CANADIAN HANDBOOK ON HEALTH IMPACT ASSESSMENT

Volume 3

Roles for the Health Practitioner

DRAFT

DECEMBER 1999

Social Impact Assessment Approaches in Environmental Impact Assessment Protocols: A Social Science Perspective

Chapter C Contents

Introduction

One of the earliest social impact assessment (SIA) studies was undertaken by the Marquis de Condorcet in 1775 when he anticipated and evaluated social and health-related impacts of a proposed canal that was to join two French towns (cf. Becker 1997). For the sake of the present discussion, however, the period of main interest for the development of SIA concepts and methodologies —as applied to environmental impact assessment (EIA)—, is usually acknowledged in North America as the early 1970's. During this period, two important events (the US National Environmental Policy Act, and the inauguration of the Canadian Environmental Assessment and Review Process) provided the main impetus to integrate into EIAs concerns over the cultural and social impacts of development projects (Burdge and Vanclay 1995; Craig 1990).

In the context of EIAs, the advisory role of health professionals is often to make sure that negative health effects are evaluated when possible, that adequate mitigation measures and monitoring programs are suggested and that negative impacts are balanced with potential induced positive health impacts such as a greater infrastructure for emergency (search and rescue) operations, an additional health care facility on the land, economic spin-offs and the reduction of transfer payments, an increase of the labor-market active population and a greater spending power for the workers.

However, to maximize their input, health professionals must be able to participate early in all phases of environmental evaluations, from the writing up of the guidelines for the environmental studies to the review of the environmental impact assessments once they are completed.

Because social impact assessments are one of the main sources of health data in environmental impact assessment reports, the objective of this section is to provide a realistic overview of what a SIA usually consists of, and of which methods are typically used by social science consultants when estimating impacts of development projects. It is hoped that this will help health professionals understand the usefulness and limits of SIAs and facilitate their interpretation of the data covered.

What exactly is a social impact assessment, what data can be found and what should not be expected of an SIA? This chapter first discusses the purpose of SIAs, the types of questions addressed and the strategies used to address the questions and get the appropriate information. This is followed by a discussion of the usual elements found in SIAs as well as the type of expertise necessary, and potential health considerations that should be kept in mind by health practitioners who are likely to be involved in the environmental impact assessment process as either reviewers or collaborators.

Scope of Social Impact Assessment

What are the Main Characteristics of Social Impact Assessments?

The purpose of SIAs is to address potential impacts of development projects, to describe the social context in which the projects are to be inserted, and to predict social change that can be related to the projects (cf. ICGP 1994).

The main objective of SIA is to predict direct and indirect repercussions of a proposed project on the social environment closest to the area in which implementation will take place. In the case of EIA, the definition of impacted communities is usually based on

the extent of predicted spatial coverage of impacts on the physical environment, and SIAs are often limited by this definition. In theory, SIA should also look at the effects on other communities indirectly affected by the project (e.g. those that benefit from direct or indirect economic spin-offs), however the focus is normally narrowed down to the communities where the main part of the development is undertaken. For example, if a resource development project is to operate in a remote area, the communities closest to the work site are usually the focus of the SIA, even though other communities considerably further away can also be affected by related infrastructure development (e.g. construction of a transformation plant, shipping and transportation logistics, long-distance commuting labor, and so on). In a limited sense, EIAs do take into account socio-economic impacts on communities not directly affected by the projects, but this is done through an economic evaluation where geographical coverage is considerably larger; covering most places where direct and indirect costs and benefits are incurred through the different project components.

One of the main components of the SIA process is the description, of the social environment within which the project will be inserted. This includes the political, social, cultural, historical (in terms of past experiences with development projects, for instance) and economic (labor and market considerations) dimensions, and some inferences on social carrying capacity (e.g. the limits pertaining to population size or characteristic group composition that given resources or services in a community can support without destruction of the social fabric). Once this context has been described, then projections can be made of potential impacts. This is why SIA reports are often divided in two parts: first, a description of the milieu, then an evaluation of potential repercussions of the project and proposed mitigation and monitoring measures.

SIA focuses on various social and community indicators (see Social and Community Indicators of this chapter). However, the exact nature of the indicators taken into account (either quantitatively or qualitatively) varies from one evaluation to the other because SIA is dependent on a number of external elements such as: province or state regulations; the EIA terms of reference; financing available for the evaluation; personal expertise and familiarity of the evaluator with SIA literature; as well as, the nature of the project itself.

In EIAs, SIA is interpreted strictly as an evaluation of prospective impacts, both negative and positive, of a development project. However, as opposed to EIAs, SIAs usually try to integrate and articulate the perspectives held by the various stakeholders involved.

Essentially, SIA describes what types of effects will likely be felt in the communities affected, identifying those groups at risk or at benefit and, when possible, the extent of the impacts (time frame, degree of pervasiveness, proximity indicators...). The fact that SIAs are predictive (as opposed to outcome evaluations based on monitoring activities) is also one of their major limits, and must be kept in mind. For instance, what in a pre-project evaluation could be predicted as a major impact (negative or positive) can, once the project is implemented and monitoring activities are set up, turn out to be a minor impact or even lead to unpredictable effects.

A dominant pattern of SIA work is the premise that the different perspectives held by stakeholders concerning a proposed project are all valid and valuable. In this sense, the SIAs often seek to identify and understand the different points of view, in order to better identify potential problems and to provide some insight into the community's receptivity to and concerns regarding the project.

