The Significance of Social and Economic Impacts

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Significance is a key term in EIA and SIA practice. It serves to trigger requirements and to focus and structure a host of interpretations when EIA requirements are applied. Interpreting the significance or importance of social and economic impacts can be especially problematic. The difficulties associated with determining the significance of social and economic impacts stem in part from the complexities, uncertainties and varying interpretations associated with social and economic phenomena. They also result from insufficient attention being devoted to the significance of social and economic impacts in EIA requirements, guidelines and literature.

This paper presents an overview of a research report intended to help EIA and SIA practitioners, regulators and other stakeholders determine the significance of social and economic impacts. The research was funded by the Canadian Environmental Assessment Agency. This study was divided into three major parts – 1) a conceptual analysis, involving a literature review; 2) an experience-based analysis, based on comments from more than one hundred EIA and SIA commentators and practitioners; and 3) a case example analysis, with 22 selected examples of significance determination procedures). The major themes addressed in the analysis include the definition of key terms, social and economic impacts most likely to be significant, approaches for determining the significance of social and economic impacts, links to sustainability, the Precautionary

Principle and collaborative EA processes, perspectives on significance determination and status, improvements and residual limitations.

Definitions

Social (impacts on people and communities) and economic (impacts on material well-being and economic activities) impacts should be broadly defined if significance determinations are to be effective (Burdge, 2003; Vanclay, 2003). Definitions should encompass direct and indirect, positive and negative, real and perceived, social, cultural, heritage and economic impacts on people, communities, and society. The analysis demonstrates the dangers of narrow definitions and the value of an integrated approach that includes the social, the economic, the physical and the ecological. Approaches used for various types of social and economic impacts can vary.

Significance determination involves subjective judgments about importance (Sippe, 1999). Significance judgments are made throughout the EIA process. They are directly linked to decision-making. They vary by context (Kjellerup, 1999). Specialists, the public and other stakeholders all can contribute to significance determinations. Thresholds, criteria and measures can help derive significance judgments (see Table 1). There are various forms of significance determination (e.g. objective - statistical, legal – administrative, and what people believe to be important). These versions can be used alone or in combination.

Table 1 – Examples of Social and Economic Significance Thresholds, Criteria and Context

Thresholds of Significance	Generic Criteria	Feature Specific Criteria	Quality and Effectiveness Criteria	Context
– an effect is permanent or irreversible (can also occur when major future options are precluded) – receptors are highly sensitive or significant – the intensity, magnitude, scale, duration or frequency of effects is great (as compared with ambient conditions) – human health and risks are potentially severe – there is a high degree of uncertainty – resources or features are very scarce or unique – there is a high level of public controversy – substantial cumulative effects are likely – regulatory standards are likely to be contravened – it is likely that the proposal will conflict with public policies, standards, plans, programs, guidelines, criteria or objectives – transboundary effects are likely – community social carrying capacity is jeopardized – there is a high level of resource or energy consumption or waste generation – activity inherently causes significant effects – establishes a precedent for future actions with significant effects -major inequities in the distribution of effects are likely	– positive or negative – degree, intensity or magnitude – spatial extent – frequency and duration – reversibility – likelihood – uncertainty – complexity – precedent- setting – size of community affected – sensitivity, stability and resilience of receptors – rarity, scarcity and uniqueness – direct or indirect – accidental or planned – degree of controversy – mitigation potential – cumulative effects potential – inequity potential – relevance to current and potential government policies and objectives	– proposal characteristics (e.g. waste disposal requirements, contaminant potential, energy and fuel requirements) – population levels (e.g. more than population level "x" affected) – sensitive and significant environmental components (e.g. resources, population characteristics – environmental justice, cultural, historical and archaeological features, land uses) – social processes and functions (e.g. community identity and cohesion) – social limits (e.g. fiscal capacity, services limits) – hazards and risks from the proposal (e.g. human health, safety) – impacts from the proposal (e.g. displacement, disruption, land use or traffic conflict, resource loss, aesthetic, community services or facilities, employment, income and housing) – setting types and locations (e.g. parks, public lands) – regulatory standards (e.g. emissions, noise, dust, health and safety, buffer zone)	– the treatment of significance in EA requirements and guidelines (e.g. explicitly addressed, linked to context, linked to EIA decisions, procedures for stakeholder involvement, specifi cation of thresholds and criteria) – the significance determination process (e.g. explicit, traceable, procedures for threshold and criteria formulation and application, open, stakeholder role definition) – significance determination thresholds and criteria (e.g. explicit, consistent, relevant, addresses major impact dimensions, easy to apply, adaptable to context) – the treatment of significance in EA documents (e.g. criteria and thresholds defined and substantiated, explicit procedure for application of thresholds and criteria, interpretations substantiated, interpretations placed in context) – significance determination methods (e.g. comprehensive, reliable, focused, explicit, readily applicable, readily understandable, accountable, unambiguous, facilitates review, facilitates public involvement) – data quality (e.g. utility, objectivity, integrity, reproducibility)	– within different spatial contexts (e.g. global, national, regional, local) – relative to other past, current and likely future actions likely to affect the same environment – within a social, a political, a legal-administrative and/or an economic context – from the perspective of various potentially affected interests – relative to public objectives, policies, plans and programs – within a sustainability context

