

SOCIO-ECONOMIC IMPACT ASSESSMENT PROTOCOL
A FRAMEWORK FOR FOREST RESOURCE DEVELOPMENT PROJECTS

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ABSTRACT

The main purpose of this study is to develop a protocol to use as a guideline framework to identify, analyze, mitigate/enhance, and monitor the socio-economic impacts for resource development projects. The main focus of this impact assessment protocol is aimed at understanding the potential socio-economic impacts of development projects within the forest resource sector of the economy. Traditionally, resource development projects have concentrated their attention to mainly understanding the biophysical implications of said projects within the context of corporate profitability and without taking into consideration the inherent collateral socio-economic implications (costs and benefits) to communities and their peoples. Modern developmental trends, sometimes because of acknowledgement and realization and oftentimes because of political pressure, now require the incorporation of *thorough and carefully crafted* Socio-Economic Impact Assessments (SIAs) within the scientific dimensions of all Environmental Impact Statements (EIAs). Frequently, also, SIAs are being developed independently of EIAs as a means to fully understand the interactions and repercussions of a given project with the social and economic variables (the bread-and-butter issues) knitted within the existential fabric of peoples and communities. This protocol study, therefore, identifies the process to follow on how to develop, implement, and interpret a Socio-Economic Impact Assessment for [*forest*] resource development projects. It identifies the steps to follow on how to ensure success in the pursuit of this task, as well as pointing out the areas of misconception and potential error that analysts and developers must attempt to avoid. Finally, because of methodological clarity, this protocol separately identifies and discusses the assessment of “economic” impacts (Section IV) from the assessment of “social” impacts (Section V). However, both assessment processes should always be presented in a single integrated SIA document since the variables of each of these categories are mutually supportive and co-dependant.

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INTRODUCTION

Socio-economic impact assessment (SIA) is a relatively new and ever-evolving discipline. It traces its origins to the growing pressure in the 1960s for comprehensive study and public review of how major developmental projects may affect the environment. Initially such studies and reviews focused narrowly on the biophysical environment, examining how projects might affect wildlife and vegetation. The whole exercise was seen as an administrative mechanism for environmental protection.

Socio-economic impact assessment can be defined as the process of assessing or estimating, in advance, the social and economic consequences that are likely to follow from specific policy actions or project development, particularly in the context of appropriate national or provincial environmental policy legislation. Socio-economic impacts include all social, economic, and cultural consequences to human populations of any public or private actions that alter the ways in which people live, work, play, relate to one another, organize to meet their needs, and generally cope as members of society. As for cultural impacts, these involve changes to the norms, values, and beliefs of individuals that guide and rationalize their cognition of themselves and their society (*Burdge, p. 32*).

As development projects have increased in size they have continued to be implemented in more remote and environmentally sensitive areas, the nature and scope of impact assessment has diversified. Studies have become more prescriptive. Not only do they now identify and describe environmental impacts, they also outline how projects may be modified to avoid or minimize any negative impacts. The scope of impact assessment has been broadened to include the socio-economic environment. Socio-economic impact assessment has become an integral part of all Environmental Impact Assessments; its objectives are to identify potential positive and negative socio-economic effects and to recommend how the former might be enhanced and the latter avoided or minimized.

In Canada, the Environmental Assessment Review Process (EARP) was established in 1973 by a decision of Cabinet. EARP was based on the U.S. experience with environmental impact assessment. Similar processes and regulations now exist in all Canadian provinces to meet requirements for environmental impact assessment. But, because the socio-economic impact assessment process is integrated as part of the environmental assessment process, separating specific socio-economic impact Assessment requirements has become more and more intricate (*Pinfold, p.1*).

The growing interest of economists and socio-economic researchers in expanding the scope of Economics and Sociology beyond the biophysical business enterprise has established the area of Socio-economic Impact Assessment as a full-fledged discipline of interest to economists, sociologists, and all other scientists interested in the socio-economic repercussions of development sciences.

As an integral part of an Environmental Impact Assessment (EIA), a Socio-economic Impact Assessment is expected to provide the essential human elements complement to the often narrow biophysical focus of many EIAs. From the perspective of the socio-economic impact agenda this has meant the valuing of people's "bread-and-butter concerns" as much as trees or fish or landscapes.

In sum, we may conclude this introductory section by reiterating that a Socio-economic Impact Assessment is no more than the estimation and appraising of how high technology affecting the environmental milieu has repercussions on the social and economic variables of societies. SIAs are the systematic advanced appraisal of the impacts on the day-to-day quality of life of people and communities when the environment is affected by development or policy change.

Although a large number and variety of types of biophysical and socio-economic impacts are likely to result from resource development such as *forestry*, the focus of this protocol is on those related to pure socio-economic dimensions, and, within said realm, to indicators of change in economic, social, cultural, demographic, public service, and fiscal dimensions among many others to be discussed further. The discussions will deal specifically with the projection of impacts; events that would not occur were it not for resource development being undertaken in the area of *forestry resource* related development.

Such projections inevitably involve projections of two sets of conditions: (1) baseline conditions without the project and (2) impact conditions with the project. Both baseline and impact projection techniques for assessing socio-economic impacts will be commented for each type of impact.

SECTION I

THE SIGNIFICANCE OF SOCIAL AND ECONOMIC IMPACT ASSESSMENT

To what extent is Socio-economic Impact Assessment a discrete, established field of theory and practice? At least three answers are possible, each with different implications for those responsible for impact assessment and review processes (*Armour and Lang, p.134*):

1. The field of Socio-economic Impact Assessment is reasonably well defined and established. There is a distinct body of knowledge and skill, the competence of practitioners can be determined and tested and, both, practitioners and theoreticians in the field share a common view of what it encompasses and how problems presented to it should be approached. This, however, does not mean unanimity in the field since, occasionally, opinions and selection of methodologies will diverge on key issues. Nonetheless, it does imply sufficient consensus to allow the field to be clearly defined and to develop continuously.
2. The field is always evolving. SIA is a discipline that continues to develop rapidly and is currently at the crossroads of becoming a discrete, established and recognized field. Legitimacy to the field is being supported by individuals specialized in Economics, Sociology, Cultural Anthropology, Social Psychology, and all sorts of community development workers.

Nowadays, ignoring socio-economic impacts is exposing agencies to criticism not only from SIA advocates but also from concerned citizens and governmental officials who are fully aware of the new approaches and expect for them to be applied. Confronted with demands to pay more attention to socio-economic impacts, such agencies do respond pragmatically by seeking a range of inputs from experienced scientists and professionals in both, the SIA and allied fields, as well as from knowledgeable citizens experienced in living in areas affected by proposed projects.

3. There is a perception that Socio-economic Impact Assessment is a field of science still too elusive to take seriously. There seems to be so much diverse opinion concerning the assessment of socio-economic impacts that it is next to impossible to distinguish fact from opinion or expert from charlatan.

For instances where SIA is effectively underestimated, agencies with impact assessment responsibilities have to rely heavily on public participation through the input provided by public hearings. At this point, socio-economic impacts are likely to be judged on case-specific and mostly subjective grounds.

THE DECISION-MAKING PROCESS

In Canada, generally, SIA takes place as part of an Environmental Impact Assessment (EIA); however, an independent decision-making process dealing with socio-economic matters has evolved separately. Consequently, socio-economic impact concerns may be dealt with as part of the overall EIA process or as independent projects in their own right. Still, within either context, the role of SIA can be distinguished.

Socio-economic Impact Assessments evaluate project development alternatives in terms of their estimated socio-economic consequences. The complete project development process involves four main stages:

1. The formulation of alternatives;
2. The selection of an alternative for implementation;
3. The actual implementation of the alternative; and,
4. The evaluation and modification of the chosen alternative.

SIA is a decision-making tool for the second stage in which the project development alternative or policy alternative for implementation is selected following a thorough analysis of its technical, environmental, social and economic implications. In the process some new alternatives and modifications of the proposed project alternatives may be suggested, but primarily SIA occurs after the proponents of the project have determined the alternatives (*Pinfold, p. 2*).

SIA GUIDELINES

Issues dealt with by SIA fall into two broad categories: allocative effects and non-allocative effects. Allocative effects are concerned with efficiency of resource use, that is, does the project in question make better use of resources than an alternative? Non-allocative effects are those concerned with the distribution of income and benefits (e.g. equity considerations), employment, demography, socio-cultural impacts, regional balance, technological progress, market structure, the balance of payments, aggregate and industrial output, and inflation among many other possible variables. The review of EIA guidelines indicates that, for most of the SIAs, non-allocative issues ranging from the micro-level impacts on individuals, small groups or small rural communities, to the macro-level socio-economic impacts at the urban, provincial, regional or national level are the main, if not the exclusive, focus of attention.

As for specific SIA guidelines, these range from minimal to extensive in their attention to socio-economic matters. Typically, socio-economic issues are listed under general headings, while the main concerns tend to be the distribution and characteristics of the population of the project/policy area; the social, economic and cultural setting; and

expected population and well-being changes. Also, in many cases, employment impacts are explicitly identified. The following are examples of SIA guidelines:

1. Lifestyle and quality of life,
2. Demographic matters; including population, gender, migration, etc.
3. Employment considerations,
4. Housing and infrastructure,
5. Health, education and social services,
6. Local government,
7. Labour market impacts, including both the immediate project area and the regional/provincial labour market impacts,
8. Economic impacts such as changes in income levels and distribution and changes in economic base and self-sufficiency.

RATIONALE FOR AN ASSESSMENT OF SIA TECHNIQUES

Continued trends toward industrial and managerial decentralization have led an increasing number of agencies and organizations to located new facilities in smaller urban areas or in rural areas. Similarly, changes in Canada's forestry resource supply patterns point toward the increasing development of large-scale forestry resource extraction and conversion-manufacturing projects in sparsely populated areas, such the case of Labrador and Western Newfoundland. These developments present both benefits and problems to the peoples and the communities nearby. While new or expanding industrial and resource development projects offer the benefits of new jobs and provide a stimulus to the local economy, they also pose the problem of potential environmental degradation and population growth that are problems few rural communities are prepared to handle adequately.

The socio-economic changes or impacts occurring during the implementation or expansion, and subsequent operation of *forestry-related industries*, exemplify the paradoxical effects of many types of industrial facilities on rural areas. On one hand, such projects often lead to long desired increases in local employment and to general economic growth in the area. However, on the other hand, the total magnitude of the expectation for economic growth associated with such development projects, the perceived exploitation of environmental resources, the rapidity of the fluctuations of such patterns during the lifetime of the projects, the public service demands created by growth, and the uncertainty of the timing and specific location of many of the impacts create severe planning problems for local areas and development agencies.

