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087 Planning for Large-Scale Construction Projects: A Socio-economic Guide for Communities, Industry and Government

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PLANNING FOR LARGE-SCALE CONSTRUCTION PROJECTS:

A SOCIO-ECONOMIC GUIDE FOR COMMUNITIES, INDUSTRY, AND GOVERNMENT

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SUMMARY

Large-scale construction projects bring both benefits and problems for communities near the project sites. Those communities need to know about possible socio-economic effects and ways to deal with them.

Many construction projects have not worked out well for local communities because of lack of experience; poor co-operation between community, government, and industry; and absence of guidelines for planning in situations of rapid growth.

It is important for all groups involved, the community, government, and industry, to know about the likely effects of construction projects. Then they can assess more accurately the costs and the benefits of the project and are therefore in a better position to seek or allocate financial resources. Most importantly, they can develop planning strategies prior to the project. Advance planning helps to prevent some adverse effects, to minimize or mitigate others, and to enhance beneficial ones.

This Guide provides information that will help local people, government officials, and developers to develop plans for the successful management of large-scale construction projects. The Guide adopts a traditional planning model in which impact issues are identified, strategies to deal with them are selected and implemented, outcomes are monitored, and adjustments are made as necessary.

Although not an easy or cost-free process, the benefits of planning for large-scale construction projects far outweigh the costs of doing nothing. This Guide attempts to help maximize those benefits.

The Guide is organized into four sections: Part I describes the planning process; Part II outlines the impact assessment and screening process; Part III, the main part of the Guide, outlines a number of possible management strategies dealing with issues such as employment, transportation, accommodation, community services, funding, and wind-down; and Part IV provides a list of supplementary sources of information about community planning, impact assessment, and growth management.

RÉSUMÉ

Les projets de construction à grande échelle créent des bénéfices et des problèmes pour les communautés avoisinantes des chantiers. Ces communautés doivent s'informer sur les répercussions socio-économiques possibles et sur les moyens de les contrôler.

Beaucoup de projets de construction n'ont pas apporté tous les bénéfices possibles aux communautés avoisinantes parce qu'elles n'en avaient pas l'expérience nécessaire, que la coopération entre la communauté, le gouvernement et l'industrie était insuffisante et qu'il y manquait les indications d'une politique à suivre pour gérer la planification dans des situations de développement rapide.

Il est important que tous les groupes intéressés- la communauté, le gouvernement, l'industrie - soient renseignés sur les répercussions possibles créées par les projets de construction. S'ils savent évaluer plus exactement les coûts et les bénéfices du projet, ils seront mieux situés pour demander ou pour allouer l'argent nécessaire. D'ailleurs, ils sauront développer des stratégies de planification avant le commencement du projet évitant ainsi quelques-uns des impacts adverses, en rendant d'autres minimes, et en rehaussant les bénéfices.

Ce guide a pour but de fournir des renseignements qui aideront les gens de la communauté, les préposés gouvernementaux et les entrepreneurs à elaborer les plans pour gérer d'une façon réussie les projets de construction à grande échelle. On a adopté un modèle traditionnel de planification où l'on identifie les répercussions, où on choisit les stratégies pour les contrôler, où on surveille les résultats et où on y apporte des changements au fur et à mesure qu'ils deviennent nécessaires.

Bien que ce processus ne soit pas facile à soivre ni qu'il n'en coûte, les bénéfices qui découleront de cette planification dans des projets de construction à grande échelle seront plus importants que les coûts qui en résulteront si l'on ne fait rien. Le but de ce guide est celui d'aider à porter les bénéfices à leur maximum.

Le guide se divise en quatre parties: la première partie décrit le processus de planification; le deuxième traite du processus pour mesurer les impacts du projet de construction et pour les trier; la troisième partie, la plus importante du guide, discute de plusieurs strategiés possibles pour gérer ces projets et examine des sujets tels que l'embauchement, la transportation, l'hébergement, les services communautaires, le financement et la fin du projet; la quatrième partie fournit des sources supplémentaires de renseignements sur la planification communautaire, sur les façons de mesurer les répercussions et sur les moyens de gérer le développement.

INTRODUCTION

WHY PLAN AND FOR WHOM?

Everybody plans, whether it is planning to go to the movies, to marry, start a business or build a road. Whatever the task, individuals and organizations try to think it through beforehand to avoid the unexpected and to try to gain the most from their actions.

With a construction project, the more complex and costly it is, the more people are likely to be affected, and the more industry, government, and other decision-makers are held accountable. Thorough planning may be an expensive process but it is necessary. Planning is the best way to make sure that limited resources are used as effectively as possible.

Planning takes many different forms. Everyone is familiar with either economic, social, and political planning, or regional, city, and corporate planning. This Guide cuts across many of these categories. Planning for large-scale construction projects involves not only economic and social planning at the local, regional, and even provincial levels but also corporate planning for those firms directly or indirectly involved with the project.

The focus of this Guide is the community. Many, though not all, major construction projects take place in or near existing communities where the main effects of the project will be felt. Consequently, much of the planning for management of projects must be directed towards these communities. The intended audience also includes government, industry, labour, and the volunteer sector, many of whom are likely to be involved with, or affected by, the project.

The Guide discusses important issues common to most projects and suggests ways of dealing with them that maximize the positive benefits and avoid or minimize the negative consequences. Given the number of different possible projects and locations in Atlantic Canada, strategies have to be adapted to fit the circumstances. The range of different interests in any given project also means that no planning strategy can satisfy everybody. However, a well-developed planning approach can significantly improve the outcome for all concerned.

HOW TO USE THIS GUIDE

This Guide is neither a recipe book nor a prescription and cannot provide a single set of planning instructions to be followed from commencement to completion. Such a document is impossible, because each project is different, and the planning process must be custom-designed to fit the particular time, place, people, and project type. However, some general procedures can be followed.

The Guide describes the planning process in general to provide a framework around which a plan to manage any large-scale construction project can be built.

In some cases, the project in question will have been subject to an Environmental Impact Assessment Review, in others it will not. For communities with projects that have not been the subject of review, Part II is a short guide to impact assessment at the community level.

For projects that will be or have already been reviewed, Part III of the Guide describes a number of strategies to deal with particular impact issues. The strategies discussed are not the only ones possible, nor is any one strategy always better than another. The purpose is to present options that can be selected or rejected, applied or modified to fit the particular case in question. Use what seems to be most appropriate in your case.

Planning involves thinking about what you would like to see happen, estimating what is in fact likely to happen, and taking actions to try to equate the two. Thinking about possibilities, problems, and options is, therefore, an important part of the planning process. This Guide is designed to encourage that process. If it is successful, it should raise as many questions as it answers. To help answer these additional questions, Part IV lists other sources of material.

Finally, this Guide may get you started but the end product, the plan to manage a large-scale construction project, will be yours. Planning will take time, effort, and co-operation. It will be frustrating and mistakes will be made. However, if we are to exercise any control over events

that affect our lives and communities then effort and sacrifices will have to be made and mistakes endured. Management planning is essential if we want to minimize the costs and disadvantages of a project and to maximize the benefits.

PART I - THE PLANNING PROCESS

WHAT IS PLANNING?

Planning involves identifying and implementing particular strategies and tactics designed to achieve specific objectives. Planning for large-scale projects involves a sequence of decisions and actions designed to maximize the benefits and to minimize the disadvantages of the project for those affected.

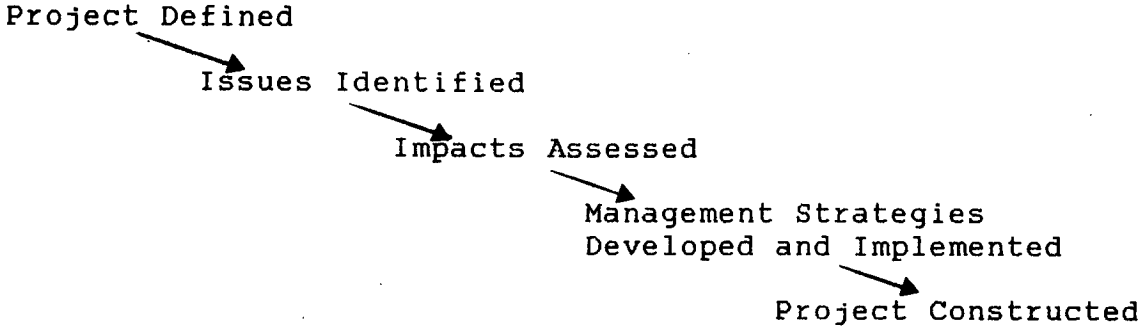
Planning is a learning experience for those involved, who obtain a better understanding of the issues and also of the way others see those issues. To be successful in planning large-scale projects requires a cooperative approach with mutual trust between all parties. Planning characterized by conflicts between individuals or groups who operate from fixed and unyielding positions is likely to fail.

There is no such thing as "standard practice" planning. Some general principles - a planning process - can be followed, but each plan will have to be custom-designed for each project. It will have to include the hopes and objectives of those concerned and the limitations or constraints imposed by the time and place of the project.

It should be remembered that planning is a continuous process and not a one-time-only event. Planning can help to prepare for some events but guarantees neither that the unexpected will not happen, nor that the plans tried will be successful. One of the keys to successful planning is, therefore, flexibility, which does not mean haphazard changes for the sake of change but rather the recognition that events and situations change, which requires changes in plans. Also, people are not infallible and may not always get things right the first time. Flexibility increases the chances of success.

THE PLANNING SEQUENCE

Social and economic planning for large-scale construction projects ideally follow this sequence:



Unfortunately this sequence is not always followed because, for example:

- projects are not always completely defined at the outset (for example, the type of platform to be used for offshore production from the Hibernia oilfield had not been decided upon when the impact assessment process began);

- projects may not be subject to assessment: either because no legislation requires it, or because use of the legislation is at the discretion of the government concerned;

- authority, funding, or organization to manage impacts may not be in place to make sure that those strategies are implemented.

This Guide focuses on the "strategies" part of the sequence. Several guides already illustrate how to carry out a social and economic impact assessment and so only a brief description is given of how this can be carried out at the community level (see PART II). Regardless of who is responsible for the process, if there is to be any serious attempt to deal with the outcomes of a major construction project, an assessment of the issues and their effects is essential.

Once the issues are identified and assessed, strategies to resolve the problems have to be implemented. Many problems will affect the community. This Guide focuses, therefore, on what may need to be done at the community level.

Impact Assessment at the Community Level

When there is no requirement for the proponent to undertake an impact assessment or when that requirement is waived, the community may need to undertake its own impact assessment.

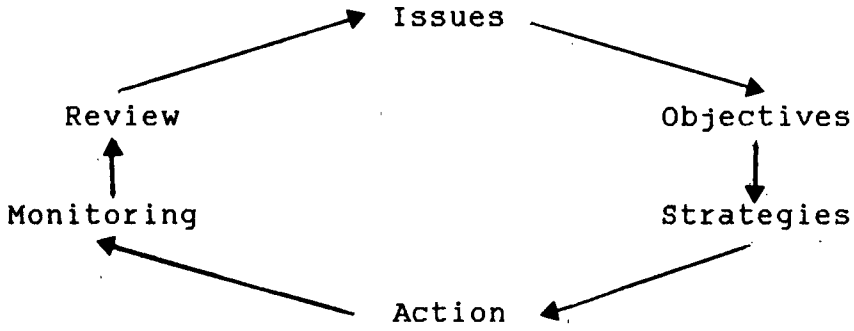
Few communities are likely to have the time, expertise, or funds to undertake a full impact assessment and, if no assessment is required, neither the proponent nor government are likely to provide sufficient funds. The community need not be prevented from acting in its own interests to inform the public about the project or from identifying and addressing likely effects of a project.

A small-scale assessment process or screening that can be undertaken at the community level is described in PART II of this Guide. The end result will be either clearly specified issues and suggested strategies that can be taken to the proponent or government for further action, or strategies that the community itself can implement.

Post-Assessment Planning

Although many large-scale construction projects may be subject to an impact assessment and review, this is not the end of the planning process. In fact, planning to manage the project only now begins.

