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Ideas Without Institutions: The Paradox of Sustainable Development

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I. INTRODUCTION: THE DISCONNECT BETWEEN SUSTAINABLE DEVELOPMENT AND IMPLEMENTATION INSTITUTIONS

In the 1980s, sustainable development (SD) emerged as the international environmental ground norm for evaluating both public and private resource use choices. The story of SD's origins and success as a societal organizing concept are well known. SD is the fruit of an ambitious effort in the 1980s to bridge the chasm between developing and developed countries over the issue of environmental protection.[1] Environmental protection, or environmentalism, is primarily a movement that seeks to pay the bill for the social costs generated by centuries of unrestrained development in the name of progress.[2] The idea that the social costs of development should be assessed and mitigated works well in developed countries, which have the public and private capital needed to strike a new balance between the destruction and conservation of "nature." Unfortunately, the idea works less successfully, if at all, in capital-poor developing countries. After the 1972 United Nations Stockholm Conference, developed countries enthusiastically embraced the duty to protect the environment, but developing countries did not.[3] Environmental protection spread rapidly in the developed world, and many developing countries viewed it as a new form of colonialism.

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1. *See generally* NASSAU A. ADAMS, WORLDS APART: THE NORTH-SOUTH DIVIDE AND THE INTERNATIONAL SYSTEM (1993) (discussing international economic policy in the new era following the end of the Second World War).

2. *See, e.g.*, CLIVE PONTING, A GREEN HISTORY OF THE WORLD: THE ENVIRONMENT AND THE COLLAPSE OF GREAT CIVILIZATIONS (1991); J.R. MCNEILL, SOMETHING NEW UNDER THE SUN: AN ENVIRONMENTAL HISTORY OF THE TWENTIETH CENTURY WORLD 20-25 (2000) (The 20th century is unique for the intensity of human-produced disruption in natural systems and the consumption patterns the disruption has produced will make it difficult to adapt to changed circumstances).

3. *See* LYNTON KEITH CALDWELL, INTERNATIONAL ENVIRONMENTAL POLICY: EMERGENCE AND DIMENSIONS 63-64 (2d. 1990).

The irony of environmental protection is that both North and South are correct. Environmental protection must contain universal norms to address many global issues such as ozone depletion, global climate change, and rain forest destruction. In addition, the public health problems developing nations face require that pollution be abated at roughly the same levels as in developed countries. As many studies have concluded, however, effective environmental protection is a function of a nation's wealth. Thus, ways must be found to reduce poverty and improve the lot of nations in Africa, parts of Asia, and South and North America.[4] To this end, the Brundtland Commission (Commission) concluded that development and environmental protection must be reconciled, and that a new standard of development was accordingly necessary.[5] The result was SD, which the Commission's report defined as "development that meets the needs of the present without compromising the ability of future generations to meet their needs."[6] SD, as the formulation states, is a bridge between the present and future generations, and rests on the ethical principle that present generations have a duty to restrain their consumption of resource stocks to conserve them for future generations.[7]

The beauty of principles that attempt to reconcile inconsistent ideas is that each side can interpret those ideas to its advantage. The principal message of the Commission's report—that environmental protection and development are not incompatible—was welcomed by developing countries. Linking development and environmental protection vindicated their long-standing position that the North's argument that environmental protection is a universal imperative was simply a new form of colonialism imposed by the more powerful developed countries to preserve their access to raw commodities and to prevent industrial and political development.

While developing countries naturally embrace the development component of SD, developed countries, especially in Europe, were enthusiastic in their reception of SD for a different reason: because it offered a vision of a more humane, less materialistic society. As the 1996 Worldwatch Institute's State of the World

4. *See* UNITED NATIONS ENVIRONMENT PROGRAMME, POVERTY AND THE ENVIRONMENT (1995).

5. The Commission, led by the then Prime Minister of Norway, was formed to bridge the North-South impasse in environmental policy. The ensuing report elevated the concept of SDto a prominent place on the international political agenda and is widely considered the seminal articulation of the idea and the justification for integrating development and environmental protection.

