

# **Handbook of Public Policy Analysis**

## **Theory, Politics, and Methods**

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# 32 Environmental Impact Assessment: Between Bureaucratic Process and Social Learning

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## INTRODUCTION

Environmental Impact Assessment (EIA) is a relatively new tool for decision making involving a standardized set of procedures designed to evaluate the prospective impacts a planned measure will have on the natural environment, and by extension, on human health. An EIA does not, however, relieve public policy and lawmakers from the duty of (pre-)determining at which point prospective impacts should be deemed too great to justify a particular project. EIA processes are typically located at the center of the most contentious public policy decisions, involving difficult trade offs between nature, society and economy. For example, do the projected time savings from a new highway justify routing it through a nature preserve where it will disrupt the habitat of several rare and endangered species? What are the cumulative traffic and pertaining pollution impacts from a new shopping mall, and do the people in the immediate vicinity have to tolerate these negative effects for the economic benefit of the city as a whole? What kind of preventive measures are needed before the new airport runway becomes acceptable to the surrounding neighborhoods? The results of EIAs are often challenged in court and, even if this is not the case, EIAs still often provide starting points rather than final answers or solutions to contentious public policy debates.

## ORIGINS OF EIA

Environmental impact assessment came into being as a formally required, legislatively mandated, decision-making tool on January 1, 1970 in the United States with the inception of the National Environmental Protection Act (NEPA). This was a groundbreaking and revolutionary moment in the legislative history of the environmental movement that can be felt today around the world and at all levels of the development process.

The roots of EIA, and impact assessment in general, however, can be traced back far earlier in the history of development decision making. There is nothing new about the idea of incorporating information gathering into planning and design, and we can find examples of the use of analytical tools to make predictions as far back as the sixteen century. In 1546 the Royal Commission of England issued a report investigating the impacts of iron mills and furnaces in Southern England that incorporated many elements of a modern EIA (Barrow 1997; Shrimpton 2000). In the 1930s, the Design and Industry Association in the UK issued Cautionary Guides that set guidelines for good and bad environmental practices in urban design in an attempt to influence the direction of planning

and decision making at that time and to incorporate greater environmental sensitivity (Caldwell 1988). Before NEPA, however, all attempts to measure impacts and make predictions were done at the discretion of the individual developer or government agency, with no established procedures or regulatory oversight. These tended to involve the public in only a limited way, if at all, and many development projects escaped any assessment process. Thus, apart from these ad hoc precursors to formal evaluation processes, the dominant approach to development decisions prior to NEPA incorporated only two major considerations, financial viability and technical feasibility (Barrow 1997).

The rapid development of the twentieth century brought with it a rise in public concern about the impacts on the environment and human health. On a legislative level, this brought many new laws governing human health, consumer protection, and workplace safety. However these early measures still failed to make any systematic connection between the impacts of development and the quality of the natural environment (Caldwell 1988). It was not until the growth of the environmental movement in the 1960s, and the high profile controversies over the use of pesticides and other chemicals, that there was sufficient pressure for the government to take action regarding the environment. There were other factors, too, that helped to lay the groundwork for the eventual passage of NEPA. The information revolution that began in the 1950s, developments in assessment techniques and planning theory, and a growing desire to integrate science and other technical and analytical tools into the decision-making process, all contributed to the birth of NEPA, and with it the modern EIA (Bailey 1997; Shrimpton 2000).

On January 1, 1970, President Nixon signed NEPA into law, making EIA a statutory requirement with set guidelines and broad objectives. This bold action opened a new chapter in the history of public policy and decision making, for the first time requiring a systematic approach to assessing and predicting impacts and presenting the results. The main objective of NEPA's drafters was to reform both the decision-making process and the dominant development and design priorities in a way that would be enforceable and subject to external review (Caldwell 1988).

To achieve this goal, they laid out the general framework for the EIA process. Section 102(2)(c) of NEPA lists three requirements: First, the assessment of all environmental impacts of the proposed action, including the residual effects that could not be mitigated, and of alternatives to the proposed action; second, a statement of the relationship between short-term economic gains and the long-term advantages of maintaining a productive ecosystem; and third, a statement of any irreversible environmental or social consequences should the proposed action be implemented (O'Riordan and Sewell 1981). Importantly, NEPA is a procedural legislation, mandating a set of actions to be followed, as opposed to specifying environmental outcome (Cashmore 2004).

