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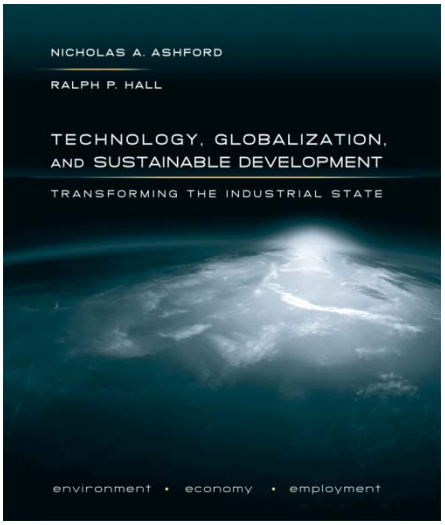
Primer on the Emergence and Evolution of Sustainable Development (1951 to 2012)



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Primer on the Emergence and Evolution of Sustainable Development (1950 to 2012)

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1 Introduction

This primer on the emergence and evolution of sustainable development provides essential supplementary material for the textbook *Technology, Globalization, and Sustainable Development: Transforming the Industrial State*. The primer expands on Chapter 2 of the textbook by discussing how key events in the United States, U.S. legislation, international conferences, seminal publications, and debates from the 1950s to the present have shaped the formulation of the concept of sustainable development.

The primer serves as a basic reference for scholars, researchers, students, and policy-makers concerned with sustainable development. The primer focuses primarily on how the concept is viewed by governments and the international community. For a discussion of alternative ways of thinking about the concept—such as the notion of a *steady-state economy* or the recent emergence of *new economics* in the aftermath of the 2008 financial crisis—that might eventually challenge the dominant perspective, see Chapters 1, 3, and 13 in Ashford and Hall (2011b).

Any errors in the manuscript are the responsibility of the authors. Please contact Ralph Hall (rphall@vt.edu) if you have any questions about the primer or have information that can help clarify or advance the text.

2 The Emergence and Evolution of Sustainable Development

The concept of sustainable development obtained formal international recognition at the 1992 United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil. However, it is possible to trace the modern environmental movement back to the 1950s, when developed nations—for example, the United States, Japan, and several nations in what is now the European Union—became increasingly aware that the *local* or *regional* environment was being stressed by rapid industrialization. Here, we focus our attention on the United States because the environmental policy and laws enacted during the early environmental movement (of the 1960s and 1970s) played an influential role in shaping the actions of other nations.[*]

This primer traces the rise of the concept of sustainable development during the latter part of the twentieth century. It begins with a brief look at the international perspective of conventional development and identifies the point at which this view transitioned to sustainable development during the 1990s. The focus then shifts to the 1950s to identify the main factors behind the creation of the United States environmental agenda. A more in depth review then follows of the major forces which led the international community to begin to address the combined topic of development and the environment during the 1970s, which laid the foundation for the concept of sustainable development. The discussion places specific emphasis on the debates between developed and developing nations and follows how their positions have changed over the decades.

Over the past forty years, the *environmental* factors that underlie the concern for sustainable development incorporated—to varying degrees and at different times—what can now be identified as four different environmental concerns. First is the disruption of ecosystems and loss of biological diversity and the indirect effects these have on human health and well-being. This concern was initially raised in the early 1960s when industrial processes and the use of pesticides led to environmental degradation and a loss of wildlife (Carson 1962), and then again more recently in the context of endocrine disruptors that affect reproductive health in all species (Colborn, Dumanoski and Meyers 1996, Solomon and Schettler 1999). Significant progress has been made on improving

[*] Other countries in the European Union may now have advanced beyond the United States in certain areas with regard to innovative environmental policy and law designed to promote sustainable development (Vogel 2003). See Chapter 10 in Ashford and Hall (2011b) for a discussion of regional and international regimes to protect health, safety, and the environment.

industrial and agricultural practices; however, the negative impacts of these sectors still present a problem in both developed and developing countries.[*]

The second concern relates to the world's finite resources and energy supplies, and asks the question of whether there are sufficient resources to fuel the economy in its current form (Schmidt-Bleek 1992, Ayres, D'Arge and Kneese 1970, Meadows et al. 1972, Georgescu-Roegen 1971, WWF 2006, Ayres and Warr 2009). A corollary concern is what will the environmental impact be from using a significant proportion of the existing resources?

The third concern is that toxic pollution directly affects human health and the health of other species (Ashford and Miller 1998, Chivian et al. 1993, Colborn et al. 1996, Commoner et al. 2000, Fagin and Lavelle 1996, Geiser 2001, McCally 1999, Schettler et al. 1999, Baskin, Himes and Colborn 2001). As scientists began to understand how ecosystems, humans, and other organisms were affected by industrial and agricultural processes, the issue of how toxic chemicals interact with biological systems grew in importance.

The final concern is that greenhouse gases from anthropocentric (human-driven) sources are leading to a disruption of the global climate (Schmidheiny 1992, International Climate Change Task Force 2005, IPCC 2001). Scientists predict that these gases will cause the globally averaged surface air temperature to increase 1.8 to 4.0°C by 2090-2099, relative to 1990-1999, and the globally averaged sea level to rise 1.1-2.9m to 2.4-6.4m by 2090-2099, respectively (IPCC 2007), with consequent dramatic changes in weather, droughts, and floods. Such scenarios have led to the acknowledgment that immediate action must be taken to minimize the significant long-term financial and social impacts of climate change (Stern 2007).

The first, third, and fourth environmental concerns are connected with the unintended effects of human development/growth while the second deals with increasing shortages of resources needed to fuel development/growth.

It is noteworthy that the seeds for each of the four environmental concerns seem to have been planted during the 1950s, 1960s, and 1970s. At the end of the 1940s and following an era of resource constraints from World War II, the U.S. turned from being a net exporter to a net importer of oil (Bradley 2008). This transition fueled the growing concern that limits in the available national resource base would undermine economic growth into the foreseeable future. In response to the mounting pressure to act, President Truman appointed a

[*] Poor environmental standards and under-resourced or non-existent environmental agencies in developing countries mean that environmental problems from industrial processes and the mechanization of agriculture more frequently go unchecked in these regions. See Section 1.4.1 in Ashford and Hall (2011b) for a related discussion on the impact of industrial globalization.

commission in 1951—known as the Paley Commission—to evaluate the state of the nation's resources. Although the commission's report did recognize the problem of resource depletion, its general message was that saving resources for the future may be unnecessary due to technological innovation and new resource discoveries (RFF 1954, The President's Material Policy Commission 1952). Notwithstanding this optimistic perspective, the report can be seen as one of the first significant works to raise the question of 'resource limits/depletion.' It would take some two decades before the question of limits to economic growth would capture the attention of the international community (Meadows et al. 1972).

The 1960s was the era when the destruction of ecosystems was recognized as a significant problem in the U.S. The two other environmental concerns began to emerge—to varying degrees—during the 1970s. The Stockholm Conference on the Human Environment in 1972 brought the topics of ecosystem integrity, biological diversity, and human health and the issue of ecological and resource limits to growth to the attention of the international community. Although the conference did discuss the potential problem with toxic substances (in its Action Plan), this third environmental concern remained the focus of national legislation during the 1970s. The passage of the 1976 Toxic Substances Control Act in the U.S. is a prime example. Towards the end of the 1970s, the international community began to discuss the related concerns of ozone depletion and greenhouse gas emissions—the fourth environmental concern. However, it was not until the second half of the 1980s and during the 1990s that international action was taken to address ozone depletion and global climate change, respectively.

In the 1980s, chemical toxicity began to be downplayed as the chemical industry itself started to point the finger at climate change as the most important environmental problem, almost to the exclusion of toxicity. The 1980s also marks a turning point when nations began to recognize that their environmental problems extended beyond national boundaries and were having impacts on a global scale. This realization further spurred the development of an international environmental agenda, and the actions taken in the following two decades as a result of this agenda can be considered the first attempt at global environmental governance (Speth 2003). Towards the end of the 1980s, the World Commission on Environment and Development (WCED) presented what became the first universally accepted definition of sustainable development.

> "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

- the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and
- the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs.

Thus the goals of economic and social development must be defined in terms of sustainability in all countries—developed or developing, market-orientated or centrally planned. Interpretations will vary, but must share certain general features and must flow from a consensus on the basic concept of sustainable development and on a broad strategic framework for achieving it" (WCED 1987, p. 43).

This definition (commonly known as the Brundtland definition, after Gro Harlem Brundtland, the commission's Chairman) highlights what has since become one of the major issues of contention about sustainable development: the *interpretation* of sustainable development by one nation might be seen as leading to unsustainable development by another. The ongoing debate between developed and developing nations reveals that the commission's objective to find middle ground between developed and developing nation's positions was largely unsuccessful (Cock 2002).

In addition to the four environmental concerns, the pressing need to improve human health, employment opportunities, purchasing power, human rights, and social cohesion also played important roles in raising the profile of sustainable development (see Section 1.1.3 in Ashford and Hall (2011b) for a discussion of the importance of employment in development). What is perhaps most interesting about the current literature on sustainable development is the lack of any significant treatment of employment. We have attempted to address this shortfall by highlighting, for example, the connections between international declarations on environment and development and labor (see Section 2.6.1).

As the following sections explore the history of the modern environmental movement, it should become clear that different environmental groups *and* nations have given different priorities to the environmental and social issues introduced above. Hence, political agendas are almost always focused on one or two of the four major environmental concerns to the exclusion of the others. Such a non-integrated planning approach means that nations and the international community have only been able to create partial solutions to growing environmental problems.[*] This situation is further exacerbated by the fact that each nation is at a different level of development and therefore has different

[*] Indeed all 'environmental' problems are related. Large transformations of materials and use of energy create resource shortages, toxic pollution, and greenhouse gases that lead to climate change and the destruction of ecosystems and biodiversity.

needs, resulting in different political agendas. In addition, even if two nations are alike from a development perspective, their values and beliefs might lead to disagreement over what constitutes an *appropriate* solution.

The following sections attempt to provide an overview of the events that propelled the modern environmental movement into action. Although the text presents only a summary of these events, it captures many of the key issues and problems which have shaped our understanding of the concept of sustainable development.[*]

2.1 The Transition from Conventional Development to Sustainable Development

The number of environmental initiatives in nations grew exponentially between 1900 and 1987 (Frank, Hironaka and Schofer 2000), but it was not until the United Nations Conference on Environment and Development (UNCED) in 1992 that a concerted effort was made by the international community to integrate environment and development issues. Until this point, environmental degradation was acknowledged as an unfortunate side effect of industrial expansion (or economic development/growth) and environmental initiatives focused on mitigating harm as opposed to rethinking the process of development.

Dernbach (1998, 2004, 2011) argues that during the past half-century, the international community has viewed the notion of development as incorporating at least four related concepts: [1] peace and security; [2] economic development; [3] social development; and [4] national governance that secures peace and development. These four concepts form what Dernbach calls "conventional development" (Dernbach 1998, p. 24). Table 2.1 shows how each concept is reflected by major multilateral treaties and/or through international institutions,

[*] See McEntire (2005) for a succinct review of many of the publications and events that are explored in detail throughout this primer. The reader should recognize, however, that like many commentators on sustainable development, McEntire (2005) does not identify 'employment' as an important aspect. Today, the most significant effort to place employment at the center of a development strategy is occurring within the European Union (EU). In 2000, the EU Lisbon Strategy was established which made 'growth' and 'employment' the main development objectives of the European community. This position is retained by the Europe 2020 Strategy, the successor to the Lisbon Strategy, but care needs to be taken to ensure that meaningful and well-paid jobs are not compromised in the EU's pursuit of competiveness. See Section 1.5 in Ashford and Hall (2011b) for a discussion of the Lisbon Strategy and Europe 2020 and how they are likely to impact the EU's Strategy for Sustainable Development.

which "provide a common framework for relations among sovereign nations as well as a shared set of national purposes"(ibid., p. 9).

Table 2.1: The Four Concepts of the Conventional Development Model*

Development Concept	Comments
Peace and Security	The international recognition of the need for peace and security began with the formation of the United Nations (UN) following World War II in 1945.[1] In addition, a growing number of multilateral and bilateral agreements have been established to limit the use and spread of certain weapons and weapons systems. Examples of such treaties include the 1997 Treaty Banning the Use, Production, Stockpiling, and Transfer of Antipersonnel Landmines,[2] and the Nuclear Non-proliferation Treaty,[3] first signed in 1968.
Economic Development (Competitiveness)	Arguably, economic development is seen by nations and the international community as being the most important component of development. While trade and economic growth have been a driver of development for centuries, the international community's focus on economic development was established with the formation of several important financial institutions following World War II. The most influential institutions include: • the International Bank for Reconstruction and Development (known as the World Bank),[4] conceived in 1944 at Bretton Woods, New Hampshire to rebuild the economies of Europe and to encourage development in developing countries; • the International Monetary Fund (IMF),[5] created in 1945 to foster global monetary cooperation, secure financial stability, facilitate international trade, promote high employment and sustainable economic growth, and reduce poverty; • the 1947 General Agreement on Tariffs and Trade (GATT),[6] designed to remove barriers to trade; • the UN Development Programme,[7] established in 1965 to promote the economic and social advancement of all peoples; and • the UN Industrial Development Organization (UNIDO), established in 1996 with the mission of promoting and accelerating the industrialization of developing economies.[8]

* See Dernbach (1998, pp. 9-14).

Development Concept	Comments
Social Development (Health; Employment; Purchasing Power; Human Rights; and Social Cohesion)	The concept of social development is most closely linked to 'human rights.' For example, in addition to promoting "higher standards of living, full employment, and conditions of economic and *social progress* and development," the UN Charter requires the organization to identify and promote solutions to "international economic, social, health, and related problems" and to promote "universal respect for, and observance of, *human rights and fundamental freedoms for all*" (emphasis added).[9] In addition, landmark treaties such as the International Covenant on Civil and Political Rights[10] and the International Covenant on Economic, Social, and Cultural Rights,[11] both of which were signed in 1966, have established an international regime which nurtures social development and condemns acts which intrude on an individual's rights and freedoms. [Note: The international formulation of 'human rights' builds on the much earlier and broader conception of 'social justice' used by the International Labour Organization in the 1944 Declaration of Philadelphia (Bartolomei de la Cruz, von Potobsky and Swepston 1996).][12]
National Governance that Secures Peace and Development	On December 4, 1986, the UN General Assembly highlighted the important role of national governance in development by adopting the Declaration on the Right to Development.[13] The Declaration clearly reaffirms the importance of international peace and security, economic development, and social development, and promulgates that "States have the primary responsibility for the creation of national and international conditions favourable to the realization of the right to development."[14] The Declaration states that the "right to development is an inalienable human right," and that "every human person and all peoples are entitled to participate in, contribute to, and enjoy economic, social, cultural and political development, in which all human rights and fundamental freedoms can be fully realized."[15]

The first three concepts—peace and security, economic development, and social development—are closely interrelated. For example, without peace and security, economic and social development cannot be achieved. Similarly, without robust and accountable legal and financial structures for investment and commerce, economic development is limited (Dernbach 1998, p. 12). Both examples highlight the need for "supportive national governance"—the fourth concept—to ensure that the development process proceeds in a manner that improves the well-being of a nation's population (ibid., p. 13).

However, as Dernbach (1998) points out, the four concepts of development are silent on the topic of environmental protection. As scientific understanding of the relationship between the development process (specifically

industrialization and the mechanization of agriculture) and the human environment grew during the 1960s and 1970s, governments began to realize that a failure to protect the natural environment was likely to adversely affect their future development prospects. Concerns such as these were addressed in 1992, when the delegates of the UNCED approved the Rio Declaration on Environment and Development. Principles 3 and 4 of the declaration speak directly to the notion of integrating environmental concerns with the development process.[16]

> Principle 3: The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations.
>
> Principle 4: 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.

The international recognition of the need to protect the environment is what Dernbach calls the "fifth element" of the international notion of development (Dernbach 1998, p. 21). Using Dernbach's construct, the five (international) concepts of development form the broad idea of sustainable development. Dernbach's view of sustainable development is that it "modifies the purposes of conventional development by adding a wide range of environmental protection goals, by incorporating the environment into social goals, and by insisting that economic goals be compatible with environmental protection. It also modifies the purposes of development by recognizing the present generation's responsibility to future generations" (ibid., pp. 24-25). Hence, the fifth element seeks to protect the environment and the natural resources on which the development process depends.

The notion of sustainable development is described in detail by Agenda 21, another product of the 1992 UNCED (see Section 2.9.2). Agenda 21 is a comprehensive plan of action that was created to guide and coordinate the work of the UN, governments, and other major groups in their efforts to transition society towards sustainable development. Agenda 21 is often described as the first blueprint for sustainable development. The preamble to Agenda 21 states that national strategies, plans, policies, and processes are crucial to achieving its successful implementation, and the responsibility for sustainable development consequently lies with national governments.[17] Since the retention of national

sovereignty is considered as an essential part of international relations,[*] it is fitting that Agenda 21 places the responsibility for the achievement of sustainable development with national governments. [However, as discussed in Chapters 10 and 11 in Ashford and Hall (2011), the formation of the European Union (EU) provides an alternative 'regional' model for international engagement. For example, the EU represents its member countries in WTO proceedings and when negotiating multinational agreements. This regional model is perhaps more likely to result in progress towards sustainable development, which will require the major economic/geographic regions of the world to act in unison to address global challenges such as climate change and toxicity problems. In this primer, the emphasis on national governments (empowered by the principle of 'sovereign rights') in making progress towards sustainable development reflects the approach adopted by international agreements on this subject (such as the Stockholm and Rio Declarations). Beyond national and regional governance, there is a critical need for international institutions that can administer agreements/laws relating to trade, the environment, and labor—see, in particular, Sections 10.20 and 10.21 in Ashford and Hall (2011).]

The following sections track the rise of the modern environmental movement, which led to the Stockholm Conference on the Human Environment in 1972 and then to the Rio Conference on Environment and Development in 1992.

2.2 A National Focus on the Human Environment: The U.S. Environmental Agenda (1960—1970)[†]

The influence of the environmental movement in the U.S.—and in several nations in the European Union and Japan—in raising environmental issues to prominence throughout the world cannot be overstated (Wallace 1995, Jänicke 2006, Shabecoff 1993, Schreurs 2002, Jordon 2002). However, while the U.S. led environmental initiatives at both the national and international level during the 1960s, 1970s, and 1980s, Europe may now be in the driver's seat (Vogel 2003). Some believe the American environmental movement is in crisis (Shellenberger

[*] Dernbach (1998, p. 9) states that national sovereignty "provides the basic context for international relations" and that the "ability of states to govern themselves and make decisions based on their understanding of their own interests has been recognized in international law for centuries."

[†] See Chapter 9 in Ashford and Hall (2011b) for a discussion of the current U.S. health, safety, and environmental regulatory system.

and Nordhaus 2004).[*] Nevertheless, the creation of environmental policy and law in the U.S. played an influential role in shaping the concept of sustainable development. This section reviews the key events, publications, and laws that embody the U.S. environmental movement.

The U.S. environmental movement began when the nation's communities became increasingly aware that the industrial and agricultural processes that contributed to the nation's economic growth were simultaneously distressing ecosystem integrity and biological diversity—the first environmental driver of sustainable development (Carson 1962). In essence, as large scale productive capacities in industry and agriculture increased, so did the rates at which these sectors discharged pollution and waste into the environment. Once the environment surrounding the industrial and agricultural land was no longer able to assimilate, or store, this waste, negative impacts soon began to emerge. In some cases the pollution was clearly visible; in others its manifestation occurred through the gradual loss or deterioration of wildlife. Hence, the concern for the environment was driven primarily by local issues such as air, water, and noise pollution, toxic-waste disposal sites, oil spills, highway construction, and suburban sprawl, and by a concern for the integrity of ecosystems.

However, negative environmental impact was only one of the factors which led to the creation of a national environmental agenda. Speth (2002) provides a useful discussion of six critical factors which he argues formed the U.S. environmental movement. These factors are:

1. The increasingly affluent post-war population made rising demands on environmental quality.
2. The negative effects of pollution were visible and difficult to ignore.

[*] In their controversial and provocative article entitled "The Death of Environmentalism," Shellenberger and Nordhaus (2004) argue that the historical and current approach of environmentalists – i.e., to define an environmental problem narrowly as a scientific problem and then to address it through technical policy proposals – has made the environmental movement into "just another special interest" (ibid., p. 8). It is argued that the problem with this approach is that it constrains the focus of environmental groups to environmental problems, leaving them silent on important issues such as employment or health care. While premature in their burial of environmentalism and focusing their criticism narrowly on global climate change, the authors argue that the lack of an integrated approach to addressing environmental concerns means that other interests such as employment or economic concerns are able to capture the debate and prevent environmental regulation. At the heart of their article is the idea that the solutions to problems such as global climate change depend on the how the problem is first structured and related to other concerns. These broader concerns might be organized around those related to sustainable development.

3. The social turmoil of the 1960s (e.g., the civil rights and anti-war movements) created a "new generation of questioning, politically active, and socially concerned young people" (Speth 2002, p. 5).
4. There was a growing belief that corporate America was generating significant profits at the expense of the environment and the health and safety of [workers and] society.
5. The rapid rate at which the environmental movement developed meant that the business community was unprepared to challenge the new laws that were being created by Congress.
6. There was a series of environmental [and workplace] disasters which increased the pressure on the U.S. government to create legislation to prevent such events from happening in the future.

The following discussion reviews the critical events, publications, and laws from the 1950s (Box 2.1) that came together to form the U.S. environmental movement.

Up until the early 1960s, economic growth was the predominant paradigm driving U.S. public and industrial policy, and the term 'environment' was rarely mentioned in public debates (Gore 1994). Between 1930 and 1970, U.S. income per capita increased by some 180% (measured in chained 1996 Dollars), see Figure 2.1. As individual wealth increased, so did the desire to move to the suburbs in search of a better standard of living (U.S. Department of Commerce 1994). Disposable income was directed towards the purchase of automobiles, which made it possible for workers to commute into industrial centers from the more spacious and healthy suburban environment. The increase in wealth that occurred during the 1950s led to conditions of economic security that provided people (especially the young) with the time and opportunity to focus their attention on issues such as the state of the environment, peace, equality, and physical fitness and health (McCormick 1995).

Box 2.1: The Creation of a National Environment and Development Agenda—1951 to 1970

Year	Events	Publications	U.S. Legislation
1951	President Truman appoints the *Paley Commission* to study the long-range aspects of the national resource base.		
1952	*Resources for the Future* is established.	*Resources for Freedom*—The President's Material Policy Commission	
1954		*The Nation Looks at Its Resources: Report of the Mid-century Conference on Resources for the Future*—Resources for the Future	
1960	*World population—3 billion.* The World Bank creates the International Development Association (IDA).	*Energy in the American Economy, 1850-1975: An Economic Study of Its History and Prospects*—S. H. Schurr and B. C. Netschert	
1961	The OECD (Organisation for Economic Co-operation and Development) is created from the OEEC (Organisation for European Economic Co-operation). The World Wildlife Fund (WWF) is established.		
1962		*Silent Spring*—R. Carson *Resources in America's: future patterns of requirements and availabilities*, 1960-2000—H. H. Landsberg, L. L. Fischman, and J. L. Fisher	
1963		*Scarcity and Growth: The Economics of Natural Resource Availability*—H. J. Barnett and C. Morse	
1964	The UN Conference on Trade and Development (UNCTAD) is established.		

Box 2.1: The Creation of a National Environment and Development Agenda—1951 to 1970

Year	Events	Publications	U.S. Legislation
1965		*Unsafe at Any Speed: The Designed-in Dangers of the American Automobile*—R. Nader	
1966		*Environmental Quality in a Growing Economy: Essays from the Sixth RFF Forum*—K. E. Boulding, H. J. Barnett, R. Dubos, L. J. Duhl, R. Turvey, R. N. McKean, A. V. Kneese, M. M. Gaffney, G. F. White, D. Lowenthal, N. E. Long, J. H. Beuscher, and J. Jarrett (eds.)	The Freedom of Information Act (FOIA)
1967	The Environmental Defense Fund (EDF) is created.		
1968	The Biosphere Conference is held in Paris under the auspices of the UN Educational, Scientific, and Cultural Organization (UNESCO). The topic of "the human environment" is addressed by the UN Economic and Social Council (ECOSOC). ECOSOC Resolution 1364 (XLV) eventually leads to the 1972 Stockholm Conference. An explosion occurs at a mine in Farmington, West Virginia, killing 78 people.	*The Tragedy of the Commons*—G. Hardin *The Population Bomb*—P. Ehrlich	

Box 2.1: The Creation of a National Environment and Development Agenda—1951 to 1970

Year	Events	Publications	U.S. Legislation
1969	An oil spill on the Cuyahoga River in Ohio catches fire. An oil spill occurs off the coast of Santa Barbara, California, discharging some 200,000 gallons of crude oil into the sea. United Mine Workers strike over coal workers' pneumoconiosis, or "black lung." Friends of the Earth is formed.	*Partners in Development*—Report prepared by the Commission on International Development	The Coal Mine Health and Safety Act The National Environmental Policy Act (NEPA)
1970	First Earth Day—April 22. The Natural Resources Defense Council (NRDC) is formed. President Nixon creates the Environmental Protection Agency (EPA) in the U.S. by executive order.	*Economics and the Environment: A Materials Balance Approach*—R. U. Ayres, R. C. D'Arge, and A. V. Kneese *Man's Impact on the Global Environment*—Report prepared by a scientific group assembled at MIT	The Clean Air Act (CAA) The Occupational and Safety Health Act (OSH Act)

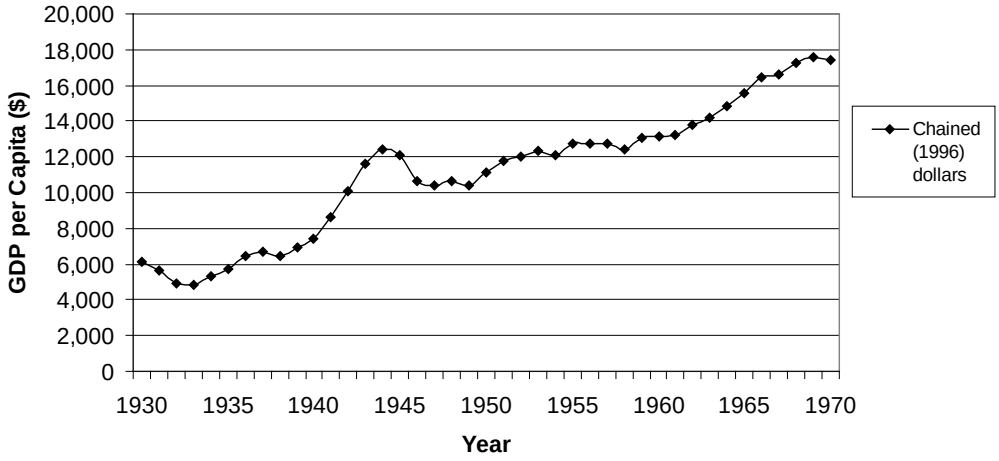

Figure 2.1: GDP per Capita in the U.S.—1929 to 1970[18]

The growing prosperity of the time was paralleled by an increasing concern that available national resources may not be sufficient to sustain economic growth into the future. This prospect became all the more real in 1947, when the U.S. transitioned from being a net exporter to a net importer or oil (Bradley 2008). In response to the public concern, President Truman's Materials Policy commission—known as the Paley Commission—completed a major review of existing resources. The commission concluded that saving resources for the future may be unnecessary due to technological innovation and new resource discoveries (RFF 1954, The President's Material Policy Commission 1952). Although, the report did warn that a time will come when future demand for nonrenewable energy resources will outrun the declining and fixed terrestrial stock, the tone of the report was not alarmist. A decade later, the optimism that resource constraints might not halt economic growth was reinforced by the classic work of Barnett and Morse (1963) on *Scarcity and Growth*.*

* This work was later revisited by Smith (1979) and Simpson et al. (2005). The original work and follow-up assessment in 1979, focused on the long-term growth implications relating to the scarcity of minerals, fuels, and agricultural resources and the efficiency by which these were allocated. The reports concluded that long-term price trends showed these resources were becoming *more* available and that technological innovation would compensate for any decline in the availability of resources. In 2005, Simpson et al. (2005) reconsidered this earlier work in the context of 25 years of learning and experience since 1979. Their conclusion was that concerns about resource scarcity had evolved in important ways. The 'old scarcity' model focused primarily on resources that could be traded in markets. Whereas today, the primarily concern lies with global public goods and environmental resources – i.e., the Earth's capacity to absorb the waste products from resource extraction and use (the 'new scarcity model'). There has also been a shift in the opinion among academics on the ability of technological innovation to overcome the challenges posed by 'new scarcity' (Simpson et al. 2005). Interestingly, those scholars who are optimistic about the role of technology do not leave its development in the hands of the market

Enthused by the commission's suggestion that much more research was needed, William Paley, along with leaders from academia, government, and conservation groups, were able to secure funding from the Ford Foundation to establish the research group *Resources for the Future* (RFF) (Bradley 2008). In its first several years, RFF completed a number of influential studies on resource-related topics including *Energy in the American Economy, 1850-1975,* by Schurr et al. (1960) and *Resources in America's Future* by Landsberg et al. (1963). In 1965, RFF commissioned a set of essays for its sixth forum entitled "Environmental Quality in a Growing Economy" (Barnett et al. 1966). This publication marked the expansion of RFF's research beyond energy and resource economics, to include environmental studies. The rationale was that the environment is an essential resource that should be considered alongside energy, fish, forest products, and other extractive materials. With its expanded research agenda, RFF can be considered as the first environmental think tank to be established in the U.S.

In the 1970s, the issue of resource limits captured international attention with the publication of *Limits to Growth* (Meadows et al. 1972). However, this time the dialog was much less optimistic—see Section 2.5.

Before the 1960s, communities seemed to accept the prevailing environmental and human health impacts from industrial activities, perhaps due to the perceived benefits from these activities and the lack of information on the potential hazards. This situation began to change in 1962 with the publication of Rachel Carson's book *Silent Spring*.[*] Carson described the potential dangers of

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alone. They recognize the importance of innovative legal, financial, and institutional changes in stimulating the necessary technological change. Understanding what types of mechanisms can be used to promote radical (technological, organizational, institutional, and social) innovation that not only protects the environment, but creates meaningful well-paid jobs is the principle focus of Ashford and Hall (2011b).

[*] Interestingly, some six months before *Silent Spring* was published, Murray Boochin (under the pen name Lewis Herber) published a book called *Our Synthetic Environment*. Boochin's book covered the same material as Carson but he failed to capture the public's interest, partly due to his target audience of scientists and to his more factual writing style (Hynes 1989). In Chapter 1 of his book, Boochin (1962) introduces his major concerns: "Today, employers require a greater output per hour from each worker. The use of machines tends to make work monotonous and sedentary, often exhausting human nerves as completely as manual work exhausted human muscles. Modern man is far less physically active than his forebears were. He observes rather than performs, and uses less and less of his body at work and play. His diet, although more abundant, consists of highly processed foods. These foods contain a disconcertingly large amount of pesticide residues, coloring and flavoring matter, preservatives, and chemical "technological aids," many of which may impair his health. His waterways and the air he breathes contain not only the toxic wastes of the more familiar industries but radioactive pollutants, the byproducts of

the pesticide DDT (dichlorodiphenyl trichloroethane)* and argued that its development and continued use served the interests of chemical companies, industrial agriculture, the military, and universities. The fierce opposition to her book by the chemical industry had the effect of strengthening the public resolve behind her work. "Silent Spring altered a balance of power in the world. No one since would be able to sell pollution as the necessary underside of progress so easily or uncritically" (Hynes 1989, p. 3).

Silent Spring was one of the founding texts of the modern environmental movement. Its influence on the history of environmentalism is often compared to the role that *Uncle Tom's Cabin* (Stowe 1982) played in the abolitionist movement (Hynes 1989, Lewis 1985). It mobilized a generation that was already questioning government and industry decision-making in the post-World War II era† and refocused the environmental agenda away from the predominant (and somewhat contradictory) environmental views of *conservation* (Pinchot, Steen and Brannon 2001) and *preservation* (Muir 1997), toward ecosystem integrity and biological diversity.‡ In 1964, Carson's premature death from breast cancer

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peacetime uses of nuclear energy and nuclear weapons tests." Source: Boochin, M. (1962) *Our Synthetic Environment, Chapter 1: The Problem,* http://dwardmac.pitzer.edu/anarchist_archives/bookchin/syntheticenviron/ose1.html (accessed July 29, 2011).

* DDT is most famous for its ability to cause eggshells to weaken and crack, threatening the survival of birds and, hence, the balance of ecosystems. Some bird species affected by DDT include: osprey, eagles, pelicans, falcons, and hawks.

† The defoliation tactics used during the Vietnam War captured the imagination of anti-war activists who saw the potential harm to soldiers (and the Vietnamese people) and the destruction of the environment as a strong rallying point. Lewis (1985) describes how the activists even started using the term "ecology" in reference to the science of the environment, which at this time was still in its infancy.

‡ Before the release of *Silent Spring*, the advice given to politicians from environmental groups was based upon a conservation and preservation ethic. For example, to support John F. Kennedy's presidential campaign in 1960, the Natural Resource Committee of the Democratic Advisory Council prepared a report entitled *Resources for the People*, which advocated the *conservation* and *protection* of the nation's natural resources. Hynes (1989, p. 140) argues that the Committee "saw the earth as a warehouse stocked with chemical and physical resources to fulfill the health, industrial, defense, recreational, and aesthetic needs of human consumers. Politicians were charged to conserve present supplies for future use, to manage the store as good stewards." Silent Spring challenged the very foundation of the conservationism movement. Carson argued that the "control of nature is a phrase conceived in arrogance, born of the Neanderthal age of biology and philosophy, when it was supposed that nature exists for the convenience of man" (Carson 1962, p. 261). Her philosophy was that nature should be viewed with respect and not as a form of commodity, and that polluting the environment to satisfy our needs ultimately polluted ourselves since we depend upon the environment for our survival.

seemed to only strengthen public support for her cause, since it was perceived that pollution had contributed to her illness (Davis 2002).

In 1967, the Environmental Defense Fund (EDF) was founded by four scientists on Long Island to develop the legal grounds on which to ban DDT.[19] The scientists went to court on behalf of the environment—a practice unheard of in 1967—which led to the nationwide ban of DDT, signed on June 14, 1972.

As the public's distrust of pesticides and the chemical industry grew, so did its distaste for corporate America. Fueled by Ralph Nader's book, *Unsafe at Any Speed*,* published in 1965, the growing belief that companies were generating private profits at the expense of the environment and the health and safety of society began to force government to take these allegations seriously.

In parallel with the growing distrust of the government-industrial complex, arguments warning of the environmental problems associated with the prevailing development model of rapid industrialization and economic growth began to surface. Two classic publications which supported this movement were "The Tragedy of the Commons" by Garrett Hardin and *The Population Bomb* by Paul Ehrlich,†, ‡ both written in 1968. Hardin (1968) highlighted the natural

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* *Unsafe at Any Speed* describes the resistance of automobile companies to introduce safety features, such as seat belts, and their general reluctance to invest in safety. General Motor's Chevrolet Corvair was one of the main targets of the book since its poor suspension system meant it was liable to roll over when traveling around corners at moderate speeds. Nader's work led to the creation of Government mandated safety and environmental regulations for automobiles – i.e., the National Traffic and Motor Vehicle Safety Act of 1966 and the Highway Safety Act of 1966. In addition, in 1970 the National Highway Traffic Safety Administration (NHTSA) was established by the Highway Safety Act of 1970. NHTSA is one of nine administrations located under the U.S. Department of Transportation.

† Paul Ehrlich's *The Population Bomb*, as indicated by the title of the book, also saw the problem of the commons in terms of too many people. Ehrlich's argument was the modern exposition of Thomas Malthus' concern that living conditions in nineteenth century England were likely to decline as a result of overpopulation. Ehrlich predicted that by the 1970s and 1980s hundreds of millions of people would starve to death as a result of overpopulation and a fixed amount of resources. While Ehrlich's predictions have yet to materialize, his book was influential to the anti-growth movement.

‡ One of the most famous examples of how population growth can lead to environmental destruction and the eventual collapse of a civilization is the history of Easter Island. See Clive Ponting's (1991) discussion of the lessons of Easter Island for an informative account of how sustained population growth combined with limited resources led to the overshoot and collapse of ecological systems (as a result of deforestation) on which the island's inhabitants depended. Research has shown that once the island's forests were depleted, the advanced Polynesian society that had successfully survived on the island for centuries (between the fifth and fifteenth century AD) was gradually forced into primitive living conditions, tribal warfare, and cannibalism. The Story of Easter Island also supports the argument made in *Limits to Growth* (Meadows et al. 1972),

tendency for private actors to exploit the public/environmental commons to the point where it can no long support economic activity. Ehrlich (1968) expressed concern that the appetite of a growing population may not be met by a fixed resource base – a similar argument to that made in *Limits to Growth* (Meadows et al. 1972). In addition to these publications, the late 1960s experienced two environmental disasters—the Santa Barbara oil spill* and the oil fire on the Cuyahoga River†—that increased the pressure on the U.S. government for action. Evidence of the growing public support for environmental issues during the 1960s can be identified through opinion surveys and through the growing number of people who joined environmental groups such as the Sierra Club and the Natural Resources Defense Council during this period (Bosso 2000).

In response to public concern that the government was failing to protect its citizens and the environment, President Nixon signed Executive Order 11472 on May 29, 1969, establishing an Environmental Quality Council and a Citizens' Advisory Committee on Environmental Quality. Lewis (1985, pp. 6-7) describes how the President was "stung" by the criticism "that these were largely

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that once human activity exceeds (or overshoots) the ecological limits of the earth, humanity will face a rapid decline in population and industrial capacity.

* On January 29, 1969, a Union Oil Co. platform stationed some six miles off the coast of Santa Barbara, California, experienced a natural gas blowout while workers extracted a pipe from a 3,500 foot deep oil well to replace a drill bit. While an initial attempt to cap the hole in the sea bed was successful, the pressure in the oil well continued to increase, eventually causing five new breaks to occur on the ocean floor. For eleven days, oil crews attempted to cap the breaks, which were releasing a mixture of natural gas and crude oil. During this period, some 200,000 gallons of crude oil were released, which created an 800 square mile oil slick. Source: Santa Barbra Wildlife Care Network, *Santa Barbara's 1969 Oil Spill*, http://sbwcn.org/wildlife-education/oil-wildlife/1969-oil-spill/ (accessed July 29, 2011). In comparison, over 200 million gallons of oil were released during the BP oil spill in the Gulf of Mexico in 2010. Source: PBS, Hoch, M., *New Estimate Puts Gulf Oil Leak at 205 Million Gallons*, August 2, 2010, http://www.pbs.org/newshour/rundown/2010/08/new-estimate-puts-oil-leak-at-49-million-barrels.html (accessed July 29, 2011). This volume of oil makes the BP oil spill *one thousand* times greater than the 1969 Santa Barbara oil spill.

† On June 22, 1969, sparks from a passing train ignited an oil slick (composed of floating debris and oil from local industrial processes) on the Cuyahoga River in Ohio. While the river had been on fire before (in 1936 and 1952), these prior events managed to escape the attention of the national media, primarily because no pictures were taken and possibly because it was perceived that the *national public* would not be interested in such events (Adler 2002). However, several photos of the 1969 fire did make it onto the front pages of two major Cleveland papers. On August 1, 1969, *Time Magazine* ran a story on the fire, giving it national attention. In subsequent years, the concept of a *river on fire* was successfully used by the growing environmental movement to highlight the problems with industrialization without appropriate regulation to protect the environment. The most notable government response to the Cuyahoga River fire occurred in 1972 when Congress passed the Clean Water Act (ibid.).

ceremonial bodies," prompting him to appoint a White House committee in December 1969 to review the idea of creating an independent environmental agency. That same month, Congress passed the National Environmental Policy Act (NEPA) and forwarded it to President Nixon for his signature.

The NEPA was Congress's response to the growing public pressure for action (Anderson, 1973). This response can most clearly be seen in the introductory text to NEPA.

> "The Congress, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource exploitation, and new and expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans" (Sec. 101, (a) [42 USC § 4331]).

The Act was designed to ensure that the entire federal bureaucracy considered the environmental impacts of its actions (Blumm 1990). It also made the statement that the federal government would "no longer be a leader in causing environmental degradation" and would become a model for other governments in the protection of the environment (ibid., p. 448). "The Federal Government shall … recognize the worldwide and long-range character of environmental problems and, where consistent with the foreign policy of the United States, lend appropriate support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of mankind's world environment" (Sec. 102, (2), (F) [42 USC § 4332]).

The inherent complexity of environmental management led Congress, through the NEPA, to initiate an environmental planning policy that was designed to "utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts" (Sec. 102, (1), (A) [42 USC § 4332]).

The most influential aspect of the NEPA, which had a profound effect on decision-making (Anderson 1973), was the requirement that each federal agency

shall make a detailed statement on "the environmental impact of the proposed [governmental] action" (Sec. 102, (2), (C), (i) [42 USC § 4332]). No longer could agencies make decisions without careful (public) consideration of the impacts of their actions.* The requirement to undertake an environmental impact assessment (EIA) is now a critical aspect of any government action which involves the environment.† In addition, the EIA process plays a critical role in informing the public of the potential environmental impacts of proposed agency actions, including the impacts of alternative actions.

On January 1, 1970, President Nixon made the political decision to sign the NEPA, making it the "first official act of the decade."[20] The signing marked the end of almost a decade of intense debate over the process of economic development and its environmental impacts, which would now be considered together in future government decision-making. During President Nixon's State of the Union address on January 22, 1970, he continued to express the importance of finding better ways to manage the nation's resources. He stated that the great question of the 1970s is, "shall we surrender to our surroundings, or shall we make our peace with nature and begin to make reparations for the damage we have done to our air, to our land, and to our water?" In discussing the need for a national growth policy, President Nixon argued for making the 1970s "an historic period when by conscious choice we transformed our land into what we want it to become." He also announced that the seventies would be the "great age of reform of the institutions of American government." His commitment to improving the environment was continued on February 10, 1970, when he announced a 37-point environmental action plan designed to strengthen federal programs that manage air and water pollution (Lewis 1985).

On April 22, almost four months after the signing of the NEPA, the first Earth Day was held. Some 20 million Americans peacefully demonstrated in streets, parks, and auditoriums for a healthy environment and in support of environmental reform.[21] The event crystallized the views of those who had been protesting against harm to the environment and to humans and enabled them to articulate a shared set of common values.

Lewis (1985) suggests that Earth Day further raised the profile of environmental issues, giving support to a report prepared by the President's Commission on Executive Reorganization that called for the establishment of an

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* Note that no policy was articulated on the actions of business and industry. Subsequent legislation addressing air and water pollution, waste, workplace health and safety, and consumer product safety was to follow.

† In addition, almost 100 countries have chosen to adopt the environmental impact assessment (EIA) provisions of NEPA, making the Act the most copied legislation in U.S. history (Caldwell and Weiland 1996).

independent environmental agency. After much consideration, President Nixon submitted the Reorganization Plan No. 3 of 1970 to Congress,[22] which led to the establishment of the Environmental Protection Agency (EPA) on December 2, 1970.