6. WORLD COMM'N ON ENV'T & DEV., OUR COMMON FUTURE 43 (1987).

7. *See* EDITH BROWN WEISS, IN FAIRNESS TO FUTURE GENERATIONS: INTERNATIONAL LAW, COMMON PATRIMONY AND INTERGENERATION EQUITY 17-93 (1989).

proclaimed, "Sustainable global development requires that those who are more affluent adopt lifestyles within the planet's ecological means—in their use of energy for example."[8] To the developed world, the Commission's report vindicated the argument that environmental protection is a permanent part of the global political agenda. These nations thus prefer the term Environmentally Sustainable Development (ESD) to SD.

The conjoining of SD and ESD did not solve the problem of how to induce effective environmental protection in developing countries, but it achieved the Commission's immediate, primary purpose: it allowed the debate about environmental protection to proceed with the participation of most developing nations. Each side had to accept a key principle of the other. It also achieved the Commission's secondary purpose: environmental protection was enshrined as an integral part of the development debate. Other than in the United States, SD and ESD quickly became the "discourse" of national and international environmental policy. SD and ESD were formally married in the 1992 Rio Declaration on Environment and Development of the United Nations Conference on Environment and Development.[9] Principle 1 of the Declaration proclaims that "[h]uman beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature."[10] Principle 3 proclaims that the right to development—the core of the developing nation's legal argument that they can subordinate environmental protection to development—must equitably meet the developmental and environmental needs of future generations.[11] Principle 4 proclaims that environmental protection is an integral part of the development process.[12] In short, SD is, at least in the eyes of the developed world, necessarily ESD.

The ultimate test of a concept intended to have legal force and profound social and economic consequences is whether it changes behavior at both the individual and institutional levels.[13] The jury is still out on SD and ESD. Problems start with the Commission's formulation linking development and

8. WORLDWATCH INST., STATE OF THE WORLD 1996: A WORLDWATCH REPORT ON PROGRESS TOWARD A SUSTAINABLE SOCIETY 12 (1996).

9. United Nations Conference on Environment and Development: Rio Declaration on Environment and Development, June 14, 1992, 31 I.L.M 874.

10. *Id.* at 876.

11. *Id.* at 877.

12. *Id.*

13. *See* J.B. Ruhl, *Sustainable Development: A Five-Dimensional Algorithm for Environmental Law*, 18 STAN. ENVTL. L.J. 31 (1999); David R. Hodas, *The Role of Law in Defining Sustainable Development: NEPA Reconsidered*, 3 WIDENER L. SYMP. J., Fall 1998, at 1.

environmental protection,[14] a formulation that has met with much criticism. More radical environmentalists argue that environmental protection and development are not in fact compatible, and thus the concept will not further environmental protection and may indeed undermine it. To them, SD is simply repackaged rapid, unsustainable growth. China is a case in point for these critics. The Chinese government has embraced the idea of SD, but reports continue to trickle out that environmental problems remain unaddressed in the country's rapid and largely unrestrained growth.[15] There, SD or ESD is all rhetoric and no action. Other critics suggest that because SD attempted to marry two incompatible ideas, environmental protection and development, the resulting formulation has no consequences. These critics argue that the reconciliation came at the cost of a vacuous formulation that is doomed to irrelevance except in glossy policy documents, likely to be filed and forgotten.[16] There is considerable merit in this argument, as SD's concepts are so vague and open that any action can be justified as the practice of SD.[17] Nonetheless, SD contains three core ideas: (1) the acceptance of limitations on the exploitation and consumption of many resources, (2) the recognition that present generations owe conservation duties to future generations, and (3) the necessity to integrate these duties into individual as well as public choices. ESD adds a fourth: development must take place with far less environmental destruction than has been the case in the past.

These criticisms are powerful. SD and ESD are like the "smart growth" movement in the United States. No one is in favor of "dumb" growth, but all levels of government practice it. However, the post-Rio de Janeiro story of SD and ESD has two contradictory narratives. First, the principles of SD and ESD have in fact been quickly adopted throughout much of the world as *the* standard against which public policy should be judged. This is particularly true in developing countries such as China, even if the immediate consequences are not evident. Europe has equally enthusiastically embraced these ideas. As it now does on all international environmental protection issues, the United States lags

14. See discussion *supra* Part I.

15. *See China's Pollution: Exposing a Dirty Secret*, ECONOMIST, July 21, 2001, at 34.

16. *See, e.g.*, CALDWELL, *supra* note 3, at 274-75; Ronnie Lipschutz, *Wasn't The Future Wonderful? Resources, Environment, and the Emerging Myth of Global Sustainable Development*, 2 COLO. J. INT'L&POL'Y 35 (1991).