The SIA must take into account both positive and negative outcomes (not measured in terms of dollars but rather in qualitative social changes). When the analysis is complete, evaluators are sometimes asked to express somewhat quantitatively the potential impacts in terms, for instance, of minor, major or null disturbances. For some, the idea is to eventually be able to weigh costs and benefits, which is perilous and -often- useless because it is extremely difficult to do and value-laden (i.e. whatever the result, many will not agree on the scale of the projected impacts). For others, this exercise must serve essentially as a summary, or a reminder, of the necessary mitigation, compensation or monitoring measures.

In principle, SIAs are undertaken by external evaluators. Their assessments can be characterized as being highly dependent on the collaborations and input they seek from the various stakeholders associated with the proposed projects.

In principle, SIA lends itself well to, and most often does use, a collaborative approach because evaluators depend greatly on inside knowledge of affected community members to help them predict the potential impacts. This can however be done in different ways. For instance, open-ended interviews can help the people impacted express their specific concerns, and directive interviews can test some impact hypotheses. Also, in some cases, a method which can be used is to present an initial draft of the SIA conclusions to the impacted communities to seek further input, to test evaluation acceptancy or to validate the projections. However, this type of collaboration has its limits, because the impacted community does not often have the final word on the final version of the SIA, and most often the many people met during the SIA work are not in a position to respond to the draft SIA.

The SIA is most often conducted by specialists not related to the project proponents. This, in principle, enhances evaluation credibility by ensuring that an independent point

of view is provided. However, in reality a certain number of elements can weed out compromising conclusions of the SIA. The two most important are: impact evaluation is often mandated to a private firm, which hires the specialist staff needed. This provides a first filter for the SIA conclusions. A second filter is added by the project promoter who gets to read and provide the final approval for the EIA report, essentially because it is the promoter who is required to submit an EIA. This is a fundamental characteristic of all EIA, and must be kept in mind by its users.

What Should not be Expected from Social Impact Assessments?

In the very specific context of an EIA, the purpose of SIA is rather limited and cannot be seen as a panacea for every social assessment related need. Thus, SIAs cannot be considered as information sources on the proposed projects, they do not focus on the promoter's cultural reality, nor are they directly concerned with following-up on the implementation or monitoring phases of the proposed projects.

Per se, the SIA is not question focused; its objective is not to answer questions or concerns of the impacted communities, nor to address the project promoter's objective to facilitate project acceptancy. In reality however, questions from both sides are dealt with by the social scientists who sometimes act as information or message relays between the impacted communities, the promoters, and other evaluators (e.g. those working on assessing biophysical environment aspects of impact studies, for instance). This position is not always easy for the evaluators because SIA most often starts before the project design is completed. Moreover, SIA evaluators do not have unlimited access to the promoter's information or data. In fact, the promoters usually consider informing the communities as their own responsibility. Yet, because this information does not make it to everybody in the communities, the social scientists sometimes have to

describe what they know of the project; how else could they ask people to participate in a SIA and provide informed opinions? In sum, although SIA evaluators are not formally asked to play an advocacy role to ensure effectiveness of the decision-making processes, their input and contacts with the population can assist the relay of information between the promoters and the communities.

The focus of a SIA is not centered on the validity of the proposed program or project itself, nor on its culture. This is usually considered as a black box topic by the evaluators. The idea is thus not to evaluate the project promoters. In some cases, however, some insight is given in SIA on the social interactions of the project workers and promoters, and their possible relations with the impacted communities. On the other hand, many evaluations mention an ethnographic focus in their methodology, because they try to provide a good insight of the impacted communities' culture - sometimes for the benefit of the promoters-, but also to understand more clearly and predict where hidden and visible social effects of the project will be felt. However, in this latter case, it is not the purpose of the SIAs that are ethnographic, but rather the methods employed.

In principle, evaluating whether a project is implemented the way it is supposed to be remains separate from the EIA study. Although this type of evaluation might be useful for evaluating socio-political impacts, SIA is not an analysis of the interaction between project promoters and impacted communities. It is also not an analysis of the way project design and implementation develops, nor the way impacted communities get to voice their concerns (i.e. it is not a decision-management process analysis).

Thus, the objective of SIA is not to see to what extent the program or project was implemented as designed, nor what problems come up during implementation and need to be looked at. However, a good evaluation will undertake a review of related

studies and will predict potential problems, i.e. as in the case of an ethnographic focus. Nonetheless, the SIA finishes before the project starts; then other mechanisms come into play (such as those designed for monitoring purposes).

Routine data (indicator follow-up, social, physical, biological, or other) is not collected and analyzed on an on-going basis in SIA. External consultants are most often required to provide a one-shot evaluation of potential impacts (positive and negative) and provide some insight on indicators that should be monitored. But that's it. If monitoring occurs during a project's definition or during its negotiation phase, the data is usually collected either by the project promoter's public relations department, or by representatives of the impacted community (e.g. by their consultants or negotiators or special interest groups when they have the resources and the impetus necessary), or through regular activities of governmental agencies and departments.

Which Elements are Described in Social Impact Assessments?

Unless formally required in the environmental impact directives, the following elements can usually be found described or referred to in an SIA (cf. Branch et al. 1984, Finsterbush 1985, Bowles 1981).

Physical environment

In regard to the physical environment, the three fundamental elements to be considered in view of potential disturbances and the need to develop preservation or mitigation measures are archaeological and historical sites, important landmarks, and land use and occupancy patterns.

Archaeological and historical sites: Surveys are usually undertaken by archaeologists. Their objective is to identify archaeological or historical sites, remains or artifacts that may be subject to disturbances due to the proposed project activities. Once they have identified and officially catalogued these sites, safeguard measures or exploratory as well as salvage excavations can be undertaken in accordance with provincial or state regulations.

