
The history, meaning and policy recommendations of sustainable development: a review essay

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Abstract: The following paper examines the history of the sustainable development concept. It illustrates that the meaning of the concept has expanded dramatically since its initial focus on environmental protection and poverty reduction. The paper mentions several policies recommended by sustainable development and concludes with a brief discussion about the future of the concept. The overriding goal of the paper is to illustrate the complex nature of sustainable development and underscore the need for further research on the subject.

Keywords: sustainable development history; environmental protection; poverty reduction; policy recommendations.

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1 Introduction

Those interested in sustainable development cannot help but be impressed by sizable literature on the concept. Research and philosophical expositions on this subject have burgeoned over the past two decades. This attention and growth makes theoretical integration of such studies and teaching about sustainability monumental tasks for professors. For these reasons, there is a dire need to synthesise what is known about this important topic in order to simplify instructional activities in the classroom.

With the above in mind, the following paper examines the history of the sustainable development concept. It illustrates that the concept has expanded dramatically since its initial focus on environmental protection and poverty reduction. The paper mentions several policies recommended by sustainable development and concludes with a brief

discussion about the future of the concept. The main purpose of this paper is to illustrate the complex nature of sustainability and highlight the need for further studies on the topic.

2 The historical development of sustainability

The concept of sustainable development has been influenced by a number of scholars, particularly among those in the mid- and late 1900s. Following up on Malthus' exposition on the limits of food supply for a growing population (see Malthus, 1933), Leopold (1949) generated the foundational ideas about sustainable development by arguing that the ecosystem is both fragile and complex, and that a new 'ethic' is needed if humans are to preserve themselves and the environment. Later, Carson noted (1965) that the capacity of the earth to absorb pollutants was actually much lower than previously assumed, which indicated the need to cease or modify the production and use of certain chemicals and pesticides. In the late 1960s and early 1970s, Hardin (1968) explained and decried over-consumption in his book *The Tragedy of the Commons*. Following up on the work of Malthus (1933), Leopold (1949), Carson (1965) and Hardin (1968), scholars, scientists, political leaders and other interested parties started to sound the alert about the depletion and pollution of the earth's natural resources.

In 1972, Meadows et al. (1972) asserted that the rate of economic and population expansion could not continue infinitely. Taking into account five variables (population, food, industrialisation, non-renewable resources, and pollution), this group of scholars, known as the Club of Rome, sought out to determine the limits of growth. In each of the projections and scenarios for the future, the computer model indicated an exponential rise in growth followed by a sharp decline, indicating an 'overshoot and collapse' pattern.

With these findings Meadows and his colleagues noted the importance of acting quickly to reverse the disturbing trends. To underscore this point, they recounted a popular children's riddle in France: If a farmer has a lily pad that currently takes up half the pond and doubles in size each day, how much time does he have before the lily pad covers the entire area and squeezes out other life forms in the water? Of course, the answer is until the next day. Meadows and the other scientists therefore asserted the exigency of curtailing excessive economic activity, limiting population growth, and reducing the emission of pollution as soon as possible. Their main goal was to protect the environment as development proceeds. This perspective, and the contributions of many authors in the prior century, had a great impact upon the introduction of the concept of sustainable development.

3 Expanding the meaning of sustainable development

In addition to its heavy focus on the environment, sustainability has been influenced by the growing attention being given to poverty and other social problems. The same year *limits to growth* was published, the UN sponsored the first International Forum on the Human Environment. Recognising the severity of environmental problems, experts and other delegates from around the world met to identify possible solutions. As discussion during the conference proceeded, the theme of protecting the environment for present and future generations became apparent. The resulting conclusions, known as

the Stockholm Declaration, contained 29 principles by which development should be guided. These recommendations entailed safeguarding renewable and non-renewable natural resources, minimising or stopping the discharge of toxic substances into the environment, and finding ways to curtail the ongoing explosion of the world's population (Rowland, 1973).

Interestingly, the delegates advocated other measures for development that would not only have an impact upon the environment but also improve human life for the majority of the world's inhabitants. The Stockholm Declaration espoused issues such as freedom, equity, planned urbanisation, technological assistance, education, and the elimination of nuclear weapons. This UN Conference therefore started to expand the meaning of development to include environment and quality of life variables.

