

Introduction

1.1 HIGHLIGHTS

This book is intended to enhance impact assessment (IA) practice. It utilizes IA process design and management choices to provide practical solutions to IA practitioners for major, recurrent problems and contemporary challenges encountered in daily IA practice.

- In Section 1.2 we present a scenario that highlights the problems and challenges. The scenario illustrates how a failure to adequately anticipate and respond to varying perspectives and challenges can contribute to the collapse of a seemingly well-designed and managed IA process.
- In Section 1.3 we “go back to the fundamentals.” We use an IA definition and definitions of various IA types—environmental impact assessment (EIA), ecological impact assessment (EcIA), social impact assessment (SIA), health impact assessment (HIA), strategic environmental assessment (SEA), and sustainability assessment (SA)—to identify implications for overall IA process management. We also describe the current “state-of-the-art” of IA process management themes and issues. These analyses illustrate the widespread nature of the recurrent problems and contemporary challenges in IA theory and practice.
- In Section 1.4 we frame the IA process and identify IA regulatory and applied design choices as the bases for building a strategy. We explain why the IA process in general, and alternative IA processes and process types and variations, in particular, are essential to the effort.
- In Section 1.5 we present a strategy for facilitating more effective IA process management.
- In Section 1.6 we suggest how IA stakeholders could use this book.
- In Section 1.7 we highlight the major themes and conclusions.

1.2 A “NOT SO HYPOTHETICAL” SCENARIO

1.2.1 Brave Beginnings

A private proponent decides to establish a new hazardous waste treatment facility. It realizes that there will be

numerous licensing requirements including the preparation and approval of an EIA (a type of IA applied to projects). Accordingly, a consulting team is hired to prepare the EIA documentation and to ensure that all approval requirements are satisfied. A preliminary design is prepared for a “state-of-the-art” facility. An overview of available properties is conducted. A site is selected in a general industrial park a couple of miles outside a medium-sized community. An option is taken out on the property. Local community officials express a willingness to accept the facility because of the tax revenue to be generated and a promise to share a portion of the facility revenues with the local community. Two municipal councilors express reservations because of a fear that the facility might stigmatize the community. They also question whether the proposal might be premature on the grounds that need and alternatives have not been addressed at higher decision-making levels.

The EIA process has a promising beginning. A core study team is assembled with ample EIA and regulatory approval experience. The project manager, a civil engineer, is experienced in the design, approval, and construction of similar projects. The EIA team’s experience and expertise derive from a working familiarity with pertinent EIA requirements and guidelines, and the experience acquired from several similar projects.

A variety of engineering and environmental specialists, together with an expert in public participation, are added to the team. A preliminary study design is prepared. Initial scoping sessions are conducted with government officials to identify regulatory requirements, concerns, and priorities. An initial set of public meetings and open houses is convened to identify public concerns and preferences. The study program is modified to accommodate public and agency concerns. The EIA is divided into a clearly defined sequence of steps. Provision is made for public and agency input into each step.

The focus, in the early months of the process, is on establishing a sound environmental baseline and on refining facility characteristics. Several mitigation options are screened and compared in the ongoing effort to prevent and ameliorate adverse impacts. Initial background papers are prepared documenting baseline conditions, study

methodology, the analysis of alternatives, and preliminary impact predictions. Impact predictions are then refined, and impact significance ratings are determined, for both individual and cumulative impacts. A concerted effort is made to mitigate potentially significant, adverse impacts. In a few cases, this necessitates comparing mitigation options. These various analyses are consolidated first in working and background papers and then in a draft impact statement. Summary reports are prepared for each document. Documents are circulated for initial agency comment and are used as the basis for discussions and presentations at public meetings and open houses. All comments and suggestions are recorded. Responses are provided to each comment received including a detailing of how and where the comments are addressed in the EIA documentation.

1.2.2 Cracks in the Foundation

Public opposition begins to mount during this period. Initially, this opposition comes from individuals. It is not long before a local opposition group is formed. Local and then regional environmental organizations quickly join the fray. The local community groups are concerned about accidents and long-term potential human health effects, possible declining property values, and community stigma. They strongly criticize the limited, closed, and informal procedure adopted for selecting the preferred site. The environmental groups question the need for the facility, arguing that it is “old technology” that should be superseded by waste reduction, reuse, and recycling initiatives. They challenge the “growth ethic” inherent in the predicted usage of the facility, express concerns about possible climate change and cumulative effects from the facility and other industrial activities in the area, and argue that the proposed facility undermines the cause of environmental sustainability.

Several faculty members from the local university also voice their opposition. They focus their comments on the scientific validity of the impact predictions. They especially point to the failure to use control communities, the lack of peer review, the excessively descriptive analysis, the questionable statistical analyses, the crude models employed, and the short duration of the baseline studies. They stress that the studies fail to adequately address uncertainties, low probability–high consequence risks, and perceived risks. They argue that effects are defined too narrowly, noting that the socioeconomic effects analysis focuses on and overestimates short-term benefits, while addressing only superficially adverse direct and indirect ecological and socioeconomic impacts. They question the absence of a policy framework, the lack of waste management strategy for the region, the absence of a coherent approach to climate change impacts, and the failure to evaluate need and alternatives to the project. They are especially critical because of the lack of a comprehensive impact management strategy. They also wonder whether the net contribution of the facility to environmental sustainability will be positive or

negative. The opposition to the facility culminates in a raucous public meeting.

Many members of the public attending the meeting stress that public involvement in the process has been at best “tokenism” and at worst “manipulation.” Considerable frustration is expressed about what is seen as a loss of community control. Many participants argue that the process is neither open nor fair. They complain that the major decisions (i.e., need, alternatives to the project, alternative locations) were already determined before the EIA process was initiated. They suggest that it is unfair to locate such a facility in an area, which generates such a small proportion of the waste, has several similar facilities, and which is social and economically disadvantaged. Frequent reference is made to the mixed, “track record” of the proponent in other communities. The EIA process is described as unfair, especially giving the overwhelming resource advantage of the proponent and the lack of capacity of local groups and communities to effectively participate in the IA process. Both the municipality and the state are criticized for failing to have in place waste management and sustainability strategies. Such strategies, it is argued, would have provided a policy and program context for evaluating the proposed project. The EIA documents are criticized for lacking a broader planning perspective. The process is criticized for failing to adequately engage senior governments. Several municipal councilors soon reconsider their initial support for the facility.

Several potential participants decide that the EIA process is pointless. Some environmental groups argue that the EIA procedures are a wasteful distraction, with little, if any, environmental benefit. They decide either to focus on direct action against the project or to focus their limited resources on other environmental causes, where they believe they can make a difference. Many local individuals fail to become involved because of the resource disparity favoring the proponent and the perception that the major decisions have already been made. The local community groups are of mixed minds concerning whether it is better to participate in the process and risk being “co-opted” or oppose the project outside the process and risk being even further “marginalized” from decision making. Several academics, with potentially valuable knowledge, decide to bypass the process on the grounds that the data generated by the process is of no scientific value and of negligible utility in predicting or managing environmental changes. They also assert that the process is biased, subjective, and a waste of resources.

It becomes increasingly evident that there is a major disconnect between the proponent/EIA team and the public. The study team emphasizes the limited likelihood of an accident or spill. The public focuses on the severity of consequences if an accident or spill occurs. The team asserts that the scale and duration of impacts will be very limited. The public argues that the significance of ecological and community-related impacts will be high. The team talks in terms of project-related impacts. The public concentrates on the cumulative ecosystem and community impacts from the

project and from other projects and activities. The team points to significant waste management benefits and limited project-related impacts. The public questions whether the net environmental contribution will be positive or negative. The team stresses the many opportunities for public involvement. The public maintains that its decision-making role is negligible. The team demonstrates its compliance with environmental requirements. The public asserts that the project is unacceptable to the community, regardless of regulatory compliance. The team seeks public input into facility design and management options. The public focuses on whether the facility is necessary, whether there are better ways to reduce and manage the wastes, and whether other facility locations would be more suitable.

This pattern of “talking past each other” leads to considerable frustration on both sides. Both sides redouble their efforts to get their points across while expressing consternation that they are not being heard. An attitude of mutual contempt becomes increasingly evident. The proponent and the study team conclude that they have “done their bit” by informing and involving the public. They decide that offering up further opportunities will only “ramp up” the intensity of opposition. Many members of the public decide that continuing to attend “token” public participation events only legitimizes a “tone deaf process” impervious to genuine public involvement. Initial agency reactions to the EIA documents are mixed at best.

Some reviewers have difficulty in determining whether specific regulatory requirements and policies have been explicitly addressed, as they work their way through the lengthy documents. Other reviewers question the clarity of the methodology, challenge the methods or data sources used, and assert that the criteria and indicators selected for predicting impacts are inappropriate for the setting. Some also argue that the methods have been misapplied or suggest that conclusions are insufficiently substantiated. Several reviewers are troubled by unexplained format and methodological inconsistencies among disciplinary analyses, and by the failure to systematically address interconnections among disciplines, climate change, and cumulative effects. The EIA, they point out, is essentially a compilation of independently prepared analyses.

The alternatives analysis becomes a focal point of criticism. Several reviewers argue that a wider range of alternatives should have been considered, criteria are not explicitly defined or consistently applied, criteria are not ranked, and sensitivity analyses have not been undertaken to explore the implications of alternative criteria rankings and varying interpretations of mitigation potential and the implications of uncertainty. The superficial and arbitrary approach to interpreting impact significance also is widely condemned. Some reviewers, who could make a worthwhile contribution to the process, have little to offer. EIA review, they note, is a largely secondary function of their agency. And yet, they assert, it absorbs far too much valuable time and resources. They too see EIA requirements and

procedures as of little substantive value to either agency decision making or to environmental sustainability.

Substantial document modifications are made to address public and agency concerns and preferences. However, it is apparent that document modifications alone will not be sufficient to quell the tide of opposition that is building against the facility.

1.2.3 Hasty Repairs

The proponent decides, in the face of this mounting opposition, to retrench and reconsider how best to proceed. A community advisory committee is established to ensure the ongoing involvement of all affected interests. A community conciliator, acceptable to all parties, is hired to chair the committee. Funding is provided to the committee to hire specialists to peer review all the major technical analyses. A separate subcommittee is established to formulate an impact management and local benefits strategy. The strategy is to ensure a greater level of local participation and control in facility operations, management, monitoring, and contingency planning. It also is to formulate local benefits and compensation policies and procedures for both local residents and for the overall community. A parallel government advisory committee is established to better coordinate regulatory interactions.

