Ethics and the Environment, 5(1):3–21
ISSN: 1085-6633

M. Shamsul Haque

Environmental Discourse and Sustainable Development: Linkages and Limitations

ABSTRACT: *In the development field, one of the major shortcomings of mainstream development theories and models is their relative indifference toward environmental concerns. However, the worsening environmental catastrophes and the growing environmental consciousness led to the emergence of a new model of development known as "sustainable development." The proponents of sustainable development tend to explore the environmental costs of development activities, prescribe environment-friendly policies, suggest institutional and legal measures for environmental protection, and publicize the principles of sustainability through international forums and publications. Despite this recognition of environment-development relationship, the model of sustainable development suffers from certain serious shortcomings that need to be addressed. This article begins with a brief discussion on various forms of environmental challenges to development, followed by an analysis of how the model of sustainable development articulates the environment-development linkages in both practical and intellectual terms. The final section of the paper critically examines the major limitations of the model in dealing with the environmental question, and makes some suggestions in this regard.*

INTRODUCTION

In recent years, the environmental discourse has increasingly gained significance in formulating development theories, models, and policies, especially under the rubric of "sustainable development."[1] In the past, the mainstream theories and models of development hardly addressed the critical environmental and ecological issues. For instance, development theories within the conservative tradition, including various economic growth theories and modernization theories, are predomi-

Direct all correspondence to: M. S. Haque, Department of Political Science, National University of Singapore, 10 Kent Ridge Crescent, Singapore 119260, phone: (65)874-2056; Fax: (65)779-6815; E-mail: polhaque@nus.edu.sg

nantly concerned with how to enhance economic growth and accumulation, efficient production and allocation, political stability and order, and entrepreneurial culture and personality, but they are often indifferent towards the environmental costs of economic production and accumulation.[2] Similarly, the tradition of radical development theories, including classical Marxist and neo-Marxist theories (except Marxian environmentalists such as M. R. Redclift, James O'Connor, and Barry Commoner), tends to deal with various modes of production, production relations, and class structures while overlooking the question of environmental disorders and ecological damages caused by capitalist production and industrial expansion.[3] Radical dependency theories explain the existing world capitalist system based on unequal exchange and center-periphery dependency as the main cause of underdevelopment, but they hardly deal with intergenerational dependency and underdevelopment caused by environmental challenges such as depletion of nonrenewable resources and decline of biodiversity.[4] In short, the major theories and models of development articulated under the conservative-capitalist and radical-socialist perspectives, have a common drawback in their relative indifference toward the implications of environmental issues for human development.

More recently, however, there has emerged a worldwide consensus that the environmental and ecological concerns represent one of the most critical factors related to socioeconomic development. The environmental discourse has gained increasing attention in almost all international forums on development, and the environment-development relationship is being seriously taken into account in practical policies and theoretical debates. However, some of the most articulate advocates of this environment-development nexus have been the proponents of a more contemporary model of development known as "sustainable development," mentioned above. As a model, sustainable development has been articulated and popularized through a series of reports, conferences, and symposia—for example, *World Conservation Strategy: Living Resources Conservation for Sustainable Development* (1980 IUCN), *Our Common Future* (WCED 1987), the United Nations Conference on Environment and Development (1992), the Kyoto Conference (1997), and others mentioned below—initiated by various international agencies or institutions. Although there are multiple concepts of sustainable development—as "injunction" that we should not satisfy ourselves by "impoverishing our successors" (Solow 1993); as a relationship between dynamic human economic system and larger ecological system that ensures the continuity of human life (Norton 1992); as the management of ecological system for future generations based on open and multiple approaches to the valuation of ecosystem (Page 1992); and as an improvement in the quality of life without deteriorating natural resources (Pearce and Watford 1993)—the focus of this article is largely on the view of sustainable development offered by the 1987 WCED report (*Our Common Future*) and shared worldwide by scholars and experts. Despite the recognition of environment-development linkages by the advocates of such a model of sustainable development, it tends to overlook certain crucial factors related to environment, such as the structure of interclass and international inequality, the acceleration of economic

growth based on industrial expansion, and the values of development embedded in different cultures and traditions. In this regard, the paper explores how the relationship between environment and development has gained increasing attention in various forums, conventions, and institutions emphasizing sustainable development; how the model of sustainable development still remains inadequate to seriously address environmental concerns; and what alternatives need to be considered to overcome the limitations of sustainable development. Before pursing this research agenda, however, it is essential to examine the seriousness of various forms of environmental challenges that led to the rising global concern for environment-development relationship.

MAJOR FORMS OF ENVIRONMENTAL CHALLENGES TO DEVELOPMENT

The mode of development based on industrial growth had an uninterrupted history of worldwide expansion for the past two centuries. Progress based on expansive industrialization and technological innovation, has been endorsed by almost all societies, institutions, and individuals. It is mainly during this last quarter of the century that the environmental cost of industrial civilization began to surface in the forms of serious natural disasters,[5] that the concern for environment began to receive international attention and priority, and that sustainability rather than expansion of material progress gained serious intellectual consideration. In this section, the paper examines some of the major environmental disorders and concerns that represent serious challenges to a sustainable mode of human development.

First, one of the most critical environmental concerns threatening sustainability is global warming or the so-called greenhouse effect[6] caused by excessive emission of carbon dioxide and the process of deforestation. Worldwide, each year 250 million tons of carbon emission is caused by electricity, 550 million tons produced by the world's 400 million cars, and 600 million tons result from deforestation (Flavin 1990, 17–23; Brown and Wolf 1987, 204). The main indicator of this greenhouse effect is the rise of global temperature, which increased by 0.6 degree Celsius during the past 100 years, and is likely increase by another 2.5 to 5.5 degrees in the next century (Flavin 1990, 17). This global warming is a challenge to sustainability because it may lead to the thermal expansion of the earth's surface waters and rapid melting of alpine and polar glaciers and ice caps, which may cause the sea-level rise, land loss, and saltwater intrusion, and thus, lead to the destruction of beaches, homes, coastal towns, ports, and crop lands in different parts of the world. The adverse impact of global warming is already evident in the hotter summers causing severe drought, the erosion of coastlines in various countries, an increase in the frequency of catastrophic storms, and the worsening vulnerability of large cities on the low-lying areas such as Bangkok, Calcutta, Dhaka, Hanoi, Karachi, and Shanghai (Brown and Young 1990, 59). Thus, the global warming or greenhouse effect caused by the excessive emission of carbon dioxide pose a serious threat to the sustainability of human habitat for the current and future generations.