Nearly a decade after the Stockholm Conference took place another group of international environmental and economic experts joined together to discuss the rate of resource depletion and the other development issues of that period. The International Union for Conservation of Nature and Natural Resources (IUCN), the United Nations Environmental Programme (UNEP) and the World Wildlife Fund (WWF) worked together to create the *World Conservation Strategy* (1980). According to Talbot, the central message of this document was that

“human beings, in their quest for economic development and improvement of the quality of life, must come to terms with the reality of resource limitation and the carrying capacity of ecosystems, and must take [into] account of the needs of future generations.” (Talbot, 1984, p.3)

Consequently, the World Conservation Strategy proposed three principles for resource conservation.

First, the Strategy saw the need to maintain essential ecological processes and life support systems. This suggested the importance of conserving the earth's water, soil and atmospheric resources, as well as limiting their pollution. Second, the global call for action advocated the preservation of genetic diversity. It decried the ongoing extinction of plant and animal species and warned of the impact that this could have on the environment and human well-being. Finally, this proposal for conservation pointed out the importance of sustainable resource use. This meant that an excessive amount of plant and animal harvesting could jeopardise the environment as well as future human consumption. Therefore, the World Conservation Strategy was also concerned with resource conservation.

At the same time, the proposals made by the above international environmental organisations did address some of the issues pertaining to economic progress. It was noted that, in spite of the millions of dollars spent on development, one-quarter of the world's population remained destitute (World Bank, 1982). Half of these impoverished people were not even able to acquire or meet the basic needs of food and nutrition. The strategy consequently affirmed the necessity of improving the standard of living of the poor around the world. It also noted that, unless the situation of the poor improves, subsistence living would take a toll on the environment. For instance, poverty is often associated with growing populations, which leads to the exploitation of natural resources for the purpose of survival (Talbot, 1984). Thus, the World Conservation Strategy realised that economic development could not be treated separately from environmental issues.

While the Stockholm Conference on the Human Environment and the World Conservation Strategy did much to promote sustainable development principles, it was the report of the World Commission on Environment and Development (WCED, 1987) that brought an incredible amount of attention to this envisioned form of progress. It summarised the findings of previous scholarship and reiterated the recommendations of previous international conferences. But the Brundtland Report, as it would later be known, was especially effective at promoting sustainable development because it defined the concept and simplified its central tenets.

In October 1984, a United Nations International Commission was given the charge of revisiting the issues of environment and development. The mandate of the commission included three objectives:

“to re-examine the critical environment and development issues and to formulate realistic proposals for dealing with them; to propose new forms of international cooperation on these issues that will influence policies and events in the direction of needed changes; and to raise the levels of understanding and commitment to action of individuals, voluntary organisations, businesses, institutes, and governments.” (WCED, 1987, pp.3, 4)

Although the resulting publication of *Our Common Future* (WCED, 1987) was less ‘scientific’ than its predecessors (IUCN, 1980; UNEP, 1980; WWF, 1980; Council on Environmental Quality, 1982),¹ it has become “the most widely read and influential of the books” [on the topic] (Brookfield, 1988, p.128). Perhaps the biggest reason for its popularity has to do with the definition it gave to sustainable development. The World Commission on Environment and Development asserted “sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987, p.43).

This definition has become a widely accepted slogan for the sustainable development movement because it simplified policy proposals in order to promote development and protect the environment. The notion of ‘needs’ in the WCED definition reiterates the fact that development should address quality of life issues for people around the world. The concern given to future generations in the definition illustrates the recognition that the environment is fragile and that natural resources are limited. Sustainable development therefore suggests the importance of addressing quality of life issues and protecting the environment in order to strive for a more equitable form of development and ensure progress into the future.

