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Achieving Sustainable Development: The Centrality and Multiple Facets of Integrated Decisionmaking

JOHN C. DERNBACH*

The biggest challenge for sustainable development in coming decades will be to operationalize it: to make it occur, or to make an effective transition toward it, in communities, places, and businesses all over the world. Very few seriously question the problems that sustainable development is intended to address—growing environmental degradation and a growing gap between rich and poor. There is also greater understanding that sustainable development is based on a set of principles that would profoundly affect national and international governance.

The relationships among these principles are less well understood, though. Much of the public and academic discussion concerning sustainable development focuses on intergenerational equity¹ and the precautionary approach or principle² alone. Worse still, given the current and increasing magnitude of the world's environmental and poverty problems, relatively little progress has been made toward sustainable development in the past decade. In 1992, at the United Nations Conference on Environment and Development, or Earth Summit, in Rio de Janeiro, countries of the world agreed to Agenda 21, an ambitious plan of action for realizing sustainable development.³ Sustainable development is development that protects and even restores the environment rather than degrades or pollutes it. It is intended to address the mutually

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1. See EDITH BROWN WEISS, IN FAIRNESS TO FUTURE GENERATIONS: INTERNATIONAL LAW, COMMON PATRIMONY, AND INTERGENERATIONAL EQUITY 37, 38 (1989); AVNER DE-SHALIT, WHY POSTERITY MATTERS: ENVIRONMENTAL POLICIES AND FUTURE GENERATIONS (1995); see also *Sustainable Development Symposium*, 11 TUL. ENVTL. L.J. 1 (1997) (articles discussing intergenerational equity).

2. See, e.g., INTERPRETING THE PRECAUTIONARY PRINCIPLE (Timothy O'Riordan & James Cameron eds., 1994); PROTECTING PUBLIC HEALTH & THE ENVIRONMENT: IMPLEMENTING THE PRECAUTIONARY PRINCIPLE (Carolyn Raffensperger & Joel A. Tickner eds., 1999); REINTERPRETING THE PRECAUTIONARY PRINCIPLE (Tim O'Riordan et al. eds., 2001); Christopher D. Stone, *Is There a Precautionary Principle?*, 31 ENVTL. L. REP. 10790 (2001); James E. Hickey, Jr. & Vern R. Walker, *Refining the Precautionary Principle in International Environmental Law*, 14 VA. ENVTL. L.J. 423, 436 (1995).

3. See *U.N. Conference on Environment and Development (UNCED), Agenda 21*, ¶ 8.7, U.N. Doc. A/CONF.151/26/Rev.1 (Vol. I), U.N. Sales No. E.93.I.8 (1992) [hereinafter *Agenda 21*].

reinforcing problems of global environmental degradation and global poverty without compromising the benefits of traditional development. These benefits include economic development, social well-being, and peace and security. The countries also agreed to a set of twenty-seven principles, known as the Rio Declaration, to guide the Agenda.⁴ A major reason for the failure to make more progress in achieving sustainable development is the failure of nations and the international community to translate the plan and principles into specific actions in specific places.

To operationalize sustainable development, we need to recognize that one principle—integrated decisionmaking—holds the other principles together. Integrated decisionmaking would ensure that environmental considerations and goals are integrated or incorporated into the decisionmaking processes for development, and are not treated separately or independently. Of all the principles contained in the sustainable development framework, integrated decisionmaking is perhaps the principle most easily translated into law and policy tools. We also need to recognize that integrated decisionmaking has multiple facets, not a single meaning. When we see the many facets or types of integrated decisionmaking, we find a major way to operationalize sustainable development. Each facet of integrated decisionmaking can be implemented by applying or broadening the application of tools that are already receiving some use. These tools also provide practical ways to move toward sustainable development.

Effecting a transition toward sustainable development would have profound impacts on globalization. Advocates of globalization argue that a rising tide lifts all boats, and suggest that economic development will sooner or later also bring greater social development and environmental protection with it. Critics of globalization argue that its economic benefits are confined to developed countries and roughly a dozen developing countries. Moreover, they add, economic development in developing countries comes at the expense of human rights and environmental protection. Put in starker terms, they argue that globalization is unsustainable in its current form. Since the failure of trade talks in Seattle in 1999, it has been clear that further progress on trade will depend on the extent to which these issues are addressed. Further progress in globalization, in sum, likely depends on progress toward global sustainable

4. *UNCED, Rio Declaration on Environment and Development*, U.N. Doc. A/CONF.151/5/Rev. 1, reprinted in 31 I.L.M. 874 (1992) [hereinafter *Rio Declaration*].

development. Thus, integrated decisionmaking is also a necessary response to the negative effects of globalization.

Part I of this article argues that integrated decisionmaking is the foundational principle of sustainable development. It shows that other principles, including the precautionary approach, intergenerational equity, and public participation, all depend on integrated decisionmaking. Part I also makes functional arguments for integrated decisionmaking. Unsustainable development results from the fragmentation of decisionmaking into economic, security, environmental, and social categories. Thus, sustainable development requires that fragmentation in decisionmaking be eliminated—that is, that environmental and social concerns be integrated into economic and security decisionmaking. The foundational aspect of integrated decisionmaking has substantial practical consequences for the achievement of sustainable development, for it suggests that the achievement of sustainable development will depend to a great degree on the extent to which integrating legal and analytical tools can be devised and employed.⁵ It also suggests an important role for law and lawyers in the quest for sustainable development.

Part II describes the many facets of integrated decisionmaking that are referred to in the Rio texts. Decisionmaking processes can be integrated according to their objective, the resources they affect, the activities on which they are based, the place in which activities take place, and the time over which their effects will be felt. A variety of legal and policy tools can be integrated into the decisionmaking process. In addition, the decisions of multiple decisionmakers can be integrated with each other. Integrated decisionmaking thus provides a relatively concrete and specific means of thinking about and operationalizing sustainable development. As Part II indicates, these forms of integrated decisionmaking suggest a set of important law and policy tools for achieving sustainable development—tools whose potential we have only begun to exploit. This is true even though, in the United States, we have a sophisticated and extensive set of environmental protection and conservation laws—laws that have not changed appreciably since the Earth Summit.⁶

5. See Philippe Sands, *International Law in the Field of Sustainable Development: Emerging Legal Principles*, in *SUSTAINABLE DEVELOPMENT AND INTERNATIONAL LAW* 53, 61 (Wilfried Lang ed., 1995) (describing integration as the principle that is probably most closely connected to law).

6. See generally *STUMBLING TOWARD SUSTAINABILITY* (John C. Dernbach ed., 2002) [hereinafter *STUMBLING TOWARD SUSTAINABILITY*]; John C. Dernbach, *Synthesis*, in *STUMBLING TOWARD SUSTAINABILITY*, *id.* at 1 (“[O]n balance, the United States is now far from being a sustainable society, and in many respects is farther away than it was in 1992.”).

In 1993, shortly after the Earth Summit, Dan Tarlock wrote: “The real debate about how environmental considerations should be integrated into the economic and social order is just beginning.”⁷ He was right then and, unfortunately, is still right today.

I. INTEGRATED DECISIONMAKING AS FOUNDATIONAL

Integrated decisionmaking is foundational to sustainable development.⁸ It goes to the very core of what the Earth Summit tried to achieve, and it responds to the governance failures that cause and contribute to unsustainable development. The other principles of sustainable development all depend on or require integrated decisionmaking. In addition, the “gap in implementation” of sustainable development since Rio can be ascribed almost entirely to the failure to achieve integrated decisionmaking.⁹

As the official name of the 1992 summit meeting—the U.N. Conference on Environment and Development—makes clear, sustainable development represents the marriage of environment and development. Sustainable development is ecologically sustainable human development; it includes but is not limited to economic development. The word “development” in sustainable development is understood internationally to include peace and security, economic development, and social development or human rights.¹⁰ All of these together are directed toward human quality of life, freedom, and opportunity.¹¹ Although development has brought many benefits since the end of World War II, it has also caused or been accompanied by unprecedented environmental deterioration and a widening gap between the rich and the poor. These are

7. A. Dan Tarlock, *Environmental Law, But Not Environmental Protection*, in NATURAL RESOURCES POLICY AND LAW: TRENDS AND DIRECTIONS 162, 189-90 (Lawrence J. MacDonnell & Sarah F. Bates eds., 1993).

8. See Howard Mann, *Comment on the Paper by Philippe Sands*, in SUSTAINABLE DEVELOPMENT AND INTERNATIONAL LAW, *supra* note 5, at 71 (describing integration as “the most essential principle of international law for sustainable development”).

9. See *Implementing Agenda 21: Report of the Secretary-General*, U.N. Commission on Sustainable Development (UNCSD) acting as the preparatory committee for the World Summit on Sustainable Development, 2d Sess. ¶ 4, 5, U.N. Doc. E/CN.17/2002/PC.2/7 (2002) [hereinafter *Implementing Agenda 21*]; see also *Assessment of Progress in the Implementation of Agenda 21 at the National Level: Report of the Secretary-General*, UNCSD, 5th Sess. ¶ 117, U.N. Doc. E/CN.17/1997/5 (1997) [hereinafter *Report of the Secretary-General*] (noting progress in some areas but concluding that the primary challenge is “in moving from the policy development phase to implementation”).

10. See John C. Dernbach, *Sustainable Development as a Framework for National Governance*, 49 CASE W. RES. L. REV. 1, 9-14 (1998).

11. See generally AMARTYA SEN, *DEVELOPMENT AS FREEDOM* (1999).

related problems; environmental degradation contributes to, and results from, poverty.¹² By adding “sustainable” to “development” in 1992, the nations of the world were attempting to address these problems together. The essential idea is to protect and restore the environment at the same time as we foster peace and security, economic development, and social development. Put still another way, sustainable development redefines progress to include environmental protection or restoration as something to be achieved along with other goals, not something to be sacrificed in order to reach those goals. Yet like traditional development, sustainable development is directed toward achieving human freedom, opportunity, and quality of life.

Achieving multiple objectives at the same time requires that each of these objectives be incorporated into, or integrated into, decisionmaking processes. Thus, a key, and perhaps the most important key, to achieving sustainable development goes by the unlikely and unattractive name of “integrated decisionmaking,” or simply “integration.” It is the concept that both binds and provides the foundation for the many principles contained in the sustainable development framework. Sustainable development is widely recognized as a framework of concepts or principles, rather than a single concept or principle. Among the twenty-seven principles in the Rio Declaration are the precautionary approach, the polluter-pays principle, intergenerational equity, integrated decisionmaking, developed country leadership, and public participation. Yet integrated decisionmaking provides the glue that holds the other principles together, and is the principle on which the other principles depend.

