 1989 issue of the *New York Times* under the title 'Bush's Shell Game', Oakes wrote: 'This war to defend environment is too important to be left to the politicians.'

¹⁸ See Miller (1993).

identify the key obstacle to making this transformation as 'the familiar one of externalities: the environmental cost of producing a good or service that is not accounted for in the price paid for it'. Ruckelhaus recommends that people be made to pay the 'full cost' of using a resource, thereby, in his words, 'bending the market system towards long-term sustainability', a proposal cited a dozen years later by *The Economist* (in its 6 July 2002 issue) in an editorial stating that 'the greening of the market to get prices right . . . (is one of) the three powerful forces for achieving sustainability'.¹⁹ It remains unclear as to how 'full costs' are to be identified and measured and allocated, nor how, as part of this process, anyone could manage to implement the recommended rule of 'internalize the externalities', nor how the market is to be 'greened'.

Many others have put forward proposals that place reliance on the market process with its related incentives to induce citizens and corporations to do 'the right thing' environmentally. As a typical example, Tietenberg (1990), wrote of 'the power of the market (that) can be harnessed to economic incentive policies for the achievement of environmental goals, in effect, turning the market into a powerful ally'. One proposal is to establish a trading system in greenhouse gas pollution permits, an idea that is tantamount to giving out licences to pollute to corporations and, at the same time, expose governments to pressure by these corporations to raise the permissible level of the noxious emissions when the total permissible output of pollutants is being determined. It seems to have mattered little to those who propose this approach that environmental management is recognized to be an area of policy where 'market failure' prevails to a degree necessitating a heavy involvement of the government to ensure

¹⁹ The other two are 'the empowerment of local people to manage local resources and adapt to environmental change, and the encouragement of science and technology, especially innovations that reduce the ecological footprint of consumption'. The feature story of the issue is titled, 'The Great Race'.

the promotion of what is known as 'the public good', and that this applies especially to greenhouse gas emissions, which has been characterized as 'the quintessential public good'.²⁰

It can be said that in championing the environmental cause this approach remained well within the bounds of the phenomenon of 'political correctness' as none of the specific proposals poses any threat of serious change to the prevailing economic/financial system, which thrives on forced obsolescence and waste by stimulating 'wants' that go well beyond 'needs' and requires to cultivate what Ruckelhaus himself has characterized as 'the culture of unsustainability' to maintain its momentum and stability. Thus, even the very same persons who voice the need for radical systemic change have been putting forward mousy proposals for the problems that they have characterized as elephantine.

There is a long list of other proposals that have been put forward that have the virtue for the powers-that-be that they pose no serious threat to the established order of things.²¹ Many of these proposals have been repeated over and over again as part of the many so-called 'plan of action' at the UN conferences in Stockholm, Nairobi, Rio de Janeiro, Kyoto, and Johannesburg. It might even be said that there has been a regression in the sense that the movement towards establishing or strengthening institutions and policies favouring a manner of development having high regard for the long term was being weakened by political leaders even as their rhetoric increased.

What is significant about almost all of the proposals put forward is that not one of them would seem to qualify as part of the 'restructuring force' and 'fundamental change' that William Ruckelhaus, Maurice Strong, and Jim MacNeill deemed necessary to meet the formidable environmental challenge. The

²⁰ See Heal (1999, p. 222).

²¹ For a listing of other proposals and some amplification of what they would do in terms of raising funds from various sources and how they would be allocated to various programmes, see Miller (1994) or the website www.management.uottawa.ca/miller.

upshot is that the political establishment of the prevailing economic/financial system could feel comfortable with proposals to achieve a 'feel-good' goal like 'sustainable development' that meant different things to different people. This brings us to the second self-defence item in their arsenal.

The Use of 'Sustainable Development', to Obfuscate and to Deflect Change

In the recent past, there has been a terminological shift that has had the effect of softening the rough edges of the prevailing global economic system: that is, language has been used as an instrument of 'the establishment' to make the prevailing economic/financial order of things more politically, economically, and socially acceptable.²²

It may be noted that the emergence of the 'sustainable development' logo and the subsequent shift of emphasis in environmental policies and programmes coincided with the tenure and the legacy of Ronald Reagan and Margaret Thatcher, who were leaders hardly noted for their support of the poor and for environmental management as they waged war on the regulatory regime that constituted a key part of environmental policy and programmes. In subtle but important ways, it is clear that their political fortunes, as well as those of other political leaders in those countries and elsewhere who had also had a low regard for the long-term future beyond their tenure in power, stood to benefit from a language change that dropped reference to 'long-term' for the ambiguous word 'sustainable'. And in dropping the phrase 'long-term', these leaders achieved two desired effects: they drew attention away from the long-term future as an element of the

²² Examples abound. 'The capitalist system' has given way to 'the market system', 'firing workers' has become 'corporate down-sizing', 'recessions' have become 'corrections'; 'workers, professors and other people' have become 'human capital' or 'human resources' that crudely signifies that people are regarded as instrumentalities rather than those the economy is supposed to serve.

objective of policy by making the nature and timing of whatever it is that was promised unclear, and they drew attention away from the powerful political and economic/financial agents—'the establishment'—who, by their very nature, make decisions only on the basis of short-term criteria.

Yet, with respect to the issue of a healthy environmental future, it is the long-term aspect that poses the formidable challenge: if the global economy is to grow and grow more equitably—so that the poorer half of humanity enjoy a more rapid rate of growth of income and all that goes with it—there must be time for major adjustments to be made. Let us focus on one aspect for illustrative purposes. If the manner of growth must change for the sake of a better environment and equity, there must be a profound change in the sources and the uses of energy. This is a formidable challenge that calls for major shifts in the global energy mix which have taken a very long time to be achieved. For example, the past shift from the peak use of a fossil fuel like coal to the peak use of another fossil fuel, oil, has taken over three generations and was concurrent with a major transformation of the global economy. There is no escape from the judgment that tackling the global environmental challenge in earnest in all its manifestations entails a *mega* shift in the way factors such, as energy, are used, and in the related institutional arrangement at several levels of governance.