It is important to note that NEPA itself establishes a broad definition of the word *environment*, one that includes the social as well as the biophysical components, although this has not always been the case in the application of NEPA, particularly in its earlier days. In addition, NEPA specifically mandates the disclosure of information to the public and to other relevant government agencies, by requiring the preparation and release of the Environmental Impact Statement (EIS). With its bold goals and sparse details, NEPA's drafters left much room for interpretation, thus beginning what has now been more than 30 years of discussion, debate, and legal battle over just how the EIA process should look and what it is meant to accomplish. This debate has grown to include people and governments around the globe, and participants from nearly every disciplinary background, including planners, scientists, economists, political theorists, and of course, developers, environmentalists, and the general public: a veritable EIA industry.

## **STEP-BY-STEP: THE EIA PROCESS**

Despite the wide variety in EIA legislation and practices around the world, the basic structure of the EIA process is more or less the same. The EIA occurs through six major stages: screening, scoping,

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**TABLE 32.1**  
**The Basic EIA Process**

1. Screening of project proposal
  2. Scoping:
    - a. Definition of key issues
    - b. Establishment of parameters of study
    - c. Collection of base-line data
  3. Impact Assessment (EIS)
    - a. Identification and prediction of impacts
    - b. Evaluation of impact significance
    - c. Recommendation of mitigation and management strategies
    - d. Release of final EIS
  4. Review of EIS—decision is made
  5. Implementation—development begins
  6. Monitoring and Auditing
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impact assessment, review, implementation, and monitoring/auditing (see Table 32.1). The initial screening process determines whether or not a project requires an EIA. The goal of this phase is to assure that unnecessary assessments are not carried out, while developments requiring assessment are not missed. The criteria for which development projects are subject to EIA laws varies greatly across national lines; some countries have no specific regulations regarding the screening process at all or adopt very weak criteria whereas in others, like the United States and Canada, the screening process is quite rigorous and well defined (Barrow 1997).

Once a project is determined to be subject to EIA procedures, it undergoes a scoping process to set its parameters and identify the key issues. Scoping presents a chance early in the assessment process to focus the study and establish its key goals and the level of detail, geographic boundaries, and temporal scale that will be considered. At this stage, relevant baseline data is collected and a team is gathered to conduct the assessment. Scoping can resemble a brainstorming session of experts and others associated with the proposal (Barrow 1997). Additionally, scoping presents a good opportunity to integrate the public into the EIA process. Local residents, in particular, may be the most aware of the particularities of the local area and can help EIA practitioners in identifying potential impacts that might otherwise go unnoticed or arise as points of conflict further down the road.

Following these initial stages, the formal impact assessment is carried out and the Environmental Impact Statement (EIS) is prepared. The goals of this stage are to identify, measure, and evaluate all the potential impacts and to suggest mitigation or avoidance measures. There is a wide range of technical and analytical tools available for impact assessment; the data collected should be both qualitative and quantitative and should, ideally, incorporate impacts on both the bio-physical environment as well as the cultural and socio-economic sphere. Assessment methods can range from simple to highly complex and include check lists, matrices, GIS mapping, and mathematical modeling. Traditional cost-benefit analysis and other related evaluative techniques may also be incorporated in the EIS in order to determine the significance of the impacts predicted. It is critical that alternatives to the development proposal, including no development, be considered at this time and that assessment take place for each scenario. After the completion of the assessment and evaluation process, recommendations should be made for how to proceed and how to minimize or mitigate the negative effects that will result, either through modification of the original design or through subsequent management. These recommendations should be included in the EIS document in addition to a list of impacts that are unavoidable or cannot be mitigated. There is a wide range in presentation of the final EIS in terms of both length and style of the document produced. Some EIS total thousands of pages and are laden with technical detail, whereas others present only a cursory overview of the situation. A good EIS must be both understandable and thorough, a challenge given the scale of the assessment task.

Once completed EIS is made public and reviewed and a decision is made on whether to allow a project to go through as proposed, rejecting it altogether, or allowing it with stipulations. The review process differs in different legislative contexts and may be done by a panel that includes members of the public, by a group of government officials, or by the judiciary (Barrow 1997).