Integrated decisionmaking is a direct response to the tendency of governments, corporations, and other decisionmakers to treat the environmental or social 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.¹³ These same governments then try to use their environmental ministries or agencies to limit the resulting damage, which is often difficult or impossible.¹⁴ This tendency to consider the environment and development separately is a

12. See WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT, *OUR COMMON FUTURE* (Oxford Press 1987) [hereinafter *OUR COMMON FUTURE*].

13. See *id.* at 122-23.

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

major reason why governmental efforts often fail, or at least fall significantly short of their goals.¹⁵

Negative environmental and poverty trends pose a profound challenge to national governance, and to the legitimacy of both national and international governance. By ignoring the environment, governments make it harder, more costly, or even impossible to do the other things they have committed to doing: providing peace and security for their citizens, fostering economic development, and providing conditions for social development and human rights. To the extent that legitimacy is based on outcomes, in the broad sense, then it is increasingly true that governments cannot afford to ignore the environment, either in the short run or in the long run.

Wholly apart from their potential to undermine the other goals of national governance, environmental degradation and the growing gap between rich and poor raise profound challenges to governance. Like terrorism, these trends are deeply destabilizing. This is particularly true when globalization, including the growth in global trade, is contributing to environmental degradation.¹⁶ If globalization is to play a mostly positive role, it must occur within the context of integrated decisionmaking.

The Rio Declaration and Agenda 21 are emphatic about the central role of 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."¹⁷ This principle asserts that environmental protection and development must be considered together, which would require integration of decisionmaking. Agenda 21 adds that the first and most important thing national governments need to do is "integrate environmental and development

15. See generally WILLIAM ASCHER, *WHY GOVERNMENTS WASTE NATURAL RESOURCES: POLICY FAILURES IN DEVELOPING COUNTRIES* (1999).

16. This is not necessarily the fault of the World Trade Organization, but rather of national governments. See Sanford Gaines, *International Trade*, in *STUMBLING TOWARD SUSTAINABILITY*, *supra* note 6, at 147-48 ("What goods are produced where and what services are provided where are influenced not by trade policy but by the economic, social, and geographical conditions of each country and the economic and social policies of national governments.").

17. *Rio Declaration*, *supra* note 4, at Principle 4. See also *Rio Declaration on Environment and Development: Application and Implementation, Report of the Secretary-General*, UNCSO, 5th Sess. ¶ 31, E/CN.17/1997/8 (1997) ("Principle 4 reflects the emphasis on integration, interrelation and interdependence of environment and development, which forms the backbone of sustainable development"); see also *id.* at Principles 11, 25; *Framework Convention on Climate Change: United Nations Framework Convention on Climate Change*, pmbl., art. 4.1(f), U.N. Doc. A/AC.237/18, reprinted in 31 I.L.M. 849 (1992) [hereinafter *Framework Convention on Climate Change*].

decisionmaking processes.”¹⁸ Agenda 21 also describes the “overall objective” as “the integration of environment and development policies through appropriate legal and regulatory policies, instruments and enforcement mechanisms.”¹⁹

Other Rio Declaration principles also expressly affirm the importance of integrated decisionmaking. One principle states: “Peace, development and environmental protection are interdependent and indivisible.” In this and in two other provisions,²⁰ the Rio Declaration expressly acknowledges that peace and security are required for sustainable development, and that governmental decisions concerning security should, among other things, be protective of the environment, economic development, and social development. This is not possible unless decisions regarding those objectives are integrated. Trade policy, too, is to be based on a mutually supportive approach to environment and development goals.²¹ Mutual supportiveness presupposes integration of goals and the decisionmaking process for achieving those goals. Another principle would have national governments prepare environmental impact assessments before undertaking activities that may significantly affect the environment.²² Environmental impact assessment is a means of obliging decisionmakers, at a minimum, to consider in advance the environmental effects of their economic or social decisions.

Other principles, too, make sense only in the context of integrated decisionmaking. For example, principles that urge the sharing of environmental information with other countries²³ can only suggest that this information would be relevant to the decisionmaking process in other countries. Another principle states: “Human beings are at the center of concerns for

18. *Agenda 21*, *supra* note 3, ¶ 8.4.

19. *Id.* ¶ 8.16.

20. See *Rio Declaration*, *supra* note 4, Principle 24 (“Warfare is inherently destructive of sustainable development. States shall therefore respect international law providing protection for the environment in times of armed conflict and cooperate in its further development, as necessary.”); *id.*, Principle 26 (“States shall resolve all their environmental disputes peacefully and by appropriate means in accordance with the Charter of the United Nations.”).

21. See *Agenda 21*, *supra* note 3, ¶ 2.10(d) (stating that “the international community should . . . [e]nsure that environment and trade policies are mutually supportive”).

22. *Rio Declaration*, *supra* note 4, Principle 17.

23. *Id.*, Principle 18 (“States shall immediately notify other States of any natural disasters or other emergencies that are likely to produce sudden harmful effects on the environment of those States. Every effort shall be made by the international community to help States so afflicted.”); *id.*, Principle 19 (“States shall provide prior and timely notification and relevant information to potentially affected States on activities that may have a significant adverse transboundary environmental effect and shall consult with those States at an early stage and in good faith.”).

sustainable development. They are entitled to a healthy and productive life in harmony with nature.” This is only possible if human health and productivity are sought in a way that is harmonious with the environment. Similarly, the injunction to “reduce and eliminate unsustainable patterns of production and consumption” is intended to decouple production from the intense consumption of materials, energy, and water. This principle only makes sense if public and private decisionmakers can integrate the environmental, social, and economic effects of their production and consumption decisions. That is, the intended decoupling can occur only if both such effects and production and consumption decisions are part of the same decisionmaking process.

In other cases, the Rio Declaration supports the kind of integrated data that is necessary for integrated decisionmaking. The polluter-pays principle,²⁴ for example, would have polluters internalize their environmental costs. The idea, which is standard to environmental economics, is that the price of a product or service should reflect all of its environmental costs. Because those costs are incorporated the product’s price, the price becomes a source of integrated information about both its economic and environmental costs.

Even the widely-discussed precautionary approach comes into play only when there has been an initial decision to integrate environmental concerns into a decisionmaking process. Put differently, the precautionary approach is about the level of scientific certainty required in integrated decisionmaking. The Rio Declaration formula is indicative: “In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.”²⁵ Because environmental decisions tend to rely to a great degree on incomplete scientific information, scientific uncertainty has been used by opponents as an argument against acting. Thus, the Rio Declaration presupposes the potential for a decision relating to the environment, and would allow action against “threats of serious or irreversible damage” where “cost-effective measures” are available. Explicit in this formula is some kind of integrated analysis and decisionmaking concerning the potential environmental damage and the cost-effectiveness of

24. “National authorities should endeavour to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment.” *Id.*, Principle 16.

25. *Id.*, Principle 15.

available mitigation measures.²⁶ The precautionary principle, then, is not independent from integrated decisionmaking. Rather, it would structure the manner in which integrated decisionmaking occurs.

Similarly, intergenerational equity requires integrated decisionmaking. The Rio Declaration formula is explicit about integration: “The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations.”²⁷ By this measure, intergenerational equity is directed toward both the environmental and developmental endowments provided to future generations. Put differently, integration of decisionmaking for each major component of sustainable development—environmental, economic, security, and social—must be accomplished not just for the present but also for the future.²⁸ Like the precautionary principle, then, intergenerational equity is not an independent principle. Intergenerational equity would structure the goals that integrated decisionmaking should be used to attain; it cannot be accomplished unless decisionmaking related to environment and development is integrated.

Another major principle, citizen participation, is justified in large part by its contribution to integrated decisionmaking. “Environmental issues,” the Rio Declaration states, “are best handled with the participation of all concerned

26. There are, of course, other versions of the precautionary principle. But each of them has integrated decisionmaking as its foundation. John Applegate explains that each version of the precautionary principle has a trigger describing the anticipated harm or basis for concern, language concerning the timing of the harm in relation to the response, a description of the type of appropriate response, and a requirement to revisit the initial, precautionary regulatory action. John Applegate, *The Taming of the Precautionary Principle*, 27 WM. & MARY ENVTL. L. & POL’Y REV. (forthcoming Fall 2002). Because the anticipated harm or basis for concern ordinarily pertains directly to the consequences of something related to the environment, the precautionary principle necessarily requires a decisionmaking process that integrates the magnitude and timing of the potential environmental impact with economic and other concerns. In addition, the type of appropriate response and its optional or mandatory nature ordinarily reflect some balancing of economic, social, and environmental factors. *Id.*

27. *Rio Declaration*, *supra* note 4, Principle 3.

28. A three-part formula for intergenerational equity articulated by Edith Weiss Brown also requires integrated decisionmaking. IN FAIRNESS TO FUTURE GENERATIONS, *supra* note 1, at 38. Under the first part of this formula, each generation should conserve the options of future generations by conserving “the diversity of the resource base.” The second expresses both an entitlement by this generation to a quality of planet enjoyed by prior generations and an obligation to pass to the next generation a quality of planet that is no worse than it received. The third, conservation of access, requires all people in the current generation to have the same minimum level of access to this legacy. *Id.* None of these features of intergenerational equity—diversity of the resource base, quality of planet, and minimum access—is possible without a system of decisionmaking that ensures their achievement. Because we can be very sure that governments, nongovernmental entities, and individuals who make decisions relevant to intergenerational equity will continue to pursue other goals as well, including economic, social, and security goals, intergenerational equity requires a system of integrated decisionmaking.

citizens.”²⁹ One of the four major sections of Agenda 21 is entitled “Strengthening the Role of Major Groups.” It specifically describes the roles that women, children and youth, indigenous people, nongovernmental organizations, workers and their trade unions, business and industry, the scientific and technological community, and farmers need to play in achieving sustainable development.³⁰ Public participation in governmental decisionmaking is a basic civil right, enshrined in many national constitutions and human rights treaties in the form of rights that include the right to petition for redress of grievances, to vote, and to use and participate in judicial processes. Public participation is important as a social and individual right, but this is not the only reason why public participation is central to sustainable development. To a great degree, public participation is essential to ensuring that social and environmental considerations and goals are integrated into governmental decisionmaking. These provisions are justified by the special knowledge that particular persons have concerning environmental and social conditions, and by the likelihood that their participation will help ensure consideration of environmental effects and goals in governmental decisionmaking. Unless groups with social and environmental agendas participate in government decisionmaking, those agendas are not likely to be heard.³¹ This is particularly true, as public choice theory suggests, because governmental forces acting on behalf of unsustainable development are not likely simply to disappear. Public participation, in short, is needed to ensure that integrated decisionmaking actually occurs.³²

Developed country leadership, another important principle in the Rio Declaration, is leadership in integrated decisionmaking. Developed countries are expected to take the lead in achieving sustainable development because they have more resources and because they have contributed disproportionately to many of the global environmental problems that sustainable development is

29. *Rio Declaration*, *supra* note 4, Principle 10.

