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The Role of Law in Defining Sustainable Development: NEPA Reconsidered

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THE ROLE OF LAW IN DEFINING SUSTAINABLE DEVELOPMENT: NEPA RECONSIDERED

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[To] meet the needs of the present without compromising the ability of future generations to meet their own needs.[1]

Our vision is of a life-sustaining Earth. We are committed to the achievement of a dignified, peaceful, and equitable existence. A sustainable United States will have a growing economy that provides equitable opportunities for satisfying livelihoods and a safe, healthy high quality of life for current and future generations. Our nation will protect its environment, its natural resource base, and the functions and viability of natural systems on which all life depends.[2]

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1. WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT, OUR COMMON FUTURE 43 (1987) [hereinafter OUR COMMON FUTURE].

2. PRESIDENT'S COUNCIL ON SUSTAINABLE DEVELOPMENT, SUSTAINABLE AMERICA: A NEW CONSENSUS FOR PROSPERITY, OPPORTUNITY, AND A HEALTHY ENVIRONMENT FOR THE FUTURE iv (1996).

I. INTRODUCTION

Since total impact of human activity on the environment is the product of the effects of resource use per person times the number of persons,[3] both the vigorous development and industrialization in the technologically advanced countries and the explosive population growth in the underdeveloped world have quickened the rate and intensity of environmental degradation worldwide.[4] While industrialized nations worry that Western-style industrialization in the populous third world will ruin the environment completely, the third world does not want to be told that its industrialization must be circumscribed either by legal or economic limits that were not imposed on the "first" world as it developed. To solve this conflict, the two sides have agreed upon sustainable development as an international goal; in the abstract, it is an obviously good idea, proposing that we need both to "meet the needs of the present without compromising the ability of future generations to meet their own needs," and balance short-term development values with long-term ecological values. Sustainable development acknowledges the rights of both nations and individuals to exploit their own resources, limited by the proviso that others, including future generations, are not damaged in the process. Unfortunately, when one attempts to implement the concept, one quickly discovers that, except

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3. Garrett Hardin calls this "impact equation" the "Third Law of Human Ecology." *See*, Garrett Hardin, *Paramount Positions in Ecological Economics*, in ECOLOGICAL ECONOMICS: THE SCIENCE AND MANAGEMENT OF SUSTAINABILITY 47, 53 (Robert Costanza, ed. 1991).

4. *See* THEWORLD RESOURCES INSTITUTE ET AL., WORLD RESOURCES 1992-93 17-56 (1992)(describing these developments in industrial, poor and rapidly industrializing countries) and THE WORLD RESOURCES INSTITUTE ET AL., WORLD RESOURCES 1996-97 1-80 (1996)(describing in vivid detail how this impact equation manifests itself in urban areas around the world).

in its most obvious applications, sustainable development is, if not meaningless, an oxymoron.[5] In the vastness of our daily affairs—suburban land use practices; economic development decisions for underdeveloped nations; coal mining; the use of fertilizer and pesticides; the decision whether to use paper or plastic supermarket bags; the structure of our tax system, banking system or even our educational system—sustainable development provides cryptic guidance. Attempts so far to define sustainable development reiterate the high aspirations behind the ideal, but fail to teach us how to identify which of the details of our decisions are the devilishly unsustainable ones.[6]

For instance, the European Union (EU) believes "sustainability" should be a guiding principle in its own policies, but the implementing definition it adopted was simply a restatement of the definition from *Our Common Future*[7] (this article's first epigraph). The EU elaborated on the definition only by a call for the "integration of environment considerations in the formulation and implementation of economic and sectoral policies, in the decisions of public authorities, in the conduct and development of production processes, and in individual behavior and choice."[8] Unfortunately, the conception is so plastic that it shields most any decision from the charge of unsustainability.[9] Of course ambiguity can be attractive, which is perhaps why the International Chamber of Commerce was willing to adopt its "Business Charter for Sustainable Development," which urges member companies to "establish environmental management as a top corporate priority," to "promote appropriate practices," and to "design and operate facilities for sustainable use of natural resources."[10]

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5. *See* Günther Handl, *Controlling Implementation of and Compliance with International Environmental Commitments: The Rocky Road from Rio*, 5 COLO. J. INT'L ENVTL. L. & POL'Y 305, 312 (1994)("[S]ustainability . . . is . . . subject to mutually incompatible interpretive claims."); Marvin S. Soroos, *The Evolution of Global Environmental Governance, in* ENVIRONMENTAL POLICY IN THE 1990S: REFORM OR REACTION 278, 291 (Norman J. Vig & Michael E. Kraft, eds., 3d ed. 1997).

6. "Like the idea of progress, . . . the concept of sustainability suffers from a certain confusion of ends and means." LAMONT C. HEMPEL, ENVIRONMENTAL GOVERNANCE: THE GLOBAL CHALLENGE 40 (1996).

7. OUR COMMON FUTURE, *supra* note 1, at 43.

8. Regina S. Axelrod, *Environmental Policy and Management in the European Union, in* ENVIRONMENTAL POLICY IN THE 1990S, *supra* note 5, at 299, 310-11.

9. David A. Wirth, *The Rio Declaration on Environment and Development: Two Steps Forward and One Back, or Vice Versa?*, 29 GA. L. REV. 599, 607 (1995) ("[The] definition of sustainable development, moreover, presents a serious challenge when applied to the operational reality of determining the 'sustainability' of a given proposal, whether a discrete infrastructure project, such as a large dam, or a broader development policy or program.").

10. Daniel Press & Daniel A. Mazmanian, *The Greening of Industry: Achievement and Potential, in* ENVIRONMENTAL POLICY IN THE 1990S, *supra* note 5, at 255, 260 (quoting INTERNATIONAL CHAMBER OF COMMERCE, THE BUSINESS CHARTER FOR SUSTAINABLE DEVELOPMENT: PRINCIPLES FOR ENVIRONMENTAL MANAGEMENT (1991)).

The seductive vagueness[11] of sustainable development has made it an attractive concept with which to package new international law instruments, such as the North American Free Trade Agreement (NAFTA),[12] and even international law generally.[13] However, the widespread use of the concept as a policy goal neither defines what is meant by sustainable development[14] nor instructs on its implementation.[15]

Thus, a skeptic very well might describe the rapid, universal adoption of the language of sustainable development as simply a brilliant

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11. Marc Pallemaerts, *International Environmental Law from Stockholm to Rio: Back to the Future? in* GREENING INTERNATIONAL LAW 1, 14 (Philippe Sands ed., 1994)("It is not surprising that such a concept [as sustainable development] has received widespread support from leaders of the North and South alike, environmental and Third World movements, international bureaucrats and enlightened managers of financial and economic institutions and structures in both capitalist and socialist countries. This is explained by the artful vagueness which the new paradigm of 'sustainable development' casts upon their respective responsibilities.").

12. *See* North American Agreement on Environmental Cooperation, Sept. 8-14, 1993, Can.-Mex.-U.S., 32 I.L.M. 1480, 1482 in which the United States, Mexico and Canada acknowledge that NAFTA and its environmental side agreement (NAAEC) were entered into in part to "promote sustainable development" because the parties were:

> Convinced of the importance of the conservation, protection and enhancement of the environment in their territories and the essential role of cooperation in these areas in achieving *sustainable development* for the well-being of present and future generations. (emphasis added).

Similarly, in NAFTA's Preamble, these three nations agreed to "promote sustainable development." North American Free Trade Agreement, Dec. 8-17, 1993, Can.-Mex.-U.S., 32 I.L.M. 289, 297 and in its substantive provisions NAFTA provides that the definition of "legitimate objective" for purposes of determining in Article 915 whether laws that affect trade are permissible includes, "protection of human, animal or plant life or health, the environment . . . and sustainable development." *Id.* art. 915 ¶¶ 1(b)-(c) at 391.

13. According to Elizabeth Dowdeswell, executive director of the United Nations Environment Programme, "[t]here is no precise definition of sustainable development for international law and one might argue that there is indeed no difference between that body of law and international environmental law itself!" *Quoted in* David A. Ring, *Sustainability Dynamics: Land-Based Marine Pollution and Development Priorities in the Island States of the Commonwealth Caribbean*, 22 COLUM. J. ENVTL. L. 65, 67 n. 5 (1997).

14. Catherine Tinker, *Responsibility for Biological Diversity Conservation Under International Law*, 28 VAND. J. TRANSNAT'L L. 777, 816 (1995) ("New international environmental law principles, including sustainable development and recognition of serious human threats to the global environment, have created new applications for the doctrines of state responsibility and liability, although states' . . . obligations under international law remain ill-defined.").

15. Mary Pat Williams Silveira, *International Legal Instruments and Sustainable Development: Principles, Requirements, and Restructuring*, 31 WILLAMETTE L. REV. 239, 251 (1995) ("[T]he distance between becoming a signatory to an international legal instrument [calling for sustainable development] and implementation is great.").

> politically expedient compromise between the forces of economic growth and those of environmental protection. Environmentalists enthused over the word *sustainability*, while many business and government leaders praised *development* as the final word. However awkward the pairing of these words may have seemed, their combination signified a rare convergence in ecological and economic thinking.[16]

However, by focusing on the core issue of integrating economic and environmental factors into every decision, it is possible to move from the quagmire of definitional generality to the firmer ground of definitional precision.[17] Viewed from this perspective, this "expedient compromise" may reflect a core truth: "the key element of sustainable development is the recognition that economic and environmental goals are inextricably linked." If there is any agreement on what sustainable development means, it is that economic and environmental factors are combined into a single decision,[18] or in economic terms, that the externalities of each activity must be internalized. Principle 16 of the *Rio Declaration* confirms this vision: "[n]ational authorities should endeavor to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public

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16. HEMPEL, *supra* note 6, at 39-40. The concept of *sustainability* is as problematic as sustainable development:

> Sustainability, after all, can imply the continuation of societies, beliefs, and practices that are unjust or incompatible with other cherished values. For example, some have questioned whether a consumer society is, or should be, sustainable. Even ecological sustainability is problematic. For example, sustaining a healthy lake as a stable aquatic ecosystem means reversing the natural process of eutrophication that slowly turns lakes into marshes, and marshes into forests . . . . Part of what makes an individual life precious is the knowledge that it is unsustainable . . . . From rainbows to breathtaking sunsets, what gives poignancy to beauty is the knowledge that it seldom lasts . . . . Hence the object of sustainability thinking is not preservation or endurance so much as wholeness . . . a deep sense of harmony and connectedness [in the] forms of human organization that cohere ecologically.

Id. at 40 (citations omitted)(emphasis in original).

17. *See* Susan L. Smith, *Ecologically Sustainable Development: Integrating Economics, Ecology, and Law* 31 WILLAMETTE L. REV. 261, 276 (1995) ("A relatively precise definition of sustainable development is . . . necessary in order for it to serve as a guiding principle for law and policy.").

18. *Id.* at 263. "Integrating economic and environmental concerns is the controlling policy objective of sustainable development. This policy objective provides a mechanism for societies to conceptualize the economy and the environment as integrally related aspects of a struggle towards a common societal goal, rather than separate values that must be balanced against each other." *Id.*

interest and without distorting international trade and investment."[19] Whatever else sustainable development may mean, it must mean that in every developmental decision the environmental costs are internalized. This will require that laws be modified to include environmental externalities and to establish concrete measurement criteria against which to judge the sustainability of each project. Unfortunately, no one has gone beyond rhetoric and proposed how this can systematically be achieved.[20]

Conceiving the general concept is one thing, defining it explicitly and making it happen is another. This article will propose an operational definition of sustainable development, suggest an analytical framework for measuring whether particular laws meet that operational definition, and apply this framework to one statute as an example of how law can define, and if enforced, allow us to realize sustainable development.

One powerful response to the complaint that principles of sustainable development are not incorporated into legal systems is what are known as environmental impact statement (EIS) or assessment (EA or EIA) laws, which are now part of the jurisprudence of nearly every country of the world.[21] These laws are

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19. United Nations Conference on Environment and Development, *Rio Declaration on Environmental Development*, princ. 16, at 879 U.N. Doc. A/CONF. 151/5/Rev. 1 (1992) [hereinafter *Rio Declaration*].

20. When the analysis turned to how best to utilize the law, even a thorough, thoughtful examination of the need to integrate law, ecology and economics as the basis of achieving sustainable development fizzled out into broad generalities:

> Societal changes in rhetorical values represents movement toward sustainable development. However, our societal processes, principles, constraints, institutions, and deep values still do not reflect the goal of sustainable development. Society has made limited progress toward sustainable development, but one may question whether a democracy of the living can ever truly embrace sustainable development–not just as rhetoric, or another factor to be considered—but as an actual constraint upon our decisions, a criterion for structuring our institutions, and as a fundamental value. . . . The law will need to find solutions to these barriers to sustainable development. We may need to re-examine the definition of property rights through devices such as the public trust doctrine. We may need to use public resources such as transportation and utility infrastructure, water resources, and public lands to control development. It may be necessary to recognize a fundamental human right to a healthy environment and intact ecosystem.

Smith, *supra* note 17, at 304-05.

21. *See generally* ALAN GILPIN, ENVIRONMENTAL IMPACT ASSESSMENT (EIA): CUTTING EDGE FOR THE TWENTY-FIRST CENTURY (1995) (surveying the EIA laws and practices in Britain, France, Germany, Italy, Austria, Belgium, Commonwealth of Independent States affiliates (Russia et al.), Czech and Slovak Republics, Greece, Ireland, Luxembourg, The Netherlands, Poland, Portugal, Spain, Switzerland, Denmark, Finland, Norway, Sweden, Canada, United States, Australia, China, India, Pakistan, Bangladesh, Sri

central to international organizations[22] and multilateral banking,[23] and are prominent expectations in international agreements.[24] These EIS, EIA or EA (hereinafter commonly referred to as EIS) requirements represent a nearly universal adoption[25] of the National Environmental Policy Act (NEPA), [26] enacted in the United States in 1970. At its core, the EIS process requires that each government decision-maker incorporate environmental concerns into the decision-making process at each stage of evaluation so that the final outcome will reflect an integration of all inputs: economic, environmental, political, and social. In theory, EIS laws that are now ubiquitous in national and international legal systems, will, by the gradual, but insistent, accretion of project decisions, inevitably advance the world along the road to sustainable development. Unfortunately, the opposite is true. The widespread existence of NEPA-like laws has created a false sense of environmental security. Instead of advancing sustainability, EIS laws allow a project's unsustainability to be masked by a process that purports to promote sustainability. In the United States, NEPA not only fails to promote sustainable development, it allows decision-makers to dress up unsustainable proposals with a veneer of sustainability, providing a false sense of security that the decisions of the government "create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social,

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Lanka, Indonesia, Japan, South Korea, Malaysia, New Zealand, The Philippines, Singapore, Taiwan, Thailand, China, and Hong Kong).

22. *Id.* at 74-90 (surveying the EIA requirements and practices of the European Community, the Nordic Council, the UN Economic Commission for Europe, the Organisation for Economic Cooperation and Development, the Antarctic Treaty nations, the UN Economic and Social Commission for Asia and the Pacific, the UN Environment Programme, the Asian Development Bank, the World Health Organization, the World Bank and the International Association of Impact Assessment).

23. Andrew Steer, *Overview: The Year in Perspective*, ENV'T. MATTERS, Fall 1996, at 4, 6-7.

24. *See, e.g., Rio Declaration* princ. 17, *supra* note 19, at 874 ("Environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority"); Convention on Biological Diversity, June 5, 1992, *in* 31 I.L.M. 818 [hereinafter Convention on Biological Diversity] (concluded at Rio de Janeiro June 5, 1992; entered into force Dec. 29, 1993) ("Each Contracting Party, as far as possible and as appropriate, shall: (a) Introduce appropriate measures requiring environmental impact assessment of its proposed projects that are likely to have significant adverse effects on biological diversity with a view to avoiding or minimizing such effects. . . ."); Convention on Environmental Impact Assessment in a Transboundary Context, Feb. 25, 1991, 30 I.L.M. 800.

25. *See* Nicholas A. Robinson, *International Trends in Environmental Impact Assessment*, 19 B.C. ENVTL. AFF. L. REV. 591 (1992) (noting in 1992 that since NEPA's enactment in 1970, more than 75 jurisdictions have required EIA by law).

26. 42 U.S.C. § 4331(a) (1994).

economic and other requirements of present and future generations of Americans."[27] NEPA, copied throughout the world, has become a worldwide public relations vehicle to paint decisions that significantly affect the environment as sustainable, when nothing could be further from the truth. This article will demonstrate how NEPA fails to require sustainable decisions, and how NEPA can be modified to promote sustainable development.

II. THE EVOLUTION OF SUSTAINABLE DEVELOPMENT

The idea of sustainable development was born in 1972 at the United Nations Conference on the Human Environment (Stockholm) which, "having considered the need for a common outlook and for common principles to inspire and guide the peoples of the world in the preservation and enhancement of the human environment," proclaimed as the "imperative goal for mankind" the need to defend and improve the human environment for present and future generations in harmony with peace and worldwide economic and social development.[28] Placing this goal within the context of international law, the conference declared, as a matter of "common conviction," the now famous Principle 21:

> States have in accordance with the charter of the United Nations and the principles of international law, the sovereign *right* to exploit their own resources pursuant to their own environmental policies, and 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.[29]

Principle 21, however, did not lead to a reduction of the environmental problems the Stockholm Conference faced in 1972. A decade later, the United Nations General Assembly, fearing that degradation of world's ecosystems would lead to "the breakdown of the economic, social and political framework of civilization,"[30] established, in the World Charter for Nature, the principle that all ecosystems and resources of the world utilized by humans "be managed to achieve and maintain optimum sustainable productivity"[31] through the requirement that planning and implementation of social and economic development activities take "due account" of the conservation of nature.[32] This principle fully recognizes that in "the sovereignty of States over their natural resources, each State shall give effect to the provisions of the [World Charter for Nature]."[33]

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27. *Id.*

28. Stockholm Declaration of the United Nation's Conference on the Human Environment, 11 I.L.M. 1416 (1972).

29. *Id.* (emphasis added).

30. G.A. Res. 7, U.N. GAOR, 37th Sess., No. 51, at 239, U.N. Doc. A/RES/37/7 (1982), *reprinted in* 22 I.L.M. 455 (1983).