The final stages of the EIA process, auditing and monitoring, take place largely after the project is completed but are nonetheless crucial in assuring the integrity of the process. The post-assessment audit seeks to answer the question of how closely the predicted impacts resemble those that actually occurred. In addition, auditors may review the effectiveness of the recommended mitigation and management strategies. Auditors should evaluate the EIA process, its thoroughness and cost-effectiveness, and the accuracy of its results. Monitoring differs from auditing in that it is an ongoing process that focuses on collecting technical data on the impacts of development and can occur throughout the process, before and after project completion. Monitoring feeds into both the assessment and auditing process. Post-development, monitoring is important in order to assess compliance with EIA recommendations and to assure that the EIA process produces results on the ground and not simply a good EIS document. Unfortunately, many countries, particularly in the developing world, lack the resources, technical abilities, or political will to implement good monitoring and auditing procedures.

Outlined below is the basic structure of the EIA process. It is important to note that this process does not occur in a linear fashion as it might appear, but rather is a cascading and at times cyclical process in which various stages may be occurring simultaneously with results feeding both subsequent and previous stages. Furthermore, the EIA process does not occur in a vacuum but is embedded within a much larger context that includes planning priorities, development needs, scientific research, and political frameworks, to name just a few. Obviously, these and other factors influence the EIA process at every stage and allow for considerable play and variation along the way, as will be discussed in greater detail in subsequent sections.

## **LIFE AFTER NEPA: ADAPTATION AND SPREAD OF EIA LEGISLATION**

The 35 years since the conception of the modern EIA has been marked by a rapid spread of EIA legislation to over 100 countries around the world (Glasson et al. 2005). This often follows a cycle in which some EIAs are conducted through donor or company requirements even in the absence of EIA requirements in the country, then a surge of EIAs when national regulations come into force, followed by a period of EIA maturity, in which the requirements are fine-tuned (Glasson 2005, pp. 293–4). With that spread has come an ever-growing volume of both critique and refinement of the EIA process. Within the United States, the passage of NEPA on the federal level was followed by similar actions by many individual states, such as California's 1970 Environmental Quality Act and Vermont's Act 250, for example. By 1991 there were 16 state-level bills that either added requirements to the national ones or replaced national procedures altogether. Collectively, these bills are known as "little NEPA's" and tend to be more demanding than the federal laws. On both a state and federal level, refinement of EIA requirements evolved out of a great deal of litigation following the passage of NEPA. NEPA's drafters chose to use relatively vague language, allowing the courts to hammer out the details of the EIA procedure (O'Riordan and Sewell 1981). For better or for worse, it is clear that litigation remains a central focus of the U.S. model of EIA. The emphasis on litigation is something that many other countries have tried to avoid in their adaptation of EIA legislation and it is the source of much criticism of the U.S. model (Caldwell 1988; Bailey 1997). Others point to the positive role of the courts in clarifying procedures and encouraging the growth and evolution of EIA within the United States (O'Riordan and Sewell 1981).

On an international level, countries such as France, Canada, Australia, and Thailand followed

the lead of the United States and adopted their own EIA legislation as early as the 1970s. By 1985 there were already signs that EIA was becoming an international norm, at least in the developed world; in that year, the European Community passed a directive requiring EIA procedures in all member states.<sup>1</sup> EIA again gained prominence on the world stage at the 1992 Earth Summit in Rio de Janeiro when the UN passed Agenda 21 encouraging all countries to “integrate environment into decision-making” and requiring EIA procedures as part of the Convention on Bio-Diversity (CBD). Since then quite a few international agreements have included EIA requirements, and many international aid agencies, like the UN and the World Bank, require that recipients complete an EIA for any development project that receives funding. These measures have expanded the reach of EIA beyond just the developed world, and today EIA legislation can be found in more than 100 countries across almost every continent.

That said, it is important to note that there is much variety in both EIA legislation and its effectiveness. Laws and procedures are adapted by each country to fit within its own decision-making framework. Some nations have followed the U.S. model and created their own EIA legislation whereas others, like Sweden, Denmark, and the UK have chosen to integrate EIA into existing planning procedures without new legislation (Barrow 1997). On a procedural level, differences arise from the unique challenges that are present in certain settings, such as in the developing nations. And even within a Western European countries, there are differences, for example in the volume performed (20 EIAs are done a year in Austria, versus 7,000 in France), in the degree of public participation, and in which projects require an EIA (Glasson 2005, p. 296). These differences make it impossible to imagine a one-size-fits-all EIA process or to generalize about the success of EIA globally without acknowledging the variety of legislative contexts and EIA experiences.

