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Sustainable Development: Now More Than Ever

by John C. Dernbach

Imagine a world in which the ordinary effect of human activity—particularly activity that contributes to economic growth and social development—also protects and restores the environment. Imagine, too, a world in which large scale poverty has been eliminated.¹ This may sound like pie in the sky, but it is emphatically not. Indeed, if we do not make a transition toward this world within the next 50 years, the future will be painful and costly for both humans and the environment.² Making the transition is possible, but it will not be easy. The means and the end are indicated by a set of concepts called sustainable development.

Sustainable development is a new way of approaching the environment and its relationship to everything else we care about as a society.³ It does not lend itself to the neat categories Americans often use to describe themselves and others. It is not Democratic or Republican, liberal or conservative. It is not about more government or less government, but about better governance. It is not about more economic growth or less economic growth, but about growth in things we value, including jobs, productivity, and profits, and reduction or elimination of things we don't value, such as

waste, pollution, and poverty.⁴ It is based on a vision of society directed at human quality of life, opportunity, and freedom. It is based on an understanding that the economic, social, environmental, and security goals of society together provide a foundation for realizing that vision. These goals, in turn, can be realized completely and coherently only if they are achieved at the same time.

Sustainable development first began to get significant international attention when it was endorsed in 1987 by the World Commission on Environment and Development (or Brundtland Commission, after its chair, Norwegian Prime Minister Gro Harlem Brundtland). According to the commission's report, *Our Common Future*: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."⁵ This one-sentence explanation has been widely quoted since then as the definitive statement of what sustainable development means, but it is only a start.

The Brundtland Commission's work led to the United Nations (U.N.) Conference on Environment and Development (UNCED), or Earth Summit, in Rio de Janeiro in June 1992. More than 130 heads of state and more than 15,000 members of nongovernmental organizations (NGOs) attended that meeting. Although the UNCED is widely recognized for its emphasis on environment, the nations of the world also endorsed sustainable development for the first time. They did so in two nonbinding texts. The first is the Rio Declaration on Environment and Development, a statement of 27 principles for sustainable development.⁶ The second is Agenda 21, a global plan of action for sustainable development.⁷ By agreeing to these texts, countries agreed to foster sustainable development within their own boundaries as well as internationally. Among the countries agree-

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[Editors' Note: In June 1992, at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, the nations of the world formally endorsed the concept of sustainable development and agreed to a plan of action for achieving it. One of those nations was the United States. In September 2002, at the World Summit on Sustainable Development, these nations will gather in Johannesburg to review progress in the 10-year period since UNCED and to identify steps that need to be taken next. In anticipation of the Rio + 10 summit conference, Professor Dernbach is editing a book that assesses progress that the United States has made on sustainable development in the past 10 years and recommends next steps. The book, which is scheduled to be published by the Environmental Law Institute in June 2002, is comprised of chapters on various subjects by experts from around the country. Beginning with this Article, and continuing for the next several months, the Environmental Law Reporter will be publishing chapters from that book. Further information on the book will be available at www.eli.org or by calling 1-800-433-5120 or 202-939-3844.]

1. See James Gustave Speth, Address to International Security Studies, Yale University (Nov. 20, 2000) (copy on file with author).
2. See *infra* note 163 and accompanying text.
3. At the same time, sustainable development has deep roots in the conservation movement. See *infra* notes 92-93 and accompanying text. It also draws on ideas that come out of environmental and natural resources law, among other sources.

4. PRESIDENT'S COUNCIL ON SUSTAINABLE DEVELOPMENT: SUSTAINABLE AMERICA: A NEW CONSENSUS FOR PROSPERITY, OPPORTUNITY, AND A HEALTHY ENVIRONMENT FOR THE FUTURE v (1996).
5. WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT, *OUR COMMON FUTURE* 43 (1987).
6. Rio Declaration on Environment and Development, U.N. Conference on Environment and Development (UNCED), U.N. Doc. A/CONF.151/5/Rev. 1, 31 I.L.M. 874 (1992).
7. UNCED, Agenda 21, U.N. Doc. A/CONF.151.26 (1992). The delegates also approved a separate statement of principles concerning the sustainable management of forests. See Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests, U.N. Doc. A/CONF.151/6/Rev. 1, 31 I.L.M. 881 (1992).

ing to these texts was the United States. Two treaties that are directed at sustainable development were also opened for signature at the UNCED—the U.N. Framework Convention on Climate Change⁸ and the Convention on Biological Diversity.⁹

These agreements, however, do not lend themselves to ready understanding. Written and negotiated by committees, and often subject to qualifications, they contain few if any statements that can be easily and broadly quoted. While Rio Declaration, Agenda 21, and the other texts contain important ideas, they contain few statements that improve on the Brundtland Commission's definition of sustainable development.

Perhaps this is why, all too often, Americans simply don't understand sustainable development. For some, development means the replacement of a wood lot or farm with a shopping mall. Thus, environmentally sustainable development is an oxymoron—a contradiction in terms. For others, and particularly environmental lawyers and other environmental professionals, sustainable development is simply a new buzzword to describe what they've been doing all along. These people tend to conclude, not surprisingly, that sustainable development as a term adds no value to the ongoing conversation and debate about environmental protection. Among environmental activists, too, the term often arouses suspicion because they believe it to be used by corporations to describe activities or programs that in fact are environmentally degrading.¹⁰

It is true that understanding of the term has increased in the United States since 1992. More and more people and organizations in the United States are framing issues in terms of sustainable development concepts and language. Polls tend to show that people believe that environmental protection and economic development can and must go together—a core idea behind sustainable development. Still, it is probably fair to say that sustainable development is nowhere near to being a household term. This is unfortunate, and doubly so because the United States has a special role to play in the effort to attain sustainability.

In September 2002, in Johannesburg, South Africa, there will be a World Summit on Sustainable Development. The nations of the world will examine the extent to which progress has been made in the first 10 years after the UNCED, and what steps should be taken next.¹¹ Ten years after the Earth Summit, sustainable development is more necessary than ever. The conditions that led to the UNCED in the first place—global environmental degradation and large-scale poverty—have mostly worsened in the past decade. While these conditions are important in their own right, they may also lead to other problems, including widespread starvation

and ethnic strife, that are more likely to capture headlines. The terrorist acts of September 11, 2001, reinforce rather than diminish the importance of sustainable development. In a world with many preexisting sources of human tension and conflict, unsustainable development can cause or contribute to conditions that make things worse. This Article explains how and why sustainable development emerged as a conceptual framework, the basic concepts or principles on which this framework is based, and why sustainability should matter to the United States and other countries.¹²

What Is Development?

Because “sustainable” modifies “development” in the term “sustainable development,” it is first important to understand what development means. Within the United States, development is often understood as a synonym for economic development or economic growth. Within the international community from which the term sustainable development originated, though, development has a broader meaning. This meaning was forged during and after World War II and the Great Depression that preceded it. The basic idea was to create conditions ensuring that such events would not happen again. Development is thus not an end in itself, but a means to an end. Many of the U.N. texts refer to human quality of life as the object of development.¹³ Amartya Sen, an economist, has argued that the goal of development is human freedom or opportunity.¹⁴

Since the end of World War II, development has included at least four related concepts: peace and security, economic development, social development, and national governance that secures peace and development. Each concept is reflected in major multilateral treaties that provide a common framework for relations among sovereign nations as well as a shared set of national purposes. The U.N. Charter, which created that body at the end of World War II, is specifically intended to achieve international peace and security.¹⁵ Several important economic development treaties were also agreed to at about the same time. These include the 1947 General Agreement on Tariffs and Trade, which attempted to raise standards of living and develop the economies of Member states by progressively removing barriers to

8. United Nations Framework Convention on Climate Change, *opened for signature* June 4, 1992, S. TREATY DOC. NO. 102-38 (1992), reprinted in 31 I.L.M. 849 (1992) (entered into force Mar. 21, 1994).

9. Convention on Biological Diversity, June 5, 1992, 31 I.L.M. 818 (1992).

10. Michael McCloskey, *The Emperor Has No Clothes: The Conundrum of Sustainable Development*, 9 DUKE ENVTL. L. & POL'Y F. 153, 159 (1999) (“What we now fear is that “sustainability” will prove to be no more than a boon to publicists who will paste new labels on old bottles and claim that every project that makes their clients rich is sustainable.”). See also Daniel C. Esty, *A Term's Limits*, FOREIGN POL'Y, Sept./Oct. 2001, at 74 (“[S]ustainable development has become a buzzword largely devoid of content.”).

11. The official United Nations website for the conference is <http://www.johannesburgsummit.org/>.

12. For another introduction, which blends social, economic, and environmental themes, see JONATHAN M. HARRIS, BASIC PRINCIPLES OF SUSTAINABLE DEVELOPMENT (2000), available at <http://ase.tufts.edu/gdae/downloads/Working%20Papers/Sustainable%20Development.PDF> (last visited Oct. 20, 2001).

13. See, e.g., Rio Declaration, *supra* note 6, princ. 2 (stating that humans are “entitled to a healthy and productive life”).

14. AMARTYA SEN, DEVELOPMENT AS FREEDOM (1999). See also WORLD BANK, WORLD BANK DEVELOPMENT REPORT 1992, at 1 (1992) (“The essential task of development is to provide opportunities so that . . . people . . . can reach their potential.”).

15. U.N. CHARTER art. 1, para. 1. Member nations are obliged not to use, or threaten to use, force against the territorial integrity of other nations. See U.N. CHARTER art. 2, para. 4. The U.N. Security Council is expressly authorized to use economic sanctions, military force, and other measures against “any threat to the peace, breach of the peace, or act of aggression.” *Id.* arts. 39-42. A substantial number of multilateral and bilateral treaties also limit the use of particular weapons and weapons systems. See generally Richard G. Tarasofsky, *International Law and the Protection of the Environment During International Armed Conflict*, in GREENING INTERNATIONAL LAW 243 (Philippe Sands ed., 1994) (explaining basic conventions relating to warfare, including warfare and the environment).

trade,¹⁶ and the treaty that created the International Bank for Reconstruction and Development (World Bank).¹⁷ Social development, which is closely related to human rights, was recognized in the U.N. Charter¹⁸ and by the war crimes trials at the end of World War II. It was given substantial impetus by two major human rights treaties that went into force in the 1960s, one dealing with civil and political rights,¹⁹ the other based on economic, social, and cultural rights, including the right to gainful employment and the right to adequate food and shelter.²⁰ When countries ratified these various treaties, moreover, they agreed to govern in a way that conforms with their objectives and requirements.

International texts referring to development rather consistently include all four concepts. One of the most prominent of these is the 1986 U.N. General Assembly resolution recognizing an “inalienable human right to development.”²¹ The resolution has been controversial because it claims that there is a right to development, but its understanding of development is in the mainstream. It expressly refers to peace, economic development, social development, and supportive national governance as the basic foundations for development.²²

There is thus a considerable international law foundation for development, which is reflected as well by national laws. Moreover, it is increasingly evident that the economic, social, and security goals of development are interdependent. That is, failure to achieve each of these goals compromises a country’s ability to achieve the others. Social and economic development are impossible in the absence of peace. Economic and social development are themselves interre-

lated.²³ Countries that have emphasized education, health and related aspects of social development tend to have the best economic performance.²⁴

For a great many people and governments, this model of development has been synonymous with progress. Development has also been a central feature of the aspirations of the international community since the end of World War II. The treaties on which this model was built, however, did not refer to the environment. Environmental degradation was seen, if at all, as the incidental or necessary price of progress.

Failures of the Development Model: Environmental Degradation and Poverty

The development model has, in many ways, been remarkably successful. The world’s economy “has grown with unprecedented speed” since World War II, and most people have experienced a rise in their standard of living.²⁵ We have not experienced a Third World war or another global depression. Yet the traditional development model has failed in two basic respects—it has not prevented the growing number of people living in poverty, and it has not curtailed continuing and perhaps accelerating deterioration of the global environment.²⁶

A growing number of people live in hunger and poverty, and the gap between rich and poor continues to widen.²⁷ More than one-third of the world’s population lacks access

16. See General Agreement on Tariffs and Trade (GATT), Oct. 30, 1947, 61 Stat. A-11. In 1994, GATT was substantially amended and the World Trade Organization was given authority to oversee its implementation. See Final Act Embodying the Results of the Uruguay Round of Trade Negotiations, Apr. 15, 1994, 108 Stat. 4809.