To achieve this transformation more rapidly and within the pain tolerance permitted by political considerations is quintessentially an issue of political will. Modest changes would help but would clearly not suffice. Recognizing this, the 'sustainable development' logo is very attractive to 'the establishment' as a diversionary and obfuscating tactic: political leaders can thereby buy into the tragic denouement hypothesis related to climate change and appear responsive to the anxiety of citizens by setting ambitious targets and signing protocols using terms that, by their very nature, are ambiguous in their meaning and operationally vacuous.

The Malthusian Hypothesis Underlying the Sustainable Development Concept

Where our ancestors feared the apocalypse as a matter of superstition or faith— echoes from the ages—we fear it as a consequence of knowledge (that) we now lie in a new age of the apocalypse that is daily announced in the media arising from authoritative sources in science, medicine and politics credibly warning of collective suicide through greed, technology or stupidity . . . (that threatens) extinction caused by the human contribution to global warming, the rape of the environment by starving masses or a 'nuclear winter' through senseless war.

William Thorsell, 'Risking it all', *The Globe and Mail*, 10 June 2002

There is another self-defence mechanism that the elites of all well-established systems have long used wherever there has been a need to explain why things are not going as they should: find a scapegoat for whatever ails the society. The use of the climate-change threat is, thus, a familiar ploy: in its essential features it takes the form of what has come to be called 'Malthusianism' that, in its essence, places the blame for societal ills and ominous future prospects on the limits of Nature rather than on the prevailing political/economic institutional arrangements as a system.

Writing at the end of the eighteenth century, Thomas Malthus put forward a simplistic doomsday model that related the differing rates of growth of population and of food supplies to demonstrate that they are periodically brought into balance by pestilence, famine, and wars. In the 'dirty' early years of the Industrial Revolution, William Pitt, England's prime minister of the time, recognized a political benefit in promoting the Malthusian hypothesis that explained why the working poor were living in misery and why, as they propagated, their ranks would be decimated periodically by famine, war, and pestilence to bring their food needs into equilibrium with food supplies. His model related the growth of population to the rise in agricultural production and proved a handy rationalization for the misery of the poor: the blame was placed on their propensity to fornicate

and breed children and not the ruthless imperatives of the nascent capitalist system.²³

Malthus wrote successive editions in which he added those facts that bolstered his simplistic hypothesis in a travesty of the scientific method: first there was the hypothesis, then selection of only those facts that supported the hypothesis! The endorsement of the hypothesis was exceptionally great among the elites at that time and periodically over the next two centuries as neo-Malthusians emerged in great numbers, the most recent dramatic instance being the publication of the the best-seller *The Limits to Growth* (Meadows et al. 1972) and the formation of a group known as The Club of Rome that was comprised of famous persons who were the sponsors of the Meadows study. The timing of publication followed 'the international oil crisis shock' of the early 1970s and its sales, therefore, can be seen as a reflection of either widespread fear for the future or an embrace by religious zealots of the idea of the coming of the Apocalypse.²⁴

For the rest of us who wish not merely to avoid catastrophe but to leave a better world behind us, there are often dark clouds on the road ahead that give rise to anxiety and pessimism—but not the extinguishing of hope. Approaching the Malthusian hypothesis in a rational manner rather than in a religious or ideological manner would call for an examination of the facts with regard to trends and the interpretation of their implications. It is, therefore, instructive in this context, where we are assessing a phrase that has Malthusian roots, to revisit the 'limits to

²³ See Foster (1998) for an interesting history of the Malthusian essays and their impact over time.

²⁴ The feature story in the 1 July 2002 issue of *Time* is titled 'Apocalypse Now.' It includes commentary and statistics on the number of believers and the impressive sales of the books sold that dwell on the theme of Armageddon and the Apocalypse. The findings of a recent poll of Canadians published by the Canadian Press on the issue of religious beliefs revealed that over 57 per cent believed in angels, 31 per cent in extra terrestrial aliens, 30 per cent in ghosts, and a majority in life after death.

growth' hypothesis to see if there are some parallels to the doomsday modelling that underlies the thesis of *The Limits to Growth*. That study concluded that the estimated known reserves of coal would run out in 110 years, natural gas in 22 years, and petroleum in 20 years, and even if there was to be a five-fold increase in the known reserves the limits of availability (and presumably, marketability) would stretch another 40 years for coal, another 27 years for natural gas, another 27 years for petroleum, and so on. The study went on to state

(if one assumed that) technological optimists are correct and that nuclear energy will solve the resource problems of the world, growth would be stopped by another constraint, namely, the limited capacity of the air and water to absorb the rising quantity of pollutants The basic behaviour mode of the world system is exponential growth of population and capital, followed by collapse Growth will be stopped by pressures that are not of human choosing.

To the extent that the Malthusian hypothesis or way of thinking is a key underpinning of the 'sustainable development' thesis, there arises the threat of a credibility gap as the estimates above have been proven wrong so often for so long.²⁵ Yet, we still find that this type of doomsday scenario prognostication remains a common message of governments and of non-governmental organizations that make pronouncements about environmental issues. The World Wildlife Fund (WWF) (2002) provides a recent example in its crudest form à la Meadows when it

²⁵ The type of model or mode of thought that produces this apocalyptic outcome is exemplified by the metaphor of the lily pond to illustrate the nature of exponential growth. The metaphor goes somewhat along the following lines: 'A pond will be filled with lilies in thirty days; the lilies double in number every day; if the decision is made to act only when the pond is half full, on what day will action be taken?'