31. *Id.* ¶ 4.

32. *Id.* ¶ 7.

33. *Id.* ¶ 22.

Unfortunately, the Stockholm Declaration and the United Nations World Charter for Nature did nothing more than elevate the notion of "sustainable development" to a proposed world "ethic" that simultaneously pursues the competing moral principles of economic/social justice and environmental responsibility.[34]

After much discussion, in the fall of 1983 the United Nations created a World Commission on Environment and Development (Brundtland Commission) to flesh out the factual and policy issues that comprise the concept of "sustainable development."[35] The Brundtland Commission's mandate was enormous a) re-examine the critical issues of the environment and development and formulate innovative, concrete, and realistic action proposals to deal with them; b) strengthen existing and propose new forms of international cooperation on the environment and development; and c) raise world-wide levels of understanding and commitment to action.[36] After years of work by thousands of people, and public hearings around the globe,[37] the Commission issued its report entitled, *Our Common Future.*[38] This report detailed "ever increasing environmental decay, poverty and hardship in an ever more polluted world" with decreasing resources, a situation that would continue unless the world moved to achieve a "new era of economic growth... based on policies that sustain and expand the environmental resource base."[39]

According to *Our Common Future*, the world must grapple simultaneously with four interlocking crises 1) rapid population growth that will increase existing poverty— 90% of the growth will be in the poorest countries, and 90% of that growth will occur in already overburdened cities; 2) economic growth, which consumes natural resources, creates pollution burdens, and which, because of international economic relationships, creates enormous pressure to minimize environmental management in developing countries; 3) ecological problems arising from soil erosion, water pollution and availability, atmospheric pollution, climate modifications, deforestation, and biodiversity diminishment; and 4) the borrowing of environmental capital from future generations with no intention of or prospect of repayment.[40] Sustainable development —the process of meeting the needs of the present without compromising the ability of future generations to meet their needs[41]— provides the

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34. J. Ronald Engel, *Introduction: The Ethics of Sustatainable Development, in* THE ETHICS OF SUSTAINABLE DEVELOPMENT1, 2 (J. Ronald Engel & Joan Gibb Engel eds., 1990).

35. *Of Preparation of the Environmental Perspective to the Year 2000 and Beyond,* U.N. GAOR, 38th Sess., Supp. No. 47, 102d plen. mtg., U.N. Doc. A/38/47 (1983).

36. OUR COMMON FUTURE, *supra* note 1, at 363.

37. *Id.* at 359-87.

38. *Id.*

39. *Id.* at 1.

40. *Id.* at 4-6.

41. *Id.* at 8.

conceptual tool with which to accommodate the competing forces of population growth, economic growth with environmental quality. Although *Our Common Future* moved sustainable development from an ethic to a subject of policy debate, it could not go beyond identifying categories that need to be addressed to transform the idea of sustainable development into reality.[42]

As part of the conceptualization of sustainable development, the Commission proposed legal principles[43] that would be applicable in "*all* instances of the use of a natural resource or of an environmental interference in *any* part of the world . . . . not merely . . . *beyond the limits of natural jurisdiction* or in *the transboundary context*, but also in the *entirely domestic domain*."[44] Unfortunately, the proposed legal principles say both too much and too little to guide decision-making towards sustainable development. However, they do provide an initial attempt to develop principles that focus our vision on sustainability issues, and create a base upon which the detailed action plan in Agenda 21 could eventually be built. The general principals propose, *inter alia:*

> Article 1. Fundamental human right. All human beings have the fundamental right to an environment adequate for their health and well-being.
> Article 2. Conservation for present and future generation. States shall conserve and use the environment and natural resources for the present and future generations.
> Article 3. Ecosystems, related ecological processes, biological diversity, and sustainability. States shall:
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> (a) maintain ecosystems and related ecological processes essential for the functioning of the biosphere in all its diversity, in particular those important for food production, health and other aspects of human survival and *sustainable development;*
>
> (b) maintain maximum biological diversity by ensuring the survival and promoting the survival and promoting the conservation in their natural habitat of all species of fauna and flora . . . ;
>
> (c) observe in the exploitation of living natural resources and ecosystems, the principle of optimum sustainable yield in the use of living resources and ecosystems.
>
> Article 7. Planning and implementation of development activities. States shall ensure that the conservation of natural resources and the environment is treated as an integral part of the planning and implementation of development activities.

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42. *Id.* at 308-347.

43. *Id.* at 348.

44. Nagendra Singh, *Foreword* to EXPERTS GROUP ON ENVIRONMENTAL LAW OF THE WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT, ENVIRONMENTAL PROTECTION AND SUSTAINABLE DEVELOPMENT: LEGAL PRINCIPLES AND RECOMMENDATIONS xi (1987) [hereinafter EXPERTS GROUP ON ENVIRONMENTAL LAW]. These proposals expand the concept of international law to include regulation of conduct that was traditionally the exclusive concern of the individual countries. *Id.* at xii. Under this view, to achieve sustainable development globally, international law will limit the heretofore sovereign power of each State to exploit its own natural resources and affect environmental changes.

> Particular attention shall be paid to environmental problems arising in developing countries and to the need to incorporate environmental considerations in all development assistance programs.
> Article 9. Reasonable and equitable use of transboundary natural resources. States shall use transboundary natural resources in a reasonable and equitable manner.[45]

These proposed principles also suggest the subjectivity of sustainability: the decision whether an environment promotes human health and well-being is based on cultural, economic, religious, and psychological factors. Even more vague and subjective is whether a policy promotes inter-generational equity. Some argue that intergenerational equity is best achieved by enhancing the present generation's sense of community.[46] Others suggest that maximizing individual choice today will enhance the capital infrastructure available in the future,[47] at least if we impose a social discount rate on market decisions. [48] Another view is that because people feel most comfortable with whatever environment they are born into, what we do today is irrelevant to the future.[49] In contrast to these present oriented perspectives, others worry about creating ecological disasters, such as loss of biological diversity, that cannot be remedied by technological innovation. This waste of ecological assets would violate the almost universally held belief that the natural and cultural environment of our planet is held in common by past, present, and future generations of human beings.[50]

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45. *Id.* at 25-27.

46. *See generally* HERMAN E. DALY & JOHN B. COBB, JR., FOR THE COMMON GOOD: REDIRECTING THE ECONOMY TOWARD COMMUNITY, THE ENVIRONMENT, AND A SUSTAINABLE FUTURE 1 (1989).

47. *See, e.g.*, J. E. Stiglitz, *A Neoclassical Analysis of the Economics of Natural Resources, in* SCARCITY AND GROWTH RECONSIDERED 36 (V. Kerry Smith ed. 1979).

48. *See* RICHARD L. OTTINGER ET AL., ENVIRONMENTAL COSTS OF ELECTRICITY, 43-44, 83-88 (1990). *See also* Daniel A. Farber & Paul A. Hemmersbaugh, *The Shadow of the Future: Discount Rates, Later Generations, and the Environment*, 46 VAND. L. REV. 267, 287 (1993) ("[P]olicymakers should use the 'riskless investment rate' as both a ceiling and a floor for the social discount rate. According to the most recent empirical evidence, this translates into a discount rate of roughly one percent. Accordingly, in considering intergenerational effects, we should discount future lives, but only at a very low rate.").

49. *See* MARK SAGOFF, THE ECONOMY OF THE EARTH: PHILOSOPHY, LAW, AND THE ENVIRONMENT 61-63 (1988). According to Sagoff, our obligation is not to the future, but for the future. *Id.* at 63. He believes that rather than owing a moral obligation to future generations of persons, we are morally bound to our present ideals of what we want to be good in our environment. *Id.*

50. *See* EDITH BROWN WEISS, IN FAIRNESS TO FUTURE GENERATIONS: INTERNATIONAL LAW, COMMON PATRIMONY, AND INTERGENERATIONAL EQUITY 17-21 (1989).

Even if intergenerational equity were not subjective, some of the underlying proposed principles to which intergenerational equity is to be applied are inherently undefinable. For instance, the proposed obligation that states "observe in the exploitation of living resources and ecosystems the principle of optimum sustainable yield,"[51] begs the question of what is optimum. Mathematics cannot tell us what the greatest long-term good is for the greatest number of people.[52] The higher the desired standard of living, the fewer who can enjoy it. Thus, to decide what is "optimum," we must first decide whether to maximize the number of human beings on the earth or their average, not total well-being.[53] Other proposed principles similarly rely upon concepts that have no objective meaning. What is "adequate" environmental protection, and what constitutes the "environment" that is to be protected (and from what)? Adequate for whom, compared to what, at what cost, and to whom? Who decides?

Nor does the balance of the proposed legal principles, which are either procedural or limited in scope, provide a useful operational framework for decision making. For instance, Article 5's requirement that states include environmental assessments as part of their decision-making processes,[54] merely acknowledges the already widespread adoption of environmental impact statement laws and regulations.[55] However, as this article will demonstrate, that principle neither defines what a sustainable development project should look like, nor insures that the sustainable version of a project is adopted. Article 6's proposal for the increased transparency of and opportunity for citizens to participate in governmental decisions,[56]

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51. EXPERTS GROUP ON ENVIRONMENTAL LAW, *supra* note 44, at art. 3.

52. *See* Hardin, *supra* note 3, at 55.

53. *Id.* For instance, solitude and wilderness experiences become more rare as population increases.

54. EXPERTS GROUP ON ENVIRONMENTAL LAW, *supra* note 44, at art 5 . (Article 5 provides: States shall make or require prior environmental assessments of proposed activities which may significantly affect the environment or use of a natural resource.").

55. At least 28 states in the United States require state and local governments to use some sort of environmental assessment process. *See* Nicholas A. Robinson, *Environmental Impact Review in the States, in* ENVIRONMENTAL IMPACT ASSESSMENT: PROCEEDINGS OF A CONFERENCE ON THE PREPARATION AND REVIEW OF ENVIRONMENTAL IMPACT STATEMENTS 71 (Nicholas A. Robinson ed., 1989). Environmental Assessment laws have now been adopted in more than 50 jurisdictions. *See* Robinson, *supra* note 25, at 597-98, 611-19. Environmental assessment is now the subject of an international treaty. *See* United Nations: Convention on Environmental Impact Assessment in a Transboundary Context, *supra* note 24. Environmental assessment is also now central to the regular operations of major multilateral development banks. *See, e.g.*, THE INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT/THE WORLD BANK, MAINSTREAMING THE ENVIRONMENT 13, 118-37 (1995).

56. The Commission's Article 6 provides: "States shall inform in a timely manner all persons likely to be significantly affected by a planned activity and to grant them equal access and due process in administrative and judicial proceedings." EXPERTS GROUP ON

simply requires notice and an opportunity for public participation as a necessary adjunct to the environmental assessment process. Article 7[57] mandates that states integrate conservation values into development decisions, but does not tell states how or what to conserve. Article 8's requirement that states "co-operate in good faith with other States in implementing the preceding rights and obligations,"[58] adds nothing of substance.[59] Finally, the principles contained in the remaining Articles 9-21 simply propose rules of international law establishing state responsibility for the narrow category of substantial transboundary harm caused by activities within the state.

Ultimately, laws must proscribe or prescribe human conduct, and therefore, must be more concrete, focused, and intelligible than ethical principles. Recognizing that the concept of sustainable development is simultaneously appealing and meaningless, the United Nations held an international conference in 1992, twenty years after Stockholm, for the purpose of giving the concept of sustainable development meaning. The United Nations Conference on Environment and Development (UNCED), convened in Rio de Janeiro, was organized, in part, to translate the declaratory principles into international law.[60]

UNCED's original agenda covered almost all the world's major environmental problems and almost all aspects of the human condition.[61] Although the focus

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ENVIRONMENTAL LAW, *supra* note 44, at art. 6.

57. *Id.* at xiii . Article 7 provides: "States shall ensure that conservation is treated as an integral part of the planning and implementation of development activities and provide assistance to other States, especially developing countries, in support of environmental protection and sustainable development." *Id.* at art. 7.

58. *Id.* at art. 8.

59. The failure of customary international law to effectuate international environmental protection has been thoroughly described elsewhere. *See Developments in the Law— International Environmental Law,* 104 HARV. L. REV. 1484 (1991).

60. UNCED was convened by the UN to "elaborate strategies and measures to halt and reverse the effects of environmental degradation" and "to promote sustainable and environmentally sound development" by, *inter alia*, promoting the "development of international law." G.A. Res 44/228, U.N.GAOR, 44th Sess., ¶¶.13, 1.15(d) (1989), *reprinted in* AGENDA 21 AND THE UNCED PROCEEDINGS 1xxxv (Nicholas A. Robinson et al., eds., 1992) *and* Thacher, *Background to Institutional Option for Management of the Global Environment and Commons*, 54, 77 (1991) (unpublished paper for the World Federation of United Nations Association's Project on "Global Security and Risk Management.").

61. G.A. Res. 44/228, U.N. GAOR, 44th Sess. (1989) ¶12. The original mandate for UNCED envisioned the conference addressing:

> a) protection of the atmosphere by combating climate change, depletion of the ozone layer and transboundary air pollution;
> b) protection of the quality and supply of freshwater resources;
> c) protection of the oceans and all kinds of seas, including enclosed and semi-enclosed seas, and of coastal areas and the protection, rational use and development their living resources;
> d) protection and management of land resources by, *inter alia*, combating

of the conference, by necessity, was much narrower, UNCED was remarkably ambitious in seeking to produce six categories of outcomes:[62]

1) an agreed statement of environmental and development principles governing the conduct of nations and people to be called the "Earth Charter";
2) a programme of work (Agenda 21) addressing major environmental and development priorities into the twenty-first century;
3) an agreement concerning financial resources for implementing the programme;
4) an agreement on access to environmentally sound technologies for developing countries;
5) an agreement on measures to strengthen and supplement existing international institutions and institutional processing; and
6) legal instruments on climate change and biodiversity.

In the end, UNCED met most of these goals by adopting the *Rio Declaration* which reaffirmed sustainable development as the dominant theme of international environmental concern;[63] *Agenda 21*,[64] a comprehensive proposal for action; the proposal for the Global Environmental Facility to help fund the incremental costs of making development projects more globally sustainable;[65] and two treaties, the United Nations Framework Convention on Climate Change[66] and the Convention on Biological Diversity.[67] Sustainable development's definitional quandary, however, was not resolved by UNCED, nor did UNCED

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deforestation, decertification and drought;
e) conservation of biological diversity;
f) environmentally sound management of biotechnology;
g) environmentally sound management of wastes, particularly hazardous wastes, and toxic chemicals, as well as preservation of illegal international traffic in toxic and dangerous products and wastes;
h) improvement of the living and working environment of the poor in urban slums and rural areas, through eradicating poverty, *inter alia*, by well as taking other appropriate measures at all levels necessary to stem the degradation of the environment;
i) protection of human health condition and improvement of the quality of life.

62. *See Report of Maurice F. Strong, Secretary-General of the Conference, to the Second Session of the UNCED Preparatory Committee*, A/CONF.151/PC/14, ¶¶ 49-58.

63. *See generally Rio Declaration*, *supra* note 19. For a detailed analysis of the final language of the Rio Declaration, its value or lack of value, and the tortuous drafting history leading to its adoption, see Wirth, *supra* note 9, at 599.

64. *See generally* AGENDA 21: EARTH'S ACTION PLAN (Nicholas A. Robinson ed., 1993).

65. Nicholas A. Robinson, *Colloquium: The Rio Environmental Law Treaties - IUCN's Proposed Covenant on Environment & Development*, 13 PACE ENVTL. L. REV. 133, 156 (1995).

66. Framework Convention on Climate Change, May 9, 1982, *reprinted in* 31 I.L.M. 849 (1992) (concluded at Rio de Janeiro May 29, 1992; entered into force March 21, 1994).

67. Convention on Biological Diversity, *supra* note 24.

propose any legal rules that would give sustainable development operational meaning.

III. THE ROLE OF LAW AS INTERNALIZER OF ENVIRONMENTAL VALUES

Sustainable development's persistent definitional problem, which UNCED did not resolve, has been how to link environmental values with economic development. It is much easier to identify practices that are not sustainable than to define what sustainable development is.

> What sustainable development is not is clear. What is not sustainable is the support of current consumption through foreign borrowing that leaves the next generation with a heavy burden of debt service obligations, or failure to maintain the quality and skills of the next generation by sufficient investment in education, or the support of current consumption levels by depletion of soils, forests, fisheries, and energy resources, so that future productivity . . . is impaired.[68]

Alternative economic definitions of sustainable development have been proposed. For instance, some authors, using a natural resources perspective, have proposed that sustainable development occurs when renewable natural resources are used in such a way that the resource exploitation "does not eliminate or degrade them or otherwise diminish their 'renewable' usefulness for future generations while maintaining effectively constant or nondeclining stocks of natural resources such as soil, groundwater, and biomass."[69] Other economic theorists have suggested definitions of sustainable development which focus on what they describe as "optimal resource management, by concentrating on 'maximizing the net benefits of economic development, subject to maintaining the services and quality of natural resources.'"[70] Still others focus on the broader concept that "the use of resources today should not reduce real income in the future."[71] Thus, central to sustainability

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68. THE WORLD RESOURCES INSTITUTE, *Overview, in* THE GLOBAL POSSIBLE: RESOURCES, DEVELOPMENT AND THE NEW CENTURY 10 (Robert Repetto ed. 1985) [hereinafter THE GLOBAL POSSIBLE].

69. WORLD RESOURCES 1992-1993, *supra* note 4 (quoting DAVID W. PEARCE ET AL., SUSTAINABLE DEVELOPMENT AND COST BENEFIT ANALYSIS 6 (1988) and CHARLES HOWE, NATURAL RESOURCE ECONOMICS 337 (1979)).

70. *Id.* (quoting EDWARD B. BARBIER, ECONOMICS, NATURAL RESOURCES, SCARCITY AND DEVELOPMENT: CONVENTIONAL AND ALTERNATIVE VIEWS 185 (1989)).