Specific proposals of the World Commission on Environment and Development (WCED, 1987) included:

- meeting needs such as jobs, food, energy, water and sanitation
- addressing the rapid growth of world population
- conserving and enhancing the resource base
- reorienting and broadening the technological base
- merging environment and economics in decision making
- increasing citizen participation in the policy process
- enhancing the flow of resources to developing countries

- improving health and education
- seeking equity in food production and distribution
- protecting animal and plant species
- reducing dependence on non-renewable resources
- untaping the potential of renewable sources of energy
- seeking the peaceful use of nuclear energy
- promoting industrialisation in developing nations
- using resources efficiently
- establishing environmental goals, standards and regulations
- managing urbanisation carefully
- providing housing and services to the poor
- disarming nations of their weapons of mass destruction.

Thus, the recommendations of the Brundtland Report were numerous and diverse, although they collectively underscored the importance of addressing fundamental issues for sustainable development.

Our Common Future (WCED, 1987) also discussed the means of implementing sustainable development. It noted the need for additional international law, increased global cooperation, and strengthened world institutions in the areas pertinent to environment and development. The World Commission on Environment and Development reiterated the previous findings about environmental degradation and development, and explored what could be done about it. This UN sponsored organisation therefore defined what type of progress should be pursued, explored what policies should be included in sustainable development, and how they would be implemented. The Brundtland Report thus marked an important shift in thinking about the environment and development.

If it is true that *Our Common Future* brought about an important turning point with regard to the perspectives and policies pertaining to environment and development, this movement became further entrenched during the United Nations Conference on the Environment and Development held in 1992 in Rio de Janeiro. Known popularly as the Earth Summit, this meeting brought together the largest number of heads of government in history to discuss environmental and development issues. This attendance was a clear sign of the times – countries from around the world had come to accept sustainable development principles, and desired practical and feasible solutions to current and future environmental and development problems (Rao, 2000).

In order to meet these demands, the Earth Summit produced 27 principles for sustainable development. This Rio Declaration, also known as Agenda 21, classified these proposals under environmental, economic, social and peace categories (Rao, 2000). Environmental principles included, among other things, the responsibility to ensure that the activities within states do not cause damage to the environment of other countries, the belief that environmental protection cannot be considered in isolation from the development process, the enactment of legislation to protect the earth's natural resources,

and the participation of all concerned citizens. Economic principles sanctioned the right to developmental needs for present and future generations, cooperation to eradicate poverty around the world, exchanges of scientific and technological knowledge to foster development in poor nations, and equitable trading practices to promote economic growth in all countries. Social principles involved the inclusion of women, children and indigenous peoples around the world in development and environmental management. Peace principles asserted that warfare is detrimental to sustainable development and that states should resolve disputes peacefully. Therefore, the principles of the Rio Conference on Environment and Development added credence to sustainable development and enumerated further variables that had to be taken into consideration for the pursuit of this type of progress.

4 Policies recommended by sustainable development

Sustainability is now regarded to be a very comprehensive approach to development. The central proposals of sustainable development include linking development and the environment, conserving natural resources, protecting animal and plant species, limiting pollution, addressing population growth, increasing participation, improving the situation of developing nations, sharing knowledge and technology, managing urbanisation carefully, seeking the dividends of peace, and addressing the toll of disasters. Each of these will be discussed in turn.

4.1 Linking development and the environment

Perhaps the major goal of sustainable development scholarship is to help people understand the complex relationship between development and the environment (WCED, 1987; Thilbodeau and Field, 1984). An impressive amount of research illustrates that development practices (such as industrialisation or the growth of urban areas) are creating significant amounts of environmental damage (e.g., pollution and the depletion of wetlands or other natural habitats). Scholarship in this area also shows that unless the economic situation of certain nations is improved, the future of development will be jeopardised as subsistence living creates environmental degradation (e.g., the depletion of forests for fuel or an overuse of land for farming). Sustainable development scholars are attempting to change public opinion about the importance and interrelated nature of the environment and development (Pearce, 1997). In this way, people may be more likely to alter their development activities to protect the environment.

4.2 Conserving natural resources

Sustainable development denotes the need for conservation. Academics and practitioners recognise that the earth's resources are finite and are therefore subject to depletion. Studies reveal, for instance, that the forested areas of Africa declined by 8% during the 1980s due to the clearing of land for agricultural production or the search for fuel (World Bank, 1992, p.8). Furthermore, Approximately 50 nations are predicted to experience severe shortage of water in the near future (Rao, 2000, p.42). And the usage of oil tripled between 1970 and 1990, and is likely to exceed 100 million barrels a day by 2010 (World Bank, 1992, p.114). These, and other statistics, indicate a growing demand

for resources, which the natural environment may not be able to provide in the future. Sustainable development therefore suggests the need to reduce consumption and otherwise protect the earth's natural resources. It also implies using resources efficiently, participating in recycling programmes, and exploring alternative or renewable sources of energy.