17. *See* Sanford E. Gaines, *Rethinking Environmental Protection, Competitiveness, and International Trade*, 1997 U. CHI. LEGAL F. 231, 231-32 (1997). *But see* J.B. Ruhl, *The Seven Degrees of Relevance: Why Should Real-World Environmental Attorneys Care Now About Sustainable Development Policy?*, 8 DUKE ENVTL. L. &.POL'Y F. 273, 273 (1998).

behind many parts of the world in its commitment to SD.[18] Thus, one can speculate that eventually specific activities, and not merely policy, will be judged and modified according to the standards of SD and ESD.[19] This said, the second narrative is that this implementation will never take place, because there is a virtual disconnect between the adoption of SD and ESD as policy standards and the institutional structures necessary to implement them.[20] This disconnect exists in almost all countries regardless of their political system.[21] It is, in my opinion, the more accurate and important narrative relating to SD, and is the subject of this article.

This article seeks to explain this institutional disconnect. I reject the arguments of the deep ecology critics of SD and ESD as well as the arguments of the skeptics that the concepts embodied in SD and ESD mean all things to all people. SD and ESD do contain core principles that, if implemented, would radically alter the way that we consume resources. Specifically, the implementation of SD and ESD would require that governance institutions, representative bodies, laws that assign the rights and conditions for resource use, and agencies that implement them must all be restructured to encourage more "balanced" extraction, production, and consumptive patterns. It will not be enough to put a "Save the Whales" sticker on a lumbering, gas-guzzling sport utility vehicle. The basic reason for the disconnect between SD and ESD and governance institutions is that our current institutions are structured to encourage unsustainable resource use. They do this by providing deeply embedded incentives for immediate resource consumption that, at best, reflects a small

18. The Clinton administration did issue several reports on SD and ESD and attempted to make the concepts the focus on specific policy studies. *See* PRESIDENT'S COUNCIL ON SUSTAINABLE DEV., SUSTAINABLE AMERICA: A NEW CONSENSUS FOR PROSPERITY, OPPORTUNITY, & A HEALTHY ENV'T FOR THE FUTURE (1996); W. WATER POL'Y REVIEW ADVISORY COMMISSION, WATER IN THE WEST: CHALLENGE FOR THE NEXT CENTURY (1998).

19. *See* Ruhl, *supra* note 13.

20. The paucity of thinking about the necessary institutions to guide the transition to ESD is acknowledged and the existing literature summarized in William C. Clark, *A Transition Toward Sustainability*, 27 ECOLOGY L.Q. 1021, 1064-69 (2001). One of the best explorations of the possible role for sustainable development is John C. Dernbach, *Sustainable Development as a Framework for National Governance*, 49 CASE W. L. REV. 1 (1998).

21. Chile is an interesting case study. After the fall of the Pinochet dictatorship in 1990, a left-center coalition has governed Chile. The Pinochet era's embrace of deregulation and the free market has left the landscape suffering from serious degradation and an economy which still rests largely on agricultural commodities, mineral, and timber exports. Since 1990, the government has adopted the discourse of stewardship and sustainability and put in place a basic U.S.-European-style system of environmental regulation. However, a recent analysis of Chilean environmental politics concludes that the reforms are not effective because "they have been constructed and put into practice in a polity and society in which elitist and neoliberal principles, practices and priorities prevail." David Carruthers, *Politics Environmental in Chile: Legacies of Dictatorship and Democracy*, 22 Third World Q. 343, 349 (2001). Thus, "Chile maintains a political economy often inimical to sustainability. . . ." *Id.* at 354.

percentage of the total social cost of consumption, and by offering few, if any, alternative incentives for exploitation and consumption that is more consistent with SD and ESD.[22]

II. THE NECESSARY CONDITIONS FOR SD AND ESD

Two conditions are necessary to the success of ESD. First, the concept of ESD must be embodied in a set of legal principles that constrain behavior, in order that it may be integrated into existing legal systems. Second, an institutional infrastructure must exist to implement those principles. Otherwise, SD will remain an unrealized aspiration. SD and ESD are not self-executing initiatives. They must be consistently defined and encouraged at the highest levels of government. Law can give the concept of SD legitimacy, but only an institutional infrastructure can actually implement the idea by applying it to specific resource choices. The focus of this paper is primarily on the institutional implementation of effective SD and ESD initiatives by governments. The rationale for this focus is simple: effective environmental protection requires a strong public law and institutional framework. This is, of course, only a partial recipe for the effective realization of the goals of SD and ESD, as full implementation requires a mosaic of public and private initiatives.