1.2.4 Too Little Too Late

The costs and the duration of the process have greatly increased—to the considerable exasperation of the proponent. The reformulated approach has some success in addressing many of the technical, scientific, and community control concerns. Broader environmental sustainability and social equity concerns are largely beyond the committee’s mandate. Several options advanced by facility opponents are not addressed on the grounds that they are impractical or beyond the control of the proponent. The negative perceptions of the proponent, the facility, and the EIA process are only slightly ameliorated by these efforts. Some environmental and community groups either refuse to participate in the modified process or opt out when it becomes evident that the committee agenda will be largely confined to refinements to technical analyses and to impact management. Several municipal councilors come to the conclusion that the likelihood of a satisfactory middle ground is remote and decide to add their voices to those of the facility opponents. More parties withdraw from the community advisory committee under a barrage of criticism from the groups they ostensibly represent.

Demonstrations, media interviews, and e-mail and letter campaigns by community and environmental groups further contribute to the momentum shift in political and public opinion against the project. The proponent attempts, behind the scene, to exert direct political pressure on local and senior government officials and on elected representatives.

These contacts are made public, further undermining the credibility of both the proponent and the EIA process.

It is increasingly evident that it is virtually impossible to reverse the momentum that has built up against the facility. Faced with the prospect of continued intense local opposition and protracted legal battles, the proponent decides that the costs of proceeding are simply too great and the likelihood of project approval is too low. The application is withdrawn and the proponent decides that it will concentrate instead on upgrading and expanding existing facilities in other communities.

1.2.5 Recurrent Problems and Contemporary Challenges

The scenario illustrates a range of recurrent problems and contemporary challenges that are broadly evident in IA practice.

With regard to the recurrent problem of decision-making influence:

- The proponent and the government (at all levels) failed to see the relevance of strategic level decision making.
- Some environmental groups chose not to participate because they saw the IA process as lacking in environmental substance and, therefore, irrelevant to their objectives.
- Some environmental and community groups saw the IA process as so peripheral to decision making that direct action was considered a more effective strategy.
- The proponent attempted to influence decision making outside the IA process by exerting political influence.
- Some community groups and individuals decided that the process was so biased and inequitable that any involvement would be ineffective.
- Some government officials stayed out of the IA process on the grounds that both the process and its outcomes were of negligible relevance to agency objectives.
- Some community groups and individuals withdrew from the process because their views and proposals were not being considered.
- Some community groups and individuals failed to participate in or withdrew from the process because the major strategic decisions had already been made.
- Some academics chose not to be involved because they viewed IA as unconnected to theoretical or applied science.
- Some academics chose not to be involved because they challenged whether IA methods could predict or manage, with any degree of certainty, environmental changes, with or without a proposed action.

With regard to other recurrent problems encountered in the IA process:

- The local university faculty members and some peer reviewers argued that the IA process, documents, and methods should have been more scientifically rigorous.
- The environmental groups and some government reviewers made the case that alternatives were too narrowly defined and were not systematically and consistently evaluated.
- The environmental groups concluded that the IA process and documents failed to adequately advance long-term environmental quality and sustainability principles and goals.
- The proponent and some reviewers felt that the process and documents were too lengthy and costly. They also were concerned that the IA documents were insufficiently linked to specific regulatory approval requirements, policies, and guidelines.
- Local community groups and some politicians expressed the view that they were losing control over their lives and their community. They did not trust the proponent and had little faith in the government.
- Local community groups and individuals took the position that the IA process was largely closed and that their views and positions were not seriously considered.
- Local community groups and politicians argued that the IA process was unfair and that the benefits and costs from the proposed facility were unfairly distributed.
- The environmental groups, some local residents, and some government reviewers felt that the risks and uncertainties associated with the proposed facility were not adequately anticipated or managed.

The IA process also failed to effectively grapple with a range of contemporary challenges:

- The study team failed to learn from other experiences in siting “locally unwanted land uses.”
- No effort was made, by drawing upon other experiences, to enhance the decision-making influence of the IA process and documents.
- The IA process neither drew upon nor, by using effective impact management, contributed to other IA theory-building efforts.
- The choices made regarding the scope of environment and effects were not effectively derived or substantiated.
- The IA process was undermined by limited, flawed, and overly simplistic methods for determining significance, for addressing cumulative effects, and for addressing climate change impacts.
- No effort was made to enhance the capacity of local communities, area residents, and other key stakeholders to effectively participate in the IA process.
- The IA process was not effectively embedded within broader level, strategic planning, and decision making.

This limitation greatly inhibited the ability of the process to effectively address alternatives, cumulative effects, and transboundary effects.

- The IA process and related methods were poorly designed for and adapted to the local context.

These flaws are not inherent to IA practice. Better results can be achieved if appropriate changes are made to IA process design and execution at the regulatory and applied levels.

1.3 THE BASICS

This section uses IA definitions and an overview of historical and emerging IA themes and issues to identify implications for overall IA process management and to provide a foundation for addressing the recurrent problems and contemporary challenges described in the scenario.

1.3.1 IA Definitions

IA, in its most basic form, is the process of identifying the future consequences of a current or future action. The “impact” is the difference between what would happen with the action and what would happen without it (IAIA, undated b). This definition is general enough to encompass (or not) a range of current or proposed, planned or unplanned initiating actions (e.g., projects, plans, programs, policies, legislation, activities, operational procedures). It also may or may not include various “reasonable” alternatives to the action and/or alternative means of carrying out the action.

The “impact” part of the definition, with the impacts taking place in the future, implies a cause–effect relationship, and an ability to predict future condition changes, with and without the proposed action. Future conditions, with and without an action, cannot be predicted with certainty. Therefore, IA involves identifying and managing risks and uncertainties. It must necessarily adapt to unanticipated changes, which, in turn, entails a postapproval component. The definition of “impact” is broad enough to encompass (or not) a diversity of potential future, current or actual, direct and indirect, individual and cumulative, positive and negative, and likelihood of occurrence impacts upon a broadly or narrowly defined range of environmental conditions (e.g., physical, chemical, biological, ecological, human health, cultural, heritage, social, economic, financial, built, interrelationships, sustainability). The “assessment” part of the definition can be very general (e.g., limited to identifying future consequences) or more specific activities can be identified (e.g., identifying, describing, measuring, predicting, interpreting, mitigating, enhancing, integrating, and controlling impacts).

IA is often, but not always, explicitly guided and bounded by values, goals, and objectives, and ethical imperatives and standards. There can be both direct and indirect, and both procedural (e.g., decision making informed, decision

making influenced, decision making made more open, systematic, transparent, inclusive, substantiated, coordinated and unbiased, power shared or redistributed) and substantive (e.g., adverse impact reduced, positive impacts enhanced, environmental or social justice served or undermined, sustainability facilitated) outcomes from the IA.

IA precedes decision making, prior to irrevocable commitments. It can be directed and shaped by action-forcing and strictly defined institutional arrangements and requirements. Or the connections between IA and its institutional setting can be more passive, informal, general, voluntary, and discretionary. IA institutional arrangements can entail interconnections across decision-making authorities (e.g., among departments, among governments for addressing transboundary impacts), and among decision-making levels (e.g., tiering).

The assessment process involves interested and affected parties who participate in and influence, to varying degrees, the conduct of the process and its outcomes. The process can be designed and managed to facilitate or inhibit stakeholder participation, influence, and control. The links between IA and decision making mean that the exercise and allocation of political power is inherent to IA practice. IA can adopt a largely passive political role (e.g., documents and process inform decision making). Or it can proactively seek to influence, shape, bound, or direct decision making by either reinforcing the existing distribution of power or by facilitating the redistribution of power among parties. Impact assessment is adapted to (sometimes well and sometimes poorly) context. Inasmuch as IA is intended to positively influence decision making and environmental outcomes, IA practice affects context, either negatively (e.g., a wasteful diversion of resources and attention, sustainability undermined) or positively (e.g., reforms decision making, influences environmental perceptions, values, attitudes and behaviors, net environmental gains). The boundaries between IA theory and practice, among IA types, and between IA and related fields of theory and practice are fluid and fuzzy. Interconnections flow in multiple directions, not always explicitly. Figure 1.1 highlights the major elements encompassed, to varying degrees, within or implied by IA definitions. The treatment of these elements varies among IA types.

EIA, the longest standing and most institutionalized form of IA, tends to be largely limited to physical projects and activities. Action-forcing institutional requirements tend to dictate the scope of EIA requirements, although these requirements vary by jurisdiction, and have evolved over time. The definition of environment generally includes a partial (as when limited to areas of jurisdiction) or more comprehensive list of physical and ecological impacts. The extent to which other direct and indirect social, health, and economic aspects of the environment are included varies by jurisdiction. Direct, indirect, negative, and individual impacts are generally addressed. Whether positive, cumulative, and sustainability impacts are addressed again varies by