4.3 Protecting animal and plant species

Sustainable development also desires to protect plants and animals from overuse and extinction. Evidence suggests that current development patterns and activities often result in the loss of forests, wetlands and other natural habitat which reduces the genetic diversity of the world's ecosystems (WCED, 1987, p.35). This damage to plant life hurts the ecological balance of the environment and may limit the ability of humans to discover potentially life-saving medicines in the future. Studies also indicate that humans, in their search for food and wealth, have killed so many animals that their ability to reproduce is being jeopardised. Based on a 1995 Global Biodiversity Assessment by the UNEP over 100 birds and mammal species became extinct from 1810 to 1995 (Rao, 2000, p.46). Proponents of sustainable development decry this devaluation of plant and animal life and desire to ensure the survival of remaining stocks into the future.

4.4 Limiting pollution

Reducing pollution of the environment is another goal of sustainable development. In pursuing industrialisation and economic progress, many individuals, businesses and nations are damaging the ecology of the planet. The earth's air, soil and water resources are having trouble absorbing the wastes that are produced by people, cars and factories. For instance, studies from various sources indicate that the release of CFCs is breaking down the ozone layer and damaging the atmosphere (Moffatt, 1996, p.19). Greenhouse gases are also leading to global warming which could dramatically shape weather patterns around the world. Population growth and increased consumption are having a negative impact upon the environment due to increased garbage disposal. Rivers and oceans are being deteriorated by chemicals, fertilisers, sewage, and toxic waste (WCED, 1987, p.242). Proponents of sustainable development therefore note the need for tighter environmental regulations, increased energy efficiency, reduced consumption and recycling (Hatcher, 1996). Sustainability therefore attempts to reduce the pollution of the environment as development takes place.

4.5 Meeting basic needs

Sustainability also recognises the importance of meeting peoples' basic needs. All around the world, and especially in developing nations, men, women and children lack the necessities of life. The statistics are both glaring and appalling:

- 35 million people were unemployed in 1993 (UNDP, 1994, p.25)
- at least two billion people are categorised below the poverty line (Pimentel et al., 1994)

- only 27% of the adult population is considered literate in Guinea (UNDP, 1994, p.15)
- less than 20% of the rural population in Somalia is able to obtain adequate healthcare (UNDP, 1994, p.149)
- the homeless population in France numbers 500,000 (UNDP, 1994, p.26)
- 12% of urban residents in Madagascar have access to sanitation services (UNDP, 1994, p.149)
- the caloric intake in Chad is only 69% of daily requirements (UNDP, 1994, p.155).

Recognising these alarming numbers, scholars and other global experts realise that something must be done to address these fundamental requirements for life. Sustainable development consequently has the goal of increasing the availability of jobs, food, sanitation, healthcare, education, and housing for all people around the world.

4.6 Addressing population growth

A further proposal of sustainable development is to reverse or limit the exponential growth in population. Today, there are approximately six billion people in the world, and the growth rate is about 1.48% per year (Rao, 2000, p.39). Trends indicate that the global population will double sometime in the next 40 years (Nath and Talay, 1996, p.48). Developing nations, in particular, are faced with exploding populations because of higher fertility rates and lower mortality rates. For instance, the growth rate in the countries of Sub-Saharan Africa was as high as 3.1% during the 1980s (Weaver et al., 1997, p.43). Obviously, the concern of many scholars is that there will be insufficient resources to sustain life for these larger numbers in the future. Proponents of sustainable development note that, unless current development practices are changed, there will be further environmental damage (World Bank, 1992, p.26). Population is therefore viewed as a potential and serious problem. Sustainability, consequently advocates education, a reduction in poverty, changes in cultural attitudes, improved status of women, and family planning to reverse these trends (Nath and Talay, 1996, p.48; World Bank, 1992, p.29).