Fundamentally, the implementation of SD will require institutions designed to produce substantive policy changes. SD and ESD can borrow some existing environmental protection strategies, but it will be necessary to correct the fundamental flaws in key protection strategies. There is a tendency to equate SD and ESD with the more effective implementation of existing environmental goals. Environmental protection is indeed an integral part of SD and ESD, but it is necessary to distinguish SD and ESD from classic environmental regulation. The purposes of environmental regulation can be roughly characterized as pollution control and biodiversity conservation.[23] These objectives are achieved primarily through the regulation of large-scale private and public activities and the use of a variety of procedural instruments to improve environmental assessment and

22. See *infra* notes 39 to 46, *infra* for a discussion of the importance of alternative incentives in the implementation of SD and ESD.

23. RICHARD N.L. ANDREWS, MANAGING THE ENVIRONMENT, MANAGING OURSELVES: A HISTORY OF AMERICAN ENVIRONMENTAL POLICY 4 (1999) offers a three-fold characterization of pollution control, sustainable natural resources management, and preservation of natural and cultural heritage, but this does not capture the extent to which biodiversity conservation has replaced natural heritage preservation and influenced many aspects of natural resources management.

planning. The National Environmental Policy Act (NEPA) remains the foundation of environmental assessment. The core idea of NEPA is that decisionmakers must consider a wide range of alternatives to the agency's usual way of doing business, and this principle can be adapted to the implementation of SD and ESD.[24] It will, however, require a fundamental change from a procedural approach to a procedural instrument that dictates substantive outcomes.[25]

SD and ESD cannot be divorced from environmental law, and their implementation will take place in the context of environmental law's evolution. This assertation is both positive and negative for the effective implementation of SD and ESD. Environmental law is evolving, at least in the eyes of many observers, from centralized planning to a more decentralized, inclusive system that increasingly relies on markets and on voluntary compliance with environmental norms.[26] It is, however, clear that the institutional framework will not be a simple command and control structure, but rather a complex network of sanctions and incentives, an evolving mix of public regulation and private initiatives.

Governments cannot be the sole implementers of ESD. The private sector, from large corporations to individuals, has a large role to play in the implementation of ESD and SD. In fact, we are seeing more and more cases where SD and ESD are being implemented by non-governmental organizations (NGOs) that identify leverage points in the production chain leading to retail sale to induce adherence to SD and ESD. For example, pressure on home-improvement retail stores in the United States and Great Britain induced them to sell only timber produced from certified SD forests.[27] Similarly, contrary to its earlier practice, McDonald's now refuses to purchase beef from rain forests or recently destroyed rain forests.[28] This said, however, almost all the success in environmental law has come either from the direct application of command and control regulation or from private desires to innovate to avoid the application of

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24. For a discussion of this concept, see *infra* Part III.

25. As William L. Andreen has observed, "[t]he impact statement or assessment is not an end in itself, but a means to produce better substantive decisions." William Andreen, *Environmental Law and International Assistance: The Challenge of Strengthening Environmental Law in the Developing World*, 25 COLUM.J.ENVTL. L. 17, 42 (2000). The need to expand the concept of environmental assessment is discussed more fully in *infra* Part V.

26. *See* Daniel C. Esty & Marian R. Chertow, *A Vision for the Future*, *in* THINKING ECOLOGICALLY: THE NEXT GENERATION OF ENVIRONMENTAL POLICY 231 (Daniel C. Esty & Marian R. Chertow eds., 1997).

27. James Salzman, *Beyond the Smokestack: Environmental Protection in the Service Economy*, 47 UCLA L. REV. 411, 463 (1999).

28. *Id.*

command and control regulation. The project of joint public and private implementation must rest on a strong, if only by default, public role, because the current incentives for SD and ESD are basically the fear that the alternative of non-implementation will be worse.