Sources: Bass and Herson, 1993; Canter, 1996; Canter and Canty, 1993; USCEQ, 1997; GLL, 2001: Interorganizational Committee, 2003; Lee and Colley, 1991; USOMB, 2002

Significance thresholds are performance levels that establish significance. There are many threshold types (e.g. legal, intensity, functional, normative, controversy, preference) (Haug et.al. 1984). Thresholds can be quantitative or qualitative, generic or linked to location or impact type (Hildén, 1997). Although intended to minimize ambiguity and increase consistency, most thresholds require interpretation. Community involvement is essential in thresholds setting and application. Problems can occur when thresholds are misapplied (e.g. creating conflicts).

Significance criteria differentiate factors contributing to significance judgments. They can facilitate more informed, consistent and explicit decision-making (Sippe, 1999). There are generic and feature-specific criteria. Criteria can be refined through scaling levels and measures. They are formulated and applied through a process – a process that tends to be more effective when interested and affected parties collaborate.

Context is about the wider public concerns and values that structure and bound SIA and EA practice (Sadler, 1996). Impact significance varies with context. There are many context types. Context is dynamic, operates at multiple levels, and shapes how people respond to a proposed action (Canter and Canty, 1993; Joyce and MacFarlane, 2001). A middle ground (e.g. flexible criteria for classes of situations) is emerging between standardized and case-by-case approaches to significance determination.

Social and Economic Impacts Most Likely to be Significant

Social and economic impact significance determinations are not completely context-dependent. Certain social and economic impacts are frequently considered especially important.

Health concerns are often considered important, especially when low probability / severe risks or unique or unknown risks are involved (Erickson, 1994; IAIA, 2003). Health should be defined broadly (e.g. well-being, aboriginal spirituality).Displacing and relocating people and displacing or foreclosing the use of cultural, heritage, and recreational features, uses and resources are often considered significant impacts (Morgan, 1998). Direct conflict with public-approved plans, policies and standards is generally a major concern (UNEP, 2002).

It is necessary to move beyond only interpreting the significance of individual impacts and to devote more attention to the importance of composite effects on individuals and communities, from both a proposed action and from other sources (Armour, 1988). Particular concerns include livelihood, quality of life, service access, and value conflicts (Vanclay, 1999).

Impacts (e.g. employment and sales) that trigger multiple secondary and tertiary impacts tend to be considered more important, both because they induce additional impacts and because of their critical impact management role (Glasson, 1995). Also frequently

important is the ability and willingness of communities to change. Many factors influence the ability of communities to adjust to change (IAIA, 2003). It is often desirable to shift away from coping with change to building social capital and facilitating community empowerment and sustainability (Taylor et.al., 2003; Wolf, 2002).

Social and economic impacts are generally considered more important when the disadvantaged, vulnerable and marginalized members and segments of society are adversely or disproportionately affected (ANZECC, 1991; UNEP, 2002). There are many forms of inequity and examples of factors and measures for preventing and offsetting inequities. Experience in the United States in addressing environmental justice could be instructive. Broadening the consideration of vulnerabilities and inequities to address procedural justice, relational justice and economic opportunities can facilitate social and economic significance interpretations (IAIA, 2003).