The rationale behind the creation of a single agency for environmental policy making was that the institutional missions of existing government agencies did not necessarily reflect the interrelatedness of environmental concerns. For example, an agency that is only responsible for air quality is likely to develop regulations that affect the quality of air without considering whether these regulations will increase other forms of pollution (e.g., physical waste or noise pollution). Hence, the EPA was required to pull together "a variety of research, monitoring, standard-setting and enforcement activities [that were] … scattered through several departments and agencies."[22] In the Reorganization Plan, President Nixon also addressed the relationship between the EPA and the Council on Environmental Quality (CEQ), which was established by the NEPA. The role of the EPA was defined as protecting the environment by abating industrial pollution through the setting and enforcing of pollution control standards (whereas the CEQ would continue to focus on what America's *broader* environmental policies should be, as well as oversee the environmental impact statement process). The two were not seen as competing entities and were believed to provide an effective means of coordinating a campaign against environmental pollution.[*]

In 1970, the passage of the Clean Air Act (CAA)[23] provided additional incentives for agencies to comply with the NEPA's environmental goals and to work with the newly established EPA, and created avenues for establishing mandatory standards for industrial and mobile source pollution. Section 309 [42 U.S.C. 7609] of the CAA provided the EPA with the statutory authority to review and comment on the environmental impact of legislation proposed by any federal department or agency. If the EPA determined that the proposed legislation, action, or regulation did not meet the NEPA requirements (from a public health, welfare, or environmental quality perspective), its response was published and referred to the CEQ for review and resolution.

In parallel with the growing concern for the environment, the 1960s also witnessed the rise of occupational health and safety on the political agenda.

[*] One of the problems of creating the EPA through an executive order is that it does not have the status of a department and, therefore, has no congressional charter or organic law to help outline and defend its institutional mission (Kraft 2002). This presents the EPA with substantial challenges, since its unreliable financial resources and broad responsibilities make it difficult to secure political support and enforce numerous environmental laws.

While not a new subject,[*] the national interest in occupational health and safety grew substantially following the passage of the Coal Mine Health and Safety Act of 1969 and the Occupational Safety and Health Act (OSH Act)[24] of 1970. Ashford (1976) highlights three increasingly important factors which led to the new legislation. First, as the industrial sector grew during the sixties, so did the number of occupational injuries and fatalities (e.g., between 1961 and 1970 the industrial 'accident rate' increased by 29%).[25] This increase in accident rates soon captured the attention of labor unions, insurance companies, and industry itself, which forced Congress (and the Johnson Administration in particular) to take action in the late 1960s. Second, the mining industry experienced two events which raised the profile of worker health and safety.[†] The combination of an explosion at a mine in Farmington, West Virginia in 1968 which claimed the lives of 78 people and a strike by United Mine Workers over coal workers' pneumoconiosis, or black lung, in early 1969 put worker health and safety at the top of the political agenda adjacent to environmental protection. Finally, the growing problem of occupational disease began to gather momentum in the late 1960s. The most common, and hotly debated, occupational illnesses discussed during this period were black lung, asbestosis, asbestos-caused cancer, and beryllium disease (Ashford 1976). However, MacLaury (1998) argues that the rising number of cancer cases in workers from uranium mines was the catalyst for 'occupational health' concerns of the late 1960s.

In response to the public condemnation of inadequate safety standards for mines and weak government enforcement mechanisms, President Nixon signed

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[*] One of the earliest and most influential works that articulated the severe environmental and occupational health and safety impacts of industrial activities was *The Jungle* by Upton Sinclair, first published in 1906. Sinclair's harrowing account of the Chicago meat packing industry captured the attention of the nation, including that of President Theodore Roosevelt. Upon reading the book President Roosevelt ordered an investigation into the meat packing industry, which led to the creation of the Pure Food and Drugs Act (1906) and the Meat Inspection Act (1906). While Roosevelt disapproved of the manner in which *The Jungle* preached socialism, he told Sinclair that "radical action must be taken to do away with the efforts of arrogant and selfish greed on the part of the capitalist." The publication of *The Jungle* also paved the way for investigative journalism and showed the American people that one person could institute change. Source: Spartacus Educational, *Upton Sinclair*, http://www.spartacus.schoolnet.co.uk/Jupton.htm (accessed July 30, 2011).

[†] Early concern for worker safety came from the mining sector, which was estimated to have claimed some 100,000 lives in the U.S. between 1900 and 1969. While Congress had toughened mining laws in 1907 – following the death of 362 people in an explosion at the Fairmount Coal Company's mine in Monongah, West Virginia – it was not until 1969 that serious steps were taken to protect the health and safety of miners. Source: U.S. Department of Labor, Mine Safety and Health Administration, *Mining Disasters – An Exhibit*, http://www.msha.gov/DISASTER/DISASTER.HTM (accessed July 30, 2011).

the Federal Coal Mine Health and Safety Act of 1969 on December 30, 1969. This Act set mandatory health and safety standards for underground mines (with the Bureau of Mines exercising enforcement authority), provided states with funding to establish or improve local protection or compensation programs, and established federal funding for research into pneumoconiosis (Ashford 1976). The Act also paved the way for more comprehensive legislation for job health and safety and the OSH Act was passed in 1970. The purpose of the OSH Act was to ensure *worker* and *workplace* safety in American industry, including agriculture. In particular, the OSH Act was designed to protect workers from exposure to "toxic chemicals, excessive noise levels, mechanical dangers, heat or cold stress, or unsanitary conditions."[26]

According to Speth (2002, p. 6), the rate at which environmental [and worker health and safety] legislation was developed during the late 1960s meant that the business community was disoriented and "caught off guard, without time to marshal its troops or gather its ammunition. Even environmental NGOs were surprised." However, this situation has been reversed over the past 30 years as industrial opposition to government regulation has become increasingly sophisticated and well-funded. Corporations frequently challenge potential environmental [and occupational health and safety] actions that might affect their business, both at the federal and state level (Kraft 2002). The financial resources that corporations can draw upon to challenge regulation far exceed those of non-government environmental organizations, for example, that are forced to defend only the most important environmental issues (Furlong 1997).

During the 1960s, concern in the U.S. about the environmental impact of industrialization had yet to be discussed by the international community. For example, in 1964 the United Nations Conference on Trade and Development (UNCTAD) was established to integrate developing countries into the world economy in a "development-friendly" manner.[27] Here, *development-friendly* should not be confused with *environmentally-friendly development*. The former holds industrialization and economic growth as the main objectives of development, whereas the latter only supports development if it does not significantly impact the environment.

One could make the argument that the seed for international concern for the environment was planted in 1968 when Sweden's permanent representative to the UN placed the topic of 'the human environment' on the agenda of the UN Economic and Social Council (ECOSOC) (Caldwell and Weiland 1996, Thomas 1992).[28,*] During its forty-fifth session on July 30, 1968, the ECOSOC adopted

[*] In the late 1960s, Swedish scientists identified a series of environmental problems that could only be addressed through international cooperation – e.g., the problem of acid rain, the

Resolution 1346 (XLV) that called for an international conference on the problems of the human environment. Having considered the resolution, the UN General Assembly decided during a plenary meeting on December 3, 1968 "to convene in 1972 a United Nations Conference on the Human Environment."[29] The implications of this conference are considered in the following sections.

While Sweden placed the topic of the human environment on the UN's agenda, the events in the U.S. played a significant role in generating an international interest in the human environment. Interestingly, if we consider the NEPA requirement that the federal government should "fulfill the responsibilities of each generation as trustee of the environment for succeeding generations" (Sec. 101, (b), 1 [42 USC § 4331]), it is clear that this Act had an important influence on the conceptualization of the Brundtland definition of sustainable development that was written almost two decades later.[*]

In conclusion, this section has attempted to explain how the modern environmental movement began at the grassroots level in the U.S. during the 1960s. The signing of the NEPA and the formation of the EPA at the beginning of the 1970s set the scene for a decade of national environmental regulation (see Box 2.2 in the following section). The Carter Administration (1976-1980) was especially crucial in formulating an integrated health, safety, and environmental agenda. However, during the 1980s and President Ronald Reagan's administration, concern for the environment lulled as conservative interests and business groups led a successful campaign for deregulation and decreased funding for environmental policy,[†] as well as the removal of Carter Administration policies. The 1980s also saw the emergence of the 'environmental justice' movement after a series of studies showed that poor and minority communities were experiencing some of the worst levels of pollution (Agyeman, Bullard and Evans 2003a, Ringquist 2000, Bullard 1990). In the 1990s, concern for the environment returned to the U.S. policy agenda, although the focus shifted from command-and-control policies to ones that balanced investments and used more voluntary approaches (Kraft 2002). The 1990s also experienced the

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accumulation of heavy metals and pesticides in fish and birds, and the pollution of the Baltic – which led the Swedish government to call for international action to protect the human environment (UNEP 1982a).

[*] The Brundtland definition is: "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).

[†] For example, in 1981 President Reagan dismissed almost all of the staff on the Council on Environmental Quality (CEQ) and halved its budget (McCormick 1995). In addition, the President reduced the budget of the EPA by 30 percent and its personnel by 23 percent between 1981 and 1983 (ibid.).

explosion of sustainable development onto the international scene, which led to the creation of the President's Council on Sustainable Development in 1993. Kraft (2002) explains how the Council, in its report to President Clinton, unanimously concluded that the existing regulatory system should remain, but be improved by a new generation of flexible, consensual environmental policies that incorporate the notion of sustainable development. Hence, the regulatory regimes that were conceptualized in the 1970s are still at the core of modern environmental policies in the U.S. today. Born out of a concern for the integrity of ecosystems, the environmental movement of the sixties paved the way for national environmental agendas around the world and laid the foundations for what later became the concept of sustainable development.

2.3 The Rise of an International Concern for the Human Environment

It has been argued that the 1960s influence on modern environmentalism is what the 1970s were to the formulation of sustainable development (Speth 2003, 2002). As national environmental agendas began to be established throughout the world, the 1970s witnessed the emergence of a concern for the human environment in the international arena. The impetus for this development was the UN Conference on the Human Environment that was held in Stockholm on June 5-16, 1972.[*] Political scientist Lynton Keith Caldwell[†] attributes such importance to the Stockholm conference for two reasons (Caldwell and Weiland 1996). First, it legitimized the critical need for all nations to establish environmental policy at the national level. Second, it informed the world society of the vital role that a healthy biosphere plays in sustaining life,

[*] While the Stockholm conference is seen as a critical factor in the development of international concern for the human environment, many of the initiatives credited to the Stockholm conference can be traced back to the 1968 Biosphere Conference (the Intergovernmental Conference of Experts on the Scientific Basis for Rational Use and Conservation of Resources of the Biosphere) held under the auspices of the UN Educational, Scientific, and Cultural Organization (UNESCO) (McCormick 1995). The Biosphere Conference identified the interrelatedness of the environment and concluded that its deterioration was the result of rapid population growth, urbanization, and industrialization (ibid.). The Biosphere Conference led to the creation of the UNESCO Man in the Biosphere (MAB) programme in 1971, which was designed to replace the somewhat limited International Biological Programme (IBP) that was scheduled to close in 1974. The Biosphere Conference and the subsequent MAB programme began to raise public awareness about the importance of a healthy biosphere in sustaining life. The Stockholm conference reaffirmed this message through its numerous national environmental reports and its strong endorsement of UNESCO's MAB programme.

[†] Lynton Keith Caldwell had an influential role in drafting NEPA in the late 1960s. For a detailed discussion of the factors which led to the formation of NEPA, see Caldwell (1998).

and hence it placed a concern for the environment on national agendas (see Section 2.6.2). Caldwell argues that both of these developments were necessary for the international community to address environmental concerns legitimately.*

A summary of the critical events and publications of the 1970s that helped form the international environmental agenda is displayed in Box 2.2. In addition, important environmental legislation passed in the U.S. is displayed, which shows how the nation's environmental agenda was developing during the 1970s.†

The U.S. legislation shown in Box 2.2 reflects all four of the environmental concerns associated with sustainable development. The first environmental concern—that industrialization negatively affects ecosystem integrity and biological diversity and indirectly affects human health—is reflected by the following legislation:

- The 1969 National Environmental Policy Act
- The 1970 Clean Air Act (CAA)
- The 1972 Federal Water Pollution Control Act
- The 1972 Federal Environmental Pesticide Control Act (now known as the Federal Insecticide, Fungicide, and Rodenticide Act)
- The 1973 Endangered Species Act (ESA)

The second environmental concern—that the world's resources and energy supplies are finite—is reflected by the 1976 Resource Conservation and Recovery Act (RCRA), which deals with the concern that national resources (e.g., land and recoverable materials lost to landfills in particular) are scarce and must be protected.

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* Caldwell's sentiments are reflected by the Nairobi Declaration that was adopted by the 'session of a special character' of the Governing Council of the United Nations Environment Programme (UNEP) on 18th May, 1982. "The Stockholm Conference was a powerful force in increasing public awareness and understanding of the fragility of the human environment. The years since then have witnessed significant progress in environmental sciences; education, information-dissemination and training have expanded considerably; in nearly all countries, environmental legislation has been adopted, and a significant number of countries have incorporated within their constitutions provisions for the protection of the environment. … The principles of the Stockholm Declaration are as valid today as they were in 1972. They provide a basic code of environmental conduct for the years to come." Source: The United Nations Environment Programme, *Nairobi Declaration* (1982), http://www.unep.org/Law/PDF/NairobiDeclaration1982.pdf (accessed July 30, 2011). Also see the UNEP report entitled *The Environment in 1982: Retrospect and Prospect* (UNEP 1982a) for a similar statement on impacts of the 1972 Stockholm conference.

† See Chapter 9 in Ashford and Hall (2011b) for a discussion of the current U.S. health, safety, and environmental regulatory system.

The third environmental concern—that toxic pollution directly affects human health and the health of other species—is reflected by the following legislation:

- The 1970 Clean Air Act (CAA)
- The 1970 Occupational Safety and Health Act
- The 1972 Federal Water Pollution Control Act
- The 1974 Safe Drinking Water Act (SDWA)
- The 1976 Resource Recovery and Conservation Act (RCRA)
- The 1976 Toxic Substances Control Act (TSCA)
- The 1980 Superfund legislation*

Finally, the fourth environmental concern—that greenhouse gases from anthropocentric sources are leading to the disruption of the global climate—is somewhat loosely connected to the CAAA of 1977 and 1990.

In the mid-1970s, scientists concluded that chlorofluorocarbons (CFCs) had the potential to deplete stratospheric ozone that provides an essential barrier to the damaging UV-B radiation emitted from the sun (Molina and Rowland 1974). In response to this research, the CAAA of 1977 included a congressional directive to undertake further research on ozone depletion, and the later CAAA of 1990 called for a reduction in the amount of CFCs that were being used. The recognition that human activity could change the thermal radiative process of the atmosphere led scientists to consider the potential impact of the vast amount of carbon dioxide (CO_2) that had entered (and continues to enter) the atmosphere since the start of the Industrial Revolution. A 2007 Supreme Court decision found that greenhouse gases such as CO_2 could be regulated under the Clean Air Act (Ashford and Caldart 2008), and in December 2009 (at the beginning of the UN climate-change conference in Copenhagen, COP-15), the Environmental Protection Agency (EPA) issued a final ruling that greenhouse gases were a danger to human health and the environment, paving the way for regulation of

* TSCA regulates chemicals that pose an unreasonable risk to humans and the Superfund Act created a tax (that is no longer collected) on chemical and petroleum industries to be used to clean up abandoned or uncontrolled hazardous waste sites. The main objective of the Superfund legislation was to "respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment." [Source: EPA, 1980 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), *CERCLA Overview*, http://www.epa.gov/superfund/policy/cercla.htm (accessed July 30, 2011).] The 1976 RCRA also included provisions that addressed the management of toxic material and the Clean Air Act Amendments (CAAA) of 1977 and 1990 included provisions to control hazardous (i.e., toxic) air pollutants (HAPs) through the application of technology-based performance standards. Note: the Clean Air Act of 1970 focused on controlling air pollution from both stationary industrial sources and mobile sources endangering human health and made mandatory previous voluntary standards contained in legislation whose origin was the late 1960s.

carbon dioxide emissions. One example of regulation developed following the EPA ruling is the proposed regulation on "Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources."[30] It will remain to be seen whether regulation such as this will be implemented, given the current climate of partisanship in U.S. politics.

Box 2.2: The Creation of an International Environmental Agenda—1969 to 1980

Year	Events	Publications	U.S. Legislation
1969	An oil spill on the Cuyahoga River in Ohio catches fire. An oil spill occurs off the coast of Santa Barbara, California, discharging some 200,000 gallons of crude oil into the sea. United Mine Workers strike over coal workers' pneumoconiosis, or "black lung." Friends of the Earth is formed.	*Partners in Development*—Report prepared by the Commission on International Development	The Coal Mine Health and Safety Act The National Environmental Policy Act (NEPA)
1970	First Earth Day—April 22. Natural Resources Defense Council (NRDC) is formed. President Nixon and the Congress form the Environmental Protection Agency (EPA) in the U.S.	*Economics and the Environment: A Materials Balance Approach*—R. U. Ayres, R. C. D'Arge, and A. V. Kneese *Man's Impact on the Global Environment*—Report prepared by a scientific group assembled at MIT	The Clean Air Act (CAA) The Occupational and Safety Health Act (OSH Act)

Box 2.2: The Creation of an International Environmental Agenda—1969 to 1980

Year	Events	Publications	U.S. Legislation
1971	The Man and the Biosphere program (MAB) is founded by UNESCO (UN Educational, Scientific, and Cultural Organization). Greenpeace starts in Canada. The OECD creates the Environment Committee (now the Environment Policy Committee—EPOC) and the Environment Directorate. President Nixon closes the gold window and unilaterally terminates the international gold exchange standard established by the Bretton Woods agreements. Thus the dollar is no longer effectively linked—directly or indirectly—to gold.	*Founex Report*—Report by the Preparatory Committee for the United Nations Conference on the Human Environment *Only One Earth*—B. Ward and R. Dubos *The Closing Circle: Nature, Man, and Technology*—B. Commoner *The Entropy Law and the Economic Process*—N. Georgescu-Roegen	
1972	The UN Conference on the Human Environment is held in Stockholm, Sweden (known as the Stockholm Conference). The United Nations Environment Programme (UNEP) is formed following the Stockholm Conference.	*The Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind*—D. H. Meadows, D. L. Meadows, J. Randers, and W. W. Behrens III *Blueprint for Survival*—The Ecologist *Exploring New Ethics for Survival: The Voyage of the Spaceship Beagle*—G. J. Hardin *Only One Earth: The Care and Maintenance of a Small Planet*—B. Ward	The Federal Water Pollution Control Act Amendments (this law is amended in 1977 and becomes known as the Clean Water Act—CWA) The Federal Environmental Pesticide Control Act, which amended the 1947 Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

Box 2.2: The Creation of an International Environmental Agenda—1969 to 1980

Year	Events	Publications	U.S. Legislation
1973	OPEC oil embargo begins.	*Small is Beautiful*—E. F. Schumacher	The Endangered Species Act (ESA)
1974	*World population—4 billion.* The World Food Council is formed and a reconstituted World Food Programme (WFP) is established following the World Food Conference in Rome.	*Cocoyoc Declaration*—Prepared by a UN-sponsored meeting in Cocoyoc, Mexico, called to discuss how development can be focused on achieving basic human needs Stratospheric Sink for *Chlorofluoromethanes: Chlorine Atom-Catalysed Destruction of Ozone*—F. S. Rowland and M. J. Molina	The Safe Drinking Water Act (SDWA)
1975	The Worldwatch Institute is established.	*What Now: Another Development*—Report by the Dag Hammarskjöld Foundation, Sweden	
1976	The UN Habitat program is created following the UN Conference on Human Settlements (Habitat I) in Vancouver, Canada.	*Crisis in the Workplace: Occupational Disease and Injury*—N. A. Ashford	The Resource Conservation and Recovery Act (RCRA) The Toxic Substances Control Act (TSCA)
1977	The UN adopts a Plan of Action to Combat Desertification (PACD) following the UN Conference on Desertification in Nairobi, Kenya.		
1978		*World Development Report (WDR)*—The WDR is first published by the World Bank *The Human Future Revisited*—H. Brown *The Twenty-Ninth Day*—L. Brown	

Box 2.2: The Creation of an International Environmental Agenda—1969 to 1980

Year	Events	Publications	U.S. Legislation
1979	The World Meteorological Organization (WMO) sponsors the first World Climate Conference held in Geneva, Switzerland. Three Mile Island nuclear accident occurs in Pennsylvania, U.S. Second oil shock occurs as the Iranian oil sector reduces its oil exports.	*Banking on the Biosphere*—International Institute of Environment and Development (IIED) *Progress for a Small Planet*—B. Ward *Scarcity and Growth Reconsidered*—V. K. Smith (ed.)	
1980		*World Conservation Strategy*—Published by The IUCN (International Union for Conservation of Nature and Natural Resources), the UNEP, and the WWF *North-South: A Program for Survival*—Report by the Independent Commission on International Development Issues *The Global 2000 Report to the President*—Report by the U.S. Council on Environmental Quality and the Department of State	The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)—also known as Superfund

In addition to providing the impetus for U.S. environmental legislation, the environmental movement led to the formation of numerous environmental non-governmental organizations (NGOs). Five of the most prominent were Resources for the Future (RFF) (formed in 1952), the Environmental Defense Fund (EDF) (formed in 1967), Friends of the Earth (formed in 1969), the Natural Resources Defense Council (NRDC) (formed in 1970), and Greenpeace (formed in 1971). Although formed eighty years earlier (in 1892) with John Muir as its first elected President, the Sierra Club was also an active environmental organization during the 1970s. The growing national and international public support for these NGOs meant they were able to leverage substantial influence on environmental issues, which led to some significant victories for the organizations.[*] Besides the formation of activist groups, the 1970s witnessed the formation of organizations dedicated to the synthesis and distribution of information on global environmental issues. A notable example is the Worldwatch Institute, formed by Lester Brown in 1975.[†]

2.4 The Pre-Stockholm Deliberations (1968 - 1972)

In preparation for the Stockholm Conference on the Human Environment (hereafter called the Stockholm conference), some 86 governments submitted national reports to the UN preparatory committee describing their

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[*] For example, in 1971 Friends of the Earth lobbied the U.S. Senate to vote against the proposed fleet of supersonic transports (SSTs) on the grounds that the aircrafts' high speed did not outweigh noise and pollution impacts (Cook 1990). Similarly, in 1971 the National Resource Defense Council (NRDC) won passage of the Clean Water Act, which enables citizens to sue polluters directly. [Source: NRDC, *Victories*, http://www.nrdc.org/about/victories.asp (accessed July 30, 2011).] In 1972, Greenpeace played an influential role in coercing the U.S. government to end nuclear testing in the Aleutian Islands and forced the French government to announce that nuclear testing would be moved underground in 1974. [Source: Greenpeace, *Greenpeace Changing Laws and Opinions*, http://www.greenpeace.org/usa/en/news-and-blogs/news/bush-vs-greenpeace-overview/greenpeace-changing-laws-and-o/ (accessed July 30, 2011).] Finally, in 1973 the Sierra Club launched a successful campaign to defend the Clean Air Act against auto industry opposition and in 1977 joined an effort that strengthened the provisions of the Act. [Source: The Sierra Club, *Highlights of the Sierra Club's History*, http://www.sierraclub.org/history/timeline.aspx (accessed July 30, 2011).]

[†] Today the Worldwatch Institute continues to prepare a wide variety of publications on the environmental condition of the world, the most prominent being the annual *State of the World* reports that began in 1984. The institute has consistently provided a stark message that all of the indicators of environmental quality and resource availability are pointing in an unsustainable direction, and that humanity faces problems around almost every corner (Dryzek 1997).

environmental experiences and concerns and highlighting areas where they saw opportunities for multilateral environmental agreements. These reports were accompanied by papers prepared by various UN agencies/bodies, and a number of documents written by individuals and non-governmental organizations in their specific areas of expertise. In addition, the UN General Assembly, recognizing the importance of including developing nations in pre-conference deliberations, announced that special attention should be given to "safeguard and promote the interests of developing countries with a view to reconciling the national environmental policies with their national development plans and priorities."[31] This policy effectively combined the concepts of national development and environmental protection in the international arena.

However, the combination of development and the environment unleashed a series of contrasting beliefs between developed and developing nations about how the process of development should be approached. Developed nations sought to protect the environment by establishing environmental mechanisms based on those in their homelands. The developing nations, however, rejected this approach since it was seen as placing unnecessary checks on their development; checks that the developed nations had managed to avoid (Redclift 1996). There were also concerns that the environmental agenda was the agenda of the "North," and that it was based on an implicit assumption that all nations should follow the development path of the industrialized world.

In an attempt to bridge the gap between such views, a panel of 27 experts (lead by Maurice Strong) on development and the environment met at Founex, Switzerland from June 4-12, 1971 to consider how developing nations could develop while protecting and improving their environment.[*] Their report, known as the *Founex Report* (UN 1972), became the focus of regional seminars in Africa, Asia, Latin America, and Beirut.

The purpose of the Founex Report was to explore the relationship between development and the environment and to create a framework from which environmental policies could be created. Prescriptive formulations of environmental policies were avoided since it was viewed that such policies could only be created by developing nations themselves.

An important message from the Founex Report was that *environmental improvement* is only one of the many objectives of planning and that its priority

[*] Two months later, the SCOPE/UNCHE (Scientific Committee on Problems of the Environment/UN Conference on the Human Environment) working party met in Canberra, Australia (24th August to 3rd September) to address similar issued raised at the Founex meeting (McCormick 1995). Note: the SCOPE/UNCHE meeting is often referred to as the 'Canberra meeting.'

should be determined by each society depending on its level of development. The objective was to ensure that developed nations did not encroach on a developing nation's ability to make decisions within its own framework of economic and social planning. In this light, the panel rejected the idea of establishing rigid environmental guidelines through multilateral or bilateral agreements prepared by donor nations. Instead, the panel opted for minimum environmental standards to be defined by *each* nation. There was also a concern that a heavy focus on environmental problems would lead to a reduction in aid to developing nations, as public opinion in developed nations would force governments to spend their taxpayers' money on alleviating domestic problems. However, a counterpoint to this argument was also presented. "An emerging understanding of the indivisibility of the earth's natural systems on the part of the rich nations could help strengthen the vision of a human family, and even encourage an increase in aid to poor nations' efforts to improve and protect their part of the global household" (UN 1972, p. 34).

One of the main concerns articulated in the Founex Report relates to the notion of "neo-protectionism" (UN 1972, p. 30). The concern was that a focus on rigorous, and arbitrarily imposed, environmental standards would enable developed nations to erect barriers to products exported by developing nations, which might have been produced using substandard technology or processes. In the words of the panel, if the environmental concern "spreads from the quality of a product to the environment in which such a product was produced, the alarm bells should ring all over the world, for it would be the beginning of the worst form of protectionism" (ibid., p. 31). Interestingly, the Founex Report is silent on the topic of occupational health and safety standards, which was a growing concern in developed nations. Hence, the 'environment' the panel refers to is the *natural*—as opposed to the worker—environment.

The panel did support the imposition of stricter environmental standards within developed nations, since this presents developing nations with a competitive advantage. "Such a development opens up an opportunity for the developing countries to move into some of these industries if their natural resource endowments, including relatively less used environmental resources, create a comparative advantage in these fields" (UN 1972, p. 35). The theory was that more stringent environmental standards would increase compliance costs, forcing industries to look overseas for more favorable operating environments. This movement of industry would not only benefit developing countries, but it would also redistribute the geographic layout of production centers. Nonetheless, this approach to development was not without its detractors, who argued that "there should be no export of pollutive industries from the developed to the developing world" (ibid., pp. 35-36). The panel addressed these

concerns by taking the middle ground. First, it stated that the environment in developing nations—which has not been burdened by industrial pollution—is likely to be able to carry a certain amount of industrial activity without substantial damage occurring.* Second, the environmental standards and associated compliance costs were likely to be different in developing countries, meaning that they might have a comparative advantage in some industrial areas. Finally, even with lower environmental standards, there is no reason why a developing nation would permit foreign investment by polluting industries if this would result in a "high rate of remittance of profits and even a lower net transfer of resources" (ibid., p. 36).

The Founex Report is a clear exposition of the concerns raised by developing nations in the pre-conference deliberations. Its overall conclusion that the contradictions between the environment and development can be mutually supportive secured the attendance of most developing countries at the Stockholm conference, who began to realize that environmental concerns were more widespread and more relevant to their situation than they had appreciated (Engfeldt 2002, UNEP 1982c). However, not all of the UN member states attended. The Soviet Union and other Eastern-Block nations (who had been active in the pre-conference deliberations) refused to attend the conference in protest at the exclusion of the German Democratic Republic, which was not a member of the UN (Nayar 1994). Their position was that the environment has no boundaries and therefore the conference should be open to all countries, not just the member states of the UN. To ensure that the Soviet Union was not excluded from discussions, Maurice Strong (the Secretary General of the Stockholm conference) held daily discussions with the Soviet embassy in Stockholm (Strong 2001).

During the UN General Assembly's twenty-sixth meeting in 1971, Resolution 2849 (XXVI) was adopted as a result of the pre-conference deliberations. The resolution stressed that the action plans and proposals to be submitted to the Stockholm conference *must*:

(a) "Respect fully the exercise of permanent sovereignty over natural resources, as well as the right of each country to exploit its own resources in accordance with its own priorities and needs and in such a manner as to avoid producing harmful effects on other countries;
(b) Recognize that no environmental policy should adversely affect the present or future development possibilities of the developing countries;

* Today it is generally understood that even small quantities of toxic chemicals can have devastating effects on the health of humans and other species (Schettler et al. 1999).

(c) Recognize further that the burden of the environmental policies of the developed countries cannot be transferred, directly or indirectly, to the developing countries;
(d) Respect fully the sovereign right of each country to plan its own economy, to define its own priorities, to determine its own environmental standards and criteria, to evaluate its own social costs of production, and to formulate its own environmental policies, in the full understanding that environmental action must be defined basically at the national level, in accordance with locally prevailing conditions and in such a manner as to avoid producing harmful effects on other countries; [and]
(e) Avoid any adverse effects of environmental policies and measures on the economy of the developing countries in all spheres, including international trade, international development assistance and transfer of technology."[32]

The pre-conference deliberations had a significant influence on the content and focus of the conference material. The UN resolution addressed the concerns of developing nations, reaffirmed the sovereign right of each nation to manage its own affairs, and helped set the stage for the first international conference on the human environment (see Section 2.6).

2.5 Influential Publications Released Prior to the Stockholm Conference (1970-1972)

In the two years preceding the Stockholm Conference, three seminal environmental works were published.* These were *The Closing Circle: Nature, Man, and Technology* by Barry Commoner, *Economics and the Environment: A materials balance approach* by Robert Ayres, Ralph d'Arge, and Allen Kneese, and *The Entropy Law and the Economic Process* by Georgescu-Roegen. Commoner saw environmental problems as a side effect of industrialization and the use of polluting (or *flawed*) technology. He argued that it was economic—as opposed to ecological—considerations that had led to the development of polluting technology† and that over-population was not the major cause of environmental

* See Røpke (2004) for a valuable discussion of these texts (and many others mentioned throughout this work) in the context of the history of modern ecological economics.

† Commoner further argued in later writings that it was the *nature* of the chemicals produced by a petrochemical-based economy, not the amount of chemical pollution per se, that was at the root of the environmental problem (Commoner 1974; 1979; 2000). He was particularly concerned with chlorinated hydrocarbons, not abundant in nature, that he deemed a problem because they were not part of our 'evolutionary soup.' Much later, Colborn et al. (1996) identified chlorinated chemicals as problematic from the perspective of endocrine disruption.

degradation (1991, 1972, Commoner 1971). This position is different to that of Paul Ehrlich and his colleague John Holdren, who argued that environmental degradation was caused by a combination of three factors—technology, affluence, *and* population (Ehrlich and Holdren 1972).[*]

In the pre-conference deliberations on the relationship of population growth to natural resource depletion, Ehrlich was effectively ignored by Commoner (the chair of the UN-sanctioned Environmental Forum) who refused to accept Ehrlich's call for an open debate on their disagreements (Rowland 1973).[†] The Commoner-Ehrlich interaction provides a good example of the contention behind some of the issues debated (or not) at the alternative conferences held during the Stockholm conference (Emmelin 1972). However, due largely to the efforts of Commoner and his colleagues, the output from the Stockholm conference was rather silent on the effects that population growth might have on the environment.

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[*] The debate between Commoner on one side and Ehrilch and Holdren on the other is one of the classic environmental feuds. In essence, all three recognized that growth in population, affluence, and technology were jointly responsible for environmental degradation, but they differed on which of these three factors was most important (Kates 2000). Commoner's view was that the economic system was creating technology that caused environmental degradation. In contrast, Ehrlich and Holdren saw the importance of all three factors and argued for a more comprehensive approach to understanding how they caused environmental degradation. However, due to Ehrlich's book, *The Population Bomb*, published in 1968, the different positions are often incorrectly described as an argument between whether technology or population was the major cause of environmental harm (ibid.). Today, there is a general recognition that population, affluence, and technology are intimately connected and the focus has shifted to the factors which influence each of these variables. For a valuable discussion of the Commoner-Ehrlich debate, see John McCormick's (1995) book *The Global Environmental Movement*.

[†] The UN summary of the general debate at the Stockholm conference highlights that several speakers "expressed regret that population problems took so minor a place in the agenda of the Conference." In addition, the report highlighted three distinct positions that delegates took on the issue of population: [1] all strategies for development and environment would be adversely affected if the rate of population growth was not reduced; [2] the real challenge was not population growth, but the fact that so many people of the world had such low expectations of a fruitful, happy, and long life; and [3] there is no incompatibility between population growth and the preservation of the environment. Source: United Nations Environment Programme, *Brief Summary of General Debate*, http://www.unep.org/Documents/Default.asp?DocumentID=97&ArticleID=1497 (accessed July 30, 2011). In an article entitled the 'Politics of Sustainable Development,' Nayar (1994, p. 1327) argues that the pre-conference literature took the position that population growth was the major concern for the environment, which meant that the "non-sustainable resource intensive production system of the north and its implications for the environment" would not be the center of attention at Stockholm.

Ayres et al.'s (1970) work, *Economics and the Environment*, was the first to explicitly invoke the first law of thermodynamics (i.e., the conservation of mass/energy), which places limits on the ability of human-made resources to replace, or substitute, natural capital. The basic argument is that human-made capital is built and maintained using natural capital (Ayres 1978). Thus, both forms of capital are complementary and cannot be substituted for one another. It follows that the maintenance of natural capital stock is, therefore, *essential* for the economic process. A reduction in the availability of natural capital will reduce the productivity of human-made capital that depends on ecosystem goods and services.

Ayres et al. (1970) also made the argument that externalities are *pervasive*, rather than *exceptional*, as earlier economists (e.g., Arthur Cecil Pigou) had argued. Environmental externalities are considered *pervasive*, since the real economy depends on extracting, processing, and converting materials (and energy), which creates waste residuals that can have negative environmental and economic consequences (Ayres 1997). Since these consequences are not priced in the real economy, the environment is treated as a free good and medium for disposal. As population and industrial production capacity grows, the impact of the waste residuals becomes increasingly important.

Nicholas Georgescu-Roegen, a Rumanian-born economist (and mentor to Herman Daly), adopted similar constructs to Commoner, Ehrlich, and Holdren of the factors which impact the environment, and made the same argument as Ayres et al. (1970) with regards to the importance of the laws of thermodynamics.

In his work *The Entropy Law and the Economic Process*, Georgescu-Roegen (1971, p. 283) used the two laws of thermodynamics—i.e., [1] the total amount of energy in the universe is constant, and [2] the entropy (i.e., disorder) of the universe is always increasing towards a maximum—to develop a theory that the "basic nature of the economic process is entropic and that the Entropy Law rules supreme over this process and over its evolution." Under this premise, the economic process "neither creates nor consumes matter or energy, but only transforms it from low to high entropy" (ibid., p. 281).

Georgescu-Roegen (1971, p. 304) argued that technological progress, guided by socio-economic conditions and opportunistic human wants, has chosen to exploit the earth's finite mineral resources instead of the more abundant solar radiation—both of which are forms of *low entropy*. It is possible to view these forms of low entropy as sources of wealth for present and future generations (ibid., p. 303). However, the two forms have very different properties. The mineral resources that constitute the earth's surface are fixed and can be used when needed, a property highly desired by the economic system. In

contrast, solar radiation is outside of man's control, its intensity varies (slightly) depending on the position of the earth in its solar orbit, and has a life span of some 5 billion years—an incomprehensibly long amount of time, especially in economics. While solar radiation is, for the sake of argument, abundant,[*] the problem lies in the rate at which solar energy creates the matter that makes up organisms (such as flora and vegetation). This slow conversion rate is not conducive to the modern industrialized lifestyle that demands large amounts of energy at the flick of a switch, meaning that the only tangible option is to extract mineral resources to generate the energy required to advance the development process.[†] As the low entropy mineral resources are 'transformed' (into high entropy) to fuel industrialization and economic development,[‡] the human environment suffers the side effects of industrial/agricultural waste and pollution. Hence, Georgescu-Roegen (1971, p. 304) argued that even if the world's population and the rate of resource usage remain constant, natural capital will ultimately be exhausted, bringing "the career of the human species nearer to its end." It follows that as the rate of economic development increases, so too does the rate at which natural resources will be used.

The implications of Georgescu-Roegen's (1971, pp. 305-306) theory are somewhat alarming:

> "If we stampede over the details, we can say that every baby born now means one human life less in the future. But also every Cadillac produced at any time means fewer lives in the future. Up to this day, the price of technological progress has meant a shift from the more abundant source of low energy—the solar radiation—to the less abundant one—the earth's mineral resources. … The faster the economic process goes, the faster the noxious waste accumulates. … There is a vicious circle in burning coal for industrial processes and then having to use more coal to produce the energy necessary to blow the smog away. … At least, the industrial energy we derive or may derive from solar radiation does not

[*] The energy stored in mineral resources on the earth is equivalent to the amount of solar energy that is delivered to the earth during a period of four days (Georgescu-Roegen 1971, p. 304).

[†] In the words of Herman Daly (1996, p. 30), we "cannot 'mine' the sun to use tomorrow's sunlight today, but we can mine terrestrial deposits and, in a sense, use up tomorrow's petroleum today. There is thus an important asymmetry between our two sources of low entropy. The solar source is stock-abundant, but flow-limited. The terrestrial source is stock-limited, but flow abundant (temporarily). Peasant societies lived off the abundant solar flow; industrial societies have come to depend on enormous supplements from the limited terrestrial stocks."

[‡] *Economic development* is defined as consisting of two elements: [1] "development proper," i.e., increasing the efficiency by which low entropy is transformed, and [2] "pure growth," i.e., increasing the scale of industrial operations and the rate of resource usage, all else being equal (Georgescu-Roegen 1971, p. 294).

> produce by itself noxious waste. Automobiles driven by batteries charged by the sun's energy are cheaper both in terms of scarce low entropy and healthy conditions—a reason why I believe they must, sooner or later, come about."

Hence, the conclusion Georgescu-Roegen reaches is that humankind must conserve the earth's limited mineral resources and transition to a reliance on solar energy.[*]

Georgescu-Roegen also reacted strongly to the notion that industrial development is the only way to achieve economic development. He denounced the economic rhetoric of what is good for one country will be good for another by stating that "the greater the industrial development achieved by an underdeveloped nation plagued by a predominant, over-populated, and disorganized agricultural sector, the stronger the evidence such a nation offers of the fallacy of the industrialization axiom" (ibid., p. 329).

Georgescu-Roegen believed that economists face moral decisions at every point in the economic process (Daly 1992). By asking critical questions such as who should pay for the long-term costs of production, and more philosophical questions such as what type of development is truly in the interests of mankind (ibid.), he brought moral inquiry into the realm of economics. In his closing statement to the Stockholm conference, his concern about a lack of ethics in economics was evident. "Even the clear formulation from the economist's perspective of the choices before us is an ethical task, not a purely analytical one, and *economists ought to accept the ethical implications of their work*. … We must have a new economics whose purpose is the husbanding of resources and the achievement of rational control over the development and application of technology to *serve real human needs* rather than expanding profits, warfare, or national prestige" (Georgescu-Roegen from Daly 1992, pp. 11-12, emphasis added).

The view that prevailing development paths were leading towards disaster for mankind was the topic of two influential and controversial publications in 1972. Some six months before the Stockholm conference the

[*] In Georgescu-Roegen's (1993) subsequent work which focused on the prudent management of resources and a transition to solar energy, he advocates the stabilization of population sizes and a reduction in the scale of human consumption as part of his preservation ethic (Kysar 2001).

British magazine *The Ecologist* published the *Blueprint for Survival*,[*] which was shortly followed by the Club of Rome's[†] report entitled *The Limits to Growth*.

The *Blueprint for Survival* argues that if the prevailing trends in world population, industrialization, pollution, agricultural production, and resource depletion continue, there will be an inevitable "breakdown of society and the irreversible disruption of the life-support systems on this planet, possibly by the end of the century, certainly within the lifetimes of our children" (The Ecologist 1972, p. v). It calls for an immediate change to the "deep rooted beliefs in continuous [economic] growth" and states that the political unfeasibility of such a position is only due to the fact that the British "government has yet to acknowledge the impending crisis" (ibid., pp. 18-19).

The fixation with economic growth was believed to rest on two notions. First, that economic growth is essential for survival and is a good way to measure progress and human well-being. Second, that any actions or policies that challenge the first notion are designed to solve problems that do not exist and, therefore, should be disregarded. It is argued that such a paradigm generates a reinforcing feedback loop in which the government's desire to continually expand is creating the need for more economic growth. The *Blueprint for Survival* (1972, pp. 19-22) presents six ways in which this reinforcing feedback loop operates:

1. The introduction of technological devices leads to the destruction of the ecosphere, creating a need for new devices to mitigate the pollution;
2. Industrial growth promotes population growth, which creates the need for more jobs for the additional people—leading to further economic growth;

[*] Interestingly, the *Blue Print for Survival* was prepared in response to the early release of data by the Club of Rome's research team based at MIT (Massachusetts Institute of Technology), headed by Dennis and Donella Meadows (Reid 1995; Rowland 1973).

[†] In 1972, the Club of Rome was an informal international association of approximately seventy-five members from twenty-five nations (Meadows et al. 1972; Forrester 1971). The group formed in 1968 after a meeting in Italy that was called to discuss the present and future predicament of mankind. The purpose of the group was not to express a single ideology, or political or national point of view, but to undertake impartial (and international) research into the major problems facing humanity. The group's view was that these problems "are of such complexity and are so interrelated that traditional institutions and policies are no longer able to cope with them, nor even to come to grips with their full content" (Meadows et al. 1972, pp. 9-10). Hence, by creating a group consisting of scientists, educators, economists, humanists, industrialists, and national and international civil servants, they hoped to better understand and articulate the complexities behind the problems to "spark debate in all societies" (ibid., p. 12).

3. To avoid widespread unemployment, without drastically changing the basis of the industrial society, governments need to stimulate economic growth;
4. Business enterprises tend to be self-perpetuating, meaning they generate profits for expansion, further promoting the growth of the industrial sector;
5. Governments are measured by their ability to increase the standard of living via GDP (Gross Domestic Product) growth;* and
6. Economic growth is needed to maintain confidence in the economy, without which the stock market would crash and social collapse would ensue.