Existing environmental protection strategies do not promote SD and ESD, because they generally do not address the root causes of environmental degradation—the promotion of excessive levels of resource exploitation and consumption—but instead seek only to minimize the worst aspects of activities that threaten to degrade the environment. Sadly, but not surprisingly, three plus decades of environmental regulation have not changed the fundamental structure of unsustainable resource consumption. We have, of course, curbed some of the worst sources of pollution—although perhaps not the most important—and preserved some remnants of biodiversity.[29] But, as many students of environmental regulation have forcefully observed, environmental regulation is a modest overlay on the liberal institutions of private property and consumer sovereignty.[30] Regulation does not challenge the fundamental idea that individuals are allowed to determine the amount of their resource consumption, subject to the caveat that they internalize some portion of the social costs of that consumption. The external cost-minimization justification for environmental regulation contemplates the possibility of resource use reduction as the gap between private and social cost is narrowed. There may not be much evidence of serious changes in consumption patterns. In contrast, SD seeks to identify the root causes of behaviors that cause environmental degradation and to change them substantially. It seeks to modify rather than mitigate. SD is thus a much more radical ideal than environmental law, especially with respect to the laws put in place between 1969 and1980. These "first generation" laws assume that environmental protection can be accomplished with minimal disruption of existing activities and within the framework of the Western liberal tradition and the institutions we have erected to maintain that tradition. As the next section illustrates, SD poses deeper challenges to this tradition and its institutions.

29. *See* Charles W. Powers & Marian R. Chertow, *Industrial Ecology*, *in* THINKING ECOLOGICALLY: THE NEXT GENERATION OF ENVIRONMENTAL POLICY 20, 20-23 (Marian R. Chertow & Daniel C. Esty eds., 1997).

30. *See* David A. Westbrook, *Liberal Environmental Jurisprudence*, 27 U.C. DAVIS L. REV. 619, 680-708 (1994).

III. WHY IT IS UNLIKELY THAT INSTITUTIONS WILL IMPLEMENT SD AND ESD

There are two explanations for the failure of new institutions to promote SD and ESD. The first is philosophical. SD requires a radical redefinition of individual responsibility. The second is structural. Our republican institutions and the laws, regulatory, and other programs that they have produced, create incentives to choose unsustainable and environmentally unsustainable practices over sustainable ones.

A. It's Not My Fault, It's Yours[31]

In the Western world, SD and ESD challenge the centuries-long project to put the individual, rather than religious communities or the state, at the center of the legal and political universe. The placement of the individual at the center of the Western intellectual tradition limits individual responsibility for "bad" behavior to two basic situations: (1) physical or (2) financial harm to another human being. This is the core of our criminal law and tort systems. For example, the hardest crimes to justify are "victimless" ones such as prostitution and gambling. As I have analyzed in more detail elsewhere,[32] regulation of environmental pollution and toxic substances is premised largely on the need for governments to protect individuals from involuntary exposure to dangerous pollutants. There is no room for the idea of individual responsibility to prevent pollution. Existing pollution regulation therefore does not challenge the fundamental idea that individuals may determine the amount of resources they use, provided they internalize some portion of the demonstrated social costs of consumption.[33]

B. Representative Government Can Do Little More than Preserve the Status Quo

Any concept that seeks to identify and modify the root causes of environmental degradation will face formidable, perhaps insurmountable,

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31. RICHARD WHITE, "IT'S YOUR MISFORTUNE AND NONE OF MY OWN:" A HISTORY OF THE AMERICAN WEST (1991).

32. A. Dan Tarlock, *Genetic Susceptibility and Environmental Risk Assessment: An Emerging Link*, 30 ENVTL. L. REP. 10277 (2000).

33. Much of the case for the use of information disclosure as a regulatory tool is that it will encourage greater incentives to reduce harmful discharges. *See* Bradley C. Karkkanien, *Information As Environmental Regulation: TRI and Performance Benchmarking, Precursor to a New Paradigm?*, 89 GEO. L.J. 257, 295 (2001).

obstacles. SD and ESD do no less than challenge the two core functions of the modern state. The first core function is the protection of the state from external aggression through military means. SD and ESD challenge this goal by linking social unrest with unsustainable development. National security has traditionally been defined primarily as a problem of adequate military might, but environmentalists somewhat successfully have linked environmental destruction and the lack of SD with political instability and possible civil unrest or war.[34] The second core function, assumed by most modern states, is to enhance human welfare. This goal has traditionally been met through the promotion of economic development. A healthy rate of economic growth and a reasonable distribution of wealth form the foundation for the effective realization and protection of the full range of political, cultural and social human rights. Unsustainable development is the price that nations have paid to maintain external and internal security.