The analysis of social and economic impacts most likely to be significant demonstrates the dangers of limiting significance determination to physical impacts, to legal standards, to individual impacts, and to negative impacts. It illustrates the importance of considering interconnections, of addressing impacts at the community level, of exploring the distribution of effects, of working collaboratively with stakeholders, of drawing upon experience and comparable situations, and of making contextual adaptations.

Approaches for Determining the Significance of Social and Economic Impacts

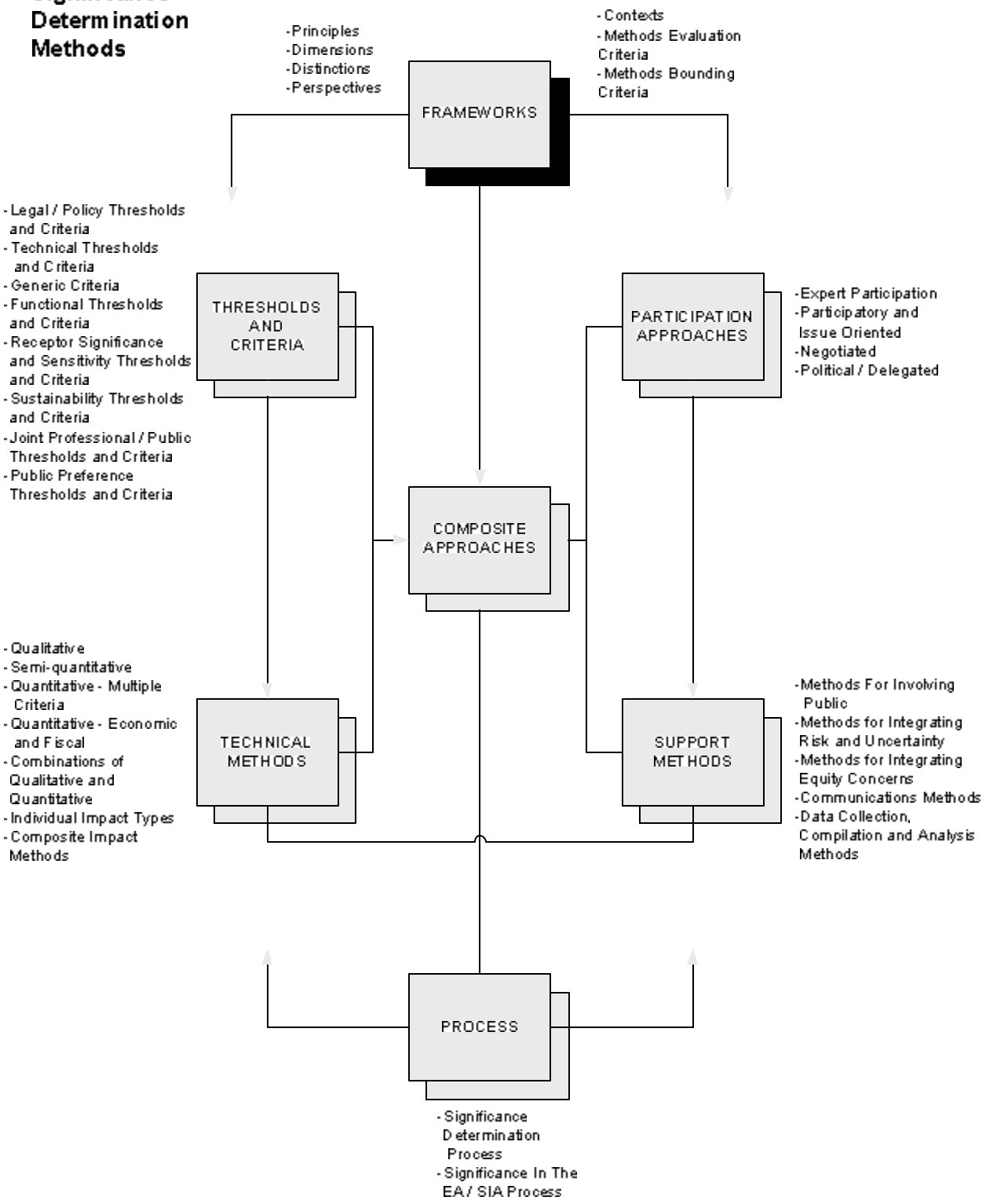
As illustrated in Figure 1, numerous approaches and methods can facilitate social and economic significance determination.