To address the growth paradigm, the *Blueprint for Survival* called for the creation of a "stable society," which it argued can be achieved through four principle conditions (ibid., p. 23).† First, there must be minimal disruption to ecological processes. Second, materials and energy resources must be seen by economists as a finite stock, as opposed to a resource of unlimited supply—a condition likely to have gained the support of Georgescu-Roegen. Third, and possibly the most controversial condition, the population must stabilize. It was argued that Britain's population should not be greater than 30 million in the next 150 to 200 years (ibid., p. 46), some 25 million less than the population in 1971. This reduction was to be achieved by ending immigration, through educational material explaining the potential impacts of having more than two children, and the introduction of various contraceptive campaigns (including free contraceptives, sterilization, and abortion on demand) (ibid., pp. 48-49). Finally, society must ensure that individuals can enjoy life and not be constrained by the first three conditions.

It does not take a great stretch of the imagination to understand why the *Blueprint for Survival* caused so much controversy in Britain. It was heavily criticized by eminent scientists and political leaders for being a kind of quasi-political document—"a sort of manifesto" (Rowland 1973, p. 20).‡ In effect, the

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* In 1975, the UN established the Human Development Index (HDI) in an effort to quantify dimensions of human development. The HDI consists of three indicators, one of which is GDP per capita. The first HDI was published in the Human Development Report of 1990 (UN 1990). See Section 1.1.1 in Ashford and Hall (2011b) for a more detailed discussion of the HDI.

† Some ten years later the notion of a 'stable' society had transitioned to a 'sustainable' society (Brown, 1981). While the concept had evolved, the influence of the *Blueprint for Survival* in this later work is evident.

‡ It should be noted that the *Blueprint for Survival* was endorsed, in principle, by thirty-three of Britain's most eminent scientists. Hence, the critiques it received from equally eminent scientists

Blueprint for Survival called for radical economic, industrial, and social change and argued that a failure to make a transition to a stable society is a failure of government to recognize the true problems at hand. The reaction to *Blueprint for Survival*, however, paled in comparison to the global response to the *Limits to Growth* report, which became a best seller in a number of countries.* Using the latest system dynamics techniques developed by Jay Forrester at MIT, the *Limits to Growth* report discussed the results of a computer model designed to address the future predicament of mankind.

The three salient conclusions from *Limits to Growth* were:

1. "If the present growth trends in world population, industrialization, pollution, food production, and resource depletion continue unchanged, the limits to growth on this planet will be reached sometime within the next one hundred years. The most probable result will be a rather sudden and uncontrollable decline in both population and industrial capacity.
2. It is possible to alter these growth trends and to establish a condition of ecological and economic stability that is sustainable far into the future. The state of global equilibrium could be designed so that the basic material needs of each person on earth are satisfied and each person has an equal opportunity to realize his individual human potential.
3. If the world's people decide to strive for this second outcome rather than the first, the sooner they begin working to attain it, the greater will be their chances of success" (Meadows et al. 1972, pp. 23-24).

Limits to Growth raised the important idea of "overshoot and collapse"—i.e., to inadvertently go beyond a system's limits, creating a situation that is nearly impossible to reverse (Meadows et al. 1972, p. 144). Meadows et al. (1992) argued that the limits to growth are not physical limits such as limits to population growth or to the number of automobiles on the road. Rather, they are limits to *throughput*, i.e., limits to the flows of energy and materials required to keep people alive, to build more automobiles, and the like. And by this they mean that the limits to growth are not only the limits to the earth's ability to provide the *resource streams* of energy and materials necessary to meet predicted consumption levels, but also limits to its ability to absorb the *pollution and waste streams* in natural 'sinks' such as forests and oceans.

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meant that much of the debate was between academic peers, which was interpreted by politicians to suit their own political interests.

* See Section 1.3.2 in Ashford and Hall (2011b) for a discussion of *Limits to Growth* (and its two revisions in 1992 and 2004) within the context of the Environmental Kuznets Curve (EKC) hypothesis.

The implications of these conclusions are far reaching. In essence, the reports state that nothing short of a radical restructuring of the prevailing trends of industrialization and economic growth will suffice to prevent a sudden decline in both population and industrial capacity. In addition, if they are correct, a condition of ecological and economic stability will only be achieved if the limited natural resources are shared prudently and equally amongst the world population, and if the economic system provides the opportunity for each individual to achieve his/her full potential though employment. Finally, the sooner such changes begin the better. Such stark predictions* and conclusions† have obvious negative connotations for both developed and developing nations and have not been received warmly. For developed nations, the idea of using substantially fewer resources (to allow developing nations to use their fair share of the terrestrial stock) raises the spectre of lowered standards of living. Developing nations are equally distressed by the suggestion that they will never be able to achieve the standard of living experienced by developed nations.

An interesting response to *Limits to Growth* came from Sir Solly Zucker: The "only kind of exponential growth with which the book … does not deal, and which I for one believe is a fact, is the growth of human knowledge and of the increase in the kind of understanding with which we can imbue our efforts as we see to it that our increasing numbers do not become incompatible with a better life. … [T]he alarm which we now experience in fact comes from our increased knowledge of what we are doing" (from Rowland 1973, p. 18).

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* Forrester and the *Limits to Growth* authors note they did not develop their models to accurately predict the future; instead their models were designed to indicate the behavior of the world system if certain changes were made to the system's structure and policies. *Limits to Growth* notes that it "was intended to be, and is, an analysis of current trends, of their influence on each other, and of their possible outcomes. [Its] … goal was to provide warnings of potential world crisis if these trends are allowed to continue, and thus offer an opportunity to make changes in our political, economic, and social systems to ensure that these crises do not take place" (Meadows et al. 1972, pp. 185-186).

† *Limits to Growth* does not make any explicit recommendations regarding how a 'state of equilibrium' could be achieved. In the words of that study, "It presents a bold step toward a comprehensive and integrated analysis of the world situation, an approach that will now require years to refine, deepen, and extend" (Meadows et al. 1972, p. 186). Regarding its pessimistic conclusions, the report offers the following comments. "Many will believe that, in population growth, for instance, nature will take remedial action, and birth rates will decline before catastrophe threatens. Others may simply feel that the trends identified in the study are beyond human control; these people will wait for 'something to turn up.' Still others will hope that minor corrections in present policies will lead to a gradual and satisfactory readjustment and possibly to equilibrium. And a great many others are apt to put their trust in technology, with its supposed cornucopia of cure-all solutions. … We welcome and encourage this debate" (ibid., p. 189).

Similarly, Jahoda (1973) argued that the introduction an extra variable—the human—into the World 3 computer model used by the *Limits to Growth* authors might change the structure of the debate: "It is in the nature of purposeful adaptation that the course of events can be changed dramatically if social constraints are experienced as intolerable, if aspirations remain unfulfilled and if confidence in the ruling political powers disintegrates. It makes no sense in this context to talk of exponential growth in a finite world. Man's inventiveness in changing social arrangements is without limits, even if not without hazards" (ibid., p. 215).

If we consider the events in the U.S. which led to the formation of a national environmental agenda in the 1960s/1970s, Jahoda's insights are not without historical support. A real question exists, however, as to whether the international community, with its competing sovereign interests, can reach a consensus on how to adequately respond to these intolerable events. In addition, we need to ask the question of whether humankind can risk the formation of global hazards of this nature in the first instance—which brings us back to the original purpose of *Limits to Growth*.

Three particularly influential critiques of the initial *Limits to Growth* report were: *The Doomsday Syndrome—An Attack on Pessimism*, written in 1972 by John Maddox, the editor of the British magazine *Nature*; *Thinking about the Future—A Critique of the Limits to Growth*, written in 1973 by a group of authors at the Science Policy Research Unit at the University of Sussex (Cole et al. 1973); and *The Computer that Printed Out W*O*L*F**, written in 1972 by MIT economist Carl Kaysen. *The Doomsday Syndrome* presents a contrasting (i.e., optimistic) view, in which resources are more abundant and human ingenuity leads to an increase in human well-being. In addition, Maddox (1972) argued that nations that were then facing food shortages were likely to have a food surplus by the 1980s—a prediction which sadly did not materialize for countries such as Somalia and Ethiopia. *Thinking about the Future* is an academic critique of *Limits to Growth*.[*] It also expressed the concern that what ultimately must be a somewhat subjective undertaking was clothed with the scientific respectability that came with having

[*] The authors argue that the World 3 model failed to adequately consider the effects of politics, economics, and sociology, and did not, on the whole, provide an accurate representation of real world phenomenon and behavior. They also argue that the aggregation of inadequate data presented a gross over-simplification of the real world situation, and that the model's use of deterministic – as opposed to probabilistic – projections meant that it was impossible to determine how probable the output was. Finally, they believe that the model underestimated the impact of technological innovation. However, the authors also praise the MIT work, characterizing it as a "courageous and pioneering attempt to make a computer model of the future of the world" (Cole et al. 1973, p. 6).

been generated by a research group based at MIT. As a result, Freeman (1973, p. 9) argues, *Limits to Growth* was often cited in doomsday literature as an "authoritative source for views which otherwise might be rather difficult to justify." The World 3 computer model, he noted, was a model of a social system, which necessarily involved critical assumptions about the workings of that system—assumptions that were, in turn, influenced by the attitudes and values of the researchers. Hence, the output of the model was only as good as the 'mental models' used to develop it, which also encapsulated the modelers' ideological positions.* *The Computer that Printed Out W*O*L*F** is a technologically optimistic critique of *Limits to Growth*. Kaysen (1972), like Maddox, argues that the limits defined in the World 3 model are not fixed and can be extended by investment into new land and into exploration and discovery. He argues that once the problem is recognized as one of 'cost limits'—as opposed to 'physical limits'—the forces of increasing extraction costs and advancing technology will combine to identify new resources that were previously out of reach. Such action extends the physical limits, or supplies of fixed resources, which Kaysen argues has been occurring throughout human history.†

Reid (1995) argues that, while *Limits to Growth* can be criticized on points of detail, the basic assumption that increasing rates of resource consumption could not continue in a finite world, had to be right. He also notes that critics were not receptive to the idea that pollution—as opposed to energy shortages or scarcity of resources—would be a key factor in the eventual collapse of the world system, and that time has tended to prove this criticism wrong.

Regardless of the position taken by advocates of and opponents to *Blueprint for Survival* and *Limits to Growth*, the fact of the matter is that both publications stimulated national and international debates on the prospects for

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* In a lecture on 'System Dynamics and Sustainability' given at MIT on January 18, 2002, Jay Forrester explained that he never strayed from the capabilities and limitations of the 'World 3' model when answering the criticism unleashed upon the Club of Rome once the report was published. While the 'World 3' model had limitations, which were clearly articulated in the report, the model's output could easily be defended, but only by clearly articulating the foundations upon which the output was based.

† Kaysen (1972) also highlights two other apparent flaws in the World 3 model. First, the price of resources is not adequately represented. Sharp adjustments to the price of a resource can lead to large shifts in the location and type of resources used and in the patterns of consumption. Hence, prices can make smooth transitions occur as limits begin to emerge. Second, the researchers did not always use available knowledge effectively. Specific attention is drawn to the manner in which population growth is formulated, and to the fact that birth to death rates in the Western world have adjusted with rising income; a trend overlooked by the model. However, Kaysen does acknowledge the magnitude of the population problem.

the human environment—an outcome which Maurice Strong, the chairman of the Stockholm conference, took great comfort in.

> "[W]hatever view is taken of the seriousness of mankind's environment predicament, it is encouraging that the issues are now being discussed in public forums in many countries. One example is the debate stirred in Britain by The Ecologist magazine's "Blueprint for Survival", which was supported by many eminent British scientists and challenged by others, also eminent. Another is the result of the computer model developed at the Massachusetts Institute of Technology and published under the title, "The Limits to Growth". There is no need to agree to disagree to believe that, whether or not a crisis in the very terms of human survival is on the horizon, the engagement of public concern at the overarching issues is essential. Only in this way can a sufficient degree of political consensus be achieved—at the international level—to produce from the myriad differences of conception and opinion a programme of concerted global action" (Strong 1972, p. 74).

The challenge of integrating the often contradictory views of developed and developing nations, scientists, economists, and politicians provided the Stockholm conference with some of its finest, and most traumatic, hours (Rowland 1973).

In summary, this section highlights how *two* of the four environmental concerns associated with sustainable development grew in importance prior to the Stockholm conference. First, the concern that industrialization was having a negative impact on ecosystem integrity and biological diversity (the first environmental concern) was an underlying theme in all of the publications presented prior to Stockholm, especially Barry Commoner's *The Closing Circle*. Second, *Economics and the Environment*, *Entropy Law and the Economic Process*, *Blueprint for Survival*, and *Limits to Growth* were all primarily concerned with the world's finite resources (the second environmental concern) and raised the question of whether there are sufficient resources to fuel a growing economy into the future. While Commoner's later work (1974, 1979, 2000) began to address the concern that toxic pollution directly affects human health and the health of other species (the third environmental concern), this problem was only just being conceived in the early 1970s. Finally, the fourth environmental concern—that greenhouse gases from anthropocentric sources are leading to a disruption of the global climate—had not yet been identified as a critical issue.

2.6 The Stockholm Conference on the Human Environment (1972)

In his message to the Stockholm delegates, Pope Paul VI commented that *Only One Earth* was a "fine motto of the conference."[33] The vision of a united world was a powerful rallying call for the protection of the human environment, although achieving unanimity on the tradeoffs between development and environmental protection was, at the very least, a daunting prospect.

Given the contentious pre-conference debates between developed and developing countries and their representative organizations (see Section 2.4), and the somewhat polarized academic debate over whether population or technology was the major cause of environmental harm (see Section 2.5), it is surprising that anything of value was achieved at Stockholm. However, four outcomes arose from the conference that played a significant role in assembling an international assault on the problems of the human environment. These were as follows:

1. the Declaration of the UN Conference on the Human Environment;[34]
2. the Action Plan for the Human Environment;[35]
3. the formation of the United Nations Environment Programme (UNEP);[36] and
4. the establishment of the Environment Fund.[37]

Although these official agreements recognized the challenges facing developing regions, they offered little with regards to how they could be resolved (Clapp and Dauvergne 2005). They also sidestepped a number of important issues raised by developing nations. A notable case was the call for global economic reforms to address the declining terms of trade faced by many raw commodity exporters in developing economies (ibid.). Their argument was that by enabling developing nations to realize higher returns on their exports, poverty, and the related environmental degradation, could be addressed. The issue of global economic reforms would continue to be debated during the 1970s, but calls for a new international economic order led to no substantive changes.

The following sections review the Stockholm Declaration, the Action Plan, the UNEP, and the Environment Fund.

2.6.1 The Declaration of the UN Conference on the Human Environment: Concern for Both the Living and Working Environments

The *Declaration of the UN Conference on the Human Environment* (commonly known as the Stockholm Declaration) is a statement consisting of a preamble and 26 principles that discuss ways to ensure the preservation and improvement of

the human environment.* The declaration was created to be a "comprehensive affirmation of the human right to a livable world" (Rowland 1973, p. 38). The declaration was (politically) sensitive to many of the concerns raised during the pre-conference deliberation process in a deliberate attempt to secure maximum attendance at the conference and international support for the protection of the environment.

The preamble begins by recognizing that man, "through the rapid acceleration of science and technology," now has the ability to create and mold the natural environment to suit our needs. With such a power comes the responsibility to protect the environment on which our lives depend. The declaration gives this responsibility to "citizens, communities, enterprises, and institutions at every level," but particularly to local and national governments who "bear the greatest burden for large-scale environmental policy and action within their jurisdictions."

The Stockholm Declaration provides further support to Dernbach's (1998, 2004, 2011) model of *conventional development* in an international context (see Section 2.1). Table 2.2 shows how the model's four related concepts are covered by specific principles of the declaration. Note that a fifth row has been added to the table to present those principles that are connected to environmental protection. We recall that Dernbach's (1998, p. 24) model of sustainable development "modifies the purposes of conventional development" by adding a comprehensive set of environmental protection measures, incorporating environmental protection goals into social and economic development objectives, and altering the purpose of development to include a responsibility for future generations. Since the Stockholm Declaration's principles do not *comprehensively* combine social and economic development goals with environmental protection, the Stockholm Declaration falls under the category of conventional development. For example, Principle 8 of the Stockholm Declaration clearly recognizes that "[e]conomic and social development is essential for ensuring a favorable living and working environment for man," but there is no explicit recognition that a healthy environment is a prerequisite for economic and social development. Hence, environmental degradation is regarded, to a certain extent, as a tolerable event by the Stockholm Declaration (Dernbach 1998). Although the declaration is clearly a positive step forward, it would take 20 years for the international community to fully articulate sustainable development at the UN Conference on Environment and Development in Rio de Janeiro (see Section 2.9).

* For a detailed discussion of the pre-conference deliberations that informed the Stockholm Declaration, see Rowland (1973) and Sohn (1973).

Table 2.2: Dernbach's Model of 'Conventional Development' and the Principles of the Stockholm Declaration

Component of *Conventional* Development	Principles of the Stockholm Declaration [a]
Peace and Security	**Principle 26**—Man and his environment must be spared the effects of nuclear weapons and all other means of mass destruction. States must strive to reach prompt agreement, in the relevant international organs, on the elimination and complete destruction of such weapons.
Economic Development	**Principle 8**—Economic and social development is essential for ensuring a favorable living and working environment for man and for creating conditions on earth that are necessary for the improvement of the quality of life. **Principle 18**—Science and technology, as part of their contribution to economic and social development, must be applied to the identification, avoidance and control of environmental risks and the solution of environmental problems and for the common good of mankind.
Social Development	**Principle 1—**Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being, and he bears a solemn responsibility to protect and improve the environment for present and future generations. In this respect, policies promoting or perpetuating apartheid, racial segregation, discrimination, colonial and other forms of oppression and foreign domination stand condemned and must be eliminated. **Principle 16—**Demographic policies which are without prejudice to basic human rights and which are deemed appropriate by Governments concerned should be applied in those regions where the rate of population growth or excessive population concentrations are likely to have adverse effects on . . . the human environment and impede development. **Principles 8 and 18—**see above.

Component of *Conventional* Development	Principles of the Stockholm Declaration [a]
National Governance that Secures Peace and Development	**Principle 13**—In order to achieve a more rational management of resources and thus to improve the environment, States should adopt an integrated and coordinated approach to their development planning so as to ensure that development is compatible with the need to protect and improve [the] environment for the benefit of their population. **Principle 14**—Rational planning constitutes an essential tool for reconciling any conflict between the needs of development and the need to protect and improve the environment. **Principle 15**—Planning must be applied to human settlements and urbanization with a view to avoiding adverse effects on the environment and obtaining maximum social, economic and environmental benefits for all. In this respect projects which are designed for colonialist and racist domination must be abandoned. **Principle 17**—Appropriate national institutions must be entrusted with the task of planning, managing or controlling the environmental resources of States with a view to enhancing environmental quality. **Principles 16 and 26**—see above. The preamble to the declaration also reinforces the importance of national governance.

Component of *Conventional* Development	Principles of the Stockholm Declaration [a]
'Weak' Environmental Protection Measures (Note: The principles of the Stockholm Declaration do not explicitly link the development process with the environment. Hence the title 'weak' environmental protection measures. What might be termed 'strong' environmental measures emerged in the 1992 Rio Declaration on Development and Environment, where it was declared that environmental protection is an integral part of the development process and cannot be considered in isolation.)	**Principle 2**—The natural resources of the earth, including the air, water, land, flora and fauna and especially representative samples of natural ecosystems, must be safeguarded for the benefit of present and future generations through careful planning or management, as appropriate. **Principle 3**—The capacity of the earth to produce vital renewable resources must be maintained and, wherever practicable, restored or improved. **Principle 4**—Man has a special responsibility to safeguard and wisely manage the heritage of wildlife and its habitat, which are now gravely imperilled by a combination of adverse factors. Nature conservation, including wildlife, must therefore receive importance in planning for economic development. **Principle 5**—The non-renewable resources of the earth must be employed in such a way as to guard against the danger of their future exhaustion and to ensure that benefits from such employment are shared by all mankind. **Principle 6**—The discharge of toxic substances or of other substances and the release of heat, in such quantities or concentrations as to exceed the capacity of the environment to render them harmless, must be halted in order to ensure that serious or irreversible damage is not inflicted upon ecosystems. The just struggle of the peoples of ill[-affected] countries against pollution should be supported. **Principle 7**—States shall take all possible steps to prevent pollution of the seas by substances that are liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea.

[a] Principles 9, 10, 11, 12, 19, 20, 21, 22, 23, 24, and 25 of the Stockholm Declaration are not included in the table since they do not fit within any of the categories listed – see supporting text for a discussion of these principles.

Principle 1 of the declaration provides the first international recognition of the connection between human rights and the right to a healthy environment (Kiss 1994), which had the effect of extending the scope of basic human rights from the UN Charter (Linner and Selin 2003).

Principles 9, 10, 11, and 12 of the declaration respond directly to the debate about how developing countries should develop while simultaneously protecting the environment. Principle 9 states that environmental problems that stem from "under-development and natural disasters" should be addressed "through the transfer of substantial quantities of financial and technological assistance" to developing nations. Principle 12 reinforces the need to provide such financial and technical development assistance, but adds the requirement that such assistance must take "into account the circumstances and particular requirements of developing countries." With regards to the international economy, Principle 10 stresses the importance of establishing "stability of prices and adequate earnings for primary commodities and raw materials," which are essential if developing nations are to invest in environmental management. Finally, Principle 11 focuses on the "environmental policies of all States" and stipulates that these policies "should enhance and not adversely affect the present or future development potential of developing countries." Such a comprehensive package of policies was warmly received by developing nations who were seeking assurances that their daily struggle to provide food, basic health care, housing, education, and jobs would not be overlooked by the conference, and that the industrialized nations' focus on their own environment would not reduce the flow of finances to aid their development.

The Stockholm Declaration also recognized the importance of national sovereignty. Principle 21 affirms that nations have the "sovereign right to exploit their own resources pursuant to their own environmental policies," but they must ensure that their activities "do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction." This recognition of national sovereignty helped secure the participation of developing countries who were concerned that industrialized nations were threatening their ability to govern their own development by establishing invasive environmental standards.

While Stockholm was not a lawmaking conference,[*] the declaration and the action plan did establish the moral and political grounds for future legal

[*] Indeed, few international conferences result in the formation of international law. If laws are developed as a result of a summit, conference, or meeting, they are generally not subject to strict enforcement mechanisms, which tends to encourage non-compliance. See Chapter 10 in Ashford

actions (Strong 1972). With regards to the declaration, Principle 22 calls for the development of "international law regarding liability and compensation for the victims of pollution and other environmental damage" caused by activities within the jurisdiction of a nation to "areas beyond their jurisdiction." In addition, Principle 23 states that environmental standards should be determined with a full understanding of the impact of such standards on developing countries, since standards that are "valid for the most advanced countries" might impart an "inappropriate and … unwarranted social cost for the developing countries."

Finally, the declaration also made clear statements on educating the public on environmental matters (Principle 19), undertaking scientific research into environmental problems (Principle 20), and establishing international cooperation with regards to environmental protection (Principles 24 and 25).

Although the Stockholm Declaration focuses on the preservation and improvement of the human *living* environment, 28 years earlier the 1944 Declaration of Philadelphia developed by the International Labour Organization (ILO) was adopted to enhance the condition of the human *working* environment. These two declarations provide the major intellectual underpinnings of the concept of sustainable development.

The Declaration of Philadelphia expanded the aims and purposes of the ILO "based on the relationship between labor and social, and economic and financial problems," and outlines the principles that should guide the national policies of its members (Bartolomei de la Cruz et al. 1996, p. 5).[*]

A core belief behind the Declaration of Philadelphia is that peace can only be achieved if it is based on social justice, a concept which is much broader than human rights and focuses on human aspirations as a struggle between the individual and the State (Bartolomei de la Cruz et al. 1996). The declaration defines social justice in terms of human values and aspirations: "all human beings, irrespective of race, creed or sex, have the right to pursue both their material well-being and their spiritual development in conditions of freedom and dignity, of economic security and equal opportunity."[38] It continues, achieving these conditions "must constitute the central aim of national and international policy" and these "policies and measures, in particular those of an economic and

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and Hall (2011b) for a detailed discussion of regional and international regimes that protect health, safety, and the environment.

[*] On 1st November 1945, all members of the UN automatically became members of the International Labour Organization (ILO). In addition, any nation that subsequently joined the UN could also become a member of the ILO if it accepted the obligations under the ILO's Constitution. Non-UN member states could join the ILO by a majority vote of the ILO Conference (Bartolomei de la Cruz et al. 1996).

financial character," should be assessed against the fundamental objective of social justice.[39]

The notion of social justice supports the fundamental principles on which the ILO was based, namely that:

(a) "labour is not a commodity;
(b) freedom of expression and of association are essential to sustained progress;
(c) poverty anywhere constitutes a danger to prosperity everywhere;
(d) the war against want requires to be carried on with unrelenting vigor within each nation, and by continuous and concerted international effort in which the representatives of workers and employers, enjoying equal status with those of governments, join with them in free discussion and democratic decision with a view to the promotion of the common welfare."[40]

In concert with the Stockholm Declaration, the Declaration of Philadelphia supports economic and social development and the creation of a stable international market. In particular, it calls for international and national "measures to expand production and consumption, to avoid severe economic fluctuations to promote the economic and social advancement of the less developed regions of the world [see Principle 8 from the Stockholm Declaration], to assure greater stability in world prices of primary products [see Principle 10 from the Stockholm Declaration], and to promote a high and steady volume of international trade."[41] However, whereas the Declaration of Philadelphia explicitly links development concerns to human welfare, including the protection of workers in all occupations, the Stockholm Declaration links such concerns to the projection and improvement of the natural environment. Hence, taken together, the declarations protect both aspects of the human environment—that in which we live and work.

There is also a positive tension between the two declarations with regard to economic growth. The Declaration of Philadelphia calls for the expansion of the international economy to improve human welfare and to create more jobs,[*] and the Stockholm Declaration qualifies this by stating that economic development should occur in such a way that the environment is protected. **Hence, taken together, both declarations provide the major intellectual underpinnings of the concept of sustainable development**. In many ways it is

[*] A position reaffirmed by a 2004 ILO report that suggests that globalization's "potential for good is immense. … Wisely managed, [the global market economy] can deliver unprecedented material progress, generate more productive and better jobs for all, and contribute significantly to reducing world poverty." (WCSDG 2004, p. x)

surprising that it took the international community so long to connect these two different strains of human welfare—employment and a healthy environment—with economic development.

2.6.2 The Action Plan for the Human Environment

The *Action Plan for the Human Environment* (hereafter called the 'Action Plan') contains 109 recommendations from the conference that are divided among three sections of the plan. Each component is briefly described below:

- **Earthwatch**—a program designed to identify, monitor, and exchange information on the condition of the environment, and to undertake research to create new knowledge that can inform the decision-making process;*
- **Environmental Management**—actions under this component were created to facilitate comprehensive (national) planning that combines the environmental impacts of human activity with the objective of protecting and enhancing the human environment for present and future generations; and
- **Supporting Measures**—actions under this component identified measures that supported the activities in the other two categories. These actions were grouped into three main sub-categories: education, training, and public information; organizational arrangements; and financial and other forms of assistance.

The Action Plan stressed the urgent need to start monitoring the environment and to undertake research into the ways in which the environment was being affected by human activity. For example, the Man in the Biosphere programme (MAB)[42]—established by UNESCO (UN Educational, Scientific and Cultural Organization) in 1971 to research the structure and functioning of ecosystems under natural or managed conditions—was highlighted as a research project to be vigorously pursued, supported, and emulated throughout the world.[43]

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* While initiated in 1972 at the Stockholm conference, the Earthwatch program was officially introduced by the United National Environment Programme (UNEP) in 1973. The purpose of the program was to coordinate and act as a catalyst for all environmental monitoring and assessment activities throughout the entire UN system, with the final objective of providing *integrated* information relevant for policymaking. The program was subsequently reinforced at the 1992 UN Conference on Environment and Development (UNCED) in Rio de Janeiro – see Agenda 21, Chapter 40, 'Information for Decision Making.' For more information on Earthwatch, see http://earthwatch.unep.ch/about/index.php (accessed July 30, 2011).

The Action Plan also stressed the importance of national initiatives to protect the natural environment. It is reported that many of the documents prepared by governments, UN agencies/bodies, individuals, and non-governmental organizations for the pre-conference deliberations constituted "the first environmental survey of certain areas ever made" (Strong 1972, p. 75). These preparations helped nations identify their domestic environmental problems, which led to more comprehensive domestic legislation (Linner and Selin 2003). This increase in legislative activity was supported, in many cases, by the creation of national environmental ministries and environmental agencies (Frank et al. 2000). For example, in the early 1970s less than 10 countries had established such bodies, but by 1974 this number had risen to about 60, and at the end of the 1970s the number was nearer 100 (UNEP 1982a, p. 9). This trend was accompanied by a sharp rise in the number of environmental non-governmental organizations, which increased from some 2,500 in 1972 to around 15,000 by 1981 (ibid., p. 9). Although there were other events which raised governments' interest in the human environment—such as the rise of the environmental movement in the U.S. during the 1960s and a series of environmental disasters that occurred throughout the world—the Stockholm conference played an influential role in putting a concern for the environment on national policy agendas.

In addition to identifying the gaps in scientific knowledge and stimulating national environmental initiatives, the Action Plan also recommended that governments pay attention to the need for international conventions and treaties. In particular, it called for the protection of migratory species and those which inhabit international waters;[44] the safeguarding of the marine environment and its resources;[45] and the conservation of the world's natural resources and cultural heritage.[46] The negotiations which formed these recommendations led to the establishment of a number of influential conventions, including:

- The 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter;
- The 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage;
- The 1973 Convention for the Prevention of Pollution from Ships (known as MARPOL); and
- The 1974 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Finally, although the Action Plan did provide eight recommendations that specifically addressed 'development and the environment,' it did not provide a "comprehensive approach to reconciling the two concepts" (Dernbach 1998, p. 18). Colby (1991, p. 201) describes Stockholm's rather limited attempt at combining environment and development concerns as having a "remedial focus"

designed to limit environmental damage: "the principle strategy was to *legalize the environment as an economic externality*."

Although the declaration and the action plan were clearly influential in advancing concerns for the human environment, many suggest that the conference's major impact came from the intense pre-conference deliberations and the explosion of literature which raised the world's consciousness about the natural environment (Dernbach 1998, UNEP 1982b, 1982a, Emmelin 1972, Strong 1972).

2.6.3 The United Nations Environment Programme (UNEP) and the Environment Fund

The idea of establishing an intergovernmental body on the human environment was generally welcomed by delegates at the Stockholm conference.[47] The United Nations Environment Programme (UNEP) was subsequently formed (with its headquarters located in Nairobi, Kenya)* to provide the UN with the institutional capacity needed to address and coordinate the recommendations put forward in the Action Plan and, more generally, to advocate for the protection and improvement of the environment. In this regard, the UNEP is seen as the voice for the environment within the UN system. In particular, it was created to attend to the following:

(a) "To promote international co-operation in the field of the environment and to recommend, as appropriate, policies to this end;
(b) To provide general policy guidance for the direction and co-ordination of the environmental programs within the United Nations system;
(c) To receive and review periodic reports from the Executive Director of … [UNEP] … on the implementation of environmental programs within the United Nations system;
(d) To keep under review the world environmental situation …;
(e) To promote … the acquisition, assessment, and exchange of environmental knowledge and information;

* The UNEP headquarters in Nairobi, Kenya was the first UN headquarters to be located in a developing country. While this represents a significant step forward and a sign that developed nations were serious in their conviction to help developing nations, some commentators were not so supportive of the action. "UNEP has no operational power and no responsibility for truly changing the ways in which development activity is organized and measured. It is an information-gathering agency, ensconsed in Nairobi, far from the corridors of power, financial resources, and decision making" (Colby 1991, p. 201).

(f) To maintain under continuing review the impact of national and international environmental policies and measures on developing countries …; and
(g) To review and approve annually the programme of utilization of resources of the Environment Fund …"[48]

The Environment Fund, referred to above, was a voluntary fund established to "provide additional financing for environmental programmes" which included the environmental initiatives recommended in the Action Plan.[48] Although the Environmental Fund was supported by many conference delegates—some of whom announced their intention of contributing to the Fund—developing countries expressed a concern that the "Fund might be regarded by some developed countries as an alternative to development assistance."[47] Developed countries responded by stating that the Fund was necessary to help developing countries meet the additional environmental costs incurred by the proposed environmental programs. The polluter pays principle was also put forward by several delegates as a financing mechanism that had significant merit.

During the pre-conference deliberations—especially at the Founex meeting in Switzerland (UN 1972)—on the relationship between the environment and development, there was a general recognition that because almost all nations needed to undergo some form of development, sound approaches to environmental planning needed to be established (UNEP 1982b). From these deliberations and the debates that ensued during the Stockholm conference, the term eco-development emerged to describe the process of "ecologically sound development," which included the "positive management of the environment for human benefit" (UNEP 1982b, p. 7). The prefix "Eco-" is used to signify both "economic" and "ecological," because both words stem from the Greek root *oikos* meaning house or home (Colby 1991). The term eco-development was subsequently adopted and advocated by the UNEP during the 1970s.[*] In a sense, eco-development could be described as the predecessor to sustainable development. The UNEP defined eco-development as "[d]evelopment at regional and local levels … consistent with the potentials of the area involved, with attention given to the adequate and rational use of the natural resources, and to applications of technological styles" (UNEP 1975, from Redclift 1987, p.

[*] Although the UNEP was an advocate of eco-development, Colby (1991, p. 200) argues that its predominant practices were still locked in the realm of environmental protection that focused on "*damage control*: on repairing and setting limits to harmful activity. Rather than focusing on ways to *improve* both development actions and ecological resilience, this approach was inherently *remedial* in practice."

34).[*] Hence, eco-development focused on satisfying basic human needs in an "environmentally sound [regional] production system" (Nayar 1994, p. 1327). [The idea of eco-development is similar to the view that Clapp and Dauvergne (2005, pp. 11-16) argue is promoted by "social greens"—i.e., people who reject industrialism, capitalism, and globalization in favor of local autonomy and justice for those who have been exploited or marginalized by the latter forms of development.][†]

In practice, the concept of eco-development proved to be somewhat symbolic and was rarely used to guide policy-making post-Stockholm (Linner and Selin 2003). A study by Farvar and Glaeser (1979) of the commitment made by international organizations to eco-development objectives provides some indication of why this might have occurred. Farvar and Glaeser (1979, p. 6) found that when fundamental approaches to development such as land reform were considered by international organizations, the real issues were "obscured and neutralized by sterile language and wrong premises." They suggest that the ineffectiveness of these organizations was connected to factors such as budgetary cuts[‡] and the resistance of developed nations to any programs which tried to

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[*] Like Colby (1991), Redclift (1987) suggests that UNEP's notion of eco-development was somewhat limited, and later conceptions (by the Centre International de Recherche sur l'Environnement et le Developpement – CIRED) sought to extend UNEP's notion by combining a "paternalistic" development methodology with the necessity to "incorporate social and cultural" variables (Redclift 1987, p. 35). He also discusses how other advocates of eco-development argued that the needs and priorities of people, especially the poor, should be put at the forefront of planning, and economists and biologists should focus their attention on creating sustainable livelihoods. In this construct, needs satisfaction and the avoidance of risk should be placed before sustainability or higher productivity, which tend to be ideas advocated by the "enlightened rich" (ibid., p. 35). Hence, "short-term improvements in living create conditions for later livelihood-intensive human use of the environment which is sustainable" (Redclift 1987, p. 36, from Chambers 1986, p. 13). The challenge, however, is how to make the livelihoods of the poor a priority (which requires a focus at the local level), when the effect of international development "systematically marginalizes" the poor (Redclift 1987, p. 36). Therefore, Redclift (1987) argues that "unless we pitch our conception of sustainable development at a level which recognizes international structures, it is in danger of being yet another discarded development concept" (Redclift 1987, p. 36).

[†] Clapp and Dauvergne (2005) articulate the political economy of the global environment through four lenses – market liberals, institutionalists, bioenvironmentalists, and social greens. Upon self-reflection of our own text we find that all four lenses are advocated to varying degrees. This highlights the challenge relating to sustainable development in that individual or group perspectives cannot often be siloed into neat categories. Nevertheless, Clapp and Dauvergne (2005) provide a valuable text that covers many of the issues discussed in this work. For a similar work, see Dryzek (1997).

[‡] When discussing the work of Farvar and Glaeser (1979), Redclift (1987) highlights that the budget of UNEP was halved between 1975 and 1979. In addition, McCormick (1995) describes

enhance the self-reliance of developing countries, thus reducing their technological dependence on industrialized nations. In addition, Linner and Selin (2003) present two other factors that they suggest contributed to the failure of eco-development to gain traction in the international community. First, there was recurring friction between developed and developing nations with regards to the prioritization of environment and development issues and financial responsibilities. Second, the energy crises and economic recessions of the 1970s reduced a nation's ability to invest in costly action on environment and development issues.

Notwithstanding the problems associated with the UNEP's early conceptualization of eco-development, the UNEP remains a prominent advocate for the environment and a leader of environmental initiatives within the UN system. Today, it advocates for the *sustainable development* of the global environment[*] and works with a wide range of partners, including UN entities, international organizations, national governments, non-governmental organizations, the private sector, and civil society.[†]

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how UNEP's average annual income between 1979 and 1987 of $30 million was worth less and less when set against inflation. McCormick (1995) describes how the shortfalls in funding were aggravated by contributions arriving late, or at the end of the financial year, or in non-convertible currency (meaning that it had to be spent in the donor nation).

[*] UNEP used the term 'sustainable development' for the first time in an official document in 1975: "The Governing Council, … [c]onsiders that: (a) The issues of population, resources, environment and development are interrelated problems. Solutions to these problems must form part of an integrated strategy directed towards harmonized objectives, to which the … [UNEP] will contribute within the framework of its specific environmental tasks. Fundamental to these objectives is the importance of meeting the aspirations of man for the fulfillment of his basic needs; (b) Environmental management implies *sustainable development* of all countries, aimed at meeting basic human needs without transgressing the outer limits set to man's endeavours by the biosphere; (c) The … [UNEP] must be concerned with prompt and effective implementation of coordinated and integrated strategies to enhance … and safeguard the environment for the benefit of present and future generations of man" (emphasis added). Source: UNEP, Governing Council of the UNEP, 3rd Session, 1975, *20 (III) Programme policy and implementation*, paragraph 9, http://www.unep.org/Documents/Default.asp?DocumentID=93&ArticleID=1371 (accessed July 31, 2011).

[†] The UNEP is also the host for several environmental convention secretariats including the Ozone Secretariat and the Montreal Protocol's Multilateral Fund; CITES; the Convention on Biological Diversity; the Convention on Migratory Species; and a number of chemicals-related agreements, such as the Basel Convention on the Transboundary Movement of Hazardous Wastes and Stockholm Convention on Persistent Organic Pollutants (POPs). Source: UNEP, *About UNEP*, http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=43&ArticleID=3301&l=en (accessed July 31, 2011).

Although the role of the UNEP is central to promoting environmental concerns within the UN system, other organizations such as the World Health Organization (WHO), the United Nations Development Programme (UNDP), the United Nations Industrial Development Organization (UNIDO), and the World Bank are also heavily involved with efforts to promote sustainable development (Luken and Hesp 2006). See Section 10.20 in Ashford and Hall (2011) for a discussion of important international organizations and their role in addressing environmental, social, and economic development concerns.

2.7 Stockholm +10 and the 1982 Nairobi Declaration

The previous sections discuss how the 1972 Stockholm conference on the Human Environment played an influential role in formulating the international environmental agenda. Although the Stockholm conference did generate significant interest in environmental concerns, the actions taken by nations during the following decade failed to live up to the initial expectations.

In 1980, the UN General Assembly decided "to convene, in 1982, a session of a special character of the Governing Council of the United Nations Environment Programme, open to all states, to commemorate the tenth anniversary of the United Nations Conference on the Human Environment."[49] The meeting was designed to [1] review progress in implementing the Stockholm Action Plan, and [2] make recommendations with respect to prevailing environmental trends for the future actions of the UNEP. On 10-18 May 1982, the meeting (often referred to as Stockholm +10) was held in Nairobi, Kenya.

In preparation for this tenth-anniversary meeting, the UNEP published two reports: one that addressed the implementation of the Stockholm Action Plan—*The Environment in 1982: Retrospect and Prospect* (UNEP 1982a)—and another that documented major research efforts and environmental trends and problems—*The World Environment 1972-1982: A Report by the United Nations Environment Programme* (UNEP 1982c). In addition, two years earlier in 1980, the World Conservation Union,* the UNEP, and the WWF (World Wildlife Fund) published the *World Conservation Strategy*. This report focused on living resource conservation and charted the destruction of the natural environment by human activity. These reports subsequently informed the Nairobi Declaration that was adopted by the 'session of a special character' of the Governing Council of the UNEP on 18 May 1982. Box 2.3 presents a series of excerpts from the Nairobi

* The World Conservation Union was formerly known as the International Union for the Conservation of Nature and Natural Resources.

Declaration that discusses the Stockholm conference and the progress achieved since 1972. The excerpts focus specifically on the Stockholm Declaration and the Action Plan, the UNEP, and the Environmental Fund.

The Nairobi Declaration and the UNEP (1982a, 1982c) reports presented a clear message that although nations had made progress towards environmental protection, their actions were insufficient to reverse the rate of environmental degradation occurring throughout the world. Thus, the answer to the first objective of the Nairobi meeting was that little substantive progress had been made towards implementing the Action Plan since Stockholm.

Box 2.3: Excerpts from the Nairobi Declaration, 1982 [50]

The world community of states, … having reviewed the measures taken to implement the Declaration and Action Plan adopted at … [the Stockholm] Conference, solemnly requests Governments and people to build on the progress so far achieved, but expresses its serious concern about the present state of the environment worldwide, and recognizes the urgent necessity of intensifying the efforts at the global, regional and national levels to protect and improve it.

1. The Stockholm Conference was a powerful force in increasing public awareness and understanding of the fragility of the human environment. … The principles of the Stockholm Declaration are as valid today as they were in 1972. They provide a basic code of environmental conduct for the years to come.

2. However, the Action Plan has only been partially implemented, and the results cannot be considered as satisfactory, due mainly to inadequate foresight and understanding of the long-term benefits of environmental protection, to inadequate co-ordination of approaches and efforts, and to unavailability and inequitable distribution of resources. For these reasons, the Action Plan has not had sufficient impact on the international community as a whole. Some uncontrolled deterioration, deforestation, soil and water degradation and desertification are reaching alarming proportions, and seriously endanger the living conditions in large parts of the world. Diseases associated with adverse environmental conditions continue to cause human misery. Changes in the atmosphere—such as those in the ozone layer, the increasing concentration of carbon dioxide, and acid rain-pollution of the seas and inland waters, careless use and disposal of hazardous substances and the extinction of animal and plant species constitute further grave threats to the human environment.