One of the most obvious examples of cross-national variation in EIA legislation is the extent to which EIA is used to integrate the public into the decision-making process. In much of the developed world, EIA legislation includes public participation or disclosure as one of its stated goals, however the interpretation of this concept varies greatly. In the United States, EIA procedures have evolved to incorporate and require more and more participation over the years as a result of several court decisions. Allowing public lawsuits that challenge EIA findings is one way that people in the United States can engage with the EIA process that is not permitted in other contexts. There are also attempts to integrate the public earlier in the process before a decision is made, in the scoping and assessment phases. Outside of the United States, New Zealand is known for having some of the highest levels of public participation at all stages, both before and after a decision is made, and including project design (Barrow 1997). In Europe, on the other hand, even the most recent amendments to the EIA Directive require only the disclosure of information to the public, not the active engagement that is present in the other contexts (Hartley and Wood 2005). The lowest levels of public participation can be found in the developing world, where there tends to be little political will to include the public; this, together with low levels of education and limited experience of the public in the political arena tends to lead to top-down EIA procedures that pay little attention to the opinions of the local residents (Petts 1999). Yet in almost all contexts, the EIA does provide an entry point through which pressure groups (which are often linked to activist counterparts globally) can access information about and challenge disturbing projects.

Some theorists see direct links between the openness of a country’s political system and the extent to which adopting EIA procedures has led beyond the procedural level to substantive policy review. Some of the key political factors include the level of government accountability, the openness of the democratic process, the influence of interest groups, and the procedures for settling disputes. In contexts where the political climate is such that people have access to information, a means of engaging the decision-making process, and the ability to challenge results,

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1. Directive on the assessment of the effects of certain public and private projects on the environment (85/337/EEC).

the influence of EIA seems to be much greater than in countries where people do not (O’Riordan and Sewell 1981).

## EIA IN PRACTICE: PROCEDURAL CHALLENGES AND CRITIQUES

The political contexts and legislative requirements are only part of what assures the effectiveness of the EIA process. It is also important to look at the procedural level in terms of how requirements are actually carried out. Public participation is a recurring area in which the complications of putting EIA goals into practice are evident. There is a wide range of procedural norms even within a given legislative context relating to how, when, and to what extent public participation is sought. At the lowest level is the simple provision of information to the public, through leaflets, newspapers, and other one-way forms of communication. Accessibility of information is critical; one of the most common procedural critiques levied against EIA is that the documents produced are often highly technical and lengthy, and thus don’t really accomplish the goal of informing the general public. Creating a document that is at once thorough and accessible is a central challenge for EIA practitioners both in terms of relations with the public and usefulness for decision-makers, themselves not technical experts (Alton 2003).

Providing information is only a small part of meeting the goal of public participation, however; participation implies a two-way process that goes beyond the disclosure of information. The collection of feedback from the public, through surveys or interviews, is one common method. Though a good first step, this, too, falls short of true participation, as the power is still entirely in the hands of the experts to collate and present this feedback and to integrate into the EIS produced (Petts 1999). Public meetings can sometimes be a more meaningful way of incorporating participation that can lead to greater accountability of decision makers and developers. These, however, can become quite contentious and can be dominated by NIMBY and LULU concerns.<sup>2</sup> Public participation needn’t imply opposition, however. It can also be a constructive process that will improve a project’s design and the ultimate decision and lead to better relations in the future. In some cases, the local residents may have more knowledge of the local area than outside experts and can provide valuable assistance to developers. For this reason, timing is crucial; for participation to be effective it must be done when done early, so that concerns can be adequately addressed and input integrated before entrenching antagonism (Kwiatkowski 2003).