Second, a sustainable mode of development is also threatened by the process of deforestation, which has not only contributed to the aforementioned global warming by increasing carbon emission and reducing the earth's carbon-absorbing capacity, it has also caused soil erosion and land desertification. It has been found that almost 90% of the original forests in Central America, Southeast Asia, and West Africa has been cleared, about 20% of the world's tropical rain forest has been lost since the mid-century, and each year the earth's tree cover is diminished by 17 million hectares (Wolf 1988, 103; Brown 1990, 3, 1991, 3–7). The problem of soil erosion has become increasingly severe—each year the world loses 24 billion tons of topsoil, 6 million hectares of its land become wasteland due to soil erosion, and another 20 million hectares become unprofitable for cultivation because of desertification (Brown 1990, 3; 1991, 3–8; Postel 1989, 21). Another factor responsible for land degradation is the problem of water logging and salinization of land, which is largely due to intensive irrigation.[7] Such a process of land degradation caused by soil erosion, desertification, and salinization has serious adverse implications for food production. It has been found that the annual loss of 24 billion tons of topsoil reduces the grain harvest by 6%, and salinization has reduced the crop yields of 24% of land worldwide (Brown 1990, 61; Postel 1990, 44). The modern method of cultivation based on irrigation has created adverse outcomes such as the increase of selenium concentration in land and water (causing the deaths and deformities of wildlife), the shrinkage of rivers and lakes (causing the disappearance of various fish species), and the fall of groundwater in different parts of the world (for detail, see Postel 1990, 46–53). These various forms of land degradation imply a threat to various food sources, represent a formidable challenge to the continuity of adequate food supply, and thus, endanger sustainability.

Third, each year a huge amount of harmful chemicals are emitted into the air[8] that are directly detrimental to human health, and thus, to sustainability. For instance, nearly 625 million people around the world are exposed to high concentration of sulfur dioxide that causes severe forms of lung disease (this gas, combining with other gases, causes about 50,000 deaths a year in the U.S.); the excessive concentration of lead in the air is found in industrialized countries, which damages the circulatory, reproductive, and nervous systems; and various hazardous pollutants are being released in the air (annually 2.7 billion to 4.8 billion pounds in the U.S. alone), many of which cause cancer (see French 1990, 99–104). Other harmful gases include nitrogen dioxide and carbon monoxide. According to reports published by the United Nations Environment Program (UNEP) and the World Health Organization (WHO), nearly 20% of urban residents in North America and Europe are exposed to an unacceptable level of nitrogen dioxide, and about 50% of them experience an unhealthy level of carbon monoxide that increases the chances of viral infections such as influenza, lung irritation, bronchitis, and pneumonia (French 1990, 102–103). In addition, the disposal of chemical wastes pollutes water through wells, ponds, and landfills, and thus, poses a serious threat to human health. In short, the current mode of industrial production that involves the disposal of deadly gases and toxic chemical wastes, represents a serious threat to human development.

Fourth, a formidable challenge to development is the depletion of the earth's ozone layer[9] caused by the emission of chlorine and bromine. Chlorine comes from chlorofluorocarbons (CFCs) used in the production of aerosols, refrigerants, air conditioners, foam, and solvents; and bromine originates from halons used in fire extinguishers.[10] It has been estimated that by year 2040, the atmospheric concentration of CFC-11 and CFC-12 will increase by 77% and 66% respectively (Flavin 1990, 32). Due to such increase in the global CFC production, the average ozone concentration over the South Pole has already declined by 50%, and in some isolated spots it has completely disappeared (Shea 1989, 77). This depletion of the ozone layer means that the earth will receive much higher intensity of the sun's ultraviolet radiation that promotes skin cancers and cataracts, depresses human immune systems, creates various lung and heart diseases, depletes marine fisheries, retards the growth of trees and crops, and damages animal species (Jacobson 1989, 78; Shea 1989, 82–84; French 1990, 102). In other words, the depletion of ozone layer caused by the production and consumption of the above products constitutes a formidable ecological threat,[11] and therefore, poses a threat to future development.

Last, the future development is also under challenge due to the depletion of nonrenewable natural resources. One most important resource under threat is the world's cultivable land, which is being diminished due to the aforementioned causes such as global warming, sea-level rise, soil erosion, desertification, and salinization. As more croplands are desertified, salinized, or submerged under water, there will be declining food supplies for the current and future generations. Similarly, fresh air and clean water are becoming scarce resources due to pollution caused by the massive emission of hazardous gases and use of toxic chemicals mentioned above. Another threat to sustainability is the rapid depletion of various nonrenewable minerals and energy sources. It has been estimated that by the year 2020, the world is likely to use 75% more energy, although by 2030, the world will be unable to burn more than 30 million barrels of oil a day (one half of the current level) (Flavin and Lenssen 1991, 21–24). It means that given the prevailing trend of energy consumption, although there will be a significant increase in demands for energy, much less quantity will be available due to the fast depletion of oil reserves by the current generation of consumers. On the other hand, due to problems such as water contamination, land degradation, air pollution, and deforestation, the number of various plant and animal species is diminishing. It is estimated that by the end of this century, due to deforestation, Latin America will lose 15% of the forest-plant species (about 13,600 kinds of plants), and about 12% of the bird species will be lost in the Amazon Basin (see, Wolf 1988, 103). This decline in the plant and animal species, which are so essential for biodiversity and ecological balance, is not reversible, and thus, represents a serious challenge to sustainability. Beyond the utilitarian valuation of diverse species as resources for human use, biodiversity also represents an independent value of its own, especially in terms of our moral obligation to preserve various life forms that implies the ethical dimension of sustainability or what Kothari (1990) calls the "sustainability of life on Earth."