The answer is: the 29th day. Lester Brown has written a book with the 29th day as its title (Brown 1978). The question is not whether this is good arithmetic but whether the lily pond dynamics can stand up as an appropriate metaphor for the world we live in. For more on this theme, see Miller (1998).

calculated in a recent report that there is 'a human deficit with the Earth' and, on present trends, point to a sombre outcome with astounding precision:

by 2050 humans will have consumed between 180 and 220 percent of the Earth's biological capacity . . . (and) the standard of living and human development as measured by average life expectancy, educational levels and world economic product will start to plummet by 2030.²⁶

While the Malthusians have been far off the mark with regard to most of the constraints on growth, they have a strong point with regard to the limited capacity of the air, water, and land to absorb the pollutants and waste of the global economy, especially when the future rapid growth of the developing countries with the resultant pollutants is factored into the equation. One would imagine then that the 'sustainable development' movement is on strong grounds in focusing on limits and the unsustainability of continuing along the present track. But the movement has virtually abandoned this focus to operate under the rubric of 'sustainable development' with a narrow focus on only one element of the environmental degradation spectrum of 'bads' that are associated with the prevailing economic system, namely, the rising greenhouse gas emission levels and the related doomsday scenario of rising temperatures and volatile weather. In doing so, a veritable storm of controversy has erupted putting the Malthusian tag on the movement and, thereby, seriously tarnished both its motives and credibility. This adverse impact can be illustrated by the views of commentators who have drawn a conclusion about the debate on the environmental issue of global warming similar to that articulated in an article by Wentz (2002):

²⁶ As reported in a WWF Press Release from their document, *The Living Planet Report 2002*. The report cites the calculation 'humans are currently running a huge deficit with the Earth, using over 20 percent more natural resources each year that can be regenerated—and this figure is growing each year'.

the real story is how science has been corrupted by the official doctrine (in a manner) that at its core is anti-intellectual I suspect that our belief in global warming is at root theological (as) the tendency to blame ourselves for natural calamities dates back to the dawn of time, . . . (a cultural phenomenon that has continued until today with) the widespread unease that our chief sin is materialism and progress.²⁷

The undisputed fact is that in this matter there happens to be a great deal of controversy and the controversy revolves around the following issues: whether one can speak meaningfully of 'average temperature levels' in global terms; whether anyone is able to assert with authority that these levels are rising at a rate significant enough to be a cause of great concern; and whether human activity has—or is ever likely to have—an impact on climate that could justify the proposed measures to reduce those emissions. Without entering into the debate 'with both feet', as the saying goes, it would suffice to note that for policy purposes—and to keep our focus on the role of the factor of fear about climate change that underlies the 'sustainable development' movement—it is the last aspect regarding the role of humans as causal and remedial agents that merits emphasis. In this regard, it would be appropriate to demonstrate scepticism by quoting Philip Stott, who has been in the forefront of the debate about both the scientific underpinning and what humans can do about the phenomenon of climate change. He writes of the arrogance of the idea that we (humans) can control a chaotic climate governed by a billion factors through fiddling about with a couple of politically selected gases Climate is one of the most complex systems known, yet the idea that we can manage it by trying to control a small set of factors, namely,

²⁷ Wente, M., 'The Kyoto-speak brainwashers', *The Globe and Mail* (Toronto), 7 December 2002. She quotes from a book, *Taken by Storm* (Essex and McKittrick, 2002), that she characterizes as both irreverent and devastating in their explanation of 'the limitations of climate-change science to a scientifically-challenged public'. Essex is described as 'a senior player in the world of climate science who specializes in the underlying mathematics, physics, and computation of complex dynamic processes such as climate'.

greenhouse gas emissions, is a basic fallacy. Scientifically, this is not merely a matter of uncertainty; it is a lie.²⁸

The nature and degree of the uncertainty 'as a policy problem' is succinctly set forth in an informative article titled 'The Role of Economics in Climate Change Policy' written by W. McKibbin and P. Wilcox (2002, p. 109):

Although greenhouse gases can trap energy and make the temperature warmer, and the concentration of those gases has been increasing, it is far from clear what those facts mean for global temperatures It is even quite hard to prove that global warming has begun.

A long list of scientific uncertainties makes it . . . impossible to say how much warming has occurred to date or how much will occur in the next century The cost of reducing greenhouse gas emissions is also uncertain

From climatology to economics, the uncertainties in climate change are pervasive, large in magnitude and very difficult to resolve. *In short, uncertainty is the single most important attribute of climate change as a policy problem.*²⁹ (emphasis added)

Given this uncertainty, it would seem advisable to resist using the dreaded denouement as the basic premise of the 'sustainable development' movement and to resist setting targets *à la* Rio, Kyoto and Johannesburg. It is not merely a question of the

²⁸ www.globalwarming.org/polup/pol14-4-01.htm, the Global Warming Information Page. Stott in a recent article (www.junkscience.com/mar02/wsj-stott.htm) has noted that 'despite a short-term rise in temperature of around 0.6 degrees centigrade over the last 150 years, the long-term temperature remains, overall, one of cooling. It may not be too long, therefore, before we see the ice spreading again We are currently emerging—granted in a somewhat jerky fashion—out of the Little Ice Age that ended around 1880 Our current interglacial period is already 10,000 years old and no interglacial period during the last half-million years has persisted for more than 12,000 years, most having had life spans of only 10,000 years or less. Statistically, therefore, we are due to slither into the next glacial period At worst, withdrawing gases might help speed the descent into the next glacial period'. See also Stott (2000).

²⁹ McKibbin and Wilcox (2002).

climatic modelling being proven wrong; rather the damage of target-setting in the face of so much uncertainty would likely be great in augmenting scepticism and cynicism about the fuller range of environmental issues that need to be addressed. In a word, the process would likely backfire.

The societal damage of scepticism and cynicism as a widespread social phenomenon is enormous as both these, along with ignorance and indifference, are the key components of political inertia.³⁰ This being so, there is likely to be even further damage inflicted on the broad range of issues in 'the environmental cause' by supporters of the doomsday climate thesis who ask politicians and the public to rely on the argument that there is a consensus among the *majority* of scientists. They base this on the conclusion by consensus of several hundred scientists—only a small percentage of whom have expertise in climate-related science—who have been involved in preparing the reports of the Intergovernmental Panel on Climate Change that has been the basis for the proposed targets of the Kyoto Protocol, to which governments are being asked to sign on to. The Kyoto supporters argue that the dissenters are not only a *minority* but, by innuendo, are also less reputable. As history can attest—think of Galileo and Einstein!—scientific truth is not found by counting the numbers of adherents to and sceptics of a scientific hypothesis.³¹ Even in the scientific community there is a phenomenon called 'the bandwagon effect'.

The bandwagon effect is dramatically illustrated by the large shift in the consensus on the climate change issue: in the 1970s, many eminent scientists declared a belief that the most imminent threat was posed by global cooling.³²

³⁰ For a full discussion on this theme, see Siddayad (1993).