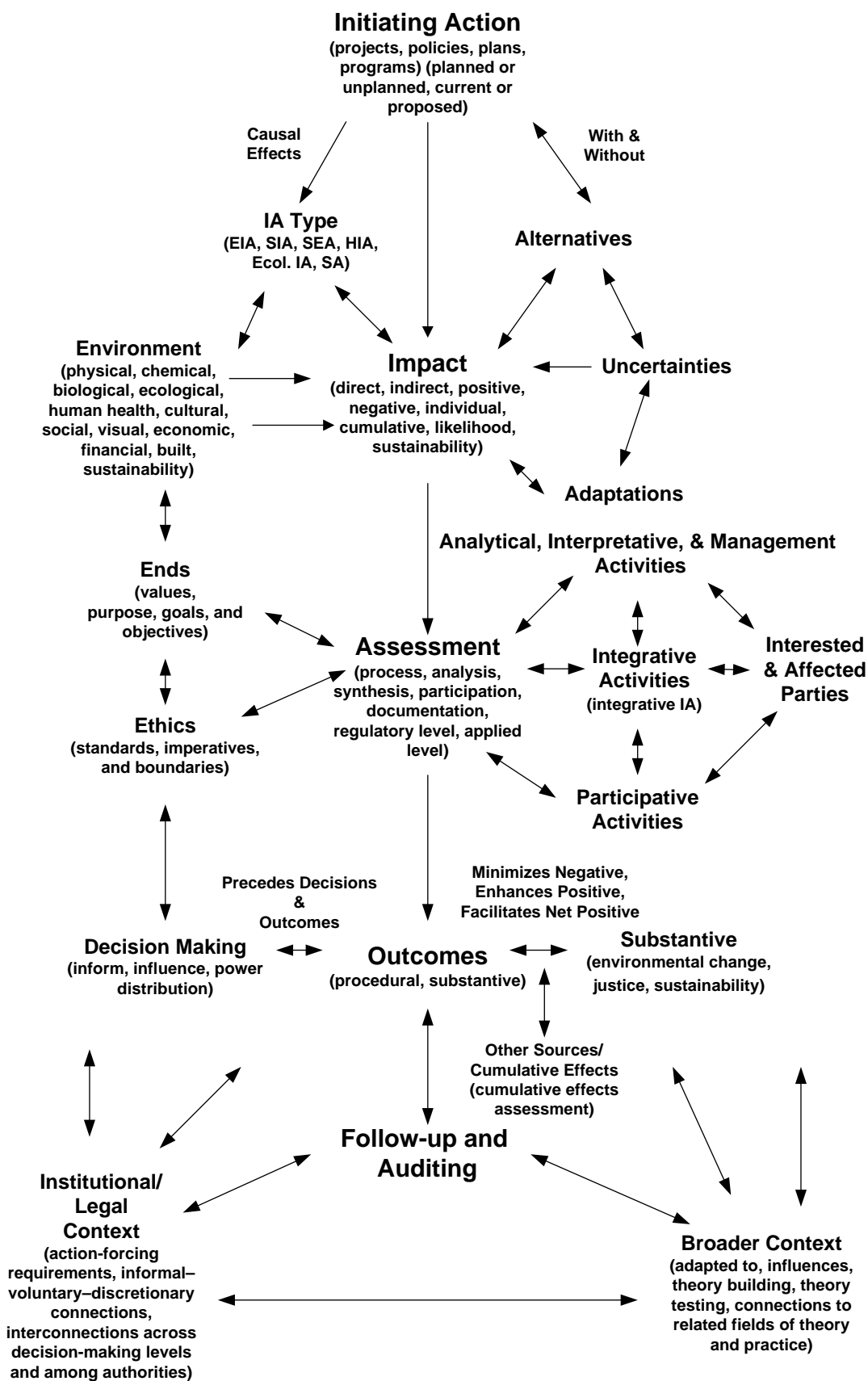


Figure 1.1 IA definition elements.

setting. There is considerable variation in if and in what manner alternatives are addressed, in the treatment of uncertainties, and in the extent to which the process is guided and directed by explicit ends and ethical boundaries.

EIA definitions and characterizations tend to include a few basic activities or steps (e.g., screening, scoping, baseline analysis, impact identification, impact prediction, impact interpretation, alternatives analysis, mitigation, public involvement, decision making, follow-up), although, as detailed in Chapter 2, there are an immense array of choices available in process design and management. EIA operates at a regulatory (e.g., requirements and guidelines, document review, review meetings) and at an applied (e.g., process design and management, interim and final document preparation, and review) level. It tends to center around the preparation and review of assessment documents. It informs and involves, to varying degrees, interested and affected parties at key decision points in the assessment process. Inasmuch as the assessment process is generally “triggered” by a proposed action, the involvement of parties, other than the proponent, in defining the essential elements of the proposed action is often limited.

The EIA process occurs, or should occur, prior to decision making. It, however, tends to assume a fairly passive approach to decision making (e.g., documents provided to decision makers as information) and an indirect route to environmental change. Follow-up to effectively manage anticipated and unanticipated impacts, to ensure the effective implementation of commitments, to involve interested and affected parties in postapproval activities, and to ascertain the accuracy of predictions is increasingly becoming a vital EIA activity. EIA generally occurs under the auspices of legal, action-forcing, institutional arrangements. Increasing attention is being devoted to the interconnections among decision-making levels and among authorities. There is now a considerable body of EIA regulatory and applied “good practices.” There is substantial variation in the extent to which these “good practices” are being applied. There also are misgivings regarding if and the extent to which these “good practices” are always appropriate in different contexts. Although there is an active interchange between EIA theory and practice, and between EIA and related fields of theory and practice (including other IA types), there remains a substantial gulf between EIA theory and practice, and a considerable variation in the quality and effectiveness of EIA institutional arrangements, and of EIA documents and processes. Although the underlying purpose of EIA is to facilitate the integration of environmental concerns and values into decision making, a recurrent criticism of EIA institutional arrangements and practices has been the predominance of procedural concerns at the expense of and sometimes exclusion of substantive concerns. This explains, in part, the emergence of other IA types with a more substantive focus. Notwithstanding differences in emphasis, definitions of other IA types tend to largely follow the lead of EIA, with a few notable exceptions and variations.

EcIA is “concerned with the process of identifying, quantifying, and evaluating the potential impacts of defined actions on ecosystems and their components” (IEEM, 2006). If properly implemented, it provides a scientifically defensible approach to ecosystem management (Treweek, 1999). Increasingly, *EcIA* focuses on the maintenance of biodiversity. *EcIA* can take the form of a standalone IA (if, for example, the “trigger” is an environmentally sensitive area), a component of EIA, or a support document for another IA type. *EcIA* emphasizes the effective application of scientific knowledge, the importance of interactions and cumulative impacts, the desirability of net ecological gains and ecological sustainability, the need to operate within ecological limits, the necessity of systematically identifying and adaptively managing risks and uncertainties, and the critical role of follow-up. It broadly defines ecological environment and impacts, encompasses a body of research, knowledge, and techniques practiced by ecological professionals, entails close natural science and community knowledge links, adheres to ecological ethical imperatives, and explicitly recognizes links to the human environment and sustainability.

Although more commonly assuming a supportive role to EIA, *EcIA* can assume an especially valuable role in support of SEA (e.g., in addressing regional cumulative effects), HIA (e.g., in addressing health implications of ecological change), and SIA (e.g., in addressing social implications of ecological change). *EcIA* definitions and characterizations appear to devote less attention to the systematic generation and evaluation of alternatives, to community knowledge and participation, to decision-making influence, and to process adaptations to contextual variations. More attention could be devoted to interconnections with other components of the environment and other types of impact.

SIA includes “the processes of analyzing, monitoring, and managing the intended and unintended consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions” (Vanclay, 2003). *SIA* is “best understood as an umbrella or overarching framework that embodies the evaluation of all impacts on humans and all ways in which people interact with their sociocultural, economic, and biophysical surroundings” (Vanclay, 2003). The primary purpose of *SIA* is “to bring about a more sustainable and equitable biophysical and human environment” (IAIA, 2003). It seeks to “help individuals and communities, as well as governments and private sector organizations, understand and better anticipate possible social consequences on human populations and communities of planned and unplanned social changes” (Burdge, 2003a).

SIA definitions generally broadly define the initiating action, although there is more *SIA* experience at the project level. They recognize that assessing impacts on people can rarely be limited to simple cause–effect relationships. It is necessary to consider both the consequences of both planned

interventions and social change processes, to evaluate how people interact with their surroundings, and to facilitate individual and community understanding and management of social change processes. Individual and community perceptions can have a considerable effect on the incidence and severity of social impacts. The recognition of the close interconnections between SIA and public participation underscores the ethical responsibility to involve interested and affected parties, and the contributions that those parties can make in preventing and ameliorating potential negative social impacts, and in facilitating the realization of net positive social impacts.

The SIA definitions broadly define the human environment and impacts, include a body of research, knowledge, and techniques practiced by SIA professionals, provide for close links to the social sciences and the community knowledge base, appreciate the value-full nature of IA, explicitly recognize links to the biophysical environment and sustainability, and acknowledge the importance of contextual adaptations. SIA is often, but not always, encompassed within EIA and SEA requirements and procedures. Depending on the situation, it can assume a secondary status to biophysical impacts (e.g., only indirect social impacts considered, receives less decision-making weight) and/or selective socioeconomic effects (e.g., employment, investment, community benefits) can assume a more prominent decision-making role than biophysical impacts. SIA definitions vary in their treatment of decision-making influence and the distribution of power. Technical/scientific and participative SIA characterizations tend to give it limited attention. More politically oriented SIA characterizations consider the exercise and redistribution of political power more fully. The generation and evaluation of alternatives, the management of uncertainties, and interconnections with the institutional setting tend to be featured less prominently in SIA definitions and characterizations.

HIA is defined as “a combination of procedures, methods, and tools that systematically judge the potential, and sometimes unintended, effects of a policy, plan, program, or project on the health of a population and the distribution of those effects within the population. *HIA* identifies appropriate actions to manage those effects” (IAIA, 2006a). It addresses induced changes in health determinants and resulting health outcomes. It seeks to proactively address health hazard risks and health improvement opportunities (IAIA, 2006a).

HIA is a multidisciplinary activity. It cuts across the traditional boundaries of public health, medical services, and environmental and social sciences. *HIA* can operate as a standalone form of IA or as a component of EIA or SEA. It defines health broadly (e.g., health determinants, health consequences, positive, negative, direct, indirect, cumulative). It explicitly considers the distribution of health effects within and among populations and communities. It includes interconnections with biophysical effects, socioeconomic-cultural effects, and sustainability. It acknowledges the need to adaptively manage risks and uncertainties. *HIA*

definitions and characterizations do not always devote as much explicit attention to alternatives, to the role of interested and affected parties, to the shaping and bounding roles of ends and ethics, to proactive measures to influence decision making, and to contextual adaptations.

SEA “is generally understood as an impact assessment process that aims to mainstream environmental, social, economic, and health issues and ensure the sustainability of strategic decisions” (IAIA, undated b). Early *SEA* definitions tended to be more strongly rooted in project EIA. *SEA* was commonly depicted as a “formalized, systematic, and comprehensive process of evaluating the environmental effects of a policy, plan, or program, and its alternatives, including the preparation of a written report on the findings of the evaluation, and using the findings in publicly accountable decision making” (Thérivel and Partidário, 1996). These early *SEA* characterizations adopted a largely positivistic-consequentialist perspective to impact assessment (Jiliberto, 2011). They emphasized the action-forcing nature of *SEA* institutional arrangements. In common with EIA characterizations, they depicted a planning process exemplified by formal goals, and objectives, the systematic generation and evaluation of alternatives, and the formal identification, scoping, analysis, interpretation, and management of environmental effects. They stressed the need for comprehensive documentation, the explicit incorporation of the views and preferences of interested and affected parties, and informed, transparent, and fully substantiated decision making.

Over time, there has been a widespread acknowledgement of the *SEA* process implications of higher level decision-making characteristics. *SEA* is more strategic, visionary, and conceptual than EIA (Fischer, 2007b). Outputs are generally less detailed. *SEA* entails larger scales and longer time horizons. It is more qualitative, more uncertain, vaguer, and more distant from the public than EIA. Planning and policy-making processes vary dramatically among *SEA* types (e.g., policies, programs, and plans). *SEA* is highly context dependent. The boundaries between planning/policy making and *SEA* are blurred and fluid. These differences have led to an acknowledgement that *SEA* is best described as a family of approaches using a variety of tools—approaches and tools that must be adapted and combined to suit the situation (Ahmed and Sánchez-Triana, 2008a). There also has been a tendency to replace terms such as consequences and impacts with vaguer and broader concepts such as environmental aspects, effects, and issues (Jiliberto, 2011). The conceptualization of *SEA* as a tool for “mainstreaming” environment and sustainability reflects a less formalized-rationalistic and more collaborative-integrative-adaptive impact assessment approach. Typically, the *SEA* proponent is the decision maker (Thérivel, 2010).

