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Nicholas A. Robinson, International Trends in Environmental Impact Assessment, 19 B.C. Env'tl. Aff. L. Rev. 591 (1992), <http://digitalcommons.pace.edu/lawfaculty/382/>.

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INTERNATIONAL TRENDS IN ENVIRONMENTAL IMPACT ASSESSMENT†

*Nicholas A. Robinson**

I. INTRODUCTION

Environmental impact assessment (EIA) today is increasingly a routine decisionmaking technique worldwide. Since Congress conceived EIA in section 102(2)(C) of the National Environmental Policy Act (NEPA) of 1969, 42 U.S.C. § 4332(2)(C), more than seventy-five jurisdictions have required EIA by law. For example, when the European Community (EC) issued a directive in 1985 requiring that its members adopt EIA procedures, the Dutch and French already had had considerable experience with EIA. Indeed, except for the other EC member states, each legislature that has followed the lead of Congress in enacting EIA has done so unilaterally. No duty imposed under a framework treaty or the exhortation of a United Nations resolution has produced this result. Rather, the world has embraced EIA on its own merits.

EIA is a proven technique used to ensure that governmental actions avoid or minimize unanticipated adverse effects. It provides a process for institutionalizing *foresight*. While its essential structure is substantially the same throughout the world, EIA is flexible and has been adapted successfully to operate within the cultural, political, and socioeconomic conditions in each jurisdiction that has enacted an EIA law.

This paper explores the range of legislation that has created the EIA mandate. A more comprehensive study of all EIA laws is under

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preparation by the Commission on Environmental Law of the International Union for the Conservation of Nature and Natural Resources, but this study will not be complete until 1992. In the absence of such an exhaustive analysis, this paper sketches the global legislative trends in EIA.

II. ENVIRONMENTAL STEWARDSHIP

The need for EIA was apparent before the creation of the EIA process. President Theodore Roosevelt, in his 1908 White House Conference on Conservation, called for "foresight":

We have become great in a material sense because of the lavish use of our resources, and we have just reason to be proud of our growth. But the time has come to inquire seriously what will happen when our forests are gone . . . when the soils shall have been further impoverished and washed into streams These questions do not relate only to the next century or to the next generation. One distinguishing characteristic of really civilized men is foresight . . . and if we do not exercise that foresight, dark will be the future.

More recently, United States Secretary of State James A. Baker has articulated the need for EIA, both in his prior post as Treasury Secretary and as Secretary of State. In 1987, he proposed that the World Bank institute EIA procedures:

[G]rowth and development are essential for conservation, and conservation is essential for growth. Despite some assertions to the contrary, these concepts are not mutually exclusive. In fact, they should not necessarily be deemed mutually antagonistic. I am not saying that growth and development do not put new and difficult strains on the natural environment. The lessons of centuries is that they often do—and with tragic results, when men and women are careless I think we have to pursue, both in the United States and abroad, a philosophy of growth combined with conservation What [the United States] wants the World Bank and the other development banks to do is make environmental analysis, systematically and routinely, a central part of every loan proposal. We want the Bank to draw on the expertise of trained environmental analysts—both from its own staff and outside consultants—who know developing countries and can assess just what impacts any new project or policy will have on the ecology of those countries. It should then incorporate that analysis into its lending decisions and assistance from the very beginning of the lending process.

In response to the urgings of representatives from both governments and nongovernmental organizations such as the Environmental Defense Fund (Rich 1985), the World Bank has adopted its initial rules on environmental assessment. These procedures are modeled on NEPA and knowledge gleaned from EIA in Australia, Canada, and elsewhere. The other multilateral development banks also are putting Secretary Baker's exhortation into practice.

NEPA anticipates possible environmental problems and identifies alternative courses of action to avoid or mitigate adverse impacts. When newly confirmed as Secretary of State, Baker urged NEPA-like, reasoned prudence in his address to the Intergovernmental Panel on Climate Change (IPCC), which the United Nations Environment Programme and the World Meteorological Organization convened to evaluate global warming. In 1989, Secretary Baker told the IPCC that "the political ecology is now ripe for action," and that while scientists continue to refine existing knowledge about the dangers and dynamics of global climate change, "we can probably not afford to wait until all of the uncertainties have been resolved before we do act." (Shabecoff 1989) The process of making cautious and informed decisions, with preventative measures to avert unwanted environmental degradation, is the essence of EIA.

Just as all of Canada's provinces and twenty-five states in the United States have enacted EIA procedures (New York State Bar Association & Council on Environmental Quality 1989; Robinson 1982), some of which include innovations improving upon NEPA's techniques, so also other countries have found ways to make EIA more effective when they have adopted EIA laws. Thoughtful adaptation rather than rote imitation of NEPA's environmental impact statement (EIS) concept has characterized the statute's transfer abroad.

III. WORLDWIDE EIA TRENDS

In examining EIA practices around the world, one finds that each jurisdiction has tailored its EIA process to meet its geographic characteristics and environmental needs, as well as its level of socioeconomic development and cultural and governmental traditions. There are seven discernable trends in EIA practice.

First, EIA works in all political systems. It can be and has been established in common law, civil law, and socialist traditions. It is equally useful in developed and developing countries. Small villages, state agencies, major military divisions, regional authorities, and

international agencies employ it, *mutatis mutandis*. The technique is adaptable to meet the type of governmental decisionmaking involved.

Second, while EIA is a young, even pioneering, analytic tool for decisionmakers, its use is spreading fairly rapidly. Different jurisdictions modify and often refine the EIA process as they adopt it, and there is a continuous sharing of methodologies. For instance, EIA works best when an independent authority is available to oversee the process. Under NEPA, courts provide this through judicial review. In jurisdictions without a comparable tradition of litigation, analogous administrative arrangements can provide oversight. The Dutch EIA process has adapted the concept of an independent commission to judge the sufficiency of EISs from Canadian EIA, in which authorities independent of the decisionmaker have the tasks of delineating the scope of the EIA and preparing the EIA. Similarly, Massachusetts developed the step known as "scoping" as a means to provide better substantive focus for each EIA, and the Council on Environmental Quality (CEQ) in turn adopted the scoping process when it revised the NEPA regulations. This dynamic system of sharing innovative techniques is likely to continue as EIA becomes more widely adopted.

