



## SUSTAINABLE DEVELOPMENT: SOME UNANSWERED QUESTIONS

Background paper prepared for Workshop  
on Reassessing Sustainable Development  
Paradigm in the Context of the Water Sector  
Alexandria, Egypt, 7-8 August, 2002

By  
ASIT K. BISWAS  
Third World Centre for Water Management  
Mexico

First Draft, June 2002  
Not For quotation

[www.thirdworldcentre.org](http://www.thirdworldcentre.org)

## RESEARCH REPORTS

The **Third World Centre for Water Management** was established in Mexico in 1999. The Centre is a unique institution in the water sector, in terms of its philosophy, its inter-sectoral and multidisciplinary approach to problem solving and its modus operandi. These are based on the following assumptions:

- The water management processes will become increasingly more and more complex in the coming years.
- Tomorrow's water problems cannot be solved on the basis of analyses of yesterday's problems and using day before yesterday's solutions.
- Increasingly many of the emerging water problems and their solutions will come from outside the water sector and the water profession.
- Implementable solutions have to be case specific. For example, solutions that are feasible in France, Germany, UK or USA may not be applicable in China, India, Egypt or Mexico, because of differing climatic, physical, economic, social, environmental, legal and/or institutional conditions.
- A single paradigm may not be equally valid, or operationally applicable, for all countries of a non-homogenous world, which are at different stages of socio-economic development, irrespective of its conceptual attractiveness.

One of the main objectives of the Centre is to disseminate water-related information covering all aspects of water development and management, in both industrialized and developing countries. Towards this end, the Centre has published many books by major international publishers, some of which have been translated into several languages. The **Research Reports** and the **International Journal of Water Resources Development**, which is one of the leading journals on water-related issues in the world, help to achieve this objective. It is hoped that these information would be useful to decision-makers, scientists, government, research institutions, non-government organizations, media, and other people interested in water resources management anywhere in the world

The Centre welcomes comments on its activities, outputs and publications.

**Asit K. Biswas**  
**President**

## **ABOUT THE AUTHOR**

### **Prof. Asit K. Biswas**

Is the President of the Third World Centre for Water Management in Mexico. Formerly a Professor in UK and Canada, he was a member of the World Commission on Water and a member of the Governing Board of the World Water Council. He has been a senior advisor to 17 governments, six Heads of the United Agencies, and most major international organisations. He is a Past President of the International Water Resources Association, and the International Society for Ecological Modelling. He is the Founder and Co-Chairman of the Club of Tokyo. He is the author of 61 books and some 575 papers in major international journals, some of which have now been translated into 31 languages. He was recently awarded the Millennium Prize of IWRA for his “outstanding global contributions to water resources management.”

## **INTRODUCTION**

At the dawn of the twenty-first century, any objective and in depth analysis of the total long-term impacts of the official development assistance will indicate that these have generally been at best marginal in terms of their impacts in alleviating poverty, improve the quality of life of billions of people, and maintain and/or improve the conditions of the natural environment and the ecosystems.

During the past three decades, the international system has consistently made numerous commitments and pledges which were expected to alleviate poverty very substantially, or even eradicate it completely. For example, at the World Food Conference, convened by the United Nations, in Rome, in 1974, senior decision-makers from all parts of the world, at the explicit recommendation of the Former Secretary of State of the United States, Henry Kissinger, made a pledge that within a decade no child anywhere in the world will go to bed hungry. More than a quarter of a century has elapsed since the world leaders and the United Nations made that commitment, but children continue to go to bed hungry, perhaps even in larger numbers. The situation continues to be as grim as ever. In some aspects, and in many parts of the world, the conditions have even deteriorated significantly.

Similarly, the two Development Decades initiated by the United Nations System in the 1970s and 1980s also had somewhat marginal impacts. In fact, the impacts of the First Development Decade was so minimal that Bradford Morse, a former Administrator of the United Nations Development Programme, an institution that was made officially responsible for implementing the two Development Decades, called it formally “the lost decade” during his own terms of office, when he was responsible for administering the Second Development Decade. While such candour for truth is refreshing and somewhat unusual for a senior international bureaucrat the fact still remains that the world has made only limited progress in terms of eradicating poverty and improving the quality of life for more than one billion human beings.