Frameworks can guide and structure significance determinations. Good practice guidelines and criteria can facilitate interpretations of significance (Interorganizational Committee, 2003). Public understanding, participation and support are essential. EIA requirements, policies and judicial decisions, the knowledge base, and general principles and good practices can help frame significance determinations. Knowledge and action limits must be appreciated.

Thresholds and criteria are frequently applied to facilitate more explicit and consistent significance determination. Various threshold and criteria types (e.g. legal, technical, functional, receptor sensitivity / significance, generic, sustainability, public preference) can be employed (Haug et.al., 1984; Sippe, 1999). Numerous methods are available for structuring and applying thresholds and criteria. Uncertainties and subjective judgments are central to threshold and criteria formulation and application (GLL, 2001). Uncertainty management and extensive stakeholder involvement are critical.

Technical significance determination methods can be qualitative, quantitative or a combination. Numerous technical method types can support social and economic impact significance determinations (Hildén, 1997; Leistritz, 1998). The characteristics, benefits

Figure 1 - Significance Determination Methods



and limitations of method types (and the means to offset limitations) need to be appreciated. Consideration also needs to be given to procedures for integrating qualitative and quantitative methods.

Social and economic impact significance can emerge from a participatory planning process. A range of participatory approaches, from the expert-driven to the publicly derived, are available. Potential roles for different parties (e.g. specialists, community representatives, facilitators) should be identified (Beckwith, 2000).

Many methods can support both technical and participatory significance determinations. General public consultation, scoping, uncertainty management, distributional analysis, communications and data collections and analysis methods can be adapted and integrated into either technical or participatory significance determination approaches.

Significance is determined through a staged process. Significance determinations also are incorporated into the EIA / SIA process (GLL, 2001). There is a role for significance determination in each EIA / SIA process activity (Canter, 1996). Significance determination methods vary among EIA activities. It is possible to derive the preferred attributes of and good practice standards for a significance determination process.

Composite approaches combine frameworks, thresholds, criteria, technical methods, participation approaches and support methods (Seebohm, 1997). Collaborative

approaches, with technical and quantitative analyses in a support role, are generally preferable for social and economic significance determination.

Links to Sustainability, the Precautionary Principle and Collaborative EIA Processes

Social and economic impact significance determination changes dramatically when sustainability is the purpose of SIA and EIA (IAIA, 2003; Vanclay, 1999). When sustainability drives the process significance determination involves, for example, evaluating proposed actions and alternatives in terms of if and the extent to which they contribute to or undermine sustainability, considering positive and negative impacts, using sustainability thresholds and criteria, employing EIA / SIA as a vehicle for advancing community objectives, and addressing cumulative impacts from a systems perspectives) (IAIA, 2003; Barrow, 2003; Joyce and MacFarlane, 2001). Obstacles to integrating sustainability into significance determination also need to be appreciated.

The Precautionary Principle (PP) addresses the dilemma of what to do when scientific knowledge is incomplete but there is a threat of serious adverse consequences (IAIA, 2003; WHOROE, 2001). There are various interpretations of the PP, each with potential advantages and drawbacks for social and economic significance determination (Gullett, 1997). Implications for social and economic significance determination procedures include, for example, using uncertainty as a criterion, applying greater weight to harm

avoidance, reversing the burden of proof and employing an adaptive decision-making approach (Gullett, 1997; Tickner et.al., 1998).

Effective EIA and SIA are dependent on effective public participation (Lockie, 2001). How social and economic significance determination might operate in a collaborative EIA or SIA process needs to be specified. The roles, advantages and drawbacks of collaborative public participation (and other forms of public participation) in social and economic significant determination need to be addressed. Links to social sciences, to decision-making, and between SIA and public participation should be identified. The roles of the public, of procedural specialists and of support methods should be clarified (Holden and Gibson, 2000). Different perspectives on the appropriate role for the public in significance determination procedures also should be explored (Gilpin, 1995).