Third, EIA is effective in providing local people with an opportunity to be heard and to participate in decisionmaking that affects their environment. EIA facilitates democratic decisionmaking and consensus building regarding new development. For example, the EIA process in the Soviet Union, known as Ecological Expertise, has allowed residents in the Altai Alps to review plans for a proposed hydroelectric facility, require their revision, and review them again. EIA equally gives voice to the often unrepresented interests of indigenous peoples and inner-city communities. To be sure, the EIA process can be contentious when countervailing interests use EIA studies to emphasize their various positions. In a democracy, however, it is better to have the reasoned examination of these contending views in the factually informed context of EIA than to ignore them or treat them exclusively as political views.

Fourth, EIA is demonstrably effective in marshaling environmental data for decisionmakers. It invariably encourages interagency communication and consultation. Experience reveals that environmental issues that were unanticipated in the process of project preparation in fact are identified before unintended damage occurs.

Fifth, despite EIA's evident value, its usefulness is not easy to establish at the outset. Decisionmakers and administrators almost

always resist EIA until they become educated about its utility. There is of course innate institutional resistance to any change—many agency managers have a strong sense of their traditional mission and have not added the coequal duty of environmental stewardship to their “primary” responsibilities. Moreover, in many agencies there is a positive preference for short-term, “business as usual” procedures. Busy administrators doubt that there is enough time to try new, apparently slower procedures. Some fear that EIA poses a risk to their projects or authority. These concerns result in politicians and civil servants opposing the use of EIA and advancing arguments either to counter the establishment of EIA procedures or to avoid using them once they are in place.

In developing countries, opponents of EIA variously have labeled the process “anti-development, expensive, or a mere paper tiger.” (Ahmad & Samny 1985) In developed countries, the canard often has been that the EIS process involves the excessively time-consuming generation of too many studies that are never read. Often, the inefficiency of a single protracted EIA or occasional mistakes in an EIA process are marshaled as excuses to abolish EIA altogether or, more often, to exempt a project from EIA. In developed countries, critics of EIA often generalize from an isolated, notorious instance of an EIA in trouble and assume without verification that the whole system has flaws. Such critics ignore the thousands of EIA applications successfully completed each year throughout North America and elsewhere.

Foreign assistance agencies in particular have resisted the use of EIA—for instance, for development aid grants—on such diverse grounds as the belief that a donor’s EIA would infringe on the recipient’s sovereignty or complicate the administration of aid. As the negative environmental impacts of the High Aswan Dam in Egypt demonstrate (George 1972; Kassas 1972), however, it is the *failure* to study and avoid the unintended adverse environmental effects of overseas aid that harms a recipient nation. These effects often not only wipe out the value of the aid but actually result in additional expenditures to repair the damage.

The EC requires that states routinely examine the environmental impacts of their actions in other states. Canada’s courts also require that impacts abroad be evaluated.¹ In the case of NEPA, however,

¹ See *Canadian Wildlife Fed’n v. Minister of the Environment and Saskatchewan Water Corp.*, Docket No. T-80-89 (Federal Court of Canada, Trial Division, Ottawa, Apr. 10, 1989). In this case, the court granted *mandamus* compelling a full EIA for a proposed project—the

those who wish to avoid using EIA suggest that studying the environmental consequences of United States actions abroad would constitute extraterritorial interference in other states' affairs rather than an attempt to ensure that the United States does not cause unintended harm in other jurisdictions. Invariably, whether within a state, across its borders, or abroad, the opponents of using EIA are persons who rarely or never have participated personally in the process. As EIA is extended to new spheres of decisionmaking, this trend of initial resistance gradually is declining.

Sixth, there is a tendency to use EIA only for large projects. Many nations have promulgated lists setting out the types of projects that require EIA. A few states have set a low threshold for EIA—they recognize that even a small project can cause unintended environmental harm. In jurisdictions like California and New York even small villages must follow EIA procedures. Because environmental significance is not merely a function of "bigness," the trends toward using lists and restricting EIA to large projects do not assure the effective employment of EIA. The tendency to limit EIA to large projects reflects a desire for administrative convenience rather than a mature application of the technique. Similarly, experience suggests that the use of lists as a threshold is evidence of an immature EIA process in which resort to a clear rule of thumb is preferable to a more sophisticated and initially open analysis based on scientific data.

Seventh, EIA is not uniformly successful. Even in jurisdictions with many years of EIA experience, it is rare to require postproject monitoring to find out whether an EIA accurately anticipated all adverse impacts or whether mitigation plans in fact were successful. Where an EIA process lacks an oversight requirement, politically or economically persuasive project sponsors more easily can subvert it. If the process lacks an automatic public disclosure requirement, as in Thailand, then its educational, consensus building, and peer review benefits are lost. When an agency's decisionmakers are inept in administering EIA, the adversaries of a proposed project can delay the project's start until it loses its essential political or economic sponsors. In sum, there is a constant need to evaluate the effectiveness of each jurisdiction's EIA process: to improve it, streamline it, and weed out its flaws.

Rafferty/Alameda Dam project—that was planned in Saskatchewan's Souris River Basin pursuant to the International River Improvements Act. According to the court, environmental impacts, including impacts in the state of North Dakota in the United States and the province of Manitoba in Canada, had not been adequately considered.

The worldwide experiences with EIA are too extensive to cover in detail in this short paper. Nonetheless, it may be useful to examine briefly two aspects of EIA: its form and functions from jurisdiction to jurisdiction, and its use to cope with global, transnational, and transboundary environmental impacts.

IV. COMPARATIVE EIA

EIA is best understood by comparing how different jurisdictions have instituted it. Both nations and the provinces and states of nations learn from each other's experiences with EIA. To appreciate NEPA's limitations fully, for example, it is instructive to compare it to the stronger "little NEPAs" of states such as Wisconsin, New York, Washington, and California. (New York State Bar Association & Council on Environmental Quality 1989) The states of New South Wales and Victoria in Australia regularly compare their practices to those under NEPA.

After the enactment of NEPA in 1969, Australia, Canada, and New Zealand adopted EIA during the mid-1970s. It since has been instituted in many jurisdictions including Argentina, Belgium, Brazil, China, Columbia, Costa Rica, Denmark, France, Germany, Greece, Hong Kong, India, Indonesia, Ireland, Israel, Italy, Japan, Korea, Kuwait, Luxembourg, Malaysia, The Netherlands, Norway, Pakistan, Papua New Guinea, Peru, The Philippines, Portugal, Sri Lanka, South Africa, Spain, Taiwan, Thailand, Turkey, United Kingdom, the Soviet Union, and Uruguay. (Appendix 1) Moreover, within nations, many states and provinces unilaterally have enacted EIA within their respective jurisdictions. (Robinson 1982) Large parts of Latin America, the Middle East, and Africa do not yet widely use EIA. In the 1970s, the North Atlantic Treaty Organization (NATO) was instrumental in explaining the use of EIA practices, based on NEPA, to NATO member nations, and the Organization for Economic Cooperation and Development (OECD) extensively studied the use of EIA. These educational efforts led to early acceptance of EIA in Western Europe.