Through their essential input on historical land use and occupancy patterns, social scientists can help pinpoint areas of interest and document types of past activities associated with these areas, values attributed to these places of interest, and community feelings regarding the need to protect the sites or even correct disturbances due to past development activities.

There are usually few health aspects directly related to this work, most community concerns and issues being of a socio-cultural nature (e.g. values, equity and empowerment issues, etc.). However, if important value-laden sites are not well identified and disturbed by the project, in some contexts popular hindsight associations might be made later on between taboo breaches, for instance, and apparent or perceived illness episodes.

Important Landmarks: The most often examined landscape parameters are visual impacts and transportation infrastructure. These are usually assessed by either geographers, landscape planners or urbanists. When they are called upon, most of their work, however, is usually centered around designing mitigation or compensation measures.   Also, because some landmarks of specific interest might need to be preserved, a highlight of the main features of the impacted areas is usually undertaken in an EIA.

As for noise levels or odor emissions, these elements are rarely extensively discussed in SIAs, unless they are described as potential threats during pre-evaluation scoping procedures. When they are mentioned in SIAs, it is most often because the impacted communities have expressed some concerns around these issues.

Because of their academic background and of their knowledge of local communities, social scientists can help identify where, when and why potential visual impacts as well as noise or odor pollution can become more than a simple disturbance and contribute to emphasizing perceived or actual risks.

Also, through their work on land use and occupancy patterns, social scientists can identify valued landmarks and the perceived limits to developing or altering existing landmarks or transportation routes. Through community consultations, they can also help design more socially acceptable mitigation measures.

Some areas might hold invaluable resources for local ethnomedicinal uses. Although knowledge on collection, preparation and use methods are seldomly shared with outsiders, if queried local experts will often mention the need to preserve these resources and those areas of interest.

Noise and odor pollution can lead to different physical health problems or induce psychological reactions. Evaluation of the extent of these potential problems is however difficult, and usually not mentioned in SIAs. If experts are asked to provide likely noise or odor estimates and evaluate potential impacts for the EIA, then these analyses are usually published in a report separate from the SIA. If extensive modelizations are also undertaken around the worksite, then this is part of the monitoring process and not included in the SIA.

Different disturbances can also lead to injury or accidents. This is the case, for example, with sudden noises (such as with low level flying, or blasting) or inadequate signalization where traditional transportation routes or corridors can be disturbed by the project developments and activities.

Land use and occupancy patterns: Often done by social scientists, land use and occupancy surveys essentially serve to identify who uses the lands and resources potentially affected by the proposed project, to clarify identity, environmental stewardship and ownership issues concerning these lands, as well as to document the different types and intensity of resource use. Typically, these studies provide a historical perspective of the evolution of land use and occupancy in the area.

This is essentially a descriptive part of the SIA, but different data expressed herein serve directly to evaluate health effects related to the proposed project components, such as impacts on nutrition or recreation. Essentially, this can be calculated from the perspective of diminished access to resources and lands as well as resource depletion.

Social and Community Indicators

In regard to the human environment, the main indicators assessed relate to social organization, public services and utilities, sociodemographic characteristics of the impacted communities, economy and health. However, headings and internal organization of the SIA reports vary in detail from one evaluation to the other.

Demography: Ideally, describing and analyzing demographic data should be done by demographers who have the ability and knowledge necessary to prepare simulations which can be useful when predicting long term impacts of development projects.

However, in SIAs demographic descriptions are often static and done either by a social scientist or, frequently, by economists because they also need this data to modelize their economic simulations. In some cases also, just about anybody available in the consulting firm can look up and use official census data. Needless to say, in this latter case, very little insight is provided in the SIA on what the demographics suggest.

The most important demographic data to look for in an SIA are sex ratios, age pyramids, in- and out-migration mobility patterns. These data are used to simulate economic impacts, to define the characteristics of the potential local workforce, and to evaluate some impacts of a transient or new in-migration workforce.

The main health issues to keep in mind are the possible pressure of in-migration on public utilities as well as on access to health services available in neighboring communities. Increased transportation infrastructures to isolated communities can also, in some cases, lead to out-migration of local residents.

Polity: This is usually a domain of the social sciences. Polity refers to public administration and community infrastructures, including formal and informal organizations, community services, housing, transportation, utilities, and so on. The objective of the SIA in respect to polity is to evaluate the strain a proposed project can have on local access to community services, for instance because of demographic pressure from migrant workers on the availability of housing, community services and equipment, and store supplies. SIAs also seek to predict the capacity of the public administration to adequately deal with issues that might arise between the project staff and local inhabitants.

Transportation and safety issues must be kept in mind when examining changes to local transportation infrastructure. Public hygiene and health should also be taken into

account in regard to the carrying capacity of existing utilities and to potential impacts on basic resources such as potable water.

Economy: Definitely the grounds of economists, economic impact assessment is very often integrated in the SIA reports. Economic evaluations in SIA do not cover the profitability of the project, but rather its potential effects on the general economy (jobs created, taxes paid, services and goods bought, and so on). The main elements described in regard to impacted communities are employment and manpower, activity sectors, businesses, income and expenditures. In the impact assessment section per se, the direct and indirect economic benefits of the projects are often well described. However, negative economic impacts on neighboring communities are either forgotten or occupy considerably less space. This is an important aspect of economic valuations which are based on the premise that the projects being essentially driven by economic imperatives, impacts are necessarily positive. Moreover, economists rarely have direct access to knowledge on local dynamics and thus are often unable to identify local economic resistance or promotion factors. In some SIAs, indirect economic impacts will be calculated, on property value for instance, as will other direct impacts, such as on local purchase power and spending patterns, but this is usually done when the economists are able to secure input from the social scientists.