The above accounts of environmental challenges to development and its sustain-

ability imply the critical relationship between environment and development. It is the realization of the severity of these developmental challenges that led to a serious rethinking of development, to the recent studies on the environment-development linkages, and to the emergence of the aforementioned model of sustainable development that pays special attention to environmental concerns. In the next section, the paper explains how these crucial linkages between environmental conditions and developmental realities have been articulated by the proponents of "sustainable development."

THE SCOPE OF ENVIRONMENT-DEVELOPMENT LINKAGES IN "SUSTAINABLE DEVELOPMENT"

In order to delineate the nature of the environment-development relationship stressed by the advocates of sustainable development, it is not only necessary to examine how the national and international events and institutions concerning environmental problems tend to focus on various dimensions of development and its sustainability, it is also essential to analyze how the practical programs and theoretical underpinnings of sustainable development emphasize the significance of environmental issues. This section explicates the major world conferences, international agencies, government ministries, legal measures, and various concepts and interpretations of sustainable development in order to demonstrate the increasing global priority of such environment-development relationship. The linkages between environment and development have to be understood in terms of relevant practical events and initiatives as well as intellectual efforts and interpretations.

A. Practical Events and Initiatives

In the practical realm, there have emerged various national and international conferences, institutions, agreements, legal measures, and government agencies dealing with environmental issues, which emphasize socioeconomic development based on the principle of sustainability. On the other hand, the proponents of the sustainable development model have introduced similar events, institutions, and measures that highlight the seriousness of environmental issues. There are ample examples of such practical endeavors. More specifically, in the late 1960s, certain international conferences—including the UNESCO Biosphere Conference in Paris (1968) and the Ecological Aspects of International Development Conference in Washington (1968)—began to stress the environmental dimension of development (see Barrow 1995, 369). However, it was the United Nations Conference on the Human Environment (UNCHE) held in 1972 in Stockholm that represented a major attempt to involve all nations to address environmental problems in relation to human development. The UNCHE was attended by 119 countries and 400 Non-Government Organizations (NGOs), and led to the publication of two documents: *The Stockholm*

Declaration on the Human Environment emphasizing development strategies (e.g., "integrated development" and "rational planning") conducive to environment, and *Action Plan for the Human Environment* highlighting the policies of reducing costs of environmental protection (see Reid 1995, 36–37). This UNCHE not only placed environmental concerns on the global agenda, it also led to the establishment of the UNEP that encouraged the formation of national-level policies, laws, and institutions related to environment in all countries pursuing development. In 1986, the International Union for the Conservation of Nature and Natural Resources (IUCN) organized another conference, the Ottawa Conference on Conservation and Development, which focused on changes in development thinking and practices towards a sustainable mode of development implying the satisfaction of basic needs, realization of social justice, provision of self-determination, and maintenance of ecological integrity (see Reid 1995).

However, the most recent and largest international forum related to environment and sustainable development was the United Nations Conference on Environment and Development (UNCED) or the Earth Summit held in 1992 in Rio de Janeiro, Brazil, which was attended by 30,000 people, including 100 heads of state, 7,000 journalists, and 1,500 NGO representatives (Reid 1995, 181). The main outcomes of the Earth Summit cover two conventions—including the Framework Convention on Climate Change (dealing with the threat of global warming) and the Convention on Biological Diversity (regarding maintenance of the diversity of species)—and three nonbinding agreements such as the Rio Declaration (related to sustainable development), Agenda 21 (prescribing the financial, technological, and institutional measures), and Principles of Forest Management (concerning the problem of deforestation) (Grubb et al. 1993, 16-18; Reid 1995, 182–185). Based on the Earth Summit's agreement, the U.N. Commission on Sustainable Development (CSD) was established in 1993 to oversee and coordinate the implementation of Agenda 21 (Hempel 1996, 43).

There were other international efforts before and after the Earth Summit to deal with the sustainability issue. For example, preceding this historical Earth Summit, there was a series of conferences and meetings organized by institutions such as Food and Agriculture Organization, International Union for the Conservation of Nature, U.N. Economic Commission for Europe, International Institute of Sustainable Development, International Institute for Environment and Development, and so on (see Grubb et al. 1993, 10–11; Barrow 1995, 381). There were also conferences and symposia after the Earth Summit, which addressed issues related to sustainable development. Examples of such conferences and symposia include the U.N. Global Conference on the Sustainable Development of Small Island Developing States (1994); World Summit for Social Development (1995); Asia Pacific Economic Cooperation (APEC) Forum Meeting of Environment Ministers on Sustainable Development (1997); World Trade Organization (WTO) Symposium on Trade, Environment and Sustainable Development (1997); International Conference on Environment and Society: Education and Public Awareness for Sustainability (1997); Symposium on the United Nations and the Global Environment in the 21st Century (1997); and Interna-

tional Conference on the Sustainable Development of Countries with Economies in Transition (1997). A series of similar international conferences related to environment and sustainable development were held in 1998.[12]

These international conferences often led to the adoption of various conventions, protocols, and other legal measures that directly or indirectly emphasized the relationship between environment and development. Some of the examples include the Vienna Convention for the Protection of the Ozone Layer (1985), the Montreal Protocol on Substances that Deplete the Ozone Layer (1987), the Convention on Biological Diversity (1992), the Framework Convention on Climate Change (1992), the Convention to Combat Desertification (1994), and the Kyoto Protocol (1997). In order to implement these conventions and protocols, there have emerged a significant number of international institutions.[13] At the national level, many countries have established the ministries of environment, some have created environmental protection agencies, and some have both.[14] The number of countries having some sort of environment-management institutions (ministries, agencies, councils, commissions) increased from only 10 in 1972 to 130 (including 90 developing countries) in 1990 (see Simonis 1990, 26). These global and national institutions have increasingly become the advocates of sustainable development based on environmental principles.