The countries that have adopted EIA procedures rarely rely upon courts to oversee the accuracy of an EIS or the procedures used to prepare it, as in the United States under NEPA. The EIA procedures in these countries, however, do reflect a recognition of two important facts: that project proponents often have a real, conscious or unconscious bias in favor of their proposals, and EIA preparers must have some independence in order to assure their objectivity in both their evaluation of a project's negative impacts and their iden-

tification of alternatives or mitigation measures. Simple and inexpensive provisions for public disclosure of environmental impact reports and opportunity for public comment guarantee that there will be some measure of objectivity and completeness. A few countries, such as Thailand, have not yet incorporated a public disclosure component into their EIA process. Most jurisdictions divide the task of EIA preparation from the task of approving the adequacy of the impact assessment. In addition, jurisdictions employ a variety of institutional measures to divide up the jobs of performing the assessment and making a decision about the particular project.

Given Canada's extensive experience with EIA, it may be useful to outline the federal process in Canada. Since 1973, Canada assiduously has applied and refined EIA, recognizing that sustainable development depends upon the use of EIA. In 1984, the nation's Minister of the Environment established the Canadian Environmental Assessment Research Council to advance research on improving the scientific, technical, and procedural aspects of Canada's EIA process. Canada has helped develop EIA abroad as well. The Canadian International Development Agency (CIDA) and Federal Environmental Assessment and Review Office (FEARO) have created an EIA process and sustainable development plan with Indonesia for the marine and coastal resources of the Indonesian archipelago. In addition, CIDA incorporates EIA into its mechanisms for giving foreign aid and advice.

Canada's Environmental Assessment and Review Process (EARP) applies to all federal proposals.² It can begin either at the planning stage or when the project is advanced as a proposal. The decision-making authority is known as the "initiating department," and the entity that plans to undertake the proposed project, whether a governmental agency or a private applicant, is the "proponent." Each initiating department must have screening procedures in order to identify when it must comply with EARP. When a proponent submits a proposal for approval, the initiating department first must ascertain whether the proposed project may have significant adverse effects or is the object of public concern because of its possible

² Canada may revise the EARP Guidelines Order, which created the process, by incorporating it into federal legislation in coming years. The courts have deemed the Guidelines Order, which was established through cabinet decisions, to be equivalent to a statutory duty that the judiciary can enforce. There thus is little administrative reason not to embody the EARP into a stronger legislative format.

environmental effects. The initiating department then must decide whether to refer a project with such potential effects to the Minister of the Environment for public review by an Environment Assessment Panel. Initiating departments report their decisions to refer or not refer a proposal to the FEARO, and the decisions are published.

The FEARO, an independent body somewhat analogous to the United States's CEQ, approves each department's EARP rules. It also provides the secretariats to staff the public reviews that the Environmental Assessment Panels conduct. The FEARO executive chairman or its delegate chairs the panels. Three to seven members of each panel are named by the Minister of the Environment, after being selected because of their objectivity, public credibility, and special knowledge of factors associated with the proposed action.

FEARO prepares an outline of the scope of the EIA in the form of a draft "Terms of Reference." The Minister of the Environment then issues this scoping document after consulting with the initiating department. The panel convenes and consults the proponent and the public regarding the preparation of an EIS. After the proponent prepares the EIS following the panel's directions, the panel makes the EIS available to the public and receives comments about it at public meetings and in writing. The panel prepares a report containing its recommendations and gives the report to both the Minister of the Environment and the minister of the initiating department. These ministers release the panel's report to the public, and the initiating department thereafter makes its decision on the proposed action.

This federal process has benefited from innovations established at the provincial level in provinces such as Ontario and Quebec. For example, Quebec employs the Service Techniques du Ministère Québécois de l'Environnement—or the Technical Services of the Quebec Ministry of Environment—to perform the EIA process, consult the proponent and the public, evaluate the EIS, and make recommendations on the environmental aspects of the project, including any necessary surveillance and monitoring. Le Bureau d'Audiences Publiques sur l'Environnement—or the Public Hearings Bureau—assists the public and holds public hearings. Citizens have the right to sue proponents for violations of the EIA procedures. In addition, the federal process follows Quebec practice in facilitating participation by indigenous peoples such as the Cree, the Inuit, and the Naskapi. These peoples participate in the EIA process through committees

to which they name representatives. The committees constitute a systematic outreach, adapting public participation to the cultural traditions of the indigenous communities. The procedures in Quebec and Canada for making EIA effective within traditional communities of indigenous peoples is worthy of study as a model for improving EIA use in analogous contexts in other jurisdictions.

Canada's experience with EIA demonstrates how the process can evolve. By dividing up the responsibility for the various stages of EIA, Canada has detached the process from the pro-project bias of the department sponsoring the governmental action. In the United States, NEPA relies mostly on judicial review and after-the-fact correction by the courts whenever such a bias might impair the integrity of an EIA. A small office in the United States Environmental Protection Agency (EPA) does have a statutory mandate to comment on draft EISs, but the EPA rarely invokes this authority. All in all, Canada has a preventative process with administrative oversight and without much litigation, whereas the United States has a corrective process of oversight, with preferred recourse to litigation and with atrophied administrative roles for the EPA and the CEQ. Nonetheless, both Canada and the United States employ a similar process: scoping, rigorous scientific and technical analysis, preparation of a draft EIS, public disclosure of the draft, public comment, and preparation of a revised final statement of environmental impacts that takes into account all comments. Decisionmakers then must consider the statement and make a decision.

At a minimum NEPA, as the United States Supreme Court construes it, requires the disclosure of environmental impacts and the means of mitigating them. The Court interprets NEPA as a procedural statute. Some early NEPA interpretations, however, were of the view that NEPA imposed substantive duties as well as procedural ones and required the decisionmaker to select the least environmentally damaging alternative or require mitigation measures. Jurisdictions that adopted EIA using this early model, such as the states of California and New York and the province of Ontario, often require mandatory mitigation of impacts disclosed. In comparison to NEPA, which today is a procedural "full disclosure" requirement that relies on voluntary environmental protection measures in light of the disclosure, Canada has a substantive environmental protection mandate.