17. Articles of Agreement of the International Bank for Reconstruction and Development, Dec. 27, 1945, art. I(i), 60 Stat. 1440. The official purpose of World Bank lending policies is to end poverty. Another entity, the International Monetary Fund, was created to foster economic growth and trade by ensuring the stability of the international monetary system and, when necessary, providing a reserve fund to help countries meet their financial obligations. See Articles of Agreement of the International Monetary Fund, Dec. 27, 1945, 60 Stat. 1401.

18. U.N. CHARTER art. 55(a).

19. International Covenant on Civil and Political Rights, Dec. 16, 1966, 993 U.N.T.S. 3, 6 I.L.M. 368 (1967) (entered into force Jan. 3, 1976).

20. See International Covenant on Economic, Social, and Cultural Rights, Dec. 16, 1966, 993 U.N.T.S. 3, 6 I.L.M. 360, art. 6, ¶ 1 & art. 11, ¶¶ 1, 2 (entered into force Jan. 3, 1976). A variety of other treaties concerning these or related human rights have come into force, including many regional treaties. See, e.g., European Convention for the Protection of Human Rights and Fundamental Freedoms, Nov. 4, 1950, 312 U.N.T.S. 221.

The U.N. Development Programme also support human social development through a variety of assistance programs. Its annual human development reports emphasize the social aspects of development. See U.N. DEVELOPMENT PROGRAMME, HUMAN DEVELOPMENT REPORT 2000: HUMAN RIGHTS AND HUMAN DEVELOPMENT (2000) (linking achievement of human rights to human social development).

21. G.A. Res. 41/128 (Annex), U.N. GAOR, 41st Sess., Supp. No. 53, at 186, art. 1.1, U.N. Doc. A/41/53 (1987).

22. *Id.* Economic growth is in many ways the most prominent component of development, of course. See LOUIS HENKIN, THE AGE OF RIGHTS 91 (1990) (stating that for the most part, development “connotes economic ‘growth’ to raise the gross national product, to improve trade balance and magnify per capita earnings”).

23. *Id.* at 191-92:

Economic development will enable a country to better guarantee the economic and social rights of its inhabitants, will increase the resources available for that purpose and help achieve it more expeditiously. Societal development is essential for individual development which is necessary to enable individuals to know their rights, to claim them, to realize and to enjoy them and the human dignity they promise.

24. See UNITED NATIONS DEVELOPMENT PROGRAMME, HUMAN DEVELOPMENT REPORT 1996, at 1-10 (1996) [hereinafter HUMAN DEVELOPMENT REPORT 1996]; James D. Wolfensohn, The Challenge of Inclusion, Address to the Board of Governors, Hong Kong, China (Sept. 23, 1997). At the same time, it is not possible to reduce poverty without economic growth. *Id.* See also Dani Rodrik, *Sense and Nonsense in the Globalization Debate*, FOREIGN POL’Y, Summer 1997, at 19, 26 (“All the available evidence points to the same, unavoidable conclusion: The social welfare state has been the flip side of the open economy.”).

25. See *Global Change and Sustainable Development: Critical Trends, Report of the Secretary-General*, U.N. Commission on Sustainable Development, 5th Sess. ¶ 159, U.N. Doc. E/CN.17/1997/3 (1997) [hereinafter *Global Change and Sustainable Development*]. Between 1960 and 1993, for example, life expectancy in developing countries increased from 46 to 62 years; between 1970 and 1993, the adult literacy rate in those countries increased from 43% to 61%. See HUMAN DEVELOPMENT REPORT 1996, *supra* note 24, at 18, 22.

26. See, e.g., UNITED NATIONS ENVIRONMENT PROGRAMME, GLOBAL ENVIRONMENTAL OUTLOOK 2000, at xx (2000) (describing these as the “[t]wo over-riding trends [that] characterize the beginning of the third millennium.”).

27. See UNITED NATIONS ENVIRONMENT PROGRAMME, GLOBAL ENVIRONMENTAL OUTLOOK 10 (1997). The income ratio for the richest 20% to the poorest 20% has doubled in the past 30 years, going from 30:1 to 61:1. See HUMAN DEVELOPMENT REPORT 1996, *supra* note 24, at 2. Global gross domestic product in 1993 was \$23 trillion. Only \$5 trillion of this amount was accounted for by developing countries, even though they have 80% of the world’s population. See *id.* During the 1990s, the incomes of more than 1.5 billion people decreased. See *Global Change and Sustainable Development*, *supra* note 25, ¶ 159.

to a safe water supply.²⁸ Health risks from the degradation of natural resources and the improper use of chemicals also are increasing.²⁹ By 2025, about two-thirds of the world's population, or five billion people, will live in urban areas, and mostly without adequate housing and sanitation.³⁰

Unfortunately, the condition of the global environment is also deteriorating.³¹ Among other things, we face widespread and even accelerating extinction of plant and animal species, growing emissions of greenhouse gases into the atmosphere, the depletion of fish stocks in oceans throughout the world, loss of farmland and grazing land through overuse and poor practices, and growing and improper use of chemicals.³² In every region in the world, these conditions are deepening.³³ Despite some positive efforts since the UNCED, "the state of the global environment has continued to deteriorate."³⁴

These are large, even overwhelming, problems, and they are getting worse. The world's growing population, which reached six billion in 1999, will likely be 8.9 billion by 2050.³⁵ In the same period, the global economy will grow to between four and five times its present size.³⁶ Even if consumption levels remain stable (which is doubtful), it will take an enormous effort to meet the needs of these additional people.³⁷

The global scale and severity of environmental degradation and poverty are unprecedented in human history. Major adverse consequences are not inevitable, but they are likely if these problems are not addressed. Many civilizations col-

lapsed or were severely weakened because they exhausted or degraded the natural resource base on which they depended.³⁸ In addition, substantial economic and social inequalities have caused or contributed to social instability, including wars and revolutions.³⁹ These problems are intensified by the speed at which they have occurred and are worsening, making it difficult for natural systems to adapt. The complexity of natural and human systems also means that the effects of these problems are difficult to anticipate. While individual challenges such as climate change and loss of biodiversity present serious threats over the long term, a severe shorter term problem is presented by "multiple, cumulative, and interactive" environmental stresses caused by human activities, which can cause severe environmental damage and be difficult to address.⁴⁰

During the 1980s, it became more evident that development was imposing massive economic, human, and environmental costs.⁴¹ The U.N. General Assembly formed the previously mentioned Brundtland Commission to examine the relationship between development and the environment.⁴² Although the "satisfaction of human needs and aspirations is the major objective of development,"⁴³ the commission concluded, developmental inequity and environmental degradation are "inexorably linked."⁴⁴

More specifically, the Brundtland Commission found that the four basic components of development—peace and security, economic development, social development, and proper governance—require environmental protection. Subsequent events have confirmed that conclusion. Peace and security are related to the condition of the environment in many ways. Environmental stresses and competition for scarce resources can lead to military conflicts. Weapons of mass destruction, particularly nuclear weapons, can have catastrophic impacts on the environment. Money spent on arms is money that is not used to meet basic human needs such as drinking water and sanitation.⁴⁵

28. See GLOBAL ENVIRONMENTAL OUTLOOK, *supra* note 27, at 4. Some 25,000 people die each day because of poor water quality. See *id.* More than three billion people do not have access to basic sanitation. See *Global Change and Sustainable Development*, *supra* note 25, ¶ 132.

29. See GLOBAL ENVIRONMENTAL OUTLOOK, *supra* note 27, at 10.

30. See WORLD RESOURCES INSTITUTE ET AL., WORLD RESOURCES 1998-1999, at 146 (1998); WORLD RESOURCES INSTITUTE ET AL., WORLD RESOURCES 1996-1997, at 1-25 (1996).

31. See generally WILLIAM H. RODGERS JR., ENVIRONMENTAL LAW §1.1 (2d ed. 1994 & Supp. 1999) (summarizing data on global environmental conditions and collecting sources).

32. See GLOBAL ENVIRONMENTAL OUTLOOK 2000, *supra* note 26, at 10; see also WORLD RESOURCES 1998-1999, *supra* note 30.

33. See GLOBAL ENVIRONMENTAL OUTLOOK, *supra* note 27, at 1. See also UNITED NATIONS ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC, STATE OF THE ENVIRONMENT IN ASIA AND THE PACIFIC 2000 (2001), available at <http://www.unescap.org/enrd/enviro/soe.htm> (last visited Oct. 15, 2001) (describing worsening environmental conditions and poverty in that region).

34. Programme for the Further Implementation of Agenda 21, U.N. GAOR, 19th Special Sess., Annex, U.N. Doc. A/S-19-29, ¶9 (1997). In the five years following the UNCED, human population grew by 450 million; about 1.3 billion people are without adequate food or shelter. See Christopher Flavin, *The Legacy of Rio*, in STATE OF THE WORLD 1997, at 3 (Lester R. Brown et al. eds., 1997).

35. UNITED NATIONS POPULATION FUND, THE STATE OF THE WORLD POPULATION 1999: SIX BILLION—A TIME FOR CHOICES 3, U.N. Sales No. E.99.III.H.1 (1999). The projected population range for 2050 is between 7.3 billion and 10.7 billion. *Id.*

36. WORLD RESOURCES INSTITUTE ET AL., RESOURCE FLOWS: THE MATERIAL BASIS OF INDUSTRIAL ECONOMIES iv-v (1997). The global economy has grown nearly fivefold in the past 45 years. See *Overall Progress Achieved Since the United Nations Conference on Environment and Development, Report of the Secretary-General, Changing Consumption Patterns (Chapter 4 of Agenda 21)*, U.N. Commission on Sustainable Development, 5th Sess., at 3, U.N. Doc. E/CN.17/1997/2/Add. 3 (1997).

37. GLOBAL ENVIRONMENTAL OUTLOOK 2000, *supra* note 26, at 6. "Whether the planetary environment can meet these demands, and under what conditions, is an open question." *Id.*

38. See J.R. MCNEILL, SOMETHING NEW UNDER THE SUN: AN ENVIRONMENTAL HISTORY OF THE TWENTIETH-CENTURY WORLD 358 (2000).

39. See CLIVE PONTING, A GREEN HISTORY OF THE WORLD: THE ENVIRONMENT AND THE COLLAPSE OF GREAT CIVILIZATIONS (1991). See also GLOBAL ENVIRONMENTAL OUTLOOK 2000, *supra* note 26, at xx ("This unsustainable progression of extremes of wealth and poverty threatens the stability of the whole human system, and with it the global environment.").

40. BOARD ON SUSTAINABLE DEVELOPMENT, NATIONAL RESEARCH COUNCIL, OUR COMMON JOURNEY: A TRANSITION TOWARD SUSTAINABILITY 8 (1999).

41. See Jessica Tuchman Mathews, *Introduction and Overview*, in PRESERVING THE GLOBAL ENVIRONMENT: THE CHALLENGE OF SHARED LEADERSHIP 24 (Jessica Tuchman Mathews ed., 1991).

42. See OUR COMMON FUTURE, *supra* note 5. The Brundtland Commission drew many ideas from INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES, THE WORLD CONSERVATION STRATEGY: LIVING RESOURCE CONSERVATION FOR SUSTAINABLE DEVELOPMENT (1980); World Charter for Nature, U.N. GAOR, 37th Sess., Supp. No. 51, at 17, U.N. Doc. A/37/51, 22 I.L.M. 455, 457 (1983) (stating "principles of conservation by which all human conduct affecting nature is to be guided and judged").