Post-assessment planning should also follow a sequence of steps:



Issues

Even when an impact assessment of the project has already been carried out, the first stage in the planning process is to review the issues and to identify impacts. This review is necessary because:

- the project may have changed in one or more ways since an impact statement was prepared (such as the project may be larger or smaller than originally planned, the time-frame for construction may have changed, or the location for particular activities may have changed);

- the impact statement may not have included specific information about issues and effects at the community level (such as what exactly will be done in the community?, or where in the community will workers live?); and

- local conditions in the community may have changed since the impact statement was prepared (such as the population may have increased or decreased more than expected, there is now a housing surplus or shortage, or there is now higher employment or unemployment than before).

Reviewing the issues and likely effects is particularly important when a long delay occurs between the presentation of the impact statement and the start of the project.

This delay need not necessitate preparation of a new impact statement. The proponent should be requested to update the proposal. When changes from the original proposal

appear, then the consequences of those changes should be reviewed. For example:

- the project has been modified and more people will now be employed. Previously, accommodation was not thought to be an important issue. Has this now changed?

- the community school/hospital/fish plant has closed since the project was first reviewed. What are the implications of this closure for the project?

The time and effort spent on reviewing issues and effects will depend on the nature of changes either in the proposal or in the community situation. Review is likely to be time well spent. Nobody's interests are served either by planning for events that will not happen, or failing to plan for those that will.

Objectives

Once the assessment or its review is complete, all parties concerned should meet to determine the objectives they hope to meet through planning. Clearly, specifying objectives that work is an art. Perhaps the most important aspects of defining objectives are refining statements so that they mean the same thing to everybody and stating them in such a way that you can assess the degree to which they are achieved.

Measurability of objectives is essential. It is of little use to have objectives that, for example, refer to "maintaining the existing quality of life in the community" because everybody will have a different idea about the concept of "quality of life." As a result, it is likely to prove impossible to agree on indicators that reflect the concept, and probably even more difficult to collect suitable data to measure changes in it.

If objectives are written in lofty language and use vague terms, management of the project is doomed from the start. Objectives need to be simple, focused, and clearly stated.

In specifying objectives, the key elements include:

a) Measurability: can it be determined whether the objective has been achieved?

b) Word choice: words used in objectives need to be simple, precise, and unambiguous.

c) Realism: objectives must consider the time, money, and human resources that will be needed. Overly ambitious objectives will be unachievable because people will become frustrated and apathetic and will drop out of the planning process.

d) Deadlines and responsibilities: if an objective is to be achieved, completion dates for its achievement should be set and, most importantly, an individual or group must be designated as responsible and identifiable as the point at which "the buck stops."

e) Support: the ideal of full and enthusiastic support for all objectives is rarely achieved but the degree to which there is support for objectives will ultimately affect whether or not they are achieved. Particularly when seeking support for objectives at the community level, remember that the proportion of those in favour is likely to be less than the proportion of those who really support it enthusiastically. You may therefore only choose to accept an objective based on something more than a simple majority opinion - e.g., where at least two-thirds (or 80%) of those affected are in favour of the objective.

Strategies

Strategies are the particular actions taken to try to achieve specified objectives. PART III of this Guide outlines examples of the kinds of action that might be taken by different interest groups. Once again, there are no ready-made strategies. Different objectives will require different strategies depending on the geographic, economic, and social context in which the project is being undertaken.

Example 1: The project is small and short-term and the community wishes to minimize the amount of social and economic disruption that might result. Strategies might include:

- hiring policies that use outside labour and do not take workers away from local industries;

- accommodation policies that house workers on-site and not in the community; and

- community investment decisions that avoid expenditure on expensive infrastructure, such as expanded water and sewer systems (although these might be useful during the project they will have to be paid for over a long time and long after the project is finished).

Example 2: The project may have a life-span of several years with the opportunity for continuing employment in the operations and maintenance of the facility after construction. The project may provide the basis for long-term regional development in the area. Strategies include:

- housing strategies to develop permanent homes in the area;

- infrastructure investments (highways, for example) that would benefit both the present project and future developments; and

- training programs to prepare local workers to participate in the construction phase and in any long-term operations or maintenance activities.

Deciding on which strategies to adopt is not easy. Inevitably only a certain amount of money is available and long-term strategies may often conflict with short-term ones.

Action and Implementation

Once the particular strategies have been identified and selected, they need to be implemented. This requires that:

- there must be a representative group of those affected by the project with responsibility and authority (or access to that authority) to oversee implementation of the strategy;

- the responsibility for implementing the strategy (government, industry, community) is clearly defined (including a timetable for action);

- sufficient funds are available; and

- consensus exists that the strategy is appropriate, workable, and affordable, and all parties are committed to implementing it in a timely and effective manner.

Examples of action and implementation include:

a) Accommodation: the workforce will be living in a work camp. The responsibility for design, construction, and operation rests with the proponent and its contractors: a plan for the camp is drawn up in consultation with government and community representatives; design and operations characteristics are clearly spelled out; construction of the camp proceeds.

b) Infrastructure: the project will place a burden on local highways. After consultation with the community and the proponent, government agrees to construct a by-pass to the project site. Funds are allocated by the appropriate highway authority, a construction time-frame is determined, engineering design is undertaken, tenders are called, and the by-pass is constructed.

c) Community planning: the project will lead to significant growth in the community. New areas will have to be designated for residential, commercial, and industrial purposes. The local planning authority undertakes to update the community plan within a specific time to take into consideration the projected changes. A new community plan is developed, subjected to community review, modified as necessary, and adopted.

These actions may sound easy but there are many stumbling blocks to success. Once strategies are implemented it is essential to monitor and review them regularly to make sure that things are proceeding as intended.

Monitoring

Monitoring refers to the observation of events without any attempt to change those events or their outcomes. Anything can be monitored, from the amount of gas in a car (by reference to the gas gauge), to fetal heartbeats of unborn infants. Monitoring should have a specific purpose.

Monitoring can inform us about:

- the status of special or changing issues which may need to be addressed by future action;

- the success or failure of management strategies; and

- whether regulations and requirements are being complied with.

Several types of monitoring are discussed in PART III of the Guide, such as inspection, regulatory permit monitoring, environmental quality monitoring, monitoring for impact management, and cumulative impact monitoring, which may be the responsibility of different agencies or organizations. It is important to remember that:

- the objectives of monitoring must be clearly and carefully thought out and may differ for different types of monitoring. All monitoring programs must relate to the planning objectives;

- monitoring needs a proper data base which means establishing satisfactory indicators to allow the measurement of changes brought about by the project and the effectiveness of the planning strategies. Monitoring programs often fail because they collect too much irrelevant and unusable information;

- monitoring is for recording and reporting information that will provide the basis for decisions. Experience suggests that monitoring should be kept separate from the decision-making function. To retain the trust and confidence of those supplying or helping to supply information, the monitoring group should remain, and be seen to remain, neutral;

- if the information collected is to be useful, then the results must be quickly and readily available. Special issues cannot be addressed either if the monitoring process is carried out behind closed doors or if the results are not easily obtainable. In the management of a large-scale construction project, information after the event may be of little use;

- monitoring should begin as early as possible in the planning process and should continue until the end of the project, or until it no longer serves any useful purpose. Those responsible for monitoring should, therefore, have the authority, funds, and staff to make sure the job is done properly.

Review and Evaluation

To ensure that the planning process is working and the objectives are being achieved, all parts of the plan should be reviewed periodically during the life of the project. Also, after project completion, the overall successes and failures of the planning process should be reviewed.

Depending on such things as the life span of the project, its size, and the issues arising, brief reviews of the process should be undertaken quarterly, semi-annually or annually. The frequency and detail of review depends on the characteristics of the project and the stage that it has reached.

Periodic reviews determine whether the plan is on track, and may indicate that issues originally thought to be important are not but that others are.

Alternatively, review may indicate that a particular strategy is not working or that it could be made to work better with changes. Also, unexpected changes unrelated to the project can be dealt with. In practice, monitoring programs often may be too complicated, too expensive, or even inappropriate. Only through periodic reviews can the shortcomings and strengths of the plan be recognized and addressed.

An overall evaluation or audit of the management plan after project completion will be useful for potential future projects. An audit may also benefit other communities facing similar developments. The evaluation should identify the overall strengths and weaknesses of the management plan. Where possible, suggestions should be given on avoiding problems and on ways to ensure that similar successes are achieved.

Learning is a cumulative process and the exercise of review and evaluation can add considerably to our knowledge of how to manage large-scale construction projects.

PART II - IMPACT ASSESSMENT AND SCREENING

The purpose of an impact assessment of a large-scale construction project is to determine the costs and benefits of the project and to identify measures to minimize undesirable effects and to maximize positive effects.

Not all projects are subject to a formal environmental impact assessment because:

- there may not be the appropriate legislation to require an assessment; or
- the need for an assessment may be waived by the government in question.

It is not worth spending a lot of time and effort in assessing effects if the project is small-scale or if the probable effects are well known. The energy saved could be put directly into developing management strategies. However, in some cases it may be in the interests of the community to undertake an impact assessment.

Few communities are likely to have time, expertise, or funding to undertake a full impact assessment. If there is no requirement for the proponent to undertake an assessment then funds or expertise are unlikely to be forthcoming from either the proponent or government. The community need not be prevented from acting in its own interests, initially by disseminating full information about the project and, secondly, by identifying and addressing likely effects of the project. With limited resources, the process is an impact screening rather than an impact assessment.

Once issues are identified, the community may be able to take some actions of its own to prevent, mitigate, or enhance effects. Alternatively it can bring pressure to bear on the proponent or government.

Impact screening at the community level consists of four main elements:

. understanding the project

. scoping: or setting priorities

. impact assessment

. action planning.

We give word of warning here. Equating impact prediction with impact management can be dangerous. Handbooks exist that describe data-gathering techniques and emphasize statistical methods to predict socio-economic change. However, impact prediction is only part of impact management. Too often too much faith and emphasis is placed on the ability to predict the future accurately. Even though skills exist to undertake prediction exercises, if there is no capability to translate those predictions into monitoring and mitigation strategies, then prediction alone will be of little value.

Don't waste the community's limited energy and resources. The temptation may be to try to "get all the facts" - a busy-work approach that is frequently counter-productive. A "scatter-gun" approach, which examines every conceivable impact issue, often results in an overwhelming amount of irrelevant information. Similarly, a "numbers syndrome," in which every available piece of data is collected, may simply result in large amounts of unusable and unimportant information.

The objective of the screening exercise should be thorough understanding of the project, a careful selection of a few special issues, a sense of what the preferred outcomes should be, and the designing of a mechanism to achieve those results. Although harder to undertake than simply collecting data, it will yield more useful results in the long run.

UNDERSTANDING THE PROJECT

Information is gathered to find out as much as possible about the project's effects on the community. A series of questions will need to be asked:

WHAT - What is being constructed? What is involved in the construction process? What are the implications for the community?

WHERE - Where is the project site? Where will the accommodation for the workers be? From where will the workforce come?

WHEN - When will the project start and finish? When will particular stages of the project occur? When will particular skills be required? When can migrants be expected to arrive?

WHY - Why is the project necessary? Why is it being undertaken here and now? Why is the project being carried out in this particular way?

HOW - How will the project be organized? How large will the workforce be? How will the community be involved in project planning? How will any costs to the community be financed?

WHO - Who is the proponent and the contractor? Who are the relevant contact people? Who is responsible for the consequences of the project? Who will get jobs? Who will be affected by the project?

These and other questions need to be put to the proponent and to governments involved to obtain a clear understanding of the project and to make that information available to the community.

Information helps to remove fears of the unknown and to provide a focus for assessing the most likely and most important effects.

SETTING PRIORITIES

There should be a process, usually referred to as scoping, for deciding which impact issues are relevant and which are the most important. If it is not undertaken the assessment becomes slower, less efficient, less effective, and more costly.

At the community level in particular, scoping is perhaps the most important of all of the screening and assessment steps. It encourages those most likely to be affected by the project to ask the right questions.

There are three steps in the scoping process:

- identification
- evaluation
- ordering.