This orientation shift is far from uniform. By and large, there is a propensity to employ a broad definition of the environment (i.e., biophysical, social, economic, health,

sustainability) and to seek to infuse higher level planning and decision making with environmental values, perspectives, and ethical imperatives. Beyond this basic, shared objective, there is considerable variability in the approaches adopted. Consequently, SEA characterizations may or may not, and to varying degrees, systematically address alternatives, manage uncertainties, and identify, predict, interpret, and manage direct, indirect, and cumulative positive and negative impacts. The desirability of involving interested and affected parties is widely accepted. But the extent of actual involvement varies from virtually none or public information only to highly collaborative even joint decision-making approaches. The considerable variability evident in SEA characterizations necessarily reflects the considerable differences among SEA types and among contextual characteristics. But it also illustrates genuine perspectives differences in actual and preferred process attributes.

SA is “a process that seeks to identify the future consequences of a proposed action in a manner that directs future decision making toward sustainability” (Pope and Dalal-Clayton, 2011). SA is a range of processes, rather than a single process, all of which share the same aim of integrating sustainability concepts into decision making (De Ridder et al., 2010; Pope, 2006). SA, consistent with the stress placed on integration into decision making and among environmental components and impacts, is a form of integrated assessment (De Ridder et al., 2010). SA can be applied to any initiating action and can, and arguably should, subsume other IA types. SA is directed and bounded by an underlying set of values and ethical precepts. The assessment of sustainability necessitates the consideration of direct–indirect, positive–negative, and individual and cumulative effects. Alternative courses of action for achieving sustainability must be explored. Other essential attributes of SA include the adaptive and precautionary management of uncertainties, the systematic consideration of procedural and substantive equity, a proactive approach to influencing decision making, a demonstrable contribution to the cause of sustainability, the full and ongoing involvement of interested and affected parties, a vital role for follow-up and auditing, and contextual adaptations.

Not immediately evident from SA definitions and characterizations are answers to a host of thorny conceptual, methodological, and applied issues. How, for example, should SA best subsume or blend with other IA types? How can such a broad range of environmental components and impacts be effectively integrated without “watering down” the often small number of critical components essential to sustainability? How is SA to move beyond brave, but vague, intentions to dealing effectively with the hard trade-offs inherent in public and private decision making? How are the concerns and preferences of existing interested and affected parties to be traded off with those of future generations? How can SA effectively influence decision making and redistribute power when sustainability imperatives so often run counter to the interests of those

in positions of power? How can flexibility and adaptability be maintained without compromising away critical limits and thresholds? How can overriding sustainability principles be adhered to at the same time as making the necessary regional and local contextual adaptations? The field of sustainability has devoted considerable attention to these issues and many others. However, the necessarily broad and admittedly ambiguous definitions of SA and sustainability leave open the potential for many forms of SA that ultimately do little to facilitate sustainability, and may, in some circumstances, undermine its basic purpose.

Several synergies are evident when the IA definitions are considered collectively. EIA offers a well-established set of action-forcing institutional arrangements, a host of process design and management choices, and a well-tested array of frameworks, concepts, methods, and “good practices.” The more focused forms of IA (e.g., EcIA, SIA, and HIA) provide an opportunity to more effectively integrate substantive environmental concerns into EIA and SEA. They also offer more direct and effective links to the natural and social science knowledge base, a greater sensitivity to and experience with addressing interactions among changing patterns of baseline conditions, cumulative effects, and management actions, well-defined ethical principles and imperatives, and an enhanced ability to appreciate, adapt to and manage risks and uncertainties. EcIA provides a foundation for integrating ecological sustainability concerns. SIA provides an effective, direct and ongoing connection, both in an analytical and in a collaborative sense, to public values, attitudes, preferences, concerns, and knowledge. HIA and SIA provide a foundation for integrating human sustainability concerns. SEA can frame and direct project-level EIA. EIA, especially when it fully integrates HIA, SIA, and ecological IA, can inform and ground SEA. SA can facilitate the infusion of sustainability frameworks, values, principles, objectives, thresholds, and trade-off rules into all forms of IA. SA provides a mechanism for integrating IA types into all decision-making levels. Each IA type can benefit from a greater understanding of the perspectives, concepts, frameworks, methods, and experiences associated with other IA types.

All IA types struggle, in different ways and utilizing different solutions, with recurrent problems. Difficult decisions must be made regarding the selection, integration, and adaptation of appropriate regulatory and process design and management choices. Each attempts, with varying degrees of success, to influence decision making. Each, again to varying degrees, draws upon and contributes to a theoretical and applied knowledge base. Each identifies, blends, and achieves ends, in part through the systematic generation and evaluation of alternatives. Each seeks to protect and enhance the environment. Each attempts to use resources effectively and efficiently. Each aims to make decision making more democratic, transparent, and collaborative. Each introduces and applies, some more explicitly than others, ethical procedural and substantive ethical principles and standards.

Each must identify, adapt to, and manage risks and uncertainties. All must address interconnections and how best to adapt to and influence context.

Contemporary challenges cut across the IA types. All IA processes encompass significance determination and follow-up activities. Each can contribute to more effective approaches for siting “locally unwanted land uses,” and for managing effects on and from climate change. Cumulative effects assessment (CEA) and multijurisdictional IA are pertinent to and potentially advantageous to all IA types. All struggle with the potential and limits of “good practices” at the strategic level. All are concerned with how best to influence decision making, with enhancing capacity building, and with ensuring that the approaches and methods applied are appropriate to the context. Each encompasses varying, sometimes conflicting, perspectives regarding if and the extent to which the definitions of the environment and effects should be broadly or more narrowly defined.

The definitions and characterizations of IA types presented in this section collectively demonstrate the need to systematically identify and explore interconnections among IA types. The varying characteristics, strengths, and limitations of the IA types suggest the potential for both complementary and conflicting interactions. The whole can be either more or less than the “sum of the parts.” Inasmuch as the recurrent problems and contemporary challenges are shared by, but in different ways, by each IA type, when addressing each problem or challenge it is essential that the potential contribution of each IA type be fully addressed.

1.3.2 Themes and Issues

The roots of IA, as a formalized (i.e., action-forcing) procedure for assessing the potential environmental effects of proposed actions, are not deep. First introduced in the United States in 1969 (the National Environmental Policy Act—NEPA), the field has expanded rapidly, especially over the past three decades. IA is now applied in more than 100 countries, often at multiple decision-making levels. The definition of the environment has broadened from an early emphasis on physical and biological effects to an increased concern with biodiversity, social, cultural, heritage, human health, and ecological effects. At the same time there has been intense debate regarding whether environmental values are better served when IA requirements and processes are broadly or narrowly defined.

In the early years direct impacts, usually from large capital projects, tended to be the focus. Much greater emphasis is now placed on indirect, positive, and cumulative effects, on substantive gain and compensation (e.g., mitigation banking, compensation pools) rather than simply on procedural compliance and minimizing negative effects, on integrating IA into earlier decision making (e.g., need, reasonable alternatives), on different IA types (e.g., SEA, SA, SIA, EcIA, and HIA), and on interconnections with other existing and proposed actions. The effectiveness of

more holistic regulatory and applied approaches, especially with reference to facilitating sustainability, has received considerable attention. Progress in the effort to shift the orientation of IA practice from process to substance, however, has been halting, uncertain, and uneven. In some jurisdictions, the range of proposed actions subject to IA requirements has been narrowed, and the scope of substantive environmental concerns subject to IA requirements has been reduced.

IA requirements have been applied to policies, plans, programs, legislative proposals, technologies, development assistance, products, and trade agreements. The application of IA to higher decision-making levels, through SEA and SA, has increased dramatically in recent years, albeit unevenly among jurisdictions. The standard of proposal acceptability has increasingly shifted, again with exceptions, from positive economic/limited negative ecological and indirect social effects to substantial, net positive direct and indirect ecological, social and economic gains, especially for global commons concerns. The role of trade-offs in IA-related decision making has been a particular focal point. IA also has been adapted to different jurisdictional types and settings (e.g., third world and transitional economies, indigenous decision making regimes, the global commons—oceans, Arctic, Antarctic), to inter- and multijurisdictional situations (e.g., harmonization, duplication), and to private sector decision making. Increasing attention has been devoted to the political nature, relevance, and effectiveness of IA instruments, both in general, and relative to other means of political influence and control.

Boundary spanning and integration, both within IA and to related fields, has received considerable attention. Frameworks and strategies have been formulated for better addressing and transcending interrelationships among impacts, disciplines, and IA types. The identification and management of systemic and cumulative effects has been a priority. Links between IA and decision making, in varying institutional settings, has been a particular concern. IA has been linked to resource management, urban and regional planning, landscape planning, risk assessment, corporate planning, environmental management systems (EMS), and efforts to protect threatened and endangered species, communities, and ecosystems. The reconciliation of broadly based effectiveness standards and the need for contextual adaptations has received considerable attention. Such efforts have been aided by comparisons across jurisdictions and setting types.

From an initial focus on procedural requirements, much greater stress is now often placed on procedural and substantive fairness, equity, justice, and vulnerability, on the integration of substantive environmental concerns such as biodiversity and sustainability, on the adaptation of precautionary and pollution prevention principles, and on the application of traditional knowledge. The roles of complexity, precaution, diversity, reversibility, resilience, uncertainty management, anticipation and rapid appraisal and

response, and harm reduction and catastrophe (human and natural, deliberate and accidental) avoidance and minimization are increasingly stressed in the management of risks and uncertainties. This orientation shift reflects a greater humility in acknowledging ignorance and its implications, and a greater openness to accept and correct the biases and limitations of conventional risk and uncertainty management procedures.

The political dimension of IA has received more emphasis in recent years. Particular attention has been paid to whether, and in what ways, IA can more effectively and more proactively influence decision making and reshape institutional arrangements, procedures, and values. An especial effort has been made to draw upon lessons and insights from IA decision making “successes and failures.” Courts and review panels have assumed a greater role in defining and interpreting IA requirements. Prominent, politically related, contemporary issues include the effectiveness of tiering arrangements, the management of transboundary impacts, the potential role of IA in community development and democratization, and the desire to resolve disputes and achieve sociopolitical acceptance, without negotiating away environmental interests.