The assessment of the impacts of resource developments such as *forest resources*, however, often places heavy demands on the socio-economic science analysts who must perform such assessments, on policy and decision makers whose agencies are responsible

for the completion of such assessments, and on decision makers who must plan courses of action on the basis of these assessments. For each, the common task is to obtain the expertise necessary to carry out and evaluate such assessments.

In addition, the rapidity of the development of the science of Socio-economic Impact Assessment further accentuates the learning problems involved. Demands for timely impact information have led increasingly to the development of computerized Socio-economic Impact Assessment models. These models provide a relatively wide range of outputs and do so in a flexible and timely manner. The models, however, differ widely in data input requirements, computational procedures, outputs, and in many other respects. Given the diversity of such models and their clear utility in producing timely and flexible information bases, a careful and systematic comparison of the conceptual and methodological basis of such models is essential. The information and knowledge bases necessary to make such evaluations, however, are even more extensive than for noncomputerized models.

Unless a sufficient knowledge base can be obtained, research analysts and decision makers cannot address many of the questions that should be answered before the assessment process begins (*Leistritz and Murdock, pp. 3-4*). These questions include:

1. What economic, demographic, public service, fiscal, or social analysis techniques are available for impact projections and which are likely to be of greatest utility under a given set of circumstances?
2. What are the factors likely to affect the magnitude, form, and distribution of economic, demographic, public service, fiscal, and social impacts?
3. What are the most frequent socio-economic informational needs of decision makers in impacted areas?
4. Which of the computerized impact projection systems best meets the decision makers' needs, and what are the costs and problems involved with the use of such models?

To summarize, the knowledge base necessary to perform socio-economic impact assessments and to monitor and utilize them is extensive and increasing rapidly. There is a clear need for a consolidated single source reference on the assessment process which brings together:

1. A discussion of the alternative methods for assessing major types of socio-economic impacts and the conceptual bases, relative strengths and weaknesses, and data base and resource requirements of each alternative;
2. A consideration of the salient features of the process of rapid economic and social repercussions which are likely to influence the nature and magnitude of each type of socio-economic impact and thus to affect the information needs of planners, policy makers, and the public;

3. A description of the present state-of-the-art of impact assessment and the most frequently used methods; and
4. A consideration of the characteristics and features of the various computerized impact projection models.

This protocol is an attempt to provide such an information source addressing the needs of decision makers and research analysts when preparing a project specific Socio-economic Impact Assessment.

SECTION II

IMPACT ASSESSMENT: ROLE AND RELATIONSHIPS

From the standpoint of the practitioner (e.g., *programmes aimed to forest resource development*) implementing socio-economic policy decisions, SIA research provides a direction for understanding the process and guidance in the management of economic and social changes in advance of the implementation of proposed biophysical (*forest related*) changes. It thus facilitates a decision-making process to choose between alternative possibilities.

In general, the SIA process provides direction in (*Burdge and Vanclay, pp 32-33*):

1. Understanding, managing, and controlling socio-economic change;
2. The prediction of likely impacts from change strategies or development projects/policies that are to be implemented;
3. The identification, development, and implementation of mitigation strategies in order to minimize potential socio-economic impacts (e.g., identified socio-economic impacts that would occur if no mitigation strategies were to be implemented);
4. The development and implementation of monitoring programmes to identify unanticipated socio-economic impacts that may develop as a result of the biophysical or social change;
5. The development and implementation of mitigation mechanisms to deal with unexpected impacts as they develop; and,
6. The evaluation of socio-economic impacts caused by earlier development projects, technological innovation, specific technology, and agency or government policy.

SIA's MAIN ROLE

Often, the greatest socio-economic impact of many projects or policies, particularly those planned taking into account expected community benefit, is the stress that results from the uncertainty associated with it. Sometimes just experiencing a situation of expected biophysical (environmental) related change is the cause of major stress. By maximizing community involvement in the SIA process, not just by consultation, but by directly involving locals in planning teams,

1. Uncertainty is dramatically reduced,
2. The legitimacy of the SIA and the development project is enhanced,
3. The accuracy of the SIA is increased, and

4. The capacity for the SIA to mitigate impacts is maximized.

Experience has proven that local people from the affected communities have made substantial contributions to Socio-economic Impact Assessments even though they may not be experienced in administrative procedures.

While the requirement to undertake SIAs may seem to be an unnecessary luxury adding to the costs of projects, there are substantial benefits to be gained from undertaking them, for governments, communities, and developers. Socio-economic Impact Assessments that involve the community:

1. Minimize local resistance to development projects,
2. Dramatically reduce disruption,
3. They increase project success,
4. They prevent major planning disasters,
5. They prevent major unnecessary costs and, thus, they may well save money in the long run,
6. The costs of rectifying socio-economic and environmental impacts of development are borne by the public sector, not by the corporations that created them.

Even where there are mechanisms (e.g., regulatory or legal action) for extracting compensation from companies for the environmental damage or impact they create, the compensation is likely to only cover direct impacts, and not the vast amounts of indirect impacts. In local community settings, the compensation itself may have a considerable social impact.

In any case, the onus of proof to establish that a community, or certain groups within an area, did experience significant socio-economic impacts would rest with the community itself, not the development agencies or investing companies. For socio-economic impacts especially, it is very difficult to establish proof to the satisfaction of the courts. Furthermore, there are many impacts that cannot be mitigated or rectified so compensation is not necessarily a desirable strategy. Once local culture life or quality of life is affected, nearly always it is affected for good, and therefore it is important to prevent the majority of negative socio-economic impacts before they actually happen. SIAs, therefore, should be required of all public and private activities (projects, programmes, policies) that are likely to affect social and economic lifestyles.

SIAs RELATIONSHIP WITH FOREST RESOURCE ECONOMICS

What makes a forest system “sustainable”? Certainly conservation of forest resources is a necessary condition, but it is not in itself sufficient. Given the inherently *human* nature of the forest endeavour, management and development efforts must also

ensure that forestry communities, forester livelihoods, forestry institutions and forestry culture are sustained. The importance of the human factor is clear to those who work in the *real world* of forestry policymaking and resource management, where environmental and technological factors must be carefully balanced with economic and social considerations.

The need for such integrated approaches has been recognized not only by practitioners but also by many in the forestry research community (*Charles, et.al., p.1*). It is clear that successful forestry management and development efforts require not only biophysical and technological knowledge, but also a range of economic and social research, including at least some understanding of human behaviour, human aspirations and human organization. In other words, there is a recognized need for more interdisciplinary research approaches.

The study of socio-economics in forestry and silviculture represents one attempt to implement interdisciplinary forestry research, in particular through studies linking the “economic” and “social” aspects of the forestry. There is a certain symmetry to the subject; it can be seen as integrating biophysical, social and institutional studies into conventional economic analysis, or alternatively as bringing the concepts and analytical methods of Economics and Sociology into biophysical science research. Indeed, more broadly, for the purposes of this report, socio-economics can be viewed as including political, cultural, institutional, and legal, as well as economic and social aspects.

Within the sphere of Economics, socio-economics is the sub-field that attempts to incorporate the *human element* into what is often a rather *hard* science. As such, it has tended to be a more descriptive, policy-oriented area of study, contrasting with other more quantitative components of economics, such as microeconomic theory and monetary economics. However, socio-economic research also contributes an inherent realism, based as it is on the economic analysis of people rather than economic proxies such as *firms* and *consumers*; this presents an interesting challenge to economists who seek to adapt the complex mathematical tools that form the basis of microeconomic and macroeconomic theory.

Amongst those involved in forestry socio-economics, there is a wide spectrum of views about what constitute the key research topics. In compiling this protocol, several subject areas may be identified within the overall theme of forestry socio-economics. Among the chosen subject areas, the following categories are hereby offered for potential further detailed analysis:

1. Identification of the socio-economic contributions of forestry activity to society,
2. Effectiveness of how forestry can be judged by the extent to which societal goals and objectives are achieved,
3. Income and human well-being,
4. How the well-being of individuals, groups and communities is affected by forestry policy and forestry operations,

5. How are direct and indirect forest generated incomes distributed amongst participants,
6. Management, development and human responses to forestry,
7. Determination of the compatibility or incompatibility of forestry policies with declared socio-economic objectives,
8. Property rights in forest resource studies, and how common property resource systems may emphasize the economic and social institutional dynamics in forest communities,
9. Labour, employment issues and production processes,
10. Understand the functioning of forest labour markets; the supply and demand of people as foresters and forestry workers,
11. Determining the dynamics that drive foresters and others working in the forestry industry,
12. Understand how does labour make decisions about entering into and exiting from forestry related industries,
13. Determining to what extent are foresters and others working in the forestry industry mobile geographically of between occupations,
14. Communities, harvest, post-harvest and aquaculture,
15. Socio-economics of forest households and forest communities, or components thereof,
16. Forest zone management, with particular focus placed on forestry or silviculture considerations,
17. Socio-economic aspects of the handling, processing, marketing and distribution of forest products,
18. Demographics and gender issues. Participation of women in forestry and silviculture activities,
19. Information and research assessment; incorporating publications which examine the need for and the nature of socio-economic information,
20. Innovation and technology transfer and their impact on both the economically and socio-culturally acceptable levels.

To reiterate an earlier point, the above represent but a sampling of the socio-economics of topics related to the theoretical and practical aspects of Forestry Resource Economics.

SECTION III

SPATIAL AND TEMPORAL DEFINITIONS

The process of determining the spatial and temporal baseline conditions of a Socio-economic Impact Assessment is referred to as “*scoping*”. That is, identifying the baseline geographical area of concern and conceptualize it within a specific period of time. This should entail a careful description of the existing socio-economic phenomena that are more likely to need in-depth analysis prior to implementing a specific development project and/or policy, the units of analysis that should be addressed, and the appropriate level of detail for the assessment effort.

This preliminary spatial and temporal assessment or scoping is important because it helps decision-makers to forge effective use of available forest resources. By considering the general type and magnitude of the potential change agents, the types of socio-economic changes they could cause, and the degree of controversy likely to be generated over the assessment or the proposed action as well as the time and budget available for the assessment effort, the socio-economic assessment can be focused more effectively. Costly mistakes and false starts can thus be avoided. An important function of these initial screening steps is to help decision-makers to think through the task being undertaken and develop an efficient plan for its completion.