Having outlined how Canadian EIA procedures evolved from NEPA, it is instructive to consider how a very different society has

implemented EIA. The People's Republic of China has developed its own EIA process. China holds a quarter of the world's people and actively is trying to expand its economy to provide for its growing population. It has enacted strong policies favoring environmental improvements, from afforestation to pollution control, in tandem with undertaking market economic reforms.

China initiated EIA in 1979, when it required that "for either new construction, extension, or expansion projects, [an] environmental impact statement must be prepared The facilities for pollution control and prevention of other hazards must be designed, constructed, and put into operation simultaneously with the main project." These statutory requirements were based upon studies that were begun in 1973, at China's first Environmental Protection Conference, to gather baseline data on the quality of the nation's environment. Following adoption of the 1979 law, the State Council in 1981 issued China's EIA rules. Preparation of these rules was a joint project of the State Council's Environmental Protection Committee, the State Planning Committee, and the State Economic Committee.

Under China's EIA rules, the lead agency prepares the EIS, which the Chinese Environmental Protection Agency then must review and approve or reject. New plans for construction require environmental review; feasibility, choice of location, and preliminary design are all to be part of a larger EIA. There are express provisions requiring that a construction project's EIS assess both surrounding environmental conditions and the technical and economic feasibility of measures to avoid adverse impacts to those conditions. In the first five years of EIA in China, some 455 projects in twenty-three cities had an EIS prepared; 287 received the Environmental Protection Agency's approval, which is signified by the grant of a "Certificate of Comprehensive Assessment." (Jin & Wen 1987)

Although China undertakes EIA only for a relatively few large projects, it has begun the process of using EIA. China adapts EIA to use techniques appropriate to the circumstances. In one EIA, it was necessary to monitor air quality over a large geographic region where coal was burned; EIA officials were able to assign 10,000 people the task of taking simultaneous measurements at prescribed time periods. China's EIA experts well understand the challenge of introducing EIA. However functionally different the Chinese EIA process may be from NEPA or EARP, the basic task is the same as in establishing and refining any EIA process. The words of two Chinese EIA specialists express this similarity well:

The key problem is: a critical line must be drawn to balance the relation between development and environment. The environmental problem caused by development must be restricted within the limit which human beings and other living things can accept (some people suggest a "bearable limit" principle), so that the economy can develop continuously without degrading environmental quality. A suitable developmental pace should be found to meet environmental requirements and harmonize the environment/economy relationship. In doing so, the economy must be developed in a gradual and sound manner, and the environment must be protected and improved. We must do our best to integrate the benefits of environment, economy, and society.

In theory, the problem seems easy, but in practice, it is much more complex and difficult. It requires great effort.
(Jin & Wen 1987)

Independently from the People's Republic of China, Taiwan is moving toward use of EIA. In 1987 it established a cabinet-level Environmental Protection Administration and since has developed an EIA process. (Chien 1991) Latin America also is moving toward greater use of EIA. (Moreira 1988) Other regions are considering how to institute EIA and are likely to follow suit. For instance, the Arab League issued a declaration in 1986 urging that EIA be used for new development projects in the Middle East.

V. AN INTERNATIONAL LAW OF EIA

All these illustrations of EIA are evidence of an emerging pattern of state practice. It is becoming a norm of customary international law that nations should engage in effective EIA before taking action that could adversely affect either shared natural resources, another country's environment, or the Earth's commons. EIA is the means of assuring that no state acts so as to harm the environment of another state: a prohibition that exists for all states under international law, as embodied in Principle 21 of the United Nations Stockholm Declaration on the Human Environment. The duty that the Association of South East Asian Nations (ASEAN) has negotiated parallels the EC's EIA directive to this effect. The ASEAN Convention on the Conservation of Nature provides that "[p]roposals of any activity which may significantly affect the natural environment shall as far as possible be subjected to an assessment of their consequences before they are adopted, and they shall take into consideration the results of their assessment in their decision-making pro-

cess." As this ASEAN provision is implemented, one can expect common EIA procedures to emerge in Thailand, Indonesia, Singapore, the Philippines, and Malaysia, just as they have in Western Europe through the Common Market.

International organizations as well as nations are moving to employ EIA as a basic management tool. Between 1974 and 1986, eleven recommendations of the OECD encouraged the use of EIA. (Appendix 2) The United Nations Environment Programme (UNEP) and the United Nations General Assembly also have endorsed the use of EIA. The World Charter of Nature, which the General Assembly adopted, expressly calls for the use of EIA, and Article 206 of the Law of the Sea Convention provides for its use. The "soft law" embodied in the resolutions of international agencies is in accord with the state practice reflected in national EIA law and practice. Moreover, as international organizations borrow and adapt state practices to meet their needs, their practice increasingly will require EIA.

For example, as noted above, the World Bank has established procedures for EIA. It has adopted an EIA process, not dissimilar to that in Canada or the United States, that involves the following six steps: screening the proposal; preparing an initial executive project summary; preparing Terms of Reference for an environmental assessment; preparing the assessment; reviewing the assessment and incorporating its findings into the project; and conducting post-project evaluation. The latter provision is an enormously useful and innovative step—very few federal Canadian and Dutch EIAs have had monitoring to gauge the effectiveness of their analyses and any impact mitigation measures, and there is a dearth of postproject evaluation under NEPA. The World Bank relies on the nation where the project is planned to implement these EIA procedures.

What does this array of national and international practice tell us? First, there is a growing body of useful experience that deserves more empirical analysis. The United States needs programs such as those of the Canadian Environmental Assessment Research Council to consider how to improve our EIA process—perhaps the CEQ can undertake or stimulate this exploration. Prior to 1980, the CEQ had begun to make such valuative studies. (Council on Environmental Quality 1981) EIA is too important to leave to unstudied evolution. Second, environmental professionals conducting EIA can learn from and derive encouragement from the growing volume of EIA work. Third, this worldwide EIA experience provides guidance on how

jurisdictions using EIA should cope with global, transnational, and transboundary environmental impacts. EIA is emerging as a basic tool for restoring, maintaining, and enhancing environmental quality.