Identification requires full community participation to outline the full range of concerns of local people. Although the screening exercise may be community-based, the proponent and government may also be invited to express their concerns. In the identification phase, the range of project alternatives are determined, including the "no-go" option.

Evaluation reduces the number of potential issues, eliminates insignificant concerns, and identifies those worthy of examination in detail.

Ordering assigns priorities to issues, determines the amount of detail necessary to examine each issue, and defines bounds and limits (for example, geographic area and time horizons).

Identification

The methods that might be used by the community to identify the issues include:

a) Comparison with similar projects: a review of similar projects can reveal the type of effects most likely to be important. This approach is very useful but there is the danger that experiences may not be simply transferable from one situation to another. The context of the particular project must always be kept in mind.

b) Relevance trees and matrices: a relevance tree or matrix approach is a systematic way of thinking about the range of project effects by generating a concise summary of impact types. Figures 1 and Table 1 illustrate an example relevance tree and matrix.

This approach should be be used with care. The relevance tree or matrix may be too general to capture the effects of a particular project and some effects not in the list may be missed.

c) Networks, systems diagrams, and flowcharts: diagramming impacts from beginning to end of the project helps in understanding the cause-effect relationships among factors. However, many of the relationships are complex and difficult to diagram, so the selective process involved may miss some important effects.

d) Overlays: overlays may be particularly useful where important issues can be presented in map form to indicate the geographic extent of an issue. When maps are overlayed, overlapping areas may indicate areas of conflict or compatibility, which may be useful in determining the relative importance of an issue.

To involve community members in the scoping process several methods can be used to determine important issues:

a) Public meetings: the most common technique of public involvement. They may be useful in helping to identify issues but often prove to be confrontational. They may stimulate unnecessary controversy and can be dominated by one-way exchanges between individuals or groups.

b) Open houses: schedule opportunities for members of the community to drop in and discuss the proposal with representatives of the proponent, government, or the review organization. Information is provided to the public through displays or handouts and public feedback is recorded. Open houses do provide the opportunity for two-way communication but the creative environment of the larger group situation may be lost.

c) Networking: fieldworkers are employed to exchange information about the project in situations where such discussion is possible. This approach may be particularly important in aboriginal communities in which decisions are made by consensus and ideas are exchanged in an informal and unstructured manner. The fieldworkers must have the appropriate skills to be accepted by, and to communicate with, the community.

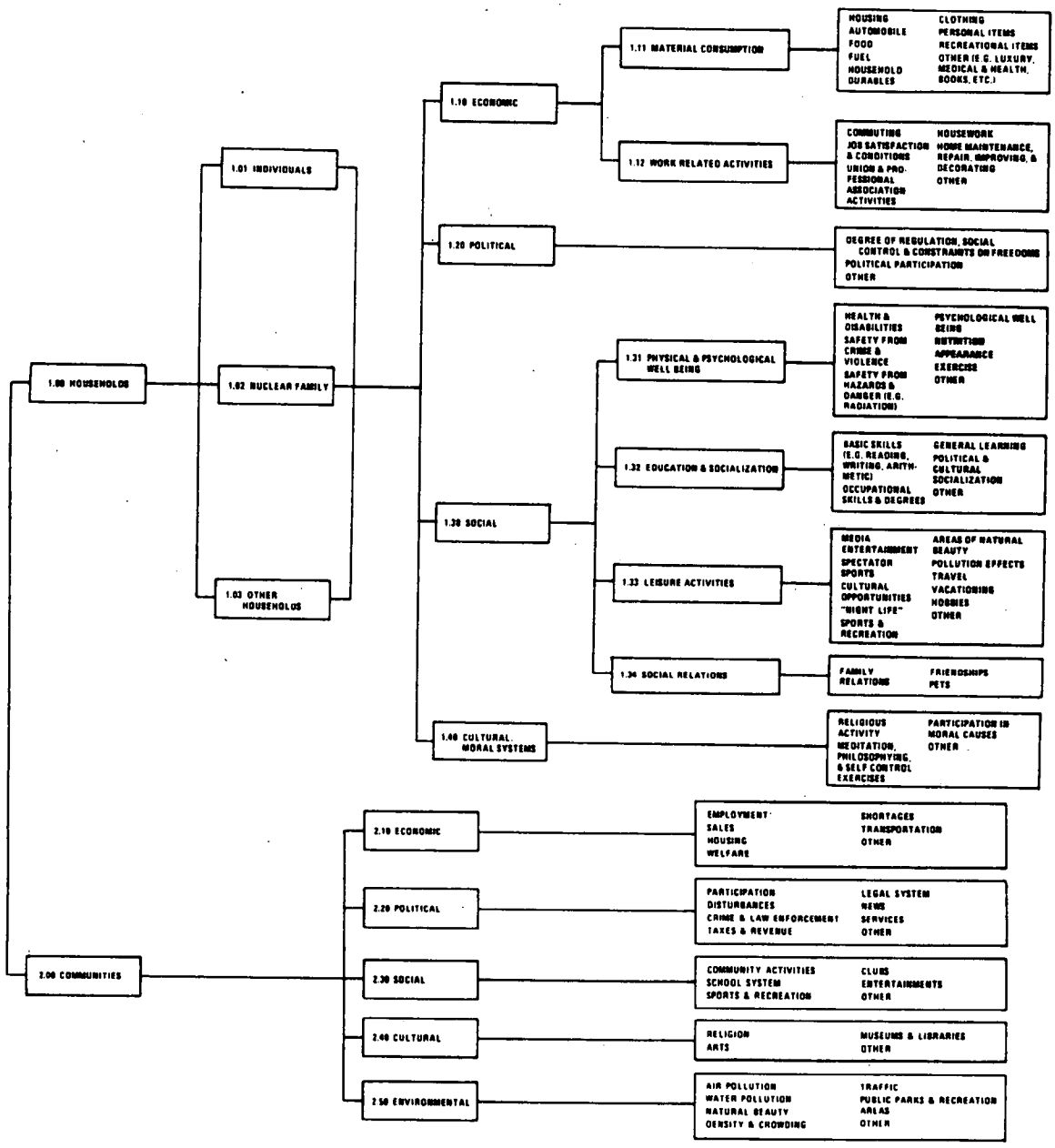


Figure 1. Issue identification: relevance tree approach.

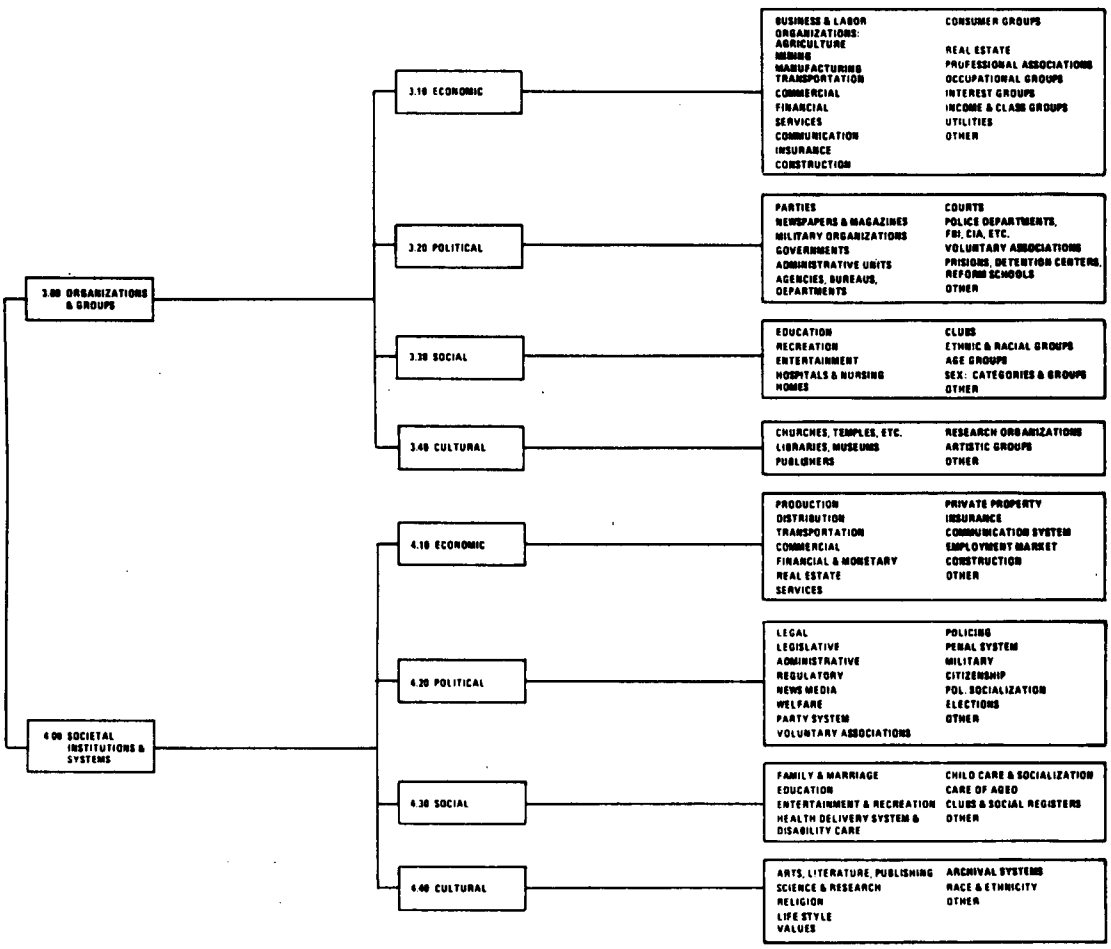


Figure 1. (Cont'd)

Source: Finsterbusch, K. 1981. The potential role of social impact assessments in instituting public policies. In K. Finsterbusch and C. P. Wolf (eds.), Methodology of Social Impact Assessment, 2nd ed. Hutchinson Ross, Penn.

EXAMPLE: effects of nuclear power plant construction

INPUT		OUTPUT		
Nuclear Power Plant (N.P.P.) - Facility characertistics - Human resources - Revenue - Licensing and regulatory procedures		FIRST-ORDER EFFECTS	SECOND-ORDER EFFECTS	THIRD-ORDER EFFECTS
	COMMUNITY	AESTHETICS Visual impact re: N.P.P. facilities and transmission lines	1. Awareness of nuclear facility 2. Attitude toward N.P.P.	Behaviour relative to N.P.P. facility
	COMMUNITY	LAND USE 1. Physical plant site and surrounding safety barrier 2. Transmission lines and corridors 3. Access roads/railroads 4. Recreational facilities	1. Political process of rezoning 2. Group interactions 3. Policy formation	Documentation and implementation of new zoning ordinances: a) Residential b) Recreational c) Industrial d) Commercial
	COMMUNITY	EMPLOYMENT 1. Operation personnel 2. Public services employees 3. Local government employees	1. Wages 2. Labour participation rate 3. Reassessment of local/ community job classifications	1. Income distribution 2. Intra-governmental roles and relationships
	COMMUNITY	TAX BASE Increase property tax base	Decision to lower/stabilize existing tax rate	1. Perceived options/choices for decision-makers re: a) Growth/controlled growth b) Increased quantity/ quality of public services c) Increased quantity/ quality of local institutions 2. Higher disposable personal income 3. Possible increased interest in community by external agents
	COMMUNITY	TRANSPORTATION Traffic patterns re: employees/tourists	1. Governmental interactions (decisions made on traffic patterns) 2. Inter-community relations re: transport of radioactive waste 3. Individual attitude/awareness of N.P.P.	
	COMMUNITY	PUBLIC SERVICES 1. Tie-ins with local community sewer/water 2. Access roads 3. Police/fire protection 4. Telephone service 5. Medical facilities	1. Allocation of funds and resources 2. Development of new inter-actions between local governmental agencies and utilities 3. Inter-community relations re: capacity expansion of public services rendered	1. Community payroll 2. Land use/physical structure 3. Coalescence around specific issues re: allocation of community funds and resources for utility's shared usage
	COMMUNITY	POLITICAL RELATIONSHIPS Development of new interact-ions between local community, other governmental agencies, and utility	1. Legislative change (possible) re: regional/statewide property tax redistribution 2. Magnify existing perceived differences between community	Development of other protected sources of revenue within the community in response to possible legislative changes
	COMMUNITY	SAFETY Public concern re: radiation hazards	1. Political coalescence around safety issues 2. Education of local govern-ment officials and citizens re: nuclear technology and safeguards 3. Increase in local safety-related medical facilities 4. Policy planning by local government on safety issues re: evacuation policies	Heightened awareness of nuclear power
		SOCIAL PSYCHOLOGICAL CONDITIONS Heightened awareness of N.P.P. Concern for community future re: growth	Socialization re: coalescence around issues	Action policy resulting from issues

Source: Soderstrom, 1981

TABLE I - ISSUE IDENTIFICATION: MATRIX APPROACH

d) Hotlines: an advertised number that the public can call for information is often used in conjunction with any of the above.

e) Submissions and surveys: information about the project can be provided and the public invited to submit written comments, suggestions, or questions. More formal opinion surveys can also be used to identify relevant groups, their concerns, and the strength of their support or opposition.

f) Advisory groups: advisory groups, consisting of members of interest groups and the general public, can meet to discuss issues and to provide input into the issue-identification process.

g) Group process methods: other methods for setting priorities include a range of techniques that employ small groups of individuals. These include workshops, brainstorming methods, and key informant forecasting methods such as the Delphi technique and model building workshops.