The scoping process will aid decision-makers to focus their attention, both geographically (spatial) and temporally, by using a documented and defensible process. The major steps in this process include (*Branch, pp-53-55*):

1. Determine what the socio-economic potential impacts from the proposed alternatives are (e.g., people, jobs, income, resources, social services, regulatory changes, organizational factors, effects in health and public safety, etc.). They differ considerably among the types of actions decision-makers may need to assess. Identify all potential public issues that are likely to emerge.
2. Locate readily available secondary data and information about the proposed actions and the socio-economic environment in the study area.
3. Review available information and estimate the socio-economic impacts that may occur. A socio-economic organizational model can be used to estimate how community resources, social organization processes, and community or individual well-being might be changed by the potential development project decisions. It can also serve as a guide to a systematic consideration of the types of socio-economic issues that may emerge.
4. Estimate all potential socio-economic changes in people (demographics), jobs (employment), income, resources, organizations, and public safety that are likely to occur without the proposed action (baseline) for the areas or communities potentially affected by the proposed project.

5. Conduct an adequate field trip to review the estimated changes that might actually occur and to familiarize decision-makers with the socio-economic realities of the affected area.
6. If necessary, re-estimate potential changes based on observations from the field trip.
7. Prepare a detailed work plan for the assessment.

The most important step of the spatial and temporal scoping process is to determine the proposed action's potential to cause socio-economic effects to a pre-determined baseline component. The main purpose of this step is to focus attention on the important issues and to help determine whether the impacts could be sufficient to affect the socio-economic organization of the communities in the study area. This is done by estimating the potential of the proposed action to cause real or perceived changes in any or all of the following:

1. The number and characteristics of people in the affected area,
2. The number, types and distribution of new and existing jobs,
3. The level of distribution of new and existing income,
4. Direct changes in the resources of:
 - a) The private sector (e.g., housing, commercial resources, recreational resources),
 - b) Local or provincial government (e.g., revenues, facilities), and
 - c) The general public (e.g., land, air and water quality; wildlife, and recreational resources).
5. Organizational and regulatory context (e.g., changes in regulatory control, change in public or private sectors, or changes in policy), and
6. Public health and safety (e.g., deforestation, floods, landscape, disease, negative visualsapes, etc.)

Some forest-related development proposed actions may be perceived as restricting or preventing socio-economic development in an area, creating conditions in which the baseline inputs would frequently appear to exceed project inputs, and the with-project forecasts would be more similar to current conditions than the baseline forecasts would be. In such cases, it is important to consider the project's ability to prevent (or minimize) change in each input category when determining potential project inputs. It may also be helpful to note that forest development projects which would place restrictions on community response or socio-economic development alternatives are likely to evoke concerns and issues that are somewhat different from those caused by growth-promoting proposals. The importance of these concerns and issues to decision-makers may necessitate special efforts in public involvement, attitude assessment, and issue analysis.

The purpose of the spatial and temporal scoping step is to focus attention on the important analytic problems and to help determine the appropriate units of socio-economic analysis for the SIA study. If the assessment task is to formulate and evaluate broad alternatives or to participate in an overall scoping process, the geographic and temporal scoping should probably be done in general terms, identifying only the geographic location, time period, nature, and general magnitude of the inputs (impacts).

On the other hand, if the Socio-economic Impact Assessment task is to prepare a detailed assessment of specific alternatives, the aforementioned described general scoping may have already been done and can be utilized to determine the potential inputs more specifically and at a disaggregated (possibly community) level. It will be useful from the onset to determine the general pattern of the potential change in these factors. Is it likely to be gradual and steady? Rapid and erratic? Rising to a peak, then dropping sharply? These patterns and the degree of uncertainty associated with them, also affect the socio-economic consequences that will result.

Particular attention should be given to the anticipation of socio-economic change and the potential for the proposed action to generate controversy. In most cases, this will result from perception or apprehension of change in one or more of the socio-economic impacts previously identified. It should be kept in mind throughout that most SIAs have political as well as scientific purposes, and that they have many audiences. For this reason, it is sometimes necessary to extend the assessment into areas where little project socio-economic effect is expected in order to demonstrate the absence of effects.

SPATIAL SCOPING

Socio-economic effects result from the interaction between the changes introduced by the proposed action (e.g., demographic, employment, income, resources, organizational and regulatory processes, and public health and safety) and the existing baseline socio-economic conditions in the community, locality, or geographic area. Consequently, the purpose of the spatial scoping in the screening process is to identify the communities or area that may be most affected by the proposed action and to establish the geographic boundaries and priorities of the socio-economic assessment. In some cases, the geographic focus of the various assessment components will vary substantially. Nonetheless, it is very important that the assessment effort be focused on those communities or areas that will be affected by proposed actions.

If the SIA is part of a preliminary scoping or formulation of alternatives effort for which the potential impacts have been determined at an aggregate study area level, the next logical step is to examine maps of the study area. The maps are to be used to determine where the communities or settlements are located relative to the site of the proposed project and to identify those communities or individuals that could be affected by the changes identified in advance. Although it might be premature to completely eliminate communities or areas from the Socio-economic Assessment process based on this preliminary spatial screening, this simple process can be effective in determining the number and geographic location of the study area communities that will require most of the decision-makers effort. It is always wise to make sure that the geographic relationship between the site of the proposed action and the affected communities is fully understood.

Using the information about potential impacts it should be possible to compile a list of potentially affected communities ranked in order of the magnitude of the socio-economic effects they will experience from the proposed project. Using the most recent population and economic data available for each community (generally from the Canada Census or Province estimates), other readily available general descriptions of the communities, other studies, visits to the area, applied questionnaires, and advice from other team members who are knowledgeable about the study area, the spatial and temporal scoping process can be completed.

The principal purpose of the spatial and temporal scoping process is to compare the magnitude of the potential action-related socio-economic change with the baseline characteristics of the communities and area residents and to determine where the relative magnitude of the action-related change could be sufficient to noticeably change socio-economic conditions in any community.

SECTION IV

ECONOMIC IMPACT ASSESSMENT

Socio-economic Impact Assessment refers to the outcome of the interaction between the characteristics of the project/policy/development action and the characteristics of the “host” environment. As a starting point, the analyst must assemble baseline information on both sets of characteristics.

The assembling of relevant information on the characteristics of the project would appear to be one of the more straightforward steps in the process. However, projects have many characteristics and for some, relevant data may be limited. For example, the drafting of a “direct employment labour curve” would be a key initial source of information since it shows the anticipated employment requirements of the project. To be of maximum use it may include several dimensions, including the duration and categories of employment. The labour data should indicate the anticipated labour requirements for each stage in the project life-cycle.

As for being able to define the so-called “host” economic environment area, it depends to some extent on the nature of the project. Some projects may have significant local, regional or provincial socio-economic implications while, others, may go beyond into national or even international socio-economic implications. However, most projects have local or regional socio-economic impacts.

THE SCOPE OF SOCIO-ECONOMIC IMPACTS

A consideration of socio-economic impacts needs to clearly specify the type, duration, spatial extent and distribution of impacts; that is, the analyst needs to ask the questions what to include, over what period of time, over what area and who and how will be affected (*Glasson, pp. 11-14*)?

1. *What to Include?*

There is usually a functional relationship between impacts. Direct socio-economic impacts have wider indirect economic impacts. Thus, direct employment on a project will generate expenditure on local services (e.g., for gas, food and drink, entertainment). The ratio of local to non-local labour on a project is often a key determinant of many subsequent impacts. A project with a high proportion of in-migrant labour (provincial, national and/or international) will have greater implications for the demography of the locality. There will be an increase in population (temporary or permanent), which may also include an influx of dependants of the additional employees/workers. The demographic changes will work through into the housing market and will impact on other local services and infrastructure (e.g., on health, policing, recreational and education services), with implications for both the public and private sectors.

Development actions may also have socio-cultural impacts. Some projects may have implications for the lifestyles in a rural, small town based environment and,

therefore, the introduction of a project may be viewed as a serious threat to the quality of life of a locality. Socio-economic problems may be associated with such development projects, which may generate considerable community stress and conflict. In practice, unfortunately, such socio-cultural impacts are usually poorly covered in SIAs, being regarded as more intangible and difficult to assess.

2. What Period of Time?

The question of what period of time to consider in Socio-economic Impact Assessment raises the substantial differences between the emerging impacts of the construction stage from those emerging during the operational stage of the project. Some projects, such as roads may have high levels of construction employment but much lower levels of operational employment; in contrast, other projects such as manufacturing/processing often have shorter construction periods with lower levels of employment, but with considerable employment levels over project lives that may extend for several decades.

The closure of a project may also have significant socio-economic impacts; unfortunately, these are rarely covered in the development of SIAs. Socio-economic impacts should be considered for all stages of the life of a development. Even within stages, it may be necessary to identify sub-stages, for example peak construction employment, to highlight the extremes of impacts that may flow from a project. Only through monitoring can predictions be updated over the life of the project under consideration.

3. What Area to Cover?

This question raises the often-contentious issue of where to draw the geographic boundaries around socio-economic impacts. Boundaries may be determined by several factors. They may be influenced by estimates of the impact zone. Thus, for the construction stage of a development project, a regional or local boundary may be taken, reflecting the fact that construction workers may be willing to travel some distance daily for short-term, well paid employment. On the other hand, permanent employees of an operational development are likely to locate much nearer to their work. Other determinants of the geographical area of study may include the availability of data (e.g., census town or community information), and policy issues (e.g., providing spatial impact data related to the areas of responsibility of the key decision-makers involved in the project).

Different socio-economic impacts will often necessitate the use of different geographical areas, reflecting some of the determinants directly associated to economic implications. In practice, most SIAs tend to focus on local areas. This may provide a very partial picture; economic impacts often have wider regional, and occasionally national and international implications.

4. *Who Will Be Affected?*

The answer to this question is of crucial importance when developing Socio-economic Impact Assessments. The differential effects of development impacts do not fall evenly on communities or among inhabitants within a given community; there are usually winners and losers. Distributional impacts can be analyzed by reference to geographical areas and/or to groups involved. For example local and non-local, age groups, ethnic/racial groups, gender groups, socio-economic groups, employment groups, etc.

There are of course many other dimensions to impacts besides the areas discussed here, including adverse and beneficial, reversible and irreversible, quantitative and qualitative, and actual and perceived impacts. All are relevant in SIA. The distinction between actual and perceived impacts raises the distinction between more "objective" and more "subjective" assessments of impacts. The impacts of a development perceived by residents of a locality may be significant in determining local responses to a project. They can constitute an important source of information to be considered alongside so-called "more objective" predictions of decision-makers perceived socio-economic impacts.

BASELINE STUDY AND ANALYSIS

The main objective for pursuing an economic impact assessment is to measure changes in the level of economic activity, which result from a specific action such as a new or expanded forest project. Indicators of economic activity that are frequently used in impact assessment include industrial output (gross receipts or value added), employment, personal income, and distribution of costs and benefits/incomes. Economic impact analysis thus measures changes in activity levels for the entire economy of the area affected by a new or expanding project, including both the private sector and the public (government) sector. Effects on the public sector are frequently subjected to additional, more detailed study of often referred to as public service analysis and fiscal impact analysis (*Leistritz and Murdock, p19*).