30. *Agenda 21*, *supra* note 3, ¶¶ 23.1-32.14.

31. *See id.* ¶¶ 23.2 (“One of the fundamental prerequisites for the achievement of sustainable development is broad public participation in decision-making.”), ¶ 27.3 (“non-governmental organizations...possess well-established and diverse experience, expertise and capacity in fields which will be of particular importance to the implementation and review of environmentally sound and socially responsible sustainable development.”).

32. Moreover, Agenda 21 and the Rio Declaration indicate that such persons or groups should be integrating environmental concerns into their own decisionmaking. *See id.* ¶¶ 23.1-32.14. Thus, public participation and democratic governance are utterly essential to the kind of integrated governmental and nongovernmental decisionmaking that is essential for sustainable development.

supposed to address.³³ A major point, of course, is that developed countries have a responsibility to be examples of sustainable development, even as they have been and continue to be examples of unsustainable development. They can become examples by integrating their decisionmaking processes in ways that developing countries can emulate.

Thus, integrated decisionmaking is a response to the fragmented decisionmaking process that causes unsustainable development, and its centrality to sustainable development is expressly and implicitly supported by the Rio texts. In addition, the failure during the past decade to achieve, or even seriously begin a transition toward, sustainable development can be explained in large part by a failure to achieve integrated decisionmaking. The U.N. Secretary-General's 2002 report on progress since Rio ascribes the "gap in implementation" to four main causes,³⁴ each of which is directly or indirectly related to integrated decisionmaking. First, the report notes, there is a "fragmented approach" to decisionmaking, caused by a failure to integrate economic, social, and environmental objectives at both national and international levels.³⁵ In addition, policies for "finance, trade, investment, technology and sustainable development" remain "compartmentalized" and lack mutual coherence. "In a globalizing world," the report says, "the need for consistency and coherence in these policies has become more important than ever before."³⁶ Moreover, no major changes have occurred in unsustainable patterns of production and consumption.³⁷ Even though these patterns "are among the main driving forces which determine the use of natural resources," governments, producers, and consumers have not changed their decisionmaking processes. Finally, developed countries in particular have not provided the necessary financial resources to developing countries to implement Agenda 21.³⁸ Put another way, developed countries have not integrated sustainable development fully into their foreign policy decisionmaking processes. Thus, failure to achieve integrated decisionmaking is at the root of continued environmental degradation and the widening gap between rich and poor after

33. *Rio Declaration*, *supra* note 4, Principle 7 ("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.")

34. *See Implementing Agenda 21*, *supra* note 9, ¶¶ 4-7.

35. *Id.* ¶ 4.

36. *Id.* ¶ 6.

37. *Id.* ¶ 5.

38. *Id.* ¶ 7.

Rio, just as this failure led to Rio in the first place. It is thus not surprising that the Rio texts are based on, or held together by, integrated decisionmaking.

To be sure, integrated decisionmaking, by itself, has some pronounced weaknesses. It does not supply specific substantive environmental or social goals toward which decisionmaking processes should be directed, either in the short term or for future generations.³⁹ Of equal importance, integrated decisionmaking by itself does not tell the decisionmaker how to handle scientific uncertainty, what time horizon he or she should employ, whether to involve others in the decisionmaking process, how developed countries should take the lead, or how to answer various questions that are addressed by other parts of the sustainable development framework. The point, then, is not that integrated decisionmaking is the only principle in sustainable development, or that it operates as substitute for specific and substantive environmental goals. The point, rather, is that all other principles and concepts in the sustainable development framework have integrated decisionmaking at their foundation, and that integrated decisionmaking provides the glue that holds them together. Without integrated decisionmaking, sustainable development is simply an odd assortment of unrelated principles.

II. FACETS OF INTEGRATED DECISIONMAKING

Integrated decisionmaking has four basic facets or aspects. First, decisions can be integrated based on the goal of the process. The goal could simply be to ensure consideration of environmental impacts, or it could be to achieve specific environmental and/or social objectives. A second facet is the scope of the decision-making process, which will vary depending on the resource, activity, or place that is the subject of the decision. A third facet is temporal integration—the extent to which the process includes medium- and long-term consequences of the decision. Finally, the legal and institutional mechanisms needed to make and carry out a decision need to be integrated. These include

39. The Plan of Implementation adopted at the World Summit on Sustainable Development in Johannesburg, South Africa, in 2002 established or affirmed targets and timetables for some social and economic issues. These include reducing by half the number of people in extreme poverty by 2015, reducing by half the number of people without access to safe drinking water by 2015, reducing by half the number of people who lack access to basic sanitation by 2015, and restoring depleted fish stocks by not later than 2015. World Summit on Sustainable Development, Plan of Implementation (advance unedited text, Sept. 5, 2002), available at http://www.johannesburgsummit.org/html/documents/summit_docs/2309_planfinal.pdf.

legal and policy tools as well as coordinating mechanisms among various governmental entities required to implement the decision.

These facets of integration are all distinct, and most if not all of them need to be used if sustainable development is to be achieved. Thus, these forms of integration need to be applied in complementary and mutually-reinforcing ways. In a fundamental way, integrated decisionmaking for sustainable development requires decisions that are based on all forms of integration.

That is not the case at present, of course. Some decisions are integrated, to some degree, and in some ways. The path to sustainability requires “the progressive integration of economic, social and environmental issues” over time.⁴⁰ Put differently, the path to sustainability requires greater and greater integration over time for each facet of decisionmaking. Different forms of integrated decisionmaking make clear that progressive integration of environmental, social, and economic activities will take time, concerted effort, and participation by all relevant decisionmakers. These different forms of integration also suggest a set of criteria or a checklist that may be useful in developing laws and programs for sustainable development. Because integrated decisionmaking is predominantly a legal principle, these types of integration help us identify and implement appropriate legal and policy tools for sustainable development. That, in turn, could help break down one of the major barriers to sustainable development—our lack of knowledge about how to achieve it.⁴¹ These forms of integration also provide criteria for evaluating claims that particular entities have integrated their decisionmaking. They make clear that the existence of integrated decisionmaking is not merely an empirical question; it is also a question about what types of integration have been employed, and with what effectiveness.

Of course, there are many different types of decisionmakers. Decisionmakers include national governments and subdivisions of national governments, such as local and state or provincial governments. Governments are not the only relevant decisionmakers, however. The major groups identified in Agenda 21—farmers, workers, women, children and youth, indigenous peoples, the scientific and technological community, and nongovernmental

40. *Agenda 21*, *supra* note 3, ¶ 8.4; *see also* Mann, *supra* note 8, at 71 (describing integration as “both multilayered and multidirectional”).

41. William C. Clark, *A Transition Toward Sustainability*, 27 *ECOLOGICAL L.Q.* 1021, 1023 (2001) (“[A] powerful impediment to moving toward more sustainable development has proved to be our ignorance about how to do so.”).

organizations—are all decisionmakers in their own right.⁴² However, governments differ from other decisionmakers in that they can adopt and implement laws that encourage, require, or forbid specific actions by nongovernmental actors. Thus, integrated decisionmaking by governments is, to a large degree, decisionmaking that would require or encourage specific types of integration by others. While nongovernmental actors are expected to adhere to relevant laws, they have other roles as well. These roles differ from group to group.⁴³ Nongovernmental actors, in short, can and should engage in integrated decisionmaking in their own activities and roles, wholly apart from what may be required by law.

Despite differences among decisionmakers and their roles, the following types of decisionmaking are common to each. To indicate the usefulness of this typology to law, this section also identifies illustrative legal and policy tools that would facilitate each form of integration, often using or borrowing from U.S. environmental laws. The basic orientation of such laws, of course, would be toward achieving a deeper and more systematic integration of national decisionmaking. Progressive integration should lead to outcomes in which social, environmental, economic, and security objectives are more and more mutually reinforcing over time.

A. Objective of Integration

The goals of integration profoundly affect the type of integration that occurs. Most of the time, integrated decisionmaking is sought for a project or activity whose economic and perhaps social goals are already clear—building a highway or a housing development, for example. For such projects or activities, there may be no environmental goals at all. Integrated decisionmaking can be a means of ensuring that the environment is considered at the same time that economic or perhaps social goals are achieved. This form of integration can be called procedural integration. Integrated decisionmaking can also occur in circumstances where there are specific environmental goals. In these situations, integrated decisionmaking is a way of realizing these

42. See *Agenda 21*, *supra* note 3, ¶¶ 23.1-32.1.

43. The scientific community, for instance, needs to be engaged in scientific research that assists integrated decisionmaking by fostering greater understanding among the relationship among various human-caused stresses on the natural environment. See BOARD ON SUSTAINABLE DEVELOPMENT, NATIONAL RESEARCH COUNCIL, *OUR COMMON JOURNEY: A TRANSITION TOWARD SUSTAINABILITY* 8 (1999) [hereinafter *OUR COMMON JOURNEY*] (urging the development and use of “place based science”).

specific environmental goals at the same time that economic or social goals are realized. This second form of goal-based integration can be described as substantive integration.

1. *Procedural Integration*

Procedural integration is the simultaneous and coherent consideration of economic, environmental, and social factors in making a particular decision.⁴⁴ 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.⁴⁵ Perhaps the most basic example is embodied in the Rio Declaration's suggestion that governments require environmental impact assessments for major projects.⁴⁶ Such assessments, like those required by the National Environmental Policy Act (NEPA), force government agencies to consider the environmental and social effects of significant economic projects.⁴⁷ Procedural integration does not require the decisionmaker to achieve specific environmental or social goals for specific projects or activities, however, or to conform its activities with broader environmental or social goals. The idea is that the assessment will bring this information to the attention of the decisionmaker, who will then make the necessary tradeoffs among social, environmental, and economic goals.⁴⁸

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. It also is rooted in an important insight: all

44. See *Agenda 21*, *supra* note 3, ¶ 8.4 (“The primary need is to integrate environmental and developmental decision-making processes.”); see also *OUR COMMON FUTURE*, *supra* note 12, 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.

45. Keith Wheeler, *Introduction*, in *EDUCATION FOR A SUSTAINABLE FUTURE: A PARADIGM OF HOPE FOR THE 21ST CENTURY* 1 (Keith A. Wheeler & Anne Perraca Bijur eds., 2000).