…

10. The world community of states solemnly reaffirms its commitment to the Stockholm Declaration and Action Plan, as well as to the further strengthening and expansion of national efforts and international co-operation in the field of environmental protection. It also reaffirms its support for strengthening the United Nations Environment Programme as the major catalytic instrument for global environmental co-operation, and calls for increased resources to be made available, in particular through the Environments [F]und, to address the problems of the environment. …

However, this pessimistic conclusion should be tempered by the fact that it is unrealistic to expect the priorities of national governments to be redirected and the environmental and social problems faced throughout the world to be solved in only one decade (Caldwell and Weiland 1996). To provide an example of the progress that was made with regards to the international environmental agenda, Box 2.4 presents the major treaties and conventions signed between 1963 and 1979. During the 1970s there was a decisive shift in the content of treaties/conventions towards the protection of the human environment and wildlife. However, at the time of the Nairobi meeting, many remained skeptical that the progress made during the 1970s could be sustained into the 1980s due to the prevailing economic, financial, and political problems facing the international community.[51]

Box 2.4: Major Treaties and Conventions—1963 to 1979

Year	Treaty/Convention/Protocol
1963	The Treaty Banning Nuclear Weapon Tests in the Atmosphere, Outer Space and Under Water
1965	The International Covenant on Economic, Social and Cultural Rights (ICESCR)
1967	The Convention for the Protection of Industrial Property
1968	The Treaty on the Non-proliferation of Nuclear Weapons
1971	The Convention on Wetlands of International Importance especially as Waterfowl Habitat
1972	The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter
	The Convention Concerning the Protection of the World Cultural and Natural Heritage
1973	The Convention for the Prevention of Pollution from Ships (MARPOL)
1974	The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
	The Nordic Environmental Protection Convention
1979	The Convention on Long-Range Transboundary Air Pollution (Geneva Convention)
	The Convention on the Conservation of Migratory Species of Wild Animals

The response to the second objective of the Nairobi meeting—to make recommendations for the future actions of the UNEP—seemed equally pessimistic.* In an editorial in *The Ecologist* magazine, Edward Goldsmith (1982,

* In a review of the first 20 years of UNEP, McCormick (1995) describes four sources of problems that impeded UNEP's ability to carry out its mission effectively: [1] there was a continual lack of funding; [2] UNEP was hindered by management that was inefficient, did not adequately outline

p. 99) reported that the delegates present in Nairobi "had undoubtedly received specific instructions to underplay environmental problems in order to justify their government's environmentally destructive policies." Goldsmith cites the German delegation's report to the Ministry of Foreign Affairs in Bonn that apologized "for not having been able to prevent a debate on the issue of Armaments and the Environment, as they had been instructed to do" (ibid., p. 99). Similarly, Caldwell and Weiland (1996) argue that the elements of the Action Plan that had been implemented were those connected to monitoring, information exchange, research, and public awareness—what one might call the low-hanging fruit. Governments had been reluctant to address issues that affect "economic or development interests or required a major reorientation of policy and administration at national levels, … [except] in those infrequent cases of urgent popular demand" (ibid., p. 97). In a somewhat cynical tone, Caldwell and Weiland suggest that in the future "the state of the environment would worsen, but UNEP would be able to monitor the where and why of its decline" (ibid., p. 97). Thus, although the Nairobi Declaration and the subsequent UN General Assembly Resolution (37/219)[52] called for enhanced national efforts and international co-operation in the field of environmental protection and for the strengthening of the UNEP, there were grounds on which one could question whether nations would answer this call in good faith.

In addition, the Nairobi meeting also raised several other important issues that warrant discussion. First, the negative impacts of over-population were formally recognized as a growing problem. Whereas population had been largely overlooked at the Stockholm conference,[*] it played a much more prominent role

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its priorities, and tried to address far more than its human and financial resources could handle; [3] UNEP's location in Nairobi tended to isolate it from the industrialized nations where many decisions that affected the global environment were made, the location made it difficult to recruit highly qualified staff, and it tended to divide UNEP between the wishes of developed and developing nations (Note: Due to its location, developing nations adopted UNEP as their 'own' UN agency); and [4] UNEP's constitution divided the attention of its headquarters between the Programme proper and the management of the Environment Fund (which were to be considered separately), and did not provide UNEP with adequate executive powers, meaning that it had to work through other UN specialized agencies with little incentives to encourage cooperation and with no powers of program enforcement. Notwithstanding these problems, McCormick (1995) highlights UNEP's 1974 Regional Seas Programme (designed to reduce pollution and coastal degradation in shared seas) and its involvement in the 1985 Vienna Convention and 1987 Montreal Protocol (designed to protect the ozone layer by limiting the production of CFCs and halons) as two of its most notable successes.

[*] See Section 2.5 for a discussion of the debate between Commoner on one side and Ehrlich and Holdren on the other, about the link between population, affluence, and/or technology and environmental degradation.

at the Nairobi meeting. In particular, the Nairobi Declaration made an explicit connection between population, resources, and the health of the environment: "During the last decade, new perceptions have emerged: the need for environmental management and assessment, the [proposition of a] … complex interrelationship between environment, development, population and resources and the strain on the environment generated, particularly in urban areas, by increasing population have become widely recognized."[50]

Second, during the decade since Stockholm, developing countries that had previously rejected the imposition of strict environmental standards had now become worried about the damage that was being done to their environment (Redclift 1984, p. 49). Their concern was that this environmental damage was affecting both the health of their people and their future development prospects. This transition in opinion is most clearly reflected in the report of the Governing Council of the UNEP on the general debate at the Nairobi meeting: "Differences of views between developed and developing countries with regard to environmental perceptions had to a large extent faded over the last 10 years, and the concepts of sustainable development and rational management of natural resources were now widely accepted as the cornerstones of environmental policies."[53] Hence, it was unlikely that developing nations would continue to disagree, in principle, with the creation of standards to protect the environment on which their livelihoods depended.

Finally, of most importance, the Nairobi meeting highlighted a reversal of the perceived impacts of economic growth. The UNEP report *The Environment in 1982: Retrospect and Prospect*, provides a succinct description of the turnaround in opinion: "A decade ago the desirability of further economic growth was questioned in some quarters but the negative effects of the recent slow-down in economic growth, have reinforced the view that it is an essential instrument in achieving social goals. In developing countries particularly, economic growth is vitally important and remains a major force for improving the health and welfare of people. It is now perceived that economic growth can often be managed not only to avoid environmental degradation but also, in many cases, to improve the environment" (UNEP 1982a, p. 37).* The notion that economic growth was

* The slow growth of the world economy during the early 1980s, combined with rising debt service obligations and a reduction in the inflow of finance, meant that many developing nations faced severe economic crises and were forced to reduce social spending and curtail environmental protection efforts (Redclift 1996; WECD 1987). The 1991 UNEP report on *The State of the World Environment* described the 1980s as being the "lost decade" (UNEP 1991, p. 2). The report criticized the structural adjustment policies of developing nations that were designed to dampen demand, devalue the currency, remove subsidies from fuel and food stuffs, and reduce government spending (ibid., p. 3). In particular, it stated that the poor tended to bear the brunt of

essential to environmental protection was also recognized by the Resolution of the UNEP Governing Council at its Session of a Special Character in May 1982. In particular, the Resolution stated that the past decade had experienced a "worsening of environmental problems in developing countries arising from the present international economic order which has slowed down their development and the protection of their environment."[54]

Because the initial concerns for the human environment grew from the negative impacts of industrialization in developed countries, the shift in the international focus toward the environmental problems faced by developing nations is significant. The identification of poverty as a major contributor to environmental degradation* increased the importance of economic growth because it was considered to be the only pragmatic way to alleviate poverty. Developing countries argued that if poverty and underdevelopment were made a priority, it would enable them to break free from the cycle in which poverty and environmental degradation were continually worsening. However, because no progress had been made during the 1970s in creating a new form of environmentally sound development, the only way to grow the economy was to follow the path of conventional development. This meant a reliance on technology that was fueled by non-renewable resources and generated a significant amount of pollution which would likely damage ecosystems and human health. Whereas developing nations made the case in the 1971 Founex report that because their environment had not been burdened by industrial pollution they could carry a certain amount of industrial activity (UN 1972), their position changed during the next decade as studies revealed the worsening condition of their environment (UNEP 1982b, 1982c). Thus, developing countries faced a paradox. They needed to develop to protect and improve their environment—on which their future depended—but in doing so they would

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such policies, which had the result of increasing malnutrition and reducing health services and school enrollment rates. It concluded that these negative affects of structural adjustment were "inhuman and ultimately inefficient" and that future adjustment policies must have a "human face – which protects the poor" (ibid., p. 4). See Section 12.3.3.3 in Ashford and Hall (2011b) for a discussion of the World Bank's structural adjustment loans (SALs).

* A report by the UNEP on the general debate at the 1982 Nairobi meeting made the following comment on the link between poverty and the environment: "There was broad agreement on the need to make a direct attack on poverty, which was the main source of environmental degradation in the third world[;] breaking the vicious circle of extreme poverty would help to unravel the tangled interrelationships between population, resources, development and the environment." Source: UNEP, *Report of the Governing Council on its Tenth Session, General Debate*, paragraph 51, http://www.unep.org/Documents.multilingual/Default.asp?DocumentID=70&ArticleID=702 (accessed July 31, 2011).

ultimately damage the very environment they wished to safeguard. This contradiction led to the birth of sustainable development, the idea that development and environmental protection could advance in unison. Hence sustainable development would be able not only to meet the needs of the present but also to do so in a manner that did not damage the environment and compromise the ability of future generations to meet their needs (WCED 1987, p. 43).*

2.8 The Rise of an International Concern for Sustainable Development

This section begins with a discussion of events in 1980, the year that the term sustainable development gained common parlance in the international arena. Although the term had been used around the time of the Cocoyoc meeting in 1974,[55] it was not until the publication and worldwide launch (in more than 40 countries) of the *World Conservation Strategy* (*WCS*) in March of 1980 that it began to be used by the international community. The purpose of this section is to chart the formulation and rise of the notion of sustainable development and document some of the influential events, publications, and U.S. legislation that occurred between 1981 and 2004 (Box 2.5).

2.8.1 U.S. Environmental Legislation and International Treaties and Conventions: 1980 to 2004

This section highlights major U.S. environmental legislation and international treaties and conventions that were established during the last two decades of the twentieth century. The U.S. legislation is included to present an

* In 1982, the International Institute for Environment and Development (IIED) presented its definition of sustainable development: "the process of improving the living conditions of the poorer majority of mankind while avoiding the destruction of natural and living resources, so that increases of production and improvements in living conditions can be sustained in the longer term" (IIED 1982, p. 7). This definition provides a clear indication that the concept of sustainable development was initially focused towards the plight of developing nations and the 'poorer majority of mankind.' The IIED definition does not make any reference to the impacts that industrial processes were having on the environment, neither does it mention the associated environmental impacts from high levels of consumption. In fact, it calls for an increase in production without any mention of the necessity of cleaner production processes. McCormick (1995) suggests that a simpler and more appropriate version of the IIED definition of sustainable development might be "economic development that takes place within the carrying capacity of the natural environment" (ibid., p. 180). While this does cover the actions of both developed and developing nations, identifying the carrying capacity of the environment is difficult at best.

example of how national environmental agendas developed during this period. This section also takes a brief look at the institutionalization of the U.S. environmental movement during the 1980s and 1990s.

Box 2.5 indicates that during the 1980s and 1990s, new environmental legislation in the U.S. focused on:

1. *decontaminating hazardous waste sites*—with the enactment and amendment of the Superfund legislation in 1980 and 1986, respectively;
2. *informing and protecting society from dangerous chemicals*—with the enactment of the 1986 Emergency Planning and Community Right to Know Act (EPCRA) and the 1999 Chemical Safety Information, Site Security, and Fuels Act;
3. *preventing industrial pollution*—with the enactment of the 1990 Oil Pollution Act (the year following the Exxon Valdez oil spill) and the Pollution Prevention Act;
4. *strengthening the regulation of pesticides*—with the enactment of the 1996 Food Quality Protection Act (FQPA) which amended the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) of 1972; and
5. *creating sector-specific legislation designed to protect the environment while facilitating development*—the U.S. surface transportation legislation enacted in 1991, and reauthorized in 1998, provides an example of sector-specific legislation that attempted to integrate transportation planning and programming with a concern for the environment.[*]

The development of legislation in the U.S. reflects the major events of the 1970s, 1980s, and 1990s. The rise of a concern about toxic (or hazardous) chemicals in the 1970s (the third environmental concern) clearly remained an important issue during the 1980s and 1990s, as did the need to reduce industrial pollution. In addition, the emergence of sustainable development during the

[*] For example, the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 declared that it "is the policy of the United States to develop a National Intermodal Transportation System that is economically efficient and environmentally sound, provides the foundation for the nation to compete in the global economy, and will move people and goods in an energy-efficient manner. … The National Intermodal Transportation System shall consist of all forms of transportation in a unified, interconnected manner, including the transportation systems of the future, to reduce energy consumption and air pollution while promoting economic development and supporting the Nation's preeminent position in international commerce." Thus, this 'declaration of policy' established a clear intent for the Department of Transportation to follow the objectives of sustainable development. Source: ISTEA, 1991, Section I, http://ntl.bts.gov/DOCS/istea.html (accessed July 31, 2011).

1980s is reflected by sector-specific legislation that began to incorporate the principles of the new development paradigm.

A look at the U.S. environmental movement during this period is informative. We recall from Section 2.2 that the U.S. environmental movement of the 1960s was predominantly a grassroots movement. It grew in response to a series of influential environmental publications and a number of highly visible environmental disasters, and was successful in forcing the U.S. government to establish the National Environmental Policy Act (NEPA) and the Environmental Protection Agency (EPA) in the early 1970s. The subsequent environmental legislation formed between the signing of the NEPA in 1970 and the enactment of the Superfund legislation in 1980 (Box 2.5) created what became, and still is, virtually the entire environmental regulatory framework in the U.S. (Coglianese 2001, p. 12). This decade of environmental legislative activity led to the "institutionalization of the environmental movement" and to some notable improvements in the environment (ibid., p. 29).

Since environmental protection measures were now codified into law, environmental groups were forced to focus their attention on insider political strategies, lobbying, and other tactics often used by industry groups. This shift in attention also led to a transformation in the structure of grassroot environmental groups, which now needed scientists, economists, lawyers, fundraisers, media consultants, and recruitment specialists to maintain the laws they had fought so hard to establish (Coglianese 2001, pp. 14-16).

During the 1980s and 1990s, there were several attempts by elected officials to weaken the legal protection of the environment in order to reduce the burdens of federal regulation (Coglianese 2001, pp. 16-18, Ashford and Caldart 2008). These attempts occurred mainly during the Reagan Administration's 'countermovement' and the Clinton Administration when Republicans captured both the Senate and the House of Representatives. However, each time environmental regulations came under serious threat, the environmental groups were able raise public awareness and use court-based challenges to protect the environmental regulatory framework. As Coglianese (2001, p. 18) argues, "even though the environment may not have been foremost in their minds during the early 1990s, Americans were still very much concerned about the environment."*

* Coglianese (2001) presents an interesting set of data that indicates the relatively high level of public support for environmental concerns during the 1980s and 1990s: "In 1980, sixty-two percent of the public surveyed in a national poll were sympathetic to the environmental movement or active within it, while only four percent said they were unsympathetic. … In 1992, a national poll found that eighty-one percent of respondents viewed themselves as sympathetic to the movement or active within it, with only two percent claiming to be unsympathetic. … In 2001, even in the face of concerns about an economic slowdown, sixty-eight percent of Americans

During this same period, there were growing divisions within the environmental movement, which rejected the institutionalization of environmental concerns and saw the mainstream environmental groups as being "insular, bureaucratized, and out of touch" (Coglianese 2001, p. 19).* The concern was that the environmental movement's focus on protecting established environmental laws meant that it was unable to pursue litigation designed to achieve "transformational results" (ibid., p. 15). Whereas the movement had once been a minority (activist) player in the political process, it was now an established part of the "American political and social fabric" (ibid., p. 16). Being an established member of the political process meant that the environmental movement entered a period of "steady state environmentalism" (ibid., p. 21) in which changes to the "institutional status quo" were vigorously resisted (ibid., p. 22).† The success in combating the environmental problems of the 1970s had also

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still claimed to be sympathetic to the environmental movement or active within it, while only five percent reported that they were unsympathetic. … According to a 1991 poll, as many as nine out of ten Americans are willing to identify themselves, at least weakly, as environmentalists" (ibid., pp. 22-23). More recently, a 2010 Gallup poll revealed that 19% of Americans considered themselves to be an active participant in the environmental movement, 42% were sympathetic towards the movement, but not active, 28% were neutral, and 10% were unsympathetic (Dunlap 2010). The trend in these data over the past decade shows an overall decline in the percentage of Americans with a positive orientation toward the environmental movement.

* In particular, three new strands of environmentalism were formed within the broader environmental movement (Coglianese 2001, pp. 18-21). First, there was the 'deep ecology' movement that placed the well-being and flourishing of human *and* non-human life at the center of decision-making. Second, there was the establishment of the 'environmental justice' movement to protect poor and minority communities that were experiencing some of the worst levels of pollution. Finally, there was an emergence of 'ecotheology,' which combined religion and conservation and argued that nature has a spiritual value and therefore humankind is "obligated to protect and preserve the environment" (ibid., p. 20).

† See Brulle (2000) for an informative and comprehensive analysis of the major strands of the U.S. environmental movement. Brulle's thesis is that the structure of the environmental social movement, which is based upon prevailing cultural and social systems, is unlikely to help transition the U.S. towards a society that is both democratic and ecologically sustainable. "If an ecologically sustainable society is to be created, social learning must be rapidly expanded, resistance must be overcome, and intentionally directed social change must be accelerated. This is a difficult theoretical and practical task, but it must be undertaken if we are to avoid the extraordinary suffering and misery that will be inflicted on all of the Earth's living beings if the projected level of ecological disruption occurs [ibid., p. 7.]. … The environmental social movement in the United States is a key component in fostering such change" (ibid., p. 12). By analyzing the core objectives, internal structures, funding, and political practices of a wide range of environmental organizations, Brulle (2000) is able to make recommendations on how the environmental movement can reform its organizational practices to transition society towards democracy and ecological sustainability. See the related discussion in Section 2.2 on "The Death of Environmentalism" (Shellenberger and Nordhaus 2004).

created a certain amount of public complacency regarding the need to address new, and serious, environmental problems. Hence, the transition into 'steady state environmentalism' has meant that new advances in environmental legislation are unlikely; however, it also means that the U.S. environmental framework will largely remain intact for the years to come.

Box 2.5: The Emergence of Sustainable Development—1981 to 2012

Year	Events	Publications	U.S. Legislation
1981		*Global Strategy for Health for All by the Year 2000*—Prepared by the World Health Organization	
1982	The International debt crisis erupts and threatens the world financial system. World Resource Institute (WRI) is established.	*The Environment in 1982: Retrospect and Prospect*—UNEP *The World Environment: 1972-1982*—UNEP *World Charter for Nature*—Adopted by the UN General Assembly	
1983	The World Commission on Environment and Development (WCED) is formed.	*Environmental Research and Management Priorities for the 1980s*—Report prepared by an international group of scientists on behalf of the Royal Swedish Academy of Sciences	
1984	Drought in Ethiopia—between 250,000 and 1 million people die from starvation. Bhopal incident—a leak of deadly methyl isocyanate at a Union Carbide pesticide plant in Bhopal, India, kills thousands of people. The OECD International Conference on Environment and Economics is held in Paris, France.		

Box 2.5: The Emergence of Sustainable Development—1981 to 2012

Year	Events	Publications	U.S. Legislation
1985	British scientists discover an ozone hole over the Antarctic.		
	The World Meteorological Society, the UNEP, and the International Council of Scientific Unions meet in Villach, Austria, to report on the build-up of CO_2 and other greenhouse gases in the atmosphere.		
1986	A nuclear reactor meltdown at the Chernobyl power station releases radioactive material throughout the Northern Hemisphere.		The Superfund Amendments and Reauthorization Act (SARA), which amended CERCLA
	The IUCN (International Union for Conservation of Nature and Natural Resources) Conference on Environment and Development is held in Ottawa, Canada.		The Emergency Planning and Community Right-to-Know Act (EPCRA)
	The Uruguay Round of the General Agreement on Tariffs and Trade (GATT) lays the foundation for the establishment of the World Trade Organization (WTO) in 1995.		
1987	*World population—5 billion*.	*Our Common Future*—WCED	
	The IMF (International Monetary Fund) establishes the Enhanced Structural Adjustment Facility (ESAF).		

Box 2.5: The Emergence of Sustainable Development—1981 to 2012

Year	Events	Publications	U.S. Legislation
1988	The Intergovernmental Panel on Climate Change (IPCC) is established.		
1989	The Exxon Valdez oil tanker runs aground spilling 11 million gallons of oil into Alaska's Prince William Sound.	*Valdez Principles* (later renamed the *CERES Principles*)—CERES	
1990	The International Institute for Sustainable Development (IISD) is established in Canada.		The Oil Pollution Act (OPA) The Pollution Prevention Act (PPA)
1991	The Global Environmental Facility (GEF) is established. The European Bank for Reconstruction and Development (EBRD) is established.	*Caring for the Earth: A Strategy for Sustainable Living*—Published by the IUCN, the UNEP, and the WWF *Ecological Economics: The Science and Management of Sustainability*—R. Costanza	The Intermodal Surface Transportation Efficiency Act (ISTEA)
1992	The UN Conference on Environment and Development (UNCED) is held in Rio de Janeiro, Brazil. The Earth Council is established in Costa Rica.	*Agenda 21*—UN Department of Economic and Social Affairs (DESA) *Changing Course*—S. Schmidheiny	

Box 2.5: The Emergence of Sustainable Development—1981 to 2012

Year	Events	Publications	U.S. Legislation
1993	The UN World Conference on Human Rights is held in Vienna, Austria. The UN Commission on Sustainable Development that was created at the UNCED holds its first meeting. The North American Free Trade Agreement (NAFTA) is signed by Canada, Mexico, and the U.S. U.S. President Bill Clinton announces the creation of the President's Council for Sustainable Development (PCSD).	*Beyond the Limits: Confronting Global Collapse, Envisioning a Sustainable Future*— D. H. Meadows, D. L. Meadows, and J. Randers	
1994	The UN International Conference on Population and Development is held in Cairo, Egypt.		
1995	The UN World Summit for Social Development is held in Copenhagen, Denmark. The UN Fourth World Conference for Women is held in Beijing, China. The World Trade Organization (WTO) is established. The World Business Council for Sustainable Development (WBCSD) is established in Geneva, Switzerland.		

Box 2.5: The Emergence of Sustainable Development—1981 to 2012

Year	Events	Publications	U.S. Legislation
1996	The Summit of the Americas on Sustainable Development is held in Santa Cruz, Bolivia. ISO 14001 is formally adopted as the voluntary international standard for corporate environmental management systems. The Second United Nations Conference on Human Settlements (Habitat II) is held in Istanbul, Turkey.	*Sustainable America: A New Consensus for Prosperity, Opportunity, and a Healthy Environment for the Future*—Report by the President's Council for Sustainable Development *Beyond Growth*—H. E. Daly *How Much Is Enough?*—A. T. Durning *Our Stolen Future: Are We Threatening Our Fertility, Intelligence, and Survival? A Scientific Detective Story*—T. Colburn, D. Dumanoski, and J. P. Myers	The Food Quality Protection Act (FQPA)
1997	The IMF establishes the Supplemental Reserve Facility (SRF). The Special Session of the UN General Assembly to Review and Appraise the Implementation of Agenda 21 is held.	*Do We Consume Too Much?*—M. Sagoff *No Middle Way on the Environment*—P. R. Ehrlich, G. C. Daily, S. C. Daily, and J. Salzman	
1998	*World population—6 billion.* The IMF activates General Arrangements to Borrow for the first time in 20 years.	*Cradle to Cradle: Remaking the Way We Make Things*—W. McDonough and M. Braungart	The Transportation Equity Act for the 21st Century (TEA-21)

Box 2.5: The Emergence of Sustainable Development—1981 to 2012

Year	Events	Publications	U.S. Legislation
1999	The first Dow Jones global sustainability index is launched.	*Our Common Journey*—National Research Council *Natural Capitalism: Creating the Next Industrial Revolution*—P. Hawken, A. Lovins, and L. H. Lovins	The Chemical Safety Information, Site Security, and Fuels Act
2000	The UN Millennium Summit is held in New York The EU establishes the Lisbon Strategy to promote sustainable economic growth (via competitiveness) and employment while respecting the environment.		
2001	The IMF announces that it will establish the International Capital Markets Department to enhance its surveillance, crisis-prevention, and crisis-management activities.		
2002	The UN World Summit on Sustainable Development (WSSD) is held in Johannesburg, South Africa.		
2004		*Limits to Growth: The 30-Year Update*—D. H. Meadows, J. Randers, and D. L. Meadows	

Box 2.5: The Emergence of Sustainable Development—1981 to 2012

Year	Events	Publications	U.S. Legislation
2005		*Scarcity and Growth Revisited: Natural Resources and the Environment in the New Millennium*—R. D. Simpson, M. A. Toman, and R. U. Ayres (eds.)	
2006		*Stern Review on the Economics of Climate Change*—N. Stern	
2008	A world financial crisis is associated with the collapse of the sub-prime mortgage sector in the U.S.	*The Bridge at the Edge of the World: Capitalism, the Environment, and Crossing from Crisis to Sustainability*— J. G. Speth *Managing without Growth: Slow by Design, Not Disaster*—P. A. Victor	
2009	*Treaty of Lisbon* is signed by the requisite number of EU member states.	*A Blueprint for a Safer Planet: How to Manage Climate Change and Create a New Era of Progress and Prosperity*—N. Stern *Prosperity without Growth: Economics for a Finite Planet*—T. Jackson	
2010	The European Commission established the *Europe 2020 Strategy* to promote sustainable growth and employment.	*Cents and Sustainability: Securing Our Common Future by Decoupling Economic Growth from Environmental Pressure*—M. H. Smith, K. C. Hargroves, and C. Desha	

Box 2.5: The Emergence of Sustainable Development—1981 to 2012

Year	Events	Publications	U.S. Legislation
	The Preparatory Committee for the UN Conference on Sustainable Development held its first meeting in preparation for the Rio+20 Earth Summit in 2012.	*Accounting for Sustainability*—A. Hopwood, J. Unerman, and J. Fries *Dynamic Sustainabilities: Technology, Environment, Social Justice*—M. Leach, I. Scoones, and A. Stirling	
2011		*Technology, Globalization, and Sustainable Development: Transforming the Industrial state*—N. A. Ashford and R. P. Hall	
2012	The UN Conference on Sustainable Development will be held in Rio de Janeiro, Brazil.		

During the 1980s and 1990s, national environmental legislation was also influenced by several international treaties and conventions (Box 2.6). However, many of the nations that signed these international agreements were unable to ratify them in their home nations, reducing the agreements to weaker statements of intent.

It is possible to group many of the treaties and conventions shown in Box 2.6 under the four environmental concerns that underlie sustainable development. First, the concern for ecosystem integrity and biological diversity is reflected, respectively, by the 1991 protocol to protect the Antarctic region, the 1992 Convention on Biological Diversity, and the 2001 Stockholm Convention on Persistent Organic Pollutants. Second, the concern that the world's resources are finite and need to be conserved is reflected by the 1980 Convention on the Conservation of Antarctic Marine Living Resources, the 1988 Convention on the Regulation of Antarctic Mineral Resource Activities, and the 1992 Statement of Principles for the conservation of forests. Third, the concern that toxic chemicals can directly affect human health and the health of other species is reflected by the 1989 Basel Convention, the 1998 Rotterdam Convention, and the 2001 Stockholm Convention. Finally, the concern that human activity is affecting the global climate is reflected by the 1985 Vienna Convention, the 1987 Montreal Protocol, the 1992 Framework Convention on Climate Change, and the 1997 Kyoto Protocol.

Box 2.6: Major Treaties and Conventions—1980 to 2001

Year	Treaty/Convention/Protocol
1980	The Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR)
1982	The Convention on the Law of the Sea
1985	The Convention for the Protection of the Ozone Layer (Vienna Convention)
1987	The Montreal Protocol on Substances that Deplete the Ozone Layer
1988	The Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA)
1989	The Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (Basel Convention)
1991	The Protocol on Environmental Protection to the Antarctic Treaty (of 1959)
	The Convention on Environmental Impact Assessment in a Transboundary Context
1992	Agenda 21
	The Convention on Biological Diversity
	The Framework Convention on Climate Change
	The Rio Declaration
	Statement of Principles for a Global Consensus on the Management, Conservation, and Sustainable Development of all Types of Forests
1993	North American Free Trade Agreement (NAFTA)
1994	The Convention to Combat Desertification
	The Draft Declaration of Principles on Human Rights and the Environment
1996	The WIPO (World Intellectual Property Organization) Copyright and Performances and Phonograms Treaty
	The Debt Initiative for 'Heavily Indebted Poor Countries' (HIPC)
1997	The Kyoto Protocol
	The Multilateral Agreement on Investment (MAI)
1998	The Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters
	The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade
2001	The Stockholm Convention on Persistent Organic Pollutants

2.8.2 The 1980 World Conservation Strategy

This section takes a closer look at the notion of sustainable development as defined by the International Union for Conservation of Nature and Natural Resources (IUCN) et al.'s 1980 *World Conservation Strategy* (*WCS*).*

The *WCS* is an eloquent synthesis of a decade of intense debate in the international community over the need to protect the environment while continuing the process of development. The strategy is free from the "heated rhetoric" which characterized so many of the New International Economic Order publications at that time (Caldwell and Weiland 1996, p. 343). The *WCS* used the term 'sustainable' to describe development that takes "account of social and ecological factors, as well as economic ones; of the living and non-living resource base; and of the long term as well as short term advantages and disadvantages of alternative actions" (IUCN et al. 1980, p. 18). Acknowledging that "[c]onservation and development have so seldom been combined that they often appear—and are sometimes represented as being—incompatible" (ibid., p. 18), the *WCS* proceeds to develop its case why conservation and economic and social development are mutually supportive endeavors (Box 2.7).

* The roots of the *WCS* can be traced back as early as 1966 when Max Nicholson called for the creation of a world conservation program for the protection of wildlife (McCormick 1995, pp. 195-202). Nicholson specifically identified the IUCN (now known as the World Conservation Union) as the body that should be in charge of such a task (ibid.). In 1970, IUCN began to develop a strategic approach to conservation, moving away from its traditional approach of establishing independent projects towards the creation of projects that are coherently linked. The idea was that a program of interlinked initiatives would have a greater impact on the worldwide conservation of nature and natural resources. This process was advanced in 1975 when (the newly formed) UNEP asked IUCN to prepare an integrated wildlife conservation strategy to identify what actions were needed to protect and save wild species (ibid.).

The IUCN 1975-76 annual report provides some insight into its new vision of conservation that was to be treated "as an integral part of the plans for social and economic development" (IUCN 1976, p. 3). In addition, planning was to involve local people in conservation projects, ensuring their needs, culture, and knowledge were taken into account. As O'Riordan (1993) and McCormick (1995) note, IUCN's new strategy for conservation aligned well with the concept of 'eco-development' – the predominant development paradigm of the mid-1970s (see Section 2.6.3). In 1977, IUCN announced its intent to prepare a 'World Conservation Strategy' that would be the first attempt to combine conservation and development in a coherent manner. In 1980, the *WCS* was simultaneously released in more than 40 nations.

Box 2.7: Excerpts from the *World Conservation Strategy* (IUCN et al.1980, pp. 18-19) (emphasis added)

Introduction: living resource conservation for sustainable development

1. … The combined destructive impacts of a poor majority struggling to stay alive and an affluent minority consuming most of the world's resources are undermining the very means by which all people can survive and flourish.

2. Humanity's relationship with the biosphere (the thin covering of the planet that contains and sustains life) will continue to deteriorate until a new international economic order is achieved, a new environmental ethic adopted, human populations stabilize, and sustainable modes of development become the rule rather than the exception. Among the prerequisites for sustainable development is the conservation of living resources.

3. *Development is defined … as: the modification of the biosphere and the application of human, financial, living and non-living resources to satisfy human needs and improve the quality of human life*. For development to be sustainable it must take account of *social and ecological factors*, as well as *economic* ones; of the living and non-living resource base; and of the long term as well as short term advantages and disadvantages of alternative actions.

4. *Conservation is defined … as: the management of human use of the biosphere so that it may yield the greatest sustainable benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations*. Thus conservation is positive, embracing preservation, maintenance, sustainable utilization, restoration, and enhancement of the natural environment. … Living resources have two important properties the combination of which distinguishes them from non-living resources: they are renewable if conserved; and they are destructible if not. …

6. *Conservation is a process—to be applied cross-sectorally—not an activity sector in its own right*. …

7. *Living resource conservation has three specific objectives*:

> *to maintain essential ecological processes and life-support systems* …, on which human survival and development depend;
>
> *to preserve genetic diversity* …, on which depend the breeding programmes necessary for the protection and improvement of cultivated plants and domesticated animals, as well as much scientific advance, technical innovation, and the security of the many industries that use living resources;
>
> *to ensure the sustainable utilization of species and ecosystems* …, which support millions of rural communities as well as major industries. …

11. … Conservation must … be combined with measures to meet short term economic needs. *The vicious circle by which poverty causes ecological degradation which in turn leads to more poverty can be broken only by development*. But if it is not to be self-defeating, it must be sustainable—and conservation helps to make it so. The development efforts of many developing countries are being slowed or compromised by lack of conservation. …

12. … While it is inevitable that most of the planet will be modified by people and that much of it will be transformed, it is not at all inevitable that such alterations will achieve the social and economic objectives of development. Unless it is guided by ecological, as well as by other

Box 2.7: Excerpts from the *World Conservation Strategy* (IUCN et al.1980, pp. 18-19) (emphasis added)

environmental, and by social, cultural, and ethical considerations, much development will continue to have undesired effects, to provide reduced benefits or even to fail altogether. … Hence *the goal of the World Conservation Strategy is the integration of conservation and development to ensure that modifications to the planet do indeed secure the survival and wellbeing of all people*.

While 'living resource conservation' is at the heart of the *WCS*, the authors also recognized the need for "a strategy for peace; a strategy for a new international economic order; a strategy for human rights; a strategy for overcoming poverty; a world food supply strategy; [and] a population strategy" (IUCN et al. 1980, p. 18). If we recall Dernbach's (1998, 2004, 2011) model of sustainable development,* we see that the *WCS* represents an essential *component* of the concept of sustainable development. Alternatively, the *WCS* can be seen as supporting Dernbach's model of sustainable development by recognizing that environmental conservation/protection is only one aspect of the much broader notion of sustainable development.

In using the word sustainable to describe the development process, the *WCS* effectively "rechristened" eco-development (the term previously used to describe ecologically sound socio-economic development)† as sustainable development (Caldwell and Weiland 1996, p. 243). However, this rechristening was more than simply a name change.

A central aspect of eco-development was *national self-reliance*, which focused on local and regional development to meet human needs.‡ National self-reliance also implied that nations should be able to detach themselves from the international economic system temporarily if they were adversely affected by, for

* Dernbach (1998, 2004, 2011) argues that the international community has viewed the notion of 'conventional' development as incorporating at least four related components: [1] peace and security; [2] economic development; [3] social development (focusing on human rights); and [4] national governance that secures peace and development. Using conventional development as a base, Dernbach states that 'sustainable' development "modifies the purposes of conventional development by adding a wide range of environmental protection goals, by incorporating the environment into social goals, and by insisting that economic goals be compatible with environmental protection. It also modifies the purposes of development by recognizing the present generation's responsibility to future generations" (ibid., pp. 24-25). Hence, the fifth component of Dernbach's model of sustainable development seeks to protect the environment and the natural resources upon which the development process depends.

† See Section 2.6.3 for a discussion of the concept of eco-development.

‡ See the 1974 Cocoyoc Declaration's text on national self-reliance. See endnote 55.

example, fluctuations in the world commodity market.* However, the oil shocks of the 1970s led to economic recessions throughout the world, drastically reducing trade and the availability of aid for developing nations. During this period, environmental degradation in developing nations worsened, highlighting the essential role that the international economy plays in national development. Recognizing that conservation and development are closely interlinked, the *WCS* highlighted the importance of a New International Development Strategy. The purpose of this strategy was: "(a) to redress the inequalities in the relations between richer and poorer nations; (b) to establish a more dynamic, more stable and less vulnerable world economy, in which all countries have opportunities to participate on a fuller and more equal basis; (c) to stimulate accelerated economic growth in the poorer countries of the world; and (d) to reduce and eventually overcome the worst aspects of poverty by improving the lot of the hundreds of millions of people now living in abject poverty and despair" (IUCN et al. 1980, p. 62). To achieve this strategy, the *WCS* called for the liberalization of trade and the removal of all trade barriers to goods from developing countries. In addition, it recommended that economic and social growth/progress be accelerated in developing nations.† Hence, the *WCS* did more than simply rename eco-development as sustainable development; it connected local, regional, and national economic and social development with the conservation of living resources and the need for a stable, equitable, and more liberalized (i.e., less regulated or subsidized) international economic system in which developing countries could participate on a more equal footing.‡

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* Such fluctuations might occur because of the dumping of a heavily subsidized agricultural product onto the international market. This action reduces the price of the commodity making it impossible for the farmers of nations that do not (or are unable to) subsidize the agricultural sector to compete.

† This recommendation can be traced back to the 1974 Declaration on the Establishment of a New International Economic Order which states that the purpose of the new international economic order is to "ensure steadily accelerating economic and social development." *Declaration on the Establishment of a New International Economic Order*, Resolution 3201 (S-VI), 1 May 1974, http://www.un.org/Depts/dhl/resguide/resins.htm (accessed July 31, 2011). Note: The declaration was released in 1974, the year the first oil crisis ended.

‡ Two years after the publication of the *World Conservation Strategy*, UNEP highlighted the reversal in the perceived impacts of economic growth on developing nations in its ten year review of the 1972 Stockholm conference Action Plan (UNEP 1982a). It cited the negative effects of the slow-down in economic growth as being *the* factor that changed the opinion of developing nations towards seeing economic growth as being an essential instrument in achieving social goals. The combination of the need for economic and social development with the need to conserve/protect the environment is a major part of what forms the modern notion of sustainable development. The remaining components of the notion of sustainable development are the need

The *WCS's* diagnosis of the pending global environmental crisis and its solution to integrate conservation and development was undermined by its failure to address the social and political forces behind prevailing unsustainable practices (1987, Redclift 1984). In short, the *WCS* failed to provide a discussion on the "ways and means" of implementing the policies it put forward (Redclift 1984, p. 50). Further, the final version of the *WCS* was a compromise between the vision of IUCN's own members and that of conservationists (McCormick 1995). It tried to reach a common ground between conservation and development, and was forced to generalize and simplify the problems and issues involved (ibid.). Although the latter points can more easily be overlooked, the failure to consider the decision-making processes within which decisions involving the environment are made was a major weakness of the *WCS*.

Comparing the *WCS* with the report *North-South: A Program For Survival*, also published in 1980 by the Independent Commission on International Development Issues (otherwise known as the Brandt Commission), yields some important insights. Like the *WCS*, the Brandt Commission recognized that the development prospects of a number of developing countries were being threatened by the "irreversible destruction of their ecological systems" (Brandt 1980, p. 47). It also recognized the importance of the world economy and its influence on development issues. In fact, the Brandt Commission kept the need for a new international economic order at the center of its concerns. With this in mind, it made the following comment on the state of the international economy: "It is clear that the world economy is now functioning so badly that it damages both the immediate and the longer-run interests of all nations. … It will not be possible for any nation or group of nations to save itself either by domination over others or by isolation from them. On the contrary, real progress will only be made nationally if it can be assured globally. And this global approach cannot be limited to economic problems: it must also take into consideration the great complexity of human society. … Viewed in this light, the new international order itself can be seen as a continuously changing process in which forethought and negotiation operate constantly to establish an overall balance between all its elements, whether individual or collective" (ibid., pp. 267-268). Thus, the Brandt Commission rejected the notion that nations should be able to temporarily detach themselves from the international economy in favor of a fully integrated global economic system.[*] Finally, although the commission does talk about the

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for peace and security and the need for national governance that ensures development and security.

[*] Stiglitz (2002) has argued that developing nations should *sequence* the order in which key development reforms are taken. For example, domestic markets may first need to mature—that

need to make the necessary political decisions for change, like the *WCS* it too does not provide a robust framework through which its recommendations could be implemented (Redclift 1984).

Three years later, the Brandt Commission published a second report—*Common Crisis: North-South Co-operation for World Recovery* (Brandt 1983)—which documented the worsening worldwide economic conditions and the lack of global cooperation to address them. In many ways, the second report highlighted the failure of the 1980 report to initiate change. In response to the pending collapse of the world economic system, *Common Crisis* outlined a set of clear and direct proposals on finance, trade, food, energy, and the negotiating process. Drawing from an influential report by a Commonwealth Group of Experts—*The North-South: Making it Work* (Commonwealth Secretariat 1982)—*Common Crisis* presented a set of more realistic (and politically feasible) approaches to implementing the policies needed for change.

The year 1980 also saw the release of a report by the U.S. Council on Environmental Quality (CEQ) and the Department of State assessing the potential changes in, and interdependence of, the world population, resources, and environment over a twenty year period (CEQ 1980). Arriving at the start of the Reagan administration, *The Global 2000 Report to the President* came to the conclusion that "life for most people on earth will be more precarious in 2000 than it is now" (CEQ 1980, p. 1). "The available evidence leaves no doubt that the world—including … [the U.S.]—faces enormous, urgent, and complex problems in the decades immediately ahead. Prompt and vigorous changes in public policy around the world are needed to avoid or minimize these problems before they become unmanageable" (ibid., p. 5). The report effectively dismissed the myth that environmental protection and development are incompatible goals.

A year later, the CEQ published *Global Future: A Time to Act* (CEQ 1981), which provided recommendations on how the U.S. should address the problems raised in *Global 2000*. *Global Future* presented three reasons why the U.S. should take an urgent interest in 'global' environmental and social issues. First, there was the moral dimension. The average U.S. citizen had a good quality of life, while hundreds of millions of people lived in poverty and misery. Second, there was the question of preservation. Ensuring that resources were protected for future generations was described as being a "profound human interest" (CEQ 1981, p. 5). Finally, there were national security concerns. U.S. political and economic security was perceived as being under threat from the growing global

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is, operate competitively within an effective domestic legal and policy architecture—before they are opened to global competition.

resource, environmental, and population problems.[*] These reasons were used to bolster recommendations for U.S. action to address the problems occurring in critical areas such as population, food and agriculture, renewable energy resources and conservation, tropical forests, biological diversity, coastal and marine resources, water resources, and global pollution. In a sense, both *Global 2000* and *Global Future* were groundbreaking in that they were prepared by a 'national government'—as opposed to the international community—to address both national and global environmental and social problems.[†]

In addition, *Global Future* came to the conclusion that sustainable development would be a key concept in solving the world's problems: "Only a concerted attack on the socioeconomic roots of extreme poverty, one that provides people with the opportunity to earn a decent livelihood in a non-destructive manner, will permit protection of the world's natural systems. Nor will development and economic reforms have lasting success unless they are suffused with concern for ecological stability and wise management of resources" (CEQ 1981, pp. 11-12). Further, it argued that long-term economic development would only be successful if the natural resources of developing nations were protected. Its focus on developing nations highlights a weakness of the report. It failed to mention the environmental impact associated with the high consumption rates of industrialized nations, thereby disregarding the issue.