4.7 Increasing participation

Participation is also seen as a crucial component of sustainable development. Academics contributing to the conceptualisation of sustainable development have made two important observations in this regard. First, development cannot be sustained unless everyone is doing his or her part to protect the environment (De Weerd et al., 1996, p.293). Second, many people have been neglected in the policy process pertaining to both development and the environment. Hence, a common admonition of sustainable development is to 'think globally, [and] act locally'. There is also a growing awareness that groups such as women, children, the elderly, native populations and ethnic minorities must have more say in the decisions that affect them (World Bank, 1992; WCED, 1987, p.65). Participation is consequently regarded to be a fundamental requisite for sustainable development.

4.8 Improving the situation of developing nations

An additional goal of sustainability pertains to the economic status of developing nations. There is an abundance of information that indicates that the rich nations of the world are getting richer while the poor nations of the world are getting poorer. International development financing (typically associated with major development projects) is partially responsible for this divergent trend. In 1992, for example, 44% of the Gross National Product of the Philippines was spent on debt servicing alone (Pilger, 1993). In comparison,

“in the decade [prior] to 1992, the net inflow of funds from the developing countries to the developed countries through World Bank activities is reported to have been \$1.3 trillion.” (Nath and Talay, 1996, p. 43)

Similar patterns are evident in global trade policies. The North generally purchases natural resources from developing nations at a low price. Once these materials are converted to manufactured goods they are then sold to the South with a profit. This structure of trade limits the potential for economic growth in developing nations and also jeopardises their natural resource base and the environment. It also hinders the ability of developing nations to pay off their debt or even service the interest payments. Many experts therefore point towards the possibility of an even wider gap between rich and poor nations in the future (Nath and Talay, 1996, p.50). Sustainable development is consequently seen as the means of reversing this downward cycle of impoverishment. Suggestions consequently include: promoting labour-intensive industries, increasing access to credit, augmenting the amount of investment into education and industry, lifting unnecessary trade regulations, developing human capital, providing safety nets, improving lending programmes, ensuring that development projects provide benefits to those ‘on the ground’, enlarging the flow of funds from North to South, enacting structural adjustment policies, improving austerity programmes, removing trade barriers, and improving the equity of trade policies (Moffatt, 1996; Nath and Talay, 1996; Varcoe, 1996; World Bank, 1992; WCED, 1987).

4.9 Sharing knowledge and technology

The proponents of sustainable development recognise the impact of knowledge and technology for both development and environmental purposes. For example, the World Commission on Environment and Development is aware of the fact that “a mainspring of economic growth is new technology” (WCED, 1987, p.4). At the same time, this international group of policy advocates concedes that science and technological progress have brought about unanticipated drawbacks of over-consumption and pollution (WCED 1987, p.5). However, improvements in technological equipment and know-how may generate hope for the future in that they “can help to provide environmentally benign ways of producing goods and assimilating wastes” (Moffatt, 1996, p.171). Therefore, sustainable development draws out the unique, if not complex, relationship among knowledge, technology, environment and development. The academic and practitioners that champion sustainable development frequently assert the need to provide technological information and equipment to the poorer nations of the world to facilitate development and protect the environment.

4.10 Managing urbanisation carefully

Another goal of sustainability is to stop, minimise or control the migration of people to cities and enact better land-use policies in urban areas. According to Weaver et al. (1997) “cities offer exciting opportunities and high-paying jobs” which encourages urbanisation (Weaver et al., 1997, p.151). For example, increased its urban share of population from 29% to 70% in only 30 years Taiwan while it was pursuing industrialisation (Weaver et al., 1997, p.159). This growth or sprawl is particularly noteworthy in Mexico City, Cairo, Rio and Nairobi; but the explosion of urban areas continues to occur in countries around the world. By 2005 it is projected that the vast majority of the world’s inhabitants will reside in urban areas (Berghall and Konvitz, 1997, p.155). Such growth is creating many challenges for development.