A realistic assessment of the impact of a development project typically requires projection of the level of economic activity that would be expected with and without the presence of the project. The results of this latter projection, often termed a baseline projection, can then be compared with the former projection which assumes development of the project. The difference between the two projections measures the impact of the project. Assessing the impact of a major project thus frequently involves a combination of the techniques often used in regional economic forecasting and those used in more traditional impact analyses.

Three concepts of particular relevance to economic impact analysis are the export (economic base) theory, location theory, and central place theory. Export base concepts underlie techniques commonly employed in economic impact assessment. Location theory is important in explaining why firms locate projects where they do, and it forms the underpinnings for most new firm feasibility studies. In the context of economic impact assessment for specific development projects, location theory provides the basis for estimating the potential for development of linked industry in the impact area and for evaluating the potential of an area's export sectors. Central place theory deals with the hierarchy of interdependence among trade centres. It provided a means to assess the

prospective geographic distribution of impacts. Through the identification of the threshold or minimum market size necessary to support various types of trade and service activities, it also provides a framework for assessing the likelihood of change in the composition of the local trade and service sector in response to project development. These, then, are the principal conceptual bases underlying most impact assessment efforts.

1. *Export Base Theory.*

Export base theory provides the conceptual foundation for all operational impact assessment models. A fundamental concept of the export base theory is that an area's economy can be divided into two general types of economic units. The basic sector is defined as those firms that sell goods and services to markets outside the area. The revenue received by basic sector firms for their exports of goods and services is termed basic income. The remainder of the area's economy consists of those firms that supply goods and services to customers within the area. These firms are referred to as the *non-basic sector* or sometimes as *residential or local trade and service activities*.

A second key concept in export base theory is that the level of basic activity uniquely determines the level of non-basic activity in an area, and a given change in the level of basic activity will bring about a predictable change in the level of non-basic activity. This relationship is known as the *multiplier effect*. Thus, export base theory emphasizes external demand for the products of the basic sector as the principal force determining change in an area's level of economic activity.

The basis for the multiplier effect is the interdependence (or linkages) of the basic and non-basic sectors of an area's economy. As the basic sector expands, it requires more inputs (e.g., labour and supplies). Some of these inputs are purchases from local firms and households. As the firms in the non-basic sector expand their sales to the basic sector, they too must purchase more inputs. Again, a portion of these inputs comes from other local firms, which in turn must purchase more inputs and so on.

Increased wages and salaries paid to labour and management by the basic sector, together with similar payments by the non-basic sector, lead to increases in the incomes of area households. Some of this additional income is spent locally for goods and services, some is saved, and some leaves the area as payments for imported goods and services, or as additional tax payments to government. To the extent that additional income is spent locally for goods and services, the output of local firms is increased and additional cycles of input purchases and expenditure result. This cycle of spending and re-spending within the local economy is the basis for the multiplier effect.

2. *Location Theory.*

Location theory is closely related to the concept of comparative advantage and emphasizes the tendency for firms to locate their development projects where they can earn the greatest profit on their investment. The conceptual location model based on profit maximization implicitly incorporates both cost and market demand factors.

Location theory indicates that industry and/or development project location decisions are guided by the comparative costs of producing, transporting, and marketing a product from plants at various alternative locations. Location theory concepts also are useful in explaining the reasons for the development or growth of an export sector in a given area (e.g., unique resources, production cost advantages, transportation advantages). Thus, it provides a conceptual framework for assessing likely future trends in an area's export sectors.

In the context of economic impact assessment for special development projects, location theory is useful as a conceptual basis for assessing the potential for development of linked industry as well as for evaluating the potential of an area's basic sectors. Export base theory provides the basis for a generalized assessment of the increase in local trade and service activity that would normally be expected to occur in response to a given level of additional basic activity. When a new industry locates in an area, or when a new development projects is established in an area, however, the possibility exists that a series of specialized firms will establish themselves in the area either to supply inputs to the industry or to utilize its products.

3. *Central Place Theory.*

Central place theory attempts to explain the location and development of "central places" (cities, towns, and villages [e.g., Corner Brook as a hub centre for Western Newfoundland and Southern Labrador]) in terms of functions performed and services provided, not only for the residents in each centre but also for the tributary populations surrounding each centre (Pasadena, Steady Brook, Bay of Islands).

According to this theory, an urban centre's primary function is to act as a service centre for its hinterland or trade area. The services provided by central places can be ranked into higher and lower orders depending on the minimum market size (sometimes called the demand threshold) required to support the service. Some goods and services can be efficiently supplied only from very large centres while smaller centres more efficiently supply others.

Central place theory provides a conceptual basis for assessing the potential geographic distribution of the impacts of a new development project. If the functional hierarchy of central places in a region can be identified and the rank and market area of each centre can be established, the effects of the project on each centre can be estimated. The approach that is typically taken is to integrate central place concepts into an export base framework. Thus, the level of non-basic activity in any central place is assumed be a function of the level of basic activity in its trade area.

EMPLOYMENT IMPACT ANALYSIS

Some considerations of project and host environment characteristics can help to clarify key issues regarding the impact on employment by development projects. Thus, issue specification should be rooted in sources that advocate the use of the "*triangulation theory*" for (1) data (the use of a variety of data sources), for (2) researchers (the use of different sets of investigators), for (3) theory (the use of multiple perspectives to interpret a

single set of data), and for (4) methods (the use of multiple methodologies). Consequently, the use of quantitative published and semi-published data should be complemented by the use of key informant interviews, public meetings, and working groups such as those of the developer, local planning officers, councilors, and representatives of interest groups.

Although many direct and indirect employment impacts will be specific to the project in hand, the following key questions tend to be raised in most cases:

1. What proportion of project construction and operation jobs are likely to be filled by local workers, as compared to in-migrants, and what are the likely origins of the in-migrant worker (regional, provincial, national, and/or international)?
2. What is likely to be the magnitude of the secondary (indirect and induced) employment resulting from project development?
3. What proportion of these jobs will be filled by local workers?
4. How will local people and/or businesses be affected by growth resulting from a development project?

MITIGATION OF NEGATIVE ECONOMIC IMPACTS

Most predicted economic impacts are normally encouraged by local decision-makers. However, there may be concern regarding some issues noted or perceived as economically deleterious for an impacted area such as the poaching of labour from local firms, the swamping of the local labour market, the inequitable distribution of economic benefits, or the shadow effect on other potential development. In such cases, there may be attempts to build in formal and/or informal controls, such as “no labour poaching agreements”. The fear of a perceived “boom-bust” labour/income scenario may lead to requirements for a compensatory “assisted area” package for other employment with the demise of employment associated with the project in hand. But in general the focus for economic impacts is more on measures to enhance benefits.

When positive economic impacts are identified there should be a concern to ensure that they do happen and do not become diluted. The potential local employment and/or income benefits of a development project can be encouraged through appropriate skills training programmes for local people. Targets for the proportion of local recruitment and training may be set.

Various measures, such as project open days for potential local suppliers and a register of local suppliers may help to encourage local links and to reduce the leakage of wider economic impacts outside the locality. The use of good management practices, including a local liaison committee that brings together the operator and community representatives, and a responsive complaints procedure, can help mitigation and enhancement. Finally, a commitment to monitoring, and the publication of monitoring data, can also make a major contribution to effective mitigation.

MONITORING

All evolving stages in the development of a Socio-economic Impact Assessment should be designed with monitoring in mind. Key indicators for monitoring direct employment, income-generating, and income distributional impacts include: levels and types of employment (and types of incomes), by local and non-local sources and by previous employment status; trends in local and regional unemployment rates; and the output of training programmes. All these indicators should be disaggregated to allow analysis by employment/skill/gender/age category. Relevant data sources include developer/decision-maker returns, monthly unemployment statistics, and training programme data; these can be supplemented by direct survey information.

Key indicators of the wider economic impacts include: trends in retail turnover, the fortunes of local businesses, and basic development trends in the locality. Some guidance on such indicators may be gleaned from published data. The project developer may also provide information on the distribution of subcontracts, but surveys of, for example, workforce expenditure, and the linkages of local firms with a project, may be necessary to gain the required information for useful monitoring.

Socio-economic impacts are important in fully understanding the holistic biophysical, social, economic, and cultural repercussions of development projects. Unfortunately, they have traditionally been limited to no more than one chapter within long Environmental Impact Statements, and often a small late chapter, if they have been included at all. Thus, the detailed analysis of socio-economic impacts in this Protocol emphasizes the growing concern to indicate their ever-expanding importance in comprehensive development projects.

SECTION V

SOCIAL IMPACT ASSESSMENT

When a unique forum is created for discussing deeply rooted social problems it is not surprising that they should squeeze onto the public agenda. Environmental Impact Assessment (EIA) was not designed to air social issues, despite being aimed at bringing about productive and enjoyable harmony between humans and their environment.

Social impact assessment, on the surface, may seem to be simply a complementary document to an “economic impact assessment” and a counterpart document for an EIA. At a deeper level, however it may be that EIA created an outlet for social concerns that have been unfolding for some time, concerns such as (*Lang & Armour, p. 10*):

1. The human implications of resource depletion, including the limits to growth argument, and environmental degradation (biophysical environment problems traced back far enough have social, [economic, cultural,] and human impacts).
2. The social consequences of rapid technological change, such as anomie and alienation.
3. A new “neighborhood conservatism” (the not-in-my-backyard syndrome); as people become aware that society’s bads and goods are unequally distributed, they are less willing to accept sacrifices for the sake of the common good.
4. A perceived unresponsiveness or indifference, by those holding the power in society (especially big bureaucracies), to the needs and values of individuals.

Nonetheless, social impacts have found their way into environmental impact statements and development project review processes. The biophysical/social impact distinction has proven difficult to make for projects in rural and resource-based areas where resident lifestyles are closely tied to the natural settings, and in urban areas where problems of air, land and water pollution are mixed up with and often dominated by complex people issues. The public has increasingly demanded to be included in environmental assessments in conjoined biophysical and social categories.

THE PURPOSE OF SOCIAL ASSESSMENT

It is given that many decision-makers and entrepreneurial managers do not have a clear understanding of the purpose and utility of social impact assessment. Throughout history, communities and their residents have been shaped by the interplay of forces that cause social change. Recently, however, in large part as a consequence of the environmental movement, a quiet (and sometimes quite vocal) revolution has taken place in what can and ought to be controlled and what must be attended to when making decisions, formulating policy, or evaluating alternatives.