VI. TRANSBOUNDARY, TRANSNATIONAL, AND GLOBAL EIA

The depletion of stratospheric ozone, gradual warming of the atmosphere, increasing loss of biological diversity, expanding desertification, and relative rise of sea levels pose international environmental challenges. None of these problems can be solved by single nations acting alone, and no country is immune no matter how good its own environmental protection programs may be. All these problems are the result of the worldwide accumulation of many discrete, isolated acts. EIA is one of the few environmental management tools fashioned to consider such isolated actions and their cumulative impacts.

Interesting procedural issues arise for EIA when the impacts studied cross over jurisdictional lines or add incrementally to global environmental trends. Many jurisdictions routinely study transnational impacts, as under the EC Directive or in Canadian EIA practice. Although harder to define, global impacts such as the effects of chlorofluorocarbon emissions on the deterioration of the stratospheric ozone layer are also the focus of study. For the reasons discussed below, such uses of EIA are likely to grow in coming years.

The drafters of NEPA anticipated the need for such cross-boundary analysis, although United States federal agencies have done rather little to implement the statute's mandate. In NEPA section 102(2)(F), Congress directed that, "to the fullest extent possible," all agencies of the federal government shall "recognize the worldwide and long-range character of environmental problems and, where consistent with the foreign policy of the United States, lend appropriate support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of mankind's world environment" Under the authority of this provision, the CEQ has examined the "worldwide and long-range character of environmental problems" in its annual reports and in the 1979 "Global 2000 Report to the President." (Council on Environmental Quality 1979) Much of the Global 2000 report subsequently has been confirmed independently in the United Nations World Commission on Environment and Development (UNWCED) report *Our Common Future*. (UNWCED 1987)

Section 102(2)(F) of NEPA expressly conditions the worldwide perspective of the United States's federal agencies upon its "consisten[cy] with the foreign policy of the United States." Since 1969, the content of United States environmental foreign policy generally has been modest and imprecise. Where treaties have created express obligations, as did the Convention on the International Trade in Endangered Species (CITES), the nation's environmental foreign policy has been more clear. In response to CITES and the United States's Endangered Species Act, the United States Agency for International Development (AID) issued rules that expressly require foreign assistance programs to consider how to protect endangered species. For most foreign policy questions, however, environmental protection has been subject to countervailing tendencies, and the inertia of past policies in the State Department and other foreign affairs agencies has tended to restrict the advancement of new environmental protection positions. Most of these past policies were framed with scant attention to trends in environmental degradation.

Executive Order 12114 contains the United States's most explicit foreign policy directives for EIA abroad. Promulgated during President Carter's Administration, Executive Order 12114 requires the use of EIA under NEPA in the following situations: when a federal agency is taking an action that will affect the so-called "global commons," such as the oceans or Antarctica; when an agency action will affect uninvolved nations; when an action is strictly regulated in the United States—for example, actions involving radioactive materials or toxic substances—and when the President or Secretary of State designates natural or ecological resources to be of global importance.

The Bush Administration is considering revisions to Executive Order 12114. The Carter Administration promulgated the order following a series of Court decisions that applied NEPA to certain federal agency actions abroad. In these cases, which dealt with aid to build part of the Pan American Highway in Panama, to spray herbicides on marijuana crops in Mexico, and other acts outside the United States, the foreign affairs agencies had complained to the CEQ that EIA would hinder their operations. The decision to issue the executive order may have retarded new litigation by clarifying foreign policy, but at the same time it codified a compromise that has stifled further agency innovation under section 102(2)(F) of NEPA. Some agency NEPA managers remain ignorant of the existence of Executive Order 12114 because it is not incorporated in their own agency's NEPA regulations. Moreover, the order falls short of the full requirements of section 102(2)(F) and thus has been

at best only a partial step toward implementing the congressional mandate.

Because "the foreign policy of the United States" traditionally has not considered conservation or environmental protection to be a high priority, and because Executive Order 12114 appeared to excuse agencies from trying to identify innovative ways to assess the environmental impacts of government actions abroad, federal agencies have devoted very little attention to section 102(2)(F). Exceptions, of course, exist. To comply with NEPA and Executive Order 12114, the United States Army has developed methodologies such as its EIA procedures for the return of weapons, including chemical munitions, from Europe to the United States for dismantling.

Notwithstanding the disuse of section 102(2)(F) during NEPA's first two decades, that provision could become an important tool in coping with global trends. As Secretary of State Baker told the IPCC, global climate change seems to present problems sufficiently serious to warrant pursuing preventative measures. Climate change, like stratospheric ozone depletion, is not the result of any one major act. It follows from many small, apparently innocent emissions of waste gases. To cope with climate change, countries must begin to assemble and analyze a wide range of data. At the same time, they need both mitigation measures to curb unnecessary gaseous emissions and alternatives to achieve social objectives without emissions. EIA both assembles data and offers remedial measures. Because climate management has become a foreign policy objective, EIA would appear to be a low-cost and already available tool by which jurisdictions could begin to address climate change. For instance, analysis of EISs completed pursuant to NEPA could provide substantial baseline data. Past EISs likely would offer data on emissions of greenhouse gases, and future EISs could consider mitigation measures to curb emissions for a wide range of federal agency actions. The EPA could review proposals for lignite mining, while the Bureau of Indian Affairs could examine the potential environmental impacts of a biomass electricity-generating facility on tribal reservation lands. If climate managers existed, they might find that the Federal Energy Regulatory Commission could serve useful foreign policy ends through its NEPA reviews.

One particular aspect of NEPA could be especially useful in shaping EIA as a foreign policy tool. This is the provision for tiering "programmatic" EISs with each more action-specified EIS. An agency could undertake a programmatic EIS to study the range of possible effects on climate change associated with one of its statutory

mandates. The agency then would be better able to identify actions for producing the data needed for better understanding climate change or for mitigating impacts it deems adverse. In other words, the programmatic EIS would allow the EIS for each individual proposed action to focus efficiently on specific points keyed into the prior, generic analysis. Agencies thus could examine cumulative impacts systematically—too few federal agencies today treat NEPA's cumulative impact process as a serious requirement.

EIA is perhaps the single best process for reaching the point of decisionmaking. If, for instance, a nation established the foreign policy goal of maximizing tree planting as a mitigation measure to stabilize the climate, promote biological diversity, and avert desertification, it could direct each EIA to examine these discrete issues and shape decisions to advance its goal. The nation could integrate its states' "little NEPA" procedures into the same process. Because state and local governments make forty percent of all energy decisions in the federal system, state EIA procedures can be crucial to helping the United States achieve its foreign policy ends.