Evaluation

Evaluation involves deciding which issues are important. These decisions should involve the public and the value judgements used should be clearly stated.

Evaluation methods that use weighting, ranking, or other quantitative techniques are the most common but they can be too complex for community use.

Alternative evaluation methods involve asking specific individuals or groups a series of questions to try to determine the level or threshold at which effects become important. These thresholds once identified can be compared with the estimated effects to see if the effects would be considered significant.

Ordering

Methods finally chosen to define issues should be organized and communicated in ways useful to the end-users, that is the community itself, government, and industry.

Usually impact issues are categorized, often according to physical, biological, and socio-economic issues. Categories are then further subdivided by discipline. For example, the social category might include issues under housing, health, education, and social services.

The difficulty with this type of organization is that a single concern might appear in several different categories. For example, a concern about migration might be addressed under housing, employment, social services, and so forth and the issue as a whole is lost.

Alternatively, issues may be clustered in several ways. For example, issues might be grouped according to the perspective of particular interested groups, such as aboriginal peoples' issues. In addition they might be grouped according to the interrelationships of issues through a network type of approach.

Issues should be grouped to maximize their usefulness. A good example of a successful issue-grouping approach is that used in the Beaufort Environmental Monitoring Project. Here issues were categorized into a framework of "valued ecosystem components" and the effects of the project were assessed against these categories.

Once issues have been identified, they should be clearly stated before any analysis proceeds. Failure to do so may result in the fuzzy thinking that has characterized many impact assessments in the past.

IMPACT ASSESSMENT

As with other elements in the screening exercise, the community is unlikely to have many resources to devote to a complex, expensive, and lengthy process. However, given a reasonable understanding of the project, a clear statement of the issues, and a sense of what is wanted from the project, it is possible to estimate effects in an essentially non-

quantitative way. Little in the way of data collection and analysis may be necessary but the results can still provide the basis for further action.

The approach can be described as a "soft" assessment. It emphasizes the general orders of magnitude of effects rather than "precise" quantified outcomes. For example, effects may either be classified as positive, negative, or neutral; long-term or short-term; reversible or irreversible; or be scaled as minor or severe; concentrated or dispersed; or highly probable or unlikely.

Long-term, severe, negative, concentrated, irreversible, or highly probable effects clearly demand preventive, or at least mitigative, action. The proponent, government, or the community itself will have to be encouraged to act.

For example, in a case where in-migration is perceived as an issue, and where the community wants to minimize local disruption resulting from that in-migration, it is less important to try to predict, project, or forecast the precise number of potential migrants than it is to prevent migration in the first place. If prevention is not possible, the community will wish to mitigate the effects of migration.

An estimate of migration will suffice as the basis for action. If supported by a monitoring program and a system to act if numbers are much larger or smaller than projected, the net effect will likely be as successful as any based on sophisticated projection models.

Where the magnitude of effects from particular issues is uncertain, a monitoring program accompanied by an "action as necessary" approach will be the most appropriate.

ACTION PLANNING

The particular action taken or strategy adopted to prevent, enhance, or mitigate effects will depend on a wide range of factors. PART III of this guide describes a number of these strategies in the context of the major issues that have arisen from the recent construction of large-scale projects in Atlantic Canada.

PART III - MANAGEMENT STRATEGIES

Management strategies are those actions taken by the community, government, and industry to try to achieve specific objectives concerning the project. There are no "correct" strategies.

The most appropriate action will depend on a range of factors and the way in which they interact with each other. The characteristics of the project in question and the geographic, economic, social and political contexts in which it exists, will all influence the choice of the most appropriate management strategies.

This section of the Guide takes a number of issues that might be relevant to a large-scale construction project in the Atlantic region and describes some management strategies that have been successful in dealing with those issues and some that have not. The examples chosen are not necessarily from the region nor even from Canada but also come from Europe and the United States.

The range of strategies described is by no means all-inclusive. Each needs to be modified to fit the particular situation. There may also be situations for which none of the suggested strategies are appropriate and situations for which no strategy is suggested.

Remember, this is a guide and not a blueprint. Use the Guide as the basis for developing management strategies but do not expect to find all the answers here. You may, after considering your own project, decide to reject the strategies described here. If this means that you then develop your own management strategies, the objective of the Guide will have been achieved just as well, if not better. Past experience is valuable but there is no substitute for thinking through the problems as carefully as possible and using common sense to deal with those problems.

Two points should be borne in mind throughout the process:

(a) Communities inevitably include a number of diverse interest groups; it is important that any plan or management organization represent those interests adequately. At the same time, the legal rights and responsibilities of different levels of government must be recognized.

(b) Communities, proponents, and governments all need to be aware of "who is responsible for what." In some cases the answer may be straightforward, for example, any activities on the project site are the responsibility of the proponent, and the provision of health, education and other social services is the responsibility of government. In many cases, however, the answers may not be obvious. As a general rule responsibility for any activity should not be taken for granted by any of the interested parties but should be posed as formal questions requiring that formal understandings about responsibilities be reached.

COMMUNITY-PROJECT RELATIONS

The relationship between the community and the project itself can be a key issue. Usually a combination of strategies is adopted with an emphasis on one. The general options are:

- containment and insulation
- integration and absorption
- major structural change.

Containment and Insulation

To minimize the social effects of construction activities, barriers are maintained between the project site and the local community. Most of the workforce would be accommodated away from the community in a workcamp designed to provide a full range of on-site facilities to make the camp as self-contained as possible.

To minimize the effects of local wage inflation and labour shortages, workers would be encouraged to commute from outside the region to the project site. Local residents would be dissuaded from obtaining employment on the project.

Containment and insulation is a strategy to limit social and economic disruption. It assumes that as long as project-related "problems" can be kept under control, the eventual withdrawal of the workforce, once the project is completed, will leave the local community relatively unchanged socially.

This strategy was attempted during the early part of the construction of oil terminals in both the Shetland and Orkney islands in Scotland. The strategy is most appropriate when:

- the project is a single facility in a relatively isolated area with activity taking place over a short period;
- existing economic activities would be severely affected if local wage rates were to rise significantly; and
- local workers are likely to leave the traditional local activities only to try to return when the project is over by which time traditional activities may have declined.

Experience from Scotland shows how difficult it is to maintain such a strategy in the face of local pressures for access to highly paid jobs. Given the high rates of unemployment in Atlantic Canada, it is even less likely that such a strategy would be tolerated here.

However, without some degree of insulation and containment of the project, the community is likely to experience not only the "boom" of construction but also the "bust" after the project is over. It is difficult to think about costs that will be incurred tomorrow when faced with benefits today, but, in planning for large construction projects, this issue should be a central one.

Integration and Absorption

This strategy aims at minimizing negative social and economic effects while taking advantage of activities of benefit to the local area, particularly local employment and business opportunities. The objectives of such a strategy are:

- to reduce the rate of local out-migration and keep in-migration of outsiders to a minimum; and

- to manage a project in a way that is compatible with the values of the local community. The project would therefore be used to strengthen the existing social and economic basis of the local community yet would avoid major changes.

This strategy is appropriate:

- where unemployment is high but the local labour force either has the appropriate skills for the project or can be trained quickly; and

- where long-term operations following construction mean long-term job opportunities.

For success, this strategy requires a realistic appraisal of both short- and long-term opportunities and the determination of what the community really wants out of the project. For example, it may be unrealistic to demand that local labour undergo extensive training for jobs that may only last a short while. On the other hand, training local labour for long-term operations positions will benefit both the community and the proponent.

Structural Change

A third option uses the project as a force for achieving major social and economic change. If the project will continue into an operations phase, or if it is only one of a number of projects, the opportunity exists to change the occupational and industrial base of the area.

If the project results in a significant permanent population increase, new housing and community services will be needed, and new industrial and commercial opportunities will arise directly from the project and its operation and indirectly from the associated population increase.

These changes may encourage further developments including local training programs or investment in infrastructure, such as roads, harbours, schools, or hospitals, which may further change both the economic character and the political status of the community or region.

This strategy should not be undertaken lightly. Investments in infrastructure are expensive. Past experience with major industrial developments in peripheral areas, including the Atlantic region, illustrates potential uncertainties and difficulties.

The closure, in the last ten years, of heavy-water plants in Nova Scotia and oil refineries in Newfoundland and Nova Scotia show the vulnerability of some large-scale operations in the region to conditions that are often beyond regional or even national control.

The most appropriate strategy for any project will probably be a combination of all three. For example, a containment strategy could be adopted in the sense that the project site is essentially self-contained and physically separate from the community. However, part of the local workforce might be integrated into the project through some form of preferential hiring. Long-term structural change might also be encouraged through the development of selected service or industrial developments in which there are opportunities for continuation beyond the construction phase of the project.

EMPLOYMENT

Direct Employment Strategies

Large construction projects provide significant employment opportunities. However, who will get the jobs? Where unemployment rates are high, as in the Atlantic region, then there will be considerable pressure to make sure that "local" workers have the first option to fill those jobs.

Who will gets the jobs depends mainly on:

- whether the project is a union or non-union operation;
- local collective bargaining agreements;
- the availability of union members (or non-union workers) in the community or area with the necessary skills;
- the length of time for which particular skills are needed and whether it is worthwhile training or upgrading local workers rather than bringing in skilled workers from outside;
- the location of projects (those in or near major urban centres will have a larger pool of local labour than remote sites);
- whether other projects are going on at the same time that require labour with similar skills; and
- the development of a "local" employment preference policy and how the term "local" is defined.

Between the mid-1960s and mid-1970s the major construction projects in the Atlantic region were all union projects. They included the Atomic Energy of Canada Ltd. (AECL) and Canadian General Electric Company (CGE) heavy water plants, the Wreck Cove and Lingan electricity generating stations, the Gulf Oil refinery in Nova Scotia, the Bay d'Espoir and Churchill Falls power generation projects, the Come By Chance refinery in Newfoundland, and the Point Lepreau nuclear generating station in New Brunswick.

These projects had a number of characteristics in common:

- the location of each was in a in relatively small community or at a remote site;
- the size of each workforce was large compared to the local labour force; and
- the number and type of skilled trades required were greater than could be provided locally.

Unless careful thought is given to the question of who gets to work on the project, the potential exists for serious disruption. For example, construction work to re-activate the Come By Chance refinery in Newfoundland in early 1987 is a non-union project, which has led to serious confrontations between union and non-union workers and the contractor.

Past experience shows that the larger the project and the more specialized the skills required, the more likely it is to be unionized.

From the proponent's point of view, the higher cost of union labour may be offset by the benefits of access to a pool of skilled workers. Also, the opportunity to create project agreements from existing collective agreements will increase the chances of completing the project as efficiently as possible.

From the community's point of view, a union project may significantly reduce the number of migrant workers arriving to look for work. If the project is known to be a union project and if all hiring is done at union hiring halls away from the project site, speculative in-migration will be reduced.