It is, therefore, questionable whether modern government is adequately prepared for SD. A few political scientists have raised the possibility that more centralized, autocratic governments are better suited to achieve environmental protection,[35] but this idea has been dropped from discourse, especially after previous links between nature worship and Nazism were unearthed.[36]

Modern representative government seems to exhibit two related characteristics: (1) minimal, or decreased, performance expectations, and (2) gridlock. Today, political institutions primarily perform two basic functions: (1) defense of the status quo against proposals to change and (2) redistribution of diminishing financial resources. There are many reasons for this including the triumph of market allocation over competing theories of state organization, the inability of European social democracies to maintain the welfare at its current levels, and the increasingly tight link between wealth and access to the political process. There are, of course, exceptions, but I regard these as positive statements, and I leave to political scientists a full explanation. Not only does SD cut against the grain of modern Western culture, it must be implemented in an era

34. For the classic articulation of this argument, see Jessica Tuchman Mathews, *Redefining Security*, 68 FOREIGN AFF. 162, 162-68 (1989).

35. The first serious effort was WILLIAM OPHULS, ECOLOGY AND THE POLITICS OF SCARCITY (1977), but the second edition, WILLIAM OPHULS & A. STEPHEN BOYAN, JR., ECOLOGY AND THE POLITICS OF SCARCITY REVISITED: THE UNRAVELING OF THE AMERICAN DREAM 281-307 (1992) responded to criticisms that environmentalism would require a Platonic dictatorship by stressing the democratic nature of serious environmentalism.

36. *E.g.*, LUC FERRY, THE NEW ECOLOGICAL ORDER 92 (Carol Volk trans., 1995).

when it is much more difficult for governments to formulate and carry out bold new policy initiatives.

The weakening of government may have important consequences for the fate of SD, because this weakening will make it much more difficult to implement SD or ESD. That implementation requires legislatures to undertake reforms, often with considerable risk, that cut against the status quo and the deeply entrenched beliefs and behaviors that support it.[37] The benefits and costs of new strategies will not be known for some time. In addition, considerable subsidies are often necessary to launch SD and ESD. U.S. energy policy illustrates this problem. The United States now imports more petroleum than at the time of 1973 Organization of Petroleum Exporting Countries (OPEC) embargoes.[38] The nation has been unable to start a meaningful transition from non-renewable to renewable energy sources, and has barely scratched the surface of energy conservation.

IV. AGRICULTURE: A CASE STUDY IN UNSUSTAINABILITY

A corollary of gridlock is that reforms intended to move toward SD often result in an increase in the level of unsustainable development. Agriculture, along with energy production and consumption, is the poster child of unsustainable activities that occur because of deeply embedded incentives to marginalize sustainable alternatives.[39] Pesticide use is a classic example of an unsustainable agricultural practice. Since 1972, the Environmental Protection Agency has had the power to ban the use of pesticides that pose significant, long-term public health or environmental risks.[40] However, once a pesticide is allowed on the market, its application by users is not controlled.[41] Continued large-scale pesticide use is one of the major reasons that non-point source pollution, much of it from agricultural run-off, continues to offset the gains from the control of point

37. As Nicholas Robinson has observed, "[v]ested economic interests control decisions over many natural resources, and are particularly ill-suited to define changes in their natural resource practices in order to accommodate new policy to cope with global environmental trends." Nicholas A. Robinson, *Legal Systems, Decisionmaking, and the Science of Earth's Systems: Procedural Missing Links*, 27 ECOLOGY L.Q. 1077, 1090-91 (2000).

38. U.S. oil companies have diversified their overseas investments and much more oil now comes from non-OPEC countries; Canada, Great Britain, Norway, and Latin America are our new sources of supply. FRED BOSSELMAN ET AL., ENERGY, ECONOMICS & THE ENVIRONMENT.: CASES AND MATERIALS 1099 (2000).

39. COMM. ON THE ROLE OF ALTERNATIVE FARMING METHODS IN MODERN PROD. AGRIC., NAT'L RESEARCH COUNCIL, ALTERNATIVE AGRICULTURE 10 (1989) [hereinafter ALTERNATIVE AGRICULTURE].