71. *Id.* (quoting Anil Mortondya and David W. Pearce, *Natural Environments and Social Rate of Discount*, 3 PROJECT APPRAISAL 11 (1988)). Stated in the affirmative, "[t]he duty imposed by sustainability is to bequeath to posterity not any particular thing—with rare exceptions such as [Yosemite or the Lincoln Memorial]—but rather to endow them with whatever it takes to achieve a standard of living at least as good as our own and to look after their next generation similarly. We are not to consume humanity's capital, in the broadest

> is the concept that current decisions should not impair prospects for maintaining or improving future living standards . . . . This implies that our economic systems should be managed so that we live off the dividend of our resources, maintaining and improving the asset base so that the generations that follow will be able to live equally well or better.[72]

None of these economic definitions has yet been translated into operational legal rules. While it was possible at UNCED to achieve framework agreements on climate change and biodiversity issues, the more fundamental question of how law can link environmental values with economic development needs to be addressed. *Ad hoc*, problem by problem international agreements, as important as they are, create a patchwork-like legal regime that is merely reactive to emerging environmental crises. Although economic concerns are always a central consideration in the drafting of international agreements,[73] domestic and international laws are not created in any systematic form, a framework within which environmentally sound, sustainable development decisions can be an integral part of day-to-day activities. In other words, the law has yet to be reformulated to reflect equally both the laws of ecology and of economics in effectuating the declaratory principle that each state has a sovereign right to exploit resources and act within its borders, but must be responsible for effects caused outside its borders. The economics side of the balance is embodied in the almost inviolate doctrine of sovereignty, which allows each state to maximize its own welfare as an actor in the world's market.[74] Domestically, the economics side of the equation is represented in the laws of property and contract. Domestic regulation represents our *ad hoc* and piecemeal response

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sense." Robert Solow, An Almost Practiced Step Toward Sustainability, Fortieth Anniversary Lecture at Resources for the Future (Oct. 8, 1992) (lecture reprint available from author).

72. THE GLOBAL POSSIBLE, *supra* note 68, at 10. Repetto notes that "this is . . . similar to John Locke's criterion for judging appropriations of natural resources, that such property claims should be considered valid only if they leave 'as much and as good for others.'" Sustainable development "also has much in common with the ideal concept of income that accountants seek to determine: the greatest amount that can be consumed in the current period without reducing prospects for consumption in the future. Accountant and philosopher thus agree on the basis of sustainability." *Id.*

73. *See, e.g.*, Wilfred Beckerman, *Global Warming and International Action: An Economic Perspective, in* THE INTERNATIONAL POLITICS OF THE ENVIRONMENT: ACTORS, INTERESTS, AND INSTITUTIONS 253 (Andrew Hurrell & Benedict Kingsbury eds., 1992).

74. MARK W. JANIS, AN INTRODUCTION TO INTERNATIONAL LAW, 151-53, 273-74 (2d ed. 1993) "The special character of international legal process, like the special nature of international legal rules, is explicable in terms of state sovereignty. Given the international political system, it should come as no surprise that the large part of formal legal procedural authority in the world today resides not in any formal supranational legal system but in the states themselves." *Id.* at 7.

to market failures.[75] What is missing from the international law, and the domestic laws of the sovereign nations of the world, is a requirement of an accounting for the extraterritorial or external effects of purely domestic activities. Unless these environmental effects are accounted for routinely in market and resource allocation decisions, sustainable development cannot be effected. In economic terms, the environmental damages, if fully borne by the polluter or resource depleter, must be internalized into the decision-making, or else these "'external' costs will not, in general, be taken fully into account by [polluters]."[76]

The problem of uninternalized externalities and why law is a necessary internalizing force has been described most eloquently by Garrett Hardin in *The Tragedy of the Commons*.[77] To each "rational" person, the cost of disposing of wastes in a common resource is less than the cost of purifying wastes before releasing them and "[s]ince this is true for everyone, we are locked into a system of 'fouling our own nest,' so long as we behave only as independent, rational, free-enterprisers."[78] At every level of activity, private or local actions maximize immediate private or local benefit but have larger regional or global impacts, the costs of which are distributed to others. For instance, in the case of chlorofluoro carbons (CFC), which deplete stratospheric ozone, a single user of CFC enjoys the full benefit of its refrigerating capability, but when the CFCs are released into the atmosphere, their ozone depletion effects on human health and the environment are dispersed throughout the entire world. As another example, the benefits to the United States of using fossil fuels are greater than the detriment from the global warming impact of its CO_2 emission because the United States enjoys the full benefits of the fuel use while spreading the climate change impact throughout the world. Even though the entire world would benefit from emission reductions, each country and each person lacks any market-based, "rational" incentive to reduce emissions.[79] Thus, although each country or individual views the use of the environment as a cost-free activity, their use imposes real and significant costs on ecosystem capacity, on society as a whole, and on future generations.

Impairment of ecosystems results in a rapid and massively expensive consumption of capital. The most recent comprehensive estimate of the annual value of

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75. *See* Arthur F. McEvoy, *The Fisherman's Problem: Ecology and Law in the California Fisheries, 1850-1980* (1986), *reprinted in* LAW AND THE ENVIRONMENT: A MULTIDISCIPLINARY READER 42-43 (Robert V. Percival & Dorothy C. Alevizatos eds., 1997).

76. ROYAL COMMISSION ON ENVIRONMENTAL POLLUTION, FIRST REPORT (1971), *reprinted in* ROGER W. FINDLEY & DANIEL A. FARBER, CASES AND MATERIALS ON ENVIRONMENTAL LAW 32 (4th ed. 1995).

77. Garrett Hardin, *The Tragedy of the Commons*, 162 SCIENCE 1243 (1968).

78. *Id.* at 1245.

79. *See* POLICY OPTIONS FOR STABILIZING GLOBAL CLIMATE, 676, 680 (Daniel A. Lashof & Dennis A. Tirpak eds., 1990).

services derived from the world's natural capital has been set at $16 to 54 trillion.[80] Although these services are enormously valuable, their consumers assume them to be free and inexhaustible. As Costanza and others explain:

> [E]cosystem services provide an important portion of the total contribution to human welfare on this planet. We must begin to give the natural capital stock that produces these services adequate weight in the decision-making process, otherwise current and continued future human welfare may drastically suffer. We estimate in this study that the annual value of these services is $16 to 54 trillion, with an estimated average of $33 trillion. The real value is almost certainly larger, even at the current margin because $33 trillion is 1.8 times the current global GNP. One way to look at this comparison is that if one were to try to replace these services of ecosystems at the current margin, one would need to increase global GNP by at least $33 trillion, partly to cover services already captured in existing GNP and partly to cover services that are not currently captured in GNP. This impossible task would lead to no increase in welfare because we would only be replacing existing services, and it ignores the fact that many ecosystem services are literally irreplaceable.
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> If ecosystem services were actually paid for, in terms of their value contribution to the global economy, the global price system would be very different from what it is today. The price of commodities using ecosystem services directly or indirectly would be much greater. The structure of factor payments, including wages, interest rates and profits would change dramatically. World GNP would be very different in both magnitude and composition if it adequately incorporated the value of ecosystem services. One practical use of the estimates we have developed is to help modify systems of national accounting to better reflect the value of ecosystem services and natural capital. Initial attempts to do this paint a very different picture of our current level of economic welfare since about 1970 while GNP has continued to increase. A second important use of these estimates is for project appraisal, where ecosystem services lost must be weighed against the benefits of a specific project. Because ecosystem services are largely outside the market and uncertain, they are often ignored or undervalued, leading to the error of constructing projects whose social costs far outweigh their benefits.[81]

Presently, the cost of emissions and the resultant ecosystem consequences are included in decisions precisely at $0.00.[82] Theoretically, if the price of every resource included the cost to the environment of using that resource,[83]

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80. Robert Costanza et al., *The Value of the World's Ecosystem Services and Natural Capital*, 387 NATURE 253, 254 (1997).

81. *Id.* at 259.

82. F. Paul Bland, *Problems of Price and Transportation: Two Proposals to Encourage Competition from Alternative Energy Resources*, 10 HARV. ENVTL. L. REV. 345, 386 (1986) ("A decision not to consider external costs in itself quantifies them by setting their value at zero.").

83. The question of how a particular environmental damage should be valued and what that value should be is beyond the scope of this article. However, considerable energy is going into answering this question. *See, e.g.*, JOHN A. DIXON ET AL, ECONOMIC ANALYSIS

then the market would encourage the efficient use of each resource, reducing total environmental costs to society.[84] The balance of this article will explore ways in which law can accomplish this by providing a legal framework that balances the privilege of action with responsibility for that action. If law can create the structure for internalizing adverse environmental effects into every economic development decision, it will have given meaning to sustainable development.

IV. LAW'S AD HOC RESPONSE TO THE PROBLEM OF ENVIRONMENTAL EXTERNALITIES

The present state of sustainable development law is the *ad hoc* accretion of clusters of uncoordinated, issue specific laws[85] or agreements[86] that

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OF ENVIRONMENTAL IMPACTS 42 (1996); EXTERNAL ENVIRONMENTAL COSTS OF ELECTRIC POWER: ANALYSIS AND INTERNALIZATION (Olav Hohmeyer & Richard L. Ottinger eds., 1991); RICHARD L. OTTINGER ET AL., ENVIRONMENTAL COSTS OF ELECTRICITY (1990); SOCIAL COSTS AND SUSTAINABILITY: VALUATION AND IMPLEMENTATION IN THE ENERGY AND TRANSPORT SECTOR (Olav Hohmeyer et al. eds, 1997); SOCIAL COSTS OF ENERGY: PRESENT STATUS AND FUTURE TRENDS (Olav Hohmeyer & Richard L. Ottinger eds., 1994); United Nations Indicators of Sustainable Development Framework and Methodologies (1996); Partha Dasgupta, *Optimal Versus Sustainable Development, in* THE WORLD BANK, VALUING THE ENVIRONMENT 35 (Ismail Serageldin & Andrew Steer eds., 1995); *and* David W. Pearce, *Valuing the Environment: Past Practice, Future Prospect, in* THE WORLD BANK, VALUING THE ENVIRONMENT 47 (Ismail Serageldin & Andrew Steer eds., 1995).

84. *See* RICHARD L. OTTINGER ET AL., ENVIRONMENTAL COSTS OF ELECTRICITY 127, 137 (1990).

85. *See e.g.* ROBERT V. PERCIVAL ET AL., ENVIRONMENTAL REGULATION: LAW, SCIENCE, AND POLICY 71 (2d ed. 1996):

> The last two decades of environmental policy in this country have been similar in some ways to [the Space Invaders] video game: Every time we saw a blip on the radar screen, we unleashed an arsenal of control measures to eliminate it." [quoting former EPA Administrator William Reilly] . . . Like the video game mentioned in the quotation above from William Reilly, most environmental statutes respond to particular visible manifestations of broader problems. When considered together, it is apparent that they provide regulatory authority that is at once piecemeal and overlapping. Thus, even though the environmental laws articulate some of society's noblest aspirations, their architecture much more closely resembles a shack on Tobacco Road than a Gothic cathedral.

Id. at 71.

Even within a particular field of regulation, the law's response is often incoherent and incomplete. *See* John C. Dernbach, *The Unfocused Regulation of Toxic and Hazardous Pollutants*, 21 HARV. ENVTL. L. REV. 1 (1997).

86. For a detailed example of the various clusters of international environmental agreements see LAKSHMAN D. GURUSWAMY ET AL., INTERNATIONAL ENVIRONMENTAL

diversity are piecemeal.[103] As current law does not significantly promote conservation of, or sustainable use of, biological resources such as forests, wetlands and the sea, current economic development is depleting these resources at a rate that renders them essentially non-renewable.[104] Nor does current law coherently address human-caused extinction resulting from economic development and population growth policies, such as suburban land development in developed countries and the expansion of conservation of forests and other biologically diverse ecosystems into monoculture cropland and marginal pasture.[105] Instead, laws such as "land tenure rules in Latin America, the divided water jurisdiction of the Ganges River basin, and the regime of suburban land development in North America" actually pose a significant threat of acceleration of environmental degradation.[106] Uncoordinated, issue-specific environmental laws are ineffectual in the face of worldwide legal measures that implicitly, if not explicitly, sanction unsustainable practices.

The values that shape our legal system are rooted in the seventeenth century philosophy of people such as John Locke,[107] who lived in a low-population, predominantly rural society in which all actions and effects remained local.[108] Common law doctrines that inform our thinking today date as far back as 1536, when the doctrine of public nuisance and its special injury rule first appeared.[109] The tort law that evolved was based on concepts of specific harms caused by specific actions that were identifiable and localized in space and time.[110] The justifications for strict causation and standing requirements associated with this tort law "made sense in an era when misuse of existing technology affected only people in the immediate vicinity of the activity and caused only limited harm. The concerns of 1536—a horse falling into a ditch along the side of a road—pale

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103. JEFFREY A. MCNEELY, ECONOMICS AND BIOLOGICAL DIVERSITY: DEVELOPING AND USING ECONOMIC INCENTIVES TO CONSERVE BIOLOGICAL RESOURCES 106-108 (1988).

104. *Id.* at vii.

105. *See* Paul R. Ehrlich & Edward O. Wilson, *Biodiversity Studies: Science and Policy*, 253 SCIENCE 758 (1991).

106. Nicholas A. Robinson, *A Legal Perspective on Sustainable Development*, in THE LEGAL CHALLENGE OF SUSTAINABLE DEVELOPMENT 19, (J. Saunders ed. 1990).

107. *See* JOHN LOCKE, TWO TREATISES OF GOVERNMENT (P. Laslett ed. 1963) (1698).

108. *See, e.g.*, Geoffrey P. Miller, *Economic Efficiency and the Lockean Proviso*, 10 HARV. J.L. & PUB. POL'Y 401, 404-05 (1987); John T. Sanders, *Justice and the Initial Acquisition of Property*, 10 HARV. J. L. & PUB. POL'Y 367, 387 n. 24 (1987) (noting "the importance in Locke's era of various restrictions—such as primogeniture and entail—on the disposition of private property . . . ").

109. William L. Prosser, *Private Actions for Public Nuisance*, 52 VA. L. REV. 997, 1005 (1966).

110. D. Jamison, The Ethics of Living in a Global Greenhouse: Corporate and Personal Responsibility, presented at Global Climate Change: Linking Energy, Environment, Economy and Equity, Center for Environmental Information, Washington, DC (Dec. 5-6, 1991).

in comparison to "modern global climate change, loss of species diversity, chemical plant accidents, supertanker oil spills, contamination of air, land and water, and the like worries about."[111]

The global climate change example illustrates the need to rethink legal relationships. Arguably, under existing law, states and individuals are liable for their wrongful conduct that proximately results in harm to another person or state.[112] Global warming, however, driven by greenhouse gas emissions, results from the lawful and rightful acts of individuals, such as driving cars, using electricity, raising livestock, growing rice, etc. Any warming will be the result of cumulative emissions scattered in space and time, without identifiable connection to any specific event, with effects that may be complex, diffuse and non-linear in space and time.[113]

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111. David R. Hodas, *Private Actions for Public Nuisance: Common Law Citizen Suits for Relief from Environmental Harm*, 16 ECOLOGY L.Q. 883, 884 (1989).

112. Pierre-Marie Dupuy, *Overview of the Existing Customary Legal Regime Regarding International Pollution, in* INTERNATIONAL LAW AND POLLUTION 61, 63-64 (Daniel Barstow Magraw ed., 1991); Geoffrey Palmer, *New Ways to Make International Environmental Law*, 86 AM. J. INT'L. L. 259, 264-266 (1991).

113. K.E. Trenberth et al., *The Climate System: An Overview, in* CLIMATE CHANGE 1995: THE SCIENCE OF CLIMATE CHANGE 51, 59 (J.T. Houghton et al. eds., 1996):

> The amount of carbon dioxide in the atmosphere has increased by more than 25% in the past century and since the beginning of the industrial revolution, an increase which is known to be in large part due to combustion of fossil fuels and the removal of forests. . . In the absence of controls, projections are that the future rate of increase in carbon dioxide amount may accelerate and concentrations could double from pre-industrial values within the next 50 to 100 years.
>
> The increased amount of carbon dioxide is leading to climate change and will produce, on average, a global warming of the Earth's surface because of its enhanced greenhouse effect - although the magnitude and the significance of the effects are not yet fully resolved.

Id. The Intergovernmental Panel on Climate Change (IPCC) also identified the potential impact of human caused climate change:

> Human activities are increasing the atmospheric concentrations of greenhouse gases-which tend to warm the atmosphere—and, in some regions, aerosols—which tend to cool the atmosphere. These changes . . . are projected to lead to regional and global changes . . . such as temperature, precipitation, soil moisture, and sea level . . . . [C]limate models . . . project an increase in global mean surface temperature of about 1-3.50C by 2100, and an associated increase in sea level of about 15-95 cm. The reliability of regional-scale predictions is still low, and the degree to which climate variability may change is uncertain. However, potentially serious changes have been identified, including an increase in some regions in the incidence of extreme high-temperature events, floods, and droughts, with resultant consequences for fires, pest outbreaks, and ecosystem composition, structure and functioning, including primary productivity.

Thus, even though human actions will cause global warming, the current legal system cannot assign any liability or blame. To make matters worse, the present legal and economic systems provide no incentive to minimize CO_2 emissions. On the contrary, for each person the benefit of present emissions exceeds the costs of emission reductions and the harms to that person in the future, even though the cumulative effect on the world of rapid climate change could be catastrophic. Thus, the legal and economic infrastructure rewards emissions, and each individual producer of CO_2 is acting perfectly rationally under existing systems.

The progressive role of law in ordering relationships to reflect revised visions of the world is frequently overlooked by scientists, policy-makers, government officials, and business persons, all of whom wish to avoid law's intricate rules. Law's potential as a force in molding conduct, however, should not be discounted.

Summary for Policymakers: Scientific-Technical Analyses of Impacts, Adaptations, and Mitigation of Climate Change, in CLIMATE CHANGE 1995: IMPACTS, ADAPTATIONS, AND MITIGATION OF CLIMATE CHANGE, SCIENTIFIC-TECHNICAL ANALYSES 3 (Robert T. Watson et al. eds., 1996).