In spite of the commitments made by the global leaders, and the continued rhetoric of the international institutions, poverty and hunger have continued to be as pervasive as ever, and have even increased significantly in recent years in many parts of the world. Furthermore, the gulf between the rich and the poor, both between countries and within countries, has increased, rather than decreased, in recent decades. Similarly, the environmental conditions have continued to deteriorate in most parts of the world.

## **DEVELOPMENT GOALS AND THEIR ACHIEVEMENT**

Consider the following statistics released by the World Bank on the current development conditions of the world, which by any national or international standard would be considered unacceptable.

- Out of the current global population of 6 billion, 2.8 billion (47 percent) live on an income of less than \$2 per day, and 1.2 billion (25 percent) live on less than \$1.00 per day. Some 44 percent of the world’s absolute poor (daily income less than \$1.00) live in South Asia.
- In South Asia, Sub-Saharan Africa and Latin America, the total numbers of poor people have been rising steadily. For the countries in transition of Eastern Europe and Central

- Asia, the number of absolute poor (income less than \$1.00 per day) has risen more than 20 times in the recent years.
- 50 percent of all children under five in poor countries, and 5 percent in rich countries, are currently malnourished.
  - The average income in the richest 20 countries of the world is 37 times the average income of the poorest 20 countries. This income gap has not decreased in recent decades: in fact, the gap has actually doubled during the past 40 years.

Faced with this dismal global performance in terms of alleviating poverty in the Third World countries during the past three decades, various United Nations Conferences during the 1990s, at high decision-making levels, have reformulated international development goals in terms of reduction of poverty and human deprivations. These objectives of international development were also separately agreed to by the countries belonging to the Organisation for Economic Cooperation and Development (OECD), that is, the developed world. These new development goals include, inter alia, the achievement of the following by the year 2015:

- reduce by half the proportion of people living in extreme poverty (income less than \$1.00 per day). This has to be achieved in a world whose population is estimated to increase by some 2 billion by 2025, with 97 percent of this increase occurring in developing countries,
- ensure universal primary education, and
- reduce by two-thirds infant and child mortality.

If the past attempts did not contribute to improvements in such indicators cost-effectively and within a reasonable frame, as now clearly has been the case, some fundamental questions need to be asked and answered: why did such attempts have failed miserably and consistently, and what lessons can be learnt from such failures so that the future development policies do not make the same mistakes.

The main recommendation as to how these international development goals can be achieved, according to these latest high-level UN fora and the leaders of the OECD countries, would be through the implementation of national strategies for sustainable development in every country by 2015. This is in spite of the fact that the UN system as a whole has never defined what is meant by sustainable or unsustainable development in operational terms, nor identified what are the parameters that should be measured which will indicate sustainable development is taking place. Nor has any single government. No one has ever asked if sustainable development has been achieved in any country of the world, and if so, in which ones, how it was achieved, over what periods, and what have been the impacts on critical issues like poverty alleviation, income distribution, economic growth, overall quality of life, and environmental conservation. Also, no consideration has been given to conduct serious analyses to determine if the past attempts at sustainable development have actually improved the very same international development indicators, which the UN system has now identified as the goals to be achieved by 2015. Nor has been the fundamental question asked: would the world have been any different now if it had not followed the currently fashionable concept of sustainable development over the past two decades?

It should be noted that the establishment of such arbitrary development goals are not new. Seldom are good technical and economic analyses made in order to realistically determine as to how these goals can be realistically achieved, where will the additional funds for such development will come from, and who will be responsible for formulating and implementing the

development programmes. For example, for the water sector, both the United Nations Conference on Human Settlements (Vancouver, 1976) and the United Nations Water Conference (Mar del Plata, 1977) pledged that every human being should have access to clean water and sanitation by 1990. The UN General Assembly reconfirmed this goal by declaring the decade of 1980s as the International Water Supply and Sanitation Decade. More than 10 years after the UN Decade is over, universal availability of clean water remains a goal that appear to be as illusive as ever. The situation in terms of sanitation is even worse.