40. *See* 7 U.S.C. §§ 136-136y (1994).

41. See WILLIAM H. RODGERS, JR., ENVIRONMENTAL LAW 394-03 (2d ed. 1994) for a discussion of how the focus on pesticide safety promotes the unrestrained use of registered pesticides.

sources of pollution.[42] The major problem with pesticide use, however, is the arms race dilemma. Insects have considerable capacity to adapt to pesticide uses by developing higher tolerance levels. Thus, it takes continually more pesticides to achieve the same kill ratio. Since the 1950s, alternative pest control techniques, known as Integrated Pest Management, have existed, but their application to major crops remains limited.[43]

In most cases, the incentives to engage in unsustainable agricultural practices come from government subsidies. Subsidies are very difficult to eliminate, because they develop powerful political constituencies. A good example of this problem is the Agricultural Market Transition Act of 1996.[44] The Act was intended to lessen the dependence of many farmers on a single crop tied to a lucrative federal price-support program. To wean farmers from dependency on federal checks, federal price supports for key crops were frozen at 1995 levels: an aggregate of six billion dollars.[45] In return, farmers were given "production flexibility contracts" to replace the existing scheme of acreage allotments and were guaranteed parity prices if the market price for their crops fell below the Department of Agricultural parity price.[46] Farmers were given greater discretion about crop choice, and this could have led to more sustainable cropping patterns.

So far, the farm program has been a failure. Farm income fell so much between 1996 and 1998 that Congress appropriated an additional thirty million dollars for crop payments and restored many production controls.[47] In addition, the preservation of the status quo prevented many more rational cropping choices. Farmers were prohibited from switching to many high-value vegetable crops, because these crops do not receive price supports.[48] Congress concluded that allowing such switches would give farmers with flexibility contracts an unfair competitive advantage over unsubsidized vegetable farmers. The cycle of subsidy continues. The George W. Bush administration tried to shift the focus of

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42. U.S. ENVTL. PROT. AGENCY, NAT'L WATER QUALITY INVENTORY, 1996 REPORT TO CONG. ES-15(1998), *available at* http://www.epa.gov/ow/resources/9698/chap6h.html (revised Jan. 19, 1999).

43. ALTERNATIVE AGRICULTURE, *supra* note 39, at 175-89; *See* STEPHEN R. PALUMBI, THE EVOLUTION EXPLOSION 131-61 (2001).

44. 7 U.S.C.A § 7201 (West 1999).

45. *See* Jeffrey A. Peterson, *The 1996 Farm Bill: What to (Re)Do in 2002*, 11 KAN. J.L. & PUB POL'Y 65, 71 (2001).

46. *See* 7 U.S.C.A. § 7211 (West 1999).

47. The 1996 Farm Bill authorized $35.6 billion in direct income payments to farmers. *The Record, Issue Brief No. 2*, U.S. AGRIC. POLICY (Coalition for a Competitive Food & Agricultural System, Washington, DC), *at* http://www.ccfas.org/US_AgPol_02.pdf (last visited Nov. 18, 2001).

48. *Id.*

the 2001 Farm Bill, which was still pending in Congress as of mid-October 2001, from the continued annual payment of some $5 billion directly to farmers to one that created greater incentives for land conservation. However, the House defeated the Administration's proposals in favor of the usual subsidy pattern.[49]

V. CONCLUSION: EMBEDDING SD IN GOVERNMENT INSTITUTIONS

The history of environmental law provides some valuable lessons on how SD might be embedded into government institutions. In brief, the mistakes made in the passage of NEPA should not be repeated. NEPA's architects made a crucial decision to opt for a general policy of environmental protection that would apply across the board to all government agencies rather than to amend major government acts to provide greater incentives and duties for specific agencies to engage in environmental protection. This decision doomed NEPA as a statute that would never reach its potential. First, no definition of environmental quality was provided. Second, procedure was exalted over substance. Third, environmental protection remains locked in a negative rather than a positive mode. Environmental regulation began as a guerilla movement to stop public and private actors from doing what seemed like bad things, bulldozing a wetland, a pristine forest, or discharging untreated wastes into a river. The movement never developed a positive vision of an environmentally sustainable society, and thus the emphasis remains on controlling undesirable behavior instead of inducing desirable outcomes.[50]

SD and ESD can also benefit from the lessons learned from thirty-plus years of federal environmental protection. The first step in the development of effective SD and ESD is to develop indices of SD and ESD, as is just now occurring with respect to environmental protection.[51] These indices will be shaped by the concept's intellectual heritage.