The time scales associated with greenhouse gas effects are enormous:

> *Turnover of the capital stock responsible for emissions of greenhouse gases: Years to decades (without premature retirement)
> *Stabilization of atmospheric concentrations of long-lived greenhouse gases given a stable level of greenhouse gas emissions: Decades to millennia
> *Equilibration of the climate system given a stable level of greenhouse gas concentrations: Decades to centuries
> *Equilibration of sea level given a stable climate: Centuries
> *Restoration/rehabilitation of damaged or disturbed ecological systems: Decades to centuries (some changes, such as species extinction, are irreversible, and it may be impossible to reconstruct and reestablish some disturbed ecosystems.) *Id.* at 4 (emphasis in original).
>
> As a result: [d]ecisions taken during the next few years may limit the range of possible policy options in the future because high near-term emissions would require deeper reductions in the future to meet any given target concentration. Delaying action might reduce the overall costs of mitigation because of potential technological advances but could increase both the rate and the eventual magnitude of climate change, hence the adaptation and damage costs.
>
> Policymakers will have to decide to what degree they want to take precautionary measures by mitigating greenhouse gas emissions and enhancing the resilience of vulnerable systems by means of adaptation. Uncertainty does not mean that a nation or the world community cannot position itself better to cope with the broad range of possible climate changes or protect itself against potentially costly future outcomes. Delaying such measures may leave a nation or the world poorly prepared to deal with adverse changes and may increase the possibility of irreversible or very costly consequences.

Id at 4.

For the law to reflect the values of sustainable development, it must reflect the underlying paradigm of the interconnectedness of life on a densely populated, technologically intense world. By ordering a society's social and economic relationships, law serves policies that either shape new enterprises, or preserve established interests.[114]

Current law mirrors the view of most economists that environmental externalities are an inconvenient theoretical contaminant in an otherwise elegant market system.[115] Externalities are only an afterthought in a legal system driven by an individual/market oriented paradigm.[116] Because sustainable development

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114. *See* Robinson, *A Legal Perspective on Sustainable Development, supra* note 106.

115. This stubborn tendency of economists to ignore messy, but crucial, reality is behind much of the failure to include externalities (a variety of what economists call transaction costs) in legal doctrine. On a theoretical level, the consistent tendency to assume away inconvenient facts is traceable to a misuse of the "Coase Theorem" in law and economics. Although the "Coase Theorem" is one of the most famous results in law and economics, it is clear from "The Problem of Social Cost" itself that Coase regarded the zero-transaction-cost assumption as unrealistic. Indeed, his previous work made it clear that he regarded transaction costs as not only widespread but essential to understanding the structure of the economy. More recently, he has explained his view of the Coase Theorem more fully. In discussing what would happen in a world of zero transaction costs, he explains, his aim:

> was not to describe what life would be like in such a world but to provide a simple setting in which to develop the analysis and, what was even more important, to make clear the fundamental role which transaction costs do, and should, play in the fashioning of the institutions that make up the economic system.

R.H. COASE, THE FIRM, THE MARKET, AND THE LAW 13 (1988).

He goes on to point out that a world without transaction costs "has very peculiar properties." *Id.* at 14. For example, monopolies would act like competitors, insurance companies would not exist, and there would be no economic basis for the existence of firms. *Id.* Indeed, he points out that since transactions are costless, it would also cost nothing to speed them up, "so that eternity can be experienced in a split second." *Id.* at 15. "It would not seem worthwhile," he concludes, "to spend much time investigating the properties of such a world." *Id.*

Little wonder that Coase was dismayed to find the world of zero transaction costs described as a Coasian world. *Id.* at 174. Instead, he says, "[i]t is the world of modern economic theory, one which I was hoping to persuade economists to leave." *Id.* The failure of economists to consider transaction costs is, he believes, the major reason for their inability to account for the operation of the economy in the real world. *Id.* As a result, their policy proposals are the "stuff that dreams are made of." *Id.* at 185. Given his actual views, the fame and impact of the Coase Theorem are at least a bit ironic. Indeed, in certain respects Coase has more in common with some of his critics that with many of his supporters. *See* ROGER W. FINDLEY & DANIEL A. FARBER, 1997 SUPPLEMENT TO CASES AND MATERIALS ON ENVIRONMENTAL LAW 35-36 (4th ed. 1997); Daniel A. Farber, *Parody Lost, Pragmatism Regained: The Ironic History of the Coase Theorem*, 83 VA. L. REV. 397, 398 (1997).

116. As markets evolved centuries ago, it was necessary for the law of property to establish the right to exclude others from using one's property so that owners could "capture the full value of their individual investments, thus encouraging everyone to put time and

must integrate economic interests and ecological values, environmental externalities can no longer be ignored. There is now a need, indeed a mandate, for a law of environmentally costed decision-making.

Two brief examples will best illustrate the theory. In 1980, when only 6% of the households in Beijing had refrigerators, China decided to saturate the city with refrigerators. Utilizing used refrigerator factories purchased from Japan, within ten years China had supplied over 60% of Beijing households with what seemed to be inexpensive refrigerators. When the cost of electricity to run the refrigerators was included, however, the total cost was three times that of the most efficient refrigerator on the world market.[117] In the second example, the Overseas Private Investment Corporation, in 1990, underwrote a $150 million project for General Electric to refurbish thirteen incandescent light bulb factories in Hungary. This $150 million could have built more than twenty new compact fluorescent light bulb factories, which would have saved the more than $20 billion needed to construct 12 billion watts of electric power plants to supply the extra electricity needed for the incandescent bulbs. In addition, these new factories would have prevented the release of vast amounts of SO_2 and other pollutants in a country that already has some of the worst air pollution in the world.[118] In these cases, both China and Hungary failed to consider the larger implications to society of life cycle cost[119] and environmental degradation.[120] The new legal paradigm for sustainable development must enable decision-makers routinely to avoid these blunders.

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labor into the development of the resources." Carol Rose, *The Comedy of the Commons: Custom, Commerce, and Inherently Public Property*, 53 U. CHI. L. REV. 711, 711-12 (1986). This unfettered right to use one's property, however, came about in a time of low population and relatively primitive technology; as "congestion" increases so too must law respond by regulating private use of property. Carol M. Rose, *Rethinking Environmental Controls: Management Strategies for Common Resources*, 2 DUKE L.J. 1, 36-37 (1991). The common law of nuisance was not particularly effective in forcing firm's to internalize the adverse environmental effects of their activities. *See* PERCIVAL ET AL, *supra* note 85, at 72-102.

117. Richard L. Ottinger, *Energy and Environmental Challenges for Developed and Developing Countries*, 9 PACE ENVTL. L. REV. 55, 59 (1991).

118. *Id.* at 60.

119. *Id.* at 85-86. Ottinger proposed using least cost planning as a blue print to guide energy service decisions. *Id.* This would allow developing countries to meet their development needs at the "least societal cost . . . taking into account the full life cycle system costs and including environmental costs" for energy plans that include evaluation of all energy related aspects of development, such as "industrial mix, natural resource management, land-use planning, the efficiency of home appliances. . . . The end uses of . . . energy resources is where energy will be saved and environmental damage avoided." *Id.*

120. *Id.* at 85. "It is important to include environmental costs, because they involve real costs people have to pay for increased health care, lost agricultural crops, etc., which are not included in energy prices. These unincluded costs (known as externalities) can be very large." *Id.*

Neither domestic nor international law, both largely products of nineteen century economic theory, hardy individualism and nationalistic feeling, shape conduct to achieve sustainable prosperity. If law were to reorient our analytical perspective so that each decision includes, to the greatest extent possible, adverse environmental consequences, we could institutionalize a process of making "sustainable" resource allocation decisions, which would merge expectations with reality. One law that was supposedly designed to break decision-making out of its narrow, economically focused box was NEPA. It was predicated on the idea that governmental decisions should not be made without full consideration of the adverse environmental implications of those decisions. The statute suggests that the more environmentally realistic our expectations, the greater the opportunity to reduce poverty, increase wealth, and diminish environmental degradation sustainably. Unfortunately, as we will discover in the remainder of the article, NEPA does not advance the cause of sustainable development, but allows unsustainable decisions to be whitewashed with a thin coat of "apparent" sustainability.

V. SUSTAINABLE DEVELOPMENT AND THE NATIONAL ENVIRONMENTAL POLICY ACT

A. The Genesis of Sustainable Development: The Federal Power Act

To understand how the single most popular environmental law in the world has become at best a toothless tiger, and at worst sheep's clothing for economically predatory wolves, one must track its historical development,[121] beginning with

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121. The conventional view is that the historical origins of EIS, EA or EIA trace back to the passage of NEPA on January 1, 1970, Pub. L. 91-190, 83 Stat. 852 (Jan. 1, 1970). Although "there has been some debate about where the roots of EIA are really to be found .... A fair judgment is that the USA developed EIA as a separate statutory procedure and Britain pioneered public participation and the public inquiry into controversial environmental issues." GILPIN, *supra* note 21, at 161. The intellectual vision behind NEPA is rooted in several key judicial opinions in the United States in the 1960's involving the Federal Power Act. NEPA itself was "accidental legislation" that grew out of a comment of Professor Lynton Caldwell during "one of a seemingly endless series of small committee hearings" on "innocuous" proposals of President Nixon to become an environmental president in response to the "late 1960s groundswell of popular attention to problems of environmental quality." Professor Caldwell mentioned in his

> testimony before Senator Jackson's Interior Committee that he 'would urge that in the shaping of such policy it have an action-forcing, operational aspect ....' Chairman Jackson, to the surprise of his staff, picked up on this: 'I agree with you that realistically what is needed in restructuring the governmental side of this problem is to legislatively create those situations that will bring about an action-forcing procedure that departments must comply with. Otherwise these lofty declarations

two cases arising under the Federal Power Act,[122] one of the earliest laws to regulate development.[123] The Federal Power Act was enacted specifically to promote and regulate the development of "hydroelectric power to meet the needs of an expanding economy,"[124] "under conditions which will give the necessary security to the capital invested and at the same time protect and preserve every legitimate public interest . . . ."[125] The first case, *Scenic Hudson Preservation Conf. v. Federal Power Comm'n*, concerned a challenge to a proposed pump-storage electric generation facility on Storm King Mountain along the Hudson River.[126] The second questioned the propriety of a hydroelectric dam on the Snake River in the Pacific Northwest.[127] Both of these cases presented the courts with the then routine failure of decision-makers to consider either the environmental consequences of or more "sustainable" alternatives to the proposed projects. Although not phrased in terms of "sustainable development," both cases raised the fundamental question of whether the law should require decision-makers to accommodate environmental concerns with traditional development imperatives, and if so, how?

The Storm King Mountain case questioned the practice of ignoring the environmental impacts of a project. Consolidated Edison, a large electric utility in New York, proposed building a pump-storage plant to generate electricity during peak load periods. The envisioned plant, the largest in the world, would have cost $162 million in 1965. It would have consisted of a reservoir at the top of Storm King Mountain, a pump/powerhouse, and transmission lines. The plant would have operated by pumping water from the river at night,

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> are nothing more than that . . . I am wondering if I may broaden the policy provision in the bill so as to lay down a general requirement that would be applicable to all agencies. . . .' Based on this brief interchange, Caldwell sat down with a couple of staffers and drafted the text of the present § 102."

ZYGMUNT J.B. PLATER ET AL., ENVIRONMENTAL LAW AND POLICY: A COURSEBOOK ON NATURE, LAW AND SOCIETY 600-601 (1992). The authors continue: "Imagine the shock of Richard Nixon and many members of Congress when, early in 1970, they discovered that these apparently innocuous words of § 102 could be the basis of very real lawsuits. § 102, like a snake in the grass, contained the hidden but potent impact statement requirement . . . . In the years immediately following NEPA's passage almost two hundred bills were introduced to weaken or repeal it, none passed." *Id.*

122. Federal Power Act 16 U.S.C. §§ 79a - 803 (1994).

123. First Iowa Hydro-Electric Coop. v. Federal Power Comm'n, 328 U.S. 152, 180 (1946) ("The nation-wide drive for the passage of this legislation dates back at least to the administration of Theodore Roosevelt . . . .").

124. Federal Power Comm'n v. Union Electric Co., 381 U.S. 90, 99 (1965).

125. 328 U.S. at 181, (quoting David F. Houston, Secretary of Agriculture).

126. Scenic Hudson Preservation Conference v. Federal Power Comm'n, 354 F.2d 608 (2d Cir. 1965).

127. Udall v. Federal Power Comm'n, 387 U.S. 428 (1967).

when electricity demand was low, to the top of the mountain for release during the day, to generate electricity when demand for electricity was highest.[128] The reservoir would have flooded 240 acres at the top of the mountain, 1000 feet above the river, with a tunnel (40 feet in diameter) running from the river through a powerhouse (800 feet long with eight pump generators) to the reservoir.[129] The plant would have been connected to high voltage transmission lines that would have been run under the river, then underground for a short distance, and then strung on towers up to 150 feet high in a 125 foot wide corridor approximately twenty-five miles long to the utility's connections in New York City. The court described the affected area as one "of unique beauty and major historical significance. The highlands and gorge of the Hudson offer one of the finest pieces of river scenery in the world. The great German traveler Baedeker called it 'finer than the Rhine'."[130]

In *Udall v. Federal Power Comm'n*, the United States Department of Interior challenged the Federal Power Commission's (FPC's) approval of a proposal by a private firm to build and operate a hydroelectric dam on a stretch of the Snake-Columbia Rivers system. This river system already housed eight federal dams, and a ninth was authorized. At issue was whether the dam should be built at all, and if so, whether it should be federally or privately operated.[131]

In both *Udall* and *Scenic Hudson*, the development switch was controlled by the FPC, from whom any hydroelectric project must receive a license before it can be built and operated. In both cases the FPC's approval of the private applicant's license was based solely upon the economic development attributes of the project — the value of the hydroelectric power versus the cost of loss

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128. 354 F.2d at 612. The Court described the process as follows:

> During slack periods Consolidated Edison's conventional steam plants in New York City would provide electric power for the pumps at Storm King to force water up the mountain, through the tunnel, and into the upper reservoir. In peak periods water would be released to rush down the mountain and power the generators. Three kilowatts of power generated in New York City would be necessary to obtain two kilowatts from the Cornwall installation. When pumping the powerhouse would draw approximately 1,080,000 cubic feet of water per minute from the Hudson, and when generating would discharge up to 1,620,000 cubic feet of water per minute into the river. The installation would have a capacity of 2,000,000 kilowatts, but would be so constructed as to be capable of enlargement to a total of 3,000,000 kilowatts. The water in the upper reservoir may be regarded as the equivalent of stored electric energy; in effect, Consolidated Edison wishes to create a huge storage battery at Cornwall."

Id.

129. *Id.* at 611.

130. *Id.* at 613.

131. *Udall*, 387 U.S. at 435.

of navigability to the waterway. In neither case did the FPC consider environmental or "sustainability" impacts of the projects. In its decision to ignore these impacts, the FPC believed it met the Congressional mandate that the licensed project be "best adapted to a comprehensive plan for improving or developing a waterway . . . for the use or benefit of interstate or foreign commerce, for the improvement and utilization of water power development, and for other beneficial public uses, including recreational purposes."[132]

There was no dispute in either case that the development issues were adequately addressed. Rather, the questions before the courts were whether the FPC evaluated the "other beneficial public uses" of the waterway, and what that phrase includes. The only explanation of that phrase provided in the statute is the reference to "recreational purposes." One might assume that by 'recreation' Congress was referring to fishing, boating, hiking, and related activities in or near the reservoir created by the dam. The argument advanced, however, was that "recreational purposes" should be interpreted to include much more such as: "conservation of natural resources, maintenance of natural beauty, and the preservation of historic sites,"[133] thereby, transmuting a minor byproduct of a large water project into a vehicle for larger ecological concerns.

Justice Douglas clearly was ready to meet the interpretive challenge:

> The objective of protecting recreational purposes means more than that the reservoir created by the dam will be the best one possible or practical from a recreational viewpoint. There are already eight lower dams on this Columbia River system and a ninth one authorized; and if the Secretary is right in fearing that this additional dam would destroy the waterway as spawning grounds for [salmon and steelhead] or seriously impair that function, the project is put in an entirely different light. The importance of salmon and steelhead in our outdoor life as well as in commerce is so great that there certainly comes a time when their destruction might necessitate a halt in so-called improvement or development.[134]

In the Court's view, the impact of a hydroelectric dam on the ecology of the river must be evaluated as part of the recreational use of the river.[135] To the extent that impact studies raised the possibility of great mortality to the river's fishery, even though the potential impact was uncertain, the Court mandated that the FPC determine whether the dam was necessary at all "in light of the alternate sources of energy that are emerging."[136] Without evaluating alternatives such as the benefit to the public interest of deferred versus immediate construction, or "whether preservation of the reaches of the river affected would be more desirable and in the public interest than the proposed development," the FPC

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132. 16 U.S.C. § 803(a)(1).
133. *Udall*, 387 U.S. at 437.
134. *Id.*
135. *Id.* at 439.
136. *Id.* at 444.

did not meet its public decision-making mandate.[137] Justice Douglas then elaborated on how the "recreational" and "other beneficial uses" criteria translates into a public interest review of the requirement for the FPC.

> The question whether the proponents of a project "will be able to use" the power supplied is relevant to the issue of the public interest. So too is the regional need for the additional power. But the inquiry should not stop there. A license under the Act empowers the licensee to construct, for its own use and benefit, hydroelectric projects utilizing the flow of navigable waters and thus, in effect, to appropriate water resources from the public domain. The grant of authority to the Commission to alienate federal water resources does not, of course, turn simply on whether the project will be beneficial to the licensee. Nor is the test solely whether the region will be able to use the additional power. The test is whether the project will be in the public interest. And that determination can be made only after an exploration of all issues relevant to the "public interest," including future power demand and supply, alternate sources of power, the public interest in preserving reaches of wild rivers and wilderness areas, the preservation of anadromous fish for commercial and recreational purposes, and the protection of wildlife.
>
> The need to destroy the river as a waterway, the desirability of its demise, the choices available to satisfy future demands for energy— these are all relevant to a decision under § 7 and § 10 but they were largely untouched by the Commission.[138]

The Court's remand mandated FPC "exploration of these neglected phases." Although the Court, naturally, expressed no opinion as to the ultimate substantive decision about construction of the dam, it warned that if on remand the FPC were to approve the dam, it "will not have discharged its functions under the Act unless it makes an informed judgement" on the public interest phases of the application.[139]

The FPC in *Scenic Hudson*, as in *Udall*, could only issue a license for a waterpower project if the proposal met the statutory mandate of being "best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce . . . and for other beneficial public uses, including recreational purposes."[140] To the FPC, this meant that it "must compare the . . . project with any alternatives that are available. If on this record Consolidated Edison has available an alternative source for meeting its power needs which is better adapted to the development of the Hudson River for all beneficial uses, including scenic beauty, this application must be denied."[141] When it came to applying this framework, the FPC narrowly

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137. *Id.* at 449.
138. *Id.* at 450.
139. *Id.* at 451.
140. 16 U.S.C. § 803(a).
141. *Scenic Hudson Preservation Conference*, 354 F.2d at 612.

construed the meaning of "alternatives" and, finding none to exist, granted the license.[142]

On appeal, the court rejected the cramped, pro-development approach of the FPC. In the Second Circuit's view, the FPC gravely erred when it "ignored . . . relevant factors and failed to make a thorough study of possible alternatives to the Storm King Project."[143] The FPC had failed in two fundamental ways. First, it defined too narrowly the public interest and the FPC's role in the decision-making process. Secondly, by so limiting its public interest inquiry, it doomed itself to ignore alternatives that could have avoided, or at least mitigated, the harm to that public interest. As we will see shortly, the court in effect was mandating a sustainable development analysis of the project that accommodated both the economic development imperatives inherent in the proposal and the long-term, sustainable use of the river valley.