46. 42 U.S.C. § 4332 (2000); *Rio Declaration*, *supra* note 4, Principle 17.

47. Procedural integration may be a principle of international law. See Alan Boyle & David Freestone, *Introduction*, in *INTERNATIONAL LAW AND SUSTAINABLE DEVELOPMENT: PAST ACHIEVEMENTS AND FUTURE CHALLENGES* 16-17 (Alan Boyle & David Freestone eds., 1999).

48. Procedural integration is even the norm in transboundary environmental impact assessment, notwithstanding the Rio Declaration principle that nations have “the responsibility 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.” *Rio Declaration*, *supra* note 4, Principle 2. See John H. Knox, *The Myth and Reality of Transboundary Environmental Impact Assessment*, 96 AM. J. INT’L L. 291 (2002).

forms of integrated decisionmaking entail the existence of required procedures for considering environmental, economic, and social effects simultaneously. When the establishment of specific environmental goals is politically or scientifically difficult, procedural integration provides a useful fallback approach to minimizing environmental damage.

2. *Substantive Integration*

Substantive integration goes beyond consideration of the environment in the decisionmaking process; it requires the establishment and realization of specific and substantive environmental or social goals. Because these goals are to be achieved at the same time as economic and security goals, environmental or social goals are integrated with these other goals. Procedural integration enhances the likelihood that a decision will further particular goals, but still allows major adverse social and environmental effects to be ignored after consideration. Under NEPA, for example, an agency may fully consider impacts and alternatives, and decide to go ahead with an environmentally or socially damaging project anyway.⁴⁹ 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.

Substantive integration is more plainly stated in the 1980 World Conservation Strategy, which first developed the intellectual framework for sustainable development.⁵⁰ The Strategy uses the term "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."⁵¹ Under this view, integrated decisionmaking has an obvious substantive aspect.⁵²

Substantive integration is also consistent with the stated parity of economic, social, and environmental goals. The Programme for the Further

49. See *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350-52 (1989), *on remand sub nom* *Methow Valley Citizens Council v. Reg'l Forester*, 879 F.2d 705 (9th Cir. 1989) (holding that the National Environmental Policy Act does not impose a substantive duty on agencies to mitigate adverse environmental effects).

50. INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES (IUCN), WORLD CONSERVATION STRATEGY (1980).

51. *Id.* at 1.

52. *Agenda 21*, *supra* note 3, 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.

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.”⁵³ Ordinarily, economic goals are substantive; those who support them want certain results. If the environment or social wellbeing are merely considered in such situations, it is possible for a project to result in economic progress, but environmental degradation or worsened social conditions. This is inconsistent with the interdependent and equal status of economic, environmental, and social factors.

Finally, a functional understanding of sustainable development requires the creation and achievement of such goals, even though they are not yet well developed or widely accepted. After all, sustainable development is an effort to address growing global environmental degradation as well as the growing gap between rich and poor. Sustainable development means nothing unless it means development that reverses this degradation and eliminates large scale poverty. Thus, sustainable development requires the adoption and achievement of substantive environmental and social goals. There are relatively few such goals at the international level,⁵⁴ and still too few of such goals in the United States and other countries. Without such goals, integrated decisionmaking can easily become a symbolic and meaningless exercise. Put differently, 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.⁵⁵

The difference between procedural and substantive integration is illustrated by the United Nations Framework Convention on Climate Change and the Kyoto Protocol. The Climate Change Convention commits parties to integrating climate change considerations into governmental decisionmaking.⁵⁶ Even though no legally binding targets are contained in the Convention, parties are, at a minimum, required to consider climate change impacts in their

53. Programme for the Further Implementation of Agenda 21, U.N. GAOR, 19th Special Sess., Annex, U.N. Doc. A/S-19-29, ¶ 23 (1997), available at <http://www.un.org/documents/ga/res/spec/aress19-2.htm>.

54. See *supra* note 39.

55. For developed countries, substantive integration is also indicated by the commitment to reduce unsustainable levels of production and consumption.

56. See *Framework Convention on Climate Change*, *supra* note 17, art. 4.1(f).

decisionmaking processes. Under the Convention, then, one party could reduce its greenhouse gas emissions, and another could allow its emissions to increase, but both could claim that they had considered climate change impacts in their decisionmaking. Under the Kyoto Protocol to that Convention, however, developed countries are to reduce their greenhouse gas emissions by about five percent from 1990 levels by 2008-2012. Each developed country is required to reduce its emissions by a specified percentage from 1990 levels.⁵⁷ Developed countries that ratify the Kyoto Protocol (and that have also ratified the Convention) must integrate all of their decisions affecting greenhouse gas emissions and sinks with the view of achieving the level of emissions reduction specified for them in the Protocol. They cannot simply consider climate change; they must achieve a specified result.

Substantive integration would require the adoption of goals for a variety of environmental resources as well as appropriate legal machinery to implement them. Substantive goals focus decisionmaking processes in ways that procedural goals do not. They state what is actually being sought; procedural requirements alone do not do that. A major problem with the U.S. regulatory reinvention debate over the past decade has been its emphasis on means. Much is said about incentives, public information, risk, cost-benefit analysis, devolution of policy to state and local governments, management systems, and enforcement. But much less is said about the substantive goals toward which such mechanisms should be directed. Thus, procedures become a kind of stand-in for unstated substantive goals or directions. Because these goals are often unstated but inferred from the organizational affiliations of advocates of various interests, this type of debate is especially unhelpful. Substantive goals have the virtue of focusing the debate on what we actually care about. Moreover, when the United States actually sets substantive goals for reductions of specific pollutants, such as sulfur dioxide, it has found that it can be extremely flexible about the means used to achieve them. The 1990 Clean Air Act Amendments reduced sulfur dioxide emissions from major coal-fired power plants by half over a ten-year period, by setting a specific goal and permitting the operators of these plants to achieve the required reduction in any way they saw fit, including trading emissions allowances with other power

57. *Protocol to the United Nations Framework Convention on Climate Change*, Dec. 10, 1997, art 3.1 & Annex B, U.N. Doc. FCCC/CP/1997/L.7Add. 1, reprinted in 37 I.L.M. 22 (1998) [hereinafter *Kyoto Protocol*].

plants.⁵⁸ The procedural device of emissions trading, in other words, was made available to achieve the substantive goal of the fifty percent reduction.

Outside the areas of air and water pollution, substantive goals are rare. Standards adopted under the Clean Air Act⁵⁹ and the Clean Water Act⁶⁰ establish maximum acceptable levels of specific pollutants in ambient air and water. Achievement and maintenance of those standards is the operative goal of both statutes. Yet there are no broad goals for oceans and estuaries under U.S. jurisdiction, for biodiversity, for forests, or for many other environmental features. The European Union, by contrast, has set a goal of establishing biodiversity indicators by 2003 and halting the loss of biodiversity by 2010.⁶¹ Goals such as these, and the public process required credibly to establish them, would go much farther toward clarifying and establishing what we are actually trying to achieve than endless wrangling about process alone.

It can certainly be said that substantive goals should be approached with caution, as we do not yet know the final form that a sustainable society will take. In addition, a sustainable society is not likely to be static, and its substantive goals are likely to change with changes in technology, scientific information, and other relevant factors. Still, we know enough now to set substantive goals on many issues. We also recognize that substantive goals are often interim or provisional goals, and not necessarily final goals. The emission reduction goals in the Kyoto Protocol represent only a first step toward the much greater reductions that are needed, and the Kyoto Protocol does not impose limits on developing countries.⁶² The establishment and achievement of substantive goals, in short, is an iterative process that should move society closer and closer to sustainability.

B. Scope of Integration

1. Resource-Based or Issue-Based Integration

It is often easier and more practical to focus the subject of integration on specific environmental resources or issues. A decisionmaker might thus choose to integrate all of its decisions concerning a watershed, for instance, or climate.

58. See 42 U.S.C. §§ 7651-7651o (1995).

59. 42 U.S.C. § 7410 (1995).

60. 33 U.S.C. § 1313 (1995).

61. A Sustainable Europe for a Better World: A European Union Strategy for Sustainable Development, COM(2001)264 final at 12, available at http://europa.eu.int/eur-lex/en/com/cnc/2001/com2001_0264en01.pdf.

62. See *infra* note 105 and accompanying text.

This type of resource-specific integration could be in lieu of a broader type of integration, or could be a way of achieving overall environmental integration.⁶³

A basic rationale for such integration is that most natural resources are subject to multiple human influences. If a particular resource is to be protected effectively at a sustainable level, it must be protected against all threats, not just some of them. Thus, this type of decisionmaking also requires consistency in decisionmaking concerning all factors pertaining to particular resources. References in Agenda 21 to integrated watershed-based protection activities, for instance, are based on that understanding.⁶⁴ Thus, this form of integrated decisionmaking would ensure that all factors influencing a particular resource are considered or controlled.⁶⁵ This form of integrated decisionmaking also looks at all aspects of a resource, not simply parts of it.⁶⁶ As a result, this form of integrated decisionmaking better protects the resource than decisionmaking that concentrates on threats to particular aspects of the resource. In addition, this form of integrated decisionmaking enables the decisionmaker to manage tradeoffs in ways that maximize both economic productivity and environmental protection.⁶⁷ This form of decisionmaking, moreover, is not about a single decision. It requires the integration of multiple decisions, often by different entities, over time.⁶⁸ This type of integration can have either a procedural or a substantive component, or both.

A common problem with environmental protection laws is that they protect against only some threats to specific natural resources, such as oceans or fresh water, but not all threats. Discharges from factories and sewage treatment plants are controlled, for instance, but agricultural and urban runoff are not well

63. This type of integration can also work to incorporate environmental factors into decisionmaking about land, to treat it as part of the ecosystem in which it is located and less like a commodity. See, e.g., *Agenda 21*, *supra* note 3, ¶ 10.1 (“Land is normally defined as a physical entity in terms of its topography and spatial nature; a broader integrative view also includes natural resources: the soils, minerals, water and biota that the land comprises.”).

64. See, e.g., *id.* ¶ 18.6 (describing fragmentation in decisionmaking among agencies regulating specific economic sectors as a major impediment to integrated decisionmaking).

65. For land use, “[i]ntegration should take place at two levels, considering, on the one hand, all environmental, social and economic factors (including, for example, impacts of the various economic and social sectors on the environment and natural resources) and, on the other, all environmental and resource components together (i.e., air, water, biota, land, geological and natural resources).” *Id.* ¶ 10.3.

66. See, e.g., *id.* ¶ 18.3 (integration of fresh water resources “must cover all types of interrelated freshwater bodies, including both surface water and groundwater, and duly consider water quantity and quality aspects.”)