B. Intellectual Efforts and Interpretations

In intellectual term, the relationship between environment and development has been a primary focus in various publications, including reports, journals, bulletins, and newsletters discussing sustainable development. First, there are various reports on sustainable development that highlight the significance of environment-development relationship. More specifically, in articulating the idea of sustainable development, the IUCN's report (titled *World Conservation Strategy: Living Resources Conservation for Sustainable Development*) put special emphasis on the integration of development and conservation, sustainable use of ecological system, preservation of biodiversity, and maintenance of biosphere for the benefits of both the current and future generations (IUCN 1980). However, the major hallmark in the evolution of sustainable development as an environment-friendly development approach was the publication of a report entitled *Our Common Future* (1987), also known as the Brundtland Report, by the World Commission on Environment and Development (WCED) headed by the former Norwegian Prime Minister Gro Harlem Brundtland.

According to this Brundtland Report, the main operational objectives of sustainable development are to revive growth, change the quality of growth, satisfy essential needs, ensure a sustainable level of population, conserve and enhance the resource base, reorient technology, merge environment with economics, restructure international economic relations, and make development more participatory (WCED 1987, 49). This well-publicized report not only popularized the idea of sustainable development, it also represented one of the most effective international initiatives to put the concern for sustainable development based on environment-development relationship

on the global agenda. Similarly, the published outcomes of the Earth Summit—that is, the Framework Convention on Climate Change, the Convention on Biological Diversity, Principles of Forest Management, the Rio Declaration, and Agenda 21—place special emphasis on sustainable development based on a conducive environment-development relationship. According to the principle 4 of the Rio Declaration, "In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it."

Second, the growing tendency to relate environment with development is also evident in some of the recently introduced journals or periodicals.[15] Most of these periodicals have extensive coverage of various dimensions of environment-development relationship. Some of the recently created international institutions dealing with environment and sustainability have their own bulletins or newsletters. For instance, *United Nations Climate Change Bulletin* (published by Information Unit for Conventions of the UNEP), and *Sustainable Developments* and *Earth Negotiations Bulletin* (both published by International Institute for Sustainable Development), encompass diverse environmental issues—including biodiversity, nonrenewable resources, toxic chemicals, greenhouse gases, deforestation, energy consumption, and land degradation—related to a sustainable mode of development.

Third, the definitions or concepts of sustainable development also stress how human development is inseparable from environmental concerns. The definition of sustainable development as a mode of development that "meets the needs of the present without compromising the ability of future generations to meet their own needs" in the Brundtland Report (WCED 1987, 8), implies the crucial environment-development relationship. Development has to be pursued in such a manner that it does not over-exploit nature, jeopardize ecological balance, and thus threaten the survival of future generations. This view of the Brundtland Report—that is, the needs of future generations must not be threatened by development endeavors pursued by the current generation—has been echoed in almost all available interpretations of sustainable development (see Noman 1996, 8–9; Barrow 1995, 372). In other respects, there are undoubtedly certain variations among scholars in conceptualizing sustainability. For instance, when sustainability is used as a "physical concept for a single resource," the focus is on the usage of a specific resource vis-à-vis its annual increase; when it is used as a "physical concept for a group of resources", the emphasis is on how the usage of one resource (e.g., forest) causes the sustainability problems (e.g., soil erosion and reduction in biodiversity) for other resources (see Langhelle 1999). However, what has been a common concern among these varying interpretations of sustainability is the critical relationship between environment and development.

Fourth, the environment-development linkage is also clear from the various measures or indicators of sustainable development. A comprehensive set of such sustainability indicators has been articulated by Kadekodi (1992, 75–76), which is overwhelmingly dominated by environmental issues and problems—including the stock of available resources, efficient use of energy, substitution for nonrenewable resources, number of surviving plant species, rate of deforestation, level of ground wa-

ter, erosion of soil, level of salinity and sedimentation, per capita consumption of fossil fuel, per capita supply of drinking water, level of temperature and rainfall, and conditions of hazardous carbon dioxide, lead oxide, sulfur dioxide, and acid rains. These measures of sustainable development predominantly represent various dimensions or criteria of environmental conditions. In other words, the environmental criteria are inseparable from the basic standards or indicators of sustainable development.

Finally, the major theoretical perspectives on sustainable development are guided by environmental concerns. For instance, the "contamination" perspective of sustainability emphasizes the biochemical contamination of air, water, and soil; the "eco-simplification" perspective stresses the problem of diminishing the complex ecosystem (or reducing biodiversity) by destroying various species; and the "natural-resource-consumption" perspective addresses the environmental impacts of using parochial consumption standards to assess natural resources (Hempel 1996, 55–56). On the other hand, for those who highlight "environmental" sustainability, the main emphasis is on development based on biotic capacity and minimal resources; for those who stress "economic" sustainability, the primary concern is the environmental cost of development; and for those who emphasize "social" sustainability, the focus is on environmental management based on people's participation (see Estes 1993, 10; Reed 1996, 33; Hempel 1996, 41; Haque 1999a). These few examples show how various theoretical perspectives on sustainable development are guided by a common basic principle that development must take into account various issues and problems related to environment. In other words, the environment-development linkages represent the core of sustainable development, although the model has certain major limitations discussed below.

LIMITS OF "SUSTAINABLE DEVELOPMENT" FOR ENVIRONMENTAL DISCOURSE: SOME SUGGESTIONS

From the above description of international forums, global and national institutions, legal measures, empirical indicators, and theoretical perspectives, it is quite evident that the primary focus of sustainable development has been on critical challenges posed by various environmental problems. The major environmental problems or concerns related to sustainability—including the depletion of nonrenewable resources, increase in nonbiodegradable wastes, decline in biodiversity, and so on—imply how the current mode of development may threaten the future generations and why development policies and practices have to be sustainable. Despite such a clear focus of the sustainable development model on the environment-development relationship, there are some shortcomings of the model that need to be critically examined and seriously considered if environmental problems are to be addressed more comprehensively. In this section, these drawbacks of sustainable development (especially those related to environmental issues) are explained, and some policy alternatives are suggested.