Although undeniably important, it is now less frequently assumed that economic (profitable) justifications are the only criteria to be considered. It is now generally

accepted that health and safety, environmental enhancement, mitigation of social impacts, and equitable distribution of benefits and costs, along with long-term organizational consequences, must also be taken into account.

Nonetheless, there is continuing disagreement about just how these considerations should be incorporated into the decision-making processes. There is no common agreement on just how much responsibility of government instead of the private sector or the individual, or on how much regulation is appropriate. There is, however, increasing agreement that it is appropriate to identify and consider this wider range of impacts, to make them visible, and to help people understand more clearly what the consequences are likely to be before decisions are made, policies are set, or development projects are implemented.

In Canada, nowadays, this growing consensus is being incorporated into numerous laws and regulations that require governmental agencies and those utilizing public resources to clearly identify the economic, environmental, and socio-cultural impacts of a project or policy before making a decision or taking action. In addition, social scientists, planners, and government officials, all of whom have an intrinsic interest in understanding the relationships between different components of the economic, social, cultural, and political system, have continued to press for better information and a greater attention to these issues in the ongoing environmental research and policy formulation processes.

There are a number of reasons to consider social information. Some, like those most influential in justifying social impact assessments or social evaluation studies, are related quite directly to decision-making. Others are more generic and less closely related to decisions about specific programmes or projects. Some commonly identified uses of social information are:

1. To predict the ability of a community or group to adapt to changing conditions.
2. To define the problems or clarify the issues involved in a proposed change.
3. To anticipate and assess impacts on the quality of life, both individually and communally.
4. To illuminate the meaning and importance of anticipated change.
5. To identify mitigation opportunities or requirements.
6. To fulfill or comply with regulations and policies.

Important applications of social information are found in the evaluation of intentional, planned decisions such as the formulation of development projects, resource management decisions, and policy or programme implementation. Efforts to hold the public (government) sector more accountable to its mandate of acting in “the public good” have resulted in specific regulations that have increased the allocation of resources for the development and application of specialized techniques for “impact assessment” whose fundamental purpose is to determine what difference a particular action or decision will socially and culturally make.

BASELINE STUDY AND ANALYSIS

As previously stated, the assessment of the social impacts of resource development is an often neglected and ill-defined area of environmental impact assessment. Social assessments are often not completed at all and, when performed, they tend to be reported in only a few short paragraphs in an otherwise comprehensive environmental impact statement.

Equally problematic is the fact that social impacts are often defined as *nonquantitative* or *unmeasurable* types of impacts, and as a residual category including all factors not included in economic, demographic, public service, and fiscal impact assessments. There are also seen as the assessment research performed by sociologists, or as consisting only of analyses of public service needs and demands. The limitation of social assessments to such uses is unfortunate because it deflects analyses from many of the critical social issues that surround resource developments (*Leistriz & Murdock, p.155*).

Prevailing social structures and institutions affect the process of project development and are affected by developments. Key groups in the social structure, such as land owners, cabin owners, trappers, hunters, fishers, merchants, and new residents, respond to one another on the basis of social interaction patterns that may be altered significantly as a result of developments. Changes in structural patterns and in the relative dominance of groups within such patterns alter the way of life in an area and often create conflicts between various groups as the relative importance of various activities is changed. At the same time, patterns of disorganization may arise as standard social alignments and controls dissipate. Rates of divorce, delinquency, school dropouts, and drug and alcohol abuse may increase, and the need for more formal controls over such behaviour may increase dramatically.

In addition, many types of social impacts, such as changes in interaction patterns, social organization, social structures, social institutions, and social perceptions, are of vital importance in the project development process. Formal and informal group organizations are, for example, the major focus of social actions both for and against various kinds of development projects. Understanding of the dynamics and the issues around which social groups and social movements are formed is a major focus of analysis in the sociology of social movements and the sociology of organizations, and it is clearly of central importance in the process of project development and completion.

The basic social impact assessment process is comparative and based on studying the course of events in communities where planned environmental change has occurred due to development projects, and extrapolating from that analysis to predict what is likely to happen in another community where a similar developmental event or policy change is planned. By identifying the probable undesirable social effect of development before they occur, recommendation can be made for mitigation. The social impact assessment process also allows for alternative plans to be evaluated through analysis of the different impacts of different alternatives. The process also permits an evaluation of the impacts actually experienced by a particular impacted community. Thus, three different tasks of social impact assessment can be identified:

1. *Assessment and Prediction.*

This task refers to the determination of the potential impacts of a specific action affecting a community before the commencement of any change. This information usually forms part of a conventional Environmental Impact Assessment (EIS), and is used in appraising the costs and benefits of projects for their social worth. The whole EIS, including a social impact statement, can be used to determine whether government approval should be given to the project.

2. *Mitigation and Monitoring.*

Mitigation involves both an initial statement about potential impacts and how that may be averted, and an ongoing role in the development process by all parties including the affected community, the developer, and the agency, in order to minimize any impact that does occur. Monitoring extends beyond the role of mitigation, checking that any change that occurs has been anticipated, and that appropriate mitigation strategies can be developed to deal with the consequences of any unexpected impacts.

3. *Audit and Analysis.*

The process of social impact assessment is heavily dependent on the use of prediction techniques during the assessment phase of the project. These prediction techniques may be highly culture bound, and are of varying reliability and accuracy. Therefore, each social impact assessment that is undertaken, especially those for resource (e.g., forest related) projects, needs to contain an audit of methods and predictions. Furthermore, in order to advance the understanding of this area of study analysis of the social impacts that have occurred as a result of past actions is necessary.

CONCEPTUAL BASES OF SOCIAL IMPACTS

Although the significance of social impacts is often acknowledged, the utility of attempting to assess them is not. In part, the difficulty in assessing social impacts has resulted from their having been poorly defined initially and poorly understood during the process of implementing development projects (*Leistritz & Murdock, pp. 156-158*).

The term social generally refers to the processes and products of human interaction. Social impacts can thus be defined as impacts that affect the patterns of interaction, the formal and informal relationships resulting from such interactions, and the perceptions of such relationships among various groups in a social setting or system. Although such a definition still includes a broad range of subject matter, it avoids the tendency to see the analysis of social impacts as a residual process. Rather, it focuses analyses on four broadly areas of social phenomena:

1. *Processes of interaction.*

This first area of analysis examines the forms of interactions between members of social groups that are attempting to adjust to various environmental, economic, cultural, and social conditions. Processes such as conflict, consensus, accommodation, and cooperation are often the focus of discussion. Such analysis concentrates on the

interaction of individuals within groups and with one another. In social impact assessments, analyses of this kind examine the formation of interest groups, particularly those involving new in-migrant residents and the interactions between new and longtime residents. The analysis of *interactional dimensions* is seldom given anything but passing attention in actual assessment efforts.

2. *Social organization and social structures.*

This second area is concerned with patterns of interactions that have become formalized in identifiable entities such as informal and formal groups and organizations. It is also concerned with such groupings as social classes, with stratification systems and patterns of social dominance, with patterns of community leadership, and with other phenomena related to the formation or dissolution of relationships within and between groups.

Such social analysis in impact assessment and related research areas thus focus on the origins of various proponent and opposition groups, on the effects of development on civic and other community groups, on existing community leadership and power groups (e.g., foresters, hunters, fishers, farmers, merchants, etc.), and on special groups such as the elderly, women, those on fixed income or welfare, and minorities. In its broadest dimensions, this area of analysis may even consider impacts on the total community structure or on the well-being of the total area.

3. *Social institutions.*

This third area of analysis is concerned with the effects of project development on more focused areas of interactions surrounding given sets of activities such as earning a living, governance, family life, religion, and training and education (schools). These regularized sets of activities are ones of paramount importance in nearly every social setting and are referred to as social institutions. In all assessments, impacts on these institutions must be carefully considered. For example, the effects of project development on educational quality, on family dimensions such as divorce, child rearing, delinquency and similar factors, as well as the effects of the project on churches and church groups are of concern in assessment efforts.

4. *Social perceptions and attitudes.*

The fourth and final area of analysis affects and is affected by each of the other previous three areas. This is the general area of how members of groups come to perceive themselves, their groups, characteristics of their communities, and possible changes in their communities. In impact assessments, this area of analysis includes attempts to measure community and service satisfaction, perceptions of the environment, and community growth and development preferences.

In sum, then, it is essential to understand the context and meaning of the term social impacts. Social impact assessment research thus involves analyses of the effects of these social factors on the development process and the effects of the development process on these factors.

METHODOLOGICAL ALTERNATIVES

The wide ranges of phenomena that are included under the heading of social impacts reflect equally broad conceptual and methodological bases. The conceptual bases include a broad range of perspectives on social interaction and social phenomena.

The process of social impact assessment is a complex and diverse process, and the social assessment methodologies and techniques used in assessments often reflect that diversity. The techniques and methodologies employed in assessment efforts tend to include secondary and primary data and those using secondary, survey, participant observation, and unobtrusive methods. In essence, therefore, the most important and widely used methodological techniques in social impact assessment are the following:

1. *Secondary Data Methods.*

These methods involve the use of existing data, collected for other purposes, to anticipate the magnitude and distribution of social impacts. The data so used include those from such agencies as Census Canada and nearly all federal and provincial departments and research institutions. Such data are extremely important for the description of baseline conditions in an impact area. As such, they provide information that is absolutely essential for the projection of impacts. They are particularly useful in providing a base of historical information on the social, economic, demographic, and cultural context within which project-related social changes occur.

Secondary data methods, however, do not provide a sufficient set of data for completing a comprehensive social impact assessment. Such methods seldom provide data on social processes, informal organizations, social relationships, social structures and institutions, or residents' attitudes and perceptions. In addition, secondary data are often dated by the time of their publication and unavailable for very small areas. As a result, secondary data methods must be used in conjunction with other social assessment methods.

2. *Survey Methods.*

Survey methodologies consist of the direct solicitation of information from individuals via personal interview, mail, or telephone administered questionnaires. A survey method is strongly advised when data are not available from secondary sources and when individual or household information is essential. Surveys are often used when perceptual and attitudinal information on impacts or pattern of service usage in impact areas is required.

Due to the widespread use of surveys for political and opinion polling, the basic dimensions of surveys are well known. Because of the importance of surveys for the collection of social data, however, it is appropriate to briefly outline the major steps in a survey. The discussion of these steps will also serve to indicate those aspects of survey methods that require careful and critical evaluation.

Although the survey process can be divided into numerous steps, it is convenient to consider six steps as essential in any survey effort. In addition to those steps necessary in the use of any research method (such as decisions concerning which dimensions or

research questions should be addressed and the choice of the form of analysis to be used), surveys require that special attention be given to the following steps:

1. Selection of the type and form of survey to be used (e.g., self-administered, interviewer-administered or assisted surveys),
2. Sample design, including:
 - a) Sampling frame selection (identification of the population of persons from which a sample is to be selected),
 - b) Sample selection (e.g., simple random sample, stratified sample, cluster sample),
3. Questionnaire or interview design,
4. Questionnaire pre-testing,
5. Questionnaire administration, and
6. Response analysis.