³¹ The 'bandwagon' or 'political correctness' syndrome should not be discounted. As evidence of its importance in this context it is instructive to note the somersault of reputable scientists. See the column by Charles Krauthammer in www.globalwarming.org/Kraut.htm.

³² To take but three examples cited by Charles Krauthammer in the same column (www.washingtonpost.com): a famous scientist, Nigel Calder, a

This zigzagging process within the span of a generation can be devastating for the public acceptance of the scientific process and their pronouncements. Should the public be moved to act on the basis of exaggerated fears and exaggerated faith in the measures put forward to stave off the dreaded denouement—and at some stage this is seen by the public to be manipulative hype—there would likely be a reaction that would reduce support for *effective* policies and programmes on the much wider range of environmental issues. It is important, therefore, to be on guard against evidence in the interpretation of findings of bias in selection of what is being publicized or by bias in interpretation. There is disturbing evidence of this bias—or, to be generous, sloppiness or laziness—when governmental and non-governmental organizations and media reporters and commentators cite sources such as reports of the UN's Intergovernmental Panel on Climate Change and declare that there is a 'scientific consensus' about future climate trends and the role of human activity in this phenomenon as though all scientists agree on both of those issues. But this is compounded when there is little or no publicity given to the third latest report (IPCC 2001), that states in its science section,

In sum, a strategy must recognize what is possible. In climate research and modeling we should recognize that we are dealing with a coupled non-linear system, and therefore that the prediction of a specific future climate is not possible.

former editor of *New Scientist*, wrote in 1975 that 'the threat of a new ice age must now stand alongside nuclear war as a likely source of wholesale death and misery for mankind; the editor of *Science Digest* urged during the same period that the atmospheric pollution needs to be carefully monitored as this 'will have a direct bearing on the arrival and nature of this weather crisis, i.e., a new ice age'; J. Murray Smith of the National Oceanic and Atmospheric Administration in 1976 observed that 'whenever there is a cold wave, the media seek out a proponent of the ice-age-is-coming school and put his theories on page one Whenever there is a heat wave . . . they turn to his opposite number for a prediction of a kind of heat death of the earth.'

The intensity of the controversy regarding truth and falsehood and the use and abuse of modelling is reminiscent of the debates revolving around the Malthusian hypothesis of the early 1970s and the preceding two centuries when William Pitt and the political elite played with the public of his day in using the Malthusian hypothesis and as later day political leaders used variants of this hypothesis in defence of the prevailing economic systems. When it is seen as a form of 'con-game'—as it unravels from its simplified version—the loss of credibility will be a great setback for the cause of achieving a manner of development that places a high priority on the future.

Nonetheless Should the Use of the 'Sustainable Development' Logo be Continued?

There are no failsafe, simple solutions to the growing propensity of decision-makers to embrace counter-productive intellectual fads; we need to be alert to our exposure to bad yet seductive ideas . . . (at a time when) globalization and cheaper instant electronic communication allow bad ideas to spread faster, . . . (when) the exponential growth of the 'noise' within our system of communications makes it harder to differentiate the bad ideas from the better ones . . . (and when) bad ideas now stand a better chance of becoming accepted thanks to the accelerated decision-making cycles and the increased public pressures that the decision-makers face.

Moises Naim, 'Misguided Ideas in a Dangerous World', *Foreign Policy*,
25 November 2002.

This cautionary note by the editor of the journal, *Foreign Policy*, was applied with special relevance to the policies related to the terrorism threat but applies equally well to the issue of the development/environment relationship. Just as new ideas are not necessarily better ideas, new terminology is not necessarily better than the old though it may sell better. It is time to retire the 'sustainable development' logo, a process that would take some time as the terminology is well and deeply entrenched. The best that can be done would be to discourage the vacuous language of this particular bad idea that obfuscates, deflects and

terrorizes—and thus leads to bad policies for, as *The Economist* rightly notes in its 6 July 2003 issue, environment policy-makers are ‘flying blind’.

In the same issue of *The Economist*, a proposal with regard to environment policy was put forward³³, namely, ‘encourage science and technology, especially innovations that reduce the ecological footprint of consumption’. Leaving aside the issue of what *The Economist* means by the ‘ecological footprint of consumption’—which is to put to one side the dynamic motor of the market economy—the kernel of the proposal is a very substantial increase in expenditure and by all other means to accelerate environmentally-related research on the requisite scale and with the requisite speed.

There are two precedents that are global in scope and could serve as examples of what could be done that would go a long way to help address the challenge of maintaining global growth with greater equity and, at the same time, reduce the stress of that growth on the environment. The first precedent is the Manhattan Project of the early 1940s. This was a research undertaking that mobilized talent *with no heed to cost* for the purpose of developing an atom bomb as a means of meeting a possible threat from the Nazis who, it was believed, were working on the manufacture of such a weapon. The immensity of the possible tragedy called for speed and an unqualified commitment of money and talent, sufficient to forestall such a tragedy.

The second precedent is the establishment, in 1970, of the internationally-funded entity called the Consultative Group on International Agricultural Research (CGIAR). Through its research programme, it has proven exceptionally successful since it was established over three decades ago in helping global food production to triple while world population doubled.

If an ambitious research programme is to serve as one of the key initiatives to address many of the facets of the environmental challenge of our times, it needs to be organized on a scale that

³³ These are discussed in Miller (1997).

is commensurate with the global dimensions of the challenge in its size and diversity. The governmental role is, therefore, critical. The participation of the private sector, including foundations and civil society, in the form of non-governmental organizations that constitute the 'sustainable development movement', could undoubtedly play a role in this endeavour, but for various reasons cannot be expected to lead. The outstanding example of that participatory role is the action taken by three private foundations, the Rockefeller, Ford, and Kellogg Foundations, that originated the idea of establishing the CGIAR and approached the World Bank to assume the role of leader. A similar approach could be attempted in other sectors such as environmentally-benign energy (*à la* CGIE2R?),³⁴ potable water,³⁵ and, as well, education, especially primary education in rural areas.³⁶

All of these initiatives could lay the basis in time for a more productive population that, in turn, would be better able to leave a more prosperous, equitable, and environmentally healthy planet which is the most worthwhile legacy to future generations. Since the environmental issue has now captured the world's attention there is an opportunity for effective action, which would likely be enhanced by abandoning the 'sustainable development' concept that, by virtue of its ambiguity of meaning and its operational vacuity, is seriously flawed.