67. See, e.g., *id.* ¶ 10.3 (“Integrated consideration facilitates appropriate choices and trade-offs, thus maximizing sustainable productivity and use.”).

68. For an example of issue-based integration, see *id.* ¶ 5.17 (“Full integration of population concerns into national planning, policy and decision-making processes should continue.”).

controlled.⁶⁹ Sometimes, too, the laws take different approaches to protecting the same resources. New sources of air pollution are strictly controlled, but existing sources of the same air pollutants are not as strictly controlled.⁷⁰ This suggests a two-part test for determining the extent to which a law further integrates decisionmaking concerning a particular resource: first, does the law cover all significant threats? and second, does the law provide an equivalent level of protection against these threats? If the United States is to protect specific natural resources, it must protect them against all threats, and do so in a consistent manner. More generally, protection of natural resources and the environment should focus more holistically on the resources to be protected.

A little-used mechanism for achieving this kind of resource-based integration is through state constitutional provisions that afford categorical protection to specific resources. Constitutional provisions concerning the environment ensure integration of environmental matters into constitutional decisionmaking, including decisionmaking relating to the use of property. Because constitutional provisions also trump inconsistent statutes and regulations, they can, when taken seriously, help foster integration of environmental considerations into legislative and administrative decisionmaking. In *Montana Environmental Information Center v. Department of Environmental Quality*,⁷¹ for instance, the Montana Supreme Court considered the addition of arsenic to surface waters from ground water pumping tests when the Department had concluded that addition of arsenic would have a significant water quality impact. The legislature had specifically exempted discharges from such tests from review under the state's water quality nondegradation rules.⁷² The court decided that this legislative exemption should be subject to strict scrutiny under provisions of the Montana Constitution stating that all persons have "[t]he right to a clean and healthful environment"⁷³ and requiring the "State and each person [to] maintain and improve a clean and healthful environment in Montana for present and future generations."⁷⁴ It remanded the case to the district court for a determination of whether there was a compelling state interest for enactment of the exemption,

69. See Robert W. Adler, *Fresh Water*, in *STUMBLING TOWARD SUSTAINABILITY*, *supra* note 6, at 202-207.

70. See David M. Driesen, *Air Pollution*, in *STUMBLING TOWARD SUSTAINABILITY*, *supra* note 6, at 264.

71. 988 P.2d 1236 (Mont. 1999).

72. *Id.* at 1249.

73. MONT. CONST. art. II, § 3.

74. MONT. CONST. art IX, § 1; see also *Mont. Env'tl. Info. Ctr. v. Dep't of Env'tl. Quality*, 988 P.2d 1236, 1243 (Mont. 1999).

whether the exemption “is closely tailored to effectuate only that interest,” and whether the exemption represents “the least onerous path available.”⁷⁵ In cases such as this, environmental provisions of state constitutions achieve a mix of procedural and substantive integration for the resources identified in state constitutions.

2. Activity-Based Integration

Integrated decisionmaking can refer to the integration of environmental, economic, and social considerations at a particular facility or entity. Like integrated decisionmaking for a particular resource, this type of integrated decisionmaking concerns both the incorporation of environmental concerns and objectives, and the consistency with which those concerns are implemented or applied. Consistency and coherence are a necessary aspect of integrated decisionmaking in this context largely because of their potential to reduce significantly both environmental impacts and costs.

A manufacturing facility, for instance, is subject to environmental regulation of its air emissions, its water pollution, its hazardous and other waste, and its public reporting of toxic chemical releases. It is also subject to occupational and health regulation as well as other controls. The obvious purpose of these laws is to force the facility to integrate environmental and social protection, in very specific ways, into its economic decisionmaking. The facility’s operator can integrate its decisionmaking through pollution

75. *Mont. Envtl. Info. Ctr.*, 988 P.2d at 1240, 1249 (citing *Wadsworth v. State*, 911 P.2d 1165, 1174 (Mont. 1996)). Similarly, a 2000 decision by the Hawaii Supreme Court upheld and applied its constitutional public trust doctrine to protect public rights in surface and ground water. *In re Water Use Permit Applications*, 9 P.3d 409 (Haw. 2000) (involving a dispute over water distributed by a major irrigation system, and the state’s issuance of permits to use that water). A major feature of the decision is the court’s detailed articulation of the role of environmental amendments to Hawaii’s constitution in agency decisionmaking. The state’s constitution requires the state to conserve and protect the state’s natural resources for “the benefit of present and future generations,” and states that all “public natural resources are held in trust by the State for the benefit of the people.” HAW. CONST. art. XI, § 1 (amended 1993). It also requires the state to protect and regulate water resources for public benefit. HAW. CONST. art. XI, § 7 (amended 1993). These provisions, the court held, “adopt the public trust doctrine as a fundamental principle of constitutional law in Hawai’i,” and this constitutional doctrine is not supplanted by state legislation regulating water. *In re Water Use Permit Applications*, 9 P.3d at 443-44. Moreover, the court held that this doctrine applies to both surface and ground water. *Id.* at 445-47. Public rights in these trust resources are different from and superior to private interests in the use of these resources, although the court acknowledged that private use for economic development may produce important public benefits. *Id.* at 448-50. Thus, the court held, “any balancing between public and private purposes begins with a presumption in favor of public use, access, and enjoyment.” *Id.* at 454. The court remanded the case to the state permitting agency for reconsideration of its permit decisions in light of the constitutional public trust doctrine.

prevention, which focuses on modifications to the manufacturing process to reduce the amount of pollution being generated, rather than focusing on controlling or limiting the release of pollution into specific media after it is generated. This may have positive implications for its economic performance (more efficient and less expensive manufacturing), social effects (occupational health), and environmental effects (reduced pollutants).⁷⁶ The facility's operator can also integrate its decisionmaking for all wastes or emissions through the use of environmental management systems that help the operator keep track of relevant information and requirements.⁷⁷ The government could also encourage or require such integration through the use of facility-wide permitting. Integrated or facility-wide permitting would consolidate the various environmental permits required for the facility's operation. Although integrated permitting is not widely used, it would likely result in both pollution prevention and more coherent and systematic governmental regulation of the facility.⁷⁸

Environmental and occupational health laws themselves are, to some degree, a barrier to such integration. The nation's environmental laws regulate the same industrial facility, for instance, in vastly different ways, depending on whether it is emitting pollution into the air, water, or on land. Even the choice of pollutants varies by medium.⁷⁹ One result is that facility operators are encouraged to discharge specific pollutants into media where those pollutants are not regulated.⁸⁰ Where regulatory gaps encourage such cross-media transfers, pollution prevention is less likely to occur.⁸¹ Thus, a basic form of integration required at manufacturing facilities is ensuring that individual pollutants are regulated or managed in an equivalent manner regardless of how they are released from a facility.⁸² Such integration would likely result in both

76. See generally Stephen M. Johnson, *From Reaction To Proaction: The 1990 Pollution Prevention Act*, 17 COLUM. J. ENVTL. L. 153 (1992) (describing the benefits of pollution prevention and the effects of a 1990 statute).

77. See Eric W. Orts, *Reflexive Environmental Law*, 89 NW. U. L. REV. 1227 (1995) (describing and comparing environmental management systems).

78. Frances H. Irwin, *An Integrated Framework for Preventing Pollution and Protecting the Environment*, 22 ENVTL. L. 1 (1992) (describing conceptual framework for, and potential benefits of, integrated permitting).

79. See John C. Dernbach, *The Unfocused Regulation of Toxic and Hazardous Pollutants*, 21 HARV. ENVTL. L. REV. 1 (1997).

80. *Id.* at 55-59.

81. *Id.* at 59-61.

82. See *id.* at 66-80 (describing proposal for integrating controls for individual pollutants, including goals for reducing the release or generation of such pollutants).

less expense for the operator and greater environmental and occupational health protection.

A broader form of activity-based integration is integration by class of activity rather than by individual activity.⁸³ Such integration, for example, would include all entities operating within a specific economic sector. More systematic approaches to the environmental regulation of particular economic sectors would likely yield significant economic, environmental, and social benefits. In this context, systematic means controlling all the environmental effects of producing a particular good or service, not just some impacts. A treatise published by the Environmental Law Institute in 1993 examined the environmental regulation of more than a dozen economic sectors, from the initial harvesting of resources, through their manufacture and use, to their disposal or recovery.⁸⁴ Among other things, the treatise showed that environmental laws often failed to approach systematically the environmental effects of specific economic sectors, concentrating on some effects and ignoring others. Programs for extended product stewardship or responsibility, whether legal or voluntary, are one approach to this problem. A second approach is modification of existing laws.

Another needed form of sectoral integration is integration of energy and environmental impacts. For many facilities and economic activities, environmental law and energy law are both applicable, but affect the facility or activity in different and often conflicting ways. The nation's environmental laws have been focused almost exclusively on the material pollutants. Energy law, by contrast, has developed as a kind of economic regulatory law for power plants, pipelines, and similar facilities. Yet both types of law have significant effects on the same problems, particularly air pollution and climate change. The gaps between energy and environmental law need to be closed, in part by rewriting existing laws so that they both account for energy and environmental effects. A simple example might be to use the Clean Air Act to reduce carbon dioxide emissions. Right now, the Clean Air Act directly regulates a number of "criteria" and hazardous air pollutants, but not carbon dioxide. Whether inclusion of carbon dioxide requires legislative amendments or rulemaking, it

83. See, e.g., *Agenda 21*, *supra* note 3, ¶ 7.52(a) (calling on countries to "[i]ntegrate land-use and transportation planning to encourage development patterns that reduce transport demand").

84. ENVIRONMENTAL LAW INSTITUTE, ENVIRONMENTAL LAW FROM RESOURCES TO RECOVERY (Celia Campbell-Mohn ed., 1993).

would move energy and environmental law toward greater coherence as well as efficiency.⁸⁵

A weakness in many forms of activity-based integration is that they may focus on improvements in the activity itself, but not on the overall environmental and social impacts of the activity. If a facility emits pollutants whose cumulative impacts over time will damage the functioning of local ecosystems, for instance, it doesn't particularly matter if the activity is more efficient and less costly than it previously was, or if the facility is emitting less pollutant per unit of output. Put differently, activity-based integration is not likely to be made sustainable unless it is coupled with substantive resource-based integration. The substantive goals of activity-based integration will determine to a great extent whether the activity is sustainable.