At first glance, the FPC's understanding of these statutory terms as narrow, secondary responsibilities seems reasonable, particularly if one relies on ordinary dictionary definitions of the words "beneficial" and "recreation." The term "beneficial," which in ordinary usage is open-ended, is defined as "promoting a favorable result; enhancing well-being; advantageous."[144] In the original statute however, "beneficial" referred only to economically profitable or advantageous uses of river systems, such as irrigation and flood control, and did not include aesthetic, ecological, or recreational values. When Congress amended the law in 1935, it added "recreational purposes" to the previously undefined "beneficial public use" catch-all.[145] In ordinary usage, "recreation" has a limited meaning: "Refreshment of one's mind or body after work through some activity that amuses or stimulates; play."[146] This definition of recreation conjures images of boaters enjoying an afternoon on a reservoir created by a dam, picnickers spending the day along the lake's shore, swimmers refreshing themselves on a hot afternoon, or perhaps day-hikers strolling in the reservoir's parkland

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142. The court noted that one of the commissioners dissented: " [I]t appears obvious that had this area of the 'Hudson Highlands' been declared a State or National park, that is had the people in the area already spoken, we probably would have listened and might well have refused to license it." *Id.* at 614.

143. *Id.*

144. THE AMERICAN HERITAGE DICTIONARY 171 (2d ed. 1985).

145. In 1935, Congress amended the statute by replacing the language "scheme of improvement and utilization for the purposes of navigation, of water-power development and of other beneficial public uses" with the present language "plan for improving or developing . . . and for other beneficial public uses, *including recreational purposes.*" (emphasis added). The legislative history advised that the purpose of the amendment was to add "an express provision that the Commission may include consideration of recreational purposes." S. REP. NO. 74-621, at 45 (1935).

146. THE AMERICAN HERITAGE DICTIONARY, *supra* note 144, at 1035. Synonyms include amusement, diversion, entertainment, leisure, pastime, and relaxation; the most direct antonym is "work." *Id.*

buffer. To the court, however, "recreational purposes" "undoubtedly encompasses the conservation of natural resources, the maintenance of natural beauty and the preservation of historic sites."[147] The FPC's duty was to integrate this broadly conceived mandate to protect the public's interest with all the other factors Congress directed, even though they "might well be contradictory rather than harmonious."[148]

This mandate to balance economic development of a vital resource[149] with a broad vision of the public's long-term interest was an early expression of the concept of sustainable development. The court's language heralds sustainable development when it insists that the FPC has an affirmative burden, when the public interest is great, to evaluate "[t]he totality of a project's immediate and long-range effects, and not merely the engineering and navigation aspects." In carrying out this burden, the FPC is not "to act as an umpire blandly calling balls and strikes for adversaries appearing before it; the right of the public must receive active and affirmative protection."[150] Where, as in this case, the record demonstrated a serious enough danger to fish habitats to warrant further inquiry, the public interest mandated that the FPC not only fully educate itself as to the potential ecological damage, but also consider project alternatives that might avoid both the adverse visual and ecological impacts to the river.[151]

Sustainable development was central to the court's blunt remand instructions.

> On remand, the Commission should take the whole fisheries question into consideration before deciding whether the Storm King project is to be licensed. The Commission should reexamine all questions on which we have found the record insufficient and all related matters. The Commission's renewed proceedings *must include as a basic concern* the preservation of natural beauty and of national historic shrines, keeping in mind that, in our affluent society, the cost of a project is only one of several factors to be considered. The record as it comes to us fails

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147. *Scenic Hudson Preservation Conference*, 354 F.2d at 614. The court extrapolated this expansive view from the brief legislative history described above and from a case decided more that a decade earlier in which the Seventh Circuit upheld a FPC denial of a license for an otherwise economically viable project because the project would threaten the fishing, canoeing and scenery along a "beautiful stretch of water." Namekagon Hydro Co. v. Federal Power Comm'n, 216 F.2d 509, 511-12 (7th Cir. 1954).

148. *Union Electric Co.*, 381 U.S. at 98 ("The central purpose of the Federal Water Power Act was to provide for the comprehensive control over those uses of the Nation's water resources in which the Federal Government had a legitimate interest, [such as] navigation, irrigation, flood control, and, very prominently, hydroelectric power."). In *Union Electric*, the Supreme Court held that a utility's pump storage plant on the East Fork of the Black River in Missouri would require a license from the FPC before it could be constructed or operated. *Id.*

149. "A river is more than an amenity, it is a treasure." New Jersey v. New York, 283 U.S. 336, 342 (1931).

150. *Scenic Hudson Preservation Conference*, 354 F.2d at 620.

151. *Id.* at 624-25.

markedly to make out a case for the Storm King project on, among other matters, costs, public convenience and necessity, and absence of reasonable alternatives.[152]

B. NEPA: The First Sustainable Development Statute

Scenic Hudson and *Udall* are the intellectual forerunners to the first law addressing sustainable development generally, the National Environmental Policy Act.[153] Enacted on January 1, 1970, NEPA was the first environmental law of the modern environmental age, and is now the model for laws that have been adopted in nearly every jurisdiction in the world.[154] Although it does not use the phrase "sustainable development" in its wording, the purpose of NEPA was to achieve that which is now referred to as "sustainable development." Congress enacted NEPA "[t]o declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man . . . ."[155] This general declaration of purpose was translated by Congress into a "national environmental policy:

> The Congress, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource exploitation, and new and expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of [humankind], declares that it is the continuing policy of the Federal Government . . . to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.[156]

To implement this policy, Congress directed "that to the fullest extent possible:

> (1) the policies, regulations and public laws of the United States shall be interpreted and administered in accordance with [these] policies, and
> (2) all agencies of the Federal Government shall—
> (B) identify and develop methods and procedures . . . which will insure that

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152. *Id.* (emphasis added). Ultimately, after years of additional litigation, the combination of available reasonable alternatives and the concern for preventing ecological harm to the river's bass fisheries resulted in abandonment of the project. Storm King mountain is now a park.

153. 42 U.S.C. §§ 4321 - 4335 (1994).

154. Nicholas C. Yost, *NEPA: A System That Works—Everywhere*, 8 ENVTL. F., 28-29 (reporting that 87 nations plus several international institutions have enacted a version of NEPA, as evidence of NEPA's "demonstrated international appeal").

155. 42 U.S.C. § 4321 (1994).

156. *Id.*

> presently unquantified environmental amenities and values may be given appropriate consideration in decision-making along with economic and technical considerations;
>
> (C) include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on
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> (i) the environmental impact of the proposed action,
> (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,
> (iii) alternatives to the proposed action,
> (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and
> (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.[157]

As with most new laws, adapting to the new beast known as the Environmental Impact Statement (EIS) requirement was slow. Although NEPA declares that each federal agency must prepare an EIS when making a decision that could significantly affect the human environment, many agencies, particularly those with a mandate to promote development projects, vigorously resisted.[158] Similar to *Udall* and *Scenic Hudson*, the early litigation under NEPA addressed the fundamental failure of the agency to include environmental impacts in its evaluation and approval of major development projects.[159] After it became clear that NEPA was being applied broadly, the litigation shifted to more lawyerly gamesmanship in which agencies tried to avoid detailed environmental evaluation by narrowly defining the threshold "proposal"[160] so that difficult issues were no longer subject to the EIS requirement.

The litigation that arose under NEPA fell into two large categories: threshold questions (*i.e.*, is this the type of action that requires an EIS) and adequacy questions (*i.e.*, did the EIS properly consider all of the factors that § 102(c)

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157. *Id.* § 4332.

158. *See, e.g.*, Calvert Cliffs Coordinating Comm., Inc. v. United States Atomic Energy Comm'n, 449 F.2d 1109 (D.C. Cir. 1971) (holding AEC rules implementing NEPA to be inadequate because, *inter alia*, they neither require the agency to prepare a full EIS nor required the agency to consider the EIS as part of the record when ruling on an application for a license to build a nuclear power plant).

159. *Id. See also* Atlanta Coalition on Transp. Crisis, Inc. v. Atlanta Reg'l Comm'n, 599 F.2d 1333 (5th Cir. 1979) (holding that a regional development plan for long-range transportation systems and land use did not require an EIS because the plan was not a "proposal for major federal action"); Sierra Club v. Morton, 400 F. Supp. 610 (N.D. Cal. 1975), *rev'd on other grounds.* California v. Sierra Club, 451 U.S. 287 (1981) (holding there is no private cause of action under § 10 of the Rivers and Harbors Act of 1899, where the state attempted to build a canal without an EIS, a canal by state and federal government manipulation of mechanism).

160. Kleppe v. Sierra Club, 427 U.S. 390 (1976).

requires). Arguments related to the first category, threshold questions, asserted that no EIS was needed because in the absence of one of the elements of the statute's requirements, there was no present agency proposal[161] either to Congress for legislation[162] or for a major[163] federal action[164] significantly affecting[165] the human environment,[166] which required an EIS.

Theoretically, the EIS was to evaluate the adverse environmental consequences of a project, as well as alternatives that could avoid or mitigate the harm. Regulations issued by the Council on Environmental Quality (CEQ) as guidelines for agency evaluations[167] confirmed this vision. For instance, CEQ regulations required an EIS to discuss three alternatives to the proposal; no action, other reasonable courses of action, and mitigation[168] measures not already included in the proposal.[169] As to each alternative, the agency must discuss both direct and indirect effects; conflicts between the alternative and other governmental interests; the energy and conservation implications of the proposal and alternative; the natural or depletable resource implications; the impact on urban quality and on historic and cultural resources; and means to mitigate adverse environmental impacts.[170] This analysis presumably should also include an evaluation of the cumulative

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161. *Id.*

162. Andrus v. Sierra Club, 442 U.S. 347, 357 (1979) (holding agency requests to Congress for appropriations are not "proposals for legislation").

163. Kings County Econ. Community Dev. Ass'n. v. Hardin, 478 F.2d 478, 480 (9th Cir. 1973) (holding unrestricted federal subsidies to states is not a *major federal* activity requiring an EIS).

164. When a small, but crucial aspect of a larger project requires federal approval, the larger project and possible future effects of the larger project need not be considered if the small part has *logical termini* or *independent utility*. *See, e.g.*, Lange v. Brinegar, 625 F.2d 812, 815 (9th Cir. 1980); Winnebago Tribe of Nebraska v. Ray, 621 F.2d 269, 272-73 (8th Cir. 1980). If the proposed action and the larger project are sufficiently connected or *inextricably intertwined,* an EIS must be prepared for the larger project, including cumulative impacts. Thomas v. Peterson, 753 F.2d 754, 758-59 (9th Cir. 1985).

165. Sierra Club v. Peterson, 717 F.2d 1409, 1411 (D.C. Cir. 1983) (holding federal oil and gas leases that preclude any *surface disturbing activity* will not have a significant effect on the environment, so no EIS is needed).

166. Metropolitan Edison Co. v. People Against Nuclear Energy, 460 U.S. 766, 772, 778 (1983) (holding under NEPA the restart of the Three Mile Island nuclear reactor does not require an EIS to evaluate the risk to the psychological health of people in the community).

167. Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 356 (1989) (noting that CEQ regulations were entitled to "substantial deference").

168. "'Mitigation' includes (a) avoiding the impact altogether . . . (b) minimizing impacts . . . (c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment . . . (d) reducing or eliminating the impact over time by preservation and maintenance operations . . . (e) compensating for the impact by replacing or providing substitute resources." 40 C.F.R. § 1508.20 (1996).

169. 40 C.F.R. § 1508.25 (1996).

170. 40 C.F.R. § 1502.16 (1996).

impacts of connected actions[171] and an analysis of uncertain but reasonably foreseeable impacts.[172]

Just as the courts have narrowly parsed the threshold terms[173] that trigger an EIS preparation and thereby have severely narrowed the role of NEPA,[174] so too, have the courts significantly narrowed the practical impact of these broadly conceived sustainable development requirements. The broad vision of *Udall* and *Scenic Hudson*, which mandated that agencies think deeply about the environmental consequences of their actions; that they seriously explore alternatives, that they consider the larger, long-term picture of accommodating development with ecological soundness, is found in the words of NEPA and the CEQ regulations. However, the meaning from those cases has been bleached out of NEPA and its regulations by a series of court decisions that take a "crabbed interpretation of NEPA" and dismiss the goals of NEPA in § 101(b) as "largely rhetorical."[175] The practical result, according to Professor Oliver Houck, is that NEPA is "missing the point. It is producing lots of little statements on highway segments, timber sales, and other foregone conclusions; it isn't even present, much less effective, when the major decisions on a national energy policy and a national transportation policy are made."[176]

C. The Supreme Court's Evisceration of NEPA

How has this sad state of affairs come about, and what can be done to fix it? The issue at the core of NEPA was whether it imposed on agencies any substantive obligations to select the least environmentally harmful alternative, and if so, what was the scope of that substantive obligation. Judge Wright in *Calvert Cliffs Coordinating Comm., Inc. v. United States Atomic Energy Comm'n* suggested that NEPA was to be "action forcing," in that agencies in each case

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171. 40 C.F.R. § 1508.7 (1996).

172. 40 C.F.R. § 1502.22 (1996).

173. *See supra* notes 160-64 and accompanying text.

174. *See, e.g.*, Public Citizen v. United States Trade Representative, 5 F.3d 549, 551-52 (D.C. Cir. 1993) (holding no EIS is required for negotiating a trade agreement because there is no final agency action since only the President can submit a proposed treaty to Congress, nor is the President's failure to prepare an EIS when submitting the agreement to Congress reviewable because Presidential actions are not reviewable under the Administrative Procedure Act).

175. Lynton Caldwell, *NEPA Revisited: A Call for a Constitutional Amendment*, ENVTL. F. 18, Nov. - Dec. 1989, at 18.

176. *See supra* note 85, at 1181. At most, within its narrow field of usefulness, NEPA may have improved the quality of agency decision-making. *See* Daniel Mandelker, *NEPA Alive and Well: The Supreme Court Takes Two*, 19 ENVTL. L. REP. (R.) 10385, 10387 (1989); Stanley Millan, *Wanted: NEPA, Dead or Alive, Reward: Our Global Environment*, [Dec. 27, 1991] 22 Env't Rep. (BNA) 2081-82 (1991).

must weigh the economic and technical benefits of a proposal for action against its environmental costs:

> In some cases, the [economic and technical] benefits will be great enough to justify a certain quantum of environmental costs; in other cases, they will not be so great and the proposed action may have to be abandoned or significantly altered so as to bring the benefits and costs into proper balance. The point of the individualized balancing analysis is to ensure that, with possible alterations, the optimally beneficial action is finally taken.[177]

Because the agency's regulations were so procedurally inadequate to NEPA's task, Judge Wright did not rule directly on the substantive impact, if any, NEPA was to have on any particular decision.[178]

The problem NEPA faced was that while its substantive goals inherently required the agency to balance economic and ecological effects of a project, the courts, when reviewing agency decisions, are reluctant to overrule an agency's choice of alternatives on the grounds that it failed to choose the alternative that best met the underlying goals of NEPA. Even in *Udall* and *Scenic Hudson*, the courts would not reverse the agency's ultimate decision so long as that decision was the product of a process that fully evaluated the environmental consequences of the proposed project. Both opinions made clear that (1) the substantive elements Congress mandated the FPC to examine were to be broadly defined and (2) the courts would closely monitor the agency to assure that these factors were adequately evaluated and considered by the agency. In both cases, there was no question that the agency was avoiding the hard ecological issues, because they were the Achilles's heel of each project. In forcing the FPC to bring these hard problems (such as destruction of the salmon fishery) to center stage, where they and their alternatives must be inspected under a bright spotlight, the courts doomed the prospects for project approval. In the end, for example, the Storm King Mountain pump storage project was abandoned. Storm King Mountain is now a park, and interestingly, the region has no shortage of electricity.

Udall and *Scenic Hudson* understood Congress' broad definition of beneficial uses to be a signal to avoid the externalities of proposed projects, and they required agencies to follow suit by explicitly conceiving of, and incorporating project alternatives into the decision matrix. In this sense, *Udall* and *Scenic Hudson* represent the beginnings of a sustainable development model of judicial interpretation.

NEPA, enacted only a few years after *Udall* and *Scenic Hudson*, would appear on its face to be a Congressional ratification of the sustainable development approach of those cases. The broad concern for public interest and ecological health the courts found manifest in the brief language of the Federal Power

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177. *Calvert Cliffs Coordinating Comm.*, 449 F.2d at 1123.

178. *Id.* at 1112, 1115.