First, despite its environmental concern, the sustainable development model is

constrained by its continuity with the agenda for economic growth (as found in the conservative tradition of development thinking) that often causes harm to the environment itself. Although the Brundtland Report (*Our Common Future*) advocates development based on environmental sustainability, it continues to emphasize "the possibility for a new era of economic growth" (WCED 1987, 1). As a result, there are scholars who are critical of the model of sustainable development stipulated in this report for its conceptual and strategic biases towards "economic growth" (see Reid 1995; Reed 1996). Similar observations regarding an inherent bias of the sustainable development model for economic growth, could be made from other recent reports on the model.[16] In this regard, it has already been pointed out by critics that policies and institutions associated with market-based economic growth often worsen ecological problem, accelerate resource depletion, and produce unsustainable development (Stokke 1991, 27; Redclift 1987, 56; UNDP 1996, 63). Because economic growth requires expansive industrialization, which in turn accounts for the rapid depletion of resources, pollution of air and water, emission of hazardous gases, and use of toxic chemicals—all these eventually lead to environmental disorders like resource scarcity, global warming, ozone depletion, and so on.[17] Although some scholars have recently emphasized alternative models of development that highlight sustainability and go beyond economic growth—for example, "authentic development," "reverential development," "just development," and "participatory development" (Engels 1990)—the fact remains that the practical state policies in most countries are still subservient to the goal of economic growth based on industrial expansion. Thus, in addressing environmental concerns, there is a need for basic reorientation in the formulation of practical development policies, and the proponents of sustainable development should draw public attention to the critical implications of this agenda of economic growth for environmental conditions.

Second, in line with this continuing focus of the sustainable development model on economic growth, is its utilitarian tendency to view development in terms of the level of consumption—such a belief of this model in consumption-centered development is evident in its central concern that the excessive consumption of resources (especially nonrenewable resources) by the current generation may threaten similar consumption by future generations. It is essential to overcome such a consumerist view of development, because consumerism itself remains a great challenge to the environment. It has been pointed out that consumerism implies a direct relationship between consumption and happiness, encourages excessive consumption of industrial products (automobiles, refrigerators, air conditioners), and thus accounts for further increases in greenhouse gases, chlorofluorocarbons, and nonbiodegradable wastes.[18] Although the worldwide spread of such bourgeois consumerism might rapidly exhaust the planet's capacity to supply resources and contain waste disposals, today many developing countries, especially those with large populations such as China and India, are embracing market-biased consumerism, replacing indigenous consumption patterns, and importing environmentally hazardous industrial goods (Sachs 1992; Durning 1991; Haque 1999a). Thus, without a basic change in the prevailing consumption-ori-

ented view of development, the effectiveness of the sustainable development model to resolve environmental problems would remain limited. At the Earth Summit (1992), the former U.N. Secretary-General Boutros Boutros-Ghali pointed out that "the lifestyle of rich countries is ecologically unsound, and that their development cannot, at the present stage, be considered 'sustainable.''' This luxurious lifestyle based on consumerism—although it has been highlighted as an environmental concern by the advocates of sustainable development—needs to be examined more intensively and critically in terms of its serious environmental implications. In this regard, there is a need for adopting appropriate policies at national and international levels to diminish the craze of consumerism by regulating bourgeois global media, education system, information network, and advertisement industry.

Third, similar to the mainstream development theories and models discussed above, the sustainable development model tends to be indifferent toward the cultural and normative dimensions of development. There are many traditional cultures, which, although portrayed as signs of backwardness by the modern development schools, often pay more attention to nature and its sustainability in pursuing socioeconomic progress. Anthropological studies show that although many tribal cultures and lifestyles (e.g., the tribal farmers, hunters, and fishermen of Amazonia) did not involve urban infrastructures and modern technologies, they were quite adequate to satisfy basic human needs without much environmental costs (see Bodley 1985, 13, 28). The indigenous cultures and values in many African, Asian, and Latin American countries have been based on traditional beliefs in the satisfaction of basic needs, minimal use of resources, maintenance of the ecosystem, and preservation of nature. But the contemporary modes of development thinking—including certain principles of the sustainable development model—hardly take into account this cultural or normative dimension of human development that has considerable implications for the environment. For some scholars, even the very principle of the needs of future generation emphasized by sustainable development is problematic, because the interpretation of human needs itself often varies between generations and between cultures (see Langhelle 1999). Similar to this cultural question, the ethical dimension of environment, which is relatively absent in the sustainable development model, is equally significant. In many precolonial societies and less-modernized developing countries, the environmental ethics often guided economic production, distribution, and consumption. In this regard, Reid (1995) mentions that the questions of environment remains an ethical question in terms of "our sense of guilt" regarding what has been done to nature. Although the Rio Declaration on Environment and Development (1992) highlights the participation of indigenous people, youth, and women as crucial for sustainable development, there is a relative lack of appreciation of the role of traditional, indigenous cultures and values in sustaining environment and caring for nature, which should be seriously taken into consideration in any discourse on environment and development. In other words, an adequate model of sustainable development would require the maintenance rather than replacement of various traditional cultures that are responsive and friendly to ecological health.

Fourth, although the proponents of sustainable development are deeply concerned with intergenerational equity, they do not pay adequate attention to the existing structures of interclass and international inequalities adversely affecting the environment. The model of sustainable development initiated by the Brundtland Commission Report, has been criticized for its indifference towards the unequal structures of income distribution that often worsen environmental problems (Jacob 1994, 244–245; Haque 1999a). The issue of inequality is important, because it is mainly the economically privileged classes and nations that are engaged in excessive production and consumption of industrial goods, and thus, largely account for the exhaustion of nonrenewable resources, accumulation of toxic wastes, and emission of greenhouse and ozone-depleting gases. However, in recent years, inequalities in the structures of ownership and income have worsened further. For instance, the advanced industrial nations represent about 22% of the world's population, but they consume, on average, 80% of the world's goods—including 70% of the world's energy, 75% of its metals, 81% of its paper, 80% of its fertilizer, 74% of its electricity, and 92% of its cars (see UNDP 1997; Reid 1995; Haque 1999a). All these indicators of unequal and excessive consumption have serious implications for the environment. On the other hand, within the developing world, only 1% of landlords own more than 40% of arable land in Latin America; 75% rural households have no access to 4% of the land in Africa; and about 40% are near-landless in South Asia (Trainer 1989, 9–17; Haque 1999a; Durning 1990, 141). For survival, often these landless or near-landless households have no alternative but to over-cultivate their small plots (causing soil erosion and desertification), and to clear the forests for additional cultivable land (creating the problem of deforestation). Thus, inequality and poverty are not unrelated to environmental problems such as land degradation, deforestation, and reduction in biodiversity. In this regard, Dasgupta (1996) describes how the rich acquire forestlands only to deforest them in Brazil, and how poverty has accentuated environmental degradation in sub-Saharan Africa. Even the problem of excessive population that puts pressure on environment is related to inequality, because the fertility rates are usually higher among poor families and much lower among affluent households (see Wolf 1996). Thus, the current model of sustainable development needs to go beyond intergenerational inequity, and seriously consider the adverse implications of interclass and international inequalities for environment and sustainability. In this regard, adequate policies have to be undertaken by national governments and international institutions—for example, fundamental land reform, income redistribution, and equitable trade and exchange—in order to ensure sustainable development more effectively.