The conceptual foundation of IA was largely neglected in the early years when the priority was on establishing and refining institutional arrangements and “good practices.” In more recent times, connections to the natural and social sciences and to philosophy, IA theory building and testing, explorations of the role of causality, the strengthening of follow-up procedures, the potential role of community-based and indigenous research and knowledge, and the facilitation of knowledge and information sharing, training and learning have received more attention. The role of rationalism, in all its variations, has been the subject of ongoing debate, and a fruitful source of conceptual frameworks and procedures.

The grounding of IA in practice has been another priority. IA documents and review procedures have been streamlined, and made more efficient and effective. Good practice screening, scoping, and mitigation procedures and tools, together with insights from problematic efforts to focus IA requirements and procedures, have received particular attention. An especial effort has been made to enhance effectiveness and efficiency at strategic decision-making levels. Greater use is made of IA document standards (e.g., document format and style, electronic publishing, use of geographic information systems). An increased effort has been made to integrate practice-based knowledge through the greater use of IA quality and effectiveness analyses, practitioner and other state-of-practice surveys, case studies, quality control and assurance initiatives, monitoring and external auditing procedures, and applied research, especially with reference to the tracking of sustainability progress.

Effective and meaningful public access, understanding, communications, learning, and participation remain priorities. Greater efforts are being made to facilitate IA capacity building and training, the pooling of information, knowledge

and experience, collaboration and conflict management, and community-based participatory and sustainability research and knowledge development. Methods and procedures for facilitating earlier and more collaborative and empowering public participation have been refined. Especial attention has been devoted to the meaningful involvement of indigenous peoples and to effective participation in developing and transitional countries. Oversight of IA practices and procedures by courts and civil bodies is increasingly evident. Greater use is being made of social networking and of online discussion groups to extend the reach and the role of the public in IA knowledge building and testing.

More effective significance determination has emerged as a major priority. The role of subjectivity, perceptions, values, and ethics in IA practice has received increased attention. A greater effort has been made to more effectively integrate environmental and social distributional, vulnerability, equity, and justice concerns. Distributional analysis requirements and tools have been refined. Impacts on and the perspectives of women and indigenous peoples are more prominently featured. As IA has matured as a field of practice, more thought has been given to professional and corporate roles, responsibilities and ethical standards, including the possible need for and accreditation of IA professionals.

The spotlight in IA literature and practice is now being turned on new challenges. Transboundary impacts, the “tiering” of IA requirements, and the integration of macro-environmental issues, such as climate change and biodiversity, are particular concerns. IA is being adapted to protect global environmental resources (e.g., the oceans, the Arctic, and the Antarctic), to address the implications of global economic activity, to integrate international agreements, conventions, principles, standards, directives and treaties, and to explore the consequences of economic trends such as privatization.

IA is now a large, complex, and rapidly changing field. The themes and issues, described above, are far from clearly defined, uniform among jurisdictions, or unambiguous. Countervailing trends and patterns are commonplace. The gulf between theory and practice remains immense. Notwithstanding numerous examples of “good practice,” “poor practice” examples are even more evident. There is far from a consensus regarding many “appropriate” good practice standards, even regarding such basics as IA aims and definitions. Perspectives vary greatly regarding how the field is evolving, and whether the changes that are occurring are desirable or undesirable. It could equally well be argued that, depending on one’s perspective and the setting, little of substance has changed, there is no discernible general pattern or trends, the field swings back and forth in pendulum-like fashion in concert with political changes, multiple, often conflicting and counterbalancing trends and patterns are occurring, or a gradual, albeit halting, uneven and “fuzzy” trend can be discerned. Arguably, the greatest danger is complacency. Simply assuming that “things are getting better” and positive reforms will remain in place and

not be “watered down” or reversed is, at best, naïve. A more prudent approach would be to identify and systematically explore a select series of recurrent problems and contemporary challenges, with ample provision for multiple approaches and perspectives, and for contextual adaptation. Such an exploration should be extremely cautious in reaching conclusions or in making recommendations. It also should progressively move back and forth between theory and practice, and should encompass multiple regulatory and applied experiences and perspectives.

1.4 A STRUCTURE

The preceding sections indicate that there is a genuine need to come to grips with recurrent problems and contemporary challenges that plague IA practice. They illustrate that there is a considerable knowledge base and many promising initiatives to draw upon. They also make it clear that these resources, although necessary, are not likely to resolve recurrent problems and contemporary challenges in IA practice. The shortest path to improvement does not lie with simply “tossing” an array of potentially relevant methods and procedures at each problem, either individually or collectively. A coherent structure is required. The IA process, embedded with a broader framework, provides that structure. This section briefly frames and describes the IA process. It then explains why the IA process is important and why multiple IA processes are necessary to any strategy to address the problems and challenges.

1.4.1 Framing the IA Process

IA process and design, as illustrated in Figure 1.2, operates at both the regulatory (e.g., requirements, guidelines) and the applied (e.g., individual proposals) levels. It entails both strategic (e.g., legislative proposals, policies, plans, and programs) and project (e.g., proposed projects and activities) planning. It encompasses an array of partially overlapping IA types. Interconnections between the regulatory and applied levels, and among IA types, are crucial. IA process design and management draws upon (e.g., recurrent problems and contemporary challenges, effectiveness reviews, stories, case studies, and surveys) and contributes to (e.g., good practices, methods and procedures, process design choices and variations) IA practice. It selects from and adapts regulatory and applied process design choices and variations, and draws upon (e.g., concepts, frameworks and principles, theory testing, definitions and distinctions) and contributes to (e.g., theory building, theory testing) IA theory. IA theory and practice draw upon and contribute to related fields of practice and knowledge. IA is adapted to and contributes to the reshaping of context. These elements are all linked and integrated through continuous analysis and synthesis. IA process design and management, to function effectively, must be systematically linked to and integrated within a broader framework.

An especially important aspect of framing the IA process, as illustrated in Figure 1.3, pertains to interconnections between strategic and project-level IA, and between SEA/EIA regulatory and applied practice and decision making. EIA can be defined sufficiently broadly, albeit with some difficulty, to encompass various strategic level choices and decisions. SEA can scope and frame EIA level planning and decision making. EIA level planning and decision making can inform and refine SEA planning and decision making. EIA and SEA can be linked or even merged at one or even at all decision-making levels. The linking and integration of SEA and EIA level planning and decision making can facilitate the setting of goals and ethical boundaries, the assessment of need and strategic options, the analysis and management of cumulative effects, the tiering of decision making, more comprehensive follow-up, and the more systematic treatment of issues such as proportionality.

1.4.2 The IA Process

At a most basic level a process is a series of actions directed toward an end. The end, in this case, is fourfold: (1) the more effective management of recurrent problems, (2) the more effective management of contemporary challenges, (3) the more effective integration of good practices, practical solutions to issues and challenges, and relevant concepts, principles, frameworks, definitions, distinctions, methods, procedures, and insights, and (4) more effective regulatory and applied practice for various IA types, both individually and collectively. The primary instrument, within which these ends can be achieved, is the IA process, as expressed through regulatory and applied IA design choices and variations.

Some important distinctions, as illustrated in Figure 1.4, must be made before the choice and arrangement of IA process actions can be considered. IA operates within a framework established by institutional arrangements. The institutional arrangements provide the basis for determining whether IA requirements are applied (i.e., screening). They also offer guidance regarding administrative procedures, documentation, and various planning activities. The planning process activities interact with proposal and alternative characteristics, and with environmental conditions. The IA administrative, planning, and documentation processes are all reviewed and contribute to decision making.

IA requirements usually provide only general guidance regarding the conduct of each process type and each IA type. This is especially the case for IA planning process activities. Major decisions may be identified. Early public involvement is usually encouraged. Specific guidance is commonly offered for conducting individual planning process activities. More detailed requirements and guidelines are often provided for administrative (such as document circulation and agency review) procedures and the content of IA documents. IA practitioners then design and manage the IA process within the framework established by IA requirements.

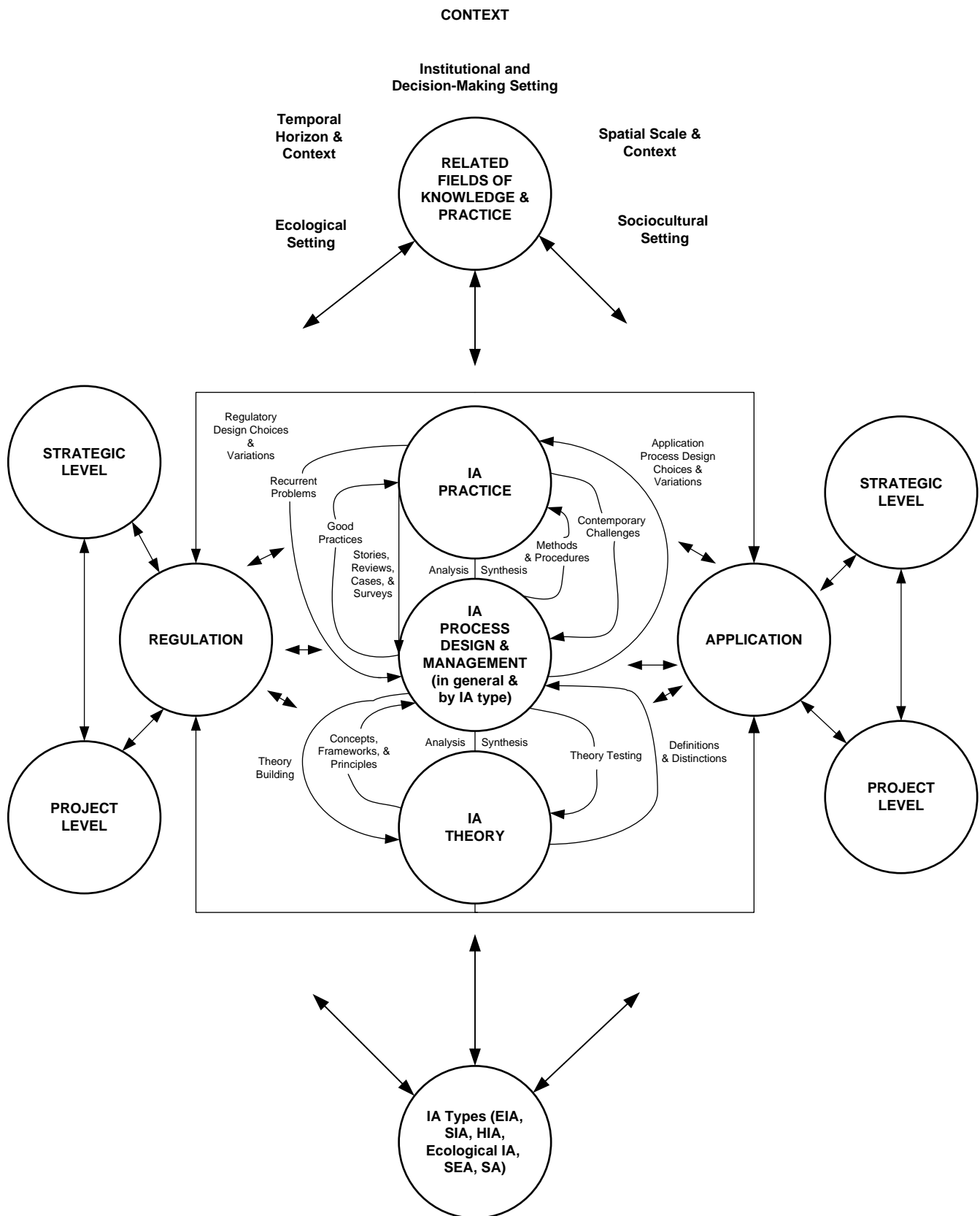


Figure 1.2 Framing the IA process.