³⁴ E standing for energy and environment. For an elaboration see, 'High-tech to the Rescue? The Role H-T could play involving Rural People in the Knowledge Economy', University of Ottawa, School of Management, Working Paper No. 97-25, ISSN 0701-3086, 1999, in www.management.uottawa.ca/miller

³⁵ Ismail Serageldin, in one of his speeches when he was a Vice-President of the World Bank, called attention to the fact that more than a billion people have no access to clean water, that a child dies every second from drinking contaminated water, and that by 2025 the number will likely grow to more than three per second.

³⁶ These proposals are elaborated in papers to be found in www.management.uottawa.ca/miller. See especially op. cit., 'High-tech to the Rescue? . . .'

Interestingly enough, this assessment accords with that of the *The Economist*, when, in its 6 July 2002 issue, the journal's editors reversed themselves on the matter of the merit of 'sustainable development' à la Brundtland as a paradigm for policy on global environmental issues. In referring to 'Rio's fatal flaw' and to the fact that 'by nearly universal agreement, those grand aspirations have fallen flat in the decade since that summit', authors of the editorial acknowledged the mistake of subsuming the many facets of environment policy under the rubric of the concept called 'sustainable development':

The main explanation for the disappointment—and the chief lesson for those about to gather in South Africa (for the Johannesburg Conference on Sustainable Development)—is that . . . (at Rio) its participants were so anxious to reach a political consensus that they agreed to the Brundtland definition of sustainable development The biggest mistake is that (there has been an inclination to) slide over the difficult trade-offs between environment and development in the real world. To insist that the two are 'impossible to separate', as the Brundtland commission claimed, is nonsense.

Nothing better?!

References

- Ackerman, F., 2001, 'Material Use and Sustainable Affluence', in J. Harris, T. Wise, K. P. Gallagher, and N. Goodwin (eds), *A Survey of Sustainable Development: Social and Economic Dimensions*, Island Press, Washington, D.C.
- Agarwal, A., and S. Narain, 2001, 'Global Warming in an Unequal World: A Case of Environmental Colonialism', in J. Harris, T. Wise, K. P. Gallagher, and N. Goodwin (eds), *A Survey of Sustainable Development: Social and Economic Dimensions*, Island Press, Washington, D.C.
- Alperovitz, G., 2000, 'Sustainability and Systemic Issues in a New Era', in J. M., Harris (ed.), *Rethinking Sustainability: Power, Knowledge and Institutions*, University of Michigan Press, Ann Arbor.
- Bailey, R., 1993, *Ecoscand: The False Prophets of Ecological Apocalypse*, St Martin's Press, New York and London.
- Banuri, T., G. Hyden, C. Juma, and M. Rivera, 1994, 'Sustainable Human Development: From Concept to Operation—A Guide for the Practitioner', UNDP Discussion Paper, UNDP, New York.

- Barkin, D., 2000, 'Wealth, Poverty and Sustainable Development', in J. M. Harris (ed.), *Rethinking Sustainability: Power, Knowledge and Institutions*, University of Michigan Press, Ann Arbor.
- Barrett, S., 1999, 'Montreal versus Kyoto: International Cooperation & the Global Environment', in I Kaul, I Grunberg, and M Stern, *Global Public Goods: International Cooperation in the 21st Century*, Oxford University Press, New York and London, pp. 192–19.
- Beckerman, W., 1992, Economic Growth and the Environment: Whose Growth? Whose Environment? *World Development I*.
- Benton, T., 1989, 'Marxism and Natural Limits', *New Left Review*, no. 178, November–December.
- Biswas, A.K., M. Biswas and K. Tolba (eds), 1991, *Earth and Us: Population-Resources-Environment-Development*, UNEP, Butterworth-Heinemann, Oxford.
- Bojo, J. and C. Reddy, 2002 'Poverty Reduction Strategies and Environment: A Review of 40 Interim and Full PRSPs', World Bank Environment Department Paper No. 86, Washington, D.C.
- Brown, L., 1978, *The 29th day: Accomodating Human Needs and Numbers to the Earth Resources*, World Water Institute, Washington, D.C.
- Bruyn, S., 2001, 'Civil Associations Toward a Global Civil Economy', in J. Harris, T. Wise, K.P. Gallagher, and N. Goodwin (eds), *A Survey of Sustainable Development: Social and Economic Dimensions*, Island Press, Washington, D.C.
- Common, M., 1995, *Sustainability and Policy*, Cambridge University Press, Cambridge.
- Commonwealth Secretariat, 1991, *Sustainable Development: An Imperative for Environmental Protection: Report by a Group of Experts on Environmental Concerns and the Commonwealth*, London.
- Corcoran, T., 1990, 'Sustainable Development: A Dumpsite for Ideas', *The Globe and Mail* (Toronto), 23 March.
- Costanza R. and H. Daly, 2001, 'Natural Capital and Sustainable Development', in J. Harris, T. Wise, K.P. Gallagher, and N. Goodwin (eds), *A Survey of Sustainable Development: Social and Economic Dimensions*, Island Press, Washington, D.C.
- Court, T. de la, 1990, *Beyond Brundtland: Green Development in the 1990s*, Zed Books, London.
- Daly, H. and J.B. Cobb, 1989, *For the Common Good*, Beacon Press, Boston.
- , 1990, 'Sustainable Growth: An Impossibility Theorem', *Development: Journal of Society for International Development*, (Special Issue on Environment & Global Sustainability), Rome.