43. OUR COMMON FUTURE, *supra* note 5, at 43 ("The essential needs of vast numbers of people in developing countries—for food, clothing, shelter, jobs—are not being met, and beyond their basic needs these people have legitimate aspirations for an improved quality of life.").

44. *Id.* at 37.

45. See *id.* at 290-307. See also MICHAEL T. KLARE, RESOURCE WARS: THE NEW LANDSCAPE OF GLOBAL CONFLICT 213 (2001) (arguing that wars over natural resources, including water, timber, oil, and

In addition, national economic development objectives frequently lead to the destruction or degradation of natural systems, thus limiting the scope and duration of that development.⁴⁶ In sector after sector, the pattern is the same.⁴⁷ Unsustainable agricultural practices, for example, contribute to desertification and cause soil erosion, loss of soil fertility, and groundwater pollution.⁴⁸ Such practices limit the availability of land for agriculture even though a growing population will require more food.⁴⁹ Similarly, the destruction of tropical forests and other habitats for agriculture, logging, and other economic activities could lead to the loss of one-third or more of all existing plant and animal species. Yet genetic material from such species can help make agricultural plants more disease-resistant, and has substantial but largely untapped potential to provide medicines and other products.⁵⁰ The use of fossil fuels such as coal and oil for energy adds greenhouse gases to the environment; threatening to raise sea levels and inundate coastal areas; and also threatening to affect agriculture, forests, and ecosystems in significant but unknown ways.⁵¹ Robert Costanza and others have estimated the annual economic value of ecological “services” at an average of \$33 trillion, almost twice the current annual global gross domestic product.⁵² These services, which are not counted in conventional economic accounting systems, include the regulation of atmospheric chemicals, climate regulation, provi-

sion of water supplies, and soil formation. Many of these services are irreplaceable.⁵³

Social development suffers when people can no longer earn a living by farming, fishing, or similar activities because of environmental degradation. Poor people tend to be exposed to the worst pollution, and are more likely not to have safe and adequate drinking water. Population growth intensifies pressure on resources such as grasslands and forests, making it difficult for them to grow back before they are used again for grazing or wood cutting.⁵⁴ More broadly, environmentally damaging activities tend to hurt humans as well. For example, air pollution from energy use in both developed and developing countries adversely affects both human health and the environment.⁵⁵

These relationships between development and the environment have profound implications for national and international governance.⁵⁶ Quite simply, effective governance requires nations and the international community to consider and protect the environment and natural resources on which its current and future development depend. Any other approach is self-defeating. The connections between the environment and development thus provide a powerful rationale for environmental protection: enlightened self-interest.

The Earth Summit: Agenda 21 and the Rio Declaration

As its name suggests, the 1992 U.N. Conference on Environment and Development represented a concerted effort to synthesize and integrate environment and development issues. Sustainable development changes the prior approach to development, which called for peace and security, economic development, human rights, and supportive national governance, by adding a fifth element, protection of the environment.⁵⁷ The Rio Declaration affirms the premise of de-

minerals, “will become, in the years ahead, the most distinctive feature of the global security environment”); CONTESTED GROUNDS: SECURITY AND CONFLICT IN THE NEW ENVIRONMENTAL POLITICS (Daniel H. Deudney & Richard A. Matthew eds., 1999) (essays summarizing findings from past two decades concerning relationship between security and environmental protection); Sandra L. Postel & Aaron T. Wolf, *Dehydrating Conflict*, FOREIGN POL’Y, Sept./Oct. 2001, at 63 (arguing that stresses on rivers and water supplies around the world are great enough to lead to wars, and suggesting institutional arrangements to prevent wars over water). Much of the relevant literature on environmental security is available or discussed in various articles and documents posted on the website for the Environmental Change and Security Project, Woodrow Wilson International Center for Scholars, at <http://www.ecsp.si.edu/> (last visited Oct. 15, 2001).

46. See, e.g., OUR COMMON FUTURE, *supra* note 5, at 4-8, 37-38, 122-23, 152-54 (discussing the many factors that link economic development and the environment).

47. A 1997 report by the U.N. Commission on Sustainable Development reinforces this conclusion: “Rapid and continuous degradation of the natural resource base, on which economic activity and life itself depend, may constitute the most serious of all threats to human well-being in the future.” *Global Change and Sustainable Development*, *supra* note 25, ¶ 198.

48. OUR COMMON FUTURE, *supra* note 5, at 122-28.

49. See *id.* at 128-30 (discussing the need for rapid increase in food production).

50. See, e.g., R. David Simpson, *The Commercialization of Indigenous Genetic Resources as Conservation and Development Policy*, in PROTECTION OF GLOBAL BIODIVERSITY: CONVERGING STRATEGIES 129 (Lakshman D. Guruswamy & Jeffrey A. McNeely eds., 1998). See generally WORLD RESOURCES INSTITUTE ET AL., WORLD RESOURCES 2000-2001: PEOPLE AND ECOSYSTEMS—THE FRAYING WEB OF LIFE (2000).

51. WORKING GROUP II, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, SUMMARY FOR POLICYMAKERS—CLIMATE CHANGE 2001: IMPACTS, ADAPTATION, AND VULNERABILITY (2001) (most recent report summarizing projected effects of global warming), available at <http://www.usgcrp.gov/ipcc/wg2spm.pdf> (last visited Oct. 15, 2001). See also JOHN HOUGHTON, GLOBAL WARMING: THE COMPLETE BRIEFING 107-40 (2d ed. 1997) (projected impacts based on somewhat earlier scientific data).

52. Robert Costanza et al., *The Value of the World’s Ecosystem Services and Natural Capital*, 387 NATURE 253 (1997).

53. The authors used willingness-to-pay surveys and other environmental economics tools to reach this calculation, despite the limits of that approach. They thus concluded that the total figure was probably low. *Id.* See also Gretchen C. Daily, *Valuing and Safeguarding Earth’s Life-Support Systems*, in NATURE’S SERVICES 369 (Gretchen C. Daily ed., 1997) (estimating economic value of biodiversity, natural pest enemies, forests, grasslands, and other natural features to be “many trillions of dollars annually”).

54. See OUR COMMON FUTURE, *supra* note 5, at 29-31. Developing countries’ economies tend to depend on exports of agricultural products, timber, minerals, and other natural resources. The emphasis on these exports contributes to environmental degradation that eventually leads to the displacement of local people who have traditionally used those resources to meet their own needs. See *id.* at 28.

55. See John R. Holdren & Kirk R. Smith, *Energy, the Environment, and Health*, in WORLD ENERGY ASSESSMENT: ENERGY AND THE CHALLENGE OF SUSTAINABILITY 61 (Jose Goldemberg ed., 2000).

56. For example, inequitable development can lead to political instability, and lack of access by many groups to the political system contributes to both environmental degradation and the lack of economic development. See OUR COMMON FUTURE, *supra* note 5, at 38 (“It could be argued that the distribution of power and influence within society lies at the heart of most environment and development challenges.”).

57. See, e.g., *An Agenda for Development: Report of the Secretary-General*, U.N. GAOR, 48th Sess., Agenda Item 91, U.N. Doc. A/48/935 (1994) (identifying these as the five components of development); see also NATIONAL RESEARCH COUNCIL, *supra* note 40, at 22 (sustainable development links the “collective aspirations of the world’s peoples for peace, freedom, improved living conditions, and a healthy environment.”); PHILIPPE SANDS, PRINCIPLES OF INTERNATIONAL ENVIRONMENTAL LAW I: FRAMEWORKS, STANDARDS, AND IMPLEMENTATION 208 (1995) [hereinafter PRINCIPLES] (sustainable development means “the acceptance, on environmental protection grounds, of limits placed upon the use and exploitation of natural resources”).

velopment that every human being is “entitled to a healthy and productive life,” but it adds “in harmony with nature.”⁵⁸ Thus, environmental protection is to be incorporated into our understanding of what progress requires. Agenda 21 describes sustainable development as “socially responsible economic development” that protects “the resource base and the environment for the benefit of future generations.”⁵⁹ That statement captures a simple formula that is often used for sustainable development—the three Es, for environment, economy, and equity.⁶⁰

Agenda 21 is the comprehensive international “plan of action” or blueprint for sustainable development adopted at Rio. No matter how it is printed, Agenda 21 is always several hundred pages long. It is a broad and detailed commitment by nations around the world to take actions to further sustainable development. The Agenda 21 commitment is not binding in international law, but it does represent a political commitment. Agenda 21 meant, and continues to mean, that the real work of the UNCED is to occur in each country. The success or failure of the UNCED, in short, ultimately depends on implementation of Agenda 21.

The centrality of Agenda 21 to sustainable development is suggested by the sustainable development review and implementation process established at the Earth Summit. Under that process, the Commission on Sustainable Development (CSD), which is part of the U.N. system, monitors and assesses overall implementation of Agenda 21.⁶¹ The only document that came out of the U.N. General Assembly’s Rio + 5 review in 1997 was a Programme for the Further Implementation of Agenda 21.⁶² Similarly, the World Summit on Sustainable Development in Johannesburg, marking the 10-year anniversary of the Earth Summit, will assess progress made in implementing Agenda 21.⁶³ Indeed, the summit is intended to “reinvigorate, at the highest political level, the global commitment to a North/South partnership” for the “accelerated implementation of Agenda 21 and the promotion of sustainable development.”⁶⁴

As a plan of action, Agenda 21 is divided into 4 sections and a total of 40 chapters. (See table). The first two sections cover social and economic issues and the conservation and management of natural resources. These subjects include, for example, poverty, consumption patterns, deforestation, oceans, and toxic chemicals. The third section describes in detail the role that nine major groups should play in getting to sustainable development (including women, business and industry, and NGOs). Because implementation obviously matters in a plan of action, the fourth section contains a detailed program for, among other things, providing financial and technical resources to countries that need such resources, for capacity building, and for better information for decisionmaking. Each chapter describes the factual basis for recommended actions, the objective of those actions, the particular activities that governments and others should take, and the entities that need to support and fund these activities.

Agenda 21 provides context-specific meaning for sustainable development. By identifying what sustainable development means for specific economic sectors, e.g., agriculture, natural resources, e.g., forestry, and problems, e.g., solid waste, production, and consumption patterns, Agenda 21 provides a better point of departure than abstract formulas. At the same time, Agenda 21 is perhaps best understood as providing a starting point toward sustainable development. It does not describe the final destination because the exact nature of a sustainable society is unknown and because sustainability will depend to a great extent on each country’s culture, history, economy, and environment.

Agenda 21 is based to a great extent on the 27 principles stated in the Rio Declaration. Agenda 21 and the Rio Declaration should thus be read together.⁶⁵ To some degree, the Rio Declaration restates principles that are accepted as, or are becoming as accepted as, principles of international law or customary international law. Prominent among these are the sovereign authority of nations to use their own natural resources and the responsibility of countries to “ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.”⁶⁶ Other principles would require integration of the environment into all decisionmaking, a precautionary approach to serious environmental risks, internalization of environmental costs by polluters (polluter-pays principle), citizen participation in government decisionmaking, reduction and elimination of unsustainable patterns of production and consumption, and common but differentiated responsibilities of developed and developing countries in sustainable development. These principles are restated and elaborated throughout Agenda 21, and provide much of the intellectual foundation for sustainable development.

Agenda 21 and the Rio Declaration, taken together, provide a direct response to the failures of the development model. They do so by addressing the connections between traditional development goals and the environment. For peace and security, the Rio Declaration states that “[w]arfare is inherently destructive of sustainable develop-

58. Rio Declaration, *supra* note 6, princ. 1; *see also* OUR COMMON FUTURE, *supra* note 5, at 41 (“Every human being—those here and those who are to come—has the right to life, and to a decent life.”); *Agenda for Development*, *supra* note 57, ¶ 44 (“The goal of development is the improvement of human well-being and the quality of life.”).

59. *See* Agenda 21, *supra* note 7, ¶ 8.7.