A major drawback of a union project is that many local or regional residents may not qualify for employment. When not enough local, skilled, union workers are available, the unions have two options. They can either expand their local membership or draw upon out-of-region or out-of-province union members to meet project needs.

Unless a period of sustained employment is expected, or there is relatively full employment elsewhere, unions are generally reluctant to expand membership.

Without an agreement between government, the proponent, the unions, and the local communities before the start of the project that would allow some degree of non-union local preference hiring, considerable tension is likely between local labour unable to find work and non-local union members working at the site.

Local-Preference Hiring Strategies

Preference given to hiring local workers can have positive advantages for the proponent and the communities near the project. However, in the same way that local non-union workers will resent jobs going to non-local union workers, then workers from communities at a distance from the project may be just as resentful if they fail to get jobs.

Large-scale projects are often "one-of-a-kind" as far as the Atlantic region is concerned. Governments may wish to spread the benefits of those projects as widely as possible and may, therefore, choose not to have a local-preference hiring policy.

The benefits of local hiring are that workers will not need accommodation, that potentially disruptive large-scale in-migration of non-local workers can be avoided or reduced, and that local construction workers can be trained if needed for jobs in the post-construction operational phase.

If local-preference hiring is to be adopted, the term must be defined. Local union members will be registered at union halls but, for others, a definition of a provincial resident may be a first requirement. The definition used in the Newfoundland offshore oil industry to give preference to local workers in the early 1980s was that persons born in the province, or who had lived there on a permanent basis for a given time before the hiring date, were defined as local residents.

At the project site level, "local" might be defined in terms of a "preference zone" system. Zone 1 workers live in the community or communities next to the project site. Zone 2 workers commute daily from within a set distance, e.g., 50 km, whereas Zone 3 workers would be all those beyond this distance, most of whom would be unable to commute to work daily.

Preference to Zone 1 workers would reduce acommodation and other local service needs. Costs of getting workers to work will be lower than if they have to commute. If local workers see it as "their project," there may also be positive benefits in terms of worker commitment to the project including lower absenteeism and lower turnover rates.

Zone 2 workers would commute daily. The effect on highway traffic could be reduced by providing commuter buses to the site or by offering transportation subsidies to workers using car pools.

Zone 3 workers, living more than 50 km from the site, would commute in on rotation, working a set number of days on site followed by a return home for a set number of rest days. These workers would be accommodated on site or in the community, depending on the accommodation strategy adopted.

A local preference strategy can increase the negative effects of the "bust" after the "boom." If there is no further work in the area after project completion, the effects of a sudden increase in unemployment will be more severely felt if the workforce is drawn from one area than if workers come from many parts of the region or province.

Both the positive and the negative aspects of local-preference hiring should be considered. Where local-preference hiring is adopted, management planning for wind-down is as important as planning for the project.

Indirect Employment Strategies

Large-scale construction projects will generate additional employment beyond that directly in construction. Purchases of manufactured goods and spending by those employed directly and indirectly on the project will generate further employment. This additional employment is the employment multiplier.

Additional employment is often overestimated. At best, the construction industry in the Atlantic region has an employment multiplier of 2.0, which means that for every project job one additional job may be generated somewhere else in the economy. In the less industrialized provinces in the region, the multiplier is lower. Much of this extra employment is at places other than at the project site. Usually the larger urban and industrial centres benefit from much of the indirect employment.

To make sure that as much of the potential additional employment stays in the community and in the province, a number of strategies could be adopted:

- local businesses can be informed about opportunities for the manufacture and supply of goods and services;

- the proponent can encourage local firms by holding bidder seminars to explain the project requirements and conditions;

- price preference can be given to local firms. For example, provincial suppliers may be awarded contracts even though they may not be the lowest bidder, provided that all other requirements are met and the price differential is below a specified percentage;

- the proponent can encourage smaller firms by breaking the bid packages down into small components;

- government can encourage local firms by making venture capital available; and

- government can assist local business by encouraging joint ventures between local and outside firms.

Employment Training Strategies

If the strategy is to maximize the number of jobs going to residents of the community, region, or province, training will be necessary for both union and non-union labour if:

- employment experience and job requirements mean that refresher courses are necessary;

- skills need to be upgraded to meet project requirements or standards; and

- "green" or inexperienced workers are hired who require training for particular jobs.

For some tasks, on-the-job training will be possible. However, this will be largely restricted to the less skill-demanding jobs and those that require little work

experience. Training on the job may mean that local employment objectives are met but it may be costly in terms of low worker productivity. Where possible, training in advance of the project is desirable.

Points to consider before undertaking training programs include:

- the length of time and cost involved to train workers to the necessary standards to meet project requirements;
- the length of time the trained workers will be required on the project;
- the number of trained workers required;
- the existing supply of such trained workers elsewhere; and
- the prospects for trained workers to use their skills after the project has been completed (for example, in the operations phase or on other construction projects).

Low priority should be given to training for jobs requiring highly specialized skills, lengthy and expensive training programs, and employing small numbers for a short period, especially if workers with the required skills can be found elsewhere.

Training programs set up to serve large construction projects tend to be for jobs that have low skill requirements and employ large numbers for relatively long periods.

The relatively short life of the construction project and the even shorter time for which particular skills are required, plus apprenticeship and union membership requirements, limits the possibilities for local hiring and training. The operations and maintenance phase of a project usually needs local workers and training for skilled jobs is considered worthwhile.

Where training programs are put in place, their advantages include:

- helping to meet any local employment objectives;

- helping to reduce in-migration of workers to the project site;

- helping to reduce competition for labour between the project and other employers; and

- providing the opportunity for work now and better prospects for jobs in the future. As such they may be useful in building local support for the project.

The development of any training program raises a number of questions:

- when and how will the training program be carried out?

  . in advance of the project leading to a recognized qualification?

  . as an on-the-job, informal program?

  . some combination of the above?

- who will pay for the training program?

  . the proponent?

  . government?

  . the workers?

- who is responsible for designing and running the programs?

  . the proponent or its contractors?

  . government through vocational schools or other institutions?

  . the private sector on behalf of the proponent and/or government?

- who is able to take advantage of the training program?

  . workers from the local community?

  . workers from the province as a whole?

TRANSPORTATION AND COMMUTING

If one of the employment-related objectives is to minimize the number of people moving to live near the project, local hiring in combination with short-term commuting strategies can be used.

Workers' travel costs can be reduced and so the possibility decreases that they and their families will move to the project. Reduction of travel costs has been shown to have positive benefits for the community by reducing local traffic and for the proponent by increasing worker productivity.

Measures to reduce worker travel costs include:

- provision of bus or van-pool transportation; and
- provision of travel allowances to offset commuting expenses.

The advantages of these measures are:

- reduced worker relocation to the project site;
- easier recruitment to the labour force ;
- reductions in worker turnover and absenteeism;
- increased worker punctuality and productivity;
- reduced traffic congestion on roads leading to the project site; and
- reduced costs of providing parking for workers at the project site.

The options for operating transportation programs involve:

- choice of vehicle (either buses, vans, or a combination; or subsidized car pools);
- administrative responsibility (private contractor, proponent, or worker organized and operated system);

- operational procedures (such as number of pick-up points, parking provision at those points, frequency of service, and number of vehicles); and

- financing (such as proponent bears all costs; transportation system operates on a break-even basis; or other).

When travel allowances are provided, either the proponent or its contractor can subsidize all or part of the cost of transport where public transport is used, or can pay a flat daily rate or a salary supplement to workers using their own transportation. The disadvantage of this last option is that it discourages multiple-rider arrangements.

The provision of a transportation service to and from the project site is one of several employment and business opportunities for individuals or for the community.

ACCOMMODATION

The strategy used to accommodate the workforce will depend on a range of factors including labour force demand and supply, project location and, as discussed earlier, the type of community-project relationship.

There are four main ways in which the workforce can be accommodated:

- the workforce is hired from within commuting range of the project, lives at home, and travels daily;

- existing permanent accommodation is used to house incoming workers or new permanent accommodation is constructed;

- temporary accommodations are made available, for example, mobile homes and trailer parks;

- workers are accommodated in a custom-built workcamp.

Local Hiring and Daily Commuting

For those workers living at home and commuting daily, there is no need to provide accommodation. Local hiring will therefore have positive benefits in terms of lower costs for the proponent, employment opportunities, and reduced disruption in the community, and employment and income benefits for the worker and other local businesses.

To encourage daily commuting rather than relocation, a number of transportation programs and subsidy strategies can be used as discussed earlier.

Permanent Accommodation

Most large-scale construction projects in the Atlantic region have been in areas with insufficient local labour to meet project needs. If workers are brought in to meet those needs, existing accommodation may be used to house them. Room rental in private homes or boarding houses for individuals and property rental for workers with families is a common strategy limited only by availability and cost.

Although renting may provide additional income for property owners, it inevitably leads to inflation of accommodation costs as there is rarely sufficient accommodation to meet the demand. This inflation is a serious problem both for incoming workers and for those already living in rental accommodation. The elderly, the unemployed, and others on low, fixed incomes, are particularly affected.

Additional permanent accommodation can be constructed but experience with past projects has been, inevitably, that sufficient accommodation has never been provided early enough. The result is great pressure on existing accommodation which leads to overcrowding and inflation. Furthermore, when workers leave the area the problem of surplus housing arises.

Where money is borrowed for water, sewers, or other infrastructure related to housing development, debt repayments will continue long after the life of the project and may place a heavy burden on the financial capabilities of the community. Long-term commitments required by short-term projects should be viewed with caution.

Temporary Accommodation

Temporary accommodation for workers can be provided either in mobile home sites, or in rental mobile home properties, or in recreational vehicle (RV) parks where workers can live in their vehicles for the duration of their employment.

Mobile homes can accommode families or single workers. In the case of the latter, it may be necessary to provide additional dining and recreation facilities. Mobile homes are much cheaper to provide than permanent accommodations and can be easily removed once the project is completed.

One disadvantage of this strategy is that, when families accompany the workers, the area will need to provide additional services such as public transport, education and health services. If these are not provided, the existing system may be overextended.

"Temporary" facilities usually remain long after their planned lifetime. Rental mobile home parks may continue to be used as "solutions" to other housing problems and may continue to be used as housing for those in need. Attempts to extend the lifetime of such temporary facilities often results in substandard accommodation.

Recreational vehicle parks have been used at a number of construction sites in the USA. Workers live in the vehicles during the week and return home at weekends, where that is the normal work pattern. In some cases, their families may join them, especially during summer months. Sites are usually provided with water, power, and sewer hookups, together with separate washing and laundry facilities.

The cost of providing RV parks is relatively inexpensive and the parks may have potential for recreational use after the project is completed. Careful monitoring of the use of RV parks is essential to avoid overcrowding and overuse of facilities. RV parks are not designed for long-term occupation by family groups and policies may need to be established to keep use of RVs within the limits of the capabilities of the site.

Workcamps

Workcamps are usually designed as single-worker housing. They are typically located at remote sites and at projects where siting laws are restrictive, where labour demands are large, and where the community is unable or unwilling to deal with rapid population growth.

The quality of most workcamps has improved dramatically in recent years as a result of the competition for skilled workers and increased demands for better accommodation by those workers.

Modern workcamps now offer a wide range of conveniences, residential privacy, and recreational and social opportunities, and are more often attractively located and landscaped.

Good-quality workcamps are recognized as being cost-effective: they attract quality workers, improve employee morale and, thereby, reduce absenteeism and turnover. They can also help defuse community resistance by reducing the effects of worker relocation into the project area.

Camp facilities vary in size and range of amenities. A modular arrangement is common. Each module may comprise about 20 accommodation units with one or two workers per unit. Total camp occupancy can vary and more than one camp should be considered if the workforce to be housed is large (i.e., over 1,000) to maintain the quality of camp life and to avoid the alienation that often accompanies "bigness."

Facilities usually include a dining hall, a recreation centre, a laundry, and sometimes bar facilities. Residents usually pay a flat weekly fee for room and board. The construction and operation of the workcamp is the responsibility of the project management. However, experience has shown that where workers are involved in decisions regarding camp operation, projects run more smoothly and worker-management relations are better.