Case Example Analysis

Twenty two case examples (See Table 2) were compiled and evaluated. Each is complex and unique. Broader lessons should be approached with great caution. The case examples represent a potential source of "ideas" that may or may not, with closer scrutiny and considerable adaptation, be helpful in other situations. Listed below are several themes, lessons and insights, pertinent to social and economic significance determination, which may warrant closer scrutiny.

Table 2 – Case Examples	
Case Examples	**Themes**
• The Asia Development Bank (guidance documents)	• Significance and Social Policies and Priorities
• Bonneville Power Administration (US Pacific Northwest) (fish and wildlife implementation plan EIS)	• Significance in a Strategic Environmental Assessment
• The Baku-Tbilisi-Ceyhan Pipeline (crude oil pipeline)	• Significance and Social Issues
• The States of California and Wyoming (requirements)	• Significance in Environmental Review Systems
• The Department of Foreign Affairs and International Trade (Canada)	• Significance and Trade Negotiations
• Doris North (gold mine in Nunavut, Canada)	• A Community-Based Perspective on Significance
• Eastmain 1-A and Rupert Diversion Project (water diversion in northwest Quebec, Canada)	• The Legal Context of "Rights"
• Hibernia, BHP and Diavik (offshore oil off Newfoundland and two diamond mines, NWT, Canada)	• Significance and Social and Economic Effects Monitoring
• Honk Kong (requirements and guidelines, a cable car project)	• The Significance of Urban Visual and Landscape Impacts
• Lambton Facility (hazardous waste landfill continuation near Sarnia, Ontario, Canada)	• A Scaling Procedure for Significance Determination
• Liberty Memorial Bridge (bridge reconstruction in North Dakota, USA)	• Significance and Heritage
• Lomeshaye Industrial Estate (industrial park expansion in Nelson, Lancashire, UK)	• Significance and Project Screening
• Lutsel K'e Dene First Nation (research priority study and a traditional knowledge study on community health, in northern Canada)	• Significance, Health and Traditional Knowledge
• Mackenzie Valley Environmental Impact Review Board Discussion Paper (NWT, Canada)	• Significance and First Principles
• Snap Lake and Related Decisions (diamond mine in the NWT, other decisions elsewhere in Canada)	• A Review Board's Perspective on Significance
• Snowy River Water Flow Options (States of New South Wales and Victoria, Australia)	• Significance and Assessing Local Amenity Benefits
• Shell Oil social performance review and socioeconomic impact assessment for Jackpine mine project in Alberta, Canada; also environmental, social and economic review of Gorgon Gas development off northwest coast of Australia	• Social Proponent Performance and Significance
• Tulesequah Chief (background paper concerned with sustainability assessment for mining project in northern British Columbia, Canada; also framework report concerned with sustainability and mining and mineral activities)	• Significance and Sustainability
• Requirements and guidance materials concerned with environmental justice and EIA (Government of the United States)	• Significance and Environmental Justice
• Economic impact analysis requirements (Washington State, USA)	• Significance and economic impact analysis
• West Siberia Oil Industry – Environmental and Social Profile (study undertaken for Greenpeace)	• Significance and a Non-Government Organization
• Yucca Mountain (background study for a geological repository for disposal of spent nuclear fuel and high level waste (Nye County, Nevada, USA)	• Significance and Assessing Fear and Stigmatization

It may sometimes be useful to significance determination to conduct gender analyses, to address social protection more comprehensively, to emphasize social capital development and harmony, and to place SIA within the context of other social, economic, environmental and sustainability initiatives and instruments (Asia Development Bank).

Sometimes it is effective if significance interpretations emerge in context through a collaborative process where options encompass a diversity of values and tradeoffs, and the consequences of implementing actions are systematically explored (Bonneville Power Administration).

Significance determination can be facilitated by identifying, analyzing and managing issues from multiple perspectives, by placing significance interpretations within the context of regional issues and challenges, international standards, conventions and guidelines, by applying social objectives, principles and corporate policies, by using a proponent-funded independent panel, and by interpreting social impacts in terms of household livelihood sustainability (BTC Pipeline).