The fate of the CEQ reports was sealed when the Reagan administration chose to ignore them (McCormick 1995). In addition, the reports suffered heavy criticism (Simon 1981, Simon and Kahn 1981, Kahn and Schneider 1981). However, in retrospect, it has been shown that these criticisms were often based on flawed reasoning and the selective use of data (McCormick 1995).

In summary, although the *North-South: A Program for Survival*, *Global 2000*, *Global Future*, and the two 1982 UNEP (1982a, 1982c) reports—see Section 2.7—all documented the major environmental problems faced by the world and recognized the important role that the international economy plays in development, they did not have the same lasting impact as the *WCS*. Although the *WCS* did not fully integrate development and environmental considerations (Clapp and Dauvergne 2005), its formulation of sustainable development was later adapted as the central theme of the World Commission on Environment

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[*] For a valuable exposition of how worldwide environmental destruction might lead to political instability see Norman Myers (1993) *Ultimate Security: The Environmental Basis of Political Stability*, W. W. Norton Company, New York.

[†] Interestingly, the process of assessing the problems facing the world population, resources, and environment, highlighted the shear inadequacies of the U.S. government to anticipate and respond to global issues (CEQ 1981). Therefore, a critical part of the recommendations put forward in *Global Future*, were a series of changes to be made to governmental institutions.

and Development's report *Our Common Future* and become the integrating theme of the 1992 UN Conference on Environment and Development (Caldwell and Weiland 1996). Both of these developments are discussed in the following two sections, respectively.

2.8.3 The Brundtland Commission and Our Common Future (1983—1987)

In light of the evidence that environmental conditions around the world were deteriorating (UNEP 1982a, IUNC et al. 1980, Brandt 1980, CEQ 1980) and population and economic growth—two critical factors affecting the environment—were continuing to increase (Strong 2003), the Governing Council of the UNEP called for the creation of a "global strategy for sustainable development," during its session of a special character in 1982.[*] The following year, the UN General Assembly passed Resolution 38/161, which created a special, independent commission on the environment to propose "long-term environmental strategies for achieving sustainable development to the year 2000 and beyond."[56] As part of its terms of reference, the commission was required to consider the interrelationships between developed and developing nations, and between people, resources, the environment, and development. In short, the commission was required to do nothing less than rethink and articulate a new vision of development.

Under the chairmanship of former Prime Minister Gro Harlem Brundtland[†] of Norway, the World Commission on Environment and

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[*] The 1982 report of the Governing Council of UNEP on its session of a special character made the following statement on the need for sustainable development: "There was general agreement that economic and social progress was essential to the effective implementation of environmental protection policies. Stress was, however, laid on the *need for a new approach to economic and social progress*, based on careful stewardship of the earth's resources and a concern for the interests of future generations. The guiding principle of such development should be the achievement of *sustainable economic and social progress, not only within the limits imposed by nature, but also, and above all, in the context of respect for and protection of mankind; it should have man as the focus, and operate in harmony with the environment*. Work should therefore begin as soon as possible *on a global strategy for sustainable development, which, while respecting human needs and the human person, should ensure a balance between man and the environment*" (emphasis added). Source: UNEP, *Report of the Governing Council on its Tenth Session*, *General Debate*, paragraph 49, http://www.unep.org/Documents.multilingual/Default.asp?DocumentID=70&ArticleID=702 (accessed July 31, 2011).

[†] Gro Harlem Brundtland was a member of the Brandt Commission that published *North-South: A Program for Survival* (Brandt 1980) and *Common Crisis: Co-operation for World Recovery* (Brandt 1983). Brundtland saw the position as Chairman of the World Commission on Environment and

Development (WCED, also known as the Brundtland Commission) was subsequently formed and held its first meeting in Geneva, Switzerland in October 1984. The commission consisted of twenty-three members: four from central European countries, seven from developed nations (including Maurice Strong, the chairman of the 1972 Stockholm conference), and twelve from developing nations (WCED 1987). During the commission's first meeting, it adopted its mandate to:

(a) "re-examine the critical issues of environment and development, and formulate innovative, concrete, and realistic action proposals to deal with them;
(b) strengthen international co-operation on environment and development, and assess and propose new forms of co-operation that can break out of existing patterns and influence policies and events in the direction of needed change; and
(c) raise the level of understanding and commitment to action on the part of individuals, voluntary organizations, business, institutes, and governments" (WCED 1987, p. 363).

Between 1984 and 1987, the Brundtland Commission received advice and support from thousands of individuals, institutions, and organizations from all over the world (WCED 1987, p. 359). The commission also visited each world region to obtain a firsthand view of environment and development issues and to hold deliberative meetings and open public hearings. On December 11, 1987, the commission's "Environmental Perspective to the Year 2000 and Beyond" was submitted to, and adopted by, the UN General Assembly via Resolution 42/186 as a "broad framework to guide national action and international co-operation on policies and programmes aimed at achieving environmentally sound development."[57] That same year, the commission's full report was published as *Our Common Future*.[58]

Benefiting from more than a decade of debate over the notion of eco-development and then of sustainable development, the Brundtland Commission sought to effectively integrate social and economic development with the need for environmental protection. By combining these elements with the important notion of intergenerational equity, the commission created what has become the first widely accepted definition of sustainable development.

Development (WCED) as being her third call for political action, one which she would answer with *Our Common Future* (WCED 1987, p. x).

> "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:
> - the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and
> - the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs" (WCED 1987, p. 43).

In keeping with the approach to development articulated by the Cocoyoc Declaration and by influential publications such as *Small is Beautiful* (Schumacher 1999)[*] and *What Now: Another Development* (Dag Hammarskjöld Foundation 1975),[†] *Our Common Future* defined the major objective of development as the "satisfaction of human needs and aspirations" (WCED 1987, p. 43). Further, it saw sustainable development not as an end state, but rather as "*a process of change* in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are made consistent with future as well as present needs" (ibid., p. 9, emphasis added). As Redclift notes (1991), focusing sustainable development on human needs—as opposed to tradeoffs between economic and biological systems—meant that many economists would find it hard to endorse the concept. Further, the Brundtland Commission adopted a highly political agenda by viewing "sustainable development as a policy objective, rather than a methodology. It is

[*] Schumacher (1999, p. 139) rejected the idea that what "is best for the rich must be best for the poor" and redefined the conventional view of development towards human needs. "Development does not start with goods; it starts with people and their education, organization, and discipline. Without these three, all resources remain latent, untapped, potential" (ibid., p. 139). Schumacher's ideas are clearly reflected by the Cocoyoc Declaration which establishes human needs as the focus of development efforts.

[†] The Cocoyoc Declaration, *Small is Beautiful*, and *What Now: Another Development* all present a consistent message of the need to redefine the whole purpose of development. They reject development that is focused on economic growth in favor of development that aims to satisfy the basic physiological and psychological needs of humankind. Although the primary focus is on meeting the basic needs of the poorest sections of each society, there is recognition that the needs of affluent sections of society are also not being satisfied. Free trade is rejected in favor of an international economic system that allows nations to enter and exit the economic system in concert with their own development strategies. Such an economic system is also seen to promote a more equitable distribution of economic gains and respond to concerns about environmental justice. In parallel, national sovereignty, the right to diversity, self-reliance, and endogenous development are all recognized as essential components of the satisfaction of human needs. Finally, there is a unanimous recognition that development must be in harmony with the environment.

an over-arching concept … Such an approach is unapologetically normative, and places both the responsibility for problems, and the political will to overcome them, in the hands of human actors" (WCED 1987, p. 37).

The Brundtland Commission made a convincing argument that the environment and development are "inexorably linked" and cannot be treated as separate challenges (WCED 1987, p. 37). It concluded: "[d]evelopment cannot subsist upon a deteriorating environmental resource base; the environment cannot be protected when growth leaves out of account the costs of environmental destruction" (ibid., p. 37). This recognition that the costs of environmental destruction need to be considered in the development equation provided the field of environmental economics with a strong endorsement.* Further, the commission highlighted the role public policy could play in using "incentives and disincentives" to guide commercial organizations to develop environmentally sound technologies (ibid., p. 60). Redclift (1996, p. 18) argues that the endorsement of economic mechanisms as valid policy tools to protect the environment "effectively opened the door to environmental economics which sought to fill the policy vacuum."

Our Common Future appeared at a time when the political climate was beginning to become more receptive to the issues raised by the report. Future prospects for economic growth in industrialized nations were beginning to look positive, while global ecosystems were beginning to show signs of distress (Engfeldt 2002). Hence, there was an international audience eager to learn how to embrace economic growth while reducing pressure on ecosystems. The commission's insistence that science and technology could be used to meet human needs and solve environmental problems was the answer many were looking for. Towards the end of the 1980s, many governments were committed to market liberalization as a means of solving their economic problems. They saw trade as a way of stimulating ordinary (and unsustainable) economic growth. Therefore, by promoting the role of technological improvements in supporting economic growth, conserving natural resources, and protecting the environment, the commission gained the support of both developed and developing nations.

* Note: 'Environmental' economics is not to be confused with 'ecological' economics. The former treats nature as an 'input' to the economy that functions to satisfy *human* wants and needs and emphasizes a concern for scarce resources and ecological damage. Thus, it follows that environmental economics seeks to maximize human benefit while minimizing social and environmental costs. Ecological economics treats human economic systems as being embedded within ecosystems; "the field can be defined as the study of interdependent natural and economic systems" (Dryzek 1997, p. 30). Ecological economics sees natural ecosystems as finite and, therefore, is concerned about the scale of human activity that can be supported (ibid., p. 30). Living (and producing) within ecological limits becomes a major focus.

As Dryzek (1997, p. 136) notes, "sustainable development would surely lose unless it could be demonstrated that environmental conservation … [was] obviously good for business profitability and economic growth everywhere, not just that these competing values can be reconciled." Hence, unless science and technological innovation—two mainstays of economic growth in industrial societies—were a central theme of sustainable development, national governments would most likely have rejected the concept as another radical and politically unrealistic form of environmentalism.[*]

By explicitly bringing science and technology into the development equation, the technologically optimistic Brundtland Commission sought to articulate a new era of economic growth that is decoupled from growth in environmental degradation. Hence, economic growth could continue and the environment could be protected. The commission stipulated, however, that for this to be achieved, the protection of ecosystems "must be guaranteed" and all "economic partners must be satisfied that the basis of exchange is equitable" (WCED 1987, p. 17).

Having articulated a bold new development agenda, the Brundtland Commission highlighted a major problem with the institutional frameworks that would implement the new era of economic and social development. It argued that most governmental environment agencies, especially those in developing nations, "tend to be independent, fragmented, [and] working to relatively narrow mandates with closed decision processes" (WCED 1987, p. 9). It stated that the same was true for many international agencies responsible for areas such as development lending, trade regulation, and agricultural development. The commission believed that the solution to these problems lay in ensuring that national and international institutions consider the ecological dimensions of policy together with economic, social, trade, energy, agricultural, and other dimensions.[†] Such integration would close institutional gaps and bring environmental concerns into the center of decision-making. The idea was to develop a more proactive approach to environmental protection, rather than the

[*] See Section 2.12 for a discussion of *Cents and Sustainability*, the 20-year update to *Our Common Future*. The book presents ways to decouple economic growth from the environmental harm caused by this growth, using economic instruments, regulation, and advanced technologies. It provides evidence of, and guidance on, how the objectives of *Our Common Future* can be achieved.

[†] A central argument of Ashford and Hall's (2011b) book—*Technology, Globalization, and Sustainable Development*—is that decision processes must ingrate economics, employment, technology, environment, industrial development, national and international law, trade, finance, and public and worker health and safety to simultaneously achieve multiple, rather than single, outcomes.

more expensive react-and-cure approach that was typical of many government policies in the post-Stockholm era (Runnalls 2008). In parallel with this approach, the commission called for the strengthening of international law and conventions in support of sustainable development and for better implementation of these mechanisms for change.

Box 2.8 presents the broad set of conclusions from *Our Common Future* which reiterates the above points and presents several additional requirements for the pursuit of sustainable development.

Box 2.8: Requirements of the Pursuit of Sustainable Development, Our Common Future (WCED 1987, p. 65)

In its broadest sense, the strategy for sustainable development aims to promote harmony among human beings and between humanity and nature. In the specific context of the development and environment crises of the 1980s, which current national and international political and economic institutions have not and perhaps cannot overcome, the pursuit of sustainable development requires:

- a political system that secures effective citizen participation in decision making,
- an economic system that is able to generate surpluses and technical knowledge on a self-reliant and sustained basis,
- a social system that provides for solutions for the tensions arising from disharmonious development,
- a production system that respects the obligation to preserve the ecological base for development,
- a technological system that can search continuously for new solutions,
- an international system that fosters sustainable patterns of trade and finance, and
- an administrative system that is flexible and has the capacity for self-correction.

Finally, in addition to making numerous recommendations related to the areas of population, food security, the loss of species and genetic resources, energy, industry, and human settlements, the Brundtland Commission found that for sustainable development to be realized, all four components of conventional development—peace and security, economic development, social development, and national governance that ensures peace and development—require environmental protection (Dernbach 1998).

Our Common Future was the first rigorous attempt to formulate the concept of sustainable development. A major part of its success was due to the commission's efforts to base its recommendations on institutional and political realities and on what needed to be accomplished in the short-term. The endorsement of an equitable and liberal international economy, fueled by scientific advance and technological progress that conserved resources and

minimized environmental harm, resonated well with those who were struggling to reconcile development with the environment. Developed nations could continue along their development paths guided by economic incentives encouraging sustainable development. Simultaneously, developing nations could look forward to rapid economic growth by joining a more equitable international economic system.

However, even before the report's publication, some commentators remained skeptical whether nations could implement the recommendations put forward.* Redclift (1987, p. 14) argues that both developed and developing countries could not make the necessary changes "without involving themselves in a very radical structural reform, not only of methodologies for costing forest losses or soil erosion, but of the international economic system itself." Some two decades later it seems that Redclift's insights were valid. See also Runnalls (2008) who argues that the failure to dramatically reform domestic institutions and establish an international framework to address sustainability concerns is the core reason for the persistent worsening global threats. Many governments have failed to implement the recommendations put forward in *Our Common Future* and the international community is still attempting to develop a more equitable international economic system.

In Section 2.12, the book *Cents and Sustainability* is discussed. This book was written to demonstrate that in the 20 years since the publication of *Our Common Future*, nations around the world had made significant progress at decoupling economic growth from environmental pollution.

2.9 The UN Conference on Environment and Development—The Earth Summit (1992)

In response mainly to the Brundtland Commission's call for an international conference to "review progress made, and to promote follow-up arrangements …[to Our Common Future] to set benchmarks and to maintain human progress within the guidelines of human needs and natural laws" (WCED 1987, p. 343), the UN General Assembly decided to "convene the United Nations Conference on Environment and Development"[59] (UNCED) in Brazil in 1992.† The decision to hold the conference in a developing nation—especially one

* An early critique of *Our Common Future* is provided by Duchin and Lange (1994).

† While the 1980s had witnessed a rise in the use of the term sustainable development, it was not used in the title of the conference because influential developing countries feared that doing so would reduce their freedom of action. Their position was that the title Environment and Development provided a level of ambiguity that strengthened their case that the environmental

that had made significant progress on environmental issues since the 1972 Stockholm conference—had enormous political relevance and symbolism (McCormick 1995). In addition, the importance of the UNCED was reinforced when it was decided that the conference should be held at the summit level—meaning that the heads of state should be present. This decision had the effect of renaming the UNCED in the media as the Earth Summit (Strong 2003).

The UNCED was subsequently held in Rio de Janerio on June 3-14, 1992, and attracted some 178 nations, including 110 heads of state who attended the final two-day meeting (UN 1993b, 1993c, 1993d). The Earth Summit (also known as the Rio Summit) was much larger than the Stockholm conference and it was the first time in history that so many influential people had gathered in one place.

The main objectives of the UNCED were to review the progress that had been made since the Stockholm conference and to identify strategies, programs, legal mechanisms, financial resources, and regional/national/global institutional frameworks that could protect and enhance the environment in the socio-economic development process of all nations.[60] Its purpose was nothing less than to develop ways to protect the planet and ensure the welfare and future of humankind. Further, the UNCED planned to bridge the major conflicts between developed and developing nations in order to increase the likelihood that its outcomes would be implemented (Linner and Selin 2003). For this objective to be achieved, the impact that both poverty *and* affluence, individually and together, have on the environment needed to be addressed in the search for sustainable forms of economic development (South Centre 2002a).

Although the high profile nature of the UNCED attracted a surge of media interest and put the topic of environment and development on government agendas worldwide, it is not seen as a seminal event. Caldwell and Weiland

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destruction witnessed during the latter part of the twentieth century was caused primarily by developed countries. Hence, developed nations should take the lead in rectifying the environmental destruction experienced around the world (Engfeldt 2002). In a similar context, Sachs (2001) argues that the word development in the title of the conference was a code word used by developing countries to express their desire for "recognition and justice" (ibid., p. 5). Following the aborted negotiations for a new international economic order in the 1970s and the international debt crisis of the 1980s, developing nations had a strong case for placing their right to development at the forefront of discussion (ibid., p. 5). Principle 3 of the Rio Declaration – "[t]he right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations" – speaks directly to these concerns. Notwithstanding the politics behind the official title of the Earth Summit, Dernbach (1998) argues that the international community's efforts to "synthesize and integrate environment and development issues" (ibid., p. 21) provided a strong endorsement to the notion of sustainable development.

(1996) argue that the Earth Summit and its agreements were only made possible because of the 1972 Stockholm conference, which "legitimized and initiated *environment* as a focus of international policy" (ibid., p. 104). Further, the preparation for UNCED followed the model developed for Stockholm; that of extensive plenary meetings and negotiations in the run up to the Summit. However, the strong non-governmental organization (NGO) and media presence at the UNCED meant that "expectations … for openness and public participation in defining agendas and negotiating compromises" were high (ibid., p. 105). Thus, NGOs were able to play a much greater role in agenda setting than they did in the pre-Stockholm deliberations.

The 'Global Forum' was held at the same time as the Earth Summit and was attended by over 500 NGOs to discuss issues related to environment and development (Reid 1995). As Maurice Strong, the Secretary-General of the UNCED,[*] recounts: "The whole spirit of the … [UNCED] was very much helped and lifted by the … [NGO] presence … We made a point of getting the NGOs from the developing world, including those who were not accredited to the UN. … We made relevance the key criteria for UNCED accreditation and we got unprecedented numbers. It was extremely important to setting the spirit that infected the official conference. I am quite sure that the … [UNCED] would not have had even the results that it did without the presence of that dynamic and motley group of … [NGO] representatives" (Strong 2003, pp. 106-107). Strong's comments provide some insight into the often intense debates that occurred during the plenary meetings and the Summit itself. Without the constant pressure from NGOs and media scrutiny, the outcomes from the Summit might have been quite different.

In addition to the views of NGOs, a major undertaking in the pre-UNCED deliberations was the solicitation of the official positions of both developed and developing nations. To facilitate this process, the UN asked each nation to submit a report on its policies and expectations for the UNCED. By the end of 1992, almost every government had prepared a report (McCormick 1995). Further, several conferences were held on the topic of sustainable development (involving UN agencies, national governments, and NGOs), which provided valuable conclusions that helped inform the UNCED (ibid.).

By taking a closer look at the positions of developing nations prior to the UNCED, it is possible to gain some insight into the core arguments of the early 1990s. In lieu of a document comparable to the 1971 Founex Report (UN 1972), a

[*] Maurice Strong was also the Secretary-General of the 1972 UN Conference on the Human Environment. The UN asked Strong to be the Secretary-General of the UN Conference on Environment and Development to ensure continuity between the two conferences (Wirth 1995).

review of a report by the South Commission* (an advocacy group for developing nations) is beneficial.

In 1971—during a pre-Stockholm conference meeting at Founex (Switzerland)—developing nations adopted the position that they should not have to relinquish their hopes of industrial development as a result of environmental controls imposed by developed nations (UN 1972). However, this position weakened during the two decades between Stockholm and Rio. The combination of the rise of environmental movements in developing nations with a worsening of environmental problems fueled by the growing debt crisis meant that politicians from these nations could no longer argue that the environment was only a concern for developed nations.

The South Commission's 1991 report, *Environment and Development—Towards a Common Strategy of the South in the UNCED Negotiations and Beyond* (South Centre 2002a),[61] documents this shift in position by highlighting the importance of adopting environmentally-sound and sustainable patterns of development. Further it argues that for "a new equitable world order to emerge and for sustainable development to become a reality, it is critical that the developing countries, representing four-fifths of all humanity have a major role and say in charting the new directions" (ibid., p. 133).

Before the UNCED, the South Commission believed both developed and developing nations had strong positions from which they could negotiate a compact (South Centre 2002a, p. 108). It argued that developing nations should only concede on environmental issues pursued by developed nations in return for firm commitments that the international economic system would be restructured to make the terms of trade more equitable for developing nations. Yet despite the optimism that progress on development and environmental issues could be made, there was pessimism related to the actions of principal developed nations in the pre-UNCED deliberations. The South Commission (2002a) argued that developed nations had attempted to shift the focus of the Summit to what they deemed to be important at the expense of the agendas of developing nations. Specifically, that developed nations promoted a narrowly defined and sectoral environmental agenda which included separate negotiations for the climate change and biodiversity conventions and encouraged

* The South Commission was an advocacy group for developing nations. The Commission, formed in 1987, functioned as an independent body and its members (from developing nations) served in their own personal capacities. In recognition of the need to enhance co-operation between developing nations, the 'South Centre' was officially formed on 31 July 1995 when the Intergovernmental Agreement to establish the Centre came into force. As of 2008, 51 developing nations were official members of the South Centre. Source: South Centre, http://www.southcentre.org/ (accessed September 1, 2012).

incremental case-by-case negotiations. Further, the South Commission (2002a) argued that developed nations sought to shift the responsibility for environmental issues towards developing nations. By focusing on issues such as deforestation and population growth the fundamental causes of these problems could be ignored. "[T]he North has been reluctant to make concessions in respect of areas where the burden of adjustment falls on the North (e.g., climate change, dumping toxic wastes, technology, finance). It has also avoided the issue of its own consumption levels and lifestyles which make heavy demand on the global environment and are wasteful of natural resources" (ibid., p. 120). The poor coordination between developing nations combined with a lack of adequate human resources meant that little resistance was mounted to counter the agenda setting tactics of developed nations, whether legitimate or not.

The South Commission put forward two fundamental strategic objectives to help determine the negotiating positions of developing nations at the UNCED:

(a) "to ensure that the South has adequate 'environmental space' for its future development, and

(b) to modify global economic relations in such a way that the South obtains the required resources, technology, and access to markets which would enable it to pursue a development process that is both environmentally-sound and rapid enough to meet the needs and aspirations of its growing population" (South Centre 2002a, p. 109).

A strong message of the South Commission's report was that the needs of developed nations should not be met at the expense of present and future needs of developing nations (South Centre 2002a, pp. 110-111). Embedded within this statement is the concern that the production and consumption patterns of developed nations were reducing the environmental space available for developing nations. This environmental space refers to both the national and global environment and commons. The South Commission's position was similar to that taken by the 1971 Founex Report, which sought to entice industry to developing nations through more favorable operating environments.[*] The notion

[*] On December 12, 1991, a controversial memo by Lawrence Summers, the chief economist for the World Bank, was leaked to the news media. The memo begins: "'Dirty' Industries: Just between you and me, shouldn't the World Bank be encouraging MORE migration of the dirty industries to the LDCs [Less Developed Countries]?" Summers goes on to support his statement by arguing that: [1] the low wages in developing countries mean that the costs of health-impairing pollution will be lower; [2] developing countries are vastly under-polluted and can, therefore, tolerate more pollutive industries; and [3] that demand for a clean environment is likely to have very high income elasticity, and that industries which cause aesthetic (i.e., visual) pollution – which has "very little direct health impact" – could be welfare enhancing. Following the leak of the memo, Summers apologized, arguing that it was intended to be ironic and more of a thought experiment

of environmental space correlates to a right to pollute within the carrying capacity of the environment. Hence, the position taken by the South Commission twenty years after Founex was that adequate (*global*) environmental space should be allocated for developing nations to allow for their industrialization and the inevitable pollution of the environment.* Further, the commission cited poverty, population growth, and unemployment as factors that feed on each other to the detriment of the environment (ibid., p. 122). Therefore, any global action program that sought to protect the environment must simultaneously tackle global poverty. The equitable access to markets was seen as an effective way of achieving these objectives.

During the pre-Summit negotiations, the UN Development Programme (UNDP), the UN Environment Programme (UNEP), and the World Bank established the Global Environment Facility (GEF) in 1991. The purpose of the GEF was to help developing nations fund projects and programs that aligned with the objectives of the UNCED to protect the global environment.[62] GEF grants were to be provided to support projects related to areas such as biodiversity, the ozone layer, climate change, and land degradation.

On the first day of the Earth Summit, Maurice Strong delivered an opening statement in which he spoke to the concerns of both developed and developing nations.

> "Sustainable Development—development that does not destroy or undermine the ecological, economic or social basis on which continued development depends—is the only viable pathway to a more secure and hopeful future for rich and poor alike. This Conference must establish the foundations for affecting the transition to sustainable development. This can only be done through fundamental changes in our economic life and in international economic

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(Mokhiber and Weissman 1999). Subsequent reports claimed that the memo had been drafted by Dr. Lant Pritchett, a lecturer in public policy at Harvard's Kennedy School of Government, and that Pritchett's original (and well balanced) seven-page memo had been doctored by a third party between its approval by Summers' and its dissemination. Pritchett claims that the manner in which the memo was altered "was a deliberate fraud and forgery to discredit Larry and the World Bank" [Source: Harvard Magazine, *Toxic Memo*, 103(5), May-June 2001: 36, http://www.harvardmagazine.com/on-line/050171.html (accessed July 31, 2011)]. Lawrence Summers's memo can be viewed on The Whirled Bank Group's web site, *The Memo*, http://www.whirledbank.org/ourwords/summers.html (accessed July 31, 2011).

* The notion that environmental pollution is an unavoidable aspect of industrialization is being challenged by the 'next industrialization' (McDonough and Braungart 1998) and 'industrial ecology' movements (see the *Journal of Industrial Ecology*). Both movements are attempting to establish industrial processes that eliminate or greatly reduce environmental pollution from industrial activity.

> relations, particularly as between industrialized and developed countries. Environment must be integrated into every aspect of our economic policy and decision-making, as well as the culture and value systems which motivate economic behaviour" (Strong 1993, p. 46).

The UNCED produced three official agreements: [1] the Rio Declaration on Environment and Development; [2] Agenda 21; and [3] a Statement on Forest Principles.* In keeping with the Stockholm format, the Rio Declaration provided a statement of principles that was supported by an action plan (Agenda 21) for its implementation. In addition, two conventions were opened for signature—the Convention on Biological Diversity and the Framework Convention on Climate Change.† These conventions were a response to events of the late 1980s that raised concerns about the continuing extinction of species and depletion of biodiversity (the first environmental concern underlying sustainable development) and about ozone depletion and global climate change (the fourth environmental concern). Both the Rio Declaration and Agenda 21 are discussed in the following two sections.

The UNCED agreements highlight a transition in the international community's conceptualization of development. The notion that prevailing economic policies were deepening economic divisions between developed and developing nations was widely understood by the Earth Summit delegates (UN 1993a). Therefore, the UNCED agreements sought to manage and protect ecosystems so as to establish a prosperous future for humankind. Further, it was widely accepted that no nation could achieve the objective of sustainable development on its own. As Caldwell and Weiland (1996, p 107) note, the recognition that global international action would be required to address issues such as climate change meant that "Only One Earth"—the title of the Stockholm conference—"became an operational reality at Rio."

In addition to the five direct outcomes of the UNCED, the Summit led to a number of important international agreements and conferences and to the formation of several bodies that are often referred to as the "Rio Cluster" of UN proceedings (Box 2.9).[63]

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* For an informative discussion of the UNCED agreements see Grubb et al. (1993).

† The decision to develop a Convention on Climate Change was made at the first meeting of the Intergovernmental Panel on Climate Change (IPCC), established by the World Meteorological Organization (WMO) and UNEP, in 1988. The 1992 Framework Convention on Climate Change has provided the international legal framework for climate policy.

Box 2.9: The Rio Cluster of UN Proceedings

Year	
1992	The UN Commission on Sustainable Development (CSD)[64] is formed by the UN General Assembly via Resolution 47/191
1993	The UN World Conference on Human Rights is held in Vienna, Austria, 14-25 June [65]
	The Economic and Social Council (ECOSOC) reviews arrangements for NGO consultation [66]
1994	The Convention on Small Island Developing States is held in Bridgetown, Barbados, 25 April—6 May (culminating in the Declaration of Barbados) [67]
	The UN Convention to Combat Desertification is adopted in Paris on 17 June and opened for signature between 14-15 October [68]
	The International Conference on Population and Development is held in Cairo, Egypt, 5-13 September [69]
1995	The World Summit for Social Development is held in Copenhagen, Denmark, 5-12 March [70]
	The UN Fourth World Conference on Women is held in Beijing, China, 4-15 September [71]
	The Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks is adopted by the UN [72]
1996	The United Nations Conference on Human Settlements (Habitat II) is held in Istanbul, Turkey, 3-14 June [73]
	The World Food Summit is held in Rome, Italy, 13-17 November [74]
	The CSD Intergovernmental Panel on Forests (IPF) is established (the panel completes its work in 1997) [75]
1997	The CSD Intergovernmental Forum on Forests (IFF) is established (the forum completes its work in 2000) [75]
	The Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC) is adopted by the Conference of the Parties to the UNFCCC on 11 December [76]

While several of the items in Box 2.9 are only loosely connected to the UNCED, it can be argued that they would not have occurred had it not been for the international momentum behind sustainable development post-Rio. The international environmental movement of the 1990s had moved beyond the despair of the 'limits to growth' movement of the 1970s into a "more mature and measured phase" (McCormick 1995, p. 261). Both developed and developing nations began to understand that global environmental problems were caused by local actions, giving rise to the phrase 'think globally, act locally.'

2.9.1 The Rio Declaration on Environment and Development

The roots of the Rio Declaration on Environment and Development (commonly known as the Rio Declaration) can be traced back to *Our Common Future*, which called for a "new charter to guide state behaviour in the transition to sustainable development" (WCED 1987, p. 332). In 1992, the Secretary General of the UN, Boutros Boutros-Ghali, addressed this call by encouraging the development of such a charter for the UNCED. In response, Maurice Strong proposed that an 'Earth Charter' be prepared as a forward to Agenda 21 (Strong 2003). The intention was to build on the Stockholm Declaration and outline the basic moral and ethical principles that would guide the development process towards sustainability. However, the creation of an Earth Charter that could be supported by all nations proved to be unattainable (Strong 2003, Wirth 1995). Therefore, the title 'Earth Charter' was subsequently abandoned in favor of the 'Declaration on Environment and Development.'*

Interestingly, only fourteen nations (seven from both developed and developing nations) had an active role in drafting the Rio Declaration in coordination with the chairman of the UNCED Preparatory Committee, Tommy Koh (Wirth 1995). Time constraints had prevented the solicitation of views from other nations. The draft declaration was subsequently adopted by the Preparatory Committee and later by the UNCED without alteration (ibid.).

The 27 principles of the Rio Declaration[16] reaffirmed and built on the 1972 Stockholm Declaration.[34] While some of the principles included in these two declarations cover the same subject matter—compare the principles in Table 2.2 [Stockholm Declaration] and Table 2.3 [Rio Declaration])—the Rio Declaration effectively broadened the notion of conventional or eco-development to sustainable development by integrating environmental protection into the development process. Yet a critical look at the Rio Declaration's principles reveals weaknesses in the compromises that were agreed on to make it politically palatable (Grubb et al. 1993). "Far from a timeless ethic, it was … a snapshot of

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* In 1994, two years after the UNCED, an initiative to develop a new Earth Charter was led by Maurice Strong and Mikhail Gorbachev with support from the Dutch government. In 1997, an Earth Charter Commission was established to manage the initiative and an Earth Charter Secretariat was created at the Earth Council in Costa Rica. In 2000, the official Earth Charter was launched at the 'Peace Palace' in The Hague. Today, the ongoing mission of the initiative is to "promote the dissemination, endorsement, and implementation of the Earth Charter by civil society, business, and government[; to] … encourage and support the educational use of the Earth Charter[; and to] … seek endorsement of the Earth Charter by the UN." Source: The Earth Charter Initiative, http://www.earthcharterinaction.org/content/ (accessed July 31, 2011). The Earth Charter can be viewed at: http://www.earthcharterinaction.org/content/pages/Read-the-Charter.html (accessed July 31, 2011).

history" (ibid., p. 85). A significant turning point in the negotiations of the declaration was the success of developing nations in placing their right to development at the forefront of considerations (Sachs 2001). The recognition that less developed nations needed to develop meant that the Rio Declaration effectively turned into a "declaration on development, rather than on environment" (ibid., p. 5). Further, because development can be defined in multiple ways it can be argued that the Rio Declaration supports a business as usual approach to development where the environment is more of an afterthought. However, although the Rio Declaration has its shortcomings, and is far from an Earth Charter, it has proven to be a useful framework from which the concept of sustainable development has evolved.

As discussed in Section 2.1, it is possible to describe the notion of sustainable development—as viewed by the international community—using five critical components: peace and security; economic development; social development; national governance that ensures peace and development; and environmental protection (Dernbach 1998, 2004, 2011). The first four of these components—often referred to collectively as the four dimensions of conventional development (Dernbach 1998)—were established via the formation of international institutions and/or major multilateral treaties over the past half-century. The addition of environmental protection measures in the Rio Declaration signaled a transition from conventional development to sustainable development. In effect, the Rio Declaration states that for development to be sustainable it must protect the resources on which the development process depends and integrate environmental protection goals with development objectives (see Rio Principles 3 and 4). Table 2.3 shows how the Rio Declaration principles correspond with the five components of sustainable development.

In keeping with the Stockholm Declaration (specifically Principle 21), Principle 2 of the Rio Declaration reaffirms the sovereign right for nations "to exploit their own resources pursuant to their own environmental and developmental policies." Since national sovereignty was viewed as a central aspect to international relations and law, establishing sovereign rights to resources ensured the participation of nations at the UNCED.

Like Principles 9, 10, 11, and 12 of the Stockholm Declaration, Principles 6 and 9 of the Rio Declaration address the special needs of developing nations. Principle 6 states that the needs of the "least developed and those most environmentally vulnerable, shall be given special priority." Principle 9 compliments this recommendation by calling for the strengthening of "endogenous capacity-building for sustainable development," to be achieved "through exchanges of scientific and technological knowledge, and by enhancing the development, adaptation, diffusion and transfer of technologies, including

new and innovative technologies." If these two principles are considered along with Principle 7 (Table 2.3), it is clear that developed nations were seen to have a "responsibility" for the international pursuit of sustainable development. Interestingly, the Rio Declaration does not call for the direct transfer of financial aid to developing nations—a call made in the Stockholm Declaration. Instead, the declaration relies on an equitable international economy as a means to alleviate poverty. However, international aid is addressed in Agenda 21, which asked developed nations to donate 0.7 percent of their GNP (Gross National Product) per year to overseas development assistance (ODA),* and by the newly established GEF.

One of the major thrusts behind the (ultimately unsuccessful) development of the Earth Charter was the need to codify international legal norms surrounding environmental decision-making (Wirth, 1995). This objective clearly influenced the formation of the Rio Declaration. Three important instruments included in the declaration which directly relate to environmental decision-making are: [1] the precautionary principle (Principle 15); [2] the importance of internalizing environmental costs—i.e., the polluter-pays principle (Principle 16);† and [3] the environmental impact assessment (Principle 17). Moreover, the Rio Declaration called on the international community to cooperate and develop further international law in the field of sustainable development (Principle 27).

One of the more controversial Principles of the Rio Declaration proved to be Principle 3—"The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations."‡ This principle was designed to protect developing nations from

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* The commitment to donate 0.7 percent of developed nations' GNP to ODA represented more than a doubling of the amount of aid provided to developing nations at that time. Since the UNCED, the U.S. and other developed nations have not been able to provide this level of financial assistance. In fact, even at the time of the UNCED, the U.S. stated that it would not guarantee that it would provide this level of aid and would instead provide aid on a case-by-case basis (UN 1993d).

† The polluter-pays principle was first introduced by the OECD (Organization for Economic Cooperation and Development) to "restrain public subsidization of the pollution control costs of private firms in line with traditional liberal economics calling for the internalization of environmental externalities" (Gaines 2002, p. 10332).

‡ Principle 3 of the Rio Declaration provides a somewhat ambiguous description of the right to development. Just as human needs can be difficult to define, so are developmental and environmental needs – especially when considered in an intergenerational context. Interestingly, the 1986 UN Declaration on the Right to Development does not include any text on environmental considerations. Instead, it states that the "right to development is an inalienable human right by virtue of which every human person and all peoples are entitled to participate in,

international actions that might slow or compromise their plans for development (Sachs 2001, McCormick 1995). The U.S. refused to endorse the principle on the grounds that "[d]evelopment is not a right. On the contrary, development is a goal we all hold, which depends for its realization in large part on the promotion and protection of human rights set out in the Universal Declaration on Human Rights. … The United States understands and accepts the thrust of principle 3 to be that economic development goals and objectives must be pursued in such a way that the development and environmental needs of present and future generations are taken into account. The United States cannot agree to, and would disassociate itself from, any interpretation of principle 3 that accepts a "right to development", or otherwise goes beyond that understanding" (UN 1993d, p. 17).

Finally, if the 1972 Stockholm and 1992 Rio Declarations are considered alongside the 1944 Declaration of Philadelphia* and Agenda 21, the positive tensions generated between these documents begin to provide a more robust and comprehensive formulation of the notion of sustainable development.

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contribute to, and enjoy economic, social, cultural and political development, in which all human rights and fundamental freedoms can be fully realized" (UN Declaration on the Right to Development, 1986, Article 1, 1). Further, it reaffirms that nations have sovereignty over their natural wealth and resources, but does not provide any guidance on how these should be used other than in accordance with relevant provisions in both International Covenants on Human Rights. Therefore, "fulfilling" the right to development to meet developmental *and* environmental needs encompasses a much broader notion of the right to development.

* See Section 2.6.1 for a discussion on the Stockholm Declaration and Declaration of Philadelphia.

Table 2.3: Dernbach's Model of 'Sustainable Development' and the Rio Principles

Component of *Sustainable* Development	Rio Principles [a]
Peace and Security	**Principle 24**—Warfare is inherently destructive of sustainable development. States shall therefore respect international law providing protection for the environment in times of armed conflict and cooperate in its further development, as necessary. **Principle 25**—Peace, development and environmental protection are interdependent and indivisible. **Principle 26—**States shall resolve all their environmental disputes peacefully and by appropriate means in accordance with the Charter of the United Nations.
Economic Development	**Principle 5**—All States and all people shall cooperate in the essential task of eradicating poverty as an indispensable requirement for sustainable development, in order to decrease the disparities in standards of living and better meet the needs of the majority of the people of the world. **Principle 12**—States should cooperate to promote a supportive and open international economic system that would lead to economic growth and sustainable development in all countries, to better address the problems of environmental degradation. Trade policy measures for environmental purposes should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade. . . . **Principle 25**—see above.
Social Development	**Principle 1**—Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature. **Principle 8—**To achieve sustainable development and a higher quality of life for all people, States should reduce and eliminate unsustainable patterns of production and consumption and promote appropriate demographic policies. **Principle 20**—Women have a vital role in environmental management and development. Their full participation is therefore essential to achieve sustainable development. **Principle 21**—The creativity, ideals and courage of the youth of the world should be mobilized to forge a global partnership in order to achieve sustainable development and ensure a better future for all. **Principle 25**—see above.

Component of *Sustainable* Development	Rio Principles [a]
National Governance that Secures Peace and Development (or more generally, National Governance that Secures Sustainable Development)	**Principle 3**—The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations. **Principle 10**—Environmental issues are best handled with participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided. **Principle 11—**States shall enact effective environmental legislation. Environmental standards, management objectives and priorities should reflect the environmental and development context to which they apply. Standards applied by some countries may be inappropriate and of unwarranted economic and social cost to other countries, in particular developing countries. **Principle 13**—States shall develop national law regarding liability and compensation for the victims of pollution and other environmental damage. States shall also cooperate in an expeditious and more determined manner to develop further international law regarding liability and compensation for adverse effects of environmental damage caused by activities within their jurisdiction or control to areas beyond their jurisdiction. **Principle 22—**Indigenous people and their communities and other local communities have a vital role in environmental management and development because of their knowledge and traditional practices. States should recognize and duly support their identity, culture and interests and enable their effective participation in the achievement of sustainable development.
'Strong' Environmental Protection Measures (Note: These Rio Principles explicitly link the development process with the environment, which is why they have been called 'strong' environmental protection measures.)	**Principle 4—**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. **Principle 7**—States shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem. In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command. **Principles 8, 11, and 13—**see above. **Principle 14—**States should effectively cooperate to discourage or prevent the relocation and transfer to other

Component of *Sustainable* Development	Rio Principles [a]
	States of any activities and substances that cause severe environmental degradation or are found to be harmful to human health. **Principle 15—**In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation. **Principle 16—**National authorities should endeavour to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment. **Principle 17—**Environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority. **Principle 18**—States shall immediately notify other States of any natural disasters or other emergencies that are likely to produce sudden harmful effects on the environment of those States. Every effort shall be made by the international community to help States so afflicted. **Principle 19**—States shall provide prior and timely notification and relevant information to potentially affected States on activities that may have a significant adverse transboundary environmental effect and shall consult with those States at an early stage and in good faith. **Principle 23**—The environment and natural resources of people under oppression, domination and occupation shall be protected. **Principles 25 and 26**—see above.

[a] Principles 2, 6, 9, and 27 of the Rio Declaration are not included in the table because they do not fit within any of the categories listed.

2.9.2 Agenda 21 and the UN Commission on Sustainable Development

> "Agenda 21 stands as a comprehensive blueprint for action to be taken globally—from now into the twenty-first century—by Governments, United Nations organizations, development agencies, non-government organizations and independent-sector groups, in every area in which human activity impacts on the environment" (UN 1993a, p. 3).[77]

Agenda 21 is the action plan for the Rio Declaration. The preamble to Agenda 21 states that national strategies, plans, policies, and processes are crucial in achieving its successful implementation and that the responsibility for sustainable development lies principally with national governments. Since the retention of national sovereignty is an essential part of international relations, it is fitting that Agenda 21 places this responsibility with national governments. However, transitioning society towards sustainable development is not the sole responsibility of governments. The private sector and other groups in civil society also need to take a proactive role—an aspect that is understood and reinforced in Agenda 21. In this regard, Agenda 21 reinforces the need for "community-based action" (Reid 1995, p. 232) that was first called for in the Cocoyoc Declaration,[55] *Small is Beautiful* (Schumacher 1999), and *What Now: Another Development* (Dag Hammarskjöld Foundation 1975).

Agenda 21 is structured using four overarching sections: [1] Social and Economic Dimensions; [2] Conservation and Management of Resources for Development; [3] Strengthening the Role of Major Groups; and [4] Means of Implementation. Within each of these sections are numerous program areas (covering a wide range of topics) that articulate their purpose by defining the basis for action; the objectives of the action; the potential activity areas; and, the means of implementing the objectives/activities. Since Agenda 21 is an action plan, the fine details of how its objectives are to be achieved are left to the decision-making institutions and/or NGO groups.