- Dasgupta, S., B. Laplante, H. Wang and D. Wheeler, 2002, 'Confronting the Environmental Kuznets Curve', *The Journal of Economic Perspectives*, American Economic Association, Winter, vol. 16, no. 1, pp. 147-68.
- Easterlin, R., 1981, 'Why isn't the Whole World Developed?', *Journal of Economic History*, March.
- El Serafy, S., 2001, 'Green Accounting and Economic Policy', in J. Harris, T. Wise, K.P. Gallagher, and N. Goodwin (eds), *A Survey of Sustainable Development: Social and Economic Dimensions*, Island Press, Washington, D.C.
- Essex, C. and R. Mc Kitrick, 2002, 'Taken by Storm: The Troubled Science, Policy and Politics of Global Warming', Key Portes Books, Toronto.
- Foster, J. B., 1995, 'Marx and the Environment', *Monthly Review: An Independent Socialist Magazine*, New York, vol. 47, no. 3, July/August.
- , 1998, 'Malthus' Essay on Population at Age 200: A Marxian View', *Monthly Review: An Independent Socialist Magazine*, New York, vol. 50, no. 7, December.
- , 2001, 'Ecology Against Capitalism', *Monthly Review: An Independent Socialist Magazine*, New York, vol. 53, no. 5, October.
- , 2002, 'Capitalism and Ecology: The Nature of the Contradiction', *Monthly Review: An Independent Socialist Magazine*, New York, vol. 54, no. 4, September.
- Fredriksson, P. G., 1999, 'Trade, Global Policy and the Environment', World Bank Discussion Paper No. 402, Washington, D.C.
- Freeman, M. A., 2002, 'Environmental Policy Since Earth Day 1: What Have We Learnt?', *The Journal of Economic Perspectives*, American Economic Association, Winter.
- French, H., 1995, *Partnership for the Planet: An Environmental Agenda for the U.N.*, Worldwatch Institute, Washington, D.C.
- , 2000, 'Coping with Ecological Globalization', *State of the World 2000*, Worldwatch Institute, Washington, D.C.
- Fulford, R., 2002, 'Giving Cliche's Short Shrift: They are a Crime Against Language', *National Post* (Toronto), July 9.
- Gallagher, K., 2001, 'Overview Essay: Globalization and Sustainability', in J. Harris, T. Wise, K.P. Gallagher, and N. Goodwin (eds), *A Survey of Sustainable Development: Social and Economic Dimensions*, Island Press, Washington, D.C.
- Hansen, S. et al., 1990, *Economic Policies for Sustainable Development: Report Synthesizing Seven Country Studies*, Asian Development Bank, Manila.
- Harris, J. 2000a, 'Introduction: An Assessment of Sustainable Development', in J.M. Harris (ed.), *Rethinking Sustainability: Power, Knowledge and Institutions*, University of Michigan Press, Ann Arbor.

- , 2000b, 'Free Trade or Sustainable Trade? An Ecological Economics Perspective', in J.M. Harris (ed.), *Rethinking Sustainability: Power, Knowledge and Institutions*, University of Michigan Press, Ann Arbor.
- , 2001, 'Overview Essay: Economics of Sustainability: The Environmental Dimension', in J. Harris, T. Wise, K.P. Gallagher, and N. Goodwin (eds), *A Survey of Sustainable Development: Social and Economic Dimensions*, Island Press, Washington, D.C.
- Harris, J. and N. Goodwin, 2001, 'Volume Overview', in J. Harris, T. Wise, K.P. Gallagher, and N. Goodwin (eds), *A Survey of Sustainable Development: Social and Economic Dimensions*, Island Press, Washington, D.C.
- Hartwick, J., 1977, 'Intergenerational Equity and the Investing of Rents from Exhaustible Resources', *American Economic Review*, vol. 67, pp. 972-4.
- Heal, G., 1999, 'New Strategies for the Provision of Global Public Goods: Learning from International Environmental Challenges', in I. Kaul, I. Grunberg, and M. Stern (eds), *Global Common Goods: International Cooperation in the 21st Century*, Oxford University Press, New York and London.
- Henderson, H., 1996, *Creating Alternative Futures: The End of Economics*, Putnam, New York.
- Holling, C. S., 2001, 'An Ecologist View of the Malthusian Conflict', in J. Harris, T. Wise, K.P. Gallagher, and N. Goodwin (eds), *A Survey of Sustainable Development: Social and Economic Dimensions*, Island Press, Washington, D.C.
- Illich, I., 1974, *Energy & Equity*, Harper & Row, New York.
- IPCC, 2001, *Climate Change: Synthesis Report/Summary for Policy Makers*, Intergovernmental Panel for Climate Change, Third Assessment Report, WMO, UNEP.
- Jha, R. and J. Whalley, 1999, 'The Environmental Regime in Developing Countries', National Bureau of Economic Research Working Paper No. 7305, Cambridge, Massachusetts.
- Johnson, B. and F. Duchin, 2000, 'The Case for the Global Commons', in J.M. Harris (ed.), *Rethinking Sustainability: Power, Knowledge and Institutions*, University of Michigan Press, Ann Arbor.
- Kjorven, O. and H., Lindhjem, 2002, 'Strategic Environmental Assessment in World Bank Operations: Experience to Date—Future Potential', World Bank Strategy Note No. 4, Washington, D.C.
- Kneese, A. V., 1977, *Economics and the Environment*, Penguin Books, New York and London.
- Lange, G. M., 2002, 'Policy Applications of Environmental Accounting', World Bank Environment Department Paper No. 87, Washington, D.C.