Finally, the sustainable development model does not adequately address the implications of internal and international power structures for the adoption and implementation of agreements, conventions, laws, and regulations concerning environmental protection. Based on the aforementioned structures of international inequality, the hegemonic world powers can block any comprehensive legal measure against environmental destruction, especially if this measure makes their production of certain environmentally hazardous but highly profitable goods more costly by regulating or pro-

hibiting such industrial production. In fact, the world powers such as the U.S. have not been always supportive of comprehensive environmental protection measures endorsed by almost all other countries. For instance, in the aforementioned Earth Summit (Rio de Janeiro 1992) attended by 178 countries, the U.S. showed disagreements with most nations on various ecological issues, opposed the Rio Declaration's emphasis on people's "right to development," and declined to accept any international obligations or liabilities related to environment and development. With regard to the Kyoto Protocol (on climate change), it has been pointed out that the U.S. Senate and Congress strongly oppose such a treaty that does not require developing countries to reduce their emissions of greenhouse gases, and that the treaty lacks effective enforcement mechanisms to oblige industrial nations to comply with the required environmental rules (see Haque 1999a; Lemonick 1997). In other words, any effective, legally binding international measures for environmental protection and ecological security could be resisted by the global economic and military powers, which may render such collective legal mechanisms ineffective. In this regard, the advocates of sustainable development need to work out more effective international strategies and institutions to ensure that all nations, including the global superpowers, respond to human concerns for environment and sustainability as understood and expressed by the majority of the world population.

Similar to other global affairs such as the world economic order, security structure, and information network, the issue of environment is a global phenomenon affecting all societies and peoples, and thus, requires cross-cultural dialogue, cross-national cooperation, and effective international measures based on mutual understanding and respect rather than hegemonic power and domination. Although the Agenda 21 adopted at the Earth Summit emphasizes the importance of "global partnership" for attaining sustainable development, such a partnership is often jeopardized by the hegemonic power structure that exists among nations. In this regard, an effective model of sustainable development must address this extreme inequality in international power structure that often constrains the resolution of such a global problem as environment.

In conclusion, although there has emerged a worldwide concern for a sustainable mode of development in relation to environment, the dominant view of such sustainable development does not always address some relevant critical issues discussed above. In order to build an adequate model of sustainable development, it is essential to overcome the parochial concern of economic growth and emphasize a more comprehensive understanding of development that takes into account the environmental costs of such economic growth; to reexamine the assumptions of modernity and appreciate the environment-friendly indigenous cultures in various regions; and to focus on the detrimental impacts of consumer culture on environment and undertake required policies to rectify such a trend. It is also necessary to introduce basic reforms in unequal economic structures for enhancing interclass and international inequalities that adversely affect environment; to adopt effective legal measures related to environmental protection; and to device alternative international institutions obliging all

nations to comply with such environmental measures. In other words, an authentic model of sustainable development should make sure that it represents a holistic development perspective beyond economic growth, recognizes multiple cultural traditions and beliefs, transcends consumerism and provides a framework of more desirable lifestyle, emphasizes structural reforms for internal and international equality, and delineates effective legal and institutional devices for environmental sustenance. It must be understood, however, that although it is possible to attain an adequate or authentic model of sustainable development, a greater challenge would remain about how to convince top policy makers—often influenced by individual prejudices, political predilections, and vested economic interests—to put such a model into practice.

NOTES

1. According to the Brundtland Report titled *Our Common Future*, 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, 8). Since the publication of this report, there has emerged varying interpretations of "sustainable development"—as the optimization of socioeconomic benefits in the present without compromising similar benefits in the future; as the realization of intergenerational, interspecies, and intergroup equities; as a process of development that is conducive to environment and society; and as the upgrading of current living standards without jeopardizing the future living conditions (see Noman 1996, 8–9; Barrow 1995, 372).
2. For instance, the classical, neoclassical, Keynesian, and post-Keynesian theories of economic growth (Smith, Ricardo, Mill, Jevons, Walras, Keynes, Friedman, Samuelson) focus mainly on the continuity of economic growth and accumulation based on market competition, express apprehension about the potential economic stagnation and market failures, but overlook the environmental costs of such production and accumulation. Although the theories of modernization pay special attention to the social, political, and cultural modernization of developing countries in the image of advanced industrial nations (Almond, Powell, Pye, Huntington, Hagen, Riggs), they hardly show any concern for the environment. See Haque (1999b); Preston (1985).
3. The proponents of radical theories (Marx, Engels, Luxemburg, Hilderfing, Lenin) are predominantly concerned for the alienation and exploitation of the working class caused by capitalist production, and they predict a cataclysmic crisis in the capitalist system and its eventual collapse leading to the emancipation of the working class. But they are quite indifferent towards the environmental cost of capitalist development. See Randall and Theobald (1985), Bloomstrom and Hettne (1984), Jung (1991). However, there are Marxian environmentalists such as Redclift, O'Connor, and Commoner, who attempt to relate the environmental question to the structures of inequalities between classes and between nations, especially in the context of global capitalist system (see Redclift 1987; Field 1997).
4. See Haque (1999b), Ruccio and Simon (1986), Bloomstrom and Hettne (1984), Chilcote (1984).
5. Some of these natural predicaments include disastrous environmental events such as the Chernobyl nuclear accident, toxic calamity in Bhopal, the Exxon Valdez oil spill, frequent typhoons and cyclones in the Bay of Bengal, and the common international concerns such as global warming, sea-level rise, deforestation, water pollution, soil erosion, ozone-layer depletion, toxic waste, decline of plant and animal species, and depletion of nonrenewable resources (Brown 1990, 3; Korten 1990, 14; Hempel 1996, 29).