There is a fundamental difference between the evaluation of economic spin-offs and cost-benefit studies. Economic spin-offs are always considered positive when undertaken in SIAs because the level of economic activity is increased every time money is spent whether to build a factory, to clean-up a river bank or to hire workers. As for cost-benefit or cost-efficiency studies between options, the focus is rather put on evaluating the distribution of impacts, i.e. who wins versus who loses.

Concerning employment, social scientists will often generate data on equity considerations in the labor recruitment process for the project, or potential personnel turnover rate problems by considering local expectancies, needs, qualifications, education levels and customs. They might also bring up other related issues such as potential "skimming effects" of jobs offered by the project (i.e. new development projects often drain some of the leaders and some of the most qualified workers from neighboring communities, thus generating indirect social impacts).

Because they are more likely than economists to have access to local data concerning informal economy, social scientists can help document project-related externalities, such as revenue losses incurred due to diminished resources or reduced access, and can pinpoint those groups at risk of having to bear these losses.

Increased spending power or diminished access to natural resources can impact positively or negatively quality of life indicators or generate nutritional changes.

Education: Education data is compiled by the social scientists or the economists essentially in order to determine the potential labor basin and skilled personnel locally available. This data is used to evaluate potential employment creation benefits and to determine the need or possibility of setting-up specific training programs. There are usually few health aspects directly related to this part of the SIAs, as increased training and education are usually viewed positively when equitable.

Health: Birley and Peralta (1995) group health hazards of development projects into five categories: communicable diseases, noncommunicable diseases, malnutrition, injuries, and mental disorders. Although all these can sometimesd be found described in EIAs, health hazards or health risks are typically analyzed in a number of different ways. Usually, the source of risk defines where specific health effects are discussed

and evaluated. For instance, toxicological analyses regarding potential contamination through drinking water, airborne gazes or particles or contamination of the foodchain can be found in the biophysical impact assessment reports. In turn, impacts that are related to human efforts, interactions, choice, values or orientations can be found in the SIAs.

In SIAs, description of health issues calls upon a number of indicators, depending on which can be found detailing data specific to the neighboring communities. In sum, just about any numbers can be presented concerning mortality and morbidity rates. Typically, about the only data that are actually summarily discussed are alcohol and drug abuse, or sexually transmitted diseases (STDs) —usually laconically mentioned as a potential problem due to an influx of lonely migrant workers.

The description of health data can be useful to health professionals to put the impact assessments in context or to propose, when possible, adequate monitoring measures. This is possibly the most underdeveloped element of EIAs in regard to health issues. Most often, the only measures taken are those that relate to toxicological impacts. However, because of the various potential repercussions of some projects, a number of indicators of psychosocial stress or social morbidity could be added to monitoring procedures such as mental pathologies, substance abuse, depression, suicides and so on. In the case of physical health, it should be possible to follow the pattern of accidents related to changing land use configurations and transportation corridors, and certain pathologies indicative of physical or social stress directly or indirectly related to the projects (e.g. STDs).

Ideally, in the case of mental health, evaluators should ideally be psychologists or social workers, and medical experts should be evaluating potential physical health effects (trauma, infectious diseases, STDs, and so on). However, most of the time, if health

effects are at all evaluated, this is undertaken by social scientists. With any luck, this person has some medical expertise (e.g. medical anthropologist, sociologist or geographer). In many SIAs, health effects are not identified as such and can be found under a number of headings (nutrition, land use and occupancy, polity, social control, etc.) and can be referred to simply as either social or psychosocial impacts.

Different elements related with a development project can generate psychosocial stress and problems in the community, for instance because:

- the appeal of the new jobs offered can have a skimming effect on community leadership and authority;
- clan or political affiliations might create unequal access to employment;
- absence of local workers from home, increased worker substance abuse or inordinate gambling and spending patterns generate household tensions;
- social or cultural misunderstandings and tensions can arise during interactions between the workforce and neighboring communities.

The above elements can sometimes be found described in SIAs. However, two other potentially important problems that can arise are less seldom mentioned. First, inadequate environmental communications by the promoter can induce undue fears and generate risk-related anxiety in neighboring communities. Second, local perceptions of environmental integrity of the land can be affected by the proposed project, which can foster a feeling of loss of control as regards environmental health issues (cf. Grondin and Bruneau 1994).

In social sciences literature, various psychosocial impacts have been associated with perceived environmental degradation and change, in particular: phobic reactions, adaptation problems, distress, disruption of interpersonal relations and a diminished

capacity of individuals or groups to function adequately. These impacts often translate as impressions of loss of control over health, loss of trust in organizations, increased somatization, calling upon various heuristics to explain the etiology and perceived consequences of health effects, and so on.

Various standardized questionnaires (e.g. Social Adjustment Scale, Hopkins Symptom Checklist-90 Item, GHQ-20, CLES, etc.) based on auto-evaluation have been developed to address the quantification of these problems (e.g. Foulks et McLellan 1992, Dunn et al. 1994, Taylor et al. 1991). However, the main difficulties in using methods such as these is that they are time consuming, and the fact that they might be considerably more useful as monitoring measures than as predictive tools for impact assessment.

Other health issues not usually discussed in SIAs

Occupational Health: Discussions in SIAs typically avoid mentioning occupational health. On the one hand, no mentions are usually made on the costs related to additional medical evacuations or regular support to the project's nursing staff by local nursing stations or hospitals, nor on indirect costs of increased pressure on social services if psychosocial problems increase in neighboring communities.