It can be helpful, at the regulatory level, to clearly define significance thresholds and to provide detailed technical guidance for applying significance thresholds and criteria (California). An alternative approach, which also can be effective, is to establish through regulatory requirements, a collaborative planning and decision- making process, where significance interpretations emerge from the process (Wyoming).

Frameworks and handbooks can assist in structuring the treatment of social and economic impact significance in SEA. Systematic, explicit, but largely qualitative procedures for consistently determining impact significance can be effective in SEA, even for broad policy initiatives and trade agreements (Department of Foreign Affairs and International Trade).

Legal requirements (e.g. land claims agreements) and operational procedures can help frame and guide significance determinations. They also can set the stage for collaborative EIA processes where local communities and the perspectives of local interests, organizations and individuals assume a pivotal role in social and economic impact significance determination (Doris North).

It can be helpful to social and economic significance determinations if rights and roles are defined in legal agreements (e.g. James Bay and Northern Québec Agreement, project agreement). This is especially true when more than one jurisdiction is involved. Further structure and guidance can be provided by project-specific directives and guidelines (Eastmain 1-A and Rupert Diversion Project).

The explicit treatment of social and economic impact significance in monitoring agreements can assist in focusing monitoring programs, in interpreting monitoring results, in facilitating community consultation and capacity building, and in determining the need for and form of mitigation, compensation and local benefits (Hibernia, BHP and Diavik).

Detailed, explicit and systematic requirements and guidelines can contribute to a greater level of consistency and traceability in social and economic significance determinations for some types of social impacts (e.g. visual and landscape effects). Care should be taken to ensure that creativity is not inhibited and that adjustments can still be made in response to varying circumstances (Hong Kong).

The systematic, consistent and traceable treatment of impact magnitude and importance, using explicit criteria and decision rules, can facilitate government review and public involvement. It also provides a sound foundation for cumulative effects assessment and impact management (Lambton Facility).

A regulatory significance trigger is sometimes warranted (e.g. for some heritage resources). It is often more appropriate and effective to acknowledge from the outset that impacts will be significant. The focus then becomes project acceptability, available alternatives and effective mitigation. A clear and collaborative significance determination process, tailored to local conditions and priorities, also is helpful (Liberty Memorial Bridge).

Impact significance can be effectively addressed during screening and through voluntary procedures. The explicit and consistent treatment of the significance of positive and negative impacts during screening can facilitate a transparent, open and collaborative EA process (Lomeshaye Industrial Estate).

A research framework can provide a context for and a means of focusing significance determinations at the project level. Traditional knowledge can make a valuable contribution to determining what is important from a community perspective. Additional benefits to SIA studies and local communities can be gained if community members are trained to gather information and conduct surveys and interviews, if there is an effective role for community leaders, workers and institutions, if interactive and ongoing involvement occurs, and if links to community-based monitoring are established (Lutsel K'e Dene First Nation).

A discussion paper on social and economic impact assessment can help identify first principles, key issues and available methods for application in significance determination. It also can contribute to defining the context for, and procedures and criteria that can be applied in, social and economic impact significance determinations (MVEIRB Discussion Paper).

Review boards and panels often address social and economic significance by means of thoughtful, meticulous, explicit and carefully reasoned analyses, interpretations and substantiated conclusions. Such efforts can be aided by generic and project specific guidelines and well-defined roles. Sufficient discretion must, however, remain to permit proponents, review bodies, the public and other stakeholders to collaboratively design and adjust approaches to individual circumstances (Snap Lake and Related Decisions).

It is possible to systematically analyze and interpret the significance of qualitative social concerns, such as amenity values, using, for example, an indicator approach. Independent analyses, which draw upon a thorough review of public submissions and comments from community representatives and scientific experts, can help test qualitative claims and explore equity concerns (Snowy River Water Flow Options).

Corporate sustainability and social performance reviews can provide an effective context for social and economic significance determinations. Focusing on key issues, questions, themes and linkages can aid in scoping significance determinations. A systematic approach to addressing the significance of composite impacts is to progressively aggregate significance determinations (e.g., issues, disciplines, overall sustainability) until an overall judgment can be made about project acceptability (Social Proponent Performance and Significance).