The forty chapters of Agenda 21 provide a comprehensive framework against which governments can assess their activities. The detailed nature of the objectives and proposed action items also means that the notion of sustainable development is made more tangible. By providing examples of what sustainable development means to economic sectors, natural resources, and important problem areas, Agenda 21 offers an implementation (or operational) context for sustainable development (Dernbach 1998). In this regard, Agenda 21 is more complete and actionable than the 1972 Stockholm Action Plan. By 2002, some

6,400 municipalities in 113 countries had become involved in local Agenda 21 initiatives, 87 of which were located in the U.S. (UNDESA 2002).

An important recommendation made in Agenda 21 is the call for the creation of a UN Commission on Sustainable Development (UNCSD) to monitor progress in the implementation of the action plan.* In December 1992, the UN General Assembly requested that the Economic and Social Council (ECOSOC) establish the UNCSD at its organizational session in 1993.[78] The UNCSD was subsequently formed with representatives from 53 states.[79]

Since its formation, the UNCSD has played an important supporting role in the 1997 Earth Summit II, the 2002 Johannesburg Summit, and the 2012 Rio Summit. During this time the mandate of the UNCSD has gradually evolved. Although the commission still meets annually to review progress on the implementation of Agenda 21—as well as the Barbados Programme of Action for Sustainable Development of Small Island Developing States[80] and the Johannesburg Plan of Implementation[81]—its work plan has been streamlined into a multi-year program of work.† This program is structured around seven thematic clusters of issues (such as water, sanitation, and human settlements), each of which will be focused on for two years. The final cluster will be completed in 2016/2017. By grouping issues into thematic clusters, the UNCSD will be able to assess them in a holistic way, taking into account economic, social, and environmental dimensions of sustainable development. Further, as a functional commission of the ECOSOC, the UNCSD will continue to play a key role in providing the UN system with expertise on sustainable development.

2.9.3 Rio's Unasked Questions

The Earth Summit is seen as a seminal event, when the international community gathered to recognize and articulate the concept of sustainable development. Indeed, the Summit was unprecedented in its scale and scope. Its mission was to revolutionize the way we think and live so as to protect the

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* "In order to ensure the effective follow-up of the Conference, as well as to enhance international cooperation and rationalize the intergovernmental decision-making capacity for the integration of environmental and development issues and to examine the progress in the implementation of Agenda 21 at the national, regional and international levels, a high-level Commission on Sustainable Development should be established in accordance with Article 68 of the Charter of the United Nations" (UN 1993c, p. 275).

† In 2003, the CSD announced its multi-year program of work until 2017. The program is structured into seven two-year cycles, with each cycle focusing on selected thematic clusters of issues. The multi-year program can be viewed at:
http://www.un.org/esa/dsd/csd/csd_multyearprogwork.shtml (accessed July 31, 2011).

planet and ensure the welfare and future of humankind. A major part of this vision was to bridge the conflicts between developed and developing nations that had preoccupied so many of the development discussions of the previous twenty years. However, although the Earth Summit was perceived by many to have addressed these issues successfully (given the challenge of achieving consensus among so many nations), there were those who argued that the summit had sidestepped vitally important, and politically volatile, questions.

On the eve of the UNCED, David Korten (founder and president of the People-Centered Development Forum) published a column that highlighted three questions that he argued had not been asked in the pre-summit discussions:

1. "Is sustained economic growth possible within a finite ecosystem?"*
2. "Is the removal of barriers to the free international flow of trade and capital consistent with the essential need for community and environmental stewardship?"
3. "Is official international assistance part of the solution or part of the problem?"[82]

The first two questions addressed the conviction that economic growth would be sufficient to alleviate the world's problems of poverty and environmental degradation. Korten argued that even a smarter (more environmentally sound) approach to sustained economic growth ignores data that indicates that the earth cannot support the scale of economic (i.e., industrial) expansion envisioned by its proponents. Second, a reliance on free trade is likely to enable goods and capital to move freely across national borders, weakening the ability of governments to regulate their own economies and protect their citizens against fluctuations in the international economy. "Where corporate globalists see the spread of democracy and vibrant market economies, citizen movements see the power to govern shifting away from people and communities to financial speculators and global corporations dedicated to the pursuit of short-term profit in disregard of all human and natural concerns" (IFG 2002, p. 5).† Korten saw the UNCED process as being dominated by nations whose political power and social systems were grounded in market capitalism. Hence, there was

* Interestingly, this question could also be asked following the Rio+20 conference, which endorsed a green economy/green growth agenda without making any formal commitments to ensure that the economy operates within environmental limits (see Section 2.12).

† In a speech to the World Business Council on Sustainable Development (WBCSD) on November 4, 1999, Gro Harlem Brundtland admitted that markets are not always right. To provide an example, she quoted a former prime minister of India who "saw no multinational companies willing to invest in educating the children of India, or immunising them and helping them to grow up" (Saha 2002, p. 23).

no incentive for them to consider alternative forms of development that moved away from economic growth through industrialization. Those nations, groups, or individuals who questioned the economic belief that a "rising tide will raise all boats" faced ridicule for being insensitive to the needs of the poor.

Korten's third question was based on the fact that although the amount of aid given to developing nations had increased over the previous four decades, environmental conditions in these nations had consistently worsened. Therefore, it seemed only logical to ask whether there were alternative international mechanisms through which developing nations could be assisted.

In response to Korten's column, Herman Daly (1991) suggested that the first question was becoming impossible to ignore because of an increasing volume of data on the declining vitality of the earth's ecosystems. He also suggested that Korten's second and third questions were vitally important and would be the most challenging to address. Rather than attempting to tackle them at Rio, he recommended that they be resolved through further research after the summit and that the UNCED focus its attention on the first question. A look at both the Rio Declaration and Agenda 21 provides some evidence that the UNCED did attempt to address the first question directly. For example, Rio Principle 8 calls for nations to try to "reduce and eliminate unsustainable patterns of production and consumption." In support of this principle, Agenda 21 dedicates an entire section to promoting "patterns of consumption and production that reduce environmental stress" (UN 1993a, p. 31).

One year after the UNCED, the *Ecologist* magazine published *Whose Common Future?*, which addressed questions similar to those raised by Korten. However, its critique of the UNCED process was rather more scathing.

> "The Summit … went according to plan: indeed the outcome was inevitable from the start. Unwilling to question the desirability of economic growth, the market economy or the development process itself, UNCED never had a chance of addressing the real problems of "environment and development". Its secretariat provided delegates with materials for convention on biodiversity but not free trade; on forests but not on logging; on climate but not on automobiles. Agenda 21—the Summit's "action plan"—featured clauses on "enabling the poor to achieve sustainable livelihoods" but none on enabling the rich to do so; a section on women but none on men. By such deliberate evasion of the central issues which economic expansion poses for human societies, UNCED condemned itself to irrelevance even before the first preparatory meeting got under way" (The Ecologist 1993, pp. 1-2).

A main conclusion of *Whose Common Future?* is that communities should be reinstated as sources of social and political authority and the idea that the

modern CEO faces the same common future as the peasant in Bihar should be rejected. A critical question raised by the book is *who* will manage the environment for *whose* interest? It argues that *how* the environment should be managed is known through past experience and indigenous/local knowledge—both of which are becoming lost in the international economy. It is interesting that both Korten and *The Ecologist's* arguments lean towards the notion of national self-reliance. This concept was a core element of the 1970s 'eco-development' movement, which sought ecological and economically sound regional and local development. Further, the book's arguments highlight the importance of balancing the role of national/local government with the role of the market—both of which must be held accountable to the people's interests by the legal/institutional frameworks of civil society.

Michael Redclift (1996) also provides a valuable retrospective on the UNCED. His main criticism of the Summit is that its spectators might have been convinced that the principal environmental problems facing the world were "climate change, a loss of forests and, with them, biodiversity" (ibid., p. 19). Redclift argues that the UNCED neglected to address important questions relating to population, trade, poverty, the debt crisis (faced by many oil importing developing nations),[*] and distributional inequality more generally. In addition, he raises the important question whether the development of industrialized nations is what the developing world should be aspiring to achieve.

> "With hindsight we may come to see UNCED as marking an important shift away from the development discourse of the 1970s and 1980s, towards a new

[*] The high price of oil during the 1970s meant that oil-exporting nations had gradually built up large amounts of surplus income. This "investable surplus" was subsequently invested in foreign assets and was deposited back in the banks of oil-importing nations from which a large proportion of the money had originated (Riesenhuber 2001, p. 28). The increase in the liquidity of western banks corresponded with a lull in their domestic investment demand, forcing them to look for other avenues for lending (ibid., p. 28). The oil-importing developing nations were identified as a prime candidate for increased lending, which took advantage of the loans for balance of payment purposes at the expense of increasing their overall external debt. At this point in time, the common wisdom was that a 'nation' could not default on its loans, which partly explains the ease with which these loans were given to the already in debt oil-importing developing nations (Boughton 2001). As interest rates began to rise in developed nations during the early 1980s, the heavily indebted nations were unable to make their debt payments and Mexico was the first to default on a loan payment in 1982. The ensuing debt crisis lasted until 1989 and involved almost 20 nations around the world (ibid., p. 274). The crisis led to the restructuring of international markets and redefined the purpose and role of institutions such as the International Monetary Fund (IMF) (Boughton 2001; Riesenhuber 2001).

> concern with science and uncertainty, a concern that paralysed Northern governments by laying bare the contradictions of their development. The 'success' of development, including improved material standard of living, has not necessarily brought improvements in the quality of life, as measured by personal security, freedom from pollution and traffic congestion, and risks from nuclear and toxic waste streams." (Redclift 1996, p. 20).

The above critiques of the UNCED indicate that it is far easier to identify the problems faced by humanity than it is to develop international consensus on any suitable way to address them. While science helps unravel the complexity of global environmental problems, it is human behavior that will ultimately direct the societies of the world towards potential solutions. As McCormick (1995, p. 264) notes, "[w]hether or not solutions are effectively applied will continue to depend upon politics and policy, upon the attitudes of leaders, parties, industry and the public, and upon a complex cross-referencing and cooperative system involving international agencies, national environmental agencies, NGOs, and a series of often non-binding international conventions and agreements." Hence, we return to the arguments made by the critics of *Limits to Growth*, who emphasized that the course of events can be changed dramatically (by altering the prevailing social arrangements) if environmental and social constraints become intolerable (Jahoda 1973, Rowland 1973). However, at the end of the 1980s, as the extent of global environmental problems was beginning to be appreciated, some remained skeptical that any effective political action could be achieved.

> "It becomes increasingly difficult to say what are practical suggestions, when one's research tends to show that what is politically feasible is usually too minor to make any difference, while changes significant enough to be worthwhile are often unthinkable in practical political terms. In any case, genuine practicality in making policy suggestions requires detailed knowledge of a particular country or area; its history, culture, vegetation, existing situation, and much more besides. Lists of general 'policy conclusions' make it all too easy for the rigid-minded to apply them as general recipes, without thought, criticism or adjustment for circumstances" (Raikes 1988, p. v).

The idea that social activism could alter what is politically feasible was cast in doubt around the time of the UNCED. A UNEP report revealed somewhat of a paradox between the public's growing awareness of environmental problems and the lack of any tangible political action to address these problems (UNEP 1992). David Korten suggested that one possible reason for this paradox was a "corrupt political process awash in corporate money and beholden to

corporate interests rewriting our laws to provide corporations with tax breaks and public subsidies while eliminating the regulations and borders that hold corporations accountable to some larger public interest."[83] The same corporations that fund the political process also control/influence the media, raising the question of whether a clear picture of global environmental problems is actually reaching society. A counterargument might simply be that the predicted environmental and social problems have yet to reach a point where prevailing paradigms can be challenged. Indeed, the problems may never reach this point. A critical question that remains, however, is whether the model of political action based on social discontent is capable of addressing the complex problem of ecosystem overshoot and collapse. With so many interests and positions to consider, so much dynamic uncertainty, and so much at stake, the challenge of *operationalizing* sustainable development is likely to be the most important and most daunting task of the twenty-first century.

2.10 Earth Summit II (1997)

In 1997, five years after the Earth Summit in Rio, the UN held a General Assembly Special Session (otherwise known as the Earth Summit II or Earth Summit +5) to review and appraise the implementation of Agenda 21. The 19th Special Session took place in New York from 23-27 June.

Although the Earth Summit II was the 'official' review of progress made towards the implementation of Agenda 21, there were several important events prior to the Summit that had a direct or indirect effect on its outcome (Box 2.10).[84]

Box 2.10: Important Events Held Prior to the Earth Summit II

Date	Event
22 Dec 1992	UN General Assembly, via Resolution 47/190,[85] calls for a Special Session to review progress made on the implementation of Agenda 21 to be held no later than 1997.
16 Dec 1996	UN General Assembly, via Resolution 51/181,[86] decides to convene the Special Session envisioned in Resolution 47/190 from 23-27 June 1997, in New York. The 19th Special Session is to be attended by heads of state.
24 Feb—7 Mar 1997	The UN Commission on Sustainable Development (UNCSD) holds an Ad Hoc Open-ended Inter-Sessional Working Group to prepare for the 19th Special Session.

Box 2.10: Important Events Held Prior to the Earth Summit II

Date	Event
13—19 Mar 1997	"Rio +5" is held in Rio de Janeiro, Brazil. This forum was organized by the Earth Council (an NGO created by Maurice Strong) and was attended by over four hundred participants from all sectors and geographic regions of the world. The heads of UNESCO, UNDP, UNEP, and the World Bank were present, along with many representatives from national and international NGOs. Rio +5 was an 'unofficial' part of the preparations for the 19th Special Session of the UN General Assembly.
7—25 Apr 1997	The UNCSD holds its fifth session as a negotiation and preparation meeting for the 19th Special Session to review and appraise the implementation of Agenda 21.[87]
16—21 June 1997	The UNCSD holds a second week of negotiations and preparations to pull together the material for the 19th Special Session.
20 June 1997	A special meeting of the UN General Assembly adopts the *Agenda for Development* [88]—an all-encompassing framework for international cooperation on development. The *Agenda for Development* is not part of the preparations for the 19th Special Session of the UN General Assembly; however, its content is of direct relevance to sustainable development.
23—27 June 1997	The 19th UN General Assembly Special Session (Earth Summit II) is held in New York. The UN General Assembly adopts the Programme for the Further Implementation of Agenda 21.[89]

The core objective of the Earth Summit II was to assess how well nations, international organizations, and civil society had responded to the challenges laid out at the 1992 Earth Summit.[90] The UN sought to identify where progress towards the implementation of Agenda 21 had been both positive and negative and, based on its evaluation, establish a work plan for the further implementation of the Rio action plan. A second objective was to reestablish and increase world-wide political commitment to Agenda 21. The UN General Assembly also made a clear statement, via Resolution 51/181, that the Rio Declaration, Agenda 21, and the non-legally binding Forest Principles would not be open for renegotiation at the 1997 Summit.

The first significant review of progress towards Agenda 21 took place during the UN Commission on Sustainable Development's (UNCSD's) Ad Hoc Open-ended Inter-Sessional Working Group (hereafter referred to as the 'Ad Hoc Working Group') from 24 February to 7 March 1997. This Ad Hoc Working Group was attended by representatives from all of its 53 member states. In

addition, observers from other nations within the UN system were present, along with representatives from many intergovernmental and non-governmental organizations (UNCSD 1997b).

The tone of the Ad Hoc Working Group was set by its co-chairs, who asked the attendees for "maximum creativity and receptivity" (Osborn and Bigg 1998, p. 5). The idea was to use the first week of discussions to outline a set of creative proposals which the Working Group could debate during the second week. As a result of these two weeks of discussions—which covered the full range of issues in Agenda 21—the Working Group was able to agree on six main areas that required special attention (ibid., pp. 5-6). These were the need to:

- address poverty and the growing levels of economic inequality around the world;
- halt the decline in overseas development assistance (ODA);[*]
- address the growing problem of diminishing water resources and the pollution of these resource in many parts of the world, and identify means to bring fresh water and sanitation services to the hundreds of millions of people with no or limited access to them;
- develop a global strategy to tackle climate change;
- promote the sustainable management of forests throughout the world; and
- establish effective international cooperation and political support to halt the decline of fish stocks in many parts of the world and to protect the marine environment from pollution.

It is interesting to note that important issues such as population growth, human health, and air quality were not identified as requiring special attention.

The conclusions of the Ad Hoc Working Group indicate that five years after the UNCED, the condition of the global environment had continued to deteriorate and looked set to worsen (UNCSD 1997b). While some nations had been able to reduce pollution levels and the degradation of resources through institutional change and capacity-building efforts (involving both public participation and private sector actions), these actions were not sufficient to counteract the sheer scale of human activity that fed negative environment and development trends (ibid., p. 5).

[*] At the 1992 Earth Summit, nations committed to a level of ODA that was equivalent to 0.7 percent of GNP for developed nations and 0.15 percent of GNP for developing nations. However, between 1992 and 1995, ODA, as a percentage of GNP in developed nations, declined from 0.34 percent to 0.27 percent (UNCSD 1997b). See Section 12.3 in Ashford and Hall (2011b) for a discussion of the current state of ODA.

Between the Ad Hoc Working Group meeting and the next meeting of the UNCSD at its fifth session, the Earth Council (an NGO based in Costa Rica) held the 'Rio +5' forum in Rio de Janeiro, Brazil. The theme of Rio +5, an unofficial part of the preparations for the Earth Summit II, was "Moving From Agenda to Action."[91] This theme was indicative of the perceived lack of action in moving towards the objectives of sustainable development since the UNCED. Rio +5 attracted over four hundred participants from all over the world from governments, international organizations, and NGOs. The pre-forum activities included a series of national and international multi-stakeholder consultations which produced more than 70 special focus reports and 80 consultation reports. The conclusions of the Rio +5 forum were the same as the Ad Hoc Working Group. "Despite progress made on many fronts as evidenced at Rio+5, the world community has still not made the fundamental transition to a development pathway that will provide the human community with a sustainable and secure future. Environmental deterioration continues and the forces which drive it persist."[91]

While Rio +5 was a significant event, a number of organizations involved with the preparations for the Earth Summit II were critical of the forum, questioning its overall value and the amount of resources it required (Osborn and Bigg 1998). The proponents of Rio +5 argue that it was intended to revitalize the sustainable development movement and provide additional material for the Earth Summit II. Its critics claim that the opposite occurred. "[I]t is clear that Rio +5 did not have the major impact on … [the Earth Summit II] that its organizers hoped for. Attempts were made during the forum to agree [on] a set of recommendations from delegates, and to get backing for the preparation of an Earth Charter. Both of these proved controversial and in the event no strong endorsement for either could be claimed. The texts made available in New York [at the Earth Summit II] did not have a strong impact on the intergovernmental process" (ibid., p. 7). Further, Osborn and Bigg (1998) argue that since many influential people took part in the forum, the lack of progress in Rio indicated that no substantial progress could be made at the Earth Summit II. Thus, these people were not as active or constructive as they might have been during the official Summit three months later.

Almost three weeks after the Rio +5 forum, the UNCSD met for its fifth session in New York with the objective of preparing for, and negotiating the likely conclusions from, the Earth Summit II (Osborn and Bigg 1998). During the two weeks of the UNCSD's fifth session, some progress was made on key issues

identified during the Ad Hoc Working Group meeting.* However, no progress was made on the implementation of the forest principles and the framework convention on climate change. Not surprisingly, the conclusions from the UNCSD fifth session were largely the same as those from the Ad Hoc Working Group and the Rio +5 forum.

> "Currently, some trends appear positive: the growth in world population is slowing, food production is still rising, the majority of people are living longer and healthier lives, environmental quality in some regions is improving. But it is impossible to ignore the other trends which have the potential to undermine these gains or even bring about catastrophic collapse of local economies. They include the growing scarcity of fresh water, loss of productive agricultural land and the downward spiral of impoverishment affecting a significant minority of the world's population. These threats are real and near-term; they already affect millions of people. … Global catastrophe does not appear to be imminent. But projections … clearly indicate that pursuit of business-as-usual development patterns is most unlikely to result in sustainable development in the near future " (UNCSD 1997a, p. 5).

In addition to the events discussed above, the output of the Earth Summit II was also influenced by the adoption of the *Agenda for Development* by the UN General Assembly a few days before the Summit. Initiated by the first Earth Summit in 1992,[92] the *Agenda for Development* outlines an "all-encompassing framework for international cooperation on development."[93] By building on and integrating the output from major UN conferences and agreements, Agenda for Development provides a comprehensive "blueprint for optimizing the efforts and the impact of the multilateral system as a whole."[93] Since the *Agenda for Development* was crafted over a four year period, outside of any pre-conference deliberations that tend to be subject-biased, it articulates a comprehensive and well balanced framework for development. If this framework is considered along with the *Agenda for Development's* action-oriented synthesis of social and economic development, it indicates that the prevailing conceptualization of sustainable development has not been fully realized (Dernbach 1998).

Despite the groundbreaking scope of the *Agenda for Development*, many developing nations were dissatisfied with the final document (Osborn and Bigg 1998). In particular, they cited the lack of any decisive commitment by developed

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* For example, a new international initiative on fresh water was approved, potential ways to strengthen work on sustainable consumption and production were launched, and some new opportunities for addressing problems associated with energy use and transportation were identified (Osborn and Bigg 1998, p. 9).

nations to transfer financial and technological support to developing nations to assist with their development. Osborn and Bigg (1998) argue that this dissatisfaction influenced the positions of many developing nation delegates at the Earth Summit II, which affected the negotiations of the key sections of the Summit's resolution.

The above discussion indicates that by the time the Earth Summit II was underway its conclusions were already largely known. There had been little tangible progress on achieving the objectives of the Rio Declaration, Agenda 21, and the Forest Principles, and important environment and development trends looked set to deteriorate. Given the relatively ineffective pre-Summit negotiations, there was also little hope that an effective plan of action could be developed to correct the perceived problems.[94] As with the first Earth Summit (Sandbrook 1993), there was a concern that the continued focus was on the world's economy and how economic growth can be sustained rather than on environmental protection.

The resulting UN General Assembly resolution on the *Programme for the Further Implementation of Agenda 21*[89] combined with the pre-Summit reports provide a rather discouraging appraisal of the limited success of the first decade of sustainable development (NRC 2002). It was clear to many that the political commitments made mainly by developed nations at the UNCED had not been kept and that the Earth Summit II had failed to address this problem.[*] The long list of broken promises seriously undermined any trust that had been established between developed and developing nations and provided little incentive for developing nations to make the difficult transitional steps towards sustainable development (Osborn and Bigg 1998). Further, it was apparent that political, media, and public interest in environmental concerns had waned since the post-Brundtland peak (NRC 2002, Osborn and Bigg 1998). Without such public attention and media scrutiny, politicians had little incentive to commit to new promises. Indeed, this was the case at the Earth Summit II when three Ministerial Working Groups failed to achieve any substantive progress on the issues of forestry management, climate change, and financial aid.

Thus, the overriding message from the Earth Summit II was that if progress is to be made towards sustainable development, there needs to be a "renewed effort around the world to focus attention on the issues and to build political consciousness and determination to achieve real results" (Osborn and Bigg 1998, p. 3).

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[*] An example of the worldwide perception of the Earth Summit II is encapsulated by the headline of *The Guardian* newspaper, London, 28th June 1997, which read "Earth Summit ends in failure."

Possibly one of the most depressing realizations regarding the Earth Summit II is the fact that even if all of the objectives of Agenda 21 had been fully implemented, "the environment, and every living creature that depends on the environment, including you and me, would still be in trouble."[94] Given that the international community was unable to commit to the provisions within Agenda 21, the future for sustainable development looked somewhat bleak.

Three years after the Earth Summit II at the turn of the millennium, the UNEP published the *Global Environmental Outlook 2000*. The report stated that two overriding trends (similar to those identified at the time of the Earth Summit II) would characterize the start of the 21st century:

- "First, the global human ecosystem is threatened by grave imbalances in productivity and in the distribution of goods and services."
- Second, "the world is undergoing accelerating change, with internationally-coordinated environmental stewardship lagging behind economic and social development."[95]

The UNEP argued that the first trend is likely to result in the accentuation of extremes in wealth and poverty. Hence, those that have will have more and those that do not will slip further into impoverishment.* The second trend, however, is likely to result in the environmental gains from technological progress being overshadowed by the sheer scale of population growth and economic development. Both trends undermine the political and environmental stability of the world and suggest that the importance of sustainable development is likely to increase the longer these trends are ignored.

Finally, two other notable millennium documents are the *Earth Charter* (prepared by the Earth Council in 2000) and the *Millennium Declaration* adopted by the UN General Assembly via Resolution 55/2. Interestingly, the structure of both the *Earth Charter* (Box 2.11) and the *Millennium Declaration*† align closely with the five components of sustainable development—peace and security; economic development; social development; national governance that ensures peace and development; and environmental protection. Because the two publications are produced by different sources (the UN and an NGO), it provides

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* See Section 1.1.3.1 in Ashford and Hall (2011b) for a discussion of between-nation income inequality.

† Major headings of the United Nations Millennium Declaration: [I] Values and principles (specifically: freedom; equality; solidarity; tolerance; respect for nature; and shared responsibility); [II] Peace, security and disarmament; [III] Development and poverty eradication; [IV] Protecting our common environment; [V] Human rights, democracy and good governance; [VI] Protecting the vulnerable; [VII] Meeting the special needs of Africa; and [VIII] Strengthening the United Nations. Source: UN, *United Nations Millennium Declaration*, http://www.un.org/millennium/declaration/ares552e.htm (accessed July 28, 2011).

additional support for the notion that sustainable development can be broadly defined using these five critical elements.

Box 2.11: Principles of the Earth Charter

I. RESPECT AND CARE FOR THE COMMUNITY OF LIFE

1. Respect Earth and life in all its diversity.
2. Care for the community of life with understanding, compassion, and love.
3. Build democratic societies that are just, participatory, sustainable, and peaceful.
4. Secure Earth's bounty and beauty for present and future generations.

In order to fulfill these four broad commitments, it is necessary to:

II. ECOLOGICAL INTEGRITY

5. Protect and restore the integrity of Earth's ecological systems, with special concern for biological diversity and the natural processes that sustain life.
6. Prevent harm as the best method of environmental protection and, when knowledge is limited, apply a precautionary approach.
7. Adopt patterns of production, consumption, and reproduction that safeguard Earth's regenerative capacities, human rights, and community well-being.
8. Advance the study of ecological sustainability and promote the open exchange and wide application of the knowledge acquired.

III. SOCIAL AND ECONOMIC JUSTICE

9. Eradicate poverty as an ethical, social, and environmental imperative.
10. Ensure that economic activities and institutions at all levels promote human development in an equitable and sustainable manner.
11. Affirm gender equality and equity as prerequisites to sustainable development and ensure universal access to education, health care, and economic opportunity.
12. Uphold the right of all, without discrimination, to a natural and social environment supportive of human dignity, bodily health, and spiritual well-being, with special attention to the rights of indigenous peoples and minorities.

IV. DEMOCRACY, NONVIOLENCE, AND PEACE

13. Strengthen democratic institutions at all levels, and provide transparency and accountability in governance, inclusive participation in decision making, and access to justice.
14. Integrate into formal education and life-long learning the knowledge, values, and skills needed for a sustainable way of life.
15. Treat all living beings with respect and consideration.
16. Promote a culture of tolerance, nonviolence, and peace.

2.11 The World Summit on Sustainable Development (WSSD)—Earth Summit III (2002)

> "Johannesburg Summit 2002 is an opportunity to rejuvenate the quest to build a more sustainable future. The Summit must bring the world together, and forge more cohesive global partnerships for the implementation of Agenda 21. It must send out a message that sustainable development is not only a necessity, but also an exceptional opportunity to place our economies and societies on more durable footing" (Kofi Annan, Secretary-General of the UN, 2001).

Kofi Annan's comments speak directly to the failures of the Earth Summit II in 1997. His call to rejuvenate the quest for sustainable development indicates the lack of international momentum and commitment to the concept. However, there was little in the deliberations before the World Summit on Sustainable Development to suggest that this situation would be altered.

The decision to hold the World Summit on Sustainable Development (also known as the Johannesburg Summit or the Earth Summit III) in Johannesburg in 2002 was made by the UN General Assembly in February 2001.[96] The purpose of the Johannesburg Summit was almost identical to that of the Earth Summit II—to review "progress achieved in the implementation of the outcome of the United Nations Conference on Environment and Development [and] … reinvigorate the global commitment to sustainable development."[96] The General Assembly placed a specific emphasis on the identification of new challenges and opportunities within "the principle of common but differentiated responsibilities."[96] Further, it decided that the Johannesburg Summit and its preparatory process (to be administered by the UN Commission on Sustainable Development—UNCSD) "should ensure a balance between economic development, social development and environmental protection, as these are interdependent and mutually reinforcing components of sustainable development."[96] The Summit was also seen as a good opportunity to replenish the GEF Trust Fund.

The clear high-level commitment to make progress at the third global summit on sustainable development was tempered by the intractable problems identified during the 1997 Earth Summit II, which continued to be a problem during the Johannesburg plenary sessions. The final meeting of the Preparatory Committee for the Johannesburg Summit, held in Bali, Indonesia from 27 May—7 June 2002,[97] failed to break the deadlock between developed and developing nations on how to reconcile the conflicting goals of economic development, poverty reduction, and environmental protection (New Scientist

2002a, 2002c).* The South Centre (2002b) argues, however, that the Bali confrontation was useful in that it brought to the surface the pervasive divisions between affluent and poor nations. Further, it awoke the international community to the need to lower its expectations for the Johannesburg Summit and prepared delegates for what was set to be "another difficult North-South encounter" (ibid., p. vii). A worrying conclusion from the Bali meeting was that some of the earlier policy achievements for sustainable development now seemed to be in jeopardy.

During the ten years since the UNCED, the world experienced a new phase of economic growth that was largely based on patterns of development, consumption, and lifestyles that had the effect of widening the gap between affluent and poor nations (South Centre 2002c).[95] While many developed nations had experienced enhancements in their overall quality of life, the direct or indirect effects of globalization led to the gradual degradation of the social, economic, political, and natural environment in many developing nations (ibid., pp. 6-7). Further, the international economic system was still far from being equitable. Differing levels of development and bargaining power throughout the world meant that the international economy tended to be dominated by those with excessive economic and political power.

This new era of economic globalization has had the effect of changing the perception of what mechanisms/solutions would be suitable to transition the world towards sustainable development. The South Centre (2002c, p. 9) argues that developed nations have fundamentally changed their view in this regard and summarizes their new positions as follows:

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* The question of how to transition to a "green economy" that reduces poverty and environmental harm is one of two central themes of the forthcoming Rio+20 conference in 2012. The second theme is how to create an international framework for sustainable development—one that will enable a green economy to thrive (see Section 2.12). The emphasis on the economy is partly due to the 2008 global financial crisis that has opened the door for a re-evaluation of the market-led approach to development. The fact that the financial crisis occurred due to inherent flaws in financial systems, and not as a result of environmental or social factors, has forced economists to face hard questions about the underpinnings and viability of economic growth. The financial crisis also led to significant cuts in government spending on social and environmental programs, which highlighted the need for a healthy economy to support the other two dimensions of sustainable development. A simple analogy is that a three-leg stool needs all three legs to be stable. Substantive progress towards sustainable development requires progress in all of the three dimensions of sustainability—economic, environmental, and social. The emphasis placed on the "green economy" at Rio+20 points to a recognition that the economy must first be healthy before significant investments can be made in social and environmental programs. Of course, the view that economic growth is a necessary condition for sustainable development is not universally supported—see Tim Jackson's (2009) *Prosperity without Growth* and Section 3.4 of Ashford and Hall (2011b).

- "It is best to leave the issues to the market mechanisms and processes to resolve, with some corrective actions at the margin (end of the pipe approach) and by relying on technological advances.[*]
- Developing countries should improve their governance and should pull their act together domestically, including through technical assistance from the North for "capacity building", and . . . this process should rely increasingly on the private sector, and [in] particular the transnational corporations from the North who have, or will develop, knowledge and solutions needed to deal with diverse challenges of sustainable development and so should be brought into partnerships with the public authorities to provide their services and know-how."

On 2 August 2002, a consortium of NGOs, organizations, and academics in the U.S. sent a letter to President George W. Bush to support his decision *not* to attend the Johannesburg Summit. In this letter, they reinforce the South Centre's characterization of the position of developed nations (e.g., the U.S.) entering the Summit.

> "We support your insistence … that one of the key conditions for sustainable development is good national governance. The sad fact is that many of the poorest "developing" nations are not developing at all. Their people are mired in poverty and environmental degradation largely because of oppressive and incompetent government. The World Summit may be considered successful if it follows your lead and proposes ways to encourage building government institutions based on the rule of law and that respect people's civil rights, including the right to property. … World Bank studies have concluded that there is a direct correlation between national prosperity and environmental quality and that environmental conditions improve rapidly as poor nations become wealthier. What will therefore create the conditions necessary for sustainable development is implementing policies that lead to economic growth" (Letter to President Bush on the Johannesburg Summit, 2 August 2002).

The letter clearly supports economic growth as a vital component of achieving sustainable development; however, there is no discussion of the need to stimulate rapid technological improvements to offset the environmental impact of this (unsustainable) growth.

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[*] The 2008 global financial crisis has shaken the belief that the existing market/economy can solve the sustainability challenge. See Section 2.12 for a discussion of how the Rio+20 conference is expected to focus on ways to transition to a "green economy" and on how to decouple economic growth from environmental harm.

The World Trade Organization (WTO) Ministerial Declaration, adopted at the 2001 meeting in Doha, 9-14 November, provides further insight into the rise of market mechanisms and capacity-building as core instruments in addressing sustainable development. The declaration's preamble states that international trade is an essential part of economic development and the alleviation of poverty, and that "enhanced market access, balanced rules, and well targeted, sustainably financed technical assistance and capacity-building programmes have important roles to play."[98] The Ministerial Declaration's section on Trade and Environment specifically reinforces "the importance of technical assistance and capacity-building in the field of trade and the environment to developing countries, in particular the least-developed among them."[99]

On the eve of the Johannesburg Summit, the International Herald Tribune published a short list of sobering statistics (Box 2.12) prepared by Vangelis Vitalis, the chief advisor to the Round Table on Sustainable Development (an independent organization hosted by the Organisation of Economic Co-operation and Development). These statistics were even more ominous if considered alongside research which indicated that, using current technology, the global society would need the resources of somewhere between 1.5 to 8 planet Earths if each person in the world were to reach the consumption level of the average American (Wilson 2002, McLaren, Bullock and Yousouf 1997, WWF 2006). There was clearly a moral dimension to the continued unsustainable consumption of resources by developed nations which needed to be addressed at the Johannesburg Summit.

In addition to the four preparatory meetings led by the UNCSD, the direction of the Johannesburg Summit was influenced by several important events that preceded it (ECOSOC 2002): [1] the international endorsement of the *Millennium Development Goals*;[100] [2] the understanding that the next round of trade negotiations would build on the WTO Doha agreements and focus specifically on *development* concerns; and [3] the *International Conference on Financing for Development* held in Monterrey, Mexico, 18-22 March 2002, which placed financing for development at the forefront of the global agenda.[101, *]

[*] See Chapter 12 in Ashford and Hall (2011b) for a detailed discussion of financing sustainable development.

Box 2.12: Some Sobering Statistics by Vangelis Vitalis (James 2002a, p. 8)

- The cost to rich countries of fulfilling the Kyoto targets on the reduction of climate warming gases by 2010 will be $56 billion. Subsidies on fossil fuels by rich countries over the same period will total $57 billion.
- The amount of fresh water available to each person in 1950 was 17,000 cubic meters. In 1995, this had declined to 7,000 cubic meters, and it is now going down so fast that up to 5 billion people will experience "high water stress" by 2020, and water could replace oil as the world's leading source of conflict.
- Nearly 50 percent of fish stocks are fully exploited. Over 20 percent are over-exploited or depleted. Fishing fleets in rich countries collect subsidies equivalent to about 20 percent of the value of the landed catch to build bigger boats to pursue diminishing shoals.
- The area covered by tropical forests is disappearing at the rate of four Switzerlands every year. The global forestry industry picks up $35 billion in subsidies every year.
- Annual development assistance by rich countries to poor countries is $53.7 billion. Farmers in rich countries collect $335 billion in subsidies.

The Johannesburg Summit was held from 26 August to 4 September 2002.[102] The Summit attracted 22,000 participants, including 100 heads of State and Government, 10,000 delegates representing 193 countries and intergovernmental organizations, 8,000 representatives from major groups (i.e., NGOs, industry, and civil society groups), and 4,000 members of the press.[103] In addition to the official Summit, there were a number of parallel events led by NGOs and other groups independent from the UN.[104]

As an implementation-focused Summit, Johannesburg did not lead to the adoption of any new international treaties. However, the Summit did lead to the following four outcomes (ECOSOC 2002):

1. The Johannesburg Declaration on Sustainable Development;[105]
2. The Plan of Implementation of the World Summit on Sustainable Development (i.e., the *Johannesburg Plan of Implementation*);[106]
3. The WEHAB Initiative (a group of five priority areas for action covering water and sanitation; energy; health and environment; agriculture; and biodiversity and ecosystem management); and
4. The Partnerships for Sustainable Development initiative.[107]

The Johannesburg Declaration provides a poignant summary of the challenges that face the international community, many of which were debated in detail during the Summit's plenary sessions (Box 2.13).[105] In addition to reaffirming a commitment to sustainable development, the Johannesburg Declaration specifically urges developed nations to provide the internationally agreed-on levels of official development assistance (ODA) to developing nations.

Further, and for the first time in such a declaration, the private sector is called on to recognize its role in achieving sustainable development. The declaration stated it had a "duty to contribute to the evolution of equitable and sustainable communities and societies" and "to enforce corporate accountability, which should take place within a transparent and stable regulatory environment."[108] Finally, the declaration states that the goals of sustainable development will be achieved through "effective, democratic and accountable international and multilateral institutions,"[109] putting multilateralism at the center of sustainable development efforts. In contrast to the 1992 Rio Declaration that formalized many of the principles of sustainable development and continues to anchor the concept, there is little in the Johannesburg Declaration to transform or further advance the concept.

Box 2.13: Excerpts from the Johannesburg Declaration—Challenges

The challenges we face

11. We recognize that poverty eradication, changing consumption and production patterns and protecting and managing the natural resource base for economic and social development are overarching objectives of and essential requirements for sustainable development.
12. The deep fault line that divides human society between the rich and the poor and the ever-increasing gap between the developed and developing worlds pose a major threat to global prosperity, security and stability.
13. The global environment continues to suffer. Loss of biodiversity continues, fish stocks continue to be depleted, desertification claims more and more fertile land, the adverse effects of climate change are already evident, natural disasters are more frequent and more devastating, and developing countries more vulnerable, and air, water and marine pollution continue to rob millions of a decent life.
14. Globalization has added a new dimension to these challenges. The rapid integration of markets, mobility of capital and significant increases in investment flows around the world have opened new challenges and opportunities for the pursuit of sustainable development. But the benefits and costs of globalization are unevenly distributed, with developing countries facing special difficulties in meeting this challenge.
15. We risk the entrenchment of these global disparities and unless we act in a manner that fundamentally changes their lives the poor of the world may lose confidence in their representatives and the democratic systems to which we remain committed, seeing their representatives as nothing more than sounding brass or tinkling cymbals.

Unlike the action plan from Rio, the *Johannesburg Plan of Implementation* took a more focused approach to the execution of Agenda 21 (ECOSOC 2002). Some 60 pages in length, it placed more emphasis on socio-economic elements of

sustainable development and introduced time-bound targets along with innovative approaches to integrate the management of issues such as poverty, consumption and production, natural resources, and health (ibid., p. 6). The implementation plan also outlined the roles and responsibilities of key bodies such as the UN General Assembly, the ECOSOC (UN Economic and Social Council), the UNCSD, and international institutions in general. Further, the plan advocated the need to strengthen national and regional frameworks for planning for sustainable development, and the need to include major groups in this process. As with the action plan from Rio, the UNCSD was responsible for monitoring its implementation.

The WEHAB initiative, introduced by Kofi Annan in the lead up to the Summit, was designed to be a complimentary element to the *Johannesburg Plan of Implementation*. The initiative responded to Resolution 55/199 of the UN General Assembly, which stated that the preparatory process should "focus on … areas where further efforts are needed to implement Agenda 21" and that "action-oriented decisions in those areas, should address … new challenges and opportunities."[110] Hence, the purpose of the WEHAB initiative was to provide focus and momentum for action in five thematic areas that captured the core objectives of Agenda 21. The WEHAB initiative helped focused the Johannesburg Summit on real world issues and enhanced the integration of the five thematic areas within the UN system (ECOSOC 2002). In addition, the five 'framework papers'[111] produced during the plenary sessions provided the Summit with a valuable review of activities in these areas. The WEHAB initiative also refocused the international community on the challenges facing developing nations. At Rio, the focus on biodiversity and global climate change were arguably of more direct interest to developed nations. At Johannesburg, the focus on issues such as providing safe drinking water and sanitation services to the hundreds of millions of people who lack access to them, represented a shift in the priorities of the United Nations (Anderson and Morgenstern 2003).

Finally, the 'Partnerships for Sustainable Development' initiative is described as being "one of the key innovations of the Summit" (ECOSOC 2002, p. 7). This initiative focused on establishing voluntary, multi-stakeholder initiatives that were aimed at implementing sustainable development. The intention was that these partnerships should complement inter-governmental partnerships, and in no way substitute for actions and commitments by governments. At the time of the Johannesburg Summit, over 220 partnerships had been identified with many new partnerships being announced during and after the Summit. Hens and Nath (2005, p. 33) describe these partnerships as "fundamentally an excellent idea. For, if one is serious about implementing SD [sustainability development], it makes much sense to operate under a framework that allows

civil society to make its contribution." However, they also caution that NGOs were worried the partnerships might mitigate government obligations, that governments may "lose control" over their sustainable development agendas to the organizations leading the partnerships, and that since the implementation of sustainable development is not a core activity of many organizations the impacts of the partnerships may be limited (ibid., p. 33). Notwithstanding these concerns, voluntary, multi-stakeholder, international-/nation-/local-level partnerships were, and continue to be, an essential driver of sustainable development. The Johannesburg Summit was the first time these partnerships received international recognition for their role in promoting sustainable development.

Two days after the Johannesburg Summit, the *International Herald Tribune (IHT)* ran an article with the title "Johannesburg summit: a triumph or a disaster?" (James 2002b). The article concluded that the Summit had been too complex and that its efforts to include something for everyone resulted in a sprawling document with few specific promises. This view was echoed by an editorial in the *New Scientist*, which argued that what "emerged from Joburg is a few non-binding targets and lots of good intentions, sprinkled with confused messages about the compatibility of development and conservation" (New Scientist 2002b, p. 3). A search of the web archives of Greenpeace and Friends of the Earth reveals similar stories of discontent with the Johannesburg summit. In fact, both organizations depict the Earth as being 'sold' to private interests. Indeed, it is hard to find a positive report of the Summit unless it is from an official UN document or a quote from a UN staff member.