60. The peace and security aspect of sustainable development is often understood, particularly in domestic discussions, as a prerequisite for, rather than a component of, sustainable development. As a result, there has been a tendency to omit it, and focus entirely on social, economic, and environmental aspects of sustainable development. In addition, many domestic sustainable development issues have no obvious or compelling connection to peace and security, particularly in countries where there is a relatively high level of peace and security. It thus has often seemed superfluous to discuss peace and security when discussing sustainable development. This is obviously not the case in countries with ongoing and threatened civil wars or disturbances, including acts of terrorism. Thus, even in the United States, it may be increasingly necessary to bring peace and security into domestic discussions of, and actions to further, sustainable development.

61. *Id.* ¶¶ 38.11, 38.13. The annual recommendations from the Commission on Sustainable Development sometimes add recommendations to those made in Rio.

62. *See supra* note 34.

63. For the 10-year review, Agenda 21 is not open to renegotiation. G.A. Res. 9848, U.N. GAOR, 55th Sess., U.N. Doc. A/RES/55/199 (2000).

64. *Id.*

65. Ben Boer, *Institutionalising Ecologically Sustainable Development: The Roles of National, State, and Local Governments in Translating Grand Strategy Into Action*, 31 WILLAMETTE L. REV. 307, 314 n.60 (1995).

66. Rio Declaration, *supra* note 6, princ. 2.

ment.”⁶⁷ The declaration therefore calls on countries to solve environmental disputes peacefully and in accordance with the U.N. Charter, and to respect international law concerning environmental protection during armed conflicts.⁶⁸

The Rio Declaration is also supportive of economic development, calling on nations “to promote a supportive and open international economic system that would lead to economic growth and sustainable development in all countries.”⁶⁹ Among other things, Agenda 21 calls on countries to use trade liberalization to support sustainable development, to make “trade and environment mutually supportive,” and to adopt macroeconomic policies that support environment and development.⁷⁰ Although Agenda 21 is supportive of economic development in these and other ways,⁷¹ it is based on recognition of a profound constraint—the ability of the world’s natural systems to support existing production and consumption patterns. Agenda 21 reflects that constraint with its detailed program for making a variety of economic activities, including fishing, agriculture, forestry, and energy production, compatible with the environment on which they depend.

Agenda 21 would also incorporate environmental protection into social development, thus fostering greater human well-being. Because social development can be hindered by environmental degradation, social development necessarily requires protection of the environment. Human health goals thus include not only meeting primary health care needs⁷² but also controlling communicable diseases⁷³ and reducing health risks from pollutants and related hazards.⁷⁴ For human settlements, the overall objective is to

improve “social, economic[,] and environmental quality,” including water supplies, air quality, sanitation, drainage, and waste management.⁷⁵

Agenda 21 and the Rio Declaration would also have governments protect the entire range of natural resources and ecosystems from every significant threat. A basic objective is to ensure that their use does not degrade or diminish resources. Environmental and natural resource goals are thus linked, on a resource-by-resource basis, with the use of resources to serve human needs. Some of these resources are covered under multilateral treaties, including the Framework Convention on Climate Change and the Biodiversity Convention, but most are not.

Ultimately, sustainable development forces us to see the environment as a source of wealth and well-being, or natural capital, that must be protected for present and future generations. Natural capital includes renewable and nonrenewable resources, living organisms, and ecological systems. Natural capital supplements two other forms of capital, human capital and human-made capital. Human capital is based on education and technology as well as the governmental, social, and economic systems that support it. Human-made capital includes factories, farms, equipment, and industrial infrastructure such as bridges and power plants.⁷⁶ Sustainable development is premised on the need to protect natural resources but recognizes that many, if not most, of these resources will also be used by humans. The challenge is to limit the conversion of natural capital to human-made capital in a way that will allow for the regeneration of renewable resources and the reuse or replacement of nonrenewable resources.⁷⁷ Nations should thus preserve and enhance natural capital as well as human and human-made capital.

Finally, as explained more fully below, Agenda 21 and the Rio Declaration explicitly call for better national and international governance. As part of that effort, Agenda 21 recommends that governments develop necessary information and technology.

If sustainable development were simply descriptive of economic and social development over the past few centuries, the term would be internally inconsistent because development has not been environmentally sustainable.⁷⁸ The framework is normative, however; it is premised on the view that development should be—and can be—made sustainable.⁷⁹ From the standpoint of the problems it is directed at, sustainable development would protect and restore the environment and would help eliminate large-scale poverty. It is quite possible that development cannot be made generally sustainable, at least development as we now understand

67. *Id.* princ. 24. *See also id.* princ. 25 (“Peace, development and environmental protection are interdependent and indivisible.”).

68. *Id.* princ. 26 and 24, respectively. *See also id.* princ. 23 (“The environment and natural resources of people under oppression, domination and occupation shall be protected.”). *See generally* THE ENVIRONMENTAL CONSEQUENCES OF WAR (Jay Austin & Carl Bruch eds., 2000).

69. Rio Declaration, *supra* note 6, princ. 12. The declaration also calls on countries to refrain from unilateral trade restrictions and to protect the environment outside their territory, and suggests that global problems be dealt with by international consensus. *Id.*

70. Agenda 21, *supra* note 7, ch. 2.

71. Agenda 21 calls for financial assistance to developing countries and management of their external debt, and for proper governmental management of national economies. *See id.* ¶ 2.3. Other aspects of economic development, including the efficient use of resources and investment of economic capital, are also discernible in Agenda 21 and related texts. *See, e.g., id.* ¶ 2.23; *Agenda for Development, supra* note 57, Annex, ¶ 2 (declaring that “sustained economic growth is essential”); OUR COMMON FUTURE, *supra* note 5, at 44 (“Sustainable development clearly requires economic growth in places where essential needs are not being met.”). But economic growth improves human quality of life only if its benefits are shared. *See* Programme for the Further Implementation of Agenda 21, *supra* note 34, ¶ 23.

72. *See* Agenda 21, *supra* note 7, ¶¶ 6.3-6.9. The UNCED’s health goal in 1992 was “to achieve health for all by the year 2000,” *id.* ¶ 6.4, which now seems hopelessly ambitious. Priority areas include food safety, safe drinking water and sanitation, health education, immunization, and the provision of necessary drugs. *See id.* ¶ 6.3. These health goals are particularly directed at “infants, youth, women, indigenous people, and the very poor.” *Id.* ¶ 6.18; *see also id.* ¶¶ 6.18-6.31 (describing program for such persons).

73. *See id.* ¶¶ 6.10-6.17. Major goals include the reduction or elimination of approximately one dozen specified diseases or illnesses by 1995 or 2000. *See id.* ¶ 6.12. These include cholera, human immunodeficiency virus (HIV) infection, and malaria. *See id.*

74. *See id.* ¶¶ 6.39-6.46. Identified risks include urban and indoor air pollution, water pollution, pesticides, solid waste, health conditions

in human settlements, noise, radiation, and industrial and energy facilities. *See id.* ¶ 6.41.

75. *Id.* ¶¶ 7.4, 7.35; *see also id.* ch. 7(D) (heading).

76. Dennis M. King & John J. Cumberland, Making Sense of Sustainability in Five Easy Steps 9 (1995) (unpublished manuscript) (on file with author).

77. ROBERT COSTANZA ET AL., AN INTRODUCTION TO ECOLOGICAL ECONOMICS 100-07 (1997) (arguing that natural resources and human-made capital are complements).

78. *See, e.g.,* Case Concerning the Gabčíkovo-Nagymaros Project (Hung v. Slov.), 1997 I.C.J. 92, ¶ 14 (Oda, J., dissenting) (referring to the “more or less contradictory issues of economic development on the one hand and preservation of the environment on the other”).

79. *See, e.g.,* J. WILLIAM FUTRELL, THE TRANSITION TO SUSTAINABLE DEVELOPMENT LAW 9 (Env’t. L. Inst., Research Brief No. 3, 1994) (“Agenda 21 is a consistent, coherent attempt to identify the goals and means for achieving a sustainable society.”).

it.⁸⁰ Indeed, sustainable development is likely to profoundly change the character of economic and social development.

Key Principles

Among the most important principles in the Rio Declaration and Agenda 21 are integrated decisionmaking, the polluter-pays principle, sustainable consumption and population levels, the precautionary principle, intergenerational equity, citizen participation, and common but differentiated responsibilities for developed and developing countries.⁸¹

Integrated Decisionmaking

“In order to achieve sustainable development,” the Rio Declaration states, “environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.”⁸² Integrated decisionmaking is arguably the bedrock principle for sustainable development—the one on which all of the others are based. It is a direct response to the current tendency for governments, corporations, and other decisionmakers to treat the environmental aspects of a project or program separately from its other development aspects. Governments, for example, give responsibility to particular ministries or departments to foster particular kinds of economic development by various means, including the use of subsidies and other kinds of economic incentives.⁸³ These same governments then try to use the environmental ministry or agency to limit the resulting damage, which is often difficult or impossible.⁸⁴ This tendency to separately consider environment and development is a major reason why governmental efforts often fail, or at least fall significantly short of their goals.

Integration can occur at many different levels of depth or penetration. Agenda 21 suggests as much by calling for “the progressive integration of economic, social[,] and environmental issues” over time.⁸⁵ It can also occur in different forms, and for different decisionmakers.

To begin with, it is useful to distinguish procedural integration from substantive integration. Integrated decisionmaking is a means of ensuring that social, economic, and environmental goals are considered at the same time. This form of integration can be called procedural integration. Integrated decisionmaking is also a way to ensure that these goals are achieved, which can be described as substantive

integration. The Earth Summit texts tend to emphasize procedural integration.

Procedural integration is the simultaneous and coherent consideration of economic, environmental, and social factors in making a particular decision.⁸⁶ In this respect, sustainable development is not a new issue; it is a broader and more comprehensive way of analyzing and acting on all issues. It is not simply a subject to think about; it is also a way of thinking about all subjects.⁸⁷ Perhaps the most basic example is embodied in the Rio Declaration’s suggestion that governments require environmental impact assessments for major projects.⁸⁸ Such assessments, like those required by the National Environmental Policy Act (NEPA),⁸⁹ force government agencies to consider the environmental and social effects of significant economic projects.⁹⁰ This type of integrated decisionmaking also requires integrated data. Agenda 21 thus calls on governments to integrate their use of social, environmental and economic data, and to use analytical procedures that will enable simultaneous consideration of a range of impacts.⁹¹

Procedural integration provides a useful starting point. It presupposes the desirability of reducing or avoiding environmental impacts if at all possible, and thus has some substantive import. When the establishment of specific environmental goals is politically or scientifically difficult, procedural integration provides a useful fallback approach to minimizing environmental damage.

Substantive integration goes beyond consideration of the environment in the decisionmaking process; it requires the establishment and realization of specific and substantive environmental goals. Because these environmental goals are to be achieved at the same time as economic, social, and security goals, environmental goals are integrated with these other goals. Procedural integration enhances the likelihood that a decision will further particular goals but allows major adverse social and environmental effects to be considered and then ignored. Under NEPA, for example, an agency may fully consider impacts and alternatives, and decide to go ahead with an environmentally or social damaging project anyway.⁹² As a categorical rule, this result is inconsistent with substantive integration. Sustainable development is thus also a type of outcome, and not simply a process.

80. See, e.g., David A. Wirth, *The Rio Declaration on Environment and Development: Two Steps Forward and One Back, or Vice Versa?*, 29 GA. L. REV. 599, 607 (1995) (noting that little evidence exists showing that the environment and development can be made compatible).

81. Other principles, described in later sections, include delegation of governmental responsibility to the lowest effective level and international partnership.

82. Rio Declaration, *supra* note 6, princ. 4. “Principle 4 reflects the emphasis on integration, interrelation and interdependence of environment and development, which forms the backbone of sustainable development.” See *Rio Declaration on Environment and Development: Application and Implementation, Report of the Secretary General*, U.N. Commission on Sustainable Development, 5th Sess., ¶ 31, U.N. Doc. E/CN.17/1997/8 (1997) [hereinafter *Application and Implementation*]; see also Rio Declaration, *supra* note 6, princ. 11, 25. Integrated decisionmaking is reflected in the Framework Convention on Climate Change, *supra* note 8, art. 3.4 and the Convention on Biological Diversity, *supra* note 9, arts. 6(b), 10(a).