3. *Place-Based Integration*

As useful as integrated decisionmaking may be, it raises an important problem: it may seem impossible to do anything without doing everything.⁸⁶ One answer is to integrate decisions concerning a specific place. This solution is attractive because it makes integration more manageable. It is also consistent with Agenda 21's orientation toward more localized decisionmaking when such decisionmaking can be effective. In the United States, many state, regional, and local sustainability efforts have arisen over the past decade because, for many decisions, states, regions, and localities represent the right geographic scale on which to achieve effective sustainable development. It is often easier to recognize and act on the connections among social, economic, environmental, and security goals in the place where one lives or works. At the state, local, or regional level, the connections are not abstractions, and they exist in specific ways that may be different from the ways in which connections manifest themselves elsewhere. The quest for an understanding of the cumulative effects of multiple facilities on people of color or low-income

85. David Driesen, *supra* note 70. Ensuring greater coherence between energy law and environmental law may, on the other hand, result in outcomes that are directed more toward the development of new energy supplies than toward environmental protection. See, e.g., NATIONAL ENERGY POLICY DEVELOPMENT GROUP, NATIONAL ENERGY POLICY (2001) (President George W. Bush's energy plan), available at <http://www.whitehouse.gov/energy/National-Energy-Policy.pdf>. Such integration, though, is not simply about consistency; it is about consistency in seeking and achieving sustainability.

86. Clark, *supra* note 41, at 1048 ("[I]f, in many cases, systems are strongly coupled, then how is one to avoid the practical impossibility of having to study everything in order to know anything?").

persons is one aspect of this issue.⁸⁷ Place-based integration would also require the development and implementation of state, local, or regional strategies, as well as appropriate environmental and sustainability indicators. Even at the local, state, or regional level, though, a major challenge is understanding the interaction among multiple stresses, not the impacts of individual stresses.⁸⁸ Another challenge is that state and national policies must be made supportive of sustainable development at the local level, not inconsistent with it.⁸⁹

C. Temporal Integration

A basic premise of intergenerational equity is that short-term economic gain should not cause long-term environmental harm.⁹⁰ Thus, integrated decisionmaking has a temporal quality. It is not enough that economic, environmental, and other goals be integrated in terms of present consequences; future consequences must also be included in the decisionmaking process. Temporal integration, in other words, is needed to ensure that integration occurs notwithstanding the fact that effects occur at different times. This is essential to sustainable development because of the almost irresistible temptation to permit short-term consequences to trump long-term consequences, especially in economic decisionmaking. Without temporal integration, sustainable development cannot succeed.⁹¹ Understood this way, temporal integration is not simply the integration of present and future. All

87. See *S. Camden Citizens in Action v. N.J. Dep't of Env'tl. Prot.*, 274 F.3d 771 (3rd Cir. 2001), cert. denied 122 S. Ct. 2621 (2002).

88. See Pamela Matson, *Environmental Challenges for the Twenty-First Century: Interacting Challenges and Integrative Solutions*, 27 *ECOLOGY L.Q.* 1179, 1188 (2001) (“[I]ntegrative, place-based analysis that deals with multiple and interacting changes is something we *do not know how to do.*”) (emphasis in original).

89. Jonathan D. Weiss, *Local Governance*, in *STUMBLING TOWARD SUSTAINABILITY*, *supra* note 6, at 694.

90. See, e.g., *Report of the United Nations Conference on the Human Environment, Declaration of the United Nations Conference on the Human Environment* at 3, U.N. Doc. A/CONF.48/14/Rev. 1, (1972) (Stockholm Declaration, Principle 1: “Man...bears a solemn responsibility to protect and improve the environment for present and future generations”); see also National Environmental Protection Act, 42 U.S.C. § 4332(2)(C)(iv), (v) (2000) (requiring environmental impact statement to describe “the relationship between local short-term uses of man’s environment and the maintenance and enhancement of long-term productivity” and “any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented”).

91. But if short-term economic consequences should not categorically trump long-term environmental consequences, there is no good reason why short-term economic (or security or social) consequences should trump long-term economic (or security or social) consequences, or vice versa. The Rio Declaration, *supra* note 4, suggests as much when it refers to the developmental, as well as the environmental, needs of present and future generations.

decisions are forward-looking to some degree, including economic decisions with short-term paybacks. What temporal integration suggests is the need to look at the longer-term consequences of decisions.⁹² Such an approach is also consistent with intergenerational equity.

Temporal integration, of course, is built into many other forms of integration. The environmental impact assessment requirement under NEPA, for instance, is intended to gauge the longer-term impact of present decisions. The establishment and achievement of goals is premised on a presently-initiated effort to achieve a certain outcome at some point in the future. This is true for both resources and activities. Life cycle integration involves a decisionmaking process based on the environmental and other effects of specific products or activities, from the extraction of raw materials through disposal, reuse, or recycling.

Temporal integration raises two challenges. One is the difficulty of predicting what effects a particular activity will cause in the future. This can be addressed by better project-specific monitoring and also by a permanent and broad-based system of environmental and related reporting. Predicted environmental effects in environmental impact statements under NEPA or NEPA-like laws often understate environmental impacts or are simply wrong.⁹³ For projects and activities subject to NEPA, this problem can be addressed to some degree by post-decision monitoring of actual environmental impacts, by building contingent responses into project design, and by requiring adaptive mitigation if those contingencies occur.⁹⁴ The more basic point behind such recommendations is the need for a reliable and continuing flow of information about the environmental, social, and economic effects of human activities, which will enable flexible and adaptive responses to any problems that may develop.⁹⁵

92. See, e.g., *Agenda 21*, *supra* note 3, ¶ 37.7 (describing “the need for the operational integration of environment and development with longer-term commitments.”)

93. See Bradley C. Karkkainen, *Toward a Smarter NEPA: Monitoring and Managing Government’s Environmental Performance*, 102 COLUM. L. REV. 903, 928-29 (2002) (summarizing studies).

94. See *id.* at 938-46.

95. Another approach to the uncertainty of future events is scenario building. A scenario is not a prediction that something will occur at a specific future point; it is a plausible future outcome based on a set of assumptions. See, e.g., L.O. Mearns et al., *Climate Scenario Development*, in CLIMATE CHANGE 2001: THE SCIENTIFIC BASIS 739, 741 (L.J. Mata & J. Zillman eds., 2001) (discussing the third assessment report of the Intergovernmental Panel on Climate Change). Scenarios, which are particularly helpful in the climate change context, provide a basis for responding to uncertainty, and of understanding the possible range of future impacts. *Id.*

That, in turn, suggests the need for a broader array of environmental, social, and economic indicators, and for periodic reporting on these indicators. Reporting of such information for the indefinite future would achieve an important form of procedural integration. Ecological or environmental indicators can be used to determine changes in the environment and in ecosystem functioning. Annual reporting of these indicators would provide decisionmakers with information needed to respond to particular problems as they occur.⁹⁶ The United States does not perform annual or periodic reporting on the state of its environment. Reporting based on such indicators would help decisionmakers understand the health of the nation's environment and natural resources, and would provide a broad set of data with which to make decisions about specific projects or economic sectors, and to understand the impact of previous decisions.

Another helpful means of achieving temporal integration would involve modification of national accounting for Gross Domestic Product (GDP), which generally measures the total price of goods and services that are bought and sold over a specified period. Virtually unchanged since 1947, GDP has proved a useful measure of economic activity and business cycles. What GDP does not do, though, is measure or explain whether this economic activity is sustainable. It does not include the value of minerals that are still in the ground, growing trees, the air we breathe, or clean water. It also does not include the added value of such nonenvironmental factors as education and unpaid work (including housework). In addition to excluding work that is not compensated in the market, GDP fails to include the creation or depletion of social capital (e.g., a well-educated work force) or natural capital.⁹⁷

A 1999 report by the National Research Council concludes that developing satellite accounts to "include assets and production activities associated with natural resources and the environment is an important goal" for the United States.⁹⁸ Such accounts, the report states, would provide a much better

96. COMMITTEE TO EVALUATE INDICATORS FOR MONITORING AQUATIC AND TERRESTRIAL ENVIRONMENTS, NATIONAL RESEARCH COUNCIL, ECOLOGICAL INDICATORS FOR THE NATION 18-21 (2000).

97. At the Earth Summit in 1992, the world's nations recommended expansion of existing systems of national economic accounts like GDP to include environmental and social information. *Agenda 21*, *supra* note 3, ¶¶ 8.41-54. The idea is not to replace the GDP entirely, but to create supplemental or satellite accounting systems that could be used in conjunction with GDP. *Id.*

98. PANEL ON INTEGRATED ENVIRONMENTAL AND ECONOMIC ACCOUNTING, NATIONAL RESEARCH COUNCIL, NATURE'S NUMBERS: EXPANDING THE NATIONAL ECONOMIC ACCOUNTS TO INCLUDE THE ENVIRONMENT 2 (William D. Nordhaus & Edward C. Kockelenberg eds., 1999). In 1994, the Bureau of Economic Analysis (BEA) of the U.S. Commerce Department published the first U.S. Integrated

understanding of interactions between the economy and the natural environment. The use of GDP creates a distorted picture of these interactions. For instance, while the United States spends more than \$100 billion annually on pollution control (which is included in the GDP), almost none of the economic benefits of these expenditures (based, e.g., on clean air, healthy ecosystems) are included in GDP.⁹⁹ In addition, “[e]nvironmental accounts would provide useful information for managing the nation’s assets and for improving regulatory decisions.”¹⁰⁰ Better information on fish stocks, the stumpage value of timber, and the value of minerals on federal lands, for instance, would help the management of those resources. Finally, the money invested in developing these accounts would yield a high economic return for the country.¹⁰¹

A second challenge for temporal integration is that human beings apparently lack the willingness or ability to plan for events that are too far into the future. While climate change impacts of present activities may be felt more than a century hence, for instance, it may not be realistic to expect individuals and decisionmakers to think or act that far ahead. Many are thus proposing that we try to focus on the next fifty years, “a time horizon that sees into young adulthood the grandchildren of today’s decisionmakers,” as a socially meaningful measure.¹⁰² This period represents about the next two human generations, during which the challenge of harmonizing development and environment goals will become much more difficult. To make a transition toward sustainability in that period, it will be necessary to decide now to achieve certain policy outcomes several decades hence. These include a transition toward dramatically greater energy efficiency, energy conservation,

Environmental and Economic Satellite Accounts. Shortly thereafter, Congress directed the Department to cease this work and obtain an external review of BEA’s methodology and its potential application. This report was prepared in response. *Id.* at 1-2.

99. *Id.* at 29-31.

100. *Id.* at 31.

101. *Id.* at 31-35.