On the other hand, most often than not, potential impacts concerning occupational exposure, hazards and health are not considered in EIAs, essentially because this is understood as being either covered by official occupational health and safety protocols or as management's responsibility. In some cases, this is most unfortunate because many employee integration problems and related costs could be avoided if due diligence were applied before project implementation. For example, some of the potential problems not usually covered by occupational health and safety protocols are:

S   accident rates due to the absence of training programs specifically tailored to enhance worker safety in view of unfamiliar work environments and equipment;

-      psychosocial stress and adaptation problems due to:

•   long periods of absence from home because of commuting operations, with effects on both the workers (inactivity, estrangement from support networks, loss of family control) and their families;

•   cross-cultural adjustment problems between workers and staff or between co-workers aggravated by training background, cultural misunderstandings, religion, language and communication barriers, etc.;

•   high worker turnover in relation to a lack of incentives, of positive discrimination or of industrial time and space adjustment strategies;

S   physical fatigue from:

•   long work periods (in commuting operations, work schedules are often 12 hours a day, seven days a week for the duration of the time on site);

•   lack of adequate leisure and sport facilities;

•   worker circadian rhythm maladjustment (sleep cycle perturbed, tension and stress);

S   nutritional problems (diet quantity and/or quality imbalances) as well as lifestyle changes (e.g. increased smoking or substance abuse) in long-distance commuting operations.

Nutrition: The object of describing nutritional behavior (particularly country food

consumption) in neighboring communities lies in the need to evaluate potential impacts in terms of the natural resources that contribute to local diet and that can be affected by the proposed project. Very few or no new data are usually generated in this part of the assessment. In sum, most of the work is simply the collection of dietary surveys available or, at the very least, a summary description of hunting, fishing and trapping activities to provide estimates of important foodstuffs. This can also sometimes be complemented by interviews focusing on local food values or preferences. For these reasons, plus the fact that nutrition surveys are rarely undertaken and that funding is typically limited, the work is usually done by social scientists.

Nutritional changes can be due not only to direct impacts on the natural resources but also because of indirect social and economic repercussions such as:

- reduced access to country food because of the loss of providers working for the proposed project;

- land use pattern changes due to indirect environmental disturbances (such as noise, runoffs or increased circulation on the land or waterways);

- changes in local consumption and spending patterns (i.e. increased access to imported goods and foodstuffs).

Social control and deviation: Though data on public safety (such as crime rates) is sometimes provided in the descriptive part of the SIA, it is often not integrated in the analysis or impact evaluation part of the SIA because of conflicting ideologies. For instance, if an evaluator has indications that the proposed project might increase public unrest, the project promoter can counter that this may not happen because jobs will be offered, spending power will be increased, and everybody will be happier. This is thus a

subject where ideologies often clash. While it is true that these changes are difficult to predict, if they were taken more seriously monitoring measures could be designed to adequately follow some of the project's effects, and adjust accordingly with mitigation measures when possible.

The possible increase in the incidence of social pathologies and morbidity related to problems such as prostitution, STDs, substance abuse, violence and so on should be taken seriously in some contexts, and for some proposed projects. Increased cultural sensitivity training for workers, or development of adequate leisure and sport facilities for the workforce can sometimes be simple mitigation measures that can help canalize and curb some potential problems. However, in regard to this type of effect, there might be some debate about social responsibility between the stakeholders: in the final analysis, who is accountable for potential social problems, the promoters or the communities?

Ideology: Not often specifically labeled in SIAs, community concerns, norms, values, beliefs, and attitudes are all elements that social scientists typically document in relation to local social structures (identity, family, community, education, bureaucracy and politics, youth and elders, work and leisure, gender relations, power, social change and development), to land use and occupancy patterns, and to the proposed project. These elements can -and should- typically be found disseminated throughout SIAs because they provide valuable insight on project acceptancy, potential social impacts, and fundamental community perspectives.

Ideology is a fundamental determinant of illness, disease, sickness and health (e.g. Eisenberg and Kleinman 1981, Fabrega 1974, Zimmerman 1980). Sensitivity to local concerns, norms, values, beliefs, and attitudes provides a certain measure of the SIAs ability to adequately predict potential effects. However, because of the limits of SIAs (in

terms of resources available) very little should be expected of the possible quantification of these impacts.

Social Science Methods - The Strategies of SIA

If and when a SIA is necessary in an EIA, the evaluation methods possible can be grouped under four main strategies: literature reviews, observations, interviews and questionnaires (cf. Bernard 1994, Livesay et al. 1984, Olsen and Merwin 1977, Jaakson 1985, Grawith 1993, Sayer 1992). Each of these research strategies can be combined and can use different techniques and tools. In truth, however, a number of elements determine which methods are used by the evaluators, such as: the originality and expertise of the social scientist, the funding and time available, the latitude given to the consultant by his company and by the promoter, the willingness of the population to participate, and so on.

The following section will provide a brief overview of the usual practice of social impact evaluation in order that readers of SIAs may be able to have some idea of the validity of the data presented to them.

How is the Research Framed?

Research design: In social sciences, as in other sciences, ideal experimentation (i.e. the basic set-up for a two-group randomized pretest-posttest design) must build on four basic principles:

- two groups are needed at least, an intervention group and a control group;

- people must be assigned randomly to one or the other group;

- different variables (e.g. knowledge, attitudes, values, health indicators, economic status, etc.) are measured before an intervention (for example, a development project, a policy or a program) is implemented (pretest);

- the same variables are remeasured and the extent of changes is evaluated after the intervention is implemented (posttest).