How quickly will foreign affairs agencies come to perceive this positive role for EIA? In part the answer depends upon how successful EIA professionals are in making the case for more effective use of NEPA and its section 102(2)(F). In addition, the answer may turn on whether or how soon Congress enacts legislation mandating such measures, and on how rapidly consensus on the IPCC builds for a global climate treaty or similar measures.

EIA is becoming international because scientific analysis increasingly can and does identify impacts that are transitional and even global. There is already a need for expanded use of EIA in the case of environmentally adverse global trends because scientists have begun to detect the effects of biospheric change. EIA can evaluate these physical manifestations and provide a practical tool for their consideration in concrete decisionmaking. For example, coastal area environmental assessments and impact statements must consider relative sea level rise, not because any official has ordered such analysis but because sea level rise is a measurable fact. Similarly, acidification of lakes in Canada or New York's Adirondack Mountains has measurable impacts on biota. EIA exposes such phenomena first to scientific quantification and then to policy scrutiny.

There is a consensus regarding the uses of EIA in a transboundary context. Negotiations through the United Nations Economic Commission for Europe resulted in the 1991 Espoo Convention on Environmental Impact Assessment in a Transboundary Context. This

convention's preparations began with a seminar on EIA in Warsaw, Poland, in 1987 and culminated in the signing of a final agreement at Espoo, Finland, on February 25, 1991. The parties agree to "prevent, reduce, and control significant adverse transboundary environmental impact from proposed activity." The agreement requires EIA for projects on a "List of Activities" included as Appendix I; among these projects are oil refineries, thermal power stations, pipelines, ports, dams, large deforestations, new highways or long-distance rail lines, and airports. For all other activities that may cause such environmentally damaging impacts, any party may request an EIA, and the parties must consult to determine if an EIA should proceed for the unlisted activity. The parties must consider the activity's size, location, and effects.

The Espoo Convention provides an EIA process that includes notification regarding the proposed activity to other states, with the transmission of "any available information on its possible transboundary impact;" response from the other states indicating whether or not they will participate in the EIA process; and exchange of sufficient information to evaluate impacts, with a nine-part recitation of the content of the EIA documentation as specified in Appendix II to the convention. Where consultations do not lead to agreement on the nature of the impacts and their mitigation, a party may request that an independent three-person "inquiry commission" be established to conduct its own EIA. The inquiry commission's final report "shall be based on scientific principles" and set forth a majority and any dissenting view, and the commission must send the report to all parties to the inquiry. In addition, the convention provides dispute settlement procedures, including a detailed arbitration process, and requires postproject analysis. The objectives of this analysis include "monitoring compliance with the conditions as set out in the authorization or approval of the activity and the effectiveness of mitigation measures . . . review of an impact for proper management and in order to cope with uncertainties . . . [and] verification of past predictions in order to transfer experience to future activities of the same type."

Once the state proposing a project completes its transboundary EIA, it must "provide to the affected party the final decision on the proposed activity along with the reasons and considerations on which it was based." The parties immediately must exchange any relevant information arising thereafter and hold consultations as to whether the new information requires a change in the EIA.

The Espoo Convention on transboundary EIA provides a useful model for interstate cooperation. Doubtless, close neighbors will

wish to tailor the process with simpler, specific bilateral agreements on EIA. For example, states with comparable EIA systems may designate a single process that is valid in each jurisdiction. As nations begin to ratify and use the convention, a more routine use of EIA for projects with potential transboundary impacts will emerge.

What may retard innovations in the affirmative use of EIA abroad is the legacy of bureaucratic suspicion about the process. In the United States, the State Department has given only a modest acknowledgment of NEPA. AID embraced the EIA process only under the pressure of federal court litigation. The Army Corps of Engineers learned the NEPA process after participating in numerous court actions, and now the military is often ahead of civilian agencies in its use of NEPA. Foreign affairs personnel apparently have liked the administrative freedom of ignoring EIA when it suits them to do so.

The diplomatic community needs education and training in EIA. Outside forces are unlikely to compel a quick change in attitude. For instance, in the case of NEPA it is clear that the courts do not take lightly intervention in foreign affairs issues. The judiciary properly gives substantial deference to the executive branch in its decisions about such issues. CEQ has urged repeatedly that the foreign affairs agencies do more to evaluate impacts abroad, but CEQ is advisory and does not direct foreign policy anymore than it does domestic policy. As a result, the executive branch and Congress have not readily embraced its advice. An express presidential directive on EIA abroad, a stronger congressional mandate, or both, is needed to speed up the process.

The best evidence that EIA will become a strong foreign policy tool is the fact that its use is increasing. EIA is a valuable management tool. Its use abroad continues to grow despite the absence of court orders or presidential intervention, and despite the lack of sympathy on the part of foreign affairs agencies.

VII. EIA AND FORESIGHT

EIA reflects the well established duty under international law that each nation must act so as not to harm the environment of any other nation. In order to avert harm, each nation must examine the consequences of its actions and adjust as necessary. This rule of good neighborly relations is an ancient one. EIA can instruct nations on how to protect the environment globally just as it has taught them how to do so locally. EIA is not a linear process, but a feedback loop. We study and learn—once informed, we strive to monitor and

evaluate our precautions and discern what to do better to eliminate impacts the next time we take a similar action.

This dynamic system not only works in small settings, as in protecting a village water supply or preserving the isolated habitats of a migratory species, but also works well on a global scale, as with the accumulation of many actions involved in climate stabilization. It is in each nation's best interest to foster the more efficient use of EIA in all jurisdictions. One of the architects of NEPA, Professor Lynton Keith Caldwell, states the rationale for this national interest: "NEPA may be seen as a contrived, institutionalized answer to a people's recognition of its deficiencies. Through the impact assessment process written into law we compel ourselves, as participants in self-government, to do what we know should be done in undertaking actions that may have consequences not immediately apparent. The EIS process institutionalizes patience, caution, and looking before leaping. Few if any among the critics of NEPA would act in their personal affairs in the manner that government decision-makers formerly acted in relation to the environment."

Congress was inspired twenty years ago when it adopted NEPA. The ready, voluntary adoption of EIA around the world is testimony to that congressional good sense. EIA has moved from being an innovative experiment to becoming a staple tool of efficient decision-making. It carries on the torch that Roosevelt passed on back in 1908, urging foresight in the care for nature and for the needs of succeeding generations.