Serious and objective evaluations and assessments of the reasons as to why the previous development targets were never reached are seldom undertaken. In contrast, there are many superficial and pseudo-evaluations, which have basically concluded that if more money was forthcoming, and if there was more “political will”, the problems would have been solved. No critical in-depth analyses are available to determine if the funds expended could have been used more efficiently, if the institutions concerned (both national and international) were competent to carry out the tasks they were entrusted with, and if the right policies and competent and experienced personnel were in place, etc. Instead of considering and answering such difficult and complex questions, the simpler solution was to declare partial victory, and then set a new target date to achieve the goals, which should have been achieved in the first place many years ago. The new target dates are set a decade or two later, to achieve the same objective as before. Thus, at least for the development target in the area of water supply and sanitation, the international community, having failed to meet the objective of universal water supply and sanitation by 1990, simply decided to extend the target date to a quarter of a century later, to 2015. On the basis of the latest trends, even this goal is highly unlikely to be achieved by the new target date of 2015. Thereupon, a cynic might say that the target date will be further postponed to another decade or two in the future.

## **SUSTAINABLE DEVELOPMENT**

There is no question that in the international political fora, sustainable development has become a powerful and all-embracing slogan during the past 15 years. Every government is for it, as are all the major international institutions like the United Nations Agencies, World Bank, Regional Development Banks, and OECD, as well as all the environmental and social NGOs. Many major American Foundations have now initiated programmes, or specific budget lines, for sustainable development. This is in spite of the fact that there is no agreement at present between the various parties concerned, as to what is meant by sustainable development, whether it works, and if so, under what conditions, what are its impacts (positive, negative or neutral) on human lives and other appropriate development indicators, how it can be achieved operationally in a real world, and especially in developing countries.

Contrary to popular belief, the concept of sustainable development is not new. The general philosophy behind the concept has been for expounded centuries, if not millennia. For example, William Shakespeare said in Hamlet:

“Suit action to the word, the word to the action; with this special observance, that you overstep not the modesty of nature.”

Similar thoughts on living in harmony with nature can be found in most religious texts.

Looking back, the use of the term 'sustainable development' became fashionable around 1980. However, there is very little difference between this and other earlier concepts like

ecodevelopment, basic human needs-outer limits, or environment and development, that were prevalent during the 1970s. Neither of these concepts could be made operationally possible in a real world, and thus these paradigms slowly disappeared during the early 1980s, only to be replaced with another very similar paradigm, sustainable development. In fact, one would be hard pressed to conceptually differentiate between the earlier concept of ecodevelopment with the current paradigm of sustainable development.

Sustainability is unquestionably a popular concept at present, but it means different things to different people. One is reminded of the popular support for the Conservation Movement of the United States in the early part of the twentieth century, when President Teddy Roosevelt correctly said that “Everyone is for conservation: no matter what it means!” The situation does not appear to be much different at present for sustainable development!

## **SUSTAINABILITY-WHAT IS IT?**

The concept of sustainable development, as it is used at present, was basically borrowed from the field of fisheries management in the late 1970s, where the concept has been used successfully for well over half a century. However, in the fisheries context, the context is simple, measurable and implementable. It means that the amount of fish catch should be equal to or less than total reproduction so that fishery in any region could be sustainable and infinitum.

Before sustainable development became fashionable, the term 'sustainability' was technically used for harvesting reproducible natural resources, e.g., maximum sustainable yield for fisheries. This concept was extended in the late 1970s by a group of environmental scientists meeting in Nairobi under the aegis of the United Nations Environment Programme. The broadened concept of sustainable development was expected to be a 'new' idea for assessing and managing human impacts on the environment and natural resources.

The term was later popularized by the Brundtland Commission report *Our Common Future*, which was published in 1982. The Commission defined it in a somewhat amorphous way as “development that meets the needs of the present without compromising the ability of the future generations to meet their own needs”. Not surprisingly with such a vague, simplistic, internally inconsistent and static definition, the Commission was unable to specify what was to be sustained. The Report made continual references to sustainability, but was totally unable to say how the concept could be operationalized. Sustainability was expected to be achieved in an unspecified and undetermined way, some time in the unspecified future. Nor did definition include the realization of a reasonable and equitably distributed level of economic well-being, without which no development can be sustainable over the long term. This aspect is especially important for developing countries, where income distribution between the rich and poor has already become a socio-political issue.