In real life situations, social sciences can rarely build true experimentation conditions. Most of the time, the best they can do is natural experimentation, which is when the conditions and the timing of the interventions are not controlled by the social scientist, they are simply evaluated. A fundamental problem with this type of evaluation is that there is most often insufficient baseline data (i.e. no pretesting) to evaluate the impacts of an intervention.

In natural experiments, pre-tests are most often simply not possible (because intervention or change has already occurred), thus one often does not have the choice but to use a one-group posttest design (also called a prescientific design), where through interviews, the social scientist tries to assess the impacts of an intervention. Needless to say, it is very difficult to evaluate if the observations of a given evaluation are the result of a specific intervention or project. Usually, to improve the one-group design, the social scientist evaluates the same variables in two or more groups (one where intervention has occurred and others where there was no intervention). In fact, the more control groups are added, the more one can reliably evaluate the impacts of a given intervention or project.

To undertake SIAs, conditions for ideal research are even more limited. First of all, there are practically never any control groups considered because the mandate of the SIA is to cover only those communities most directly impacted by a proposed project. Next, sampling is absolutely not random (see sampling below). Finally, and most importantly, SIAs do not undertake any posttesting because they only include, per definition, a baseline description of the social environment, a projection of potential impacts and suggestions for mitigation and monitoring measures. In conclusion, SIAs could be called a one-group pretest only design. Consequently, at best impact projections will be based on comparisons of impact outcomes of development projects in other contexts, but numerous differences are likely to influence the value of these inferences (i.e. projects or interventions differ, characteristics of communities impacted differ, evaluation protocols differ, and so on...).

In sum, no experimentation is done in SIAs, and no actual hard science data is generated. One way to overcome this limit of SIAs is to build on one of its strengths, namely: SIAs may include good descriptions of existing conditions before a project is implemented (pretest), in particular a description of the social environment, of land use and occupancy patterns and of community concerns or ideas about potential impacts. Thus, through monitoring activities, pretest-posttest research could be done to evaluate the real effects of development projects.

In the best of cases however, if the conditions of the interventions (i.e. project implementation) are well-known, and if a multigroup pretest (i.e. SIA descriptions)-posttest (i.e. monitoring activities) design could be set-up, this would at best be a quasi-experimental test design because distributions of people in control and intervention groups would not be randomly assigned, and because the validity of comparisons between communities would remain limited given that the effects of potentially different socioeconomic, historical or other factors cannot be controlled fully

in the evaluation.

Sampling: The context of SIA rarely if ever provides the social scientist the opportunity to undertake random sampling procedures. In cases where large populations are involved, then systematic random sampling could be used. But again this is rather rare, a project being defined in EIAs as normally impacting only a small part of a large community (e.g. those people living closest to the project, those using resources potentially impacted by the project, those commuting through the EIA area, and so on).

Because sampling is not random in SIAs, most of the time social scientists will resort to locating key informants, who are essentially the people the most knowledgeable or the most directly concerned by what is being measured.

To supplement this key informant approach, other groups not directly affected will sometimes also be met. This is a variant of stratified sampling which is used when an important subgroup is likely to be underrepresented in the sampling approach. For example, if the key informants are those that presently use a given resource that might be potentially affected by a project, then the social scientist might also want to get some representation from previous users (e.g. elders) or future users (e.g. youth). This type of sampling remains disproportionate in that key informants are oversampled compared to the other strata since they may be able to provide essential data to evaluate the project's impacts.

Because survey conditions used in SIAs are rarely based on random sampling, they nearly always have a non-probabilistic approach. Their sampling methods thus often have little external validity. However, if the sampling justification is clearly indicated and supported by adequate baseline data, SIAs can still lead to credible analyses.

The three most often used sampling strategies in SIAs are clustering, haphazard and snowball sampling. Clustering is simply a technique used to identify those natural groupings or associations where key informants are likely to congregate. For example, this might be hunters' and trappers' associations, ecological groups, neighborhoods, etc. Snowball sampling is when key informants are asked to identify other potential informants. In small communities this can be very effective because most people are likely to be in contact with each other. But in large communities, one is likely to oversample specific subgroups of informants with this technique. Finally, haphazard sampling is sometimes the only solution left to the evaluator because of the context of the SIA (e.g. timing for the SIA is not good to meet important informants; reluctance or resistance of local populations to participate in EIAs because of disapproval of the project...). In these cases, the evaluator will have to rely on those who are willing to participate, or have a vested interest in doing so.

Unfortunately, in most SIAs sampling techniques are not catalogued as such and limiting conditions are rarely specified, thus the burden rests on the readers of SIAs to interpret what types of sampling were undertaken to determine some of the limitations of the studies.

How is the Data Collected?

Literature Review: As in any other type of research, the first, essential, and most basic step when initiating an SIA is a search of the literature, both published and unpublished. In some SIAs this is, in fact, the only data gathering phase. Thus, the evaluator should, at the very least, have compiled the socioeconomic and health data available on the communities affected by the project, as well as have read the most important literature on the social and cultural organization of these communities, and should at least have some data on the important historical evolution of the area. Also

quite important is gathering the data on land use and occupancy in the EIA area (often available as "grey" literature, or through municipal, provincial or state land planning and resource management agencies).

Ideally, the evaluator should be able to base his projected impacts on a comparison of impacts or SIAs undertaken in similar contexts (i.e. similar project type and size, as well as impacted community characteristics).

Observation: In cases where data are not readily available but necessary (e.g. the number and characteristics of people accessing an area or using a specific public or private utility during a given period), fieldwork might be necessary to observe and generate the information needed. The usual method is that of non-participant observation.