APPENDIX 1

ENVIRONMENTAL IMPACT ASSESSMENT STATUTES

Australia

Australia's commonwealth government adopted the nation's first EIA law in 1974—the Environment Protection (Impact of Proposals) Act. Since then, the states of New South Wales, Victoria, South Australia, and Western Australia and the Northern Territory have adopted EIA procedures.

Belgium

Introduction of EIA by separate decrees on the national and regional levels. Integration of EIA into existing administrative procedures.

Brazil

Brazil's federal government has about forty officials conducting EIAs, primarily in Amazonian. For a discussion of Brazilian procedures, see R.A. Braun, *Environmental Impact Assessment in Brazil*, THE LEGAL PROCEDURE WORDLETTER; see also *Law Containing Provisions on National Environmental Policy*, THE INTERNATIONAL NEWSLETTER FOR ENVIRONMENTAL ASSESSMENT, Sept.–Oct. 1976, at 10.

Canada

EIA began in Canada at the federal level with the establishment in 1973 of the Environmental Assessment and Review Process (EARP), and at the provincial level with the enactment in 1975 of Ontario's Environmental Assessment Act.

Cabinet Decision of December 20, 1973 established the EARP and assigned responsibility for overseeing the process to the Minister of the Environment: a delegation of authority reaffirmed in the 1979 Government Organization Act. Cabinet Decision of February 15, 1977 revised that process. An Order-In-Council entitled the Environmental Assessment and Review Process Guidelines Order, S.O.R./84-467, was proclaimed under the Act on June 22, 1984. This Guideline Order replaced the prior Cabinet decisions.

For references regarding Quebec, see the *Loi sur la qualite de l'environnement*, L.R.Q., 1981, c. Q-2 (1972) (modified 1978); le *Reglement sur l'evaluation et l'examen des impacts sur l'environnement*, R.R.Q., 1981, c. Q-2, r.1; the *Environment Quality Act* (1972) (amended 1978); *General Regulations, Environment Impact Assessment and Review*; *see also* *Quebec Environmental Quality Act*, R.S.Q. c-2 (Chapter II).

For references regarding Ontario, see the *Environmental Assessment Act* (1975).

China

For the People's Republic of China, see *Environmental Protection Law* § 6 (1979); *Management Guidelines on Environmental Protection of Construction Projects*.

For Taiwan, see *Executive Yuan (the Cabinet)*, R.O.C. (Aug. 22, 1987); R.O.C. *ENVIRONMENTAL PROTECTION ADMINISTRATION, ENVIRONMENTAL PROTECTION IN THE REPUBLIC OF CHINA* (Apr. 1988).

Columbia

National Code of Natural Resources and Environmental Protection §§ 28-29, Decree 2811 (1974); *see* Decree Partially Regulating Title I of the Act of 9, 1979; *see also* Dto. 2811-74, tit. IV, ch. II (concerning use of water and liquid waste).

Costa Rica

Procedures of environmental protection agency.

Denmark

Implementation of EC Directive by amendments to national and regional planning laws. Integration of EIA into regional planning procedure.

France

France elected to set a low threshold, encompassing most of the EC Directive Annex II actions, in its *Nature Protection Act* of 1976. Some 4,000 to 5,000 assessments are done annually in France.

Gambia

National Environmental Management Act (1987).

Germany

Introduction of EIA through a so-called "article law" that determines basic principles of EIA in Article 1 and necessary amendments to special laws in following articles. Integration of EIA into existing procedures.

Greece

Introduction of EIA within framework of Environmental Protection Act of 1986. Integration of EIA into existing administrative procedures.

EIA regulations for industrial plants have existed since 1981.

Hong Kong

Town Planning Ordinance (1939); WHITE PAPER: POLLUTION IN HONG KONG—A TIME TO ACT.

Ivory Coast (Cote d'Ivoire)

Decree Prescribing the Duties of the Minister of the Environment and Laying Down the Organization of the Ministry, J.O. 19811015, No. 44, at 532-33.

India

Constitution (42nd Amendment) Act (1977); The Environment (Protection) Act (1986).

Indonesia

Act of the Republic of Indonesia, No. 4 of 1982 (concerning "Management of the Living Environment").

Ireland

Implementation through regulations under the Local Government (Planning and Development) Act and other relevant laws. Integration of EIA into existing administrative procedures.

Israel

Israel adopted EIA regulations for building plans in 1981. *See* Planning & Building Regulations (Environmental Impact Statements), Kovetz Ha-Takanet of 5742, at 502.

Italy

Before implementation of EC Directive, interim provisions on basis of Law No. 349 of 1986. Performance of EIA as separate procedure preceding permitting procedure.

Japan

Environmental Scheme Measures Involving Various Public Works Act (1972).

Korea

Environmental Preservation Act (1977) (amended 1979, 1981, 1982, 1986); Regulations for the Preparation of Environmental Impact Assessment (1981).

Kuwait

Law No. 62 of 1980 (establishing Environmental Protection Department within Ministry of Health).

Luxembourg

Project de Loi No. 3257 pending since September 1988 for adoption by Chamber of Deputies of Luxembourg.

Malaysia

Environmental Quality Act (1974) (amended 1985); Environment Preservation Act (1977) (amended 1979, 1981, 1982, 1986); Regulations for the Preparation of Environmental Impact Assessment (1981).

Mexico

General Act on Ecological Balance and Environmental Protection (federal statute).

The Netherlands

Introduction of EIA by amendments to General Environmental Protection Act of 1979.

The Netherlands formally adopted EIA in 1985, appointing a special commission of independent experts to review EISs. A working group of six to eight specialists is assembled from the 110 members of the Review Commission; the commission's evaluation is delivered to the competent decisionmaking authority. The Dutch Law on EIA supplemented the General Environmental Protection Act of 1979 and became effective May 13, 1986.

New Zealand

New Zealand instituted "Environmental Impact Reporting and Assessment" practices in 1974 through Cabinet Decision of August 7, 1972; this Cabinet Decision also established the Commission on the Environment.

Norway

For a description of the country's experimental systems, see Tor Lorstang, *Challenges for a Proposed EIA System in Norway*, 1 SCANDINAVIAN PLANNING & HOUSING RESEARCH 107-21 (1984).

Pakistan

Pakistan Environmental Protection Ordinance (1983).

Papua New Guinea

Environmental Planning Act (1978).