Act was explicitly articulated in NEPA § 101.[179] The alternatives analysis, previously applicable only to water-related power projects, was now seemingly required for all major federal actions. Judge Wright's understanding of NEPA in *Calvert Cliffs* appeared to be firmly placed on the line of cases beginning with *Udall* and *Scenic Hudson*.[180]

1. *Kleppe v. Sierra Club*: The Narrowing of Remedies

Since the late 1970s, the United States Supreme Court, has been unwilling to incorporate the substantive goals of NEPA into its interpretations, especially when major government policy issues were at stake. Instead of broadly defining an agency's procedural obligation under NEPA to advance the sustainable development objectives of NEPA, the Court has so narrowed the statute's scope as to make it virtually useless. First, in *Kleppe v. Sierra Club*[181] the Court defined "proposal" in the most narrow, legalistic sense possible, on the theory that an agency could avoid preparing an EIS so long as it was only contemplating action. This excused the agency from having to prepare an EIS for the Great Plains coal region before issuing a series of coal leases, and allowed the agency to issue individual leases in the region with individual EISs that only evaluated local impacts and thus avoided evaluating the regional environmental impacts of coal mining in the Great Plains.[182] According to the Court, an EIS does not need to be prepared until the eleventh hour. "[T]he moment at which an agency must have a final statement ready is the time at which it makes a

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179. 42 U.S.C. § 4321 (1994).

180. NEPA's principal sponsor and author, Senator Henry Jackson (D. Wash.) explained on the Senate floor prior to the Senate's vote on the bill:

> Subsection 102(b) requires the development of procedures designed to insure that all relevant environmental values and amenities are considered in the calculus of project development and decisionmaking. Subsection 102(c) establishes a procedure designed to insure that in instances where a proposed major Federal action would have a significant impact on the environment that the impact has in fact been considered, that any adverse effects which cannot be avoided are justified by some other stated consideration of national policy, that short-term uses are consistent with long-term productivity, and that any irreversible and irretrievable commitments of resources are warranted.

115 CONG. REC. 29,055 (1969).

181. 427 U.S. 390 (1976).

182. Both the District Court and the Court of Appeals had concluded that the Department of Interior was "'contemplating' a regional development plan or program" by which the Department was planning "to control development by individual companies." *Id.* at 403.

recommendation or report on a *proposal* for federal action,"[183] even though by then the decision would have been all but finalized so that the EIS would merely be window dressing, and would be too late to remedy the failure of NEPA. In his dissent, Justice Marshall was troubled by the Court's narrow interpretation of NEPA. He felt the majority approach implicitly rejected the broad goal of Congress that NEPA open up the minds of federal officials both to the adverse environmental consequences of decisions and to the possibility of alternatives that could avoid or at least mitigate the harm caused by these projects.[184] According to Marshall:

> NEPA contemplates agency consideration of environmental factors throughout the decisionmaking process. Since NEPA's enactment, however, litigation has been brought primarily at the end of the process-challenging agency decisions to act made without adequate environmental impact statements or without any statements at all. In such situations, the courts have had to content themselves with the largely unsatisfactory remedy of enjoining the proposed federal action and ordering the preparation of an adequate statement. This remedy is insufficient because, except by deterrence, it does nothing to further early consideration of environmental factors. And, as with all after-the-fact remedies, a remand for preparation of an impact statement after the basic decision has been made invites *post hoc* rationalizations, rather than the candid and balanced environmental assessments envisioned by NEPA . . . . Nonetheless, until this lawsuit, such belated remedies were all the federal courts had the opportunity to impose under NEPA. In this case, confronted with a situation in which . . . federal agencies were violating NEPA prior to their basic decision to act, the Court of Appeals . . . seized the opportunity to devise a different and effective remedy. It recognized a narrow class of cases-essentially those where both the likelihood of eventual agency action and the danger posed by nonpreparation of an environmental impact statement were great-in which it would allow judicial intervention prior to the time at which an impact statement must be ready. The Court today loses sight of the inadequacy of the other remedies and the narrowness of the category constructed by the Court of Appeals, and construes NEPA so as to preclude a court from ever intervening prior to a formal agency proposal. This decision, which unnecessarily limits the ability of the federal courts to effectuate the intent of NEPA, is mandated neither by the statute nor by the various equitable considerations upon which the Court relies.[185]

In this case, as with most complicated projects, "preparation of an impact statement [would take] a considerable amount of time."[186] Therefore, if the EIS were to be finished by the time of the formal proposal so that it could be considered

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183. *Id.* at 405-06. ("A court has no authority to depart from the statutory language and, by a balancing of court-devised factors, determine a point during the germination process of a potential proposal at which an impact statement *should be prepared.*")(emphasis in original).

184. *Id.* at 415 (Marshall, J. dissenting).

185. *Id.* at 415-16.

186. *Id.* at 417.

in the decisionmaking, its preparation must begin years in advance. Nevertheless, the Court refused to allow a district court to order an agency to begin preparation of an EIS in time for it to be completed when the formal proposal is made.[187] In effect, the Court held that it would be impossible to require an agency to prepare or consider an adequate EIS if the agency sufficiently delayed making a formal proposal. By viewing NEPA solely as a procedural requirement devoid of any substantive value, the Court clearly signaled its hostility towards advancement of the statute's sustainable development goals, even in a requirement as minor as allowing courts to order agencies to begin preparation of EISs early enough so they can provide meaningful input. Instead of enhancing NEPA's procedural (if not substantive) power as a "stop and think" statute,[188] the Court rejected even NEPA's procedures as nonsubstantive annoyances. In contrast, Justice Marshall, in a spirit reminiscent of *Udall* and *Scenic Hudson,* interpreted NEPA in a manner that would advance its substantive purposes:

> [A]n early start on the statement is more than a procedural necessity. Early consideration of environmental consequences through production of an environmental impact statement is the whole point of NEPA, as the Court recognizes. The legislative history of NEPA demonstrates that "[b]y requiring an impact statement Congress intended to assure [environmental] consideration *during the development of the proposal*...." Compliance with this duty allows the decisionmaker to take environmental factors into account when he is making decisions, at a time when he has an open mind and is more likely to be receptive to such considerations. Thus, the final impact statement itself is but the "tip of an iceberg, the visible evidence of an underlying planning and decisionmaking process that is usually unnoticed by the public." Because an early start in preparing an impact statement is necessary if an agency is to comply with NEPA, there comes a time when an agency that fails to begin preparation of a statement on a contemplated project is violating the law.[189]

Two years later, CEQ, the agency charged with shaping NEPA,[190] promulgated

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187. For instance, in *Kleppe*, it would take at least three years to develop an adequate EIS, and therefore, "since it would violate NEPA for the Government to propose a plan for regional development of the Northern Great Plains without an accompanying environmental impact statement, if the Government contemplates making such a proposal at any time in the next three years it should already be working on its impact statement." *Id.*

188. ZYGMUNT J.B. PLATER ET AL., *supra* note 121, at 596.

189. *Kleppe*, 427 U.S. at 417-18.

190. Federal agencies shall to the fullest extent possible:

> (a) Interpret and administer the policies, regulations, and public laws of the United States in accordance with the policies set forth in [NEPA] and in these regulations. . . .
>
> (f) Use all practicable means, consistent with the requirements of [NEPA] and other essential considerations of national policy, to restore and enhance the quality of the human environment and avoid or minimize any possible adverse effects of their actions upon the quality of the

regulations defining "proposal" as "exist[ing] at that stage in the development of an action when an agency subject to the Act has a goal and is actively preparing to make a decision on one or more alternative means of accomplishing that goal and the effects can be meaningfully evaluated."[191] However, as we shall see, CEQ's rejection of *Kleppe's* hostility towards NEPA's substantive underpinnings did not deflect the Court's efforts to gut NEPA of any substantive importance.

2. *Vermont Yankee Nuclear Power v. NRDC*: The Narrowing of Vision

Several years later, in *Vermont Yankee Nuclear Power v. NRDC*,[192] a case reminiscent of *Scenic Hudson*, public interest groups challenged the issuance of a nuclear power plant construction license on the grounds, *inter alia*, that the agency had failed to consider alternative sources of electricity, including energy conservation.[193] The Court in *Vermont Yankee* stated explicitly that although NEPA established "significant substantive goals for the Nation," the duties it imposed on agencies were "essentially procedural."[194] It rejected the D.C. Circuit Court's opinion that the Atomic Energy Commission, now the Nuclear Regulatory Commission, violated NEPA by failing to consider energy conservation alternatives to nuclear power, even though *Vermont Yankee* was decided five years after the Arab oil embargo. Compared to *Udall* and *Scenic Hudson*, *Vermont Yankee's* treatment of NEPA's goals was flippant:

> the "detailed statement of alternatives" cannot be found wanting simply because the agency failed to include every alternative device and thought conceivable by the mind of man. Time and resources are simply too limited to hold that an impact statement fails because the agency failed to ferret out every possible alternative, regardless of how uncommon or unknown that alternative may have been at the time the project was approved.[195]

Even though as a result of the 1973 energy crisis both CEQ and Federal Power Commission regulations mandated evaluation of energy conservation alternatives, the Court blithely dismissed any agency duty in this case because the draft EIS was prepared a year and a half before the energy crisis.[196] By 1978, the nation was well underway in responding to drastic oil price increases by reducing energy use 30% per dollar of annual GDP.[197] Nevertheless, the Court refused to enhance

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human environment. 40 C.F.R. § 1500.2 (1996).

191. 40 C.F.R. § 1508.23 (1996).

192. 435 U.S. 519 (1978).

193. *Id.* at 551.

194. *Id.* at 558.

195. *Id.* at 551.

196. *Id.* at 508.

197. JOSE GOLDEMBERG, ET AL., ENERGY FOR A SUBSTAINABLE WORLD 75, (1988) ("The energy price increases of the 1970's have had the effect of decoupling energy consumption and economic growth in the DECD countries—prior to 1973 they had

the agency's EIS duty with any substantive vision. It even refused to ask the agency to reevaluate the need for multibillion dollar nuclear power plants in light of evolving energy efficiency technology.

In sharp contrast to its myopic view of NEPA, the Court's eye-opening concluding paragraph explained why the Court so willingly swept away the substantive goals of the statute. The Court said Congress had decided to "try nuclear energy" and had "resolved" the fundamental policy questions with respect to nuclear power. Although "time may prove wrong the decision to develop nuclear energy, . . . a single alleged oversight on a peripheral issue" would not be allowed to stop the decision to build these nuclear power plants.[198]

Thus, even though NEPA clearly applied to the construction of nuclear power plants, and even though the ignored "peripheral issue" was the central question of whether the power plant was needed, the Court refused to allow NEPA to do its job. Ironically, in 1978, the year *Vermont Yankee* was decided, the nuclear power industry was already dying. Since 1978 no new proposals for nuclear power plants have been advanced, and half of the contracts already let as of 1978 were canceled within the next decade,[199] at a cost of hundreds of billions of dollars. Of the plants that were constructed, several have closed prematurely, while those that remain produce the most expensive power.[200] Nuclear white elephants cannot compete either with gas-powered electricity generation plants, energy conservation, or renewable energy. Furthermore, they represent the enormous "stranded assets" obstacle to electricity deregulation.[201] By abandoning the broad vision of its ancestors, (i.e., *Udall*, *Scenic Hudson*, and *Calvert Cliffs*), *Vermont Yankee* left not only the legacy of a stable of high-cost power plants,[202] but also, and of equal importance, the evisceration of NEPA.

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moved in lock step. Between 1973 and 1984, energy use in these countries increased only 2 percent while GDP increased 29 percent. . . .").

198. *Vermont Yankee Nuclear Power*, 435 U.S. at 558.

199. Dan W. Reicher, *Nuclear Energy and Weapons*, *in* ENVIRONMENTAL LAW: FROM RESOURCES TO RECOVERY 558, 629 (Celia Campbell-Mohn et al. eds., 1993).

200. ED SMELOFF AND PETER ASMUS, REINVENTING ELECTRIC UTILITIES: COMPETITION, CITIZEN ACTION, AND CLEAN POWER 78-80 (1997) ("The strongest link among areas with high electricity prices seems to be the decision to invest heavily in nuclear power. . . ." Smeloff and Asmus quoting Senesin Borenstein, director University of California Energy Institute, in a statement to the California Legislature).

201. *See* Editorial, *Sugar-Coated Pills and the Blast from the Past*, 10 ELECTRICITY J., Oct. 1997, at 100 ("There's some bitter medicine to swallow before we head off to the Electricity Competition Revival, Bakeoff and Derby: It's the above-market price of existing power plants—stranded costs—which thoughtful heads have put at over $100 billion.").

202. Each plant generates long term nuclear waste for which no storage solution has yet been found. Each plant will require decommissioning when it reaches the end of its useful life in the next few decades. The decommissioning costs are estimated to greatly exceed the original construction costs. *See* Robert Johnson & Ann de Rouffignac, *Closing Costs: Nuclear Utilities Face Immense Expenses in Dismantling Plants*, WALL ST. J., Jan. 25, 1993, at A1.

Just two years after *Vermont Yankee*, the Court announced summarily, without hearing oral argument, that an agency was "free under NEPA to reject an alternative acknowledged to be environmentally preferable solely on the ground that any change in [plans] would cause delay."[203] As a result, NEPA does not require an agency either to develop or implement a plan to mitigate environmental damage, so long as the agency considers mitigation in general terms as an option.[204] Nor does NEPA require an agency to perform a "worst-case analysis" to assess the effects of catastrophe.[205] Rather, under CEQ regulations revised in 1986 by the Reagan Administration, agencies need only evaluate "reasonably foreseeable . . . impacts which have catastrophic consequences, even if their probability is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason."[206]

Thus, the vibrancy of *Udall* and *Scenic Hudson* has been washed out of NEPA, which now merely requires a relatively narrow document that accompanies files reflecting foregone conclusions.[207] This is not much different in flavor, if not form, than the AEC regulations rejected by *Calvert Cliffs*. The best that can be said of NEPA is that it has marginally improved thousands of narrow decisions that affect the environment.[208] However, NEPA does not provide even marginal ecological or sustainable security. Rather, NEPA, the most widely adopted environmental law in the world, now provides the means to thoroughly wallpaper over serious structural flaws in our decisions, so that decisions appear to be sustainable, when in reality they are no more than Potemkin Villages of environmental concern.

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203. Strycker's Bay Neighborhood Council, Inc. v. Karlen, 444 U.S. 223, 230 (1980) (Marshal, J., dissenting). Justice Marshall dissented that "[w]hether NEPA, which sets forth 'significant substantive goals,' *Vermont Yankee Nuclear Power Corp. v. NRDC* . . . permits a projected 2-year time difference to be controlling over environmental superiority is by no means clear." *Id.* (citing Vermont Yankee Nuclear Power Corp. v. NRDC, 435 U.S. 519, 558 (1978)). Justice Marshall concluded: "Further, I do not subscribe to the Court's apparent suggestion that *Vermont Yankee* limits the reviewing court to the essentially mindless task of determining whether an agency 'considered' environmental factors even if that agency may have effectively decided to ignore those factors in reaching its conclusion." *Id.* at 231.

204. Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 353 (1989).

205. *Id.* at 356.

206. 40 C.F.R. § 1502.22(b)(4) (1996).

207. PERCIVAL ET AL., *supra* note 85.

208. *Id.* at 1181. *See also* Antonio Rossmann, *NEPA: Not So Well at Twenty*, 20 ENVTL. L. REP. 10174 (1990) ("[The Supreme Court] has never written to expand NEPA's application and has consistently narrowed or reversed generous rulings by courts of appeals. In essence, for two decades the Justices have never gotten it right . . . . The Supreme Court's 1989 decisions unnecessarily threw out sound resolutions . . . ., rejected models of pragmatic environmental accountability, discouraged agency initiative to enhance the federal trusteeship over environmental values and . . . facilitated the probable destruction of rare natural splendors.").

D. NEPA's Structural Defect: No After-the-fact Responsibility for Errors

When the United States Supreme Court eviscerated NEPA, and drained the spirit of sustainability out of its procedural mandates, the Court also silently sabotaged what remained of the statute by removing any possible decisionmaker accountability from NEPA's now purely procedural construct. This fundamental defect is the little-appreciated fact that no one is responsible for substantive errors, flaws or inadequacies in EIS evaluations. So long as the NEPA process has been followed, there is no consequence to the decisionmaker for making a bad decision, short of fraud, nor is there even any obligation to follow up on the project to see what are the actual adverse environmental consequences. The combination of narrow judicial oversight and lack of accountability for error can produce terrible consequences. For instance, when the federal government was deciding whether to build the Grand Teton Dam, officials considered the likelihood of its collapse to be too remote to require even a mention in the EIS.[209] Unfortunately, as it was being filled for the first time, the dam collapsed killing eleven people, leaving 25,000 people homeless, and totally or partially inundating 300 square miles of downstream land.[210] The cost of the collapse, in 1976, was about $1 billion, of which the United States government paid over $400 million to victims.[211] However, "[n]one of Teton's principal designers and builders were fired."[212] Neither the decision-makers nor the project proponents were held accountable for their mistakes. By making decision-makers and project proponents accountable under NEPA, the statute would be revived and able to advance the goals of sustainable development.

There are several reasons for this non-accountability. First, government officials and the government are protected from tort liability for their discretionary decisions even if the exercise of discretion was abused.[213] Second, the United States Supreme

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209. *See* William H. Rodgers Jr., ENVIRONMENTAL LAW: HAZARDOUS WASTES AND SUBSTANCES, § 7.7 (1992).

210. Denis Binder, *NEPA, NIMBYs and New Technology*, 25 LAND & WATER L. REV. 11, 17 n.35 (1990).

211. *See* Teton Dam Disaster Act of 1976, Pub. L. No. 94-400, 90 Stat. 1211 (1976).

212. MARC REISNER, CADILLAC DESERT, THE AMERICAN WEST AND ITS DISAPPEARING WATER 408 (1993).

213. *See* 28 U.S.C. § 2680(g), which excludes from liability under the Federal Tort Claims Act, 28 U.S.C. § 2671 et seq., "any claim based upon an act or omission of an employee of the 'Government, exercising due care, or the execution of a statute, or regulation, whether or not such statute or regulation be valid, or based upon the exercise or performance or the failure to exercise or perform a discretionary function or duty on the part of a federal agency or employee of the Government whether or not the discretion involved be abused." *See also In re* Ohio River Disaster Litigation, 579 F.Supp. 1273 (S.D. Ohio 1984) (government decisions as to the design and placement of a dam were immune from suit as discretionary functions); *and* K.W. Thompson Tool Co. v. United States, 836 F.2d 721, 727

Court has made clear that as long as an agency has prepared an EIS (within the narrow requirements established by the Court), the soundness of the ultimate decision will not be examined.[214] These decisions "cast doubt on a court's ability to order an agency or an agency-regulated party to do what it has promised to do to protect the environment,"[215] particularly since there is no provision in NEPA for citizen enforcement of any agreement or promise made as part of the project's approval.[216]

Much of the problem with regard to NEPA accountability can be traced back to the need for measurement. In its review of a challenge to a beach erosion project that utilized inland sand (an option not mentioned in the EIS) instead of the type of sand evaluated in the EIS, the First Circuit worried about meddling in NEPA enforcement when measurement criteria were too vague.[217] Although the court was "deeply troubled" by the "prospect that a violation of NEPA is insulated from remedy once the project is completed," it was also "disturbed by the implications of affording post-completion relief where hindsight reveals inadequacies in an environmental impact statement."[218] Without more precise means by which to measure performance of promises under NEPA, the court was simply unwilling to entertain the idea that official NEPA undertakings should be enforced.