Once the concept became popular, dozens of new definitions were offered. Currently one can easily identify more than one hundred definitions of sustainable development without much difficulty.

The concept was promptly embraced by many institutions because of its simplicity and vagueness, so that they could define it the way it suited their interests and agenda the best. Thus, even though all the United Nations agencies now champion the sustainable development concept, individual agencies often define it the way it is most convenient and beneficial to them. Thus, the

definition of sustainable development often varies from one UN agency to another in some significant ways, even though all the UN agencies embraced this concept early two decades ago.

## **MAJOR SUSTAINABILITY ISSUES**

In spite of the present rhetoric, it has to be admitted that operationally it has not yet been possible to identify a development process which can be planned and then implemented in such a manner that it becomes inherently sustainable, however this may be defined. It would be true to say that we have had more success in identifying certain aspects of development which are unsustainable and then taking appropriate remedial steps to reduce or even eliminate those undesirable effects, compare to devising a holistic process that is intrinsically sustainable right from the very beginning.

For example, if sustainable water resources development is considered, it has been known for decades that irrigation without drainage would contribute to waterlogging and salinity, which in turn would reduce the yields of the irrigated area over a period of time. Since the main purpose of any irrigation project is to increase the total agricultural production, clearly any system that does not fulfil this objective over a long-term period cannot be considered to be sustainable. However, provision of drainage alone will not make an agricultural system inherently sustainable. There are many other factors, some tangible and others intangibles, which, only when considered concurrently, are likely to define the sustainability of the system. Similarly, if extensive use of fertilizers by the farmers increases the nitrate content of groundwater so that its use for drinking purposes is impaired, then this practice has to be considered unsustainable. Again, there are numerous other factors, some known and other unknown, which contributed to the sustainability of using any groundwater system implementation.

While there are many issues that are important for sustainable development, from an implementation point of view the following three factors need special consideration.

*Short- versus Long-term Considerations* - The concept of sustainable development automatically assumes that the process selected would continue over the long-term, even though the issue of what constitutes “long-term”, has neither been clarified nor featured much in the past/or current discussions. The time factor, either inadvertently or because of its complexity, has basically been left fuzzy: no attempt has been made to define or even discuss what is meant by the long-term. For example, does sustainability cover 50 years, or 100, 500, 1000 or even more? Some have spoken vaguely of 'several' generations. Even if one considers the lowest figure of 50 years, there is a fundamental dichotomy as to its use in the real world.

Consider irrigated agriculture - Generally the economic planning horizon of the farmers extends to the next cropping season, or at most the next two. The overriding philosophy of nearly all the farmers anywhere in the world has been to maximize economic returns from their agricultural activities within this short and limited time-frame. Thus, the mind-set is inherently based on maximizing profits over a continual series of short-term periods without any specific or explicit considerations of their long-term benefits and costs. Though the short-term benefits could have long-term costs, even to themselves (e.g. in terms of soil erosion, salinity development, etc.), generally short-term considerations have won over the long-term implications. While in some cases this emphasis on short-terms could be due to the lack of knowledge or understanding of the potential long-term impacts of their activities, it has to be admitted that, for financial reasons, small farmers in developing countries, who are generally poor, are mostly forced to

consider only the short-term economic implications for their own survival surprisingly. Large farmers are no different in their perceptions and outlooks either.

Similarly, for large private sector companies, their performances are judged on the basis of their profits every 3 months, and their profit expectations over the next 4 to 8 quarters. The managers of these companies are rewarded on the basis of their quarterly and annual performances. The stock prices of the companies depend exclusively on their quarterly performances. While the politicians can get away with their promises of “jam tomorrow”, provided some sacrifices and hardships are faced in the short-term, the private sector managers often will lose their jobs, unless they are capable of showing increasing quarterly profits, irrespective of the long-term impacts of their management practices. No manager will survive in the private sector, if he is to promise the stakeholders that they suffer for the next ten years in terms of low or no profit, their profit pictures there after will be simply magnificent. The market will clobber mercilessly that company’s stock, and the President and CEO of that company will simply be fired by its own Board of Directors.