83. See OUR COMMON FUTURE, *supra* note 5, at 122-23.

84. See *id.* at 39-40.

85. Agenda 21, *supra* note 7, ¶ 8.4.

86. See *id.* ¶ 8.4 (“The primary need is to integrate environmental and developmental decision-making processes.”); see also OUR COMMON FUTURE, *supra* note 5, at 62 (“The common theme throughout this strategy for sustainable development is the need to integrate economic and ecological considerations in decision making.”). National security issues would also be considered, where relevant.

87. Keith Wheeler, *Introduction*, in EDUCATION FOR A SUSTAINABLE FUTURE: A PARADIGM OF HOPE FOR THE 21ST CENTURY I (Keith A. Wheeler & Ann Perraca Bujur eds., 2000).

88. See Rio Declaration, *supra* note 6, princ. 17.

89. 42 U.S.C. §§4321-4370d, ELR STAT. NEPA §§2-209.

90. After the International Court of Justice decision concerning the Gabcikovo-Nagymaros Project, *supra* note 78, procedural integration may be a principle of international law. Alan Boyle & David Freestone, *Introduction*, in INTERNATIONAL LAW AND SUSTAINABLE DEVELOPMENT: PAST ACHIEVEMENTS AND FUTURE CHALLENGES 16-17 (Alan Boyle & David Freestone eds., 1999).

91. *Id.* ¶¶ 8.5(a)-(b), 8.6.

92. See *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 19 ELR 20743 (1989), *on remand sub nom.* *Methow Valley Citizens Council v. Regional Forester*, 879 F.2d 705 (9th Cir. 1989) (holding that NEPA does not impose a substantive duty on agencies to mitigate adverse environmental effects).

Substantive integration is more plainly stated in the 1980 *World Conservation Strategy*, which first developed the intellectual framework for sustainable development.⁹³ The *Strategy* uses conservation instead of environment when referring to sustainable development; the idea, it says, is to merge conservation and development. It then defines conservation to include “preservation, maintenance, sustainable utilization, restoration, and enhancement of the natural environment.”⁹⁴ Under this view, integrated decision-making has an obvious substantive aspect. Agenda 21 is replete with references to the conservation, restoration, rehabilitation, and reclamation of environmental features. At the same time, it contains few if any specific environmental objectives.

Substantive integration is also consistent with the stated parity of economic, social, and environmental goals. The Programme for the Further Implementation of Agenda 21, adopted by the U.N. General Assembly in 1997 at its five-year review of progress since the Earth Summit, states: “Economic development, social development[,] and environmental protection are interdependent and mutually reinforcing components of sustainable development.”⁹⁵ Ordinarily, economic and social goals are substantive; those who support them want certain results. If the environment is merely *considered* in such situations, it is possible for a project to result in economic and social progress but environmental degradation. That is not sustainable development; that is business as usual.

Finally, substantive integration directly addresses the real-world problems to which sustainable development was intended to respond—continuing environmental degradation and growing global poverty. These problems are more effectively addressed if specific substantive goals concerning them are integrated into the other goals of human projects and activities. While the international community has developed specific goals for poverty reduction to be achieved within specific times,⁹⁶ it generally has not done so for the environment. That suggests the need for international agreement on specific environmental goals to be achieved by particular dates, particularly significant environmental features for which no such goals exist.⁹⁷

The contrast between procedural and substantive integration raises one of the most fundamental questions about the meaning of sustainable development: is it a journey or is it a destination? An emphasis on procedure or process suggests an understanding of sustainable development as a journey. An emphasis on substantive goals suggests that sustainable development is a destination. As already indicated, there is support for both views in Agenda 21 and the Rio Declaration. We can make sense of sustainable development as jour-

ney or destination by referring to each in slightly different ways. Sustainable development as a destination is a useful and necessary way of understanding what sustainable development requires and what our goals should be. We can then ask whether we are moving closer to or further away from sustainable development. That is one of the essential questions for the Rio + 10 summit in Johannesburg.

For both procedural and substantive integration, there are at least three additional ways that integrated decision-making can be understood. First, there are many kinds of decisionmakers, and integrated decisionmaking will differ for each. Decisionmakers include the government, corporations and businesses, consumers, citizens, and others.⁹⁸ Governmental decisionmaking can be integrated at the local, state, national, and even multinational level, e.g., European Union, North American Free Trade Agreement. Corporate and business decisionmaking can be integrated by external factors, e.g., environmental law, or internal factors, e.g., environmental management systems. The environment can be integrated into consumer decisionmaking through better information or prices that accurately reflect environmental costs. Citizens and others can be provided with indicators of social, economic, and environmental progress.

Second, integrated decisionmaking can vary in scope. Most broadly, of course, this type of decisionmaking integrates everything of significance relating to the environment and everything of significance relating to development. But it is often easier and more practical to focus the subject of integration on specific environmental features and specific development activities. The Framework Convention on Climate Change, for instance, commits parties to integrating climate change considerations into governmental decisionmaking.⁹⁹ Agenda 21 calls on parties to integrate protection of the other specific resources—including freshwater, land resources, forests, and biological diversity—with economic and social goals. A complementary approach is to integrate economic and social decisionmaking to take account of specific ecosystems or watersheds. Similarly, it is often useful to consider particular types of development, rather than all development, when discussing integrated decisionmaking. Agenda 21 specifically addresses integration of environmental considerations into agriculture and rural development, mountain development, chemical manufacturing, and other activities.

Third, there can be many different forms of integration for any particular decisionmaker. National governments, for instance, can integrate their environmental regulatory policies so that they apply holistically and coherently to specific types of economic actors. National governments can also integrate their fiscal and regulatory policies so that, for example, subsidies do not undermine their regulatory efforts. They can integrate their energy and environmental policies. In addition, they can make sure that their national and international policies affecting the environment are consistent and mutually reinforcing.

These different forms and levels of integrated decisionmaking make clear that progressive integration of environmental, social, and economic activities will take time, concerted effort, participation by all relevant decisionmakers,

93. INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES (IUCN) ET AL., *WORLD CONSERVATION STRATEGY* (1980).

94. *Id.* ch. 1, at 1.

95. See Programme for the Further Implementation of Agenda 21, *supra* note 34, ¶ 23.

96. United Nations Millennium Declaration, G.A. Res. 55/2, U.N. GAOR, 55th Sess., U.N. Doc. A/55/L.2 (Sept. 8, 2000), available at <http://www.un.org/millennium/declaration/ares552e.htm> (last visited Oct. 15, 2001).

97. See, e.g., David G. Victor & Jesse J. Ausubel, *Restoring the Forests*, FOREIGN AFF., Nov./Dec. 2000, at 127, 139, 141-44 (recommending the adoption of a nonbinding measurable international objective of a “forest estate expanded by 200 million hectares in 2050,” and intermediate goals building toward that objective).

98. In fact, the major groups identified in Agenda 21—farmers, workers, women, children and youth, indigenous peoples, the scientific and technological community, and NGOs—are all decisionmakers.

99. Framework Convention on Climate Change, *supra* note 8, art. 4.1(f).

and greater attention to specific environmental goals. They also suggest the need for better information and analytical tools. Finally, they make clear that the existence of integrated decisionmaking is not merely an empirical question; it is also a question of depth and effectiveness.

Polluter-Pays Principle

The polluter-pays principle is necessary to ensure that social, economic, and environmental goals are realized harmoniously. According to the polluter-pays principle, governments should require polluting entities to bear the costs of their pollution rather than allow those costs to be imposed on others or on the environment.¹⁰⁰ Economic development, in short, should not come at the expense of social development, natural resources protection, or even other types of economic development. Use of the polluter-pays principle should thus result in greater efficiency. The polluter-pays principle also would prevent the involuntary wealth redistribution that occurs when some benefit at the expense of others.

The Organization for Economic Cooperation and Development (OECD), which is composed of the world's developed nations, originally enunciated the principle in 1972 as a means of allocating costs for pollution control.¹⁰¹ In practice, however, it is difficult to properly allocate costs without also asserting liability against particular entities for those costs. The principle is thus broadly understood to include both cost and liability allocation. Because the use of goods and services often results in environmental or social costs, the principle also is referred to as the user-pays principle.

If implemented by governments, the polluter-pays principle would further procedural integration by providing private decisionmakers with a simple means of considering a great deal of information. Without it, private actors could ignore social and environmental costs, making a decision based simply on price. More conscientious decisionmakers would need to undertake the daunting tasks of gathering information about social and environmental costs and then weigh those costs against the economic price of goods and services. When the price of goods and services reflects their environmental and social costs, however, these separate tasks are unnecessary. Because decisionmakers prefer the least expensive goods and services when given a choice among goods and services of comparable quality, the polluter-pays principle makes it more likely that the choices they make in their self-interest also will further sustainable development. The polluter-pays principle thus furthers substantive integration as well. The whole point of including social and environmental effects in the economic or legal cost of goods and services is to ensure better decisions.

100. Although the principle has been formulated in somewhat different ways in various contexts, the Rio Declaration is representative: "National authorities should endeavor 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." Rio Declaration, *supra* note 6, princ. 16. See generally ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT (OECD), THE POLLUTER-PAYS PRINCIPLE (1975) (tracing the development of the polluter-pays principle); PRINCIPLES, *supra* note 57, at 213-17 (same).

101. See OECD, *Guiding Principles on the Environment*, 11 I.L.M. 1172 (1972); Sanford E. Gaines, *The Polluter-Pays Principle: From Economic Equity to Environmental Ethos*, 26 TEX. INT'L L.J. 463, 467-68 (1991).

Sustainable Consumption and Population Levels

"To achieve sustainable development and a higher quality of life for all people," the Rio Declaration states, governments "should reduce and eliminate unsustainable patterns of production and consumption and promote appropriate demographic policies."¹⁰² Developed countries consume a disproportionate share of the world's resources. With only 5% of the world's population, the United States in 1993 was responsible for 24% of the world's energy consumption and almost 30% of the world's raw materials consumption.¹⁰³ That makes this country "the largest producer and consumer in all history."¹⁰⁴ As Agenda 21 observes, "the major cause of the continued deterioration of the global environment is the unsustainable pattern of consumption and production, particularly in industrialized countries."¹⁰⁵ The primary idea behind reducing production and consumption of resources is not that the resources themselves are limited, but rather that the manner and scale at which the resources are used imposes severe damage on the environment. For example, if the planet develops to U.S. levels of consumption, environmental, economic, and social disruption stresses are likely to be overwhelming for everyone. A major purpose of Agenda 21 is thus reduction by developed countries of unsustainable patterns of production and consumption for energy and raw materials.¹⁰⁶ Achievement of this objective would profoundly change the way in which economic development occurs because it would reduce the amount of new energy and materials that need to be continually extracted, and would limit the ability of humans to use nature for disposal of wastes.¹⁰⁷ The 1994 International Conference on Population and Development in Cairo endorsed a plan of action that links the provision of reproductive health care, education and greater rights for women, to reduction in population growth rates.¹⁰⁸ In doing so, it provided a more specific and meaningful program than the "appropriate demographic policies" referred to in the Rio Declaration.¹⁰⁹ It is now possible to seriously consider the end of global population growth, but probably not before the world's total population increases to nine billion people.¹¹⁰

In many ways, the idea that there are limits to the amount of resources that can be consumed, or the number of people

102. See Rio Declaration, *supra* note 6, princ. 8.

103. See PRESIDENT'S COUNCIL ON SUSTAINABLE DEVELOPMENT, *supra* note 4, at 5, 142 n.8.

104. PRESIDENT'S COUNCIL ON SUSTAINABLE DEVELOPMENT, TOWARD A SUSTAINABLE AMERICA: ADVANCING PROSPERITY, OPPORTUNITY, AND A HEALTHY ENVIRONMENT FOR THE 21ST CENTURY 86 (1999).