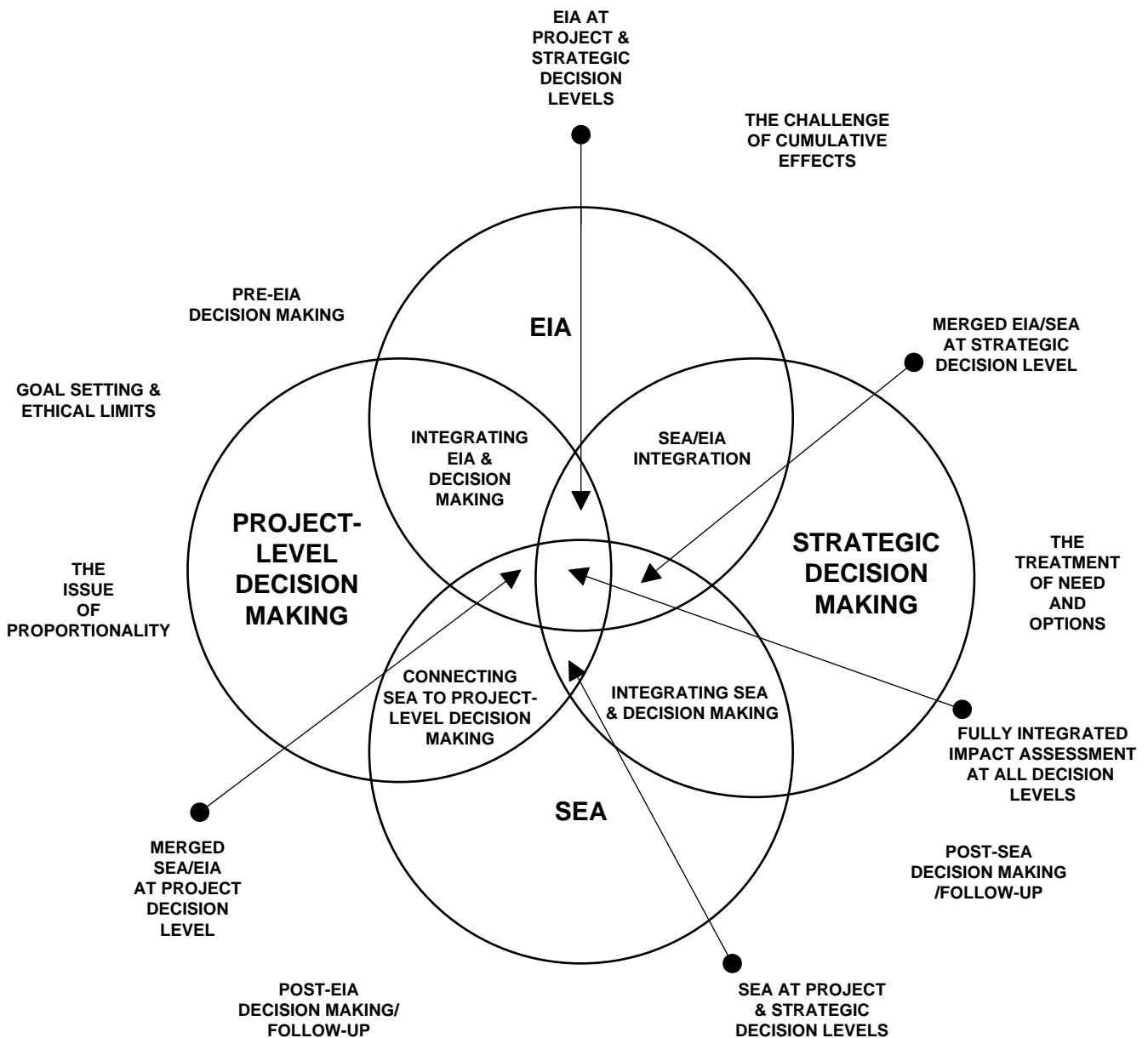


Figure 1.3 EIA, SEA, and decision-making linking and integrating.

As explored more fully in Chapter 2, there are many ways in which the IA process can be managed at the regulatory and applied levels for both strategic and project planning. The IA process also varies among IA types. Some management procedures are better able to address the problems and challenges that arise from diverging perspectives than others.

1.4.3 Why Is the IA Process Important?

IA practitioners have a great deal of discretion, in the sequence in which IA activities are arranged, in the extent to which IA activities are subdivided, in the choice of activity inputs and outputs, in the choice and nature of interconnections among IA activities, and in how IA types are linked and

integrated. IA practitioners, in concert with other stakeholders, determine if and to what extent potential problems and challenges that result from varying perspectives will be resolved. They also determine if and how the IA knowledge base is drawn upon and adapted (theory testing), and if and how IA practice contributes to the IA knowledge base (theory building). The varying perspectives generally focus on whether or not IA requirements and processes are relevant, and, if so, how IA processes are or are not conducted. Considerable potential for preventing and ameliorating the problems and challenges stemming from varying perspectives lies with better IA process management.

A great many methods, an extensive knowledge base, a vast pool of experience, and a diverse array of values and

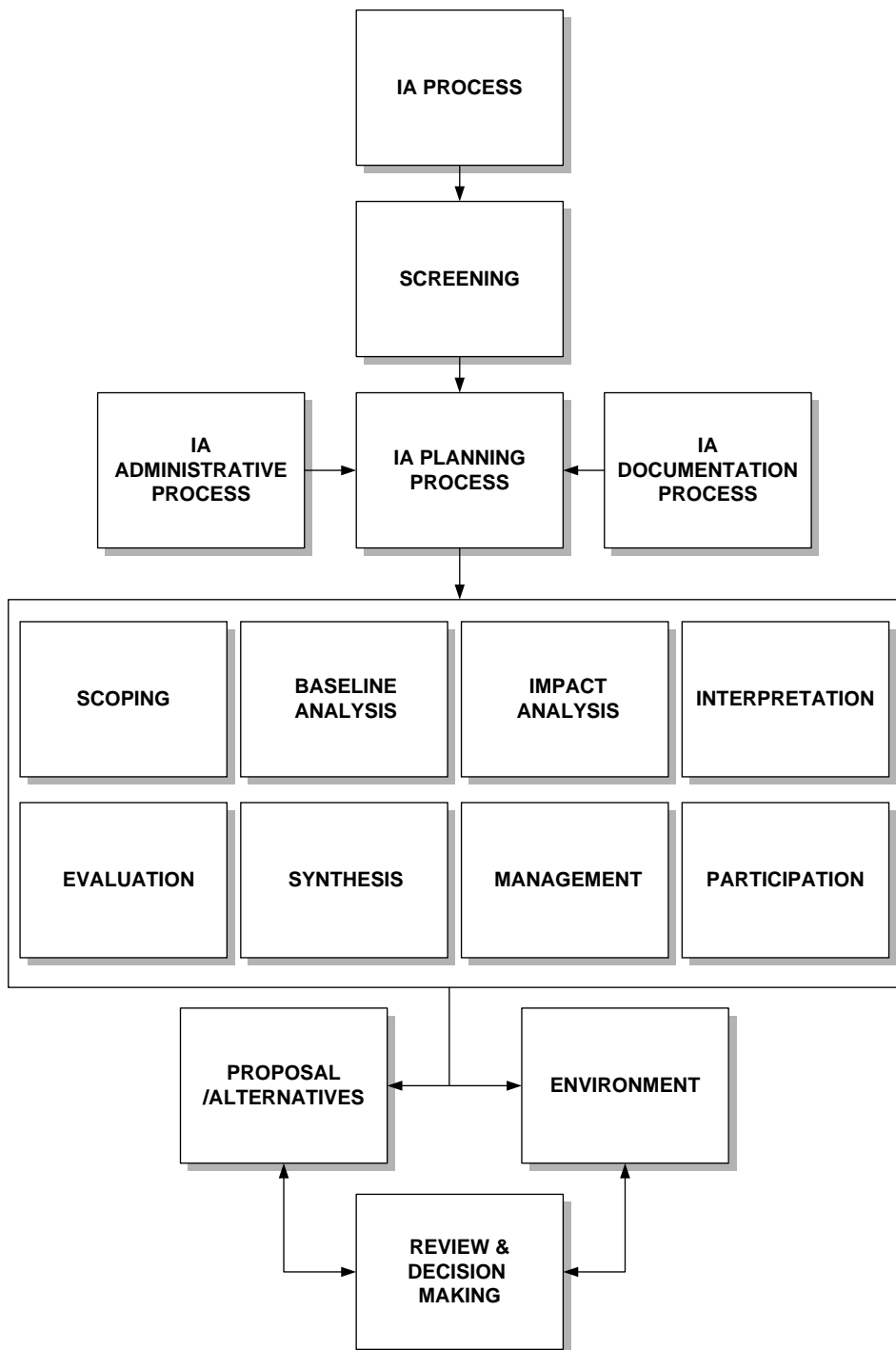


Figure 1.4 IA process activities.

perspectives, are available to IA practitioners. The IA process, to varying degrees, integrates these inputs. Poorly managed processes will more than offset any benefits resulting from, for example, the rigorous application of the “latest” methods. The IA process bridges IA regulatory requirements and IA practices, and cuts across decision-making levels. It also helps link and integrate IA theory and practice. IA requirements, because of the breadth of their application, must necessarily be general. At best IA

requirements will reduce the incidence and severity of “bad” IA practice. Highly effective IA practice and high-quality IA documents will only occur when effectively framed by IA processes.