Accordingly, and inspite of the rhetorics of the World Business Council for Sustainable Development no business can survive if they only consider long-term implications, and ignore short-term impacts.

Accordingly, even if the societal and/or governmental goal is to achieve long-term sustainable development, in reality the main objective of a vast majority of farmers and private sector companies often extend only to short-term benefits which predominantly dictate their behaviours, perceptions and approaches. Thus, any plan for sustainable development, which does not specifically consider this fundamental conflict between short-term and long-term consideration and then attempt to identify realistic alternatives to overcome the problem, is doomed to fail. Such plans become primarily academic exercises which gather only dust on the shelves. The situation is very similar for private sector companies as well, where short-term considerations often dictate long-term developments.

*Externalities* - Externalities occur when private costs or benefits do not equal social costs or benefits. People operate primarily on the basis of their own private costs and benefits. If they perceive opportunities which could reduce their costs and/or increase potential benefits, they often take actions which could be beneficial to them, even when they are unlikely to serve the common good. A common example is the discharge of wastes from municipalities and industrials concerns to rivers and other water bodies, which could impair existing water uses of numerous other people sharing the same water system. The private economic benefits due to non-treatment wasters are likely to be significantly less than the societal costs of using polluted water.

Such costs could be internalized, at least conceptually, through taxes, subsidies and regulations. But in reality, even in developed countries, it has not been possible to internalize the externalities for four important reasons. First, methodologically, calculation of the precise value of externalities has been a very difficult task. Often two experts may disagree in terms of their estimates of the external costs, and even the methods used to estimate them. Second, frequently there are politically powerful individuals and organizations who vociferously defend their own considerable private advantages against a large number of unorganized and disadvantaged individuals, or even the society as a whole, who may be experiencing additional costs, directly and/or indirectly. Third, externalities could develop steadily over time, and thus there could be a time gap before those affected realize the real costs, which over the years could become very substantial. Finally, regulations to control such externalities in nearly all developing countries

have proved to be somewhat ineffective and expensive. Developed countries have had only marginally better success.

*Risks and Uncertainties* - A major issue confronting sustainable development is risks and uncertainties that are inherently associated with any complex development process. For example, with the increasing population base of the Asian developing countries, there is no question that resources such as land and water have to be used intensively in order to maximize agricultural yields, and thus the total production. The fundamental question, for which there is no real clear-cut answer at the present state of knowledge, is: up to what level can an agricultural production system be intensified, without sacrificing sustainability, irrespective of how it is defined? What early warnings could indicate the beginning of a transition process from a sustainable to unsustainable system, or vice versa? What are the parameters that need to be monitored to indicate that such a transition is about to occur from one state to another, or, indeed, is occurring? Clearly, our present knowledge is inadequate even to identify all the parameters that could indicate the passage from one state to the other, and their relative primary considerations. Thus, currently, it is not possible to accurately detect, much less predict, the transition of any sustainable system to an unsustainable one, or vice versa. In addition, all natural systems are variable. For example, a major global concern at present is climate change, especially in terms of changes in the existing precipitation and temperature regimes, both of which are subject to very wide natural variations. Their normal fluctuations could be so great that statistically significant data could be very expensive, or even impossible, to collect in order to state categorically that such variations are normal (that is within the existing standard deviations), or due to other reasons. When additional factors such as potential climatic changes are super-imposed on inherently variable systems, the degree of uncertainty in terms of detecting or predicting the transition process from one stage to another increases greatly. One is then confronted with the difficult issue of even identifying the direction of any change, let alone estimating the degree of change with any degree of reliability.