Establishing a community advisory group, or a body of key stakeholders that represent the greater public, is another way to integrate participation at a very high level by inviting the public to play an active role in shaping the outcome of a development decision. This approach acknowledges that the public is not just to be placated, but may genuinely have something to contribute to the assessment and design process. This representative approach, too, has its limitations, as it relies heavily on a select group of individuals to speak for the entire public and therefore does not result in a truly open process or the education of the general population (Petts 1999). The complications of meaningfully integrating the public and providing them with accessible information illustrate some of the procedural challenges that are imbedded throughout the EIA process and the wide range of procedural norms that exist. Overall, there has been growing attention to the need for meaningful integration of local stakeholders, largely as a result of outside pressure from NGO’s and community

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2. The abbreviations stand for “Not In My Back Yard” and “Locally Unwanted Land Uses.” Note that, as Fischer (2000, 125) has pointed out, “Basically, NIMBY reflects a public attitude that seems to be almost self-contradictory: namely. That people feel it is desirable to site a particular type of facility somewhere as long as it is not where *they* live.” Typical NIMBY and LULU projects are landfills, hazardous waste facilities, power plants, prisons, homeless shelters, or drug clinics.

activists (Shrimpton 2000; Petts 1999). Many countries that previously had little or no provisions for public disclosure are adopting disclosure practices and there is growing pressure to make EIA documents accessible to a wider audience rather than just technical experts.

The timing in which impact assessment takes place is another procedural variable that is often the focus of critique. For an EIA to have meaning, to be able to influence the outcome of development, it must take place early on, where options are still open and alternatives truly exist. Too often, EIA is done only after a great deal of project planning has taken place and is used only as a tool to justify and give legitimacy to a predetermined decision or design plan (Alshuwaikhat 2005). There can still be some value in a retrospective EIA, as it can provide valuable information on mitigation options and on-going management, but it falls short of the goal of EIA to be a proactive tool that institutionalizes foresight (Bailey 1997).

The link between EIA and on-going project management, or how the EIA is used after the point of decision making, is another important challenge receiving increasing notice. Critics have argued that though EIA documents may contain a wealth of data and information, they are too often ignored or even discarded as soon as a decision is made and a project moves forward and that the entire process has been too focused on producing the EIS (Robinson 1992). One of the goals of the EIA has always been to provide information and recommendations to improve the development project throughout its life cycle. Unfortunately, procedures are not always in place to translate that goal into a reality and the value of EIA as a management tool can often go untapped. But there has been a shift in EIA away from narrowly focusing on the accuracy of predictions toward linking EIA recommendations with project management (Morrison-Saunders 2005). In some cases, EIS documents may even contain legally binding prescriptions for on-going management and impact mitigation or a special management document may be required (Bailey 1997).

With all of its imperfections, there is little question that EIA has firmly established itself as the dominant means for incorporating environmental considerations into development decision making. At the same time, the EIA process remains in a constant state of evolution and flux, as it has since its inception, driven by an ever-growing body of experience and critique. In the years since NEPA, there has been much progress in both recognizing and addressing the procedural and technical challenges of EIA practice. The following list of “best practices” summarizes some of the key characteristics identified as necessary to assure EIA effectiveness.

## EIA “BEST PRACTICES”

(adapted from Barrow 1997)

- *Timing*: assessment should be initiated early in process, before major project/policy decisions are made and alternatives are ruled out.
- *Assessment techniques*: systematic and interdisciplinary analysis should be performed using a variety of assessment techniques and incorporating biophysical, social, cultural, and economic impacts as well as indirect and cumulative impacts.
- *Independence*: objective review of results should occur to ensure scientific integrity.
- *Public disclosure*: EIA results should be published before decision is made in a way that is accessible and widely available for review.
- *Public participation*: participation should take place at various stages and suggestions incorporated into project design and decision making .
- *Follow-up*: EIA results should be integrated into on-going management and compliance monitored.

## BEYOND PROJECT-LEVEL EIA: THE RISE OF STRATEGIC ENVIRONMENTAL ASSESSMENT

At the same time that these improvements to the EIA process are taking place, there are others who hold that such refinements are not enough and that more sweeping changes are needed in order to meet the goal of sustainable development. This level of critique does not look at the EIA process in isolation, but focuses, rather, on the interfaces between the EIA process and the surrounding development context, thus adopting a more radical, bigger-picture view of the changes that are needed in order to move forward. These critics play an integral part in promoting the continued evolution of EIA, particularly the most cutting edge developments that we see today.