102. Clark, *supra* note 41, at 1025-26; *see also* OUR COMMON JOURNEY, *supra* note 43, at 3 (“[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.”); COMMITTEE ON THE SCIENCE OF CLIMATE CHANGE, NATIONAL RESEARCH COUNCIL, CLIMATE CHANGE SCIENCE: AN ANALYSIS OF SOME KEY QUESTIONS 18 (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.”), at <http://books.nap.edu/html/climatechange/climatechange.pdf>.

and renewable energy.¹⁰³ One proposal, which illustrates the magnitude of the continued commitment required, involves an annual five percent increase in the tax for fossil fuels and certain other natural resources over a thirty- to forty-year period.¹⁰⁴

From a law and policy perspective, the transition to sustainability will require the design and implementation of policies with much longer time frames than are used in most other decisionmaking. Another approach to this issue, implicit in the Kyoto Protocol, is to develop laws and policies directed toward interim goals, and periodically to set new or more ambitious goals with corresponding implementing mechanisms. Although the Kyoto Protocol would have developed countries reduce their emissions by around five percent by 2012, the Protocol itself envisions subsequent commitment periods in which even greater reductions are achieved.¹⁰⁵

D. Integration of Implementation Methods

1. Integration of Available Legal and Policy Tools

Integration is often used to describe a decisionmaking process that considers all relevant legal and policy tools, and then uses the most appropriate tool or combination of tools to achieve a particular result. Two examples demonstrate this type of use.¹⁰⁶ Integrated pest management refers to the consideration and use of a variety of techniques to control insects, diseases, and other agricultural pests. These include not only pesticides but also crop rotation

103. Industrialized countries may need to reduce materials consumption, energy use and environmental degradation by more than 90 percent by 2040 just to maintain overall impacts at current levels. BUSINESS COUNCIL FOR SUSTAINABLE DEVELOPMENT [now known as the World Business Council for Sustainable Development], GETTING ECO-EFFICIENT 10 (1993). Another report concludes that resource productivity in industrialized countries needs to increase by more than a factor of ten in the next 30 to 50 years to achieve sustainability. 1994 Declaration of the Factor 10 Club, at <http://www.techfak.uni-bielefeld.de/~walter/f10/declaration94.html>.

104. ERNST U. VON WEIZSÄCKER & JOCHEN JESINGHAUS, ECOLOGICAL TAX REFORM: A POLICY PROPOSAL FOR SUSTAINABLE DEVELOPMENT 9 (1992).

105. *Kyoto Protocol*, *supra* note 57, art. 3.9 (describing the process and timing of negotiations for reductions in subsequent commitment periods).

106. These are not the only examples. *See Agenda 21*, *supra* note 3, ¶ 12.46 (“Integrated packages at the farm and watershed level, such as alternative cropping strategies, soil and water conservation and promotion of water harvesting techniques, could enhance the capacity of land to cope with drought and provide basic necessities.”); *id.* ¶ 18.12(b) (suggesting that countries integrate “measures for the protection and conservation of potential sources of freshwater supply, including the inventorying of water resources, with land-use planning, forest resource utilization, protection of mountain slopes and riverbanks and other relevant development and conservation activities.”).

and the use of organisms that attack pests.¹⁰⁷ Similarly, integrated waste management occurs when a mix of different waste management practices is used to safely handle waste, including waste reduction, waste recycling, composting, landfilling, and incineration.¹⁰⁸

In this form, integration often includes or implies goals that may or may not be consistent with sustainable development. In fact, integrated pest management and integrated waste management are defined somewhat differently depending on these goals. The goals of integrated pest management could be cast in primarily ecological or primarily economic terms. The goals of integrated waste management could include recycling a certain percentage of waste or simply keeping economic costs at the lowest possible level. On the other hand, this form of integration is especially important for problems that have historically been characterized by use of a single solution, such as pesticides and landfills. Sometimes these goals are described in the form of a process that gives highest priority to the most environmentally preferable outcomes, but recognizes that cost and technological feasibility may limit their availability. Thus, a waste hierarchy may begin with waste prevention, then reuse, then recycling and composting, and then landfilling and incineration.¹⁰⁹ By forcing decisionmakers to consider a range of possible solutions, this form of integration can reduce environmental impacts while also achieving economic and social goals. In other words, integration of available legal and policy tools makes it possible to achieve outcomes that might be impossible if only one tool or approach were employed. To be truly sustainable, though, this form of

107. *Id.* ¶ 14.74 (defining integrated pest management as combining “biological control, host plant resistance and appropriate farming practices” to “minimiz[e] the use of pesticides”); OFFICE OF TECH. ASSESSMENT, U.S. CONG., 1 PEST MANAGEMENT STRATEGIES IN CROP PROTECTION 5 (1979) (defining integrated pest management as “optimization of pest control in an economically and ecologically sound manner, accomplished by the coordinated use of multiple tactics to assure stable crop production and to maintain pest damage below the economic injury level while minimizing hazards to humans, animals, plants, and the environment”); see also Brian P. Baker, *Pest Control in the Public Interest: Crop Protection in California*, 8 UCLA J. ENVTL. L. & POL’Y 31, 34 n.11 (1988) (quoting M. FLINT & R. VAN DEN BOSCH, INTRODUCTION TO INTEGRATED PEST MANAGEMENT 6 (1981)) (defining integrated pest management as “an ecologically based pest control strategy that relies heavily on natural mortality factors, such as natural enemies and weather and seeks out control tactics that disrupt these factors as little as possible” through the combined use of biological, chemical and cultural controls).

108. OFFICE OF TECH. ASSESSMENT, U.S. CONG., FACING AMERICA’S TRASH: WHAT NEXT FOR MUNICIPAL SOLID WASTE? 306 (1989).

109. See, e.g., the hierarchy expressed in the Resource Conservation and Recovery Act, 42 U.S.C. § 6902(b) (2000) (“The Congress hereby declares it to be the national policy of the United States that, wherever feasible, the generation of hazardous waste is to be reduced or eliminated as expeditiously as possible. Waste that is nevertheless generated should be treated, stored, or disposed of so as to minimize the present and future threat to human health and the environment.”).

integration would need to be combined with goals that are appropriate for sustainable development.

This aspect of integration provides an important insight into how sustainable development can change the decisionmaking process. Environmental law as we know it is overwhelmingly based on one tool, environmental regulation.¹¹⁰ As a result, the environmental debate in the United States has historically been focused on the benefits and costs of environmental regulation. Yet there are a variety of other legal and policy instruments in the toolbox that we neglect or underutilize. These include economic instruments, property law, required disclosure of public information, and others.¹¹¹ For climate change and other problems, the adverse reaction to regulation has been so intense and the influence of economists so pervasive that the only legal tools discussed in many studies are taxes and trading.¹¹² Such economic tools are seen as more efficient and incentive-based than so-called “command and control” regulation. There is certainly merit in the claims made on behalf of economic instruments, but those claims err in the same way that traditional claims on behalf of regulation erred: they depend entirely on a single type of legal tool. To solve any particular problem, we need to be willing to consider whatever tools are available and useful, including combinations of tools.¹¹³ A variety of potential criteria may be employed in selecting such tools, including “environmental effectiveness, cost effectiveness, distribution considerations, administrative and political feasibility, governmental revenues, wider economic effects, wider environmental effects, and effects on changes in attitudes, awareness, learning, innovation, technical progress, and dissemination of technology.”¹¹⁴ The up-front exclusion of particular tools from consideration

110. ZYGMUNT J.B. PLATER ET AL., ENVIRONMENTAL LAW AND POLICY: NATURE, LAW, AND SOCIETY 317 (2d ed. 1998) (“Most governmental environmental protection efforts are regulatory.”).

111. See Dernbach, *supra* note 10, at 63-82.

112. See generally ENERGY INFORMATION ADMINISTRATION, U.S. DEP’T OF ENERGY, IMPACTS OF THE KYOTO PROTOCOL ON U.S. ENERGY MARKETS AND ECONOMIC ACTIVITY (1998) (analysis of U.S. economic impacts limited to taxes and trading).

113. Igor Bashmakov et al., *Policies, Measures, and Instruments*, in CLIMATE CHANGE 2001: MITIGATION 399, 401 (Bert Metz et al. eds., 2001) (“Any individual country can choose from a large set of possible policies, measures, and instruments to limit domestic [greenhouse gas] emissions.”); John Dernbach & The Widener University Law School Seminar on Global Warming, *Moving the Climate Change Debate From Models to Proposed Legislation: Lessons From State Experience*, 30 ENVTL. L. REP. 10,933, 10,934, 10,979 (2000) (analyzing and advocating the use of many different types of legal and policy tools to address climate change) [hereinafter *Moving the Climate Change Debate*].

114. Bashmakov et al., *supra* note 113, at 401.

prevents a decisionmaker from using or even knowing about the full range of tools that may be appropriate in a particular context under such criteria.

2. *Integration Among Multiple Decisionmakers*

Sustainable development also requires that the many decisionmakers who may influence particular outcomes make decisions that are mutually supportive or reinforcing, rather than inconsistent or antagonistic. This kind of integration requires consistency and coherence among decisionmakers, but it also requires consistency and coherence on behalf of sustainable development. Thus, this form of integration does not exist when a group of decisionmakers support unsustainable development in coordinated and mutually reinforcing ways.

a. *Vertical Integration*

Vertical integration assumes a hierarchical relationship among decisionmakers, although it need not be a formal hierarchy.¹¹⁵ Although cooperation and coordination are essential for vertical integration, higher levels ordinarily have some kind of formal authority over lower levels. Among governmental decisionmakers, for instance, vertical integration occurs if decisionmakers in the hierarchy (e.g., federal, state, local) are working in different ways for the same objective. Agenda 21 would have national governments delegate “planning and management responsibilities to the lowest level of public authority consistent with effective action.”¹¹⁶ That presupposes an organizational framework in which all levels of government within a country are working toward the same sustainable development objectives. It also suggests an allocation of decisionmaking responsibility that corresponds to the strengths of each level of government. Although cooperation and coordination are helpful in vertical integration, elements of coercion or financial suasion may also be involved. For example, U.S. environmental protection laws are built on a model of cooperative federalism under which the federal government sets

115. See, e.g., EARTH COUNCIL, NCS D REPORT 1999-2000: NATIONAL EXPERIENCES OF INTEGRATIVE MULTISTAKEHOLDER PROCESSES FOR SUSTAINABLE DEVELOPMENT 4 (2000), at <http://www.ncsdnetwork.org/knowledge/ncsdreport2000.pdf> (distinguishing between “horizontal integration of ecological, economic, and social dimensions of sustainable development by involving different actors and including the needs of present and future generations” and “vertical integration of local, national, regional, and global action for sustainable development”); see also Patricia Salkin, *Land Use, in STUMBLING TOWARD SUSTAINABILITY*, *supra* note 6, at 369 (distinguishing between horizontal and vertical integration).