If the workcamp is self-contained, there need be few demands on community services. Camps can be designed so that the infrastructure (including recreational facilities) and roads can be used later by the community. Alternatively, the camp can be constructed so that the units can be removed

and the landscape returned to its original appearance. Once again, firm policy regarding these temporary facilities needs to be established at the outset to avoid short-term structures becoming long-term eyesores.

Evidence from workcamp experience indicates that a clear relationship exists between camp quality and problems such as worker turnover, vandalism, and worker-management confrontation.

Seven features are necessary to minimize the negative impacts on the local community and to improve worker productivity and well-being:

- a good camp facility, which includes good quality accommodations, privacy, low noise levels (for the benefit of off-shift workers who wish to sleep), and worker representation in camp management;

- good food in quality and quantity;

- security and policing of the camp, which are effective without being officious. (This provision implies that regulations on a variety of matters including the use of alcohol, visitors to the camp and worker absence from the camp, have been carefully considered before the project gets underway);

- good pay with opportunities for overtime;

- a work-rotation system that permits regular breaks for workers to get out of camp, i.e., so many days on and so many days off. The length of the rotation needs to be considered carefully. Rotations that are too long may result in lower productivity, higher risk of accidents, and the greater possibility for tension between workers and management. Conversely, rotations that are too short may not be cost-effective. The non-work period must be long enough to allow workers to return home and to spend some time with their families or in a non-work environment. Regular breaks to get out of camp does not mean simply having the opportunity to visit the local community periodically;

- a shift system that balances shift length against workers having too much spare time in and around the camp;

- varied and well-organized recreational and leisure-time programs.

COMMUNITY SERVICES

Any major construction project will lead to community change that will affect local social, health, recreation, and other community services. The size, location, and lifetime of the project and the overall approach to project management will affect the kind of community services needed. For example, if the workforce is accommodated in a workcamp, and population change is temporary, then service needs will differ from those in a situation in which workers and their families move into the community.

Four strategy areas need to be considered in determining the community services:

. existing services
. new service requirements
. staffing
. economic opportunities.

Existing Services

One conclusion of the Hibernia Environmental Impact Assessment was that existing social services in the area were already severely overextended. If the project were to go ahead, social problems would increase unless the social services system were adequately funded.

This situation is probably common throughout Atlantic Canada. Prior to any large-scale construction project, therefore, community service needs will need to be examined very carefully.

One strategy to reduce the potential effect on local services is for the proponent to minimize the use of existing services by providing a self-contained workcamp, and

by minimizing in-migration. For example, a workcamp with over 200 workers must have its own medical officer, and smaller operations can be encouraged to do so, thus reducing demands on existing medical personnel.

In addition to estimating potential demands for services, the ability of the delivery system to meet those needs should be monitored. Some groups will be more vulnerable than others to pressures on existing services, such as, the elderly, single-parent families, the unemployed, and the working poor.

Affordable housing, and access to medical and welfare services are essential to these and other groups and will need to be monitored carefully. These issues and cost of living may have been identified and addressed at the outset. If not, contingency plans and funding must be in place to deal with these problems as they arise.

New Services

Sufficient lead time has to be allowed to plan and find funding for new services where needed. (Lead-time requirements are discussed under the section on infrastructure strategies and funding strategies are also discussed separately). The provision of new services requires close co-operation among the proponent, governments, and the community.

Funding may come from either government or the proponent: government may provide new services as part of a normal mandate or through a special grants system; proponents may support local recreational and cultural activities as did Dome Petroleum and Gulf Canada Resources Inc., for example, in the Beaufort region.

The proponent may turn over facilities to the community once the project is complete, such as worker housing, recreational facilities, and fire and safety equipment.

Monitoring the need for new services is also important. New work opportunities may give rise to new problems, such as the need for day-care facilities, financial counselling, and drug abuse. If the prospect of such needs was not

already recognized, there must be a structure in place which can respond quickly to these unanticipated situations.

Staffing

Communities in remote areas, in particular, often have difficulty in attracting and retaining community service professionals. Government may need to offer financial incentives to overcome this problem and to employ a professional services planner.

A number of innovative approaches have been attempted to improve the professional working environment:

- a co-ordinated or integrated approach to human service needs planning and provision: an integrated approach would see the issues addressed as a set rather than unrelated individual problems. In Quebec, for example, numerous integrated community service facilities operate under the control of local boards. The system recognizes that, for example, health problems may be a function of family problems which, in turn, may be the result of financial problems.

- the project as an internship opportunity for young professionals: social workers, nurses, doctors, and teachers, under supervision, could provide relatively inexpensive assistance to communities experiencing staff shortfalls. This approach was used by the town of Gillette, Wyoming, in conjunction with professional schools from the University of Wyoming. Both the community and the students in the program found the approach very useful;

- the volunteer sector: this resource can be mobilized to help organize and staff community services, including day care, counselling, family intervention, and newcomer integration. Many proponents also encourage their staff to become involved in volunteer community activities; and

- the training of local residents to upgrade their professional skills: where the project is a long-term one, one of a series, or where there is to be an operations

phase, this strategy encourages the retention of community service professionals.

Economic Opportunities

Providing community services can represent local economic opportunities. The project may require fire fighters, security personnel, ambulance drivers and nursing assistants, day-care attendants, and recreational personnel.

INFRASTRUCTURE TIMING

Timing and planning go together. There is little point in planning for change if mitigative measures are too late. In Newfoundland, for example, the EIA process provides specific time frames for each stage of the process. The time from project registration through all stages of the process to project release could be less than a year. Thus, little lead time is left in which to implement necessary mitigative measures.

Accommodation for incoming workers is a typical problem area. If a strategy is not initiated at least 12 to 18 months before accommodation is needed, then the total mitigation process is in jeopardy.

All mitigation and enchancement strategies need lead time for their planning and implementation. Inevitably, plans take longer to implement than one feels that they should. As any one element in the plan is invariably dependent on another factor, it is essential to ensure that:

- planning strategies are given adequate lead time;
- planning strategies are co-ordinated to identify important relationships and sequences of events; and
- financial resources and decision-making systems are in place early enough to meet those lead-time requirements.

To provide some idea of the lead times required for different types of facilities and services, Table 2 identifies some of the services that might be required for a particular project.

These estimates are intended only as rough guidelines. The infrastructure requirements will depend on the specific project, the requirements of that project, and its social, economic, and political environment. For example, a workcamp is likely to require far less time to construct than a comparable amount of permanent housing. Construction in remote locations may take longer because of environmental difficulties. Provision of services in areas of overlapping jurisdiction may require more lead time, and so on.

For any particular project it will therefore be necessary to determine what is required and how long it will take to put in place.

PROJECT MANAGEMENT

Project management strategies can reduce undesirable effects on the community and increase the likelihood of the project being completed on time and within budget. Most of these strategies will have to be at the initiative either of government or of the proponent.

If one objective is to maximize local or provincial employment and to minimize the in-migrant workforce, governments should avoid more than one major project at the same time and should try to sequence projects. Such planning provides longer-term employment opportunities for local workers and less need to import migrant workers.

A "fast tracking" approach was adopted in New Zealand to encourage the development of domestic natural resources. This approach was adopted to stimulate rapid economic growth, but at the same time, it seriously limited the ability to manage project effects in general and in-migration in particular.

TABLE 2

Service planning for construction projects

Services required	Lead Time Requirements (months)	
	Planning	Construction
Before people arrive:		
* major highways	6	12
* water and sewer systems	12	6 - 12
* flood protection	12	12
* accommodation	6 - 18	6 - 12
As people arrive:		
* local roads	3 - 6	6
* waste disposal	6	3 - 6
* electricity/gas	6 - 12	6
* telephone	6 - 12	6
* health	6 - 12	6
* police	6 - 12	6
* fire	6 - 12	6 - 12
* education	12	6 - 18
* public transit	6	6
After people arrive:		
* hospitals	12 - 18	12 - 24
* ambulance	6	3
* airport	6 - 12	12
* solid waste collection	3 - 6	3 - 6
* parks/recreation	6	3 - 12
* welfare and human resources	3 - 6	3 - 6
* cultural facilities	6 - 12	6 - 18
* government buildings	6 - 12	6 - 12

Source: Based on D. Myhra, 1980, Energy Plant Sites. Conway Publications, Atlanta, Georgia, p.135.

Government also needs to consider project organization. Government may designate the project as a union or non-union operation and can also act to implement collective agreements with the workforce to prevent strikes and lockouts and other delays of the project. The Government of Newfoundland, for example, has the legislative power to designate projects as union operations and can impose no strike-no lockout contracts.

The proponent is chiefly concerned that the project run smoothly and without delays from labour disputes or other unanticipated events. However, several large-scale projects undertaken in the Atlantic region in the last 20 years have experienced serious problems and delays because of labour disputes.

The most important reason for these problems seems to have been incomplete project design and engineering at the start of the project and inexperience of management and unions.

For example, a major cause of walkouts has been jurisdictional disputes which have resulted from inadequate pre-project planning and allocation of work among the various trades and unions working at the site. When the response to these delays has been to bring in more labour to get the project back on schedule, the community has often suffered because of the unanticipated increase in in-migration.

Even when design work is completed in advance and work is allocated among the trades and unions, project management still needs to monitor progress and to revise schedules and labour demand regularly. By updating labour-demand forecasts, in particular, likely changes can be foreseen. Although this action may not in itself reduce in-migration, steps can be taken to minimize the effects.

Other project management strategies are identified under other headings; for example, for a workcamp, strategies are discussed under Accommodation.

INFORMATION

When managing large-scale projects, it is important to make available information about the project. The provision of information is not the responsibility of any one group but depends on the willingness of all parties - industry, government, labour, and the community - to co-operate.

Proponent Information Strategies

All groups involved need a clear understanding of the characteristics of the project; its nature, purpose, size, lifetime, and social and economic implications.

This information may have been made available in an Environmental Impact Statement (EIS). However, it will probably need to be updated before the project begins and will definitely need to be reviewed and updated during the life of the project. If the project has not been subject to an EIS the proponent must provide full information about project characteristics to all others concerned.

Revised project information will be essential if, for example:

- pre-project estimates were based on general rather than specific engineering and organizational plans;
- any changes in the project design or organization have been made since the EIS;
- actual contract awards change the location, nature, or level of project activities from what had been expected; and
- there has been a change in the "baseline" characteristics of the community and affected area since the EIS.

Making information available will also be important because:

- it may be necessary to remind or update people on the project details to present the project realistically. Such information may help to avoid the disappointment that occurs when unjustified expectations are unfulfilled; and

- as unknowns about the project are resolved, government, the community, and business will need access to that information as quickly as possible to give the maximum amount of lead time for planning.

The social and economic management of the project does not end with the production of an impact statement or approval of the project, but must continue throughout the construction program and into any operations phase that may follow. Proponents should recognize this and continue to provide project information throughout the life of the project.

Project information to update and inform interested groups about progress of the project can be made available through regular meetings with management groups of the community, government, labour, and service agencies.

Project information can be made available to the general public through various media: a regular newsletter, local cable television programs, a public relations office at the project site, or at annual open-house events for the public.

The way in which information is made available will be influenced by the location of the project, its size, and its duration. A short-term project is unlikely to warrant the large-scale public relations and information program needed for a long-term project.

Information must be provided about responsibilities. Who are the decision-makers for different types of activity, and where can they be reached? It is important for public credibility that individuals are identified with particular tasks and that the chain of command within the organization is known and understood by all concerned. This identification is important not only for credibility outside of the project site but also on site, especially when the development is large and complex.

Government Information Strategies

Government will be involved in any large-scale construction project in several ways: it may be the proponent;

the regulatory agency with responsibility for matters including health and safety, and environmental protection; or the source of funds for services to the project, including highway infrastructure, social services, and so on.

Information about those areas for which the government has responsibility must, therefore, be available to all other interested parties.

Depending on the size of the project, government can designate a senior civil servant with direct responsibility for the project, who would have the power to communicate directly with the proponent, labour, the community and relevant government departments as the need arises.