In rare cases, SIAs might mention participant observation, which is when the evaluator establishes an intimate rapport with a given group and shares or helps in its activities. This is very useful to gain insight into insider knowledge of a context and putting into perspective the information useful to evaluate social impacts. This method is typical of ethnographic work which is undertaken to collect in-depth data on a specific culture or sub-culture, to discuss sensitive or intimate topics, to do human ecology work, and so on. However, the time and energy needed to build sufficient trust and to justify the presence of an outside observer nearly always exceeds what is available for a SIA.

Interviews: As mentioned previously (in the section on sampling), when people are actually met in the communities, key informants are often used as the sole source of information. However, using key informants does not guarantee valid data. For one thing, informants might lie about or exaggerate certain information. Also, the

informants met by the evaluator are not necessarily the most competent.

Different methods such as via triangulation or verifying cultural consensus (Romney et al. 1986) can greatly help put the data provided by informants into perspective and give an added measure of validity. However, in SIAs there is rarely any information available on such tests having been done. Moreover, because of different types of pressure on the evaluators, it is very rare that informant validity tests are undertaken. Consequently, the analyses often tend to mix together information from informants with different levels of competence in the questions covered by SIAs.

Open-ended interviews with individuals or a group of informants are frequently used in SIAs. There are essentially two types of approaches, either unstructured or semi-structured interviews (the latter are those often used in focus groups). Unstructured interviews are common in ethnographic work, where time is not a problem, but very rare in SIAs because it implies (once the informant has been briefed on the interview objectives) that the interviewer intervenes only when absolutely necessary during the responses.

Semi-structured and structured (see below) interviews are usually the norm in SIAs, in particular because time is limited and the evaluators must maximize the information gathering strategies. In semi-structured interviews, an interview guide is used, which is a list of subjects that must be addressed, and informants are probed with specific queries when they deviate too far off topic. This provides some degree of freedom to let the informant suggest new associations or ideas, and helps the interviewer cover the minimum data needed.

Structured interviews are used when the evaluator needs the different informants to answer questions in a specific order and worded in a specific manner. This is

necessary when comparisons between informant responses are needed. Less often used in SIAs since they do not necessarily add to the predictive power of open-ended interviews, this type of interview is nevertheless interesting because it provides information that can be categorized and analyzed quantitatively. Different techniques (such as free listings, sentence framing, triads, taxonomies, ranking and rating) can be associated with structured interviews to elicit underlying meanings or knowledge. However, these techniques are seldom used because the degree of analysis usually required to interpret the data would quite likely drain the resources available for SIA, and the type of measures that could be obtained would most often exceed what is expected of EIAs.

Questionnaires: Finally, where funding and logistics permit, SIAs can use different types of questionnaires (self-administered, interviewer assisted, telephone or mail surveys, etc.) to gather quantitative data, but this is usually limited to some very specific questions. Each type of questionnaire has its advantages and limitations, but the main drawback to using a questionnaire design to collect social data is due to the context of the SIA (i.e. communities will be reluctant to answer sensitive issues in a questionnaire perceived to be issued by a promoter). Thus, the response rate can be quite low and different potential biases can seriously compromise the validity of the data obtained, which is why evaluators usually refrain from using a questionnaire.

How about Validity?

While reading a SIA, one might wonder if the evaluation was well-done or if it meets professional standards and principles. It is difficult to answer these questions because SIAs often do not indicate all the data necessary to undertake a meta-evaluation.

Moreover, the only formal agencies that usually evaluate SIAs are environmental assessment review boards and the authorities in charge of permitting procedures. In most cases, when evaluating SIAs, best practice judgments usually apply. SIA evaluators often have to deal with one or many of the following typical problems of the impact assessment process:

- the elements required to be evaluated are not clearly formulated or are not really measurable;

- stakeholders hold unrealistic expectancies (too high or too low)   about the work of SIA evaluators;

- the project definition and parameters change during the course   of the evaluation;

- SIA bothers everybody;

- time and resources allotted to SIA are often limited;

- the promoter or the population (or both) are not cooperative;

- very little baseline information is available; and,

- stakeholders try to force their agendas on the evaluators.

The limits of interpretation: The final objective of EIAs is to delimit the probabilities of social and ecological risks related to a project, and to define the measures necessary to minimize them. In the process of evaluating these potential risks, many

uncertainties have to be dealt with in EIAs. These uncertainties can be reduced (made measurable or more predictable) in some cases, namely by gathering more data, evaluating more parameters. In other cases, however, some uncertainties are apparently irreducible, either because of their nature (phenomenological limits) such as in non-linear, chaotic systems, or because of our structure of knowledge (epistemological limits) such as when we try to interpret meanings cross-culturally or when we try to synthesize complex, dynamic and multioriented social systems (cf. Faber et al. 1992).

Conclusions

What can health professionals do with SIAs? Given their usual position as external reviewers and sometimes collaborators. Their main input to SIAs lies in knowing how to translate health determinant concerns into research questions for the SIA evaluator. Consequently, their principal role in using SIAs is to translate back the social science output into useful predictions on health issues.

Finally, keeping in mind the basic difference between social impact assessment and social impacts of EIA studies (i.e. "products" versus "processes"), health professionals can help ensure equity in the EIA process by facilitating part of the dialogue between local communities and promoters. This is essential because the relative importance given to the various risks associated with a project, their perception in fact, varies according to the specific interests and agendas of the stakeholders, i.e. the promoters, the consultants, the government authorities, and the populations concerned by the project. Sometimes, the positions held by the various stakeholders of the impact assessment process are simply incommensurable. In a context such as this, it is essential to focus the debates on the primary issues of the environmental impact

assessment process, namely the negotiation of risk acceptability and of the definition of realistic probable versus possible impacts.