Perhaps the best example of such a critique, and the progress it has spurred, can be seen in the development of the Strategic Environmental Assessment (SEA), a relatively new tool for impact assessment that is gaining ground around the world. This tool came out of the critique that the project-based characteristic of EIA makes it, on its own, intrinsically antithetical to the promotion of sustainable development. The goal of EIA is to institutionalize damage prevention and to further an anticipatory, proactive approach to dealing with the environment, and yet the very nature of EIA makes it, in one sense, reactive in that it can only be done once a project is already proposed (Alshuwaikhat 2005).

SEA addresses this by establishing a process similar to EIA that can be carried out at the policy, planning or program level. In other words, SEA mandates that before a development policy, whether national or international, is passed, its impacts should be assessed and evaluated just as we do for individual projects. Sustainability goals, then, would “trickle down” from the highest levels of decision making to the project level based on the results of the assessment and decisions that followed (Alshuwaikhat 2005). This helps assure that the full range of development options are truly considered instead of waiting until many are ruled out to begin the assessment process. In addition to being more anticipatory and broadening the scope of EIA, SEA also provides a way of capturing cumulative and indirect impacts that can go unnoticed as a result of the narrow focus of project-level EIA. It is important to note that though SEA emerged out of the recognition of the short-falls of EIA, it is not meant as a substitute or replacement, but rather acts in conjunction with current EIA procedures.

In the past ten years, there has been growing recognition internationally about the important role that SEA can play in promoting sustainable development and the limitation of the project-based EIA. Significant challenges still exist, however, in terms of the implementation of SEA procedures. Current policy and planning procedures lack triggers to set the SEA process in action, and once initiated there is insufficient guidance on how SEA should be carried out. Advocates of SEA point out that this should not be surprising given the relatively short life of SEA development, and that the current challenges facing SEA resembles those faced with EIA in the 1970s (Shrimpton 2000).

SEA may have the most important role to play in the developing world, where the development challenges are the greatest and there are the most significant barriers to adopting good EIA practices. Currently, developing countries around the world have established various forms of EIA legislation and yet these are often ineffective in promoting ecologically sound development. Focusing on using impact assessment tools to make big-picture plans and decisions might be more effective in this context than the project-based EIA. Experience with the implementation of SEA in the developing world remains limited, however there are some promising examples. In Asia, for example, SEA has been used to develop Nepal’s forest management plan and Pakistan’s water program, and a few developing countries around the world have adopted legislation mandating some form of SEA, including Brazil, South Africa and China (Alshuwaikhat 2005).<sup>3</sup>

3. For an extensive, up-to-date review of SEA approaches in international financial and development organizations as well as SEA implementation in twelve different countries, see Chaker et al. (2006).

## EIA AS PUBLIC POLICY: NOT “HARD SCIENCE,” BUT A MEANINGFUL TOOL FOR DELIBERATIVE DECISION MAKING

The above sections have already indicated that EIA can hardly be regarded as “hard” or “exact” science. With all the procedural and technical challenges, scientists themselves are in fact some of the harshest critics of the EIA process. For one, the “scientific” goals of EIAs have largely proven impossible to attain: natural ecosystems and human populations are simply too complex to make accurate, “objective” predictions about the precise environmental and health impacts of any given project. Scientists critical of EIA often focus on the lack of a peer review-process and question the independence of the consultants hired by developers to complete the EIA (Robinson 2001; Treweek 1996). Assuring the legitimacy of EIA findings is one of the critical roles that the courts and the public can play, and this is why it is essential that there be a process to challenge findings. Measuring and predicting impacts is not simple, even with the highest level of independence. Furthermore, there is often a lack of good base-line data that can be used as a basis for making predictions, and certain impacts, particularly indirect and cumulative impacts, are often ignored because they are difficult and costly to quantify, despite the fact that they may be quite significant (Parr 1999).