116. *Agenda 21*, *supra* note 3, § 8.5(g).

minimum standards and provides financial support for enforcement and administration of those standards, and states have the right to run programs in accordance with those standards.

Softer forms of vertical integration also occur. Vertical integration may exist between nations, on the one hand, and the governing body of multilateral environmental agreements to which they are party, on the other. In such circumstances, a formal hierarchy of authority does not exist because these nations are also part of the governing body, and because the governing body ordinarily has little coercive authority over individual nations. A high level of compliance with those agreements suggests a high level of vertical integration; a low level of compliance suggests a low level of vertical integration.

b. Horizontal Integration

Horizontal integration occurs among multiple decisionmakers on the same or similar level in the hierarchy. Coordination here is not achieved by coercion or higher governance structures, but by coordination and cooperation. Thus, Agenda 21 and the Rio Declaration represent an effort to harmonize national decisionmaking on behalf of sustainable development. Within nations, however, horizontal integration is also important. Sustainable land use decisions, for example, require cooperation, coordination, and even tax sharing among municipalities. Thus, Agenda 21 encourages the creation and strengthening of “coordinating mechanisms” for land use.¹¹⁷ Such mechanisms would help ensure that local governments address common problems in a coordinated way. Another common problem is that natural resources and environmental problems are often regional in nature, transcending traditional political boundaries. Again, a basic approach to such issues is to develop coordinating, information sharing, and cooperation measures. Another approach is to create some kind of formal regional governance structure for those particular resources or problems. When that occurs, of course, it is also important to achieve vertical integration between this governance structure and the governmental entities within its jurisdiction.

Another form of horizontal integration occurs within national governments, and involves the many different agencies, or legislative committees, that operate on their behalf. This type of national integration, across legal entities of similar legal stature, is essential to sustainable development in that it addresses the

117. *Id.* § 10.5(c).

problem of fragmented decisionmaking. Thus, Agenda 21 would have nations develop and implement sustainable development strategies “to build upon and harmonize the various sectoral economic, social and environmental policies and plans that are operating in the country.”¹¹⁸

Other forms of horizontal integration also recognize the existence of multiple but relatively independent decisionmakers within the national government or another government. Thus, for example, Denmark conducts an annual Strategic Environmental assessment of its budget. The assessment is intended to encourage economic ministries to take environmental matters into account, and to encourage consideration of economic efficiency by the Environment Ministry. Among other things, the assessment process has identified several strategies for improving the efficiency of environmental policies without diminishing environmental protectiveness.¹¹⁹

Another and somewhat similar approach would help integrate regulatory and fiscal policy in the United States, which are usually conducted by two different and relatively independent sets of national decisionmakers. Both environmental regulation and subsidies affect the costs of doing business, have environmental impacts, generate other policy outcomes, and require federal budget expenditures. They also have the ability to generate inconsistent and conflicting results.¹²⁰ It thus makes sense that congressional and executive regulatory and subsidy decisions involving the same economic sector or resource be made by the same decisionmaker or by decisionmakers who are consulting with each other. Information about the costs and impacts of regulation tends to be much more readily available than information about the costs and impacts of subsidies. It also makes sense to ensure that information about both is equally available, and in comparable form.¹²¹

E. Summing Up: Toward Progressive Integration

Progressive integration suggests a series of steps over a wide range of activities, not a single leap into sustainability. Over time, integrated

118. *Id.* § 8.7.

119. ORGANISATION FOR ECONOMIC CO-OPERATION & DEVELOPMENT, POLICIES TO ENHANCE SUSTAINABLE DEVELOPMENT 47-49 (2001).

120. See generally Doug Koplow & John Dernbach, *Federal Fossil Fuel Subsidies and Greenhouse Gas Emissions: A Case Study of Increasing Transparency for Fiscal Policy*, in 26 ANN. REV. ENERGY & ENV'T 361 (Robert H. Socolow et al. eds., 2001) (discussing subsidies and environmental regulations and the disparity in their procedural treatment).

121. *Id.*

decisionmaking would lead to decisions in which economic development, environmental protection, security, and social objectives would be more and more mutually supportive, rather than being inconsistent or contradictory. There will always be tradeoffs in the sense that it will be difficult to achieve outcomes, for example, that are environmentally optimal, economically optimal, optimal for security, and socially optimal at the same time. It may be possible to achieve an optimal outcome for one or two objectives, but probably not all objectives, for any given decision.¹²² But we can design and implement a system in which the positive consequences of those tradeoffs are greater, and their negative consequences smaller, over time. Integrated decisionmaking would play an instrumental role in that system.

To begin with, the multiple objectives of sustainable development suggest that decisionmakers should avoid tradeoffs as much as possible, and not simply assume that tradeoffs will need to occur in all cases. They should also minimize the potential negative consequences of any tradeoffs that do occur. In addition, progressive integration suggests a path in which the environmental, social, economic, and even security objectives of decisionmaking will be more fully met over time. Similarly, the negative consequences of decisions should be smaller and smaller over the years.

Progressive integration can be also mapped or delineated along the following lines for each of the four major facets of integrated decisionmaking. The starting point for each of these facets is unsustainable development in relatively pure form, and the end point for each is sustainability. For any particular issue in real life, the present situation will likely be somewhere between those points. Thus, progressive integration means movement from a present point toward sustainability for each of these facets.

1. Objective. Decisionmakers should move from not considering the environment or social well-being at all to considering them, and then to achieving specific and substantive environmental and social objectives. These specific objectives, in turn, should over time move from interim objectives toward objectives that are designed to ensure and maintain environmental and social sustainability.¹²³ This movement from procedural to substantive integration is likely to reduce the negative impacts of tradeoffs over time. By

122. J.B. Ruhl, *Sustainable Development: A Five-Dimensional Algorithm for Environmental Law*, 18 STAN. ENVTL. L.J. 31, 45-54 (1999) (using economics, equity, environment, time scale, and geographic scale as the five dimensions of integrated decisionmaking).

123. Economic and security considerations and objectives are relevant and important, too, but are less likely to be ignored.

generating more accurate and detailed information about environmental consequences of decisions, for instance, procedural integration concerning climate change is likely to encourage entrepreneurs and investors to develop technologies and other means to reduce greenhouse gases and other adverse environmental effects. The setting of modest interim substantive goals could be understood as indicating the likelihood of more ambitious substantive goals in the future, and could thus stimulate private and governmental behavior (such as research and development) that would reduce the likely costs of these future goals.

2. *Environmental Features.* The scope of environmental features to be considered or protected needs to be broadened over time. Thus, decisionmaking processes should move from ignoring a resource, to focusing on part of it, to focusing on all of it. They should move from ignoring the environmental impacts of a human activity, to focusing on some of the environmental impacts of that activity, to focusing on all of the significant impacts of the activity. They should move from ignoring sustainability in a particular place, to focusing on some aspects of sustainability, to focusing on all aspects of sustainability. Broadening the scope of decisionmaking enables more efficient and cost-effective tradeoffs because a greater number of potential impacts are being considered and because all impacts on a particular resource or area are being controlled.

3. *Long Term.* Decisionmaking processes need to move from a focus on short-term consequences to include medium-term consequences and ultimately the long term. For instance, some projects with environmental and social benefits (investments in energy efficiency and pollution prevention, for instance) may require several years or more to pay back their initial investment through the money these projects save. A short-term view sees those projects as having negative economic consequences; even a medium-term view suggests the contrary.

4. *Means of Implementation.* Decisionmaking processes need to move from consideration of a few legal and policy tools toward consideration of the full range of available legal and policy tools. In climate change, for instance, states have succeeded in reducing greenhouse gas emissions, creating jobs, fostering the development of new technology, and stimulating economic growth because of the wide variety of legal and policy tools they use.¹²⁴

124. *Moving the Climate Change Debate*, *supra* note 113.

To greater degrees, too, decisions that are now made by separate decision makers should be made by the same decision maker. In some cases, it will be impossible or undesirable to consolidate decisionmaking authority in a single entity. Still, resource-based, activity-based, and place-based integration, are highly unlikely to be achieved based only on the activities of one level or unit of government. As a result, integrated decisionmaking will require more and better coordination among governmental entities, and coordination based on a growing shared understanding of what sustainability requires for particular resources, activities, and places.¹²⁵

The path toward sustainability requires continuous progress over time on all four aspects of integrated decisionmaking. Put differently, it requires broader and more ambitious combinations of these approaches. While integrated decisionmaking does not dictate how tradeoffs should occur in particular situations, it suggests ways in which tradeoffs should lead to better outcomes over time.

CONCLUSION

Because sustainable development provides a framework for making decisions, but does not provide the details, it is relatively easy for critics to identify gaps in that framework. But without sustainable development, and the integrated decisionmaking it requires, globalization will lead to a less stable, more dangerous, and more impoverished world. It is thus necessary to close the gaps, and to provide decisionmakers with tools they can use effectively for sustainable development.

Integrated decisionmaking offers a useful set of analytical tools to move national governments and other decisionmakers in the direction of sustainable development. It does so by identifying a basic set of issues that need to be addressed in all law and policymaking, and by providing a set of criteria against which to evaluate laws and policies in which sustainable development is sought or claimed. We need to make much more use of these tools in a manner that builds on, and takes advantage of, democratic governance.

125. Progressive integration would also require greater use of supportive principles, including public participation. It is necessary to move from little or no public participation to stakeholder involvement in the development and implementation of decisions. As previously explained, stakeholders increase the likelihood that environmental and social aspects of a problem, as well as economic and security aspects, are included in the decisionmaking process.

Law and policies, of course, are not enough.¹²⁶ These tools will require the development and implementation of national strategies, as well as appropriate implementing institutions at the executive and congressional levels.¹²⁷ They will also require relatively independent institutions to develop and make public the information needed for sustainable development, including environmental and sustainable development indicators, as well as data that supplements GDP.¹²⁸ None of these things are likely to happen, moreover, without strong and consistent public support and participation. This support and participation is much more likely if people believe that sustainability can actually be achieved. When people have a clearer understanding that tools are available to move toward sustainability, they are more likely to demand their use.

126. See generally A. Dan Tarlock, *Ideas Without Institutions: The Paradox of Sustainable Development*, 9 IND. J. GLOBAL LEGAL STUD. 35 (2001).

127. John C. Dernbach, *National Governance*, in STUMBLING TOWARD SUSTAINABILITY, *supra* note 6, at 723 (explaining why the United States needs to develop and implement a national strategy for sustainable development); see also John A. Pendergrass, *State Governance*, in STUMBLING TOWARD SUSTAINABILITY, *id.* at 701 (explaining the need for comparable state strategies).

128. Dernbach, *supra* note 127, at 742.