6. The greenhouse effect is caused by the increased density of carbon dioxide which, although it allows the sun's rays to reach and warm the earth's surface, absorbs the infrared rays given off by the same earth surface. Thus, some of the excess heat remains in the atmosphere, causing the warming of the earth.
7. Due to excessive irrigation without adequate drainage, the level of groundwater rises, and in dry season, as the soil surface evaporates, a layer of salt remains. Annually, the use of 10,000 cubic meters of water per hectare adds 2 to 5 tons of salt to the soil, and this salinization has reduced the crop yielding of 20 million hectares of land in India, 7 million in China, and 3.3 million in Pakistan (Postel 1990, 44).
8. The use of such chemicals has multiplied worldwide: globally, about 70,000 chemicals are in everyday use, while 500 to 1,000 new ones are added every year (Postel 1988, 119).
9. Ozone is a three-atom form of oxygen which prevents the harmful ultraviolet radiation of the sun from reaching the earth surface by absorbing this radiation (Shea 1989, 77). This radiation is dangerous to life on earth, because it damages DNA, and thus, disrupts the working cells.
10. Worldwide, the share of the CFC use is 25% for aerosols, 19% for foam insulation, 19% for solvents, 12% for air conditioning, 8% for refrigerants, 7% for foam, and 10% for other materials (see Shea 1989, 86).
11. It has been estimated that in the U.S., by 2075, the ozone depletion may increase the number of cancer cases from 3 million to 15 million, and cataract cases from 0.5 million to 2.8 million (see Shea 1989, 82). Even at the current level of ozone, according to a 1987 government report (U.S.), the total crop losses were estimated to be 5% to 10% of production (French 1990, 107).
12. The conferences held in 1998 include the following: North/South Conference for Sustainable Development, the African Ministerial Conference on Environment, the Conference on Ethics and the Culture of Development: Building the Sustainable Economy, the Intergovernmental Conference on Cultural Policies for Development, the Conference on Protecting the Environment and Sustaining Development, the Meeting on the Global Issues of Sustainable Development, and the International Conference on Ecology, Economy, & Development.
13. These international institutions include the United Nations Environment Programme, the Climate Change Secretariat, the United Nations Commission on Sustainable Development, the Intergovernmental Panel on Climate Change, the Worldwide Fund for Nature, the International Centre for Trade and Sustainable Development, the Global Environmental Facility, the Secretariat of the Convention on Biological Diversity, and the Secretariat of the Convention to Combat Desertification.
14. These national-level institutions related to environmental management can be found in countries such as Austria, Australia, Brunei, Canada, Czech Republic, Denmark, Finland, Germany, Holland, India, Jamaica, Korea, Malaysia, New Zealand, Poland, Singapore, Sweden, Switzerland, Thailand, the United Kingdom, the United States, and Venezuela.
15. Examples of these periodicals include *International Journal of Sustainable Development*, *Journal of Environment & Development*, *World Watch*, *Environmental Ethics*, *Environmental Forum*, *Environmental Studies*, *Habitat International*, *International Environmental Affairs*, *International Journal of Environment and Pollution*, *Renewable Resources Journal*, *Journal of Energy and Development*, *Environment and Planning*, and *Biodiversity and Conservation*.
16. For instance, the Agenda 21 (Chapter 2) emerging from the Earth Summit (1992), emphasizes economic growth based on trade liberalization and free exports, although such export-led growth has often been detrimental to the environment in many developing nations.
17. The harmful effects of industrial expansion on ecology and environment are well emphasized in Nudler's statement that "the destructive action of industrialism over the environment has been so convincingly shown that it hardly requires further comment" (Nudler 1986, 61).
18. In this regard, Ramphal (1992) mentions that "The question of consumption is central to the environmental crisis. It is the human impact that is endangering the planet's capacity to sustain life."

REFERENCES

Barrow, C.J. 1995. "Sustainable Development: Concept, Value and Practice." *Third World Planning Review* 17:369–386.

Bloomstrom, M., and Hettne, B. 1984. *Development Theory in Transition*. London: Zed Books.

Bodley, J.H. 1985. Anthropology and Contemporary Human Problems. London: Mayfield.

Brown, L.R. 1990. "The Illusion of Progress." In *State of the World, 1990*, edited by Worldwatch Institute. New York: W.W. Norton.

Brown, L.R. 1991. "The New World Order." In *State of the World, 1991*, edited by Worldwatch Institute. New York: W.W. Norton.

Brown, L.R., and Wolf, E.C. 1987. "Charting a Sustainable Course." In *State of the World, 1987*. Worldwatch Institute (ed.) New York: W.W. Norton.

Brown, L.R., and Young, J.E. 1990. "Feeding the World in the Nineties." In *State of the World, 1990*, edited by Worldwatch Institute. New York: W.W. Norton & Company.

Chilcote, R.H. 1984. *Theories of Development and Underdevelopment.* Boulder, CO: Westview Press.

Dasgupta, P. 1996. "The Economics of the Environment." *Proceedings of the British Academy* 90:165–221.

Durning, A.B. 1990. "Ending Poverty." In *State of the World, 1990*, edited by Worldwatch Institute. New York: W.W. Norton.

Durning, A.B. 1991. "Asking How Much is Enough." In *State of the World, 1991*, edited by Worldwatch Institute. New York: W.W. Norton.

Engels, J.R. 1990. "Introduction: The Ethics of Sustainable Development." In *The Ethics of Environment and Development: Global Challenge, International Response*, edited by J. Engel and J.G. Engel, pp. 1–23. London: Belhaven.

Estes, R.J. 1993. "Toward Sustainable Development: From Theory to Praxis." *Social Development Issues* 15:1–29.

Field, R.C. 1997. "Risk and Justice: Capitalist Production and the Environment." *Capitalism, Nature, Socialism* 8:69–94.