In the end, the process of scientific inference is always laden with interpretative elements. However, if properly acknowledged, the value-ladenness of EIA does not necessarily discredit it as a tool for decision making. Quite the contrary, it can also be seen as an opportunity. Yet to date, few EIA experts are willing to radically rethink the core nature of EIA as a soft tool that “is political to its roots” (Richardson 2005, 350). The role of interpretation and valuation in EIA remains a contested issue—one that is, in fact, very much linked to larger debates in public policy and planning about the nature of decision making. More specifically, the so-called communicative, or argumentative turn in policy analysis and planning (see e.g., Fischer and Forester (1993), Dryzek (1993) or Healey (1993)) has also begun to affect some people’s thinking about EIA. Bringing some of the insights from planning theoretical debates related to the communicative turn to bear on this issue, Richardson (2005, 341) argues that environmental assessment “needs to engage with competing multiple rationalities, and the inescapable presence of value conflicts.” The question of values has indeed become a very difficult issue within EIA, as the line between facts and opinions can easily become quite blurred. The fact that the assessing experts typically carry out their work in the midst of various power struggles and processes of political maneuvering and a look into the daily practice of environmental assessment quickly confirms that EIAs or SEAs are highly politicized sites of struggle. Thus, a simplistic, technocratic interpretation of EIA (and SEA) is clearly falling short of its reality in practice, and it may be more appropriate to instead measure the usefulness of the EIA process by its ability to increase the overall sustainability of the decision-making process. In this context, Wilkins (2003, 404), calls for an even greater subjectivity in EIA, arguing that

subjectivity [is] . . . one of the positive attributes of the process that should be encouraged in order to promote sustainability and to inspire confidence in EIA. A satisfactory decision at the end of a specific EIA is not the only goal of the process. As a forum in which the public, proponents and regulators deliberate on the design and implementation of development plans, the creation of discourse around the pertinent issues at stake is also an important result. EIA promotes the development of values that foster greater social responsibility and has the capacity to increase the importance of long-term environmental considerations in decision-making.

Here, EIA is seen less as a tool for environmental decision making than for social learning (also see Wandesforde-Smith and Kerbavaz 1988, 161–163). Clearly, promoters of this view are typically more interested in the EIA process than in its results. But one does not have to go this far

to acknowledge the fact that subjective value assessments and power struggles are inescapable in the practice of EIA.

## CONCLUSION

In the late 1970s, sustainable development became an increasingly important public policy goal. In this context, EIA entered the stage as a new, now indispensable, decision-making tool. Far from being a foolproof scientific exercise, EIA remains a relatively malleable evaluation device that is always dependent on judgment calls and value assessments from experts. Also, as practical experience has shown, EIAs are not free from political and other influences. Even the most professional and independently prepared EISs are useless unless the results are taken seriously in the subsequent decision-making context. Regardless of this persistent element of subjectivity, however, the overall usefulness of the tool remains unquestioned. Today, most countries require EIAs for a host of large-scale projects, from transport infrastructures to housing estates and commercial or industrial developments. Assessment techniques have also been expanded to more specifically include health or social aspects (HIAs, SIAs) or to be applied at the level of plans and programs (SEA). EIAs are particularly contentious in the case of very high-profile, large-scale mega projects. Even short of rejecting a mega-project outright, an EIA might call for such extensive mitigation measures so as to render the entire project economically unviable, which is especially problematic in cases where politicians and public decision makers have tied their political futures to the construction of a particular project. In the end, any EIA process is only as good as the public policy environment it is embedded in.

## REFERENCES

- Alshuwaikhat, Habib M. 2005. Strategic Environmental Assessment Can Help Solve Environmental Impact Assessment Failures in Developing Countries *Environmental Impact Assessment Review* 25: 307–317.
- Alton, Charles. 2003. Let Us Make Impact Assessment More Accessible. *Environmental Impact Assessment Review* 23: 141–153.
- Bailey, John. 1997. Environmental Impact Assessment and Management: An Underexplored Relationship. *Environmental Management* 21, no. 3: 317–327.
- Barrow, C. J. 1997. *Environmental and Social Impact Assessment: An Introduction*. London: Arnold Publishing.
- Caldwell, Lynton. 1988. Environmental Impact Assessment: Origins, Evolution, and Future Directions. *Policy Studies Review* 8: 1, 75–83.
- Cashmore, Matthew. 2004. The Role of Science in Environmental Impact Assessment: Process and Procedure Versus Purpose in the Development of Theory. *Environmental Impact Assessment Review* 24: 403–426.
- Chaker, A., El-Fadl, K., Chamas, L., and B. Hatjian (2006) A review of strategic environmental assessment in 12 selected countries. *Environmental Impacts Assessment Review*, 26: 15–56.
- Dryzek, John. 1993. Policy Analysis and Planning: From Science to Argument. In: Fischer, Frank and Forster, John, *The Argumentative Turn in Policy Analysis and Planning*. Durham and London: Duke University Press.
- Fischer, Frank. 2000. *Citizens, Experts, and the Environment: The Politics of Local Knowledge*. Durham and London: Duke University Press.
- Fischer, Frank, and Forster, John (Eds). 1993. *The Argumentative Turn in Policy Analysis and Planning*. Durham and London: Duke University Press.
- Frank, David J., Hironaka, Ann, and Evan Schofer. 2000. The Nation-State and the Natural Environment over the Twentieth Century. *American Sociological Review* 65, 1: 96–116.
- Glasson, John, Therivel, Rikki, and Andrew Chadwick. 2005. *Introduction to Environmental Impact Assessment*, 3rd ed. New York: Routledge.