A significant outcome from the Johannesburg process was the international community's commitment to market-mechanisms and capacity-building (now reconceived as *capacity development*)* as critical measures to achieving sustainable development. Developing nations, however, were concerned about the nature of this transition because it reduced the pressure on (and responsibility of) developed nations to provide their agreed-on share of

* During the 1990s, the concept of capacity building and capacity development grew in importance as the international community began to realize that sustainable development could not be addressed through technological and financial solutions alone. While the terms *capacity building* and *capacity development* are often used interchangeably, there is a difference between them. *Capacity development*, a more recent term, emphasizes an on-going process of enhancing existing capacities as opposed to building new ones. Hence, it is understood to be an endogenous process whereby society develops its social arrangements (i.e., its regulations, institutions, and standards of behavior), increases its social capital, and enhances its ability to adapt to new circumstances. Source: www.capacity.org (accessed July 31, 2011). For more information on the concept of capacity development, see the UNDP, *Capacity Development Resource Book*, http://mirror.undp.org/magnet/cdrb/ (accessed July 31, 2011).

overseas development assistance since the market would make up for any shortfall.* Although the creation of a fair (or equitable) trade regime is essential for development in less developed regions, the assistance that industrialized nations provide to less developed nations is likely to remain an important aspect of their early progress. Further, the transition towards a reliance on the market reflects a continuing ideological shift away from the role of the government as a policy driver.† In effect, the trend to greater trade liberalization allows industry to escape or minimize the social costs of production by locating its operations in places where national laws of environmental protection are weak and good health and the environment are less valued.‡

Given that developed nations currently hold the majority of economic and political power, and that this power is based on the expansion of the international economy, it is not surprising that developing nations are concerned. In the words of the South Centre (2002c, p. 10), "the overall political and power context, together with the now dominant neo-liberal globalization paradigm favoured by the North and projected worldwide, are not in harmony with some of the basic policy premises contained in the Stockholm-Rio declarations and plans for action. Nor are they responsive to the expectations of the developing countries concerning what role the North—whom they see as being chiefly responsible for the global environmental predicament—and the international community should play in supporting, directly and indirectly, their actions and sustainable development objectives in the South. This has led to a widening policy divide on sustainable development between the North and the South."

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* Given the fact that virtually no developed nation has been able to meet its commitment to provide 0.7 percent of its GNP for overseas development assistance (Martens 2001; UNCSD 1997b), developing nations have had no real option but to compete for private capital to assist with their development. This transition to a reliance on transnational corporations for capital has undermined the notion of the social contract between developed and developing nations (Sachs 2001). There is also a parallel concern that in order to secure private capital, recipient businesses, organizations, and institutions within nations might be forced to accept unfavorable terms of agreement. Alternatively, governments might be coerced into adjusting regulations to lower the financial risk of investing in their nation when compared with other nations. If such regulatory adjustments have the effect of lowering environmental and worker health and safety standards, this outcome would clearly be a shift away from the objectives of sustainable development. The need to look to the international economy for development assistance further reinforces the international economy as *the* mechanism through which nations should follow their right to development. In this regard, Sachs (2001) suggests that a more accurate name for the 1992 Earth Summit would have been "Environment, Development, and the Global Economy" (ibid., p. 11).

† See the discussion of the so-called Washington Consensus in Section 3.4.1 of Ashford and Hall (2011b).

‡ See Section 5.2.1 in Ashford and Hall (2011b) for a related discussion on the international division of labor.

At the time of the Johannesburg Summit, the decision by the United States to withdrawal from many multilateral agreements and, instead, focus on voluntary partnerships, was a signal to many environmental organizations that the United States was attempting to redefine sustainable development away from environment and development issues towards trade liberalization (James 2002a). The fact that delegates were able to reject a sentence from the summit's final resolution that would have given the WTO a judicial role in trade and environment disputes, indicated that the lines were drawn for a future battle on economic globalization (New Scientist 2002b).

Although the outcomes of the Johannesburg Summit did not meet the expectations of almost anyone, the Summit did mark a departure from previous UN conferences both in terms of the preparatory process and its outcomes.[112] The Summit's Secretary-General, Nitin Desai, supported what was achieved at Johannesburg but suggested that too many expectations were placed on the Summit. He commented that "we have to be careful not to expect conferences like this to produce miracles. But we do expect conferences like this to generate political commitment, momentum and energy for the attainment of the goals."[112]

Governments were not the only group to make commitments at Johannesburg; NGOs, intergovernmental organizations, and the private sector also promised action through the numerous partnerships that were launched at the Summit. While some questioned the validity of these partnerships (New Scientist 2002b), they remain a starting point from which new ventures can evolve in the years to come. Indeed, these partnerships might have the most lasting impact of any of the Johannesburg outcomes (Hens and Nath 2005).

It only seems fitting for the final word on the Johannesburg Summit to go to Kofi Annan, the UN Secretary-General at this time. "We invited the leaders of the world to come here and commit themselves to sustainable development, to protecting our planet, to maintaining the essential balance and to go back home and take action. It is on the ground that we will have to test how really successful we are. But we have started off well. Johannesburg is a beginning. I am not saying Johannesburg is the end of it. It is a beginning."[112]

Six years after the Johannesburg Summit, the challenges facing humanity persist (Box 2.14). What is evident from the human impacts shown in Box 2.14, is that sustainable development must be conceived broadly so as to capture the impacts on the environment and human health.*

* See Sections 1.6, 1.7 and 1.9 in Ashford and Hall (2011b) for a discussion of the importance of adopting a holistic view of the environmental (e.g., the four environmental concerns discussed throughout this text) and social (e.g., inequality, social/environmental justice, worker health and

Box 2.14: Human Impacts on the Biosphere (Adams and Jeanrenaud 2008, p. 16)

- Evidence for global warming due to human production of CO_2 and other greenhouse gases is now unequivocal.
- Three-quarters of the habitable surface of the earth was disturbed by human activity by the end of the twentieth century.
- People represent 0.5% of animal biomass on earth yet, on average, human appropriation of net terrestrial primary production is estimated to be 32%. Locally and regionally, impacts are much greater.
- Forty to sixty percent of the nitrogen in the human body is comprised of industrially produced ammonia.
- Human activities are now the most significant force in evolution.
- Human activities have increased previous 'background' extinction rates by between 100 and 10,000 times.
- Between five and 20 percent of the ca.14 million plant and animal species on earth are threatened with extinction.
- Between 1970 and 2003, the Living Planet Index (LPI) fell by about 30%.
- The terrestrial index (695 species) fell by 31%, the marine index (274 species) by 27% and the freshwater index (344 species) by 29%.
- In 2005 some 60% (15 out of 24) of ecosystem services evaluated by the Millennium Ecosystem Assessment were being degraded or used unsustainably.
- The population of large predatory fish is now less than 10% of preindustrial levels. Over-harvesting has devastated both ocean and inshore fisheries.
- More than two million people globally die prematurely every year due to outdoor and indoor air pollution and respiratory disease.
- Per capita availability of fresh water is declining globally, and contaminated water remains the single greatest environmental cause of human sickness and death.

2.12 Rio+20—Earth Summit IV (2012)

From June 20-22, 2012, the United Nations Conference on Sustainable Development (known as Rio+20) was held in Rio de Janeiro, Brazil.[113] The conference was attended by some 50,000 policymakers, environmentalists, and business leaders, who were charged with reinvigorating the international community's efforts to promote sustainable development. The two themes of the conference were: [1] the green economy in the context of sustainable development and poverty eradication, and [2] on creating an institutional

safety, and meaningful and well-paid employment) challenges limiting progress towards sustainable development.

framework for sustainable development.[114] Further, the preparatory meetings to Rio+20 revealed seven critical issues that needed priority attention. These issues covered jobs, energy, cities, food, water, oceans, and natural disasters.[115]

The principle outcome from the conference was the endorsement of the 'green economy' as a flexible mechanism for advancing sustainability. Given its emergence in the sustainable development lexicon, the mechanism is explored in more detail below.

With regards to creating an institutional framework for sustainable development, the outcome from the conference can best be described as one that enhances/strengthens/clarifies existing frameworks, rather than establishes new frameworks.[*] For example, conference attendees committed to strengthening UNEP so it can fulfill its role as a leading authority on the global environmental agenda. One important step in this regard is the call to stabilize UNEP's funding from the UN and from voluntary contributions. The conference report also calls for the parties to multilateral environmental agreements to work together to reduce any unnecessary overlap that exists between agreements. However, beyond the general recognition of the need for an "inclusive, transparent, reformed, strengthened and effective multilateral system" (UN 2012, p. 14), Rio+20 failed to establish a comprehensive framework with commitments and targets for long-term action.[116]

The 2011 UN report on the "Objective and themes of the United Nations Conference on Sustainable Development" provides a useful commentary on the current international view of sustainable development (UN 2011). The report reaffirms the need for an integrated and "balanced consideration of social, economic and environmental goals and objectives in both public and private decision-making" (ibid., p. 3), and recognizes that the focus on a green economy lies firmly within the environment and economic dimensions. The Rio+20 conference provided decision-makers with an opportunity to revisit the message from the 1992 Rio conference—that economic development (i.e., growth) must be decoupled from environmental harm. The green economy is now the conceptual framework the UN system is promoting to achieve this objective. However, it should be noted that the green economy "does not "supplant" or substitute for sustainable development but rather is best understood as a means to achieving the end of sustainable development" (UN 2011, p. 4).

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[*] One exception is the creation of a *universal intergovernmental high-level political forum* that will eventually replace the UN Commission on Sustainable Development. The proposed forum is intended to provide political leadership, guidance, and recommendations for sustainable development, which essentially means its role is limited to one of coordination and cooperation and the promotion of ideas such strengthening the science-policy interface and evidence-based decision-making (UN 2012, pp. 16-17).

The Rio+20 conference report, entitled *The Future We Want*, provides the following commentary on the green economy in the context of sustainable development and poverty eradication:

> "We affirm that there are different approaches, visions, models and tools available to each country, in accordance with its national circumstances and priorities, to achieve sustainable development in its three dimensions which is our overarching goal. In this regard, we consider green economy in the context of sustainable development and poverty eradication as one of the important tools available for achieving sustainable development and that it could provide options for policymaking but should not be a rigid set of rules. We emphasize that it should contribute to eradicating poverty as well as sustained economic growth, enhancing social inclusion, improving human welfare and creating opportunities for employment and decent work for all, while maintaining the healthy functioning of the Earth's ecosystems" (UN 2012, p. 9).

The focus on a green economy continues the modernist development stance established at the 1992 Rio conference—that is, *green* economic growth (*green growth*) can occur through the deliberate application of science and technology. The approach is reflected in the conference report, which recognizes "the critical role of technology as well as the importance of promoting innovation" to make progress towards sustainable development and reduce poverty (UN 2012, p. 13). The report also emphasizes the importance of technology transfer to developing countries as a key part of this strategy.

The idea of a green economy aligns with the notion of *decoupling* economic growth from growth in environmental pollution, a topic discussed below in the context of the book *Cents and Sustainability*. To make progress towards a green economy will require a more interventionist, directive role for governments through programs, laws, and regulation. These interventions are likely to include establishing minimum environmental, product-safety, and labor standards and practices; requiring full disclosure by employers and producers of information needed by consumers, citizens, and workers to make informed choices and demands; and encouraging technology development, transfer, and infrastructure through a deliberate industrial policy. Thus, the endorsement of the green economy at Rio+20 is likely to intensify the debate between those who desire a more market-based, capitalist model of development (what might be considered as the current status quo) and those who see the need for a more interventionist role for government in development (Ashford and Hall 2011b).

The strategies required to transition to a green *global* economy—such as significantly increasing investment in green technologies combined with more

stringent national and international regulations/standards—have revived concerns of emerging economies that such actions may promote green protectionism, conditionality, and subsidies that protect the domestic economies of developed regions (UNCSD and UNCTAD 2011). Thus, the tension between competiveness and environmental standards,* and the impact that transition strategies might have on trade† are likely to become important areas of debate in the coming decade. There is also the concern that only developed nations have the available finance and innovative capacity to create and supply the needed technologies for a green transition—with the possible exception of certain (allegedly) green(er) technology sectors in China (e.g., clean coal technology) and Brazil (e.g., biofuels) (UN 2011). Thus, the technology gap between advanced and emerging economies may increase, placing developing regions at a further disadvantage. Such arguments increase the focus on mechanisms to transfer or share technologies with emerging economies, which raises important questions in areas such as intellectual property. Many of the challenges that will accompany a transition to a green economy are clearly articulated in several reports prepared for Rio+20 (UN 2011, Ocampo, Cosbey and Khor 2011, UNCSD and UNCTAD 2011, UNEP 2011b).

A significant challenge that will need to be addressed under the green economy agenda is how to control the environmental impacts associated with the scale of economic activity (or consumption) in developed nations and provide goods and services for the growing populations in developing regions without further endangering the environment. The responsibility for transitioning to a green economy lies with governments, but consumer and citizen acceptance remains a challenge. It remains to be see how much of a role governments will play in the transition. Beyond financing green research and supporting private sector investments, governments could also establish more stringent and phased-in environmental and worker health and safety standards to stimulate innovation to improve the natural and work environments (Ashford and Hall 2011a).‡

Two, of the many,§ publications written to inform the preparation of Rio+20 are UNEP's (2011b) report *Towards a Green Economy: Pathways to*

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* See Chapter 8 in Ashford and Hall (2011b) for a detailed discussion of government policies to foster innovation, green economic growth, and meaningful, well-paid employment.

† See Chapter 11 in Ashford and Hall (2011b) for a detailed discussion of trade regimes and sustainability. Also see Ocampo et al. (2011).

‡ See Section 8.4 in Ashford and Hall (2011b) for a discussion of regulation-induced innovation.

§ See, for example, the extensive list of pre-conference publications listed on the website of the United Nations Conference of Sustainable Development, http://www.uncsd2012.org/rio20/index.php?menu=45 (access September 1, 2012).

Sustainable Development and Poverty Eradication [117] and Smith et al.'s (2010) book *Cents and Sustainability: Securing Our Common Future by Decoupling Economic Growth from Environmental Pressure*.[*] The message from both publications is that a "green economy" and "decoupling" present new growth opportunities that can help protect the environment, create decent jobs, and help address the challenge of poverty.

Cents and Sustainability provides an in-depth look at potential pathways for decoupling economic growth from environmental pressures. It frames the future development agenda within the context of a global financial crisis, where the desire for economic growth seems almost universal. The book's focus on sustained economic growth is defended by the argument that since "there is no sign of any government committing to 'slow' economic growth . . . efforts to decouple are the only realistic option and need to be better informed and accelerated" (Smith et al. 2010, p. xliii).

Cents and Sustainability argues that since wealth (and hence consumption) and population are unlikely to decline in the medium term, significant technological changes present the *only* practical way to make progress towards the goal of absolute decoupling and hence, environmental sustainability. One challenge, however, is that the promotion of green technology may only have a marginal impact on the total number of jobs—see Getzner (2002, 2004) and Walz (2010). The reason for this is that while green technologies do create new jobs, they also destroy jobs in industries that become technologically inferior. These industries tend to be the traditional energy industries. An additional problem is that as new innovations are created, the form in which they are originally introduced tends to be the most labor intensive. As new process innovations take place, labor can—or is likely to—be replaced by capital, and jobs are lost in the process. Furthermore, when opportunities for additional technological modernization are seized, more labor can be shed. Thus, for the decoupling approach and the green economy to be successful there needs to be an explicit consideration of how meaningful and well-paid jobs can be enhanced and become a part of the creation and delivery of new, highly-efficient products, processes, and services (Ashford, Hall and Ashford 2012). The challenge of creating jobs that are resistant to efficiency-based displacement should be given the same status in decoupling strategies and efforts to promote a green economy as the OECD's four criteria for environmental sustainability.[†]

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[*] See also UNEP's (2011a) report "Decoupling Natural Resource use and Environmental Impacts from Economic Growth."

[†] The OECD's notion of *absolute decoupling*, whereby economic activity does not undermine the requirements for environmental sustainability, is captured by four criteria: [1] *regeneration* (with

The principal argument of *Cents and Sustainability* and *Towards a Green Economy* is that economic growth can coexist with environmental protection—reinforcing the message from the 1992 Rio conference that economic growth and environmental protection can advance in unison while reducing poverty. The publications are based on a premise that a green economy or decoupling agenda present the most viable pathway towards sustainable development.[*] A critical question though, is whether the policies and mechanisms that promote a green economy or decoupling lead to *evolutionary* or *revolutionary* change.

Ashford and Hall (2011b) argue that an *evolutionary* rate of change—where innovation is more sustaining than disrupting in its nature (Christensen 1997)—is likely to be insufficient to make major inroads on the development challenge ahead. They argue that a sustainable development approach must be fashioned to create a competitive and green economy that creates safe, meaningful, and well-paid employment and sufficient earning capacity within the context of rapid technological change and globalization. This approach is grounded on the belief that current rates of change are too slow and what is needed is *revolutionary* change—both of a technical and strategic nature, and of a political and social nature. At Rio+20, the international community missed a critical opportunity to establish an agenda of radical change/innovation to promote sustainable development. While the green economy could lead to more sustainable forms of development, the lack of any targets or mandates to guide progress means that nations may have no option but to adopt a business as usual approach to development given the current global financial crisis and concern for jobs. Rather than viewing mechanisms to promote sustainable development as a burden (or job destroyer), governments could adopt an agenda that welcomes creative destruction and targets this destruction on old ideas and conventional ways of developing.

As currently envisioned, the green economy rests heavily on the notion that *green growth* will drive progress towards sustainability. The question not addressed at Rio+20 is how this green growth agenda will lead to the necessary fundamental and equitable reconfiguration of the global economy in time to

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an emphasis on enhancing the production capacity of renewable resources rather than only operating within the capacity of *existing* natural systems); [2] *substitutability* (i.e., the substitution of non-renewable resources with renewable resources and the efficient use of non-substitutable non-renewable resources as long as the other three criteria are met); [3] *assimilation* (i.e., emissions and waste must not exceed the assimilative capacity of natural systems), and [4] *avoiding irreversibility (*Smith et al. 2010).

[*] See Section 3.6 in Ashford and Hall (2011b) for a discussion of whether continuous economic growth is possible.

address challenges such climate change. For example, Hoffmann (2011) provides an array of arguments that cast doubt on the ability for green growth to significantly reduce greenhouse gas emissions, in an absolute and permanent way at a global scale. He remarks:

> ""Green growth" naively postulates that technological progress and structural change would be sufficient to uncouple economic from GHG and resources/material consumption growth, without questioning the existing asymmetrical market structures, related supply-chain governance, and economic driving forces (dematerialized growth will remain an illusion under the prevailing capitalist accumulation imperative). . . .
>
> Without democratization of economies and changes in income-distribution and culture related to consumption behaviour, the required fundamental transformation will remain illusory" (Hoffmann 2011, pp. 14-15).

If the answer to sustainable development is not found in technology-enabled green growth, the question becomes what other options exist? The dominance of *growth* (in general) as an overarching goal is perhaps the most significant barrier confronting sustainable development. Daly's (1996) notion of the steady-state-economy is one example of an alternative development model, whereby the economy operates within ecosystem limits.[*] Another approach would be to focus on human-centered development, where, for example, the production and consumption of products is replaced by activities that would enable people to do things for people. Thus, the focus on economic growth would be replaced by a focus on growing opportunities for people to serve people, rather than engaging in the making of material- and energy-intensive products. Examples include the teaching of languages and the arts, tutoring, household economic and financial management, and the building of social and community relationships, all of which have small environmental footprints. Such approaches to development, however, are not widely accepted by the entities promoting sustainable development, many of which are dominated by the organized private sector or their policy advocates. The agenda endorsed at Rio+20 has ensured that growth will remain the objective of development for the foreseeable future.[†] Put another way, Rio+20 failed to establish an alternative agenda to growth.

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[*] See Section 1.3.1 in Ashford and Hall (2011b) for a discussion of growth, technology, and substitution versus a steady-state economy.

[†] See Chapter 3 in Ashford and Hall (2011b) for a discussion of economic growth and development.

2.13 The Necessity of Solving Problems on a Comprehensive Basis

Anyone new to the concept of sustainable development might be led to believe that the only major environmental concern related to the concept is *global climate change*. In recent years, starting with the Kyoto Protocol in 1997, there has been a dramatic increase in the international visibility of the climate problem. The release of Al Gore's documentary *An Inconvenient Truth*, followed by the award of the 2007 Nobel Peace Prize to him and the Intergovernmental Panel on Climate Change "for their efforts to build up and disseminate greater knowledge about man-made climate change,"[118] did much to raise global concern about the issue. Equally important was the publication of the *Stern Review on the Economics of Climate Change* (known as the *Stern Review*) by the U.K. Treasury on October 30, 2006 (Stern 2007). Although the review was not the first economic analysis of climate change (Cline 1992, Mendelsohn et al. 1998, Nordhaus and Boyer 2000), its status as an official government document made it one of the most widely known and debated studies of its kind. The growing dominance of global climate change as *the* environmental concern means that the focus on other important environment and human health concerns is lessoned.*

As should be evident from the discussion throughout this primer, global climate change is one of four environmental concerns related to sustainable development. The remaining three concerns are the disruption of ecosystems and loss of biological diversity and the indirect effects these have on human health and well-being; the rapid use of the world's finite resources and energy supplies, and whether there are sufficient resources to fuel the economy in its current form; and toxic pollution that directly affects human health and the health of other species.†

Figure 2.2 has been created to help visualize the need to broaden the current discourse on sustainable development to include concerns in addition to global climate change. The figure highlights all four of the critical environmental concerns related to sustainable development. In addition, it captures important social concerns such as the need for peace and security and equality, both in terms of environmental justice and of income. Employment is also placed alongside these concerns, given its critical role in raising purchasing power and providing sufficient income to make essential goods and services accessible to all. The "competitiveness" wedge was included in the diagram to account for the

* See Section 1.6 in Ashford and Hall (2011b) for a discussion of the reformulation of sustainable development as a problem of global climate change.

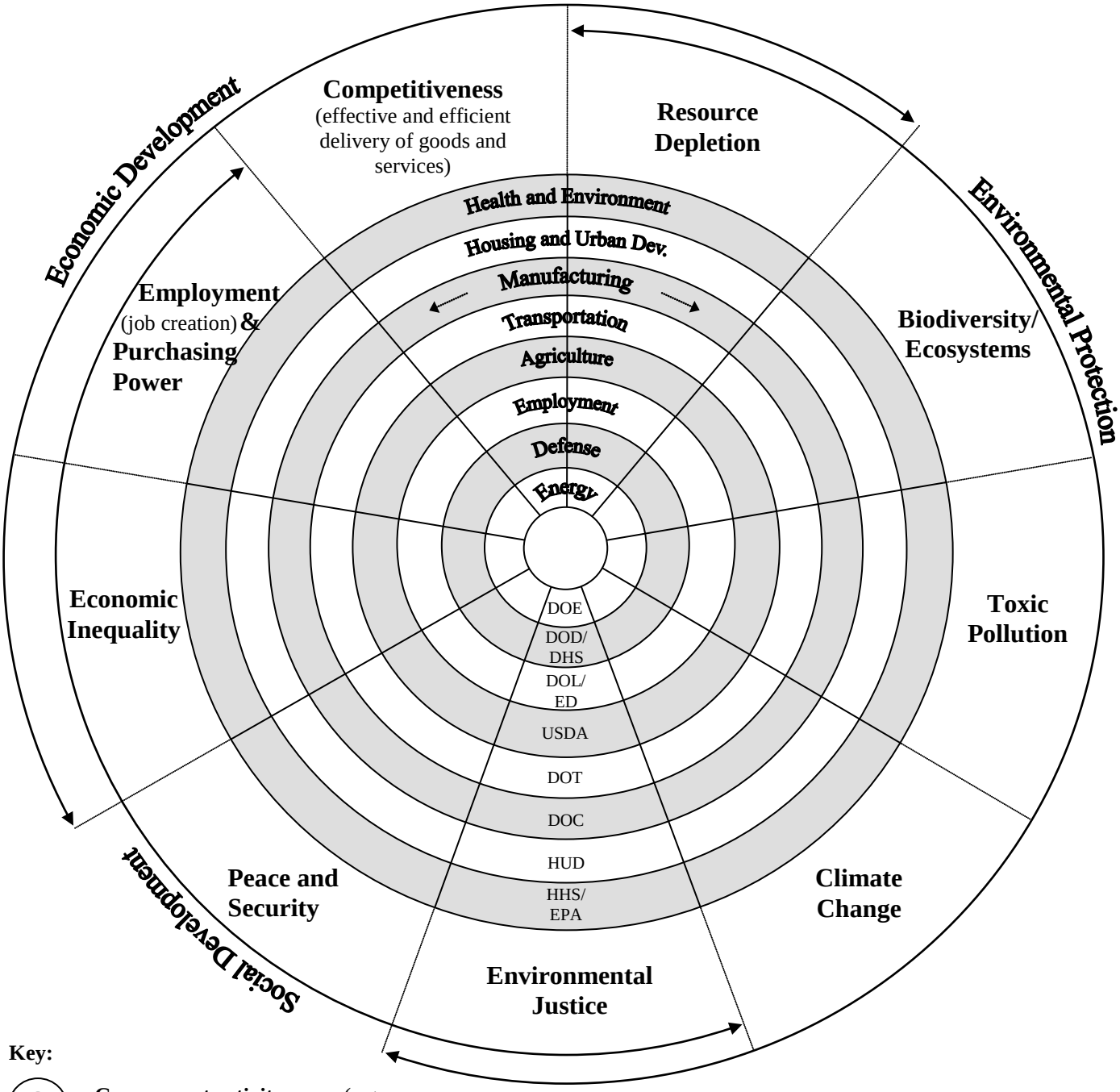
† See Section 1.7 in Ashford and Hall (2011b) for a discussion of the need to broaden our awareness of potential tipping points beyond those related to global climate change.

economic challenge of delivering effective and efficient goods and services.* The rationale is that competitiveness is a critical factor of economic growth and one that is closely related to technological innovation—an issue of direct interest to virtually all government activity areas.

The three arrows that follow the circumference of the outer circle in Figure 2.2 identify which challenges relate to environmental protection, social development, and economic development. The rings in the figure represent several U.S. federal government activity areas—that is, those areas where government provides basic goods and services. There is no hierarchy to the activity areas shown. Thus those located near the center of the circle are not necessarily more or less important than those located near the edge.

Figure 2.2 highlights the challenge confronting *integrated decision making* for sustainable development. For example, it shows that focusing on climate change as the major challenge confronting sustainable development ignores the importance of other environmental, social, and economic challenges. In addition, single-purpose policies designed to confront climate change may inadvertently worsen problems in other areas. For example, increasing the percentage of ethanol in gasoline to reduce CO_2 emissions might lead to the production of additional toxic air pollutants and to an increased use of pesticides, worsening the toxics problem, as well as raising the cost of food and actually increasing greenhouse emissions through additional land use (Searchinger et al. 2008). Thus a major advance in confronting sustainable development would be the integration of government decision making to address environmental, social, and economic problems that are not constrained by institutional missions or the fragmentation of activities within government agencies (Hall 2006). Specific recommendations for achieving integration are addressed in Chapter 13 of Ashford and Hall (2011b).

* The decision to highlight competitiveness as an important issue rather than economic growth is intentional. The basic argument is that focusing on the competitive delivery of goods and services is more likely to lead to long-term economic benefits than a focus on short-term economic growth. See Chapter 7 in Ashford and Hall (2011b) for a discussion of how technological innovation can enhance competitiveness and lead to economic growth.



Key:

Government activity areas (e.g., transportation, health, energy)

Challenges confronting sustainable development (e.g., climate change, resource depletion, toxic pollution)

DHS: Department of Homeland Security
DOC: Department of Commerce
DOD: Department of Defense
DOE: Department of Energy
DOL: Department of Labor
DOT: Department of Transportation
ED: Department of Education
EPA: Environmental Protection Agency
HHS: Department of Health and Human Services
HUD: Department of Housing and Urban Development
USDA: US Department of Agriculture

Figure 2.2: Government Activity Areas and Challenges Confronting Sustainable Development

2.14 References

Ackerman, F., D. Kiron, N. R. Goodwin, J. M. Harris & K. Gallagher. 1997. Human Well-being and Economic Goals. In *Frontier Issues in Economic Thought,* ed. N. R. Goodwin. Washington, D.C.: Island Press.

Adams, W. M. & S. J. Jeanrenaud. 2008. Transition to Sustainability: Towards a Humane and Diverse World. 108. Gland, Switzerland: International Union for Conservation and Nature (IUCN).

Adler, J. M. (2002) Fables of the Cuyahoga: Reconstructing a History of Environmental Protection. *Fordham Environmental Law Journal,* 14**,** 89-146.

Agyeman, J., R. D. Bullard & B. Evans. 2003a. Joined-up Thinking: Bringing Together Sustainability, Environmental Justice and Equity. In *JUST Sustainabilities: Development in an Unequal World,* ed. J. Agyeman, Bullard, R. D., and Evans, B. Cambridge: The MIT Press.

---. 2003b. Just Sustainabilities: Development in an Unequal World. Cambridge: The MIT Press.

Anderson, F. R. 1973. *NEPA in the Courts: A Legal Analysis of the National Environmental Policy Act*. Baltimore: Johns Hopkins University Press.

Anderson, J. W. & R. Morgenstern. 2003. The Future of Sustainable Development: The Johannesburg Conference and What Happens Next. Issue Brief 03-06. Washington, D.C.: Resources for the Future.

Argyle, M. 1987. *The Psychology of Happiness*. London: Routledge Kegan & Paul.

---. 2002. *The Psychology of Happiness, 2nd Edition*. London: Routledge Kegan & Paul.

Aristotle. 1982. *Aristotle: The Nicomachean Ethics*. Cambridge: Harvard University Press.

Ashford, N. A. 1976. *Crisis in the Workplace: Occupational Disease and Injury*. Cambridge: The MIT Press.

Ashford, N. A. & C. C. Caldart. 2008. *Environmental Law, Policy, and Economics: Reclaiming the Environmental Agenda*. Cambridge: MIT Press.

Ashford, N. A. & R. P. Hall (2011a) The Importance of Regulation-Induced Innovation for Sustainable Development. *Sustainability,* 3**,** 270-292. Available at: http://www.mdpi.com/2071-1050/3/1/270/ (accessed on November 6, 2011).

---. 2011b. *Technology, Globalization, and Sustainable Development: Transforming the Industrial State*. New Haven: Yale University Press.

Ashford, N. A., R. P. Hall & R. H. Ashford (2012) The crisis in employment and consumer demand: Reconciliation with environmental sustainability. *Environmental Innovation and Societal Transitions,* 2**,** 1-22.

Ashford, N. A. & C. S. Miller. 1998. *Chemical Exposures: Low Levels and High Stakes*. New York: Van Nostrand Reinhold.

Ayres, R. & B. Warr. 2009. *The Economic Growth Engine: How Energy and Work Drive Material Prosperity*. Williston, VT: Edward Elgar Publishing.

Ayres, R. U. 1978. Application of physical principles to economics. In *Resources, Environment and Economics: Applications of the Materials/Energy Balance Principle,* ed. R. U. Ayres, 37-71. New York: Wiley.

--- (1996) Limits to the Growth Paradigm. *Ecological Economics,* 19**,** 117-134.

--- (1997) Environmental Market Failures: Are There Any Local Market-Based Corrective Mechanisms for Global Problems? *Mitigation and Adaptation Strategies for Global Change,* 1**,** 289-309.

Ayres, R. U., R. C. D'Arge & A. V. Kneese. 1970. *Economics and the Environment: A Materials Balance Approach*. Washington, D.C.: Resources For The Future.

Barnett, H. J., J. H. Beuscher, K. E. Boulding, R. Dubos, L. J. Duhl, M. M. Gaffney, A. V. Kneese, N. E. Long, D. Lowenthal, R. N. McKean, R. Turvey, G. F. White & H. Jarrett. 1966. *Environmental Quality in a Growing Economy: Essays from the Sixth RFF Forum*. Baltimore, MD: Johns Hopkins University Press for Resources for the Future.

Barnett, H. J. & C. Morse. 1963. *Scarcity and Growth: The Economics of Natural Resource Availability*. Baltimore, MD: Johns Hopkins University Press for Resources for the Future.

Bartolomei de la Cruz, H., G. von Potobsky & L. Swepston. 1996. *The International Labour Organization: The International Standards System and Basic Human Rights*. Boulder: Westview Press.

Baskin, L. S., K. Himes & T. Colborn (2001) Hypospadias and endocrine disruption: is there a connection? *Environmental Health Perspectives,* 109**,** 1175-1183.

Beatley, T. 1994. *Ethical Land Use: Principles of Policy and Planning*. Baltimore: The Johns Hopkins University Press.

Blumm, M. C. (1990) Symposium on NEPA at Twenty: The Past, Present and Future of The National Environmental Policy Act: Introduction: The National Environmental Policy Act At Twenty: A Preface. *Environmental Law,* 20(3)**,** 447-483.

Bosso, C. J. 2000. Environmental Groups and the New Political Landscape. In *Environmental Policy, 4th Edition,* ed. N. J. a. K. Vig, M. E. Washington, D.C.: CQ Press.

Bradley, R. L. 2008. *Capitalism at Work: Business, Government, and Energy*. Salem: M & M Scrivener Press.

Brandt, W. 1980. *North-South: A Programme for Survival, Report by the Independent Commission on International Development Issues*. Cambridge: The MIT Press.

---. 1983. *Common Crisis: North-South Co-operation for World Recovery*. Cambridge: The MIT Press.

Brown, L. R. 2008. *Plan B 3.0: Mobilizing to Save Civilization*. New York: W.W.Norton.

Bullard, R. D. 1990. *Dumping in Dixie: Race, Class, and Environmental Quality*. Boulder: Westview Press.

Caldwell, L. K. & P. S. Weiland. 1996. *International Environmental Policy: From the Twentieth to the Twenty-First Century, 3rd Edition*. Durham: Duke University Press.

Carson, R. 1962. *Silent Spring*. New York: Houghton Mifflin Company.

Chivian, E., M. McCally, H. Hu & A. Haines. 1993. Critical condition: Human Health and the Environment. Cambridge: The MIT Press.

Christensen, C. M. 1997. *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*. Cambridge: Harvard Business School Press.

Clapp, J. 2002. The Distancing of Waste: Overconsumption in a Global Economy. In *Confronting Consumption,* eds. T. Princen, M. Maniates & K. Conca, 155-176. Cambridge: The MIT Press.

Clapp, J. & P. Dauvergne. 2005. *Paths to a Green World: The Political Economy of the Global Environment*. Cambridge: MIT Press.

Cline, W. R. 1992. Optimal Carbon Emissions over Time: Experiments with the Nordhaus DICE Model. Washington, D.C.: Institute for International Economics.

Cock, P. H. 2002. Psychology for Ecology. In *Psychology of Sustainable Development,* ed. P. a. S. Schmuck, W. P., 175-195. Boston: Kluwer Academic Publishers.

Coglianese, C. (2001) Social Movements, Law, and Society: The Institutionalization of the Environmental Movement. *Social Science Research Network (SSRN) Electronic Paper Collection*, 1-30.

Colborn, T., D. Dumanoski & J. P. Meyers. 1996. *Our Stolen Future: Are We Threatening Our Own Fertility, Intelligence, and Survival? A Scientific Detective Story*. New York: Dutton Press.

Colby, M. E. (1991) Environmental Management in Development: The Evolution of Paradigms. *Ecological Economics,* 3**,** 193-213.

Cole, H. S. D., C. Freeman, M. Jahoda & K. L. R. Pavitt. 1973. Thinking About the Future: A Critique of "The Limits to Growth". London: Sussex University Press.

Commoner, B. 1971. The Closing Circle: Nature, Man, and Technology. In *Thinking About The Environment,* eds. M. A. Cahn & R. O'Brien, 161-166. New York: M. E. Sharpe, Inc.

---. 1972. *The Closing Circle: Confronting the Environmental Crisis*. New York: Vintage/Ebury (a division of random house group).
---. 1974. Foreword. In *Legislation of Product Safety, Volume 1,* ed. S. S. a. G. Epstein, R. D. Cambridge: The MIT Press.
---. 1979. Chemical carcinogens in the environment. In *Identification and Analysis of Organic Pollutants in Water,* ed. L. H. Keith, 49-71. MI: Ann Arbor Science Publishers Inc.
--- (1991) Rapid Population Growth and Environmental Stress. *International Journal of Health Services,* 21.
Commoner, B., P. W. Bartlett, H. Eisl & K. Couchot. 2000. Long-range Air Transport of Dioxin from North American Sources to Ecologically Vulnerable Receptors in Nunavut, Arctic Canada. New York: Center for the Biology of Natural Systems (CBNS), Queens College.
Commonwealth Secretariat. 1982. The North-South: Making it Work, Report of the Commonwealth Expert Group on the Negotiating Process. London: Commonwealth Secretariat.
Compaine, B. M. 2001. *The digital divide: facing a crisis or creating a myth?* Cambridge: The MIT Press.
Cook, E. (1990) Global Environmental Advocacy: Citizen Activism in Protecting the Ozone Layer. *Ambio,* 19**,** 334-338.
Council on Environmental Quality (CEQ). 1980. The Global 2000 Report to the President: Entering the Twenty-First Century, Volume One. Washington, D.C.: U.S. Government Printing Office.
---. 1981. Global Future: A Time to Act, Report to the President on Global Resources, Environment and Population. Washington, D.C.: U.S. Government Printing Office.
Dag Hammarskjöld Foundation. 1975. The 1975 Dag Hammarskjöld Report - What Now: Another Development. Uppsala: Dag Hammarskjöld Foundation.
Daly, H. E. 1991. *Steady-State Economics*. Washington D. C.: Island Press.
--- (1992) UN Conferences on Environment and Development: Retrospect on Stockholm and Prospects for Rio. *Ecological Economics,* 5**,** 9-14.
---. 1994. Operationalizing Sustainable Development by Investing in Natural Capital. In *Investing in Natural Capital,* ed. A. Jansson, Hammer, M., Folke, C., and Costanza, R., 22-37. Washington D. C.: Island Press.
---. 1996. *Beyond Growth: The Economics of Sustainable Development*. Boston: Beacon Press.
Davis, D. 2002. *When Smoke Ran Like Water*. New York: Basic Books.
Dernbach, J. C. (1998) Sustainable Development as a Framework for National Governance. *Case Western Reserve Law Review,* 49**,** 1-103.

--- (2004) Making Sustainable Development Happen: From Johannesburg to Albany. *Albany Law Environmental Outlook,* 8**,** 173-186.
--- (2011) Creating the Law of Environmentally Sustainable Economic Development. *Pace Environmental Law (PELR) Review,* 28**,** 614-641.
Deutch, J., E. Moniz, S. Ansolabehere, M. Driscoll, P. Gray, J. Holdren, P. Joskow, R. Lester & N. Todreas. 2003. The Future of Nuclear Power: An Interdisciplinary MIT Study. Cambridge: Massachusetts Institute of Technology (MIT).
Dilulio, J. (1996) Help Wanted: Economists, Crime and Public Policy. *Journal of Economic Perspective,* 10**,** 3-24.
Dryzek, J. S. 1997. *The Politics of the Earth: Environmental Discourses*. New York: Oxford University Press.
Duchin, F. & G. M. Lange. 1994. *The Future of the Environment: Ecological Economics and Technological Change*. New York: Oxford University Press.
Dunlap, R. E. 2010. On 40th Earth Day, Image of Green Movement Still Positive. Attitudes not quite as positive as they were a decade ago. April 22, 2010. Gallup, http://www.gallup.com/poll/127487/environmental-movement-endures-less-consensus.aspx#1 (accesed on September 1, 2012).
Economist. 2004. The changed nature of work. Pushing a different sort of button: How jobs, in the rich world, have become less boring (though there's still plenty to whinge about). In *The Economist, U.S. Edition*.
Ehrlich, P. & J. Holdren (1972) Review of The Closing Circle. *Environment***,** 24-39.
Ehrlich, P. R. 1968. *The population bomb*. New York: Ballantine Books.
Ehrlich, P. R., G. C. Daily, S. C. Daily, N. Myers & J. Salzman (1997) No Middle Way on the Environment. *The Atlantic Monthly,* 280**,** 98-104.
Ekins, P. & M. Max-Neef. 1992. Real-Life Economics: Understanding Wealth Creation. New York: Routledge.
Emmelin, L. (1972) The Stockholm Conferences. *Ambio,* 1**,** 135-140.
Engfeldt, L. G. (2002) The Road from Stockholm to Johannesburg. *United Nations Chronicle,* 29.
Etzioni, A. (1990) Liberals and Communitarians. *Partisan Review,* LVII**,** 215-227.
Fagin, D. & M. Lavelle. 1996. *Toxic Deception: How the Chemical Industry Manipulates Science, Bends the Law, and Endangers Your Health*. Secaucus: Carol Publishing Group.
Farvar, M. T. & B. Glaeser. 1979. Politics of Ecodevelopment. Berlin: International Institute for Environment and Society.
Firat, F. A. & N. Dholakia. 1998. *Consuming People: From Political Economy to Theaters of Consumption*. New York: Routledge.
Flink, J. J. 2001. *The Automobile Age*. Cambridge: The MIT Press.

Frank, D. J., A. Hironaka & E. Schofer (2000) The Nation-State and the National Environment over the Twentieth Century. *American Sociological Review,* 65**,** 96-116.

Freeman, C. 1973. Malthus with a Computer. In *Thinking About the Future: A Critique of The Limits to Growth,* ed. H. S. D. Cole, Freeman, C., Jahoda, M., and Pavitt, K. L. R., 14-22. London: Sussex University Press.

---. 1990. Schumpeter's Business Cycles Revisited. In *In Evolving Technology and Market Structure: Studies in Schumpeterian Economics,* ed. A. a. P. Heertje, M., 17-38. Ann Arbor: University of Michigan Press.

Freeman, R. B. 2003. The World of Work in the New Millennium. In *What the Future Holds: Insights from Social Science,* eds. R. N. Cooper & R. Layard, 157-178. Cambridge: The MIT Press.

Furlong, S. R. (1997) Interest Group Influence on Rulemaking. *Administration and Society,* July, 29**,** 325-347.

Geiser, K. 2001. *Materials Matter: Toward a Sustainable Materials Policy*. Cambridge: The MIT Press.

Georgescu-Roegen, N. 1971. *The Entropy Law and the Economic Process*. Cambridge: Harvard University Press.

Getzner, M. (2002) The Quantitative and Qualitative Impacts of Clean Technologies on Employment. *Journal of Cleaner Production,* 10**,** 305-319.

--- (2004) Quantitative and qualitative employment impacts of environmental innovations. *International Journal of Environmental Technology and Management,* 4**,** 375-399.

Goldsmith, E. (1982) The Retreat From Stockholm. *The Ecologist,* 12**,** 98-100.

Gore, A. 1994. Introduction. In *Silent Spring,* ed. R. Carson, xv-xxvi. New York: Houghton Mifflin Company.

Grubb, M., M. Koch, A. Munson, F. Sullivan & K. Thomson. 1993. The "Earth Summit" agreements: a guide and assessment: an analysis of the Rio '92 UN Conference on Environment and Development. London: Earthscan Publications Ltd.

Hall, R. P. 2006. Understanding and Applying the Concept of Sustainable Development to Transportation Planning and Decision-Making in the U.S. In *Engineering Systems Division*. Cambridge, http://esd.mit.edu/students/esdphd/dissertations/hall_ralph.pdf: Massachusetts Institute of Technology.

Hardin, G. (1968) The Tragedy of the Commons. *Science,* 162**,** 1243-1248.