Unfortunately, instead of demanding that agencies develop explicit compliance criteria to which they should be held accountable, the First Circuit, expressing

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(1st Cir. 1988) (claim that EPA failed to properly train and supervise its personnel and failed to use valid scientific data in issuing a Clean Water Act permit were barred by the discretionary function exception to the waiver of sovereign immunity contained in the Federal Tort Claims Act).

214. *See, e.g., Robertson*, 490 U.S. at 350; *Vermont Yankess Nuclear Power*, 435 U.S. at 548.

215. Thomas O. McGarity, *Judicial Enforcement of NEPA- Inspired Promises*, 20 ENVTL. L. 569, 571 (1990).

216. Unlike most environmental laws enacted after NEPA, NEPA does not contain a citizen suit section permitting citizen suits against persons violating the law or against the United States or its agencies for failing to perform a nondiscretionary duty. *See, e.g.*, Endangered Species Act, 16 U.S.C. § 1540(g) (1994); Clean Water Act, 33 U.S.C. § 1365 (1994); Resource Conservation and Recovery Act, 42 U.S.C. § 6972 (1994); Clean Air Act, 42 U.S.C. § 7604 (1994); *and* Emergency Planning and Community Right-To-Know Act, 42 U.S.C. § 11046 (1994). Rather, under NEPA judicial review of agency actions is available only under the generic provisions of the Administrative Procedure Act, 5 U.S.C. §§ 701-06.

217. Ogunquit Village Corp. v. Davis, 553 F.2d 243, 244-45 (1st Cir. 1977).

218. According to the court:

> Retrospective review, with the benefit of hindsight, would predictably reveal in many projects some lapse of planning and foresight which could give rise to a lawsuit. The prospects of prolonged litigation and of additional, large and unplanned expenditures of public funds in undoing and redoing what has been done would give pause to any court.

Id. at 245.

the general judicial view on NEPA, informed agencies that they would have no accountability for their decisions under the statute.[219] Even if an agency changes its mind after the EIS is completed and selects an alternative not evaluated or even mentioned in the EIS, the only remedy, feeble as it may be, is that the agency supplement its EIS to include its new initiative.[220] However, if the agency change is not detected or challenged until after the project is completed, then any NEPA claim would probably be dismissed as moot, without even the paper "remedy"of an after-the-fact supplemental EIS.[221]

Finally, peeling back the NEPA enforcement onion to its inner layer, even if an agency specifically conditions its approval on compliance with explicit, measurable criteria placed in legally binding documents such as contracts, permits, licenses or the like, courts are reluctant to enforce these requirements. As a result, "even well-conceived NEPA-inspired conditions or requirements will not insure against environmental harm if they are not effectively enforced."[222] In large part this is because "courts tend to take at face value . . . that the environmental protective permit conditions will be observed by the permittee," an assumption that is "woefully naive."[223] In other words, although courts will carefully examine agency claims that permit conditions and mitigation measures will reduce environmental effects to the point that an EIS is not needed, once this determination is made, the courts simply assume, without any binding assurances, that the conditions will be enforced.[224] However, the failure of an agency to enforce is presumptively nonreviewable,[225] and NEPA contains no private right of action or citizen suit

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219. However, a narrow window of relief was left open by the decision; a limited NEPA remedy might be available if it were to be shown that the agency acted in bad faith, with a conscious design to circumvent NEPA. *Id.* at 246. Unfortunately, any remedy for bad faith would be minimal and proof of bad faith would be almost impossible to establish in practice. McGarity, *supra* note 215, at 595.

220. McGarity, *supra* note 215, at 591 ("Unless a statute were to provide a basis for enforcing an agency's commitments, the agency can apparently avoid its NEPA promises by preparing another NEPA document.").

221. *See generally* Pork County Resource Council Inc., v. USDA, 817 F.2d 609 (10th Cir. 1987) (discussing inability of court to remedy complaint when project was completed); City of Romulus v. County of Wayne, 634 F.2d 347 (6th Cir. 1980) (discussing mootness); *and* Ogunquit Village Corp. v. Davis, 553 F.2d 243 (1st Cir. 1977) (discussing inability to recover damages after sand dune was completed). *But see* Van Abbema v. Fornell, 807 F.2d 633 (7th Cir. 1986); Columbia Basin Land Protection Ass'n v. Schlesinger, 643 F.2d 585 (9th Cir. 1981) (noting that if the EIS was inadequate the agency must correct its decision-making process and could be required to remove the completed power line) *and* Lake Wylie Water Resources Protective Ass'n v. Rodgers Builders, Inc., 621 F. Supp. 305 (D.C.S.C. 1985).

222. McGarity, *supra* note 215, at 599.

223. *Id.*

224. *Id.* at 600-02.

225. Heckler v. Chaney, 470 U.S. 821, 831 (1985).

provision.[226] The dismal conclusion is that the combination of a constrained judicial interpretation of NEPA's EIS obligations, and the lack of accountability for mistakes in judgment, together with the inability to enforce criteria the EIS identified as environmentally protective,[227] makes NEPA useless in promoting sustainable development. NEPA does, however, retain considerable value in whitewashing development projects so the public believes that long-term environmental interests are being protected.

VI. PLACING THE RISK OF MISTAKE ON THE PREDICTOR

A. The Measurement Problem

The tragic enfeebling of NEPA resulting from the Supreme Court's evisceration of the statute's EIS requirements and NEPA's lack of accountability can be traced to the lack of any criteria to measure conduct and with which to hold actors accountable for their decisions. The lack of post-EIS review and monitoring not only makes the promises of mitigation hollow, but decision-makers and project advocates have also learned the short-term lesson of NEPA litigation: that they need merely meet NEPA's technical requirements and need not hinder a project by asking important questions. This short-term approach results in no post-project monitoring and deprives us of the feedback needed to improve decisions in the future.[228] Under the current state of the law, project proponents

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226. For a detailed examination of the role of citizen enforcement of environmental law *see generally* David R. Hodas, *Enforcement of Environmental Law in a Triangular Federal System: Can Three Not Be a Crowd When Enforcement Authority is Shared by the United States, the States, and their Citizens?*, 54 MD. L. REV. 1552 (1995).

227. In the future we are "likely to witness the spectacle of agencies reneging on their promises in derogation of NEPA's clearly articulated substantive goals." McGarity, *supra* note 215, at 609.

228. A further explanation of this short term approach is given by Kai N. Lee:

> Conflict through the courts forced substantial change in the agencies' decision-making. But there was little learning about the environment itself. The reasons lay in the same incentives that made the federal agencies unwilling agents for the environmentalists. Environmentalists seldom wanted a better project; they wanted no project at all. Environmental assessment was thus a pretext, often a successful one, for opposition. But win or lose both proponents in the agencies and their constituency groups and opponents in the national environmental movement moved on. Cancellation of a project ended the matter. Approval also ended the environmentalists' concern about it: they had lost, there were other battles and insufficient resources, and the projects were a long way from Washington, D.C., where the battles were fought. It was a dynamic that forestalled learning about the environment, although it forced rapid learning in the agencies about what had to be

know there is no consequence from underestimating adverse environmental effects. Not only is there no liability for inaccuracy, there is no post-project review that would check the accuracy of the predictions.

Imagine, as a hypothetical, the typical decision involving a developer who wants to build a shopping mall on land that is somewhat marshy and which fronts on an old two lane road that is near its maximum daily vehicle capacity. In the application for a wetlands permit from the Army Corps of Engineers, the developer predicts that the project will generate little additional traffic and little harmful runoff into the marsh area. In preparing the EIS, the agency accepts the developer's traffic predictions and approves the permit. However, upon completion, the actual traffic increase is many times the level predicted in the EIS, resulting in severe congestion, more traffic accidents, greater pollution runoff into the marsh, greatly increased air pollution from the many cars and trucks, and destruction of the previous character of the area. The public now clamors for the state, at great expense, to widen the road and deal with the pollution and lifestyle issues. When confronted with the modest predictions it relied on in the EIS, the agency says, with a shrug, that it complied with NEPA at the time of its decision. The developer responds, with an enigmatic smile, that it simply relied upon the estimates of its consultants for the predictions. Neither the agency nor the developer is accountable for the error. On the other hand, if the developer and agency had accurately predicted the impacts of the project, it probably would have faced stiff opposition from the public and might not have been approved. The lesson for project proponents is antithetical to sustainable development but obvious: comply with NEPA by mentioning but minimizing the adverse environmental impacts, and enjoy the profits of the project while leaving the public to bear the environmental consequences.

NEPA must be reinvigorated if it is to advance sustainable development. A sustainable decision should accommodate both the economic and ecological costs and benefits over the life of the project. Such a decision however, requires accurate economic and environmental information. The marketplace provides the economic data, but NEPA does not provide any incentive for making accurate environmental predictions. If external environmental effects could be valued, they could be included in the decision-making matrix, along with direct costs.

To improve decision-making under NEPA, decision-makers and project proponents must be held accountable for their predictions, mitigation promises, and the inevitable residual environmental consequences of the projects. The EIS must be required to identify objective, measurable criteria that can be used to judge the ultimate accuracy of environmental predictions. These criteria should reflect the quantity and quality of the external environmental impacts created by the

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> done to comply. What remains is environmental analysis that is often useable, but with few users and little cumulative ecological learning.

KAI N. LEE, COMPASS AND GYROSCOPE: INTEGRATING SCIENCE AND POLITICS FOR THE ENVIRONMENT 103-04 (1993).

project and be translated into specific, dollar-based valuations that can be incorporated into the total project valuation, and secured against, as with any other financial risk.

B. Environmental Externality Valuation

Fortunately, there is an emerging discipline of environmental externality valuation that will allow us to use the law to define sustainable development.[229] At a macroeconomic level, externality valuation has been advanced by the emergence of natural resource accounting, under which national income accounts (GDP, etc.) are adjusted directly or indirectly to reflect environmental degradation associated with a country's economic activity.[230] For example, if the wealth of a country that was selling off its forests were reduced by the value of the topsoil lost from the clearcutting, the country's annual income would reflect a liquidation of capital rather than a sustainable investment.[231] Natural resource accounting that includes changes in value of ecosystem services from capital investment more accurately reflects a country's true annual income and net worth, and provides data with which to assess the sustainability of investment decisions. These concepts are also being extended to the corporate level through the emergence of "green" accounting.[232]

These techniques have been applied at the project level. The World Bank has developed a broad range of techniques to evaluate the economic costs of the environmental impacts of projects. It is beginning to include these analyses in its environmental assessments and financial evaluations of project lending proposals.[233] For instance, the full economic impact of the logging industry in the Philippines was examined by comparing the existing logging system, its ecosystem damage, resulting losses of tourism, and fishing income (the "without" a logging ban project) with a logging ban that reduced forestry income but increased or sustained tourism and fishing income (the "with" project scenario). The comparison revealed that a logging ban would result in a 70% revenue increase over the

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229. *See, e.g.*, NATURE'S SERVICES: SOCIETAL DEPENDENCE ON NATURAL ECOSYSTEMS (Gretchen C. Daily, ed. 1997).

230. *See* NICK HANLEY ET AL., ENVIRONMENTAL ECONOMICS IN THEORY AND PRACTICE 434-41 (1997) (reviewing in detail the arguments for and against environmentally-adjusted national accounts.)

231. *Id* at 434-36.

232. *See* U. N. Conf. on Trade and Development, Position Paper, accounting and financial reporting for enviornmental costs and liabilities, U.N. Doc. TD/B/COM.2/1SAR/3 at 4-15 (March 12, 1998) (Identifying for companies, regulators and standard-setting bodies "best practice in accounting for environmental transactions and events," with a "focus . . . on the accountability of the management of an enterprise for financial implications of managing the environmental resources trusted to it and that are linking to the enterprise's activity."). *Id.* at 5.

233. LEE, *supra* note 228, at 46-83.

current system.[234] In the United States, evaluation expertise has emerged in two areas; natural resource damage assessment and state public utility commission integrated resource planning. Oil pollution and hazardous waste laws now mandate that violators pay for damage done to natural resources.[235] Damages to a variety of public natural resources are quantified by methods such as contingent valuation,[236] and these methods are a legally valid means to measure damages for which legal liability can be imposed.[237] In the area of electricity regulation, public utility commissions, industry, and public interest intervenors have developed expertise in establishing preliminary values for the external damages caused by residual emissions from utilities, even after all environmental regulations are met.[238]

Thus, both after-the-fact liability for external damages and before-the-fact evaluation of environmental externalities can be valued and directly incorporated into a decision-maker's calculus. A price can even be placed on the biological and geophysical systems of the planet for the valuable services these systems provide.[239] The valuation of "everything" can greatly enhance local, project based decisions, so that "[i]ncreasingly, such decisions will be informed by those who realize that there is more to a whale than its meat, and that wetlands, like all other ecosystems, provide services we cannot afford to replicate."[240]

C. Securing Against the Risk: Externality Insurance

The EIS for the described hypothetical of a development along an old country road and alongside of a wetlands would specifically identify the environmental externalities and valid, reliable sustainability indicator measurement criteria for

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234. JOHN A. DIXON ET AL., *supra* 83, at 44-45.

235. *See, e.g.*, Oil Pollution Act of 1990, 33 U.S.C. § 2706 (1994); Comprehensive Environmental Response, Compensation, and Liability Act, § 107(f), 42 U.S.C. § 9607(f) (1994).

236. Frank Cross, *Natural Resource Damage Valuation*, 42 VAND. L. REV. 269, 315 (1993).

237. Natural Resource Damage Assessments, 61 Fed. Reg. 440 (1996) (codified at 15 C.F.R. pt. 990).

238. *See, e.g.*, EXTERNAL ENVIRONMENTAL COSTS OF ELECTRIC POWER: ANALYSIS AND INTERNALIZATION, *supra* note 83 (evaluating social or external costs of energy and including these costs in the market prices of energy); SOCIAL COSTS AND SUSTAINABILITY: VALUATION AND IMPLEMENTATION IN THE ENERGY AND TRANSPORT SECTOR, *supra* note 83 (valuing social costs and internalized social costs in attaining sustainable development) *and* SOCIAL COSTS OF ENERGY: PRESENT STATUS AND FUTURE TRENDS, *supra* note 83 (assessing social costs and the techniques to incorporate these costs into internal costs).

239. *See* Costanza et al., *supra* note 80. The authors valued each major ecosystem type in the world (from oceans to forests to deserts) by identifying the services those systems provide in 17 categories ranging from atmospheric gas regulation, storage and retention of water, food production, sinks for pharmaceutical, recreational benefits, to cultural value.

240. Stuart L. Pimm, *The value of everything*, NATURE, May 15, 1997, at 231-32.

each; in this case, for instance, an externality would be increased vehicle traffic. The EIS drafter would calculate the additional environmental burden that each vehicle, on average, would place upon the environment. This burden would be translated into a dollar amount per vehicle for the environmental externalities imposed by each vehicle. The decisionmaker would have full discretion to choose among project alternatives, but the externalities created by that choice would be internalized into the project. This proposal would prevent decision-makers and project proponents from ignoring, underestimating, or failing to mitigate adverse environmental effects.

How might this proposal operate? In the case of the hypothetical development, it might be determined that each additional car will impose $10 per day of externalities on the environment and surrounding community. If the EIS predicts that the project will result in 100 additional cars per day, then the externalities associated with the project as proposed would be $1000 per day. The decision would incorporate this baseline of public environmental costs as acceptable for the development project, but all excess environmental costs would be borne by the project proponent. Although, technically, these baseline public costs are not being economically internalized into the decision, they are fully taken into account politically as the baseline of public costs acceptable for the project. To further protect the public, agency approval would require a secured environmental externality performance bond.[241] In other words, for each car over 100 per day, the project proponent would have to pay $10 per day. Agency project approval would contain traffic measurement criteria, (e.g., how to measure, how often, by whom, data reporting methods) and, most critically, a secured obligation under which the project proponent would pay ten dollars plus the economic benefit enjoyed by the project, plus interest, for any traffic over the baseline. Thus, if the project resulted in 500 cars per day instead of the 100 predicted, the project would pay $4000 per day for the excess externalities created.

The risk of error would be absorbed by the project proponent, and not the community or the environment. More abstractly, this proposal rejects the legal presumption that economic activities probably do not damage the environment and replaces it with the more realistic view "that a resource-based activity will be environmentally damaging."[242] The obligation would continue for some reasonable impact measurement period, during which the bulk of the effects would be observed; in a case like the hypotheticed the period might be ten to fifteen years.

The core feature of this proposal is the mandate that the potential liability for external environmental harm be secured. Although the method of obtaining that

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241. The concept of environmental performance bonds was an early product of the emerging field of ecological economics. *See, e.g.*, Robert Costanza & Charles Perrings, *A Flexible Assurance Bonding System for Improved Environmental Management*, 2 ECOLOGICAL ECON. 57, 64 (1990) *and* Charles Perrings, *Environmental Bonds and Environmental Research in Innovative Activities*, 1 ECOLOGICAL ECON. 95, 100-02 (1989).