- Lind, R. C. and R.E. Schuler, 2001, 'Equity and Discounting in Climate-Change Decisions', in J. Harris, T. Wise, K.P. Gallagher, and N. Goodwin (eds), *A Survey of Sustainable Development: Social and Economic Dimensions*, Island Press, Washington, D.C.
- Linde, C. van der and M. Porter, 2001, 'Toward a New Conception of the Environment-Competitive Relationship', in J. Harris, T. Wise, K.P. Gallagher, and N. Goodwin (eds), *A Survey of Sustainable Development: Social and Economic Dimensions*, Island Press, Washington, D.C.
- Lipietz, A., 2001, 'Enclosing the Global Commons: Global Environmental Negotiations in a North-South Conflictual Approach', in J. Harris, T. Wise, K.P. Gallagher, and N. Goodwin (eds), *A Survey of Sustainable Development: Social and Economic Dimensions*, Island Press, Washington, D.C.
- Lovei, M., and B.S. Gentry, 2002, 'The Environmental Implications of Privatization: Lessons for Developing Countries', World Bank Discussion Paper No. 426, Washington, D.C.
- Lvovsky, K., 2002, 'Environment, Health and Poverty', World Bank Strategy Note No. 1, Washington, D.C.
- Magdoff, F., 2002, 'Capitalism Twin Crises: Economic and Environmental', *Monthly Review: An Independent Socialist Magazine*, New York, vol. 54, no. 4, September.
- Matthews, W. H., 1980, 'Moving Beyond the Environmental Rhetoric', *Mazingira: The International Journal for Environment and Development*, vol. 4, no. 2.
- McKibbin, W. and P. Wilcox, 2002, 'The Role of Economics in Climate Change Policy', *The Journal of Economic Perspectives*, American Economic Association, Spring.
- MacNeill, J., P. Winsemius and T. Yakushiji, 1991, *Beyond Interdependence: The Meshing of the World's Economy and the Earth's Ecology*, Oxford University Press, New York and London.
- Mészáros, I., 2001, 'Sustainable Development and Equality', *Monthly Review: An Independent Socialist Magazine*, New York, vol. 53, no. 7.
- M. Miller, (ed.) 1962, *Resources for Tomorrow*, 3 volumes, Papers of Conference of Federal and Provincial Governments Queen's Printer, Ottawa.
- , 1983, 'The Challenge of the Energy Transition: the UN Response', in E. El-Hinnawi, M. Biswas and Asit K. Biswas, *New and Renewable Sources of Energy*, Volume 14 of Natural Resources and Environment Series, Tycooly International Publishing, Dublin.
- , 1990, 'Can Development be Sustainable?', *Development: Journal of Society for International Development*, (Special Issue: Environment and Global Sustainability), Rome, Italy.

- , 1993, 'Sustainability and the Energy/Environment Connection: Overcoming the Institutional Obstacles to "Doing the Right Thing"', in Corazon Siddayao (ed.), *Investing in Energy and the Environment*, World Bank, Washington, D.C., Chapter 4.
- , 1994, 'Promoting Bio-energy and the Environment: The Role of Large-Scale UN Conferencing', University of Ottawa Working Paper No. 94-57 (ISSN 0701-3086), Ottawa (in www.management.uottawa.ca/miller).
- , 1995, 'The Environment Policy Challenge', *Development Policy*, in S. Sharma (ed), St. Martin's Press, New York and London, Chapter 8.
- , 1996, *Debt and the Environment: Converging Crises?*, United Nations Publications, New York.
- , 1997, *High Technology to the Rescue?: The Role H-T Could Play Involving the Rural Poor in the Knowledge Economy*, University of Ottawa Working Paper No. 97-25, July (ISSN-0701-3086) or www.management.uottawa.ca/miller.
- , 1998, 'The Chicken-little Syndrome and the Responsibility of Social Scientists', University of Ottawa Working Paper, School of Management, Ottawa.
- , 1999, 'Decentralized Energy: An Approach to Meet the Needs of the Rural Poor on a Scale Commensurate with the Challenge', in E. Bietry and V. Mubayi, *Decentralized Energy Alternatives*, Columbia University, New York.
- Mishan, E.J., 1969, *The Costs of Economic Growth*, Pelican Books, London.
- , 1969a, 'Welfare Economics: Ten Introductory Essays', Random House, New York.
- , 1969b, 'Welfare Economics: An Assessment', North-Holland, Amsterdam.
- , 1993, 'Economic Growth: The Need for Skepticism', *Lloyd's Bank Review*.
- Munasinghe, M. (ed.), 1993a, 'Environmental Economics and Sustainable Development', World Bank Environment Paper No. 3, Washington, D.C.
- , 1993b, 'Environmental Economics and Valuation in Development Decisionmaking', in M. Munasinghe (ed.), *Environmental Economics and Natural Resource Management in Developing Countries*, Committee of International Development Institutions on the Environment (CIDIE), World Bank, Washington, D.C.
- , 1993c, 'Issues and Options in Implementing the Montreal Protocol in Developing Countries', Munasinghe (ed.), *Environmental Economics*

- and Natural Resource Management in Developing Countries*, Committee of International Development Institutions on the Environment (CIDIE), World Bank, Washington, D.C., Chapter 11.
- Munda, G., 2001, 'Environmental Economic, Ecological Economics and the Concept of Sustainable Development', in J. Harris, T. Wise, K.P. Gallagher, and N. Goodwin (eds), *A Survey of Sustainable Development: Social and Economic Dimensions*, Island Press, Washington D.C..
- Nordhaus, W. D., 1990, 'Greenhouse Economics: Count Before You Leap', *The Economist*, 7 July.
- Oakes, J.B., 1989, Bush's Shell Game (editorial), *New York Times*, 12 January.
- Pearce, D., 1989, 'Sustainable Development: An Overview', *Development: Journal of the Society for International Development*, (Special Issue: Sustainable Development: From Theory to Practice), vol. 2, no. 3.
- , 1996, 'Towards a Sustainable World', *Scientific American*, (Special Issue: Managing the Earth), New York, vol. 3, no. 4.
- Pearson, C. S., 1985, 'Down to Business: Multinational Corporations, Environment and Development', Study No. 2, World Resources Institute, Washington, D.C.
- Pezzey, J., 1992, 'Sustainable Development Concepts: An Economic Analysis', World Bank Environment Paper No. 2, Washington, D.C.
- Pezzey, I., 1992, 'Economic Analysis of Sustainable Growth and Sustainable Development, Environment Working Paper No. 15, World Bank, Washington.
- Redclift, M., 1987, *Sustainable Development: Exploring the Contradictions*, Methuen, London and New York.
- Reddy, A., R.H. Williams and T.B. Johansson, 1997, *Energy After Rio: Prospects and Challenges*, United Nations Development Programme (UNDP), New York.
- Reed, D., 2001, 'Impacts of Structural Adjustment on the Sustainability of Developing Countries', in J. Harris, T. Wise, K.P. Gallagher, and N. Goodwin (eds), *A Survey of Sustainable Development: Social and Economic Dimensions*, Island Press, Washington, D.C.
- Repetto, R., 1989, 'Wasting Resources: Natural Resources in the National Income Accounts', World Resources Institute, Washington, D.C., June.
- Repetto R. and D. Austin, 2001, 'The Costs of Climate Protection: A Guide for the Perplexed', in J. Harris, T. Wise, K.P. Gallagher, and N. Goodwin (eds), *A Survey of Sustainable Development: Social and Economic Dimensions*, Island Press, Washington, D.C.
- Ross, E. B., 1998, 'Malthusianism, Counter-revolution and the Green Revolution', *Organization & Environment*, vol. 12, no. 1, December.