The IA process varies greatly depending on the type of proposal, the type of IA, the purposes that drive and structure the IA, the decision-making level, the local and regional environmental conditions, and the types of anticipated impacts. The effectiveness of an IA is often highly

dependent on how well the IA process fits the context. The roles assumed by stakeholders, both planned and unplanned, are often crucial. The IA process determines which stakeholders are involved and when and how they are involved. It determines how stakeholder concerns and suggestions are solicited and addressed. The IA process is the bridge between IA practice and decision making. It determines the decision points and establishes how IA technical and procedural activities and decision making are linked and integrated. Decision makers often reject IA analyses and documentation when those interconnections are inappropriately established and managed.

IA texts, manuals, and guides usually provide only very general IA process characterizations. These characterizations are rarely tested and refined in practice. When the IA process is discussed, it tends to be in terms of document preparation and the satisfaction of government requirements. IA resource materials generally concentrate on IA institutional arrangements, IA types, IA methods, and the adaptations required for predicting different types of impacts and for assessing various types of proposals. This deficiency in the literature (notwithstanding the central role of the IA process) underscores the need to formulate and apply more effective and adaptable IA processes.

1.4.4 Why Are Multiple IA Processes Important?

IA processes should be designed to encompass stakeholder perspectives. A multipronged approach can narrow the gap between process characteristics and stakeholder values. As illustrated in Figure 1.5, the first priority of IA process managers is to ensure that the IA process influences decision making, and is legitimate and credible to all potentially interested and affected parties, to pertinent objectives, to all decision-making levels, and to the accumulation of IA-related knowledge. The effectiveness of an IA process can be severely, sometimes fatally, undermined when major stakeholders choose to operate outside the IA process. The integration of both strategic and project-level planning with decision making also is critical.

Different processes will be appropriate in different situations. IA practitioners could benefit from being able to “pick and choose” from a suite of IA processes as they seek to meet multiple demands, and to match process and context. The procedures for addressing any one demand are many and varied. A coherent understanding of how each demand can be addressed is essential before strategies for counterbalancing overlapping, emerging, and conflicting demands can be explored and applied.

The IA process has been scrutinized before. Numerous variations have been suggested. There are many references to alternative approaches scattered across IA literature—some specific to various IA types. Process differences between project-based EIA and SEA processes have received particular attention. Debates and discussions regarding the relevance and legitimacy of IA, as an

environmental management instrument, have occurred since the inception of the field, and still persist, in some ways with even greater vigor. The effectiveness of various IA types in influencing decision making has been a critical and recurrent theme. There is an ongoing debate between advocates of a more scientific as compared with a more practical IA process. A similar debate has occurred, especially within SIA, between proponents of technical systems, consensus-based processes, and political, conflict-based processes. Much has been written regarding study team roles and responsibilities within the IA process. Alternative processes, such as adaptive environmental assessment and management, have been advanced. The application of alternative models (e.g., advocacy planning) from related fields, such as planning theory, has been suggested. What has not occurred is the consolidated presentation, analysis, comparison, and integration of the available concepts and insights into IA process forms readily applicable to IA practice.

Other related fields of practice (such as urban and regional planning and environmental management) and other related disciplines (such as sociology and philosophy) have demonstrated the many insights that can be acquired when multiple models or frameworks are applied to a complex problem or situation. IA, as a field of theory and practice, is very much the exception in its traditional assumption that a single process model (with minor adaptations) can be applied to any and all situations. This assumption has been challenged in IA literature in recent years, especially at the SEA level, and as reflected in alternative SA, SIA, and HIA models and approaches. A rich array of applied research, methods, and conceptual frameworks (both within IA and in related fields) could be readily integrated into multiple IA processes. Once multiple IA processes are consistently formulated, presented, and analyzed, it becomes much easier to formulate composite processes that balance and integrate a range of perspectives. A foundation also is established for effectively integrating good practice principles and procedures into IA process design and management.

1.5 A STRATEGY

This section presents a strategy for facilitating more effective IA process management. As indicated in Figure 1.6, the IA process provides the organizing structure for both the regulatory and applied level analyses. Both the conventional IA process (in a diversity of manifestations) (Chapter 2) and multiple IA processes (one for each perspective) are presented and assessed (Chapters 3–11). Practice-based stories set the stage for each of Chapters 3–12 analyses. Variations among IA types (EcIA, SIA, HIA, SEA, SA), in the expression and management of the recurrent problems are addressed in each of Chapters 3–11. The contemporary challenges addressed in Chapters 2–12, respectively, include SEA good practice, strategies for influencing decision making, follow-up, the siting of “locally unwanted land uses,” the issue of how broadly the environment and effects should be defined, the

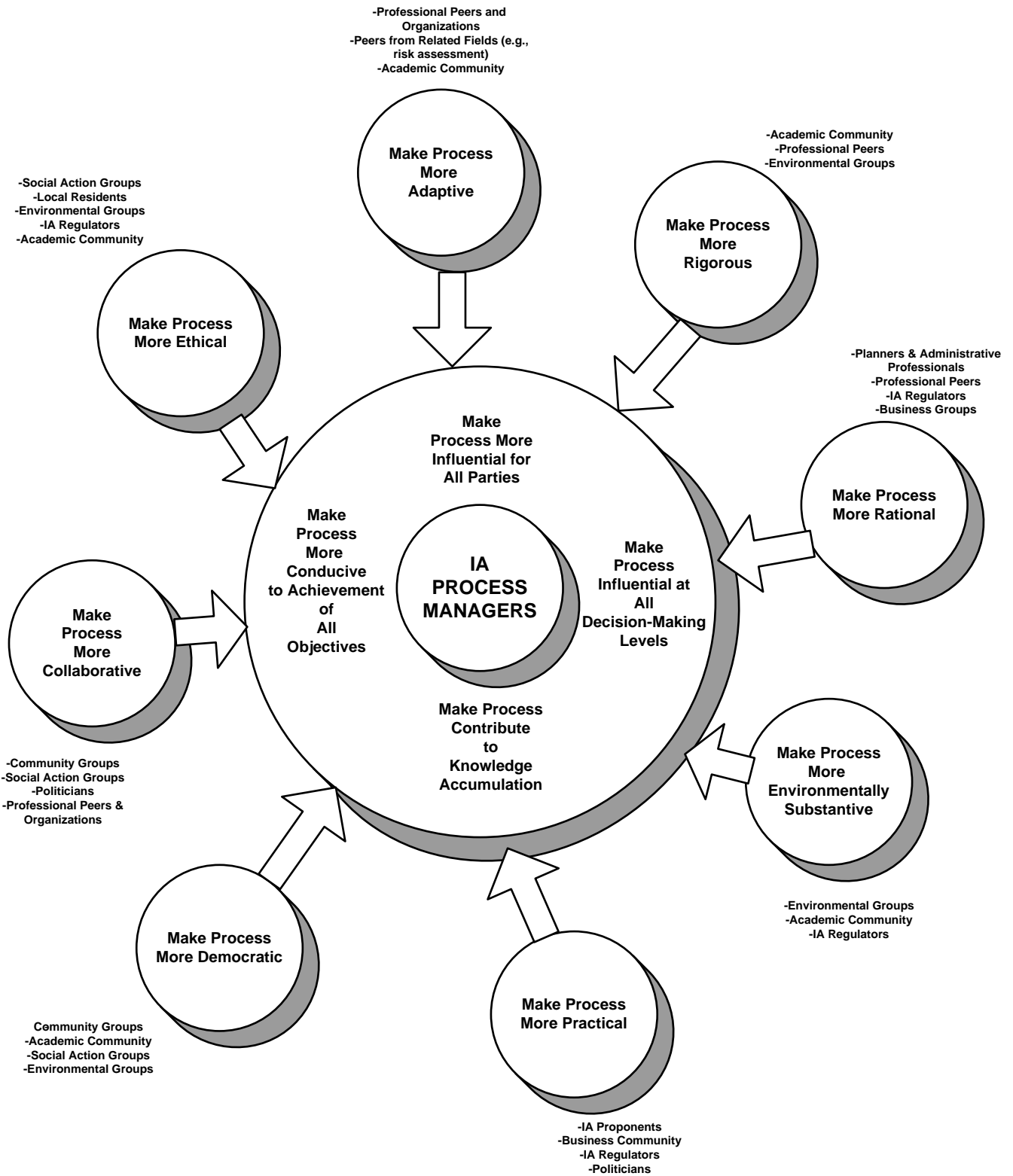


Figure 1.5 Demands on IA process managers.

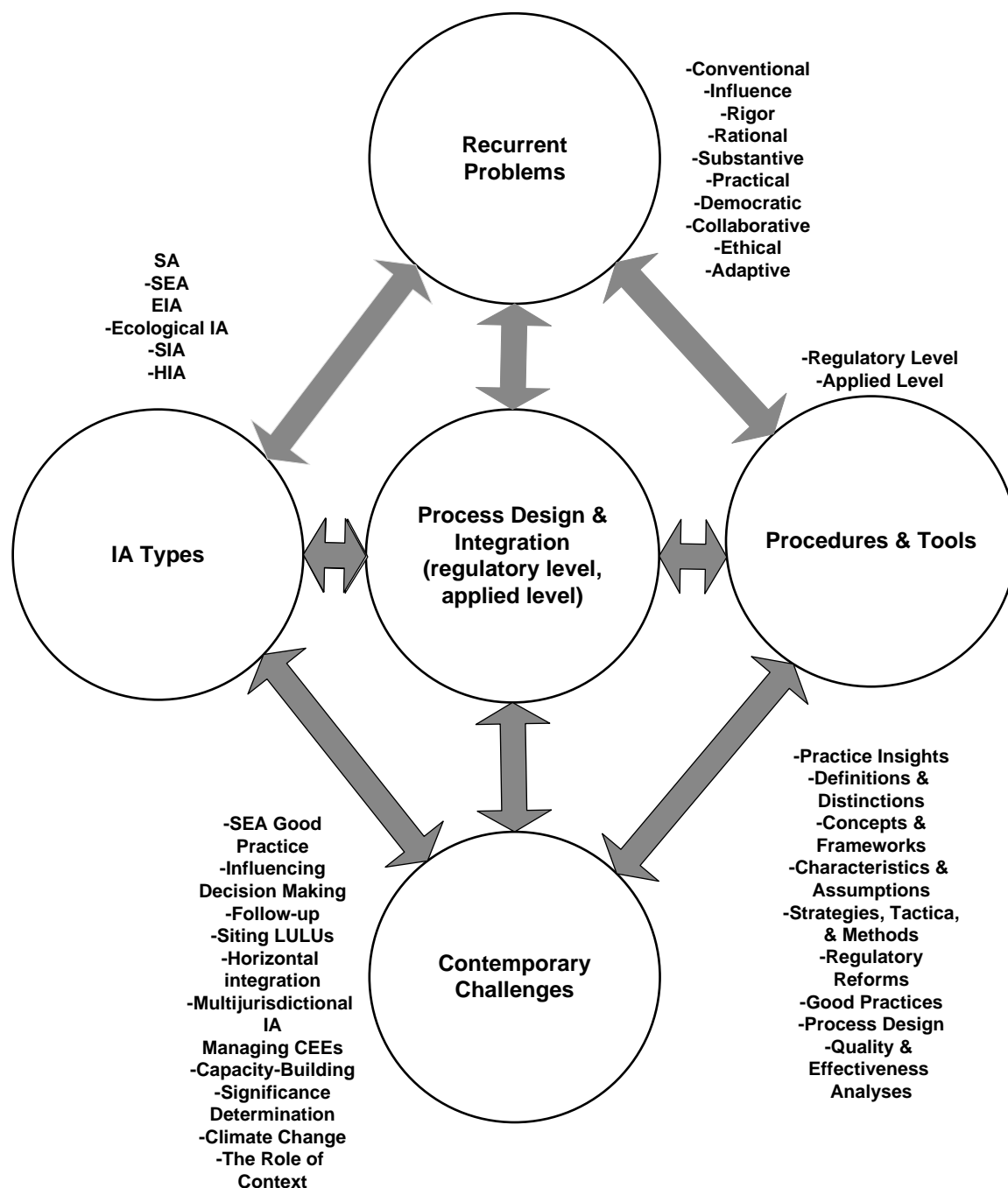


Figure 1.6 Reforming the IA process.

management of cumulative effects, multijurisdictional impact assessment, capacity building, significance determination, climate change, and the role of context. Composite IA processes are also described (Chapter 12).