The Philippines

Presidential Decree No. 1586 (1976) (establishing EIS system); Presidential Decree No. 1151 (1977) (setting out Philippines environmental policy); Council Resolution No. 4 (1986) (revised rules and regulations implementing Presidential Decree No. 1586); Presidential Proclamation No. 2146; NATIONAL ENVIRONMENTAL PROTECTION COUNCIL, OFFICE CIRCULAR No. 3 (1983).

Technical definitions and scope of environmentally critical projects and areas are enumerated in Proclamation No. 2146.

Portugal

Introduction of EIA within framework of Environmental Protection Act of 1987.

Democratic Socialist Republic of Sri Lanka

National Environmental Act, No. 47 (1980); Coast Conservation Act, No. 57 (1981); Coast Conservation (Amendment) Act, No. 64 (1988).

South Africa

No. 100 of 1982; Environment Conservation Act (1982).

Spain

Introduction of EIA by Royal Legislative Decree of June 1986. Integration of EIA into existing administrative procedures.

Thailand

Improvement and Conservation of National Environmental Quality Act (1975); Last amendment (No. 3), B.E. 2522 (1979).

Proclamations under § 17 of the 1975 Act cover the activities requiring EIA. The first such proclamation in 1981 covered major industrial, mining, and dam projects, as well as commercial airports and large hotel and resort facilities. *See* Proclamation for Types and Sizes of Projects Required: Environmental Impact Assessment (1981).

Turkey

The Environmental Law; Decree 222/19; Law 3301/1986; Law 3416/1988; Turkey: Report to UN ECE Seminar on EIA, Warsaw, Poland (Sept. 21–25, 1987) (on file with CEQ).

United Kingdom

Implementation through regulations under the Town and Country Planning Act and other relevant laws. Integration of EIA into existing permitting procedures.

United States of America

The National Environmental Policy Act of 1969 (NEPA) is codified at 42 U.S.C. §§ 4321–4370c (1988). Its EIA provision is § 4322(2)(C). Generic regulations governing all agencies appear at 40 C.F.R. pts. 1500–1517 (1991). In addition, each federal agency can promulgate its own EIA regulations. For instance, the Agency for International Development's NEPA procedures appear at 22 C.F.R. pt. 216 (1991).

State agencies independently have issued state "little NEPA" statutes. *See e.g.*, CAL. PUB. RES. CODE §§ 21000–21177 (West 1986); MASS. GEN. LAWS ANN. ch. 30, §§ 61–62H (West 1992); N.Y. ENVTL. CONSERV. LAW §§ 8-0101 to 8-0117 (McKinney 1984); WASH. REV. CODE ANN. §§ 43.21C.010 to 43.21C.910 (West 1983); WIS. STAT. ANN. § 1.11 (West 1986).

USSR

See Instructions of Goskompriroda on EIA, Directive of 1990.

Venezuela

Organic Law on the Environment, art. 21.

NOTE: For Argentina, Peru, Uruguay, see I. Verocai Moreira, *EIA in Latin America*, in P. WATHERN, ENVIRONMENTAL IMPACT ASSESSMENT & PRACTICE (1988).

APPENDIX 2

**INTERNATIONAL ENVIRONMENTAL IMPACT
ASSESSMENTS PROVISIONS***European Community (EC)*

Annex I of the European Economic Community Directive on EIA requires a full assessment. Annex II provides for an optional assessment under specified conditions. Council Directive 85/337 of 5 July 1985 on the Assessment of the Effects of Certain Public and Private Projects on the Environment, O.J. (L 175).

Association of South East Asian Nations (ASEAN)

ASEAN Convention on the Conservation of Nature and Natural Resources, 1985, § 14(1).

United Nations Economic Commission for Europe (UNECE)

The Convention on Environmental Impact Assessment in a Trans-boundary Context, Feb. 25, 1991, U.N. Doc. E/ECE/1250.

United Nations Environment Programme (UNEP)

See *Goals and Principles of EIA*, UNEP Governing Council, June 17, 1987; *Chapter C, UNEP Conclusions on Off-shore Mining and Drilling*, UNEP Working Group of Experts on Environmental Law (1981) (endorsed by United Nations General Assembly in Conclusion No. 8, March 24, 1983).

UNEP Regional Seas Conventions

Article 11 of the 1978 Kuwait Regional Convention and article 11 of the 1982 Jeddah Regional Convention focus on marine pollution.

Organization for Economic Cooperation & Development (OECD)

OECD recommendations on EIA include the following:

(a) General EIA Recommendations:

1974 OECD Council Recommendation C(74)216 on Analysis of the Environmental Consequences of Significant Public and Private Projects, para. 1;

(b) Recommendations on Chemicals:

1974 OECD Council Recommendation C(74)215 on the Assessment of the Potential Chemical Effects of Chemicals, para. 1;
1977 OECD Council Recommendation C(77)97 (Final) on Guidelines in Respect of Procedures and Requirements for Anticipating the Effects of Chemicals on Man and on the Environment;

(c) Recommendations on Energy Production:

1976 OECD Council Recommendation C(76)162 (Final) on Reduction of Environmental Impacts for Energy Production and Use, para. 2(5);
1979 OECD Council Recommendation C(79)117 on Coal and the Environment, para. 5;

(d) Recommendations on Development Assistance:

1985 OECD Council Recommendation C(85)104 on Environmental Assessment of Development Assistance Projects and Programmes;
1986 OECD Council Recommendation C(86)26 (Draft) on Measures Required to Facilitate the Environmental Assessment of Development Assistance Projects and Programmes;

(e) Recommendations on Exports of Hazardous Wastes:

1984 OECD Council Decision-Recommendation C(83)180 (Final) on Transfrontier Movements of Hazardous Waste;
1986 OECD Council Decision-Recommendation C(86)64 (Final) on Exports of Hazardous Wastes from the OECD Area.

World Bank

Operational Directive 4.00, Annex A: Environmental Assessment,
in OPERATIONAL MANUAL FOR THE IBRD, IDA, IFC AND MIGA.

United Nations General Assembly

World Charter of Nature, UNGA Res. 37.7 of Oct. 28, 1982, arts.
11, 16.

United Nations Law of the Sea

United Nations Law of the Sea Convention, 1982, art. 206 ("When States have reasonable grounds for believing that planned activities under their jurisdiction or control may cause substantial pollution of or significant and harmful changes to the marine environ-

ment, they shall, as far as practicable, assess the potential effects of such activities on the marine environment and shall communicate reports of the results of such assessments [at appropriate intervals to the competent international organizations, which should make them available to all states]”).

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