242. Costanza and Perrings, *supra* note 241, at 59.

security will vary depending upon the nature of the project, the central tenet of sustainable development, that environmental externalities be internalized into routine decisionmaking, requires that the risk of uncertain adverse consequences be placed upon project proponents and direct beneficiaries. There are at least two approaches to creating accountability for externalities: 1) a performance bond approach, and 2) an insurance approach.[243]

The concept of an environmental externality bond is a variation of the recent concept of a "flexible environmental assurance bonding system,"[244] which itself is a variation of the long standing idea of deposit-refund programs.[245] An environmental externality bond that secures against environmental harm[246] might operate, according to Michael Common, as follows:

> Assume that there is in existence an Environmental Protection Agency (EPA) without permission from which the firm cannot go ahead with the project. The EPA takes independent expert advice on the project, and comes to a view about the worst conceivable environmental consequences of the project. Approval of the project is then conditional on the firm depositing with the EPA a bond of $x, where this is the EPA's estimate of the social cost of the worst conceivable outcome. The bond is fully or partially returned to the firm at the end of the project's lifetime, defined by the longest lasting conceived consequence of the project, according to the damage actually occurring over the lifetime. Thus, if there is no damage the firm gets back $x, plus some proportion of the interest. The withheld proportion of the interest is to cover EPA administration costs and to finance EPA research. If the damage actually occurring is $y, the firm gets back $x - $y, with appropriate interest adjustment. For $x equal to $y, the firm gets nothing back, forfeiting the full value of the bond. It is, of course, possible that $y will turn out to be greater than $x, in which case also the firm gets back $0. The advantages claimed for such an instrument are in terms of the incentives it creates for the firm to undertake research to investigate environmental impact and means to reduce it, as well as in terms of stopping projects. Taking the latter point first, suppose that the EPA decides on $x as the size of the bond, and that the firm assesses lifetime project net returns to it as one dollar less than $x, and accepts that $x is the appropriate estimate of actual damage to arise. Then it will not wish to go ahead with the project. If, however, the firm took the view that actual damage would be less than $x, it would wish to go ahead with the project. The firm, itself, then has an incentive to assess the damage that the project could cause, and to research means to reduce that damage. Further, if it does undertake the project it has an ongoing incentive to seek damage-minimizing methods of operation, so as to increase

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243. Other approaches might include environmental taxes, impact fees or permits; but they are beyond the scope of this article.

244. Robert Costanza et al., *The 4P Approach to Dealing with Scientific Uncertainty*, 34 ENV'T 12, 16 (1992).

245. *See, e.g.*, Robert M. Solow, *The Economist's Approach to Pollution and Its Control*, 173 SCIENCE 498, 502. (1971).

246. In this example, the author is discussing environmental harm generally, and not excess environmental costs. (i.e., environmental costs beyond those predicted to be incurred in the EIS). However, the basic approach is the same in either case.

> that eventual size of the sum returned to it, $x - $y. This incentive effect could be enhanced by having the size of the bond posted periodically adjustable. Thus, if on the basis of its research, the firm could at any point in time in the life of the project, convince the EPA that the worst conceivable lifetime damage was less than $x, the original bond could be returned and a new one for an amount less than $x be posted.
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> Environmental performance bonds would entail the shift in the basic presumption about projects that the precautionary principle implies. At the end of the project lifetime, the burden of proof as to the magnitude of actual damage would rest with the firm, not the EPA. The presumption would be that the bond was not returnable. It would be up to the firm to convince the EPA that actual damage was less than $x if it wished to get any of its money back. This would generate incentives for the firm to monitor damage in convincing ways, as well as to research means to minimize damage. In the event that damage up to the amount of the bond, $x, occurred, society, as represented by the EPA, would have received compensation. If damage in excess of $x had occurred, society would not receive full compensation. Recall that $x is to be set at the largest amount of damage seen as conceivable by the EPA at the outset. A socially responsible EPA would have an incentive to take a cautious view of the available evidence, implying a high figure for $x, so that society would not find itself undercompensated. This, it is argued, would coincide with the selfish motivations of EPA staff, since a higher $x would mean more funding available for EPA administration and research.[247]

Under this system, the agency and project proponent will have the incentive to be realistic about the adverse environmental impacts of the project and to think creatively about alternatives that would eliminate or reduce the impacts. To avoid externality payments,[248] the proponent will want to estimate the impacts realistically high, because that would set the baseline high. However, realistic predictions might tend to provoke serious public debate over the value of the project. For instance, the community might find a prediction of 100 cars per day to be acceptable but 500 extra cars per day to be intolerable. Public concern would require serious consideration of project alternatives that actually would reduce the environmental impact. The resulting public and private deliberation would foster a truer sustainability

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247. MICHAEL COMMON, SUSTAINABILITY AND POLICY: LIMITS TO ECONOMICS 215-16 (1995).

248. The excess externality payments should include 1) the excess external damages to human health and the environment caused by the project, and 2) an additional civil penalty that places the predictor in a worse position as a result of the inaccuracy than it would have been if it had made an accurate prediction. This approach would be analogous to the current practice in assessing civil penalties under existing environmental laws. *See, e.g.*, 33 U.S.C. § 1319(d) (1994) (mandating that courts impose a civil penalty for Clean Water Act violations and that the amount of the penalty shall be based upon "the seriousness of the violation . . ., the economic benefit (if any) resulting from the violation, any history of such violations, any good-faith efforts to comply with the applicable requirements, the economic impact of the penalty on the violator, and such other matters as justice may require.").

debate.[249] This dialog would also reflect the substantive goals of NEPA and the vision of *Udall* and *Scenic Hudson*, because environmental and community impacts would be incorporated into each decision on equal footing with traditional financial concerns, thereby tempering the power and privilege of development with responsibility for the externalities created.

Another method of holding project proponents accountable is to require that they insure against the cost of future abandonment or modification of a project, thereby mitigating adverse environmental consequences that become apparent or regulated. For instance, in the context of electric power production, the emission of carbon dioxide, a greenhouse gas produced by burning fossil fuel, may be limited, regulated, or taxed[250] as a result of international commitments to control climate change under the United Nations Climate Change Convention.[251] However, as the electric industry becomes deregulated, the public could be held hostage for the external costs of electricity which were not accounted for and probably not even considered when the huge investments in capital were made. The risk of these future regulatory costs and of the need to pay for the internalization of these effects should be borne by the project beneficiaries. In order to accomplish this, it is necessary that potential external costs be secured so that payment of the costs

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249. To be a true sustainable development debate, the interests of future generations must be included in the project analysis. To do this, evaluation of the environmental costs of projects must reflect long-term effects, and these damage calculations must be reduced to present value either using no discount for future human suffering, or a minimal social discount rate, between about 0.5% and 3% per year, to reflect long-term interests of society. RICHARD L. OTTINGER ET AL., *supra* note 84, at 43-44, 83-88 (1990) *and Summary for Policymakers, in* CLIMATE CHANGE 1995: ECONOMIC AND SOCIAL DIMENSIONS OF CLIMATE CHANGE 5, 8-9 (Contribution of Working Group III to the Second Assessment Report of the Intergovernmental Panel on Climate Change, James P. Bruce et al. eds., 1996).

250. *See* B.S. Fisher et al., An Economic Assessment of Policy Instruments for Combating Climate Change, *in* CLIMATE CHANGE 1995: ECONOMIC AND SOCIAL DIMENSIONS OF CLIMATE CHANGES, 401-31 (Contribution of Working Group III to the Second Assessment Report of the Intergovernmental Panel on Climate Change, James P. Bruce et al eds., 1996) *and* Jose Goldemberg et al., *Introduction: Scope of the Assessment* 21, 33-40 (Contribution of Working Group III to the Second Assessment Report of the Intergovernmental Panel on Climate Change, James P. Bruce et al. eds., 1996).

251. Negotiations are currently underway for setting firm committments to reduce greenhouse gas emissions under the Climate Change Convention at the next meeting of the parties scheduled for November 1998. Recent reports that increased concentrations of greenhouse gases could lead to the weakening or even halting of the Gulf Stream suggest that the speed of reductions may be as important as the final atmoshperic concentrations. *See* Thomas F. Stocker & Andreas Schmittner, *Influence of CO_2 Emission Rates on the Stability of the Thermohaline Circulation*, NATURE, Aug. 28, 1997, at 862, 865; Stefan Rahmstorf, *Risk of Sea-Change in the Atlantic*, NATURE, Aug. 28, 1997, at 825-26 *and* William K. Stevens, *Warming Could Bring Some Cold Surprises*, N.Y. TIMES, Sept. 9, 1997, at C2.

cannot be avoided by insolvency or bankruptcy.[252] This risk-shifting could be "collateralized" by combining modified offsets with adequate, relatively liquid, identifiable loss reserves. To protect the public and itself against these risks, the utility should be required to create a segregated environmental damage reserve account and a global warming "decommissioning" account that will insure against future requirements such as greenhouse gas taxes, CO_2 emissions limitations, hazardous air pollutant restrictions, and the like. The utility or energy supplier would either deposit annual insurance premiums into this reserve fund or purchase environmental externality insurance from private insurers. Self-insurance premiums would be calculated by multiplying the environmental externality value (e.g., $/pound or $/ton) set by the appropriate regulatory body (e.g., a state public service commission (PSC) or the Federal Energy Regulatory Commission) times annual emissions. Premiums for private externality insurance would be set by private insurers. The utility's combined private insurance and self-insurance would cover the full amount of its future environmental externalities.

Ultimately, the best insurance against future environmental harm and the best method to reduce the risk of future regulation is to reduce emissions and adverse environmental consequences now. Therefore, in addition to the market-leveling approach of environmental externality insurance, the system also should have a direct incentive to reduce emissions and adverse environmental effects. The utility should be entitled to reduce its risk and pay all or part of its environmental externality insurance premium by implementing an environmentally beneficial emission reduction project[253] deemed to be a satisfactory equivalent reduction of the externality caused by the future emissions. In other words, "buying" environmentally beneficial projects that reduce emissions would be deemed equivalent to buying actual insurance or funding a self-insurance account. Any expenditures on these durable, verifiable emission reduction activities that are deemed environmentally equivalent to externalities would reduce the utility's annual insurance obligations.

As further incentive to invest in emission reducing projects, the credit could be greater than one to one. For example, if a two to one credit were allowed for certain projects, then every dollar spent on the approved environmentally

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252. *See* David Hodas, *Using Environmental Externalities to Regulate the Risk of Harm from Greenhouse Gas Emissions, in* SOCIAL COSTS AND SUSTAINABILITY: VALUATION AND IMPLEMENTATION IN THE ENERGY AND TRANSPORT SECTOR 488, 492-496 (Olav Hohmeyer et al. eds., 1997) (describing the dangers inherent in failing to secure the cost of risk shifting in advance).

253. The concept of using environmentally beneficial projects to mitigate or offset environmental liabilities has been well established in the environmental field as sound, effective public policy. *See, e.g.*, Clean Air Act, 42 U.S.C. § 7604(g)(1) (1994) (allowing civil penalties to be placed in a fund to be used exclusively for "beneficial mitigation projects" that are consistent with the Act and which "enhance the public health or the environment").

beneficial project would reduce the externality insurance obligation by two dollars.[254] The credit ratio could vary by project type and emission. Money in the externality insurance account could be used at any time for any environmentally equivalent project. The money in the insurance account may be reasonably invested and earn interest, but it would not be in the utility's rate base. Rather, premiums would be treated as an operating expense. However, capital expended on an environmentally equivalent project could be included in the utility's rate base and earn a normal rate of return for the utility. Similarly, money in the insurance account could be used to pay for the cost of complying with future emission limitations. Finally, if the utility so reduced its emissions that its externality insurance exceeded, by an adequate margin of safety, its insurance requirements, then, with PSC approval, the funds might be released from the reserve account, and returned to the ratepayers or the company, as appropriate.

Although this package is new, the individual elements presently exist in one form or another. For instance, owners of nuclear power plants must maintain nuclear decommissioning accounts[255] and must account, at least in part, for the future costs of long-term high-level nuclear waste disposal. Utilities already insure against routine and catastrophic risks, from worker's compensation and automobile liability to nuclear plant accident liability, both by purchasing commercial insurance and by self-insuring. Commercial insurers who agree to bear the financial risk of some future loss are required to maintain loss reserves funded by identifiable, conservative, investment portfolios. Surety bonds are routinely required of construction contractors, in the sale of goods and in a myriad of other routine commercial transactions. Even multilateral banks, such as the World Bank, have begun to use "*ex post* evaluation" to determine the costs and benefits resulting from a project, in terms of "technical, financial, economic, social and environmental aspects" with "ratings of overall performance and sustainability."[256] It is not unreasonable for the public to insist that commercially reasonable practices be required of activities and projects that can have significant adverse environmental effects. One such practice should be insuring against

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254. *See* NEW YORK STATE ENERGY OFFICE, NEW YORK STATE ENERGY PLAN, VOL. II: ISSUE REPORTS 191-95 (1994).

255. The nuclear decommissioning experience teaches that regulations must insure that adequate funds for future needs are in fact set aside in secure, identifiable accounts. As of early 1993, utilities should have already accumulated approximately $33 billion for plant decommissioning, however, the Nuclear Regulatory Commission estimates that only $4 billion (12%) has been "stashed away." Even worse, the initial $33 billion estimate is far too low; recently revised utility estimates are two to four times previous estimates. *Id. See supra* note 202, at A1.

256. IBRAHIM F. I. SHIHATA, THE WORLD BANK INSPECTION PANEL 19-20 (1994) (These evaluations will be used to gauge loan compliance, to learn from past experience to improve projects in the future.). *Id.*

environmental externalities where the risks to society from pollution is large.

The advantages of this approach to the public, to utilities and energy suppliers, and to regulators are numerous:

1) the risk of future regulation is shifted to the polluter, who is the one who should bear it;

2) the utility fully internalizes the risk of environmental harm and of future regulation in response to that harm, thereby relieving the public of the need to underwrite risk;

3) the environmental externality insurance obligation is backed by adequate financial security;

4) utilities, by reducing emissions, can reduce insurance premiums, reduce harm to human health and the environment, and increase profits;

5) utility management can act flexibly, either innovating in emissions reduction or buying insurance, to best meet its needs;

6) the public internalizes the externalities associated with electricity use by paying for the benefits of the environmentally beneficial projects in rates, as the rate base is increased, or in a deregulated system, using system benefits charges,[257] or a renewable portfolio standard,[258] or by paying for the environmental externality insurance as a routine operating expense;

7) because the utility is rewarded for reducing emissions instead of making payments into an insurance account, it will have a market-based incentive to reduce emissions now;

8) the sooner emissions are reduced, the greater the reduction in risk, and the greater the improvement to environmental quality;

9) because this is neither environmental regulation nor taxation, but prudent oversight of economic risk, the environmental externality insurance plan can be implemented through the energy plan and PSC rules; and

10) because environmentally beneficial projects qualify for premium offsets there is less pressure on PSCs to be absolutely precise in setting externality values.[259]

VII. CONCLUSION: FIXING NEPA OR USING LAW TO DEFINE AND IMPLEMENT SUSTAINABLE DEVELOPMENT

Implementation of environmental accountability into NEPA could be accomplished quickly and easily. When NEPA was first enacted in 1970, it

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257. *See* PETER FOX-PENNER, ELECTRIC UTILITY RESTRUCTURING 357-67 (1997) *and* ED SMELOFF & PETER ASMUS, REINVENTING ELECTRIC UTILITIES 102-107, 144 (1997).

258. FOX-PENNER, *supra* note 257, at 357-67; SMELOFF & ASMUS, *supra* note 257, at 86, 88, 102-05, 195-98.

259. As presently envisioned, qualifying projects would be utility specific and project credits would not be tradeable. As experience with this concept grows, and verification and enforcement capability is developed, market trading of offsets may be possible in the future.

commanded each agency to develop regulations to "insure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations."[260] Under NEPA, "the policies, regulations and public laws of the United States" shall, to the fullest extent possible, promote decisions meeting the goals of the statute—what we now call sustainable development.[261] As a first step, all that is needed is for the CEQ to amend its regulations to require externality valuation and the posting of security for all NEPA decisions.[262] Each federal agency should similarly amend its NEPA-based regulations. To insure that implementation is effective and that obligations and mitigation promises are enforced, NEPA should be amended to add a citizen's suit provision, now standard in other environmental laws, to allow citizens to sue the government for failing to perform a nondiscretionary duty (e.g., failing to include specific, secured, measurable externality valuation criteria in an EIS and project approval),[263] and to sue private persons as private attorney's general to enforce externality conditions when the government fails to do so.[264] These simple changes would preserve the government's decision-making discretion, but would improve the decision-making and the accuracy of decision-making data by increasing

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260. 42 U.S.C. § 102 (1994), under which Congress directed:

> that, to the fullest extent possible: (1) the policies, regulations, and public laws of the United States *shall* be interpreted and administered in accordance with the policies set forth in this chapter, and (2) all agencies of the Federal Government *shall*—
>
> (A) utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking which may have an impact on man's environment; [and]
>
> (B) identify and develop methods and procedures . . . which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations. (emphasis added)

261. "NEPA provides authority to engage in activities that we might today gather under the rubric of 'sustainable development' . . . . A similar proposal, if made today, might be dismissed as hopelessly visionary. But it is already the law of the land." ENVIRONMENTAL LAW INSTITUTE, REDISCOVERING THE NATIONAL ENVIRONMENTAL POLICY ACT: BACK TO THE FUTURE 6 (1995).

262. Findings of No Significant Impact (FONSI) under which an agency might avoid performing an EIS should be subject to externality securitization. If the project produced externalities beyond the predicted insignificant effects that justified the FONSI, then that value of those externalities should be assessed against the project in some form of secured fashion. *See generally* 40 C.F.R. § 1508.13 *and* 40 C.F.R. § 1504.4.

263. Arguably, NEPA already imposes a nondiscretionary duty on the government to act within a reasonable period of time to incorporate environmental externalities into all decisions. *See* 42 U.S.C. § 4332 (1994).

264. *See* Hodas, *supra* note 226, 1616-27, 1651-55.

the accountability of the decision-maker and the project proponent.

This proposal would combine the substantive sustainability goals of NEPA with the traditional risk shifting skills of lawyers and the emerging discipline of environmental externality valuation. The proposal would also enhance long-term learning, allowing "law and society [to] interact as a dynamical system."[265] Post-project monitoring and feedback can produce refined and improved externality measurement criteria, resulting in better information for evaluating project designs and alternatives. Law will be the engine that both defines and implements sustainable development for our nation and the world.

265. *See* J.B. Ruhl & Harold J. Ruhl, Jr., *The Arrow of the Law in Modern Administrative States: Using Complexity Theory to Reveal the Diminishing Returns and the Increasing Risks the Burgeoning of Law Poses to Society*, 30 U.C. DAVIS L. REV. 405, 426 (1997).