These types of fundamental issues need to be discussed and resolved successfully, before the concepts of sustainable development can be holistically conceived and then implemented. Unfortunately, while much lip-service is given to sustainable development at present, most of the published works on this subject are either somewhat general, or a continuation of earlier 'business as usual' undertakings that have only been given the latest trendy label of 'sustainable development'. If sustainable development is to become a reality, national and international organizations will have to address many real and complex questions, which they have not done so far in any measurable and meaningful fashion, nor are there any signs that they are likely to do so in the foreseeable future. If not, and unless the current rhetoric can be translated effectively into operational reality, sustainable development will remain a trendy, and fashionable paradigm for some years, and then gradually fade away like the earlier concept of ecodevelopment. It would then be replaced by a new and more fashionable paradigm.

It is indeed a curious irony that we have spent the last two decades discussing and promoting *what is not* sustainable development rather than what it is. We have concentrated almost exclusively on those aspects which cannot be sustained. By trying to define sustainable development in terms of only those factors that could contribute to unsustainability, clearly we have focused our entire attention only on one part of the equation, and have completely ignored the other, which could possibly be as important as the negative aspects, if not more so. Sustainable development, as it is analysed at present, focuses *only on what it is not*, and then attempts to ameliorate the potential negative effects. This issue is thus not approached holistically. Consideration should first be given to what is sustainable development, and then proceed to consider what is *unsustainable*. Instead, we are hung up exclusively on how to reduce

the negative aspects of sustainable development. It is worth noting that, even though it is axiomatic, that any significant development project would have many economic, social and environmental impacts. However, the word 'impact' in the current development context has developed primarily and almost exclusively, negative connotations. While any large development project, irrespective of its nature, will have both positive (otherwise why construct it?) and negative impacts, current analyses of environmental and social impacts generally consider *only* adverse impacts and their potential amelioration.

To a certain extent this overwhelming emphasis on the negative aspect of all major development projects can be explained by historical developments. During the 1970s and earlier, project analyses primarily consisted of technical and economic considerations: environmental and social issues were mostly not seriously analysed or considered. Because of this general neglect, and some very visible but adverse impacts of certain development projects on the society and the environment, a movement gradually developed in the West to promote environmental conservation. Within a very short period, environmental protection became an important item on the political agenda in early 1970s in some developed countries, primarily through the activities of environmental pressure groups and non-governmental organizations.

Not surprisingly, this negative attitude and perception of environmental protection was reflected in the United Nations Conference on the Human Environment, held in Stockholm, in June 1972. A retrospective analysis of the Stockholm Action Plan, as approved by all the UN member countries, clearly indicates its negative approach to environmental management: stop all pollution stemming from any development activity, stop exhausting non-renewable resources, and stop using renewable resources faster than their generation. The emphasis thus was primarily on controlling the adverse impacts of development: positive aspects did not receive much attention.

Accordingly, environmental impact analysis, which was developed and made mandatory in many developed countries during this era, was exclusively concerned with the identification and amelioration of negative impacts of development projects only; positive impacts were mostly ignored. Because of this inauspicious and incorrect beginning, the term 'impact' has continued to have almost exclusively negative connotations. Sadly, this unfortunate situation has not changed over the past two decades.

## **CONCLUDING REMARKS**

It is clear that the development profession is now facing a critical problem, the magnitude and complexity of which no earlier generation has ever had to face. At the dawn of the 21st century, the development profession really has two stark choices: to carry on as before with a 'business as usual' attitude with only some marginally incremental changes, and thus endow our future generations with a legacy of sub-optimal development process and management practices, or to continue in earnest an accelerated effort to identify and implement development processes that can successfully meet the expectations of the humankind as a whole. Rhetorics and exhortations for sustainable development are no longer enough: paradigms and concepts must be implementable to solve global problems, both cost-effectively and within a reasonable timeframe. The net result must be to improve the quality of life of the people of the world as a whole. Fashionable though the current paradigm of sustainable development maybe, its usefulness, irrespective of its conceptual attraction and widespread acceptance, can only be marginal, unless it can be used operationally and effectively in the real world. The concept of sustainable development must be critically appraised and re-assessed. Following these in-depth and objective appraisal and reassessment process, if considered necessary, the concept needs to be modified

appropriately, or even jettisoned, unless it can be shown that it works in terms of its application to solve complex problems in the real world. We no longer have any soft options left: only hard choices. To quote George Bernard Shaw:

You see what is and ask, 'Why?'

I see what could be and ask 'Why not?'