- Roumasset, J., 1990, 'Economic Policy for Sustainable Development', *Development: Journal of Society of International Development, (Special Issue: Human-Centred Economics)*, vol. 3, no. 4, Rome.
- Ruckelshaus, W., 1989, 'Towards a Sustainable World', *Scientific American, (Special Issue: Managing Planet Earth)*, September.
- Ryle, M., 1988, *Ecology and Socialism*, Radius, London.
- Sachs, I., 1997, 'Rio, Five Years Later: Against a Wintry Sky, a Few Swallows', *Ecodecision: Environment and Policy Magazine*, IRPP, Montreal, Spring.
- , 1980, *Strategies de l'Ecodeloppement*, Les Editions Ouvrières, Paris.
- Sachs, W., 2001, 'Global Ecology and the Shadow of Development', in J. Harris, T. Wise, K.P. Gallagher, and N. Goodwin (eds), *A Survey of Sustainable Development: Social and Economic Dimensions*, Island Press, Washington, D.C.
- Schmalensee, R., P.L. Joskow, A.D. Ellerman, J.P. Montero and E.M. Bailey, 1998, 'An Interim Evaluation of Sulfur Dioxide Emission Trading', *The Journal of Economic Perspectives*, American Economic Association, Summer.
- Shiva, V., 2001, 'Conflicts of Global Ecology: Environmental Activism in Period of Global Reach', in J. Harris, T. Wise, K.P. Gallagher, and N. Goodwin (eds), *A Survey of Sustainable Development: Social and Economic Dimensions*, Island Press, Washington, D.C.
- Siddayad, C. (ed.), 'Sustainability and the Energy/Environment Connection: Overcoming the Institutional Obstacles to Doing the Right Thing'.
- Solow, R., 1974a, 'The Economics of Resources or the Resources of Economics', *American Economic Review*.
- , 1974b, 'Intergenerational Equity and Exhaustible Resources', *Review of Economic Studies*.
- , 1991, 'Sustainability: An Economist's Perspective', *Journal of the Woods Hole Oceanographic Institution*.
- , 1992, 'An Almost Practical Step Towards Sustainability', *Resources for the Future*, Washington, D.C.
- Stavins, R. N., 1998, 'What Can We Learn from the Grand Policy Experiment? Lessons from SO₂ Allowance Trading', *The Journal of Economic Perspectives*, American Economic Association, Summer.
- Stiglitz, J., 1998, 'The Private Use of Public Interests: Incentives and Institutions', *The Journal of Economic Perspectives*, American Economic Association, Spring.
- , 1999, 'Knowledge as a Global Public Good', in I. Kaul, I. Grunberg, and M. Stern (eds), *Global Common Goods: International Cooperation in the 21st Century*, Oxford University Press, New York and London.

- Stone, C. D., 1993, *The Gnat is Older than Man: Global Environment and Human Agenda*, Princeton University Press, Princeton, New Jersey.
- Stott, P., 2000, 'Political Ecology: Science, Myth and Power', Oxford University Press, New York and London.
- Stretton, D., 1988, *Capitalism, Socialism and Environment*, Cambridge University Press, Cambridge.
- Strong, M., 2001, 'More is Not Enough', *Scientific American* (Special Issue: The Growth-Environment Dilemma), vol. 3, no. 4.
- Sudhir, A., and A. K. Sen, 1996, 'Sustainable Human Development: Concepts and Priorities', UNDP Discussion Paper, UNDP, New York.
- Tellus Institute, *Halfway to the Future: Reflections on the Global Condition*, Boston, Mass.
- The Economist*, September 1989; September 1992; December 1997; July 2002; July 2003.
- The Economist*, 1991, 'Energy and the Environment', (Special issue), 31 August.
- The Globe and Mail* (Toronto) 2002, 'Don't blow it Canada', December 6, *The Time*, 2002 July 1.
- Thorsell, W., 2002 'Rising it All', *The Globe and Mail*, June 10.
- Tietenberg, T., 1990., 'Using Economic Incentives to Maintain our Environment', *Challenge: The Magazine of Economic Affairs*, March-April.
- Toman, M. A., 2001, 'Economics and "Sustainability": Balancing Trade-offs and Imperatives', in J. Harris, T. Wise, K.P. Gallagher, and N. Goodwin (eds), *A Survey of Sustainable Development: Social and Economic Dimensions*, Island Press, Washington, D.C.
- Tucker, W., 1980, 'Environmentalism: The Newest Toryism', *Policy Review*, no. 14, Fall.
- Vylder, S. de, 1995, 'Sustainable Human Development and Macroeconomics: Strategic Links and Implications', UNDP Discussion Paper, UNDP, New York.
- Watson, R.T., J.A. Dixon, S.P. Hamburg, A.C. Janetos and R.H. Moss, 1998, *Protecting Our Planet: Securing Our Future*, UNEP, NASA, and the World Bank, Washington, D.C.
- Wente, M., 2002 'The Kyoto-Speak Brainwashes', *The Globe & Mail* (Toronto), 7 December.
- White, A.L., 2001, 'Sustainability and the Accountable Corporation', in J. Harris, T. Wise, K.P. Gallagher, and N. Goodwin, (eds), *A Survey of Sustainable Development: Social and Economic Dimensions*, Island Press, Washington, D.C.

World Bank (Annuals), *Environment Matters at the World Bank: Towards Environmentally and Socially Sustainable Development*, Washington, D.C.

———, 2002a, *The Environment and the Millenium Development Goals*, Washington, D.C.

———, 2002b, *Third Environmental Assessment Review (FY1996–2000)*, Washington, D.C.

World Commission on Environment and Development (Brundtland Commission), 1987, *Our Common Future*, Oxford University Press, New York and London.

World Wildlife Fund, 2002, Living Planet Report, www.panda.org

Young, O., 1989, *International Cooperation Building Regimes for Natural Resources and the Environment*, Cornell University Press, Ithaca, New York.