“Problems include waste management, air, noise and water pollution, traffic congestion, the loss of open space and degraded land, the deterioration of building and infrastructure, and the degradation of the urban landscape.”
(Berghall and Konvitz, 1997, p.155)

Scholars of sustainable development therefore propose new regulations, mixed land-use patterns, tax and price measures to control business activity, and a variety of other development innovations in order to curb urbanisation or control unanticipated sprawl. There is growing awareness that many environment and development problems can only be addressed when attention is directed to cities and the process of urbanisation.

4.11 Seeking the dividends of peace

Another recommendation of sustainable development has to do with domestic and international conflict. It has often been argued that war and preparations for war may be inimical to development. While war and investment into armament related industries could promote economic growth, domestic and international conflict obviously destroys the progress of development, damages the environment and jeopardises the future of progress (WCED, 1987). Armaments also divert money to the military, which could limit available funding for education, healthcare, housing, and other social welfare programmes (UNDP, 1994). The champions of sustainable development are therefore justified in their attempt to educate people about the benefits of resolving disputes to avert conflict (Klare, 1996). They also note how disarmament and the peaceful use of nuclear energy may foster economic progress (Stevens, 1997). Sustainability therefore points out the disadvantages of engaging in conflict and highlights the advantages of utilising resources for the purpose of development.

4.12 Addressing the toll of disasters

Many of the initial writings on sustainable development recognised the link between environmental degradation, the economy and disasters (WCED, 1987). Since this time, others have conducted more detailed examinations of this complex relationship. Berke (1995), for instance, has illustrated that the seven principles of Agenda 21 can be applied successfully for disaster reduction. Mileti et al. (1995) also assert the need to integrate sustainability and natural hazard debates:

Losses from natural disasters occur because of development that is unsustainable; that natural disasters occurring in unsustainable communities can restrict efforts toward sustainability through their impact on environmental degradation, ecological imbalance, hindered socioeconomic development, and lower quality of life; and that more resilient human communities are better able to mitigate natural disaster losses.” (Mileti et al., 1995, p.122).

As a result, Geis and Kutzmark (1995) assert that the protection of green spaces such as parks may catch storm-water runoff and prevent flooding disasters. Mileti (1999) also encourages a change in culture resulting in improved land-use planning and engineering practices. Sustainability therefore recommends altered development practices in order to reduce the occurrence of disaster.

5 Discussion and conclusion

By now it should be clear that sustainable development has evolved into an extremely important concept for scholars and practitioners alike. Since its introduction, sustainable development has focused mainly on environmental protection and poverty reduction. However, it is very evident that sustainability now gives attention to a much wider range of issues and variables in the past. It recommends numerous policies ranging from resource conservation and pollution reduction to meeting basic needs and increased democratisation. Thus, professors should stress the complexities of the concept when discussing it with students in their classes. In particular, it is necessary to teach about both the central themes of the concept and subtle nuances of how it may be applied to different contexts.

In terms of research, it is necessary to point out that scholars should use some caution as they continue to expand the meaning of sustainability. Contradictions may arise as the concept becomes broader and the explanatory power may be jeopardised as a result. For instance, increased environmental regulations may hurt, at least in the short run, the prospects of economic development that is so desperately needed in poor nations. Also, family planning policies may limit personal freedoms, thereby undermining democratic principles, which are espoused by sustainable development. Furthermore, technology is not always advantageous for poorer nations; it does present many drawbacks for development. Finally, the concept of sustainable development is not always applied without drawback in different contexts. As an example, it has been illustrated that sustainable development may not adequately address the unique challenges of the disaster problem (McEntire and Floyd, 2003). Consequently, additional research on sustainability will be required by those educators interested in resolving some of the dilemmas inherent in this field of study.

In conclusion, it is hoped that this paper will enable scholars to better recognise the historical development of the sustainability concept. More importantly, the author desires that the thoughts presented herein will encourage professors to share what we do understand about the concept with the new generation of scholars and practitioners. Finally, it should be recognised that we still have insufficient knowledge about sustainable development policies and how to most effectively implement them. The future of sustainable development is therefore likely to be as intellectually stimulating as its impressive past.

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Note

- ¹Compare to the World Conservation Strategy (IUCN, 1980; UNEP, 1980; WWF, 1980) and The Global 2000 Report (Council on Environmental Quality, 1982).