3. *Unobtrusive Research Design.*

These designs consist of methods that involve the collection of primary data but do not involve direct contact with area residents. They include such methods as videotaping and tape recording everyday activities, and analysis of the content of newspapers and other written materials describing the activities of the population of an area. To the extent that these methods sometimes fail to provide the rigor evident in other techniques, they are less desirable than other research designs for social impact analysis.

Social analysis based on casual observations, unsystematic newspaper analysis, and similar procedures appear much too often in social impact assessment research. If completed with systematic rigour, these techniques are, however, valuable research methods capable of being applied with considerable utility in impact assessment. Their careful use in socio-economic impact analysis is clearly advantageous.

MITIGATION AND ENHANCEMENT

Several approaches to the mitigation of social impacts are available. The most basic would be to encourage the maximum recruitment of labour from within daily commuting distance of the project site, thereby reducing the number of employees and families moving into the impact zone. Project developer policies on travel, accommodation and relocation allowances might be used to influence the relative attractiveness of daily and weekly commuting versus relocation. Such policies might lead to some reduction in the proportion of in-migrant employees relocating and bringing families into the area unless, like in most of Newfoundland and Labrador communities, the policy might be, precisely, to attract new employees and their families.

The mitigation of local accommodation impacts is likely to involve attempts either to provide additional accommodation for the workforce or to encourage the use of unoccupied or under-occupied accommodation in the impact zone. Encouragement of the sharing of accommodation would also be a useful mitigation measure, but it is uncertain how this could be carried out in practice. The provision of accommodation specifically for the workforce, in the form of purpose-built hostel or additional caravan accommodation is always a potential acceptable alternative.

Impacts on local services and local authority finance can be partially mitigated by the direct provision of certain facilities by the project developer or development project decision-makers. Examples might include a medical centre, a school facility, and firefighting equipment and staff located on the project site(s), as well as recreational facilities for the workers and their families. Developer funding of additional local authority provision necessitated by the project is also likely to be requested. Funding of local community projects may also be offered as partial compensation for the adverse impacts of the development project.

MONITORING

Existing monitoring of social impacts is relatively limited. Ideally, however, such monitoring should consist of three key elements:

1. *Administrative Systems.*

The first important element is the establishment of administrative systems that ensure a regular flow of information on the total number of people directly employed on the project and the mix of local in-migrant employees and their families. During most development projects, the decision-makers are likely to request this type of information from the contractors on site as a routine part of project management (e.g., to monitor earning levels, wood cutting levels, bonuses and allowances across the project site).

2. *Regular Surveys.*

The second component of any monitoring system must be a regular (possibly quarterly or annually) survey of the development project evolution. This is likely to involve interviewing a sample of the local residents and the workforce, with care taken to ensure a representative coverage of all types of residents and employees.

3. *Trends and Tendencies.*

The final element in monitoring system should be the monitoring of various social and economic trends and tendencies within the impact zone. This can range from regular monitoring of school enrollment, crime rates, house prices or rent levels, the amount of house-building, occupancy levels in local B&Bs and other accommodation, doctors' list sizes, etc. Such trends should be compared with those in the wider region or province, as well as those nationally. In addition, periodic surveys of local service providers (e.g., police, teachers, doctors, repair shops, retail outlets) should also be carried out.

SECTION VI

SOCIO-ECONOMIC ASSESSMENT PRACTICE

The hands-on practice of developing a Socio-economic Impact Assessment makes it necessary to develop criteria of method acceptability, whether as a basis for choosing among alternative methods or as a guide in deciding whether a given technique can be used with confidence. While many factors may enter into such decisions, three considerations should be predominant:

1. The method must provide the types of information needed by the user. Increased communication between analysts and decision-makers will be required to achieve better congruence between assessment capabilities and user needs. It must be recognized, however, that determination of information needs is not a trivial task. Decision-makers frequently experience difficulty in articulating their needs in terms that are meaningful to socio-economic impact analysts. Similarly, analysts often appear to be insensitive to the imperatives confronting decision-makers. It may be necessary for the decision-makers and analysts to jointly simulate a typical decision process before a final prioritization of needs and impacts can be developed.
2. The assessment should use tested, state-of-the-art techniques to provide the most realistic possible representation of the real world system being analyzed. Frequently, lack of empirical validation has been one of the major shortcomings of socio-economic impact assessments. Therefore, analysts should give more attention to empirical validation of socio-economic impacts with emphasis on the ability to replicate actual outcomes in highly impacted areas, and potential "impactees" should demand objective measures of validity.
3. Socio-economic impact assessment methodologies are at best a simplification of the system being studied; decision-makers must evaluate them not in terms of an ideal but unobtainable "perfect model" but rather in terms of available alternatives.

PROBLEMS CONFRONTING SIA

Despite the advances and ever-growing acceptance of the practice and importance of Socio-economic Impact Assessments, some conceptual, procedural, and methodological difficulties remain. These can be grouped into four major categories (*Burdge and Vanclay, pp. 44-47*):

1. Difficulty in applying the social sciences to SIA:
 - a) Units of analysis, theoretical models, and the language of the various social science disciplines are sometimes contradictory or inconsistent, making interdisciplinary communication difficult.

- b) Social science traditions, especially sociology, tend to be critical and discursive, rather than predictive and explanatory. Thus the core theoretical disciplines that comprise SIA fail to provide background in the processes of developing conceptual frameworks or valid measures for testing the interrelationships among variables.

2. Difficulties with the SIA process itself:

- a) Data are often poorly collected, and therefore projections are based on inadequate information that is often isolated, not systematically collected and therefore lack validity checks. Estimates about the consequences to human communities of likely future events should be based on conceptual relationships developed from theory and previous research supported by data collected utilizing the appropriate methods and subject to empirical verification.
- b) The methodologies for assessing socio-economic impacts are numerous and complex, and exist as a process as much as a discrete entity. Consequently, they are difficult to document and to evaluate.

3. Problems with the procedures applying SIA:

- a) SIAs are often done by consultants who do not know relevant social and economic theory, and who may not be trained in either SIA or social/economic science methodologies. Some over-zealous consultants tend to claim expertise that they do not have.
- b) Regulatory agencies and research institutes seldom check the credentials of consultants who undertake SIAs or insist that SIA consultants have appropriate social and economic science training.
- c) There is little evaluation or audit of SIA reports, and agencies and research institutes receiving SIA statements seldom take the time to determine the validity and reliability of the contents of these reports.
- d) Relevant literature on SIA is hard to find, and often not accessible. Many valuable resources are not published, but exist only as consultancy reports. Because of both litigation and commercial secrecy concerns, consultants, proponents, and government agencies often prefer not to publish or make widely available many reports. Where reports are published, they often do not provide the detail necessary to fully evaluate the methodologies used and the validity of the claims.
- e) SIA is seen as a single event, as a discrete statement of impacts, not as a process that develops its full potential in the mitigation of impacts, and as a process that governs the planning and development process itself.
- f) Because of its project-based conceptualization, SIA, when undertaken according to the regulatory guidelines, although not to its full potential,

cannot address cumulative impacts resulting from multiple resource development projects.

- g) While mitigation is part of the project-based conceptualization, the potential for the development and implementation of effective and ongoing mitigation strategies is limited by the failure to see SIA as a process.
 - h) Impact statements tend to be used to determine whether a project should go ahead or not; and if approval is given under what conditions, such as what mitigation strategies and/or what compensation should be paid. The failure to utilize SIA as a process with effective monitoring, mitigation, and management means a reliance on the use of SIA as an approval mechanism and to determine the level or form of compensation.
 - i) While approval may be denied to projects that potentially could be acceptable provided that certain mitigation strategies were in place; other projects are approved, with compensation paid, even though the project and the compensation (or royalties) itself may create considerable social and economic impacts that appropriate mitigation and planning may have avoided.
 - j) More frequently than not, SIAs often go unread or, at least, unheeded, and mitigation measures are seldom taken seriously.
 - k) As a component of the policy-making process, SIAs will come under increased scrutiny in the adversarial setting of the public hearing and judicial review process; therefore, the assessment must be based on rigour and at least a minimal level of quantification.
 - l) When a SIA is questioned in a legal setting, it will be by another social (/economic) scientist hired to critique the methods and conclusions.
 - m) Because of the nature of public settings, data, ideas, and concluded impacts tend to be evaluated in the context of special interests.
 - n) In Canada, the various reviews of SIAs are done in the setting of “formal hearings”. As such, the SIA practitioner needs some peer-supported guidelines and principles for justification of the general methodological approach and sociological/economics content of the study.
4. There tends to be what can be described as a prevailing *asocietal mentality*, an attitude that humans do not count, amongst the management of regulatory agencies, corporations, and biophysical research institutes which commission SIAs. The implications of this *asocietal mentality* for SIA are:
- a) A failure to accept the need for SIA in the first place. The mentality naively assumes that development is good and that there are no social

or economic (and sometimes no environmental) consequences of resource development projects.

- b) There is no recognition of the need for special skills or expertise to assess socio-economic impacts. Since no credence is given to society as a special entity, it is assumed that anyone can determine the social and economic consequences of development.
- c) The legitimacy and unique (ever-evolving) knowledge of the applied field called SIA is not yet fully recognized, understood, and accepted.
- d) Since there little understanding of the nature of potential impacts, or of the concerns that community members might have, there is little expectation that SIA statements should provide anything other than a statement about the change in the number of jobs, the number of children going to school, and the number of new houses being built or abandoned. SIAs have been regarded as little more than primitive “demographic impact assessments” and “fiscal impact assessments”. With this expectation, it has not been in the interest of consultants to provide more, even if they are or have been capable of doing so.
- e) Persons not familiar with SIA have difficulty in understanding the use and integration of public involvement in the SIA process. In some organizations and agencies, public involvement has been equated to SIA. The problem comes when administrators or decision-makers believe that because they have done involvement, they have done SIA. Public involvement is a component of the SIA process and may be used to collect data on key SIA variables. Public involvement is also part of the initial scoping process and must be incorporated throughout the entire process, but is not socio-economic impact assessment.
- f) Consultants who intend to undertake a thorough SIA are usually thwarted because of the lack of understanding about how long it would take and how much it would cost to do the job adequately. Reputable consultants are frequently underbid in the tender process by *charlatan SIA consultants* intending to do a conceptually superficial and scientifically shallow analysis.
- g) Nearly always there is a lack of understanding, and often disagreement with the results of SIA studies. Because individuals possessing this as societal mentality do not understand social and economic processes, they often reject and challenge the results of bona fide consultants whose results often seem to contradict their notions of “common sense”.
- h) Another problem is articulating the complex stakeholder network (both research institution and community-based) in which SIA is conducted. Special interest groups usually define problems and see results of studies from their point of view, and attempt to use SIAs to their particular advantage, possibly distorting the intent of the study or the

specific result in the process. In a litigious and/or confrontationist situation, altruism and concern for local and regional goals as a quality environment and the future welfare of an impacted community are seldom part of the debate.