This procedure was adopted in Alberta for the development of the early tar-sands projects. The civil servant in question had direct access to the Premier of the Province. This and other strategies are discussed in more detail in the section on Administration and Organization.

Government is also in the business of collecting, analysing, and distributing data and will often be in the best position to monitor key social and economic variables, such as population change, land-use changes, and social service and infrastructure use. Once the key indicators are indentifed and responsibility for data collection is determined, information must be collected, analysed, and distributed in a timely fashion.

The timing of information release can be very important. For example, if population change associated with a project occurs over a few months, there is little value in having information made available the following year. If the purpose of the monitoring exercise is to aid in the planning and management process, it must be made available quickly.

It may be necessary to develop new information collection and distribution systems to meet the particular needs of the project. At the simplest level, this may require the hiring of special staff for data collection and distribution for the duration of the project. Alternatively, in conjunction with the proponent, the tasks might be contracted to a private company.

Community Information Strategies

A primary reason for collecting information is to provide the basis for decision-making. Experience suggests that it is important that the information collection, analysis, and distribution function be separate from decision- and policy-making. Those collecting the information should be seen to be "objective" about that exercise. Objectivity has been found to be essential in maintaining the credibility of the data gatherers, especially with the proponent.

Information on such key community indicators as housing, social service, and welfare issues can be collected by members of the local community who, if chosen for their knowledge and understanding of that community, may well be more sensitive to the meaning of the information collected than any outsider.

Information collected, as well as that provided from other sources, should be made available frequently and regularly. It should be in a form that other members of the community can easily understand.

Written reports are a traditional means of presenting information. However, the use of video and local cable television can often bring issues to life, present information and ideas much more dramatically, and, for certain types of information, may allow a much wider audience to be reached more effectively than by the use of printed material.

WIND-DOWN

Construction projects are essentially short-term events. Large-scale construction projects typically follow a "boom and bust" pattern in which a rapid growth in employment is followed by an even faster decline. Whereas some employment opportunities may exist if there is to be an operations phase of the development, construction employment will, sooner or later, come to an end.

Wind-down strategies are designed to address the problems that accompany major lay-offs of the workforce at project completion. These strategies are fundamental to any management plan and should be considered from the very start of the project. There are three general types:

- preventive strategies: designed to avoid or reduce the negative effects of wind-down from the very start of the project;

- preparatory strategies: designed to prepare individuals, communities, firms, and government during the life of the project for eventual wind-down; and

- amelioration strategies: designed to address wind-down effects once the project has been completed.

Preventive Strategies

Several preventive strategies to minimize the undesirable effects of wind-down can be put in place before the project begins.

a) The proponent can be encouraged to extend the life of the project to "flatten" the employment curve and to provide some workers with a longer period of employment while reducing total employment on the project. (This strategy, however, will not reduce the total number of person-years worked. One person could work for one year or two people could work for six months, the total number of person-years in both cases being one, but total employment is one in the first case and two in the second.) The limitation to this strategy is the difficulty of persuading the proponent to extend the life of the project. Investors need to complete projects as quickly as possible to generate revenue.

b) Government can attempt to sequence large-scale construction projects. If projects can be arranged to follow one another, it will reduce the number of migrant workers to the province in question and will provide a series of employment opportunities for construction workers.

c) Where workers have to be brought in for the project, temporary rather than permanent migration should be encouraged. Workers should also be discouraged from bringing their dependents. This action will reduce the burden on community services during the life of the project and will lessen the problem of a concentration of unemployed workers and their families once the project has finished.

d) Communities should not invest in infrastructure or facilities that will be a major burden on the community once the project has finished. The debt burden for water and sewer systems, or hockey rinks will extend many years beyond the life of the project. Unless there are sources of funding other than local tax revenues, these investments may be more than the community can afford.

Preparatory Strategies

Once the project has begun, strategies should be developed to prepare individuals, business, labour, and government for events both during and after the project. These might include:

- information about the progress of the project and the pattern and timing of the demand for labour. In any project the demand for particular trades and unskilled labour will vary over the life of the project. Some workers will be laid off before the project is complete because their particular tasks are complete. Depending on the particular mix of local skills, the local workforce could experience increasing unemployment while, at the same time, overall project employment is increasing. Unless the pattern of employment requirements is understood, unnecessary tensions may develop between workers and management.

- counselling, particularly financial counselling, of the workforce can help prepare individuals for the time when the project is finished and lay-offs occur. Experienced construction workers may be used to a pattern of periodic unemployment but new entrants to the workforce may need assistance in managing their affairs to prepare for times of unemployment.

- major construction projects with a lifetime of several years provide some opportunities for regional development. There may be opportunities for local business not only to supply goods, services, and expertise to the project, but also to develop these activities to serve other markets.

  For large-scale projects, it may be appropriate to appoint a regional development officer. This individual might work independently or with regional development organizations where they already exist. The objective would be to take advantage of both short- and long-term employment opportunities that would help reduce the effects of wind-down.

Ameliorative Strategies

Once the project has been completed, a number of strategies can help individuals adjust to the no-work situation. These include:

- a centre for job information, placement, and counselling designed to help workers find alternative employment;

- relocation grants to assist workers to move to alternative employment opportunities;

- retraining programs for alternative employment, or training to upgrade present skills to improve employment prospects; and

- counselling to assist workers and families to adjust to unemployment. This service would include financial counselling, leisure-time counselling, and information on how to deal with the stress of unemployment.

All these strategies cost money to implement and the question of who is to pay is an important one. Information about the project is relatively inexpensive to provide and would be the responsibility of the proponent. Job information and placement is best handled by those government agencies that already have responsibility for these matters.

Responsibility for other strategies may be less clearly defined. Funds should be allocated in advance, either through a disturbance fund or other arrangement, to address wind-down issues. Thus those responsible for the socio-economic planning of the project must recognize both the need for wind-down strategies and the need to allocate funds to pay for them.

ADMINISTRATION AND ORGANIZATION

A variety of administrative and organizational strategies have been developed to deliver programs, services, and funds to communities experiencing large-scale construction projects. The range reflects the fact that each situation is unique and must be addressed in a special manner.

However, experience suggests some guidelines:

a) No organization or agency can successfully deliver services and programs in isolation from other governments, agencies, companies, or communities. A co-operative approach is essential.

b) Administrative and organizational structures should be kept simple. A complex administrative structure is unnecessary for short-term, well-defined, or low-impact projects.

c) Wherever possible, existing structures should be used. New levels of decision-making and bureaucracy may only serve to delay the implementation of decisions. On large-scale projects, issues arising rapidly require quick action.

Use of the existing administrative structures implies the capability to act efficiently and in a timely manner, which may not always be the case. Streamlining the existing decision-making process or development of a special organizational structure may be required.

Attempts to improve the efficiency of the process, however, should not ignore the emphasis on a co-operative approach. Decisions, even though efficiently and rapidly

arrived at, will be of limited value if conceived and implemented in isolation by government, the proponent or the community. Alienation of any of the interested parties will make successful management planning difficult.

Project characteristics and requirements will differ as will the administrative contexts within which each project exists. Therefore the description of a single, organizational model to satisfy all projects is neither possible nor appropriate.

Two examples of possible, alternative, organizational models are described here. They differ principally in terms of the degree of control exercised at the community level. Either model can be modified to fit particular project situations.

Government-based Management

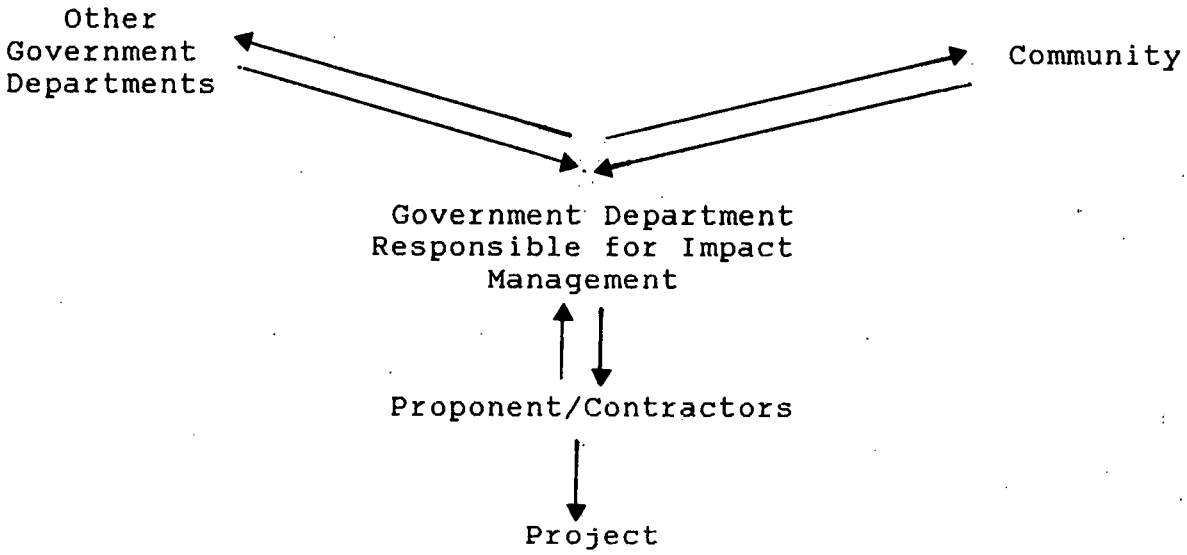
The type of organizational structure most commonly found is a government-based management. This structure is appropriate for smaller-scale, short-term projects where effects on the community are expected to be minor, or where there is a familiarity with managing this type of project, such as the management of either hydro projects in remote areas or highway construction.

Primary responsibility for management is assigned to government and specifically to the appropriate department, such as the Department of the Environment for hydro projects and the Department of Transport for highway projects.

This approach assumes that the department in question has the capability to deal with issues outside its normal responsibilities without any special organizational arrangements. For example, if a project managed by the Department of the Environment requires action involving social services, can Environment generate the appropriate action from Social Services? Cooperation between departments is clearly a pre-condition for successful impact management.

The organizational structure can be represented as shown in Figure 2.

FIGURE 2. IMPACT MANAGEMENT:
GOVERNMENT-BASED ORGANIZATIONAL STRUCTURE



Under this organizational structure the department is responsible for:

- organizing the monitoring and regulation of the activities of the proponent and its contractors. In some cases, the department may assume responsibility for monitoring and regulation itself. In other cases, it may delegate responsibility to other departments. For example, health and safety issues are normally regulated by Departments of Labour;

- co-ordinating decisions on strategies to deal with impact issues and monitoring their implementation. Where such issues are outside the normal mandate of the co-ordinating department, decisions would be made in consultation with staff from other departments who would assume responsibility for their implementation;

- acting as the contact between the community and the project. Community concerns can be brought to the department responsible for impact management for discussion and resolution; and

- acting as a clearing house for information about the project for industry, government, and the public.

In some cases, the project may involve both federal and provincial governments as in, for example, any offshore-related construction projects. In these circumstances, if the proposed organizational structure for the Hibernia development can be taken as a model, there will be two groups with responsibility for impact management. One is the Canada-Newfoundland Offshore Petroleum Board and the other is the Newfoundland Department of Energy. Precise definition of management responsibilities is necessary in these circumstances.

Community-based Management

This type of organizational structure may be most appropriate for large-scale, long-term projects in which significant effects on the community are anticipated. Decisions are made at the community level rather than at the "head office" level of government. The model described draws on elements of organizational structures which have been used in New Zealand to manage large-scale energy projects.

Unlike the previous model, the normal decision-making processes of government are assumed to be too slow to implement the necessary actions, and a special decision-making structure is required that includes a much greater role in the decision-making process for the community.

Co-ordination and co-operation are needed <u>within</u> each interest group. At the government level, (national, provincial, and regional), there should be a lead department, committee, or agency, responsible for co-ordinating all activities that fall within the jurisdiction of that level of government. Similarly, at the community level there must be co-operation among the different interest groups within the community or region affected.

This co-operation could take the form of co-ordinating committees, councils or task forces, whose function is to pool information, to identify issues, and to state priorities regarding the project.