One approach to linking significance determination and sustainability is to identify criteria and/or indicators (inputs, outputs, outcomes) to guide and test proposed activities in terms of their compatibility with sustainable development. Guidance documents, adapted to classes of proposed actions (e.g. mining activities), can provide refined advice and direction. Ideally such guidance materials should be directly linked to each significance judgment (Tulsequah Chief).

Guidance documents can help ensure that the significance of impacts on the most vulnerable segments of society (e.g. environmental justice) is systematically analyzed.

Such documents can provide advice regarding distributional analyses, facilitate the participation of susceptible groups, and avoid and reduce unfair distributional outcomes (United States).

Economic impact analysis requirements can be a useful means of interpreting the significance of disproportionate impacts on small or vulnerable businesses from legislation, regulations and administrative procedures. There may be potential for using such requirements to ensure that the significance of economic repercussions from proposed conditions of approval is fully assessed before they are imposed (Washington State).

Advocacy organizations can apply social and economic analyses to develop and substantiate their own significance interpretations and to advance their policy and political agendas. Such analyses can be helpful in challenging the significance interpretations of others, in engendering public support, and in bargaining with decision-makers (West Siberia Oil Industry Environmental and Social Profile).

Literature reviews, the sponsoring of applied research, and social surveys and analogues can all be useful in systematically interpreting the significance of social impacts (e.g. stigma) that are subjective, uncertain and qualitative. It is essential to respond to public issues and concerns and to fully integrate resulting analyses into EIA documents, regardless of whether the proponent and / or government reviewers consider the concerns too subjective and qualitative (Yucca Mountain).

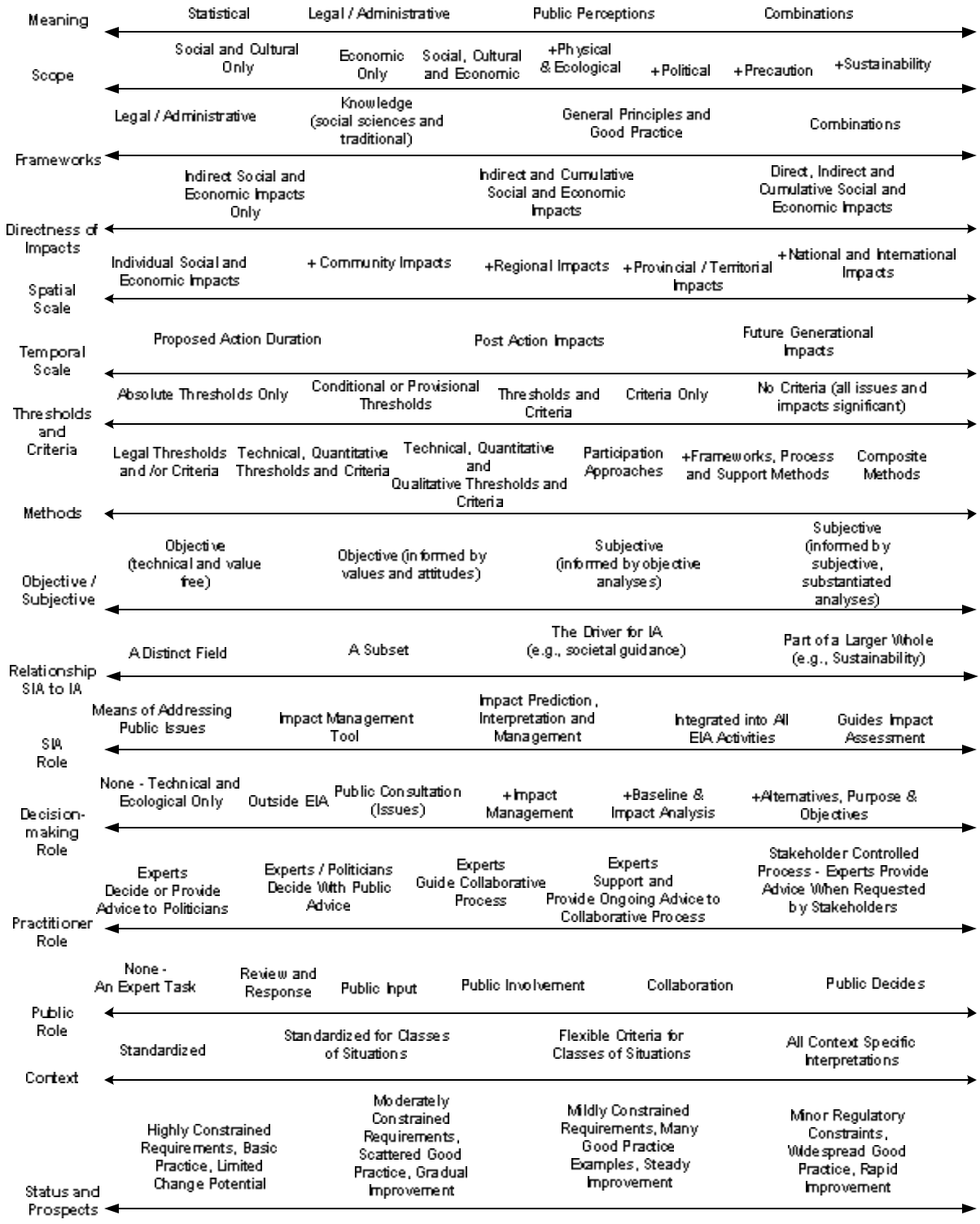
Perspectives on Significance Determination