Flavin, C. 1990. "Slowing Global Warming." In *State of the World, 1990*, edited by Worldwatch Institute. New York: W.W. Norton.

Flavin, C. and Lenssen, N. 1991. "Designing a Sustainable Energy System." In *State of the World, 1991*, edited by Worldwatch Institute. New York: W.W. Norton.

French, H.F. 1990. "Clearing the Air." In *State of the World, 1990*, edited by Worldwatch Institute. New York: W.W. Norton.

Grubb, M. et al. 1993. *The 'Earth Summit' Agreements: A Guide and Assessment.* London: Earthscan.

Haque, M.S. 1999a. "The Fate of Sustainable Development Under the Neoliberal Regimes in Developing Countries." *International Political Science Review* 20:199–222.

Haque, M.S. 1999b. *Restructuring Development Theories and Policies: A Critical Study.* Albany: State University of New York Press.

Hempel, L.C. 1996. *Environmental Governance: The Global Challenge.* Washington, D.C.: Island Press.

IUCN (International Union for the Conservation of Nature and Natural Resources) 1980. *World Conservation Strategy: Living Resources. Conservation for Sustainable Development.* Gland, Switzerland: IUCN.

Jacob, M. 1994. "Toward a Methodological Critique of Sustainable Development." *Journal of Developing Areas* 28:237–252.

Jacobson, J.L. 1989. "Abandoning Homelands." In *State of the World, 1989*, edited by Worldwatch Institute. New York: W.W. Norton.

Jung, H.Y. 1991. "Marxism and Deep Ecology in Postmodernity: From Homo Oeconomicus to Homo Ecologicus." *Thesis Eleven* 28:86–99.

Kadekodi, G.K. 1992. "Paradigms of Sustainable Development." *Development* 3:72–76.
Korten, D.C. 1990. *Getting to the 21st Century*. Connecticut: Kumerian Press.
Kothari, R. 1990. "Environment, Technology, and Ethics." In *Ethics of Environment and Development: Global Challenge, International Response*, edited by J.R. Engel and J.G. Engel, pp. 27–35. London: Belhaven.
Langhelle, O. 1999. "Sustainable Development—Recovering the Essence and Ethics of Our Common Future." *International Political Science Review* 20:No.2.
Lemonick, M.D. 1997. "Turning Down the Heat." *Time* 150:22 December.
Noman, O. 1996. *Economic Development and Environmental Policy*. London: Kegan Paul International.
Norton, B.G. 1992. "A New Paradigm for Environmental Management." In *Ecosystem Health: New Goals for Environmental Management*, edited by R. Costanza, B.G. Norton, and B.D. Haskell, pp. 23–41. Washington, D.C.: Island Press.
Nudler, O. 1986. "The Human Element as Means and Ends of Development." In *Human Development: The Neglected Dimension*, edited by K. Haq and U. Kirdar. Islamabad, Pakistan: North South Roundtable.
Page, T. 1992. "Environmental Existentialism." In *Ecosystem Health: New Goals for Environmental Management*, R. Costanza, B.G. Norton, and B.D. Haskell, pp. 97–123. Washington, D.C.: Island Press.
Pearce, D.W., and Watford, J.J. 1993. *World Without End*. New York: Oxford University Press.
Postel, S. 1988. "Controlling Toxic Chemicals." In *State of the World, 1988*, edited by Worldwatch Institute. New York: W.W. Norton.
Postel, S. 1989. "Halting Land Degradation." In *State of the World, 1989*, edited by Worldwatch Institute. New York: W.W. Norton.
Postel, S. 1990. "Saving Water for Agriculture." In *State of the World, 1990*, edited by Worldwatch Institute. New York: W.W. Norton.
Preston, P.W. 1985. *New Trends in Development Theory*. London: Routledge & Kegan Paul.
Ramphal, S. 1992, January 24. "In a North-South Gap, Seeds of Environment Discord." *International Herald Tribune*, 4.
Randall, V., and Theobald, R. 1985. *Political Change and Underdevelopment*. Durham, NC: Duke University Press.
Redclift, M. 1987. *Sustainable Development: Exploring the Contradictions*. London: Methuen.
Reed, D. 1996. *Structural Adjustment, the Environment, and Sustainable Development*. London: Earthscan.
Reid, D. 1995. *Sustainable Development: An Introductory Guide*. London: Earthscan.
Ruccio, D.F., and Simon, L.H. 1986. "Methodological Aspects of a Marxian Approach to Development: An Analysis of the Modes of Production School." *World Development* 14:211–222.
Sachs, W. 1992. "Introduction." In *The Development Dictionary: A Guide to Knowledge as Power*, edited by W. Sachs. London: Zed Books.
Shea, C.P. 1989. "Protecting the Ozone Layer." In *State of the World, 1989*, edited by Worldwatch Institute. New York: W.W. Norton.
Simonis, U.E. 1990. *Beyond Growth: Elements of Sustainable Development*. Berlin: Ed. Sigma Bohn.
Solow, R.M. 1993. "Sustainability: An Economist's Perspective." In *Economics of the Environment: Selected Readings*, edited by R. Dorfman and N.S. Dorfman, pp. 179–187. NY: W.W. Norton.
Stokke, O. 1991. "Sustainable Development: A Multi-Faceted Challenge." *European Journal of Development Research* 3:8–31.
Trainer, T. 1989. *Developed to Death: Rethinking Third World Development*. London: Green Print.
UNDP (United Nations Development Programme) 1996. *Human Development Report, 1996*. NY: Oxford University Press.

UNDP (United Nations Development Programme) 1997. *Human Development Report, 1997*. NY: Oxford University Press.

WCED (World Commission on Environment and Development) 1987. *Our Common Future*. Oxford: Oxford University Press.

Wolf, C. 1996. *Population Growth and Intergenerational Justice*. APA Pacific Division meeting, Society for Philosophy and Public Affairs, Spring, 1996.

Wolf, E.C. 1988. "Avoiding a Mass Extinction of Species." In *State of the World, 1988*, edited by Worldwatch Institute. New York: W.W. Norton.