Suggested Readings and Resources

Becker, H.
1997   *Social Impact Assessment.* UCL Press: London.

Bernard, H.R.
1994   *Research Methods in Anthropology. Qualitative and Quantitative Approaches* (2nd ed.). Thousand Oaks (CA): Sage Publications.

Birley, M.H.. and G. Peralta
1995   "Health Impact Assessment of Development Projects", in *Environmental and Social Impact Assessment,* F. Vanclay and D.A. Bronstein (eds), John Wiley & Sons: New York, pp. 153-170.

Bowles, R.T.
1981   *Social Impact Assessment in Small Communities. A Review of Selected Literature.* Toronto: Butterworths

Branch, K., D.A. Hooper, J. Thompson and J. Creighton
1984   *Guide to Social Assessment: A Framework for Assessing Social Change.* Westview Press: Boulder (CO).

Burdge, R.J. and F. Varclay
1995   "Social Impact Assessment", in *Environmental and Social Impact Assessment,* F. Vanclay and D.A. Bronstein (eds), John Wiley & Sons: New York, pp. 31-65.

Craig, D.
1990   "Social Impact Assessment: Politically Oriented Approaches and Applications", *Environmental Impact Assessment Review,* 10(1-2): 37-54.

Dunn, J.R., S.M. Taylor, S.J. Elliot and S.D. Walter
1994   "Psychosocial Effects of PCB Contamination and Remediation: The Case of Smithville, Ontario", *Social Science and Medicine,* 39(8): 1093-1104.

Eisenberg, L. and A. Kleinman
1981   *The Relevance of social science for medicine.* Boston: D. Reidel Pub. Co.

Faber, M., R. Manstetten and J.L.R. Proops
1992   "Humankind and The Environment: An Anatomy of Surprise and Ignorance",

Environmental Values, 1: 217-242.

Fabrega, H.
1974 *Disease and Social Behavior; an Interdisciplinary Perspective.* Cambridge,
        (Mass): M.I.T. Press

Finsterbush, K.
1985 "State of the Art in Social Impact Assessment", *Environment and Behavior*,
        17(2): 193-221.

Foulks, E. and T. McLellan
1992 "Psychologic Sequelae of Chronic Toxic Waste Exposure",*Southern Medical
        Journal*, 85(2): 122-126.

Frankish, C.J., L.W. Green, P.A. Ratner, T. Chomik and C. Larsen
1996 *Health Impact Assessment as a Tool for Population Health Promotion and
        Public Policy.* Institute of Health Promotion Research, University of British
        Columbia

Gagnon, C., P. Hirsch and R. Howitt
1993 "Can SIA Empower Communitites", *Environmental Impact Assessment Review,*
        13: 229-253.

Grawitz, M.
1993 *MŽthodes des sciences sociales,* (9th ed.), Dalloz: Paris

Grondin, J. and S. Bruneau
1994 "Mining and Health in the Arctic", *Arctic Medical Research*, v. 53, sup. 2: 364-
        366.

ICGP (Interorganizational Committee on Guidelines and Principles for Social Impact
        Assessment, 1994   "Guidelines and Principles for Social Impact Assessment",
        Impact Assessment, 12(2): 107-152

Jaakson, R.
1985 "The Role of Surveys in Social Impact Assessment", in *Environmental Impact
        Assessment: The Canadian Experience,* J.B.R. Whitney and V.W. MacLaren
        (eds.), Toronto: Institute for Environmental Studies, University of Toronto, pp.
        181-195.

Livesay, J.M., J.C. Boyer and J.R. Harding

1984   "Social Impact Assessment: Conceptual Frameworks and their Implications for Planners", in *Applied Social Science for Environmental Planning,* W. Millsap (ed.), Westview Press: Boulder (CO), pp. 23-35.

Manring, N., P.C. West and P. Bidol
1990   "Social Impact Assessment and Environmental Conflict Management: Potential for Integration and Application", *Environmental Impact Assessment Review*, 10(3): 253-265.

Olsen, M.E. and D.J. Merwin
1977   "Towards a Methodology for Conducting Social Impact Assessment Using Quality of Life Indicators", in *Methodology of Social Impact Assessment,* K. Finsterbusch and C.P. Wolf (edfs.), Stroudsburg: Dowden, Hutchison & Ross, pp. 43-63.

Patton, M.Q.
1996   *Utilization-Focused Evaluation. The New Century Text* (3rd ed.). Thousand Oaks (CA): Sage Publications.

Rickson, R.E., R.J. Burdge, T. Hundloe and G.T. MacDonald
1990   "Institutional Constraints to Adoption of Social Impact Assessment as a Decision-Making and Planning Tool", *Environmental Impact Assessment Review*, 10(1-2): 233-243.

Romney, A.K., S.C. Weller and W.H. Batchelder
1986   "Culture as Consensus: A Theory of Culture and Informant Accuracy", *American Anthropologist,* 88: 313-338.

Sayer, R. A.
1992   *Method in Social Science: a Realist Approach* (2nd ed.), New York: Routledge

Taylor S.M., S.J. Elliot, J. Eyles, J. Frank, M. Haight, M. Streiner, S.D. Walter, N. White and D. Willms, 1991   "Psychological Impacts in Populations Exposed to Solid Waste Facilities", *Social Science and Medicine*, 33: 441-447.

Zimmerman, M.R.
1980   *Foundations of Medical Anthropology: Anatomy, Physiology, Biochemistry, Pathology in Cultural Context,* Philadelphia: Saunders