- Hartley, Nicolas, and Christopher Wood. 2005. Public Participation in Environmental Impact Assessment—Implementing the Aarhus Convention *Environmental Impact Assessment Review* 25: 319–341.
- Healey, Patsy (1993) Planning Through Debate: The Communicative Turn in Planning Theory. In: Frank Fischer and John Forster, eds., *The Argumentative Turn in Policy Analysis and Planning*. Durham and London: Duke University Press, 234–257.
- Kwiatkowski, Roy E., and Maria Ooi. 2003. Integrated Environmental Impact Assessment: A Canadian Example. *Bulletin of the World Health Organization* 81, no. 6: 434–438.
- Morrison-Saunders, Angus, and Bailey, John. 2000. Exploring the EIA/Environmental Management Relationship: Follow-up for Performance Evaluation. Paper presented at IAIA '00 Back to the Future conference (EIA Follow-up Stream). Hong Kong Convention and Exhibition Centre, 19–23 June 2000, Hong Kong.
- O’Riordan, Timothy, and Sewell, W. R. D., eds. 1981. *Project Appraisal and Policy Review*. Chichester: John Wiley and Sons.
- Parr, S. 1999. *Study on the Assessment of Indirect and Cumulative Impacts, as well as Impact Interactions*. Volume 1: Background to the Study.
- Petts, Judith. (ed.) 1999. *Handbook of Environmental Impact Assessment*, vol. 1. Oxford: Blackwell Publishers.
- Richardson, Tim. 2005. Environmental Assessment and Planning Theory: Four Short Stories about Power, Multiple Rationality, and Ethics. *Environmental Impact Assessment Review* 25, 341–365.
- Robinson, Nicholas A. 1992. International Trends in Environmental Impact Assessment. *Boston College Environmental Affairs Law Review* 19, no. 3: 591–621.
- Robinson, Nicholas A. 2001. Legal Systems, Decision Making and the Science of Earth’s Systems: Procedural Missing Links. *Ecology Law Quarterly* 27, no. 4: 1077–1161.
- Shrimpton, Mark, and Storey, Keith. 2000. *Assessing and Managing Socio-Economic Effects: Improving the Process of Environmental Impact Assessment*. Paper presented at the European Centre for Occupational Health, Safety and the Environment (ECOHSE) Symposium, 4–7 Oct 2000, Kaunas, Lithuania (available online at <http://www.gla.ac.uk/ecohse/2000papers/shrimpton-storey.pdf>, 1-31-2006).
- Treweek, J. 1996. Ecology and Environmental Impact Assessment. *The Journal of Applied Ecology* 33, no. 2: 191–199.
- Vries, Michiel S. de. 1999. *Calculated Choices in Policy-Making: Theory and Practice of Impact Assessment*. New York: St. Martin’s Press.
- Wandesforde-Smith, Geoffrey, and Kerbavaz, Joanne 1988. The co-evolution of politics and policy: elections, entrepreneurship and EIA in the United States. In: Wathern P. (ed.) *Environmental impact assessment: theory and practice*. London: Allen and Unwin, 161–91.
- Wilkins, Hugh. 2003. The need for subjectivity in EIA: discourse as a tool for sustainable development. *Environmental Impact Assessment Review* 23: 401–414.