- i) Because in the biophysical sciences generally there tends to be clearly defined problems for which singular solutions can be identified with the appropriate analysis, there is a belief that social and economic issues are similar, and an expectation that SIA statements will deliver clear statements of social and economic impacts and that singular mitigation strategies can be identified.
- j) There is a complete lack of recognition of the complexity and heterogeneity of society, and how socio-economic impacts of resource developments benefit and disadvantage different components of society in different ways.

SPONSORING THE PRACTICE OF SIA

For those that contemplate sponsoring Socio-economic Impact Assessments, a number of questions frequently arise. While these questions may take different forms in different settings (e.g., using of in-house staff vs. outside consultant, development of a new method or model vs. transfer of an existing one), their focus is on defining the conditions necessary for a successful socio-economic impact assessment effort. While there is certainly room for differences of opinion in this area, the following are important conditions (*Leistriz and Murdock, pp 242-244*):

1. Early planning involvement of potential information users.

Participation of potential users in the methodology design effort not only improves the chances that the resulting methods will be compatible with their needs but also can provide the developers with easier access to local socio-economic data bases. User involvement through the development period allows for correction of initial model inaccuracies based on information about local socio-economic baseline conditions. Further, the meaningful involvement of users in the development process increases the likelihood that they will use the assessment.

2. Appropriate timing with respect to information needs.

Awareness of upcoming decisions and the need for the information the socio-economic assessment can provide and timely provision of information to meet those needs are also essential. If assessment efforts are pursued before decision-makers feel the need for the information they can provide or if the development process is so extended that the important issues have been addressed prior to the assessment's completion, the effort is unlikely to be highly utilized or well receive.

3. Knowledge of Study area conditions.

Socio-economic impact analysis requires a detailed understanding of the economic, social, demographic, public service, fiscal, and cultural conditions of the study area. If the researchers do not possess such knowledge, they must be willing to commit a significant effort to thoroughly understanding local conditions and relationships.

4. Knowledge of socio-economic impact assessment techniques.

Socio-economic impact analysis generally and impact modeling in particular requires a variety of skills, including thorough knowledge of economic, social, cultural, demographic, public service, and fiscal impact assessment methods and expertise in computer systems/programming. Because it would be highly unlikely to find this combination of skills in one individual, a multidisciplinary team must usually be assembled. Further, if such a team is to function effectively, attention must be given to developing an adequate project management structure.

5. Continuity of professional and technical support.

Once the assessment methodology has been completed, there is a continuing need for competent analysts both to assist users in various applications and to update various databases and coefficients. There is also a continuing need for advice from persons with expertise in the use and interpretation of assessments in determining when use of a method is appropriate and in interpreting its outputs. In addition, as the method is applied to a variety of problems, needs for refinements are often identified. Determination of the institutional setting (e.g., mission agency, research institute, corporation, etc.) which can best provide a continuity of support will be important to the long-term usefulness of any methodology.

6. Resources commensurate to the task.

Socio-economic impact methodology development, like other research and development endeavours, is not inexpensive. Development of some local or regional impact modeling systems do involve very high costs, not including background data, collection and analysis. Transfer of an existing system may be possible at a cost substantially lower than that required developing a new system. This option is attractive, however, only if an existing model appears to meet information needs and if questions relating to documentation and computer system compatibility can be satisfactorily resolved. In any event, the costs of the effort must be realistically assessed and adequate resources allocated.

CONCLUSION AND RECOMMENDATIONS

It is apparent that the developing of socio-economic methods and techniques for assessing the impact of resource development projects will provide significant challenges for the social and economic science practitioner. Techniques that uniquely reflect the impact assessment process is continuously being developed and refined while, at the same time, evolving and major existing questions not yet fully resolved by the social and economic science community as a whole continue to be examined.

The main purpose of a socio-economic impact analyst is not only to design techniques that can be completed in short periods of time, with limited resources, and that can readily be understood by a diverse set of users, but it must also arrive at tentative answers to broader important question. These other significant questions are:

1. How economic structures change as a result of a major economic stimulus?
2. What factors determine migration and settlement decisions?
3. How rural service structures respond to increase (or decrease) demands?
4. How taxation policies will be applied during a period of rapid development?
5. How social structures respond to patterns of rapid growth/decline?

These are clearly complex and difficult to address socio-economic impact issues but, nonetheless, still very important issues. In addition, the analyst must answer such questions not only for the present but, also, often for several decades into the future. If they are to be effective, socio-economic impact analysts must thus not only be specialists in impact analysis techniques but conceptually and methodologically sophisticated socio-economic scientists as well.

CONCLUSION

Socio-Economic Impact Assessments fulfill three major important functions in the overall impact assessment/project/policy development process:

1. To project the social and economic profile of the study area under "baseline" and "impact" conditions.

The projection of socio-economic profiles produces conditional forecasts of the levels of various economic, demographic, cultural, public service, fiscal, and social variables. These projections are critical to decision makers as a basis evaluating potential problems which may emerge and for evaluating the efficacy of alternative policy options. Specifically, decision-makers frequently utilize impact projections in three distinct application: (a) area facility and programme planning; (b) development project evaluation; (c) implemented project/policy analysis.

In the first application, impact projections are often used as the “best available forecast” of future conditions, and the projected levels of critical variables are used as target values for facility and programme planning. In project evaluation, interested parties frequently utilize impact projections (particularly the comparison of baseline [e.g., without the project] and impact projections) in determining whether the proposed project is acceptable and what types of socio-economic impact mitigation measures will be required. Finally, impact projections may be utilized to evaluate the likely effects of various development projects and/or management policies.

As a projection tool, computerized assessment models are often particularly valued because of their capacity to deal with complex analytic situations and large data sets (e.g., involving large numbers of variable and interrelationships), their ability to provide quantitative answers (even though these may be approximations), the replicability of the results, and the rapidity with which the implications of alternative policies or assumptions can be assessed.

2. To sensitize decision-makers to critical problem areas and key relationships.

The second function of socio-economic impact assessments, enhancing the perceptions of policy-makers, provides decision-makers with a frame of reference for assessing the effects of alternative actions. Because a model provides an abstraction and explicit representation of the real world phenomenon being studied (often termed the model's *reference system*), it offers a means of portraying essential relationships and isolating critical problems. Even if the policy-maker does not utilize a socio-economic assessment directly in decision-making, it may provide useful insights concerning the probable consequences of alternative courses of action. Because they provide an explicit representation of a real world system, formalized socio-economic impact assessment procedures provide a focus for differing opinions. Even when controversial, however, assessments can provide a framework for discussion, and such discussion may improve the probability that key decisions will receive concerted attention.

While assessments may serve to increase decision-makers' awareness of key relationships and critical issues, however, they cannot be expected to resolve policy differences that are basically philosophical in nature. Likewise, models cannot and should not be expected to replace the decision-makers' role of considering all available information in arriving at a final decision. Neither should the existence of assessment projections remove the decision-maker's responsibility for those decisions.

3. To provide direction to future research.

The role of socio-economic impact assessments in stimulating and guiding research, their third major function, is widely recognized. The process of developing assessment methods consists, essentially, of conceptualizing relationships among variables, seeking empirical evidence to quantify and/or refine these relationships, and providing a computational structure (model) that portrays the system under investigation. The absence of data to quantify certain relationships constitutes a priority area for further analysis. A guide for such research design is provided if the model is subjected to socio-economic *sensitivity* testing.

Public and private sector officials who sponsor the development of socio-economic impact assessment processes and methodologies may recognize the multiple benefits that arise from the role of such methods as educational tools for decision-makers and researchers. Their decision to support the development of a socio-economic modeling system, however, typically hinges on whether they believe the model will provide information useful in specific planning and policy contexts.

In concluding, it is vital to reiterate that Socio-economic Impact Assessment constitutes a relatively new tool from the social and economic sciences that are proving valuable for ecosystem management and the implementation of resource development projects. Adopting and implementing a system of socio-economic indicators for ecosystem management requires new skills and expertise for most traditionally trained natural resource managers with a limited socio-economic science background. It is likely to require a cultural change within natural resource organizations and professions; monitoring socio-economic conditions challenges the myopia of some current biophysical approaches to ecosystem monitoring. The adoption and diffusion of the use of socio-economic indicators among natural resource managers will require patience and planned strategies. The benefits are likely to be substantial.

It is likely at the same time, however, that the evolving development of socio-economic methods for assessing the impacts of resource developments will continue to be exciting and potentially rewarding ones for impact analysts and the socio-economic sciences. The laboratory of research opportunities for both conceptual and methodological refinement of social science concepts and methods provided by socio-economic impact events and the assessment process must not be allowed to escape the attention of concerned and policy-oriented socio-economic scientists.

Nonetheless, to avoid the problems and challenges that tend to arise with the development, refinement, expansion, and evaluation of socio-economic impact assessment techniques in the near future will entail missing a significant opportunity to contribute to the development of the socio-economic sciences as well. Even more important, it will mean that the information needs of local and regional residents in impact areas will not have been adequately addressed. The pragmatic and professional necessity for the further development of the socio-economic impact assessment art is thus apparent. It is challenge that must be met.

RECOMMENDATIONS

So-called "accurate socio-economic predictions" are more likely to be associated with luck than inspired modeling techniques. Socio-economic impact predictions assume a given set of conditions and the outcomes represent a "snapshot" of the future assuming those conditions are met. However, projects, and the contexts within which they occur, are dynamic not static (*Storey & Locke, p.141*).

Project activities almost invariably change over time. In many resource development projects there are delays in start-up, changes in the exact location of activity even before start-up, and subsequent significant changes in design and schedule throughout the life of the project. Seldom these changes are incorporated into revised impact predictions and thus the original predictions are, in many cases, meaningless.

What is important, however, is that the objectives of seeking to maximize employment and business benefits are achieved and in fact exceeded the targets set. Likewise the less clearly articulated, but nonetheless vital objectives of minimizing environmental, community, and socio-economic disruption should also be achieved.