Economists have long struggled to determine the most efficient way to exploit non-renewable resources, such as oil and gas reservoirs, and potentially renewable resources, such as stocks of fish. They have long realized that efficiency requires a comparison between the present and future value of a non-

49. *See* Elizabeth Becker, *House Rejects an Effort to Redirect Farm Policy*, N.Y. TIMES, Oct. 5, 2001, at A14.

50. *See* A. Dan Tarlock, *The Future of Environmental "Rule of Law" Litigation*, 17 PACE ENVTL. L. REV. 237, 244-47 (2000).

51. *See generally* COMM. TO EVALUATE INDICATORS FOR MONITORING AQUATIC & TERRESTRIAL ENV'TS, NAT'L RESEARCH COUNCIL, ECOLOGICAL INDICATORS FOR THE NATION (2000).

renewable resource,[52] and similar calculations must be made for resources that can switch from renewable to non-renewable. The calculations are complex, but the basic point is that limits must be imposed to conserve the resource for the immediate as well as the long-range future. Thus, the idea that the consumption of exhaustible and fragile resources must be limited is the first major principle of SD.

The second idea—the assumption of ethical obligations to future generations—follows from the first. Traditional economists have not been terribly impressed with the need to assume such obligations, given the long history of resource substitution and continued progress.[53] However, the work of Edith Brown Weiss[54] and others has converted the duty to conserve resources for future generations into the fundamental international environmental ethic. It is the ethical basis for many nations such as the United States, which are well prepared to adapt to projected global warming, and to participate in an international effort to reduce carbon dioxide and other greenhouse gas emissions. Enormous problems remain in working out what the precise duties stemming from that ethic are, but the core principle that we must restrain present consumption for the benefit of future generations is a powerful idea that runs counter to the long-standing Western belief in progress.

The third idea is that SD requires implementation by both individuals and governments. This is an important contribution of ESD to SD. Environmental protection is moving slowly from the first to the second generation. The first generation was characterized by top-down regulation of the "other" large private and public sources of pollution. This strategy has been quite successful, but we now realize that most of the major sources of pollution such as non-point water pollution and ozone come from thousands of small sources. Behavior modification must therefore be brought down from the corporate and governmental to the individual level as well. More important, in an era of the declining influence of governments, informed consumer choice is a powerful leverage point to reinforce environmentally sustainable practices throughout the world.

The second mistake to rectify is the exaltation of process over substance. The decreasing effectiveness of NEPA, the foundation of modern environmental

52. *See generally* Harold Hotelling, *The Economics of Exhaustible Resources*, 39 J. POL. ECON. 137 (1931).

53. *See, e.g.*, Stephen F. Williams, *Running Out: The Problem of Exhaustible Resources*, 7 J. LEGAL STUD. 165 (1978).

54. WEISS, *supra* note 7.

law, illustrates this. NEPA's goal was originally to infuse substantive environmental considerations in all relevant federal programs and activities. But, as defined by courts, the goal of the process is to produce an adequate environmental impact statement divorced from the merits of the action. Any change in agency behavior is indirect rather than direct. In contrast, the goal of any process designed to implement SD and ESD is to change behavior. SD and ESD require a careful congressional review of statutes and programs to determine if they advance or hinder the achievement of SD and ESD indices. Once any defects are identified, agencies should be forced to develop a substantive correction strategy. The NEPA requirement that the agency consider a reasonable range of alternatives can be modified to achieve this result. Agencies should be required to choose a limited number of alternatives, all of which move in the direction of SD and ESD. Maintaining the status quo or adopting only token modifications should not be an option. The relevant issues for the choice of alternatives are the economic, environmental, and social costs of program change, the available technologies and methodologies to implement effective change, and the appropriate time horizon to make a fair transition from unsustainable to sustainable resource exploitation and use practice. This strategy will not guarantee the effective pursuit of SD and ESD, but it will make it easier to focus on the critical issues that must be faced if governments are to make the transition from unsustainability to sustainability.