105. Agenda 21, *supra* note 7, ¶ 4.3.

106. See *id.* ¶ 4.7(a).

107. See Robert Goodland, *The Concept of Environmental Sustainability*, 26 ANN. REV. ECOLOGY & SYSTEMATICS 1, 3 (1995) (stating that "economics has rarely been concerned with natural capital").

108. See *Report of the International Conference on Population and Development*, U.N. Doc. A/CONF.171.13 (Cairo, Sept. 5-13, 1994).

109. See Programme for the Further Implementation of Agenda 21, *supra* note 34, ¶ 30 (calling, consistent with Cairo program, for "the further expansion of basic education, with full and equal access for girls and women, and health care, including reproductive health care, including both family planning and sexual health." *Id.* Even though the population growth rate is declining, the number of people continues to increase.

110. See Wolfgang Lutz et al., *The End of Population Growth*, 412 NATURE 544 (2001).

that can live on the planet at one time, is pretty straightforward. In other ways, the idea is quite controversial. A major practical and political challenge for developed countries is to “decouple” prosperity from the vast resources on which they now depend. Put another way, the challenge is to decouple opportunity and quality of life from the manner in which opportunity and quality of life are realized.

Precautionary Principle

“In order to protect the environment,” the Rio Declaration states, “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.”¹¹¹ The precautionary approach or principle responds to an important problem in decisionmaking—the absence of complete scientific information concerning the environment. If decisions are made based only on available information, it is highly likely that they will damage the environment, perhaps severely or irreparably. Because the impetus for economic development tends to be strong, the environment generally has been protected only to the extent scientific information exists.

Instead of assuming that important natural systems are resilient or invulnerable, the precautionary principle presumes their vulnerability.¹¹² By giving the benefit of the doubt to the environment when there is scientific uncertainty, the principle would shift the burden of proof from those supporting natural systems to those supporting development.¹¹³ The principle is premised on the preference of preventing pollution to subsequent remediation, the relevance of scientific data to governmental decisionmaking, and the obligation to take precautionary measures that are in proportion to the potential damage.¹¹⁴ The precautionary principle is especially important for sustainable development because the carrying capacity of the global environment as well as regional ecosystems is mostly unknown.¹¹⁵

Significant questions about the scope and meaning of the precautionary approach or principle remain to be resolved.¹¹⁶ The Rio Declaration version is quite narrow, coming into play only when there are “threats of serious or irre-

versible damage,” and stating that the “lack of full scientific certainty” cannot be used to postpone “cost effective measures.” At least two recent international agreements have articulated the meaning of the principle more specifically for particular contexts.¹¹⁷ One way of addressing the broader meaning of the principle may lie in the use of the kind of laws that are employed in the United States and elsewhere for environmental and public health risks.¹¹⁸

Intergenerational Equity

The principle of intergenerational equity is inherent in sustainable development and is one of its most basic justifications. The Brundtland Commission’s definition of sustainable development specifically includes this idea: present development must not compromise “the ability of future generations to meet their own needs.”¹¹⁹ Intergenerational equity ordinarily refers primarily to the future availability of the environment and natural resources.¹²⁰ The Rio Declaration formulates the principle more broadly: “The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future gen-

111. Rio Declaration, *supra* note 6, princ. 15. For an exhaustive analysis of the principle in this and other contexts, see HARALD HOHMANN, *PRECAUTIONARY LEGAL DUTIES OF MODERN INTERNATIONAL ENVIRONMENTAL LAW* (1994). See also THE PRECAUTIONARY PRINCIPLE AND INTERNATIONAL LAW: THE CHALLENGES OF IMPLEMENTATION (David Freestone & Ellen Hey eds., 1996); PRINCIPLES, *supra* note 57, at 208-12.
112. See ANTHONY M.H. CLAYTON & NICHOLAS J. RADCLIFFE, *SUSTAINABILITY: A SYSTEMS APPROACH* 213 (1996).
113. See Bernard Weintraub, *Science, International Environmental Regulation, and the Precautionary Principle: Setting Standards and Defining Terms*, 1 N.Y.U. ENVTL. L.J. 173, 178-80 (1992); Wirth, *supra* note 80, at 634.
114. See James E. Hickey Jr., & Vern R. Walker, *Refining the Precautionary Principle in International Environmental Law*, 14 VA. ENVTL. L.J. 423, 436 (1995). The principle does not answer certain questions, however, such as: the level of potential damage, the level of certainty required, and the circumstances under which the government would act (as opposed to the circumstances under which it would refrain from acting).
115. See DONELLA H. MEADOWS ET AL., *BEYOND THE LIMITS* 1-14 (1992).
116. See, e.g., Christopher D. Stone, *Is There a Precautionary Principle?*, 31 ELR 10790 (July 2001).

117. Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982, Relation to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, Aug. 4, 1995, Annex II, U.N. Doc. A/CONF.164/37; Cartagena Protocol on Biosafety to the Convention on Biological Diversity, arts. 1 & 15, Annex III, Feb. 23, 2000, 39 I.L.M. 1027 (2000), available at <http://www.biodiv.org/biosafe/BIOSAFETY-PROTOCOL.htm> (last visited Oct. 15, 2001).
118. Stone, *supra* note 116, at 10792. See also Mark Geistfeld, *Implementing the Precautionary Principle*, 31 ELR 11326 (Nov. 2001); Vern R. Walker, *Consistent Levels of Protection in International Trade Disputes: Using Risk Perception Research to Justify Different Levels of Acceptable Risk*, 31 ELR 11317 (Nov. 2001); Vern R. Walker, *Some Dangers of Taking Precautions Without Adopting the Precautionary Principle: A Critique of Food Safety Regulation in the United States*, 31 ELR 10040 (Jan. 2001); David P. Fidler, *Challenges to Humanity’s Health: The Contributions of International Environmental Law to National and Global Public Health*, 31 ELR 10048 (Jan. 2001).
119. OUR COMMON FUTURE, *supra* note 5, at 43. Intergenerational equity is based on the moral obligation of each generation “to future generations to pass on the natural and cultural resources of the planet in no worse condition than received and to provide reasonable access to the legacy for the present generation.” EDITH BROWN WEISS, IN *FAIRNESS TO FUTURE GENERATIONS: INTERNATIONAL LAW, COMMON PATRIMONY, AND INTERGENERATIONAL EQUITY* 37, 38 (1989); see also AVNER DE-SHALIT, *WHY POSTERITY MATTERS: ENVIRONMENTAL POLICIES AND FUTURE GENERATIONS* (1995) (dealing with intergenerational justice as a “moral basis for environmental policies”); Duncan A. French, *International Environmental Law and the Achievement of Intragenerational Equity*, 31 ELR 10469, 10475 (May 2001) (characterizing equity as an integral aspect of sustainable development); Anthony D’Amato, *Do We Owe a Duty to Future Generations to Preserve the Global Environment?*, 84 AM. J. INT’L L. 190, 198 (1990) (urging protection of the environment even though it may be difficult to determine the exact impact on future generations); Edith Brown Weiss, *Our Rights and Obligations to Future Generations for the Environment*, 84 AM. J. INT’L L. 198 (1990) (analyzing justifications for, and implications of, intergenerational equity).
120. See, e.g., *Legality of the Threat or Use of Nuclear Weapons* (Advisory Opinion of July 8, 1996), 1996 I.C.J. 95, 35 I.L.M. 809, 821 (1996) (finding that the environment “represents the living space, the quality of life and the very health of human beings, including generations unborn”); Charter of Economic Rights and Duties of States, U.N. GAOR, 29th Sess., Supp. No. 31, at 50, 55, U.N. Doc. A/9631 (1975), reprinted in 14 I.L.M. 251, 260, art. 30 (1975) (“The protection, preservation and enhancement of the environment for the present and future generations is the responsibility of all States.”).

erations.”¹²¹ Although ambiguous, the statement can be read to mean that goals for economic development, social development, peace and security, and natural resources protection should be met for both present and future generations. Such a reading recognizes the many links between development and environment, and the implicit premise of Agenda 21 that nations should build on existing economic and social achievements.

Sustainable development thus represents an ambitious intergenerational compact. It implies a responsibility for the future that needs to be reflected in a country's legal system and institutions.¹²² An emphasis on intergenerational equity is particularly important because it is no longer clear that institutions or individuals are willing or able to protect future generations.¹²³ Under this principle, progress toward attainment of unmet goals should continue, and the progress that already has been made should be preserved. In addition, negative trends should be reversed.

Intragenerational equity, it should be said, is likely needed to achieve *intergenerational equity*. Poor people in developed and developing countries tend to be exposed to the worst environmental conditions, and these people often destroy or damage the environment simply to survive.¹²⁴ Without efforts to reduce poverty and environmental degradation for the present generation, it will be difficult to ensure that future generations will have the same access to the same quality of environment or developmental conditions as the present generation.

Public Participation

Agenda 21 and the Rio Declaration speak repeatedly of the importance and need for public participation, not only in governmental decisionmaking but also, and more broadly, in the work of sustainable development. Agenda 21 emphasizes the desirability of direct participation in governance by identifying important roles for women, youth, indigenous people and their communities, NGOs, local authorities, workers and their trade unions, business and industry, the scientific and technological community, and farmers.¹²⁵

121. Rio Declaration, *supra* note 6, princ. 3.

122. See MARK SAGOFF, *THE ECONOMY OF THE EARTH* 63-65 (1988) (describing the paternalism that arises from such political authority as “a concern about the character of the future itself”).

123. See COSTANZA ET AL., *supra* note 77, at 160 (arguing that over time “modern peoples lost their sense of responsibility for their offspring and the institutions needed to assure appropriate transfers of assets”); see also ROBERT HEILBRONER, *VISIONS OF THE FUTURE* (1995). Heilbroner divides historic human attitudes toward the future into three periods. Until the end of the 18th century, people expected the future to resemble the past because there was no reason to expect anything else. HEILBRONER at 6-10. From the 18th century until the mid-1950s, the idea of progress led people to expect that the future would be better than the past. Three forces supported that expectation: science and technology, capitalism as a means of organizing production, and democracy. See *id.* at 41-66. At present, however, the attitude toward the future is “ambiguous, indeterminate, and apprehensive.” *Id.* at 71. Each of the three identified forces has either created or allowed the creation of reasons for misgiving and doubt. See *id.* at 71-91.

124. ALEXANDER GILLESPIE, *INTERNATIONAL ENVIRONMENTAL LAW, POLICY, AND ETHICS* 118-19 (1997); Edith Brown Weiss, *A Reply to Barresi's “Beyond Fairness to Future Generations,”* 11 *TUL. ENVTL. L.J.* 89, 91 (1997); French, *supra* note 119, at 10477.

125. See Agenda 21, *supra* note 7, chs. 23-32; see also *id.* ¶ 8.3(c) (recommending that governmental processes “facilitate the involvement of

Public participation in the development and implementation of environmental and other laws is also encouraged.¹²⁶ In addition, Agenda 21 recommends that governments ensure that NGOs have access to information necessary for effective participation.¹²⁷ Because of the difficult and worsening problems that sustainable development needs to address, national governments should energize and mobilize every part of society to do its best to help achieve national goals.¹²⁸

At the same time, as Agenda 21 and the Rio Declaration also makes clear, sustainable development will happen only if people, organizations, businesses, and others take necessary actions on their own and for their own reasons. Their involvement is thus not simply participation in governmental decisionmaking, but also in the work of sustainable development.¹²⁹ This power-dispersing approach suggests that sustainable development is not a framework requiring, or even encouraging, larger or more intrusive governments. To the contrary, it encourages government to act as a catalyst and use the strengths of NGOs. For the private sector, for example, governments should take full advantage of the ingenuity, motivation, rapid feedback, and better-quality information that decentralized decisionmaking and the profit motive can provide.¹³⁰

Common but Differentiated Responsibilities

All countries have a responsibility for fostering sustainable development, but developed countries have a special responsibility. The Rio Declaration states:

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.¹³¹

concerned individuals, groups and organizations in decision-making at all levels”).