Applied examples, IA literature, and selective literature from related fields contribute to the major definitions, concepts, frameworks, characteristics, assumptions, strategies, tactics, and methods presented. The regulatory analysis is based on an overview of readily available (i.e., largely on the Internet) Federal or senior level IA legislation,

regulations, guidelines, reforms, and proposed reforms from four jurisdictions—the United States, Canada, Australia, and the European Union. The regulatory analysis also includes the approach taken, in each jurisdiction, to EcIA, SIA, HIA, SEA, and SA. Positive and negative examples, derived from the four jurisdictions, for addressing each recurrent problem are briefly highlighted as the basis for a broader discussion of potential regulatory choices.

An iterative, analysis–synthesis relationship is inherent to IA practice. It also is intrinsic to this book. Interactions

between IA requirements and IA practice are explored in each of Chapters 3–11. Anecdotal examples from IA practice are integrated into each of Chapters 3–11. Major conclusions and lessons are integrated for conventional IA (for different IA types) (at the end of Chapter 2) and for individual IA processes and contemporary challenges (at the end of each of Chapters 3–11). Chapter 12 presents multiple approaches for synthesizing individual IA processes, for integrating IA types, for establishing and maintaining decision-making links, and for better bridging theory and practice. Chapter 12 also addresses contextual adaptations and identifies residual challenges and priorities.

Each of Chapters 2–11 uses relevant concepts, frameworks, definitions, and distinctions to establish a foundation for the regulatory and applied analyses. Good practice guidance is provided for addressing recurrent problems and contemporary challenges. Particular attention is devoted to process adaptations and adjustments required when undertaking IA, in all its forms. Each chapter seeks to build and test theory.

A comprehensive treatment of the subject matter addressed by this book, at a uniform level of detail, is neither practical nor appropriate. The analysis is selective, sometimes arbitrarily so. It was necessary to focus on some subjects, treat other subjects more selectively and at a broader level of detail, and not consider other potentially relevant topics.

This analysis focuses on managing the IA process at both the regulatory and applied levels. It seeks to ameliorate the negative consequences that sometimes stem from perspective differences. The regulatory analysis is based on senior level IA requirements and guidelines in the United States, Australia, Canada, and the European Union that bear directly on IA process management choices. The applied analysis focuses on the roles and responsibilities of IA process managers. It assesses and reformulates conventional IA processes, formulates, analyzes, integrates, and refines multiple alternative IA processes, explores process

variations and commonalities among IA types, presents practical approaches for managing a range of contemporary challenges, and formulates composite IA processes. Both the regulatory and applied analyses are largely based on pertinent IA literature and practice. A broader and more selective analysis is undertaken of other IA aspects connected to IA process management and literature and practice in related fields.

IA requirements outside the four jurisdictions are not considered. It is possible that insights and lessons from this analysis may be of value to other jurisdictions. Adaptations to address, for example, IA practice in developing and transitional countries have only been briefly considered. No effort has been made to trace the long and complex intellectual traditions that underlie the various IA processes. These traditions span hundreds of years and encompass tens of thousands of references. Although intriguing (albeit a major undertaking), it would be impossible to provide a just and accurate treatment of those traditions without detracting from the central thrust of the book, which is to provide a succinct and practical reference to IA practitioners.

Finally, any treatment of the IA process, no matter how practical, will never fully match the subtle complexities encountered in IA practice. Each proposal and each setting are, in important, often not readily apparent respects, unique. Hopefully, much can be learned from IA references such as this book. Nevertheless, the IA process and methods must always be designed and adapted, jointly with stakeholders, to fit unique setting related circumstances. Both the approach and the circumstances will change and evolve—preferably in tandem.

1.6 A ROAD MAP

Table 1.1 identifies examples of how IA process managers, IA study team specialists, IA regulators, nongovernment organizations (NGOs), and IA instructors might wish to use this book.

Table 1.1 Suggested Approaches for Using This Book

IA process managers	<ul style="list-style-type: none"> • Read the book for an in-depth review of alternative IA process management approaches and approach combinations • Use Chapters 3–11, as appropriate, to avoid and minimize the recurrent problems • Use the good practice guidance, provided in Chapters 3–11, to enhance the application and adaptation of IA regulatory approaches and methods • Use the contemporary challenges guidance, provided in Chapters 2–11, for more effective responses to contemporary challenges • Use the guidance for various IA types, provided in Chapters 2–11, to more effectively address, for example, strategic, social, health, and ecological choices in IA process design and management • Use sustainability assessment guidance, in Chapters 2–11, for addressing various ways in which sustainability concerns can be integrated into process design and management • Read the highlights and summing up subsections for an initial impression of each chapter • Use the figures and tables, with text support, for process design and management • Draw upon individual chapters as issues are identified • Take a particular look at Chapter 3 to more effectively influence decision making
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(continued)

Table 1.1 (Continued)

IA study team specialists	<ul style="list-style-type: none"> • Take a particular look at Chapter 7 for study team management strategies • Use Chapter 12 for composite planning process management and for more effective integration within and external to the IA process • Use references for follow-up • Review highlights and summing up subsections to obtain an initial impression of available processes • Review descriptions of process activities, inputs and outputs in Chapter 2, to understand specialist integration procedures • Review IA types guidance, provided in Chapters 2–11, to facilitate process adaptations and IA type integration for addressing ecological, social, health, and sustainability concerns • Review good practice guidance, provided in Chapters 2–11, to enhance discipline-specific application of IA methods • Review contemporary challenges guidance, provided in Chapters 2–11, to better understand potential role in anticipating and responding to contemporary challenges • Review Chapters 3 and 7 to understand decision-making links and roles within the study team • Natural and social scientists may be especially interested in Chapters 2, 4, 6, and 11 • Urban and regional planners and resource managers may be especially interested in Chapters 5 and 6 • Social scientists may wish to take a close look at Chapter 10 • Public participation specialists may find Chapters 8 and 9 especially relevant
IA regulators	<ul style="list-style-type: none"> • Any specialist, concerned with risk and uncertainty management, may wish to take a closer look at Chapter 11 • Review Chapter 2 and regulatory sections of each of Chapters 3–11 • Review SEA sections in Chapters 2–11 for guidance in assessing policies, programs, plans, and legislative proposals • Use SA guidance in Chapters 2–11 for addressing how best to integrate sustainability concerns into IA requirements and guidelines, and for evaluating the adequacy of the treatment of sustainability concerns in individual IA processes and documents • Review IA type guidance (e.g., SIA, HIA, EcIA) for addressing discipline-specific concerns • Peruse highlights, tables, summing up subsections, and figures in determining possible regulatory reform approaches • Use flow charts for evaluating IA documents • Use good practice guidance, provided in Chapters 2–11, for evaluating IA methods and processes • Use contemporary challenges guidance, provided in Chapters 2–11, for working with other stakeholders in anticipating and responding to contemporary challenges • Review definition of the problem sections to alert proponents and IA managers to potential and emerging problems and challenges • Take a closer look at Chapter 7 for examples of procedures for expeditiously satisfying regulatory requirements • Review Chapter 12 for an overview of composite process approaches and for integration procedures within and external to the IA process
Nongovernment organizations	<ul style="list-style-type: none"> • Take an especially close look at Chapters 8 and 9 • Use the good practice guidance, provided in Chapters 2–11, for evaluating the choice and application of regulatory approaches and applied methods • Use the IA type guidance in Chapters 2–11 for assessing the treatment of ecological, social, health, and sustainability concerns • Use the contemporary challenges guidance, provided in Chapters 2–11, for anticipating and responding, jointly with other stakeholders, to contemporary challenges • Use SA guidance for evaluating and challenging the treatment of sustainability concerns in IA guidelines, documents, and processes • NGOs are likely to find Chapters 6 and 8–11 especially pertinent to their concerns • Peruse highlights, definition of problem, direction, and summing up sections and Chapter 12

1.7 SUMMING UP

This book is intended to enhance IA practice. It is especially directed toward the needs of IA practitioners who manage IA processes. It provides practical solutions to major, recurrent problems encountered in daily IA practice. It also provides good practice guidance for addressing a range of contemporary challenges.

A scenario is used to identify several, recurrent, IA process-related problems and contemporary challenges.

The IA definitions provide an initial sense of the perspectives and of the requisite characteristics of an IA process. They also provide the basis for identifying the recurrent shortcomings and contemporary challenges. An overview of IA issues and themes demonstrates that the shortcomings are

unlikely to resolve themselves through the normal evolution of IA practice.

The framing, design, and management of the IA process, at both the regulatory and applied levels, are pivotal to effectively managing many recurrent shortcomings of IA practice, and to effectively addressing a host of contemporary challenges. Formulating, analyzing, and synthesizing multiple IA processes can further enhance IA process management.

A strategy is presented for more effectively managing regulatory and applied IA process design choices. The

strategy initially assesses how well various versions of the conventional IA process (for each IA type), with appropriate modifications, respond to major recurrent problems. It then formulates, assesses, and combines IA processes that respond to each problem. Practical, “good practice” advice is provided in Chapters 2–12 for addressing a range of contemporary challenges. Pertinent literature and reviews of IA requirements in four jurisdictions support the analyses. A focused and selective approach is required because of the breadth of the subject matter.