Positions regarding the appropriate approach to social and economic impact significance determination are far from uniform (See Figure 2). The conceptual and experience-based analyses are largely complementary. The case examples contribute numerous "ideas" regarding good practice methods and procedures.

Individual commentators expressed a diversity of perspectives. These perspective differences pertain to meaning and scope, to guidance frameworks, to impact directness, to temporal and spatial scales, to thresholds, criteria and methods, and to whether approaches should be objective and / or subjective. They also concern the relationship of SIA to impact assessment, to the role of SIA, to decision-making, practitioner and public roles, to the role of context, and to the status of and prospects for social and economic impact significance determination.

The diversity of perspectives suggests a field that is far from settled. A range of perspectives can be desirable in some situations and reflects the nature of EIA and SIA theory and practice. Diversity also is helpful when matching approach and context and when deriving composite approaches. In general terms, however, the situations in which social and economic impact significance should be narrowly defined and technically driven are likely to be more limited than those where a broad definition and a collaborative approach (informed by technical methods, thresholds and criteria) is more appropriate.

Figure 2 - Perspectives



Status, Improvements and Residual Limitations

There is considerable room for improvement in undertaking social and economic significance determinations (Sippe, 1999). There are shortcomings in both EIA requirements and guidelines and in EIA and SIA practice (Canter and Canty, 1993; Sadler, 1996). EIA requirements tend to inhibit systematic approaches to social and economic significance determination (Morgan, 1998). EIA guidelines provide only the most basic advice. EIA practice is inconsistent and of variable quality (Burdge, 2002; Vanclay, 1999). Social and economic impact assessment tends to have a secondary status to physical and ecological impact assessment. Opinions vary concerning the appropriate role for social and economic impact analysis (e.g. fully integrated, address outside EIA, limit to public consultation or impact management).

Numerous opportunities for improvement are available. Social and economic significance determination could receive greater attention in applied research, in case study analysis and in methodological development and refinement (Burdge, 2002). EIA requirements and guidelines could be reformed (e.g. redefining environment, enhanced threshold and criteria formulation guidance, sponsored case studies). Many potential reforms to EIA and SIA practice involve shifts in emphasis or orientation, skill and capacity development, and modifications to the SIA process (Hildén, 1997; Vanclay, 1999, 2003).

Despite good intentions and best efforts, social and economic impact significance determination will continue to be hampered by the complex and changing nature of social

phenomena, by gaps and uncertainties in the knowledge base, by difficulties associated with predicting, interpreting and managing social and economic impacts, and by regulatory, resource, study team, and political limitations (Finsterbusch, 1995; Barrow, 1997). These difficulties are likely to be compounded if a highly quantitative, technical approach is adopted. A more qualitative, collaborative and adaptive approach is more likely to be appropriate. Good practice is still possible, notwithstanding these constraints.

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