Hens, L. & B. Nath. 2005. The Johannesburg Conference. In *The World Summit on Sustainable Development: the Johannesburg Conference,* eds. L. Hens & B. Nath, 1-39. Dordrecht: Springer.

Hessel, D. T. 2002. Sustainability as a Religious and Ethical Concern. In *Stumbling Toward Sustainability,* ed. J. C. Dernbach, 593-605. Washington, D. C.: Environmental Law Institute.

Hoffmann, U. 2011. Some Refections on Climate Change, Green Growth Illusions, and Development Space. No. 205. New York: United Nations Conference on Trade and Development (UNCTAD).

Hynes, P. H. 1989. *The Recurring Silent Spring*. New York: Pergamon Press.

Inglehart, R. (2000) Globalization and Postmodern Values. *The Washington Quarterly,* 23**,** 215-228.

Inglehart, R. & H. Klingemann. 2000. Genes, Culture, Democracy, and Happiness. In *Culture and Subjective Well-being,* eds. E. Diener & E. M. Suh, 166-183. Cambridge: The MIT Press.

Intergovernmental Panel on Climate Change (IPCC). 2001. *Climate Change 2001: Synthesis Report, Summary for Policymakers*. New York: Cambridge University Press.

---. 2007. Climate Change 2007: Synthesis Report. Geneva: IPCC.

International Climate Change Task Force. 2005. Meeting the Climate Change Chellenge: Recommendations of the International Climate Change Taskforce. London: The Institute for Public Policy Research.

International Forum on Globalization (IFG). 2002. *Alternatives to Economic Globalization: A Better World is Possible*. San Francisco: Berrett-Koehler Publishers, Inc.

International Union for Conservation and Nature and Natural Resources (IUCN), United Nations Environment Programme (UNEP) & World Wildlife Fund (WWF). 1980. World Conservation Strategy. Gland: IUCN.

Jahoda, M. 1973. Postscript on Social Change. In *Thinking About the Future: A Critique of The Limits to Growth,* ed. H. S. D. Cole, Freeman, C., Jahoda, M., and Pavitt, K. L. R., 209-215. London: Sussex University Press.

James, B. 2002a. Growth versus environment. In *International Herald Tribune*, 1, 8-9.

---. 2002b. Johannesburg summit: a triumph or a disaster? In *International Herald Tribune*.

Jänicke, M. 2006. Trend Setters in Environmental Policy: The Character and Role of Pioneer Countries. In *Environmental Governance in Global Perspectives: New Approaches to Ecological and Political Modernisation,* eds. M. Janicke & K. Jacob, 51-66. Berlin: Freie Universität Berlin.

Jordon, A. 2002. Environmental Policy in the European Union: Actors, Institutions and Processes. London: Earthscan Publications Limited.

Jowitt, P. W. (2004) Sustainability and the Formation of the Civil Engineer. *Engineering and Sustainability,* 157**,** 79-88.

Kahn, H. & E. Schneider (1981) Globaloney 2000. *Policy Review 16*, 129-147.

Kaysen, C. (1972) The Computer that Printed Out W*O*L*F*. *50 Foreign Affairs*, 660-668.

Kellert, S. R. & E. O. Wilson. 1993. The Biophilia Hypothesis. Washington, D. C.: Island Press.

Kingston, W. 2004. Schumpeter and Institutions: Does his "Business Cycles" give enough weight to legislation? In *International J. A. Schumpeter Society 10th ISS Conference, Innovation, Industrial Dynamics and Structural Transformation: Schumpeterian Legacies*. Università Bocconi, Milan 9-12 June 2004.

Kiss, A. 1994. Preface. In *Manual on Public Participation in Environmental Decisionmaking: Current Practice and Future Possibilities in Central and Eastern Europe,* eds. M. T. Nagy, M. Bowman, J. Dusik, J. Jendroska, S. Stec, K. van der Zwiep & J. Zlinszky. Budapest: REC.

Kleinknecht, A. (1998) Commentary. Is labour market flexibility harmful to innovation? *Cambridge Journal of Economics*, 22, 387-396.

Korten, D. C. 2001. *When Corporations Rule the World*. San Francisco: Berrett-Koehler Publishers.

Kraft, M. E. 2002. Environmental Policy and Politics in the United States. In *Environmental Politics and Policy in Industrialized Countries,* ed. U. Desai, 29-69. Cambridge: The MIT Press.

Krishnan, R., J. M. Harris & N. R. Goodwin. 1995. A Survey of Ecological Economics. In *Frontier Issues in Economic Thought,* ed. N. R. Goodwin. Washington, D. C.: Island Press.

Landsberg, H. H., L. L. Fischman & J. L. Fisher. 1963. *Resources in America's future. Patterns of requirements and availabilities, 1960-2000*. Baltimore, MD: Johns Hopkins University Press for Resources for the Future.

Layard, R. 2005. *Happiness: Lessons from a New Science*. The Penguin Press.

Lessig, L. 2000. *Code and Other Laws of Cyberspace*. New York: Basic Books.

Lewis, J. (1985) The Birth of the EPA. *EPA Journal*, 11(9), 6-9.

Linner, B. & H. Selin. 2003. How It All Began: Global Efforts on Sustainable Development from Stockholm to Rio. In *6th Nordic Conference on Environmental Social Sciences*. Abo, Finland.

Luken, R. & P. Hesp. 2006. Review of Selected Industrial Environmental Initiatives of the United Nations System, Regional Development Banks and other International Organizations. Issue paper for the United Nations Environmental Management Group. Background Paper No. 4. New York: United Nations Department of Economic and Social Affairs.

MacLaury, J. 1998. Tragedy in the Uranium Mines: Catalyst for National Workers Safety and Health Legislation. In *symposium on "Lyndon Baines Johnson's Legacy"*. Miami University, Oxford.

Maddox, J. 1972. *The Doomsday Syndrome - An Attack on Pessimism*. New York: McGraw-Hill.

McCally, M. 1999. *Life Support: The Environment and Human Health*. Cambridge: The MIT Press.

McCormick, J. 1995. *The Global Environmental Movement, Second Edition*. New York: John Wiley & Sons.

McEntire, D. A. (2005) The history, meaning and policy recommendations of sustainable development: a review essay. *International Journal of Environment and Sustainable Development,* 4**,** 106-118.

McLaren, D., S. Bullock & N. Yousouf. 1997. *Tomorrow's World - Britain's Share in a Sustainable Future*. London: Earthscan.

Meadows, D. H., D. L. Meadows & J. Randers. 1992. *Beyond the Limits: Confronting Global Collapse, Envisioning A Sustainable Future*. Post Mills, Vermont: Chelsea Green Publishing co.

Meadows, D. H., D. L. Meadows, J. Randers & W. W. Behrens. 1972. *The Limits to Growth*. New York: Potomac Associates.

Mendelsohn, R. O., W. Morrison, M. E. Schlesinger & N. A. Andronova (1998) Country-specific market impacts of climate change. *Climatic Change,* 54**,** 553-569.

Miles, S. 1998. *Consumerism - as a Way of Life*. London: SAGE Publications.

Miles, S., A. Anderson & K. Meethan. 2002. The Changing Consumer: Markets and Meanings. New York: Routledge.

Muir, J. a. C., W. 1997. John Muir: Nature Writings: The Story of My Boyhood and Youth; My First Summer in the Sierra; The Mountains of California; Stickeen; Essays. New York: Library of America.

Nader, R. 2004. *The Good Fight : Declare Your Independence and Close the Democracy Gap*. New York: Regan Books.

National Research Council (NRC). 2002. *Our Common Journey: A Transition Toward Sustainability*. Washington, D. C.: National Academy Press.

Nayar, K. R. (1994) Politics of 'Sustainable Development'. *Economic and Political Weekly,* 29**,** 1327-1329.

New Scientist (2002a) Development talks falter. *New Scientist,* 174**,** 7.

--- (2002b) Editorial, The party's over, Have we got what it takes to deliver on the promises made at Joburg? *New Scientist,* 175**,** 3.

--- (2002c) Joburg or bust. *New Scientist,* 175**,** 37.

Nordhaus, W. D. & J. G. Boyer. 2000. *Warming the World: economic models of global warming*. Cambridge: The MIT Press.

Norris, P. 2001. *Digital divide: civic engagement, information poverty, and the Internet worldwide*. Cambridge: Cambridge University Press.

Ocampo, J. A., A. Cosbey & M. Khor. 2011. Report by Panel of Experts on The Transition to a Green Economy: Benefits, Challenges, and Risks from a Sustainable Development Perspective. New York: United Nations Department of Economic and Social Affairs (UNDESA), United Nations Environment Programme (UNEP), and United Nations Conference on Trade and Development (UNCTAD).

Organisation for Economic Co-operation and Development (OECD). 1995. Sustainable Agriculture: Concepts, issues and policies in OECD countries. Paris: Organisation for Economic Co-operation and Development.

Osborn, D. & T. Bigg. 1998. *Earth Summit II, Outcomes and Analysis*. London: Earthscan Publications Lts.

Perrow, C. 1999. *Normal Accidents: Living with High-Risk Technologies*. Princeton: Princeton University Press.

Pinchot, G., H. K. Steen & E. B. Brannon. 2001. The Conservation Diaries of Gifford Pinchot. Washington, D. C.: Island Press.

Porter, M. E. 1986. Competition in Global Industries: A Conceptual Framework. In *Competition in Global Industries,* ed. M. E. Porter, 15-60. Cambridge: Harvard Business School Press.

Raikes, P. 1988. Modernizing Hunger. London: Catholic Institute for International Relations.

Redclift, M. 1984. *Development and the Environmental Crisis: Red or Green Alternatives?* London: Methuen & Co. Ltd.

---. 1987. *Sustainable Development: Exploring the Contradictions*. London: Methuen.

--- (1991) The Multiple Dimensions of Sustainable Development. *Geography*, 36-42.

---. 1996. *Wasted: Counting the Costs of Global Consumption*. London: Earthscan.

Redclift, M. R. 2000. Sustainability: life chances and livelihoods. New York: Routledge.

Rees, W. E. (1995) Achieving Sustainability: Reform or Transformation? *Journal of Planning Literature,* 9, 343-361.

Reid, D. 1995. *Sustainable Development, An Introductory Guide*. London: Earthscan Publications Ltd.

Resources for the Future (RFF). 1954. The Nation Looks as Its Resources: Report of the Mid-Century Conference on Resources for the Future. Washington, D.C.: Resources for the Future.

Ringquist, E. J. 2000. Environmental Justice: Normative Concepts and Empirical Evidence. In *Environmental Policy, 4th Edition,* ed. N. J. a. K. Vig, M. E. Washington, D. C.: CQ Press.

Røpke, I. (2004) The early history of modern ecological economics. *Ecological Economics,* 50**,** 293-314.

Rowland, W. 1973. *The Plot to Save the World*. Toronto/Vancouver: Clarke, Irwin, & Company Ltd.

Runnalls, D. (2008) Our Common Inaction: Meeting the Call for Institutional Change *Environment Magazine,* 50 18-28.

Ruttan, V. (1959) Usher and Schumpeter on Invention, Innovation, and Technological Change. *Quarterly Journal of Economics,* 73**,** 596-606.

Sachs, W. 2001. Rio +10 and the North-South Divide. Berlin: Heinrich Boll Foundation.

Sagoff, M. (1997) Do We Consume Too Much? *The Atlantic Monthly,* 279**,** 80-96.

Sandbrook, R. 1993. From Stockholm to Rio. In *Earth Summit 1992 - The United Nations Conference on Environment and Development, Rio de Janeiro 1992,* ed. J. Quarrie. London: Regency Press Corporation.

Sandel, M. J. 1996. *Democracy's Discontent: America in Search of a Public Philosophy*. Cambridge: Harvard University Press.

Schettler, T., G. M. Solomon, M. Valenti & A. Huddle. 1999. *Generation at Risk*. Cambridge: The MIT Press.

Schmidheiny, S. 1992. *Changing Course: A Global Business Perspective on Development and the Environment*. Cambridge: The MIT Press.

Schmidt-Bleek, F. 1992. Toward Universal Ecology Disturbance Measures (Position Paper). Berlin: Wuppertal Institute.

Schreurs, M. A. 2002. *Environmental Politics in Japan, Germany, and the United States*. Cambridge: Cambridge University Press.

Schumacher, E. F. 1999. *Small is Beautiful, Economics as if People Mattered, 25 years later . . . with commentaries*. Point Roberts, WA: Hartley & Marks Publishers, Inc.

Schumpeter, J. A. 1934. *The Theory of Economic Development*. Cambridge: Harvard University Press.

Schurr, S. H. & B. C. Netschert. 1960. *Energy in the American Economy, 1850-1975. An economic study of its history and prospects*. Baltimore, MD: Johns Hopkins University Press for Resources for the Future.

Searchinger, T., R. Heimlich, R. A. Houghton, F. Dong, A. Elobeid, J. Fabiosa, S. Tokgoz, D. Hayes & T.-H. Yu (2008) Use of U.S. Croplands for Fuels Increases Greenhouse Gases through Emissions from Land-use Change. *Science* 319**,** 1238-1240.

Sen, A. K. (1993) The Economics of Life and Death. *Scientific American,* 268**,** 40-47.

---. 2003. Foreword. In *Readings in Human Development: Concepts, Measures, and Policies for a Development Paradigm,* eds. S. Fukuda-Parr & A. K. Shiva Kumar. Oxford: Oxford University Press.

Shabecoff, P. 1993. *A Fierce Green Fire. The American Environmental Movement*. New York: Hill and Wang.

Shellenberger, M. & T. Nordhaus. 2004. The Death of Environmentalism. Global Warming Politics in a Post-Environmental World. Copyright 2004 by Michael Shellenberger and Ted Nordhaus: Breakthrough Institute, www.thebreakthrough.org.

Simon, J. L. (1981) Global Confusion, 1980: A hard look at the Global 2000 Report. *The Public Interest*, 3-20.

Simon, J. L. & H. Kahn. 1981. The Resourceful Earth: A Response to Global 2000. Oxford: Basil Blackwell.

Simpson, R. D., M. A. Toman & R. U. Ayres. 2005. Scarcity and Growth Revisited: Natural Resources and the Environment in the New Millennium. Washington, D.C.: Resources for the Future.

Smith, M. H., K. C. Hargroves & D. Cheryl. 2010. *Cents and Sustainability: Securing Our Common Future by Decoupling Economic Growth from Environmental Pressure*. London: Earthscan.

Smith, V. K. 1979. Scarcity and Growth Reconsidered. Baltimore, MD: Johns Hopkins University Press for Resources for the Future.

Solomon, G. M. & T. Schettler. 1999. Environmental Endocrine Disruption. In *Life Support: The Environment and Human Health*, ed. M. McCally, 147-162. Cambridge: The MIT Press.

South Centre. 2002a. Environment and Development - Towards a Common Strategy of the South in the UNCED Negotiations and Beyond. In *The South and Sustainable Development Conundrum: From Stockholm 1972 To Rio 1992 To Johannesburg 2002*, ed. S. Centre, 105-133. Geneva: South Centre.

---. 2002b. Foreword. In *The South and Sustainable Development Conundrum: From Stockholm 1972 To Rio 1992 To Johannesburg 2002*, ed. S. Centre, vii-x. Geneva: South Centre.

---. 2002c. The South, The North and Sustainable Development: The Continuity of Basic Issues. In *The South and Sustainable Development Conundrum: From Stockholm 1972 To Rio 1992 To Johannesburg 2002*, ed. S. Centre, 4-30. Geneva: South Centre.

Speth, J. G. 2002. The Global Environmental Agenda: Origins and Prospects. In *Global Environmental Governance: Options & Opportunities*, eds. D. C. Esty & M. H. Ivanova, 11-30. New Haven: Yale F&ES Publications.

---. 2003. Two perspectives on globalization and the environment. In *Worlds Apart: Globalization and the Environment*, ed. J. G. Speth, 1-18. Washington D.C.: Island Press.

Stearns, P. N. 2001. *Consumerism in World History: The global transformation of desire*. New York: Routledge.

Stern, N. 2007. *Stern Review on the Economics of Climate Change*. Cambridge: Cambridge University Press.

Stiglitz, J. E. 2002. *Globalization and its Discontents*. New York: W. W. Norton & Company.

Stowe, H. B. 1982. *Uncle Tom's Cabin (Reissue edition)*. New York: Bantam.

Strong, M. F. (1972) The Stockholm Conference - Where Science and Politics Meet. *Ambio,* 1**,** 73-78.

---. 1993. Statement by Maurice F. Strong, Secretary-General of the United Nations Conference on Environment and Development. In *Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3-14 June 1992, Volume II, Proceedings of the Conference,* ed. U. Nations. New York: United Nations.

---. 2001. *Where on Earth are We Going?* London: Thomson Texere.

---. 2003. Global Sustainable Development. In *Globalization, Globalism, Environments, and Environmentalism: Consciousness of Connections,* eds. S. Vertovec & D. A. Posey, 103-122. Oxford: Oxford University Press.

The Ecologist. 1972. *Blueprint for Survival*. Boston: Houghton Mifflin Company.

---. 1993. *Whose Common Future? Reclaiming the Commons*. London: Earthscan Publications Ltd.

The International Economy (2004) Is the Aging of the Developed World. *The International Economy,* 18**,** 6-19.

The President's Material Policy Commission. 1952. *Resources for freedom*. Washington, D.C.: U.S. Government Printing Office.

Thomas, U. P. 1992. United Nations Environment Programme - An Evaluative Analysis. Montréal, http://www.ecolomics-international.org/epal_2004_4_upt_unep_1972_1992_rio_conference_phd.pdf: Political Science, Université du Québec à Montréal.

U.S. Department of Commerce. 1994. Tracking the American Dream - Fifty Years of Housing Changes, Statistical Brief. Washington, D.C.: U.S. Department of Commerce, Economics and Statistics Administration, Bureau of the Census,.

ul Hague, I. 2004. Globalization, Neoliberalism and Labour - Discussion Paper. Geneva: United Nations Conference on Trade and Development (UNCTAD).

United Nations. 1972. *Development and Environment: Report and Working Papers of a Panel of Experts Convened by the Secretary-General of the United Nations Conference on the Human Environment (Founex, Switzerland, June 4-12, 1971)*. Paris: Mouton.

---. 1993a. Earth Summit: Agenda 21, The United Nations Programme of Action from Rio. New York: United Nations.

---. 1993b. Report of the United Nations Conference on Environment and Development, Volume I, Resolutions Adopted by the Conference. New York: United Nations.
---. 1993c. Report of the United Nations Conference on Environment and Development, Volume II, Proceedings of the Conference. New York: United Nations.
---. 1993d. Report of the United Nations Conference on Environment and Development, Volume III, Statements Made by Heads of State or Government at the Summit Segment of the Conference. New York: United Nations.
United Nations (UN). 2011. Objective and themes of the United Nations Conference on Sustainable Development. Report of the Secretary-General. 22 December 2010. A/CONF.216/PC/7. New York: United Nations.
---. 2012. The future we want. A/CONF.216/L.1. New York: United Nations.
United Nations Commission on Sustainable Development (UNCSD). 1997a. Global change and sustainable development: critical trends, Report of the Secretary-General. New York: United Nations.
---. 1997b. Report of the Ad Hoc Open-ended Inter-Sessional Working Group of the Commission on Sustainable Development, 17 March 1997. New York: United Nations Economic and Social Council, United Nations.
United Nations Commission on Sustainable Development (UNCSD) & United Nations Conference on Trade and Development (UNCTAD). 2011. Trade and Green Economy. In *Rio+20 Issues Briefs*. New York: UNCSD Secretariat and UNCTAD.
United Nations Department of Economic and Social Affairs (UNDESA). 2002. Second Local Agenda 21 Survey. Background Paper No. 15. New York: United Nations.
United Nations Economic and Social Council (ECOSOC). 2002. Follow-up to the World Summit on Sustainable Development and the future role of the Commission on Sustainable Development: the implementation track, Report of the Secretary-General. New York: United Nations.
United Nations Environment Programme (UNEP). 1975. The Proposed Programme. Nairobi: United Nations Environment Programme (UNEP).
---. 1982a. The Environment in 1982: Retrospect and Prospect. Nairobi: United Nations Environment Programme (UNEP).
---. 1982b. *The State of the Environment 1972-1982*. Nairobi: United Nations Environment Programme.
---. 1982c. *The World environment 1972-1982: a report by the United Nations Environment Programme*. Dublin: Tycooly International Publishing Ltd.

---. 1992. *The World Environment 1972-1992: Two Decades of Challenge*. London: Chapman and Hall.
---. 2011a. Decoupling Natural Resource use and Environmental Impacts from Economic Growth. Nairobi: United Nations Environment Programme, International Resource Panel.
---. 2011b. Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication. United Nations Environment Programme, www.unep.org/greeneconomy.
van de Poel, I. R. (2000) On the Role of Outsiders in Technical Development. *Technology Analysis and Strategic Management,* 12**,** 383-397.
Veblen, T. 1994. *The Theory of the Leisure Class*. New York: Dover Publications.
Vogel, D. (2003) The Hare and the Tortoise Revisited: The New Politics of Consumer and Environmental Regulation in Europe. *British Journal of Political Science,* 33**,** 557-580.
Wallace, D. 1995. *Environmental Policy and Industrial Innovation. Strategies in Europe, the U.S. and Japan*. London: Earthscan Publications Ltd.
Walz, R. (2010) Employment and structural impacts of material efficiency strategies: results from five case studies. *Journal of Cleaner Production,* 19**,** 805-815.
Wilson, E. O. 2002. *The Future of Life*. New York: Alfred A. Knopf.
Wirth, D. A. (1995) The Rio Declaration on Environment and Development: Two Steps Forward and One Back, or Vice Versa? *Georgia Law Review,* 29**,** 599-652.
World Bank Group (WBG). 1993. *World Development Report, 1993*. New York: Oxford University Press.
---. 2002. World development report 2003: Sustainable development in a dynamic world: Transforming institutions, growth, and quality of life. Washington D.C.: World Bank.
World Commission on Environment and Development (WCED). 1987. *Our Common Future*. Oxford: Oxford University Press.
World Wildlife Fund (WWF). 2006. Living Planet Report 2006. Gland: World Wildlife Fund.

[1] See the *Charter of the United Nations*, http://www.un.org/aboutun/charter/index.html (accessed July 28, 2011).
[2] See the *Ottawa Convention* banning landmines, http://www.un.org/Depts/mine/UNDocs/ban_trty.htm (accessed July 28, 2011).
[3] See the *Treaty on the Non-Proliferation of Nuclear Weapons*, http://www.fas.org/nuke/control/npt/text/npt2.htm (accessed July 28, 2011).

[4] See World Bank Group, http://www.worldbank.org/ (accessed July 28, 2011).
[5] See the International Monetary Fund (IMF), http://www.imf.org/ (accessed July 28, 2011).
[6] See *General Agreement on Tariffs and Trade (GATT)*, http://www.ciesin.org/TG/PI/TRADE/gatt.html (accessed July 28, 2011).
[7] See the United Nations Development Programme (UNDP), http://www.undp.org/ (accessed July 28, 2011).
[8] See the UN Industrial Development Organization, http://www.unido.org/ (accessed July 28, 2011).
[9] Source: The Charter of the United Nations, Chapter XI, *International Economic and Social Cooperation*, *Article 55*, http://www.un.org/aboutun/charter/index.html (accessed July 28, 2011).
[10] See the *International Covenant on Civil and Political Rights*, http://www2.ohchr.org/english/law/ccpr.htm (accessed July 28, 2011).
[11] See the *International Covenant on Economic, Social, and Cultural Rights*, http://www2.ohchr.org/english/law/cescr.htm (accessed July 28, 2011).
[12] See the International Labour Organization, *Declaration Concerning the Aims and Purposes of the International Labour Organization* (Declaration of Philadelphia), Section II, http://www.un-documents.net/dec-phil.htm (accessed July 28, 2011).
[13] Source: The *Declaration on the Right to Development*, http://www2.ohchr.org/english/law/rtd.htm (accessed July 28, 2011).
[14] Source: The *Declaration on the Right to Development*, article 3, paragraph 1.
[15] Source: The *Declaration on the Right to Development*, article 1, paragraph 1.
[16] Source: *UNCED Declaration on Environment and Development* (the Rio Declaration), 1992, http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm (accessed July 28, 2011).
[17] Source: United Nations, Department of Economic and Social Affairs, Division for Sustainable Development, *Agenda 21*, http://www.un.org/esa/dsd/agenda21/ (accessed July 28, 2011).
[18] Source: U.S. Bureau of Economic Analysis, *National Income and Product*, www.bea.gov/national/nipaweb/Index.asp (accessed July 29, 2011).
[19] Source: Environmental Defense, *Origin and History*, http://www.edf.org/page.cfm?tagID=362 (accessed July 29, 2011).
[20] President Nixon, January 1, 1970.
[21] Source: Earth Day Network, *History of Earth Day*, http://www.earthday.net/node/77 (accessed July 30, 2011).
[22] See the U.S. EPA, *Reorganization Plan No. 3 of 1970*, http://www.epa.gov/aboutepa/history/org/origins/reorg.html (accessed July 30, 2011).
[23] See the Clean Air Act (CAA), http://www.epa.gov/air/caa// (accessed July 30, 2011).
[24] See the *Occupational Safety and Health Act (OSHA)* of 1970, http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=2743&p_table=OSHACT (accessed July 30, 2011).
[25] Source: Hearings on Small Business and the Occupational Safety and Health Act of 1970 Before the Subcommittee on Environmental Problems Affecting Small Business of the H.R. Select Committee on Small Business, 92d Congress, 2d session, June 22, 1972.
[26] Source: EPA, *Summary of the Occupational Safety and Health Act* (OSHA), http://www.epa.gov/regulations/laws/osha.html (accessed July 30, 2011).
[27] Source: About UNCTAD (United Nations Conference on Trade and Development), http://www.unctad.org/Templates/Page.asp?intItemID=1530&lang=1 (accessed July 30, 2011).

[28] Source: The United Nations Environment Program, *Constitution of the* [Stockholm] *Conference*, http://www.unep.org/Documents/Default.asp?DocumentID=97&ArticleID=1496 (accessed July 30, 2011); Engfeldt (2002).
[29] Source: UN General Assembly, Twenty-Third Session, *Resolution 2398 (XXIII)*, 3 December 1968, *Problems of the Human Environment*, 1, http://www.un.org/documents/ga/res/23/ares23.htm (accessed July 30, 2011).
[30] Source: U.S. EPA, Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units, Docket No. EPA-HQ-OAR-2011-0660, http://epa.gov/carbonpollutionstandard/pdfs/20120327proposal.pdf (accessed September 1, 2012).
[31] Source: UN General Assembly, *Resolution 2657 (XXV)*, *United Nations Conference on the Human Environment*, http://www.un.org/documents/ga/res/25/ares25.htm (accessed July 30, 2011).
[32] Source: UN General Assembly, twenty-sixth meeting in 1971, *Resolution 2849 (XXVI)*, http://www.un.org/documents/ga/res/26/ares26.htm (accessed July 30, 2011).
[33] Source: Pope Paul VI, *Message to the Stockholm Conference on Human Environment*, June 1, 1972, http://conservation.catholic.org/pope_paul_vi.htm (accessed July 30, 2011).
[34] See the *Declaration of the UN Conference on the Human Environment* (the Stockholm Declaration), 1972 http://www.unep.org/Documents/Default.asp?DocumentID=97&ArticleID=1503 (accessed July 30, 2011).
[35] See United Nations Environment Programme, *Action Taken by the Conference*, http://www.unep.org/Documents/Default.asp?DocumentID=97&ArticleID=1492 (accessed July 30, 2011).
[36] See the United Nations Environment Programme, http://www.unep.org/ (accessed July 30, 2011).
[37] See the United Nations Environment Programme, *Environment Fund*, http://www.unep.org/rms/en/Financing_of_UNEP/Environment_Fund/index.asp (accessed July 30, 2011).
[38] Source: The International Labour Organisation. *The Declaration of Philadelphia*, Section II, (a), http://www.ilo.org/ilolex/english/iloconst.htm (accessed July 30, 2011).
[39] See note 38, Section II, (b) and (c).
[40] See note 38, Section I.
[41] See note 38, Section IV.
[42] See United Nations Educational, Scientific and Cultural Organization (UNESCO), *Man and the Biosphere Programme*, http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/man-and-biosphere-programme/ (accessed July 30, 2011).
[43] See Recommendations 15 (b, i), 21 (a, i), 24 (a), 42 (a), 43 (3, c), 45 (2, d), 65, 80 (b, d), 96 (2) from the United Nations Conference on the Human Environment, 1972, http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=97&ArticleID=1506&l=en (accessed July 30, 2011).
[44] Ibid., see *Recommendation 32*.
[45] Ibid., see *Recommendation 47*; and *Recommendations 86* and *92*, section entitled *Marine Pollution*, *http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=97&ArticleID=1510&l=en* (accessed July 30, 2011).
[46] See *Recommendations 98* and *99* from the United Nations Conference on the Human Environment, 1972, section entitled *Educational, Informational, Social and Cultural Aspects of Environmental Issues*,

http://www.unep.org/Documents/Default.asp?DocumentID=97&ArticleID=1511 (accessed July 30, 2011).

[47] Source: UNEP, Report of the United Nations Conference on the Human Environment, *Brief Summary of the General Debate*, http://www.unep.org/Documents/Default.asp?DocumentID=97&ArticleID=1497 (accessed July 30, 2011).

[48] Source: UN General Assembly, twenty-seventh meeting in 1972, *Resolution 2997 (XXVII), Instructional and financial arrangements for international environmental cooperation*, http://www.un.org/documents/ga/res/27/ares27.htm (accessed July 30, 2011).

[49] Source: UN General Assembly, 35th Session, *International Co-operation in the Field of the Environment*, A/RES/35/74, 5 December 1980, http://www.un.org/documents/ga/res/35/a35r74e.pdf (accessed July 31, 2011). Also see UN General Assembly, 36th Session, *Session of a special character of the Governing Council of the United Nations Environment Programme*, A/RES/36/189, 5 December 1980 http://www.un.org/documents/ga/res/36/a36r189.htm (accessed July 31, 2011).

[50] Source: United Nations Environment Programme, *Nairobi Declaration* (1982), 18 May 1982, http://www.unep.org/Law/PDF/NairobiDeclaration1982.pdf (accessed July 31, 2011).

[51] Source: UNEP, *Report of the Governing Council on its Tenth Session*, *General Debate*, paragraph 44, http://www.unep.org/Documents.multilingual/Default.asp?DocumentID=70&ArticleID=702 (accessed July 31, 2011).

[52] Source: UN General Assembly, 37th Session, *Session of a special character of the Governing Council of the United Nations Environment Programme*, A/RES/37/219, Adopted at the 113th plenary meeting, 20 December 1982. http://www.un.org/documents/ga/res/37/a37r219.htm (accessed July 31, 2011).

[53] See note 51, paragraph 36.

[54] Source: UNEP, *Report of the Governing Council on its Tenth Session*, *Resolution of the Governing Council at its Session of a Special Character*, Section 1 (e), http://www.unep.org/Documents.multilingual/Default.asp?DocumentID=70&ArticleID=723&l=en (accessed July 31, 2011).

[55] The *Cocoyoc Declaration* can be viewed at http://helsinki.at/projekte/cocoyoc/COCOYOC_DECLARATION_1974.pdf (accessed July 31, 2011).

[56] Source: UN General Assembly, *Resolution 38/161*, *Process of preparation of the Environmental Perspective to the Year 2000 and Beyond*, 19 December 1983, Section 8 (a), http://www.un.org/documents/ga/res/38/a38r161.htm (accessed July 31, 2011).

[57] Source: UN General Assembly, *Resolution 42/186*, *Environmental Perspective to the Year 2000 and Beyond*, 11 December 1987, 2, http://www.un.org/documents/ga/res/42/a42r186.htm (accessed July 31, 2011).

[58] See the UN General Assembly, *Resolution 42/187*, *Report of the World Commission on Environment and Development*, for the UN response to the release of *Our Common Future*, http://www.un.org/documents/ga/res/42/a42r187.htm (accessed July 31, 2011).

[59] Source: UN General Assembly, *Resolution 44/228*, *United Nations Conference on Environment and Development*, 22 December 1989, 1, http://www.un.org/documents/ga/res/44/a44r228.htm (accessed July 31, 2011).

[60] See note 59, Sections 15 (a) to (w).

[61] The South Centre Report, *The South and Sustainable Development Conundrum: From Stockholm 1972 To Rio 1992 To Johannesburg 2002*, which contains the South Commission's 1991 report, can accessed at: http://www.southcentre.org/index.php?option=com_docman&task=doc_download&gid=253&Itemid=&lang=en (accessed July 31, 2011).
[62] Source: The Global Environment Facility (GEF), http://www.thegef.org/gef/ (accessed July 31, 2011).
[63] Source: Habitat (a clearinghouse for information related to the 1992 UNCED), http://habitat.igc.org/un-proc/#unced (accessed July 31, 2011).
[64] See the UN Commission on Sustainable Development (CSD), http://www.un.org/esa/dsd/csd/csd_aboucsd.shtml (accessed July 31, 2011).
[65] See the UN World Conference on Human Rights, http://www.ohchr.org/EN/ABOUTUS/Pages/ViennaWC.aspx (accessed 04/09/06).
[66] See the related ECOSOC Resolution 1996/31, on the consultative relationship between the United Nations and non-governmental organizations, http://habitat.igc.org/ngo-rev/index.html (accessed July 31, 2011).
[67] See the Declaration of Barbados, http://islands.unep.ch/dbardecl.htm (accessed July 31, 2011).
[68] See the UN Convention to Combat Desertification (UNCCD), http://www.unccd.int/main.php (accessed July 31, 2011).
[69] See the International Conference on Population and Development, http://www.un.org/popin/icpd2.htm (accessed July 31, 2011).
[70] See the World Summit for Social Development, http://social.un.org/index/Home/WSSD1995.aspx (accessed July 31, 2011).
[71] See the UN Fourth World Conference on Women, http://www.un.org/womenwatch/daw/beijing/ (accessed July 31, 2011).
[72] See the UN Conference on Straddling and Highly Migratory Fish Stocks, http://www.un.org/Depts/los/fish_stocks_conference/fish_stocks_conference.htm (accessed July 31, 2011).
[73] See the United Nations Conference on Human Settlements, http://www.un.org/Conferences/habitat/ (accessed July 31, 2011).
[74] See the World Food Summit, http://www.fao.org/wfs/index_en.htm (accessed July 31, 2011). Also see the World Food Summit *five years later*, 10-13 June 2002, http://www.fao.org/worldfoodsummit/english/index.html (accessed July 31, 2011).
[75] See the Intergovernmental Panel on Forests (IPF) and the Intergovernmental Forum on Forests (IFF), http://www.un.org/esa/forests/ipf_iff.html (accessed July 31, 2011).
[76] See the Kyoto Protocol, http://unfccc.int/kyoto_protocol/items/2830.php (accessed July 31, 2011).
[77] Source: UN Department of Economic and Social Affairs, Division for Sustainable Development, *Agenda 21*, http://www.un.org/esa/sustdev/documents/agenda21/english/agenda21toc.htm (accessed July 31, 2011).
[78] Source: UN General Assembly, *Resolution 47/191*, 22 December 1992, http://www.un.org/documents/ga/res/47/a47r191.htm (accessed July 31, 2011).
[79] See the UN Commission on Sustainable Development, http://www.un.org/esa/sustdev/ (accessed July 31, 2011).

[80] See the 1994 *Declaration of Barbados* and the *Programme of Action for Sustainable Development of Small Island Developing States*, http://www.sidsnet.org/docshare/other/BPOA.pdf (accessed July 31, 2011).
[81] See the 2002 *Johannesburg Plan of Implementation*, http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/POIToc.htm (accessed July 31, 2011).
[82] Source: Korten, D. (1991) People-Centered Development Forum, Column No. 12, 15 April 1991, *The UNCED: Unasked Questions*, http://livingeconomiesforum.org/1991/12KORTEN (accessed July 31, 2011).
[83] Source: Korten, D. (2003) "Agriculture for a Living Environment." Presentation to Prairie Festibal XXV, Salina, Kansas, September 26-28, 2003, http://livingeconomiesforum.org/agriculture-for-a-living-earth (accessed July 31, 2011).
[84] A comprehensive set of materials relating to the Earth Summit II can be accessed from the Habitat web site (Habitat is a clearinghouse for information related to the 1992 UN Conference on Environment and Development), http://habitat.igc.org/csd-97/prop-out.html (accessed July 31, 2011).
[85] See the UN General Assembly, *Resolution 47/190, Report of the United Nations Conference on Environment and Development*, 22 December 1992, http://www.un.org/documents/ga/res/47/a47r190.htm (accessed July 31, 2011).
[86] See the UN General Assembly, *Resolution 51/181, Special session for the purpose of an overall review and appraisal of the implementation of Agenda 21*, 16 December 1996, http://www.un.org/documents/ga/res/51/a51r181.htm (accessed July 31, 2011).
[87] The official documents from the UNCSD fifth session and the Ad Hoc Open-ended Inter-sessional Working Group can be accessed from the following web site, http://www.un.org/esa/dsd/resources/res_docucsd_05.shtml (accessed July 31, 2011).
[88] See the UN Agenda for Development, http://www.un.org/Docs/SG/ag_index.htm (accessed July 31, 2011).
[89] See the UN General Assembly, *Programme for the Further Implementation of Agenda 21*, http://www.un.org/documents/ga/res/spec/aress19-2.htm (accessed July 31, 2011).
[90] Source: The United Nations, Earth Summit +5, *Special Session of the General Assembly to Review and Appraise the Implementation of Agenda 21*, http://www.un.org/ecosocdev/geninfo/sustdev/es&5sust.htm (accessed July 31, 2011).
[91] Source: Statement by Maurice F. Strong, *Earth Council Chairman's Report to the UN Commission on Sustainable Development*, April 8, 1997, http://www.ecouncil.ac.cr/rio5/forum/english/annex1.htm (accessed April 9, 2006).
[92] See UN General Assembly, *Resolution 47/181, An Agenda for Developmen*t, 22 December 1992, http://www.un.org/documents/ga/res/47/a47r181.htm (accessed July 31, 2011). Also see Resolution 48/166, *An Agenda for Development*, 21 December 1993, http://www.un.org/documents/ga/res/48/a48r166.htm (accessed July 31, 2011), and *Resolution 49/126, An Agenda for Development*, 19 December 1994, http://www.un.org/documents/ga/res/49/a49r126.htm (accessed July 31, 2011).
[93] Source: UN, *Agenda for Development*, Foreword, http://www.un.org/Docs/SG/forward.htm (accessed July 31, 2011).
[94] Source: Meadows, D. H. (1997) *Rio Plus Five and Going Backward*, June 19, 1997, http://www.sustainabilityinstitute.org/dhm_archive/search.php?display_article=vn678rio%2B5ed (accessed July 31, 2011).

[95] Source: United Nations Environment Programme, *Global Environmental Outlook 2000*, Synthesis, http://www.unep.org/geo2000/english/0011.htm (accessed July 31, 2011).
[96] See the UN General Assembly, *Resolution 55/199, Ten-year review of progress in the implementation of the outcome of the United Nations Conference on Environment and Development*, 5 February 2001, http://www.un.org/Depts/dhl/resguide/r55.htm (accessed July 31, 2011).
[97] See the Fourth Summit Preparatory Committee (PREPCOM 4) reports, http://www.johannesburgsummit.org/html/documents/prepcom4.html (accessed July 31, 2011).
[98] Source: The WTO (Doha) *Ministerial Declaration*, Adopted on 14 November 2001, paragraph 2, http://www.wto.org/english/thewto_e/minist_e/min01_e/mindecl_e.pdf (accessed July 31, 2011).
[99] See note 98, paragraph 33.
[100] See the *UN Millennium Development Goals*, http://www.un.org/millenniumgoals/ (accessed July 31, 2011).
[101] See the '*Report of the Conference*' (A/Conf.198/11), accessible from the International Conference on Financing for Development, http://www.un.org/esa/ffd/ (accessed July 31, 2011) and the UN General Assembly, *Outcome of the International Conference on Financing for Development, Report of the Secretary-General*, accessible from http://www.un.org/esa/ffd/ffdconf/ (accessed July 31, 2011). For a detailed discussion of financing sustainable development, see Chapter 12 of Ashford and Hall (2011b).
[102] For a wealth of information on the Johannesburg Summit see the web sites of the following organizations: United Nations, http://www.johannesburgsummit.org/ (accessed July 31, 2011); Heinrich Boell Foundation, http://www.worldsummit2002.org/index.htm (accessed July 31, 2011); and Stakeholder Forum for Our Common Future, http://www.earthsummit2002.org/ (accessed July 31, 2011).
[103] Source: United Nations Department of Economic and Social Affairs, *The Road from Johannesburg, What was Achieved and the Way Forward*, http://www.un.org/esa/sustdev/media/Brochure.PDF (accessed July 31, 2011).
[104] See the United Nations Johannesburg Summit 2002, *Parallel Events*, http://www.johannesburgsummit.org/html/basic_info/parallel_events.html (accessed July 31, 2011).
[105] See the *Johannesburg Declaration on Sustainable Development*, http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/POI_PD.htm (accessed July 31, 2011).
[106] See the *Johannesburg Plan of Implementation*, http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/POIToc.htm (accessed July 31, 2011).
[107] See the *Johannesburg Partnerships for Sustainable Development* program, http://www.un.org/esa/dsd/dsd_aofw_par/par_index.shtml (accessed July 31, 2011).
[108] See note 105, paragraph 27 and 29.
[109] See note 105, paragraph 31.
[110] Source: UN General Assembly, *Resolution 55/199, Ten-year review of progress in the implementation of the outcome of the United Nations Conference on Environment and Development*, 5 February 2001, http://www.un.org/Depts/dhl/resguide/r55.htm (accessed July 31, 2011).
[111] See the WEHAB framework papers, http://www.johannesburgsummit.org/html/documents/wehab_papers.html (accessed July 31, 2011).

[112] Source: Department of Economic and Social Affairs, Division for Sustainable Development, *The Johannesburg Summit Test: What Will Change?*, http://www.johannesburgsummit.org/html/whats_new/feature_story41.html (accessed July 31, 2011).
[113] See the United Nations Conference on Sustainable Development, http://www.uncsd2012.org/index.html (September 1, 2012).
[114] Source: United Nations Conference on Sustainable Development, Objective and Themes, http://www.uncsd2012.org/rio20/index.php?menu=61 (accessed July 31, 2011).
[115] Source: United Nations Conference on Sustainable Development, 7 Critical Issues at Rio+20, http://www.uncsd2012.org/7issues.html (September 1, 2012).
[116] For example, see the Friends of the Earth Rio+20 blog that describes the unwillingness of governments to commit to a new set of principles (source: http://www.foei.org/en/what-we-do/rio-20, access on September 1, 2012), and Greenpeace's press statement on Rio+20 that called the conference a "failure of epic proportions" due its the lack of commitments and targets (source: http://www.greenpeace.org/international/en/press/releases/Greenpeace-Press-Statement-Rio20-Earth-Summit-a-failure-of-epic-proportions/, access on September 1, 2012).
Source: Friends of the Earth, Rio with the principles,
[117] See the UNEP's website on the Green Economy, http://www.unep.org/greeneconomy/ (accessed July 31, 2011).
[118] Source: Nobel Foundation, The Nobel Peace Prize 2007, http://nobelprize.org/nobel_prizes/peace/laureates/2007/ (accessed July 31, 2011).