126. See Rio Declaration, *supra* note 6, princ. 10; see also Agenda 21, *supra* note 7, ¶ 23.2 (“One of the fundamental prerequisites for the achievement of sustainable development is broad public participation in decision-making.”). In addition, citizens should have “effective access to judicial and administrative proceedings, including redress and remedy.” Rio Declaration, *supra* note 6, princ. 10; see also Agenda 21, *supra* note 7, ¶ 27.13 (recommending that NGOs have the right to protect the public interest by law).

127. See Rio Declaration, *supra* note 6, princ. 10; see also Agenda 21, *supra* note 7, ¶¶ 40.17-40.30 (recommending more effective public dissemination of data related to sustainable development). National governments also are urged to educate the public about the challenges and opportunities of sustainable development. See Agenda 21, *supra* note 7, ¶¶ 8.11, 36.10.

128. In a sustainable system, the government “becomes an advocate for excellence, and oversees and guarantees the integrity of the process.” THE ASPEN INST., *THE ALTERNATIVE PATH: A CLEANER, CHEAPER WAY TO PROTECT AND ENHANCE THE ENVIRONMENT* 30 (1996). This requires government to monitor substantive progress as well as the effectiveness of public participation and other processes. See *id.* at 32.

129. See, e.g., Rio Declaration, *supra* note 6, princs. 20-22 (stating that women, youth, indigenous people, and local communities should participate fully and effectively in sustainable development).

130. See CARL C. VON WEIZSACKER ET AL., *FACTOR FOUR* 143-44 (1997); see also TERRY L. ANDERSON & DONALD R. LEAL, *FREE MARKET ENVIRONMENTALISM* 14-17 (rev. ed. 2001).

131. Rio Declaration, *supra* note 6, princ. 7.

Developed and developing countries made sustainable development commitments in Agenda 21 and the Rio Declaration. These include commitments to adopt “effective environmental legislation,” to integrate development and environment matters in national decisionmaking, and to implement Agenda 21. Thus, the sustainable development responsibilities of developed and developing are “common” to both.

Yet recognition of differentiated responsibilities was at the political heart of the UNCED synthesis because developing countries were unwilling to have global environmental problems impede their development.¹³² Developed country leadership is premised on two grounds—developed countries put more pressure on the global environment,¹³³ and developed countries have more money and better technology.¹³⁴ The principle of developed country leadership is also an outgrowth of the polluter-pays principle. Because developed countries have made the greatest contribution to most global environmental problems, they should pay for the cleanup.¹³⁵ The equitable considerations intrinsic to the polluter-pays principle also suggest that it is appropriate for developed countries, whose development is imposing significant negative externalities on the environment of both developed and developing countries, to help developing countries meet their environmental obligations. The Rio Declaration recommends the adoption of “effective environmental legislation” but adds that standards used by some countries “may be inappropriate and of unwarranted economic and social cost to other countries, in particular developing countries.”¹³⁶

Developed countries are also urged to provide financial, technical, and other assistance to help developing countries fulfill their sustainable development responsibilities. In Agenda 21, developed countries stated their commitment to contribute 0.7% of their gross domestic product to official development assistance for sustainable development on an annual basis, provide technical assistance, facilitate the use of environmental technologies in developing countries, and help developing countries improve their capacity to govern in a responsible and sustainable manner.¹³⁷ In so doing,

they agreed to change the purpose of their official assistance from development to sustainable development. (The United States, however, submitted a statement saying that it was not making the 0.7% official development assistance commitment.)¹³⁸

Developed country leadership has both a domestic and an international component. Developed countries are obviously encouraged to provide international assistance, but the whole point of Agenda 21 is for countries to also take action within their own borders. At day’s end, the core responsibility of developed countries is to create workable models of sustainable development within their own boundaries that are not merely functional but that are obviously more attractive than the development approach they are currently pursuing. If developed countries can do that, developing countries are likely to follow suit. If developed countries cannot or will not, developing countries can hardly be expected to take the lead.¹³⁹

Consequences for National Governance

The primary responsibility for implementing Agenda 21 and related agreements rests with national governments.¹⁴⁰ National governments are not supposed to do everything, however, their essential jobs are to lead and facilitate sustainable development activities by others.

Agenda 21 recommends that national governments “ensure socially responsible economic development while protecting the resource base and the environment for the benefit of future generations.”¹⁴¹ In virtually every chapter of Agenda 21, national governments’ responsibilities for sustainable development are prominently addressed. To accomplish environmental goals, countries are urged to “enact effective environmental legislation,” including environmental standards.¹⁴² The Programme for the Further Implementation of Agenda 21 calls on each national government to have a strategy for sustainable development in place by 2002.¹⁴³ A strategy of this nature could also be called a national policy because it would necessarily be reflected in the

132. See, e.g., Subrata R. Chowhury, *Common but Differentiated State Responsibility in International Environmental Law: From Stockholm (1972) to Rio (1992)*, in *SUSTAINABLE DEVELOPMENT AND GOOD GOVERNANCE 331* (Konrad Ginther et al. eds., 1995) (arguing that the right to formulate development policies is indisputably tied to the right to self-determination).

133. PRINCIPLES, *supra* note 57, at 204-05, 217-20; see also Holmes Rolston III, *Environmental Protection and an Equitable International Order: Ethics After the Earth Summit*, in *THE ETHICAL DIMENSIONS OF THE UNITED NATIONS PROGRAM ON ENVIRONMENT AND DEVELOPMENT, AGENDA 21*, at 267, 273 (Donald A. Brown ed., 1994) (discussing how fairness requires differential treatment of nations).

134. For an elaboration of the rationale for developed country leadership in the context of climate change, see David M. Driesen, *Free Lunch or Cheap Fix?: The Emissions Trading Idea and the Climate Change Convention*, 26 B.C. ENVTL. AFF. L. REV. 1, 11-15 (1998).

135. See Rio Declaration, *supra* note 6, princ. 16.

136. *Id.* princ. 11. A lower level of environmental responsibility for developing countries is not universally accepted; the United States recorded an interpretative statement to the Rio Declaration, saying that it did not accept any interpretation that would imply “any diminution in the responsibilities of developing countries.” *U.S. Statement for the Record on the UNCED Agreements*, U.S. Dep’t of State Dispatch Supp., July 1992, at 35, 35.

137. See Agenda 21, *supra* note 7, ¶¶ 33.13, 33.18 (estimating average annual costs of implementing Agenda 21 between 1993 and 2000 at

\$600 billion). Since 1970, the United Nations has suggested that developed countries aim for official development assistance in the amount of 0.7% of their gross national product, though not for sustainable development. G.A. Res. 2626, U.N. GAOR, 25th Sess., Supp. No. 28, at 43, ¶ 43, U.N. Doc. A/8028 (1970).

138. *U.S. Statement for the Record on the UNCED Agreements*, *supra* note 136.

139. Developed country leadership, however, does not get developing countries off the hook. The idea is that all countries have common responsibilities, not simply differentiated responsibilities. In addition, the focus of the Rio Declaration is on “global environmental degradation,” and the responsibility of the developed countries for that degradation. In many cases, though, environmental degradation is national or regional in scale, and developed countries have had little if anything to do with creating or contributing to it.

140. See Agenda 21, *supra* note 7, ¶¶ 1.3.

141. *Id.* ¶ 8.7. A growing number of national constitutions explicitly recognize a human right to a healthy environment or otherwise direct the state to protect the environment, thereby supplementing existing economic and social responsibilities. *Application and Implementation*, *supra* note 82, ¶ 19, at 6, 35 n.12 (identifying Argentina, Ethiopia, the Philippines, South Africa, and the Ukraine as recent examples); BROWN WEISS, *supra* note 119, at 297-317, 325-27 (1989) (setting forth environmental provisions of various national constitutions).

142. Rio Declaration, *supra* note 6, princ. 11; *accord id.* prins. 13, 17.

143. See Programme for the Further Implementation of Agenda 21, *supra* note 34, ¶ 24(a).

world view and day-to-day actions of political decision-makers as well as in the law.

The national government as a whole needs to direct this effort because sustainable development is not within the province of any single agency or branch of government. A nation's environmental agency cannot be the only government agency that is responsible, for example, because sustainable development embraces broader goals. Because the work of each agency has environmental and social aspects, and because many agencies affect individual economic sectors, integrated decisionmaking is impossible without an overall national effort to ensure better coordination among agencies for sustainable development.¹⁴⁴

This attention to the national government is qualified in three important ways. First, as already explained, governments need to allow meaningful public participation in their decisions. In addition, they need to delegate decisions to the lowest effective level of government and develop partnerships with other nations. Agenda 21 calls on national governments to delegate sustainable development responsibilities "to the lowest level of public authority consistent with effective action."¹⁴⁵ In the United States, for example, national governments would allow states to take responsibility for sustainable development activities that are most effectively carried out at the state level. This approach raises two related questions that are not fully answered in Agenda 21 and that each nation needs to answer: what level of government is consistent with effective action, and which particular responsibilities should be delegated? Without a doubt, many problems are best addressed at the local level. In many ways, sustainable development is most understandable in the specific places where people live, work, and play. Some problems addressed by sustainable development, however, require concerted national action as well as local action. It is difficult to imagine an effective water pollution control plan or greenhouse gas emission control strategy, for example, that did not involve some national standards or goals.¹⁴⁶

Finally, nations should also act in partnership with other nations by, among other things, cooperating with each other to address international concerns and sharing information.

Eleven of the Rio Declaration's 27 principles directly or indirectly refer to partnership or cooperation among states.¹⁴⁷

Consequences for National Law

An effective legal framework is necessary for sustainable development.¹⁴⁸ Agenda 21 calls on governments to adopt and implement laws and policies that successfully guide both private and governmental decisions for sustainable development, and to regularly assess and modify them when appropriate to improve their effectiveness.¹⁴⁹ Most countries now have legislation and corresponding administrative authority to control pollution from industrial and other activities, and to limit the manner in which certain natural resources are exploited. In developed countries such as the United States, significant pollution control laws have been in place for several decades; many developing countries are adopting similar controls. Most countries also have some kind of legislation to protect wildlife, forests, soil, fisheries, and other natural resources. Whatever their effectiveness in particular nations, these laws represent a starting point for the environmental and natural resources protection part of sustainable development.

A national sustainable development effort would build on these efforts but would modify them in several ways. To begin with, such efforts would need to consider all natural resources and environmental systems, not just particular problems. A bedrock principle in such efforts would be the conservation and restoration of natural systems and resources. In addition, these efforts need to be more systematically directed toward production and consumption of materials and energy. National efforts also would require greater integration of decisionmaking for economic sectors, natural resources, and social issues. They should also reflect the polluter-pays principle and the precautionary principle more fully than they do now.¹⁵⁰ Finally, these legal efforts will need to depend on a variety of mutually reinforcing policies and legal instruments, e.g., economic instruments, information, subsidy reform, not simply or even primarily regulation.

These differences mean that sustainable development is not going to be achieved in the United States and other de-

144. In addition to coordination, some national-level entity should review proposed legislation, including budget and appropriations legislation, for its potential to further or impede sustainable development goals.

145. Agenda 21, *supra* note 7, ¶ 8.5(g).

146. Moreover, a nagging problem with local flexibility is competition for economically attractive but environmentally unsustainable industry between jurisdictions within a country; local jurisdictions often use reduced environmental standards, tax relief or subsidies to make their jurisdiction a more appealing location for such industry. Compare Richard L. Revesz, *Rehabilitating Interstate Competition: Rethinking the "Race-to-the-Bottom" Rationale for Federal Environmental Regulation*, 67 N.Y. U. L. REV. 1210, 1253 (1992) (arguing that competition for industry among states should not decrease social welfare, and should be considered "at least presumptively beneficial") with Daniel C. Esty, *Revitalizing Environmental Federalism*, 95 MICH. L. REV. 573 (1996) (arguing for multiple tiers of government for environmental regulation, with specific mix of tiers based on nature of the problem being addressed and the most significant types of regulatory failure that have occurred or are expected) and Kirsten H. Engel, *State Environmental Standard-Setting: Is There a "Race" and Is It "to the Bottom"?*, 48 HASTINGS L.J. 271 (1997) (arguing that empirical data demonstrate the existence of interstate competition among states for industry that results in lower environmental standards).