Finally, because of the various issues discussed throughout the preceding sections, at this point it is desirable to articulate a number of guiding principles that should govern the use of SIA practitioners, those commissioning SIAs, and those evaluating socio-economic impact statements ought to be mindful of. The following list of principles represent a guideline to appropriate recommendations to follow (*Interorganizational Committee on Guidelines and Principles for Social Impact Assessment*):

1. Involve the diverse public.

This point refers to identifying and involving all potentially affected groups and individuals. Public involvement and conflict management should be implemented to complement and fit within the Socio-economic Impact Assessment process by identifying potentially affected groups, and by interpreting the meaning of impacts for each group. Public involvement should be truly interactive, with communication flowing both ways between the agency or research institute, and affected groups.

2. Analyze impact equity.

Clearly identify who will win and who will lose, and emphasize vulnerability of under-represented groups. Impacts should be specified differentially for all potentially affected groups and not just measure in aggregate. For all resource development projects, there are winners and losers. However, no single group, particularly those that might be considered more vulnerable or at risk as a result of age, gender, ethnicity, race, social class, or other factors, should have to bear the brunt of adverse social and/or economic impacts.

Socio-economic Impact Assessment has a special duty to identify those whose adverse impacts might get lost in the aggregate of benefits. Practitioners must be attentive to the groups that lack political efficacy, such as groups low in political or economic power that often are not heard or do not have their interests strongly represented.

3. Focus the assessment.

Deal with issues and public concerns that truly count, not those that are just readily available. Because of time and resource constraints, it is important for SIA practitioners to focus on the most significant socio-economic impacts in order of priority, and for all significant impacts for all impacted groups to be identified early using a variety of rapid appraisal or investigative techniques. Clearly, impacts identified as important by the public must be given high priority, but because of limitations of public participation in terms of representation, additional methods of scoping and impact assessment must also be used to ensure that the most significant impacts are addressed, whether or not the public identifies them.

4. Identify methods and assumptions and define significance in advance.

Describe how the SIA was conducted, what assumptions were used, and how significance was determined. The methods and assumptions used in the SIA should be made available and published prior to a decision in order to allow decision-makers as well as the public to evaluate the assessment of said socio-economic impacts. This should be done at least to the standards required under the relevant jurisdictional regulations and agency commitments. In general terms, they should be specified sufficiently to allow other SIA practitioners to evaluate the work and to determine whether the procedures followed would be what would likely have been undertaken by another practitioner.

5. Provide feedback on socio-economic impacts to project planners.

Identify problems that could be solved with changes to the proposed action or alternatives. Findings from the SIA should feed back into resource development project design to mitigate adverse impacts and enhance positive ones. The socio-economic impact assessment, therefore, should be designed as a dynamic process involving cycles of project design, assessment, redesign, and reassessment.

6. Use SIA practitioners.

Trained socio-economic scientists employing social and economic science methods will provide the best results. The need for professionally qualified, competent people with social and economic science training and experience cannot be overemphasized. Experienced SIA practitioners know the data, are familiar and conversant with existing social and economic science evidence pertaining to impacts that have occurred elsewhere, which may be relevant to the impact area in question. This breadth of knowledge and experience can prove invaluable in identifying important impacts that may not surface as public concerns or as mandatory considerations in the applicable jurisdictional regulations or compliance procedures. Socio-economic scientists will be able to identify the full range of important impacts and to select appropriate methodologies and measurement procedures.

7. Establishing monitoring and mitigation programmes.

Manage uncertainty by monitoring and mitigating adverse impacts. Crucial to the SIA process is the development and implementation of mitigation programmes, and the over-time monitoring of significant socio-economic impact variables and the mitigation mechanisms for their efficacy. Monitoring and mitigation should be a joint agency and community responsibility. These activities should occur on an iterative basis throughout the resource development project life-cycle. While responsibility for long term monitoring and mitigation is not easily defined, and may depend on the nature of the project and time horizon, local communities should be provided resources to assume a portion of the monitoring and mitigation responsibilities.

8. Identify data sources.

Used published social scientific literature, secondary data and primary data from affected area. SIAs should draw on the published social and economic scientific literature

pertinent to SIA. Existing documentation is useful in identifying which social and economic impacts are likely to accompany a proposed action. Since the best guidance for future expectations is past experience, caution is needed when a SIA study proposes to present a conclusion that contradicts published literature. In such cases, the reasons for the difference should be explicitly addressed.

9. Plan for gaps in data.

SIA practitioners often have to produce assessments in the absence of all relevant and sometimes necessary data. In general, gaps in the data should only be permitted when relevant information cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known. In such cases, a statement of the relevance of the incomplete or unavailable data, a summary of the existing literature on the issue, and an evaluation of the likely and possible impacts based upon theoretical approaches or research methods generally accepted in the SIA community, should be provided. Three points are provided as acceptable to the SIA community when there are shortages of resources to do the desired data collection:

- a) It is more important to identify likely socio-economic impacts than to precisely quantify the more obvious socio-economic impacts. This is so because it is better to be roughly correct on important issues than to be precisely correct on unimportant issues.
- b) It is better to be inclusive rather than exclusive in reporting likely socio-economic impacts. If the evidence for a potential type of impact is not definitive in either direction, the conclusion reported should be that the impact cannot be ruled out, not that there is no evidence to support the existence of the impact.
- c) The less reliable data there are on socio-economic impacts, the more important it is for SIA work to be performed by competent professional social and economic scientists. There are only two situations in which it may be appropriate to proceed without professional social and economic scientist involvement:
 - (i) In cases where proposed actions are considered by persons within the agency with social and economic science training, and by those in the potentially affected community, to likely cause only negligible or ephemeral social impacts; and
 - (ii) In cases where a significant body of empirical findings is available from the social and economic literature, which can be applied fairly directly to the proposed action in question, and is referenced, summarized and cited by the person(s) preparing the Socio-economic Impact Assessment.

Not to undertake a SIA using professional social and economic scientists when either (i) or (ii) did not apply, would be imprudent for both the agency or resource research

institute, and the affected (impacted) groups and communities. The effectiveness of SIA rests on the integrity of the SIA practitioner.

REFERENCES

- Alavalapati, Janaki, et.al., 1998. *An Economic Impact Model of the Foothills Model Forest*. Hinton, AB: Foothills Model Forest, The Canadian Forest Service Socio-Economic Research Network.
- Barrow, C J. 1997. *Environmental and Social Impact Assessment. An Introduction*. New York, NY: Oxford University Press.
- Bates, Sheena. 1984. *The Diand Socio-Economic Impact Monitoring Program: Attitudes Towards the Norman Wells Project*. Saskatoon, SK: Department of Geography, University of Saskatchewan.
- Belkaoui, Ahmed, 1984. *Socio Economic Accounting*. London, U.K.: Quorum Books.
- Bonnell, Brian. 2000. *Assessing Public Opinion on Sustainable Forest Management in Western Newfoundland*. Corner Brook, NL: Western Newfoundland Model Forest Inc.
- Branch, Kristi, et.al., 1994. *Guide to Social Assessment. A Framework for Assessing Social Change*. Boulder, CO: Westview Press.
- Burdge, Rabel J., and Frank Vanclay. 1995. "Social Impact Assessment", in *Environmental and Social Impact Assessment*. F. Vanclay and D.A. Bronstein, eds. New York, NY: John Wiley & Sons, Ltd.
- Chadwick, Andrew. 1995. "Socio-Economic Impacts 2: Social Impacts", in *Methods of Environmental Impact Assessment*. P. Morris and R. Therivel, eds. Vancouver, BC: UBC Press.
- Charles, Anthony T., et.al., 1994. *Fisheries Socioeconomics in the Developing World*. Ottawa, ON: International Development Research Centre.
- Condon, Barbara S.; and Wiktor L. Adamowicz. 1995. *A Comparative Analysis of Use and Non-Use Values Estimation: A Case Study in Newfoundland*. St. John's, NL: Natural Resources Canada, Canadian Forest Service.
- Cunningham, Alain. 1984. *Socio-Economic Impact Assessment, Development Theory, and Northern Native Communities*. UBC Planning Papers. Studies in Northern Development, # 4. Vancouver, BC: University of British Columbia School of Community & Regional Planning.
- Econometric Research Limited (ERL). 2000. *Aboriginal Community Development Impact Model User's Guide*. Iroquois Falls, ON: Lake Abitibi Model Forest and Moose Cree First Nation.
- Econometric Research Limited (ERL). 2000. *Socio Economic Impact Model Technical Manual*. Burlington, ON: Forest Division. Ontario Ministry of Natural Resources.

- Force, Jo Ellen; and Gary E. Machalis. 1997. "The Human Ecosystem. Part II: Social Indicators in Ecosystem Management" in *Society and Natural Resources*. Moscow, ID: Cooperative Park Studies Unit, University of Idaho.
- Glasson, John. 1995. "Socio-Economic Impacts 1: Overview and Economic Impacts", in *Methods of Environmental Impact Assessment*. P. Morris and R. Therivel, eds. Vancouver, BC: UBC Press.
- Government of Alberta. 1995. *Ensuring Prosperity Implementing Sustainable Development*. Edmonton, AB: Alberta at the Crossroads.
- Graham Smith, L. 1993. *Impact Assessment & Sustainable Resource Management*. New York, NY: John Wiley & Sons, Inc.
- Kimmins, Hamish. *Balancing Act. Environmental Issues in Forestry*. 2/E. Vancouver, BC: UBC Press.
- Lang, Reg; and Audrey Armour, 1994. *The Assessment and Review of Social Impacts*. Ottawa, ON: Federal Environmental Assessment and Review Office.
- Leistriz, Larry F., and Steven H. Murdock, 1981. *The Socioeconomic Impact of Resource Development: Methods for Assessment*. Social Impact Assessment Series, No. 6. Boulder, CO: Westview Press.
- Machlis, Gary; Jo Ellen Force; and William R. Burch Jr. 1997. *The Human Ecosystem. Part I: The Human Ecosystem as an Organizing Concept in Ecosystem Management*. Moscow, ID: Cooperative Park Studies Unit. University of Idaho.
- Pinfold, Thomas. 1987. *An Evaluation for the Utility of Large-Scale Economic Models for Socio-Economic Impact Assessment*. Ottawa, ON: Environmental Studies Revolving Funds (ESRF Report No. 67).
- Sadar, Husain M. 1996. *Environmental Impact Assessment*. 2/E. Ottawa, ON: Carleton University Press, Inc.
- Storey, Keith, and James C. Locke. 1998. "Socio-Economic Impact Audits: A Dubious Learning Exercise?" in *Assessment and Impacts of Megaprojects*. Toronto, ON: Canadian Society of Environmental Biologists.
- Washburn and Gillis Association, Ltd. 1996. *Environmental Impact Assessment Trans-Canada Highway Fredericton to Salisbury*. Fredericton, NB: Fiander-Good Associates, Ltd.