147. See Rio Declaration, *supra* note 6, prins. 2, 5-7, 9, 12-14, 18, 19, 27. Agenda 21 states that it "marks the beginning of a new global partnership for sustainable development." Agenda 21, *supra* note 7, ¶ 1.6. Ongoing international cooperation is also detailed in recent treaties. See, e.g., Straddling and Highly Migratory Fish Stocks Agreement, *supra* note 117; Vienna Convention for the Protection of the Ozone Layer, Mar. 22, 1985, art. 4, UNEP Doc. 1G.53/5/Rev. 1, reprinted in 26 I.L.M. 1529 (1987).

148. See Agenda 21, *supra* note 7, ¶ 8.16(b) (stressing the importance of a national legal and policy framework for sustainable development).

149. See *id.* ¶ 8.13 ("Laws and regulations suited to country-specific conditions are among the most important instruments for transforming environment and development policies into action . . ."). The design and implementation of this framework, particularly for developing countries, may require legal and other assistance, including training, from NGOs, academic institutions, and others; such assistance should be provided as needed. See *id.* ¶¶ 8.19, 8.20. Agenda 21 also calls for improvements in reporting for legal and other measures taken by governments in response to international agreements. See *id.* ¶ 8.22. Governments also should establish strategies to ensure compliance with their laws as well as procedures for judicial and administrative review. *Id.* ¶¶ 8.18, 8.21.

150. See, e.g., CELIA CAMPBELL-MOHN ET AL., ENVIRONMENTAL LAW FROM RESOURCES TO RECOVERY (Env'tl. L. Inst. 1993) (analyzing lack of systemic approach to economic activities in U.S. laws).

veloping countries with only the same kind of laws that currently exist. As important and necessary as these laws are, they do not reflect the range or depth of actions necessary for protection of the environment and natural resources, nor are they necessarily the most economically efficient means of achieving that protection. The basic reality is that we have little, if any, present or historical experience with technologically advanced societies that are ecologically sustainable. As a consequence, the analytical and legal tools needed for sustainable development are at best partially understood and tested.¹⁵¹ To a large extent, countries will need to consider legal and policy approaches that are not now even fully conceptualized. In addition, they will need to develop laws that provide a transition from unsustainable to sustainable development without materially compromising their existing social and economic achievements.

Consequences for International Law and Governance

At the international level, another issue needs to be addressed. The international law norms that provide the basis for development—treaties involving peace and security, economic development (including trade), and human rights—tend to be broader, more precise, and much older than many environmental norms, and generally have stronger political constituencies supporting them.¹⁵² A great many environmental goals in Agenda 21, by contrast, have little or no support in treaties. They simply represent declarations at an international conference, “soft law,” in international parlance, and do not have the status of treaties or other “hard” international law. Even where environmental objectives are based on a treaty, e.g., climate change, biodiversity, they are often stated only vaguely, are relatively new, and are supported by weaker political constituencies.

It seems unlikely that the environment can be made equal in real-world stature to traditional development norms if it does not have equivalent legal stature. A number of treaties and protocols adopted since the 1992 Earth Summit, including the Desertification Convention,¹⁵³ the Straddling Fish Stocks Agreement,¹⁵⁴ the Kyoto Protocol to the Climate Change Convention,¹⁵⁵ the Cartagena Protocol to the Biodiversity Convention,¹⁵⁶ and the Stockholm Convention on Persistent Organic Pollutants,¹⁵⁷ may suggest a

path to resolution of this issue. Each of these agreements builds on, and draws from, the action items and principles stated in Agenda 21 and the Rio Declaration. It is likely that new and more detailed treaties will need to grow out of these instruments, or that existing instruments will need to be modified, if the environment is to attain legal status equivalent to development norms that are already established in other treaties.¹⁵⁸

Role of the United States

The U.S. role in attaining sustainable development should be guided by the principles of developed country leadership and international cooperation. As previously explained, the rationales for developed country leadership are (1) their responsibility for a major share of global environmental problems, and (2) their superior ability to address these problems. These rationales apply with particular force to the United States. The United States has been, and continues to be, a major contributor to many global environmental problems.¹⁵⁹ In addition, the country has an enormous capacity for technological innovation, abundant natural resources, and one of the world’s best educational systems.¹⁶⁰ The United States is thus often said to have a “special obligation” to help the world attain sustainable development.¹⁶¹ At the same time, growing global poverty and environmental degradation are not the responsibility of any one country alone, and cannot be solved by any one country acting alone. Thus, the United States is called on to work with other countries in a shared effort to achieve sustainable development.

It is often said of challenging endeavors that nations or individuals can lead, follow, or get out of the way. With the world’s single strongest economy and military, the United States is in an unparalleled position to play a key international leadership role on sustainable development. The United States can also permit the European Union, Japan, and other developed countries to play the leadership role, and follow their lead. This choice, of course, would be politically unpalatable to many. Because of its dominant role in international affairs, however, the United States cannot simply get out of the way. If the United States does not lead or follow, it will be an obstacle to international efforts to attain sustainable development.

151. See, e.g., James Salzman, *Sustainable Consumption and the Law*, 27 ENVTL. L. 1243, 1255 (1997) (“Over the past [25] years, no country’s laws have addressed the environmental impacts of consumption in a systematic manner.”).

152. This is particularly true of economic development and peace and security. Even in the human rights area, though, norms are broader and seemingly better established, despite the reality that they are often ignored.

153. United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, June 17, 1994, U.N. Doc. A/AC.241/15/Rev. 7, 33 I.L.M. 1328 (1994).

154. Straddling and Highly Migratory Fish Stocks Agreement, *supra* note 117.

155. Kyoto Protocol to the Framework Convention on Climate Change, FCCC Conference of the Parties, 3d Sess., U.N. Doc. FCCC/CP/1997/L.7/Add.1 (Dec. 10, 1997), 37 I.L.M. 22 (1998).

156. Cartagena Protocol on Biosafety to the Convention on Biological Diversity, Jan. 29, 2000, available at <http://www.biodiv.org/biosafe/Protocol/html/Biosafe-Prot.html> (last visited Oct. 15, 2001).

157. Stockholm Convention on Persistent Organic Pollutants, in Report of the Intergovernmental Negotiating Committee for an Interna-

tional Legally Binding Instrument for Implementing International Action on Certain Persistent Organic Pollutants on the Work of Its Fifth Session 13, Dec. 4-9, 2000, UNEP/POPS/INC.5/7.

158. In addition, some have suggested that the environment needs an international institutional presence equivalent to that enjoyed by such organizations as the World Trade Organization (WTO) if environment and development are to be given truly equal weight in decisionmaking. See Daniel C. Esty, *The Case for a Global Environmental Organization*, in *MANAGING THE WORLD ECONOMY: FIFTY YEARS AFTER BRETTON WOODS 287* (Peter B. Kenen ed., 1994). At present, international environmental responsibilities regarding the environment are divided among the CSD, the U.N. Environment Program, and the secretariats or administrative bodies for various multilateral environmental agreements. None of these entities has anything like the stature or clout of the WTO or the World Bank.

159. E.g., see *supra* note 103 and accompanying text.

160. OECD, ENVIRONMENTAL PERFORMANCE REVIEWS: UNITED STATES 129-30 (1996) (identifying these strengths as having particular importance for sustainable development).

161. See, e.g., NATIONAL RESEARCH COUNCIL, *supra* note 40, at 320.

Can It Be Done?

It may be said, after the terrorist attacks of September 11, 2001, that the national and international response to terrorism should trump all other objectives, including sustainable development. That view is profoundly mistaken. As previously explained, sustainable development is based on explicit recognition of the need for peace and security. Sustainable development is not antagonistic to a campaign against terrorism; it requires that campaign. But sustainable development is also based on recognition of the interconnected nature of our social, economic, environmental, and security goals. Thus, it means that the campaign against terrorism cannot succeed by force of arms alone. Because sustainable development would reduce and eventually eliminate the large-scale poverty and related environmental degradation that may contribute to terrorism, sustainable development must necessarily be a major part of the antiterrorism effort. The international leadership role that the United States is taking against terrorism may give it opportunities to advance this constructive and broader agenda.

It is also easy to simply say that sustainable development cannot be achieved—that human activity cannot be made to protect and restore the environment, and that large-scale poverty cannot be eliminated. But some evidence and greater necessity suggest caution before jumping to that conclusion. Pollution control laws in the United States and other developed countries have made cities more liveable, lakes and rivers more suitable for recreation, workplaces safer, and the air healthier—even as the economies of those countries have grown.¹⁶² Indeed, it is reasonable to suggest from these experiences that, in some respects, there has already been some progress toward sustainable development. Sustainable development requires us to improve upon, and extrapolate from, these experiences.

It is also appropriate to focus most of our attention on what needs to be done by or before a specified future date, such as 2050. This period represents about two human generations, and includes a period during which the challenge of harmonizing development and environment goals will become much more difficult. If we cannot make the transition from an unsustainable society to a sustainable society during this period, both humans and the environment are likely to experience significant harm.¹⁶³ A two-gener-

ation period is also realistic, because it is possible to plan and act with a reasonable level of confidence for this period, and vastly more difficult to do so for the next 100 years or beyond.¹⁶⁴

In 1999, the National Research Council (NRC) issued a thoughtful report concluding that “a successful transition toward sustainability is possible over the next two generations.”¹⁶⁵ According to the report:

This transition could be achieved without miraculous technologies or drastic transformations of human societies. What will be required, however, are significant advances in basic knowledge, in the social capacity and technological capabilities to utilize it, and in the political will to turn this knowledge and know-how into action.¹⁶⁶

Of course, governance and law are part of the social capacity and knowledge required for the transition. This transition is unlikely to occur unless needed actions are begun now.¹⁶⁷ The “troubling news,” the NRC added, is that it “is by no means clear how the required public mobilization and political vision could arise in the context of conventional values, lifestyles, and institutions.”¹⁶⁸

Marjory Stoneman Douglas, who spent most of her life fighting to protect the Florida Everglades, was asked on her 100th birthday whether she was hopeful about its future. “I am neither an optimist nor a pessimist,” she replied. “I say it’s got to be done.”¹⁶⁹ The same can be said of sustainable development.

164. *See id.* (“[T]wo generations is a realistic time frame for scientific and technological analysis that can provide direction, assess plausible futures, measure success—or the lack of it—along the way, and identify levers for changing course.”). *See also* COMMITTEE ON THE SCIENCE OF CLIMATE CHANGE, NATIONAL RESEARCH COUNCIL, CLIMATE CHANGE SCIENCE: AN ANALYSIS OF SOME KEY QUESTIONS 18 (2001), available at <http://books.nap.edu/html/climate-change/climatechange.pdf> (last visited Oct. 15, 2001) (“One rationale for focusing first on 2050, rather than 2100, is that it is more difficult to foresee the technological capabilities that may allow reduction of greenhouse gas emissions by 2100.”).

165. NATIONAL RESEARCH COUNCIL, *supra* note 40, at 7.

166. *Id.*

167. *Id.* at 161-76 (describing scenarios for how the transition could occur for hunger and carbon reduction). These scenarios envision significant progress by 2025, which will not be possible unless significant actions are taken much earlier.

168. *Id.* at 168.

169. James LeMoyne, *Everglades Sentinel on Watch at 100*, N.Y. TIMES, Apr. 8, 1990, at A20.

162. *See, e.g.*, PRESIDENT’S COUNCIL ON SUSTAINABLE DEVELOPMENT, *supra* note 4, at 26-27 (describing the improvement in the natural environment of the United States).

163. NATIONAL RESEARCH COUNCIL, *supra* note 40, at 3.

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16. Environmentally sound management of biotechnology
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