By establishing groups for each cluster of interest, such as different levels of government, labour, service agencies, and community organizations, the basis for a single, overall project co-ordinating committee is developed. The committee is then established to address the various concerns associated with the project and to find appropriate ways to deal with them.

The establishment of a single organization for all major interests represents a "one-window" approach to management and planning of the project. It would function as:

- a forum for discussion of project-related issues and a link between the various interest groups;

- a local decision-making body to identify and implement, or arrange the implementation of, strategies to deal with the issues; and

- a clearing house for information about the project by collecting and distributing that information to industry, government, and the public.

For such an organization to work successfully, the following pre-conditions must be met:

- the establishment of such an organizational structure must be based on a formal agreement between all groups affected. The "one-window" approach will not be successful unless all interested parties are prepared to adopt it;

- the responsibilities of the organization must be clearly specified and the relationships defined between its membership and the groups represented by those members;

- the organization must have "legitimacy", i.e., it must represent all affected groups and not just a select few;

- the organization must have adequate resources to carry out its functions, i.e., managerial, administrative, research, and other staff skilled and experienced enough to perform the necessary tasks and sufficient financial resources to carry out those tasks; and

- the power to implement the decisions made by the organization. This item is the most essential. Responsibility for providing social, economic, and physical infrastructure for the most part rests with government. The extent to which governments will transfer their responsibilities to a non-government, community-based organization is open to question.

The organizational structure would look like that illustrated in Figure 3.

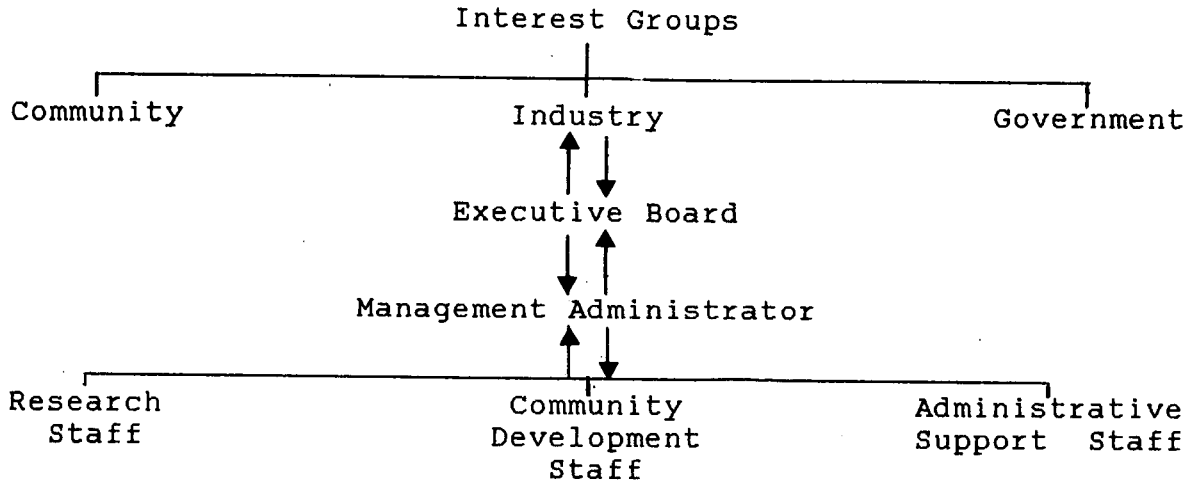
The Executive Board acts as the chief decision-making body responsible for determining which issues deserve attention, deciding how they should be addressed, and ensuring that they are implemented. A series of sub-committees for particular issues, such as housing, transportation, and health, would report to the Board on specific issues.

Both the Board and the sub-committees would have access to information and technical expertise through the support staff.

The research staff would collect and analyse data at the request of the Board and the sub-committees to provide a basis for decision-making by monitoring selected indicators to determine the outcome of programs. The research staff would also provide information about the current and expected status of the project to all interested parties through newsletters and annual reports.

The community development staff would be working in the field implementing local development strategies and acting as a source of information about local issues and concerns. As fieldworkers they would be expected to provide input on policy to the Board and the sub-committees. Community development workers may include community development specialists, municipal planners, social workers, public health nurses, and industry information officers.

FIGURE 3. IMPACT MANAGEMENT:
COMMUNITY-ORIENTED ORGANIZATIONAL STRUCTURE



Administrative support is essential for the success of this type of management planning organization. A Management Administrator should be appointed whose role would be to co-ordinate the work of the Board and the sub-committees and to see that its wishes are carried out by the support staff or the appropriate agencies of government, industry, or the community.

Some communities may be fortunate enough to have individuals with the appropriate skills to fill the positions described but many will not. It may, therefore, be necessary to train management from local people who have both and understanding of, and commitment to, the project area.

FUNDING

The implementation of any of the strategies described in this Guide will involve significant costs to government, the proponent, and the community. These include the capital costs either of building a new road or a recreation

centre, or of servicing a subdivision. They may also include the operating costs of running the recreation centre, providing additional social workers, and running a community information program, and the administrative costs of impact management.

The question of who should pay is a complex one and several funding options are possible. Funding arrangements will depend on a number of factors:

- the effects of the project, the strategies to be implemented, and costs to be incurred;
- whether the proponent is a private corporation or government; and
- the socio-economic and political context of the project and the arrangements that can be negotiated between the corporate proponent and government.

On-site/Off-site Funding

Arrangements might be reached whereby the proponent would be responsible for all project-site costs, whereas government would fund off-site infrastructure and services.

If workcamp accommodation were to be used, for example, the proponent would assume all costs associated with the construction, operation, and dismantling of the camp. At the same time government would assume responsibility for new infrastructure outside the project site, including highways, water, and sewer, and health and education services.

The assumption is that off-site infrastructure and services are usually the responsibility of government. Taxes and royalties paid by the proponent, plus income and business taxes from companies and individuals associated with the project, contribute to general revenue funds for these items.

In some cases in which this funding strategy has been used, for example, the Tumbler Ridge coal development in British Columbia, the project has been subject to full municipal taxation rather than being allowed to pay a grant in lieu of taxes.

Proponent-funded Infrastructure

In some instances, agreements have been reached in which the proponent pays for specific capital facilities used by the project and by the population coming to the area as a result of the project. These might include either servicing costs of new subdivisions if the workforce is to be accommodated off-site, or a new water supply, refuse disposal site, or other facilities required because of the project.

Special Taxation

To ensure that all costs of the project are met by the project rather than by the community, a number of funding agreements have been reached in which the project is subject to special taxation arrangements.

In North Dakota, for example, a coal severance tax, coal conversion tax, and an oil and gas production tax were levied instead of property taxes on production. Funding for affected communities came from these taxes rather than from any direct funding from the coal developers. The taxes were collected by the state and were redistributed to affected communities.

Disturbance Funds

Disturbance funds are normally negotiated between the proponent and the community or government. A once-only payment is made by the proponent as a form of compensation for community disruption caused by the project.

A form of disturbance fund was negotiated by the Shetland Islands Council as compensation for the disruption caused by the building of the Sullom Voe oil terminal. Interest from the reserve fund into which these monies were placed was used to fund new investments in local business. The balance of the fund was intended for use to relieve social and economic hardships resulting from development.

Joint Funding

Joint funding of impact management strategies by the proponent and government may be negotiated. Such an arrangement could apply to any management strategy but joint funding of monitoring projects seems to be the most common.

Government Funding

Government funds can be made available in ways other than the redistribution of project taxes and royalties.

Shetland, for example, was given special area status when the Sullom Voe terminal was constructed, making the area eligible for funding from a variety of government sources.

Communities may also be made eligible for federal or provincial grants, loans, or loan guarantees. United States legislation, such as the Inland Development Assistance Act and the Oil Shale Commercialization Act, offer planning grants, loans, and loan guarantees to communities affected by energy developments.

Government may treat management and other project costs as part of a broader regional development strategy. The Canada-Newfoundland Offshore Development Fund, for example, will lead to investment in infrastructure and training programs. Although this funding is not project-specific, it represents a funding strategy that will benefit the industry as a whole.

Front-end Financing

A major difficulty facing many communities is the need for front-end financing to put in place the relevant impact management strategies. Funding assistance and loan guarantees may be available from federal and provincial sources. There are also examples (U.S. Navy, Norsk Hydro) of the proponent offering financial assistance or loan guarantees for front-end financing.

Community Revenue Funding

If the project offers business opportunities that could benefit the community, the revenues, if generated in time, could be used to fund impact management strategies.

The Sullom Voe Association has earned revenue as a shareholder in the construction, development, and operation of the Sullom Voe oil terminal and through its involvement

with catering services, and port and harbour services. Revenues generated from this non-profit organization are used for the benefit of people in the region.

Investment Funds

The Swedish government encourages companies to make a deductible allocation of profits to an investment fund during the life of the project. These funds may be used to create alternative employment opportunities or used later during the recessionary wind-down stage.

This attempt, together with the reserve fund approach, is one of the few to provide funding in anticipation of wind-down.

Whichever funding strategy or strategies are chosen, it is most important that there is a clear commitment to a funding strategy, and that the strategy is in place before the project begins.

Any funding strategy should:

- cover all foreseeable costs of the management strategy in question;
- have built-in flexibility to cover additional unforeseen costs;
- be responsive so that needs arising quickly can be dealt with immediately;
- specify the contributions (in cash or in kind) expected from each of the parties involved;
- have a timetable for the commitment of funds; and
- specify the process by which funds are to be committed to particular impact management programs or projects.

PART IV - SOURCES OF INFORMATION

The strategies outlined in this Guide are offered as a starting point for decisions about managing the effects of large-scale construction projects. When considering individual strategies in relation to a particular project, more information will probably be needed. This section of the Guide provides a list of sources for additional information on these and other strategy options.

Two types of information source are described. First, institutions, agencies, and departments are identified in which are likely to be found individuals with expertise useful both to the community and to the proponent. These individuals will also have access to published material as well as to other contacts.

The second source of information is published material. The material listed here represents only a small selection of that available. It is intended only as a representative sample of material which deals wholly or in part with the strategies discussed. In choosing what to include or exclude, the main criteria are that the material:

- deals with community impact assessment and impact management strategies;
- does not require a specific technical background for it to be useful; and
- can be obtained relatively easily.

INSTITUTIONS, AGENCIES,AND DEPARTMENTS

Construction projects may come either under the jurisdiction of the federal or provincial governments or under joint jurisdiction. Municipal governments also may be involved with the project.

Within the federal government, useful contacts might be found in regional offices of:

- Environment
- Parks
- Agriculture
- Forestry
- Fisheries and Oceans
- Energy, Mines and Resources
- Health and Welfare
- Labour
- Transport
- Ports
- Coastguard
- Public Works
- Regional Industrial Expansion
- Statistics

Within the Department of Environment is the Federal Environmental Assessment Review Office (FEARO), which co-ordinates activities under the federal Environmental Assessment Review Process (EARP). Any activity of any federal department, board, or agency is subject to this review process if the activity:

- might have an effect on federal government responsibility;
- would require federal government financial commitment; or
- would be undertaken on lands administered by the federal government, including those offshore.

FEARO can provide information about the review process, about projects that have been previously subject to review, and about individuals and institutions involved in impact assessment and impact management activities. This last item is discussed in more detail later.

At the provincial level, contacts can be sought through the provincial equivalents of those offices listed above, plus departments or agencies that are responsible for matters including:

- urban and rural planning and development
- social services
- education
- recreation
- tourism

Institutions of higher learning can be sources of useful contacts, and university libraries are the main source of the publications listed. FEARO publishes a list of universities that offer courses in environmental impact assessment (Couch and Rigby 1986).

The directory indicates eight institutions in the Atlantic region that offer courses in some aspect of environmental assessment and management. It lists the names of individuals involved in teaching these courses plus their recent publications in the field. The directory also includes the activities of university extension services and institutes.

Other organizations that may be able to provide expertise regarding effects of projects and their management include:

- the proponent
- public interest groups (such as environmental groups, church organizations, and the Community Planning Association of Canada)
- social planning councils
- labour unions
- professonal associations (such as the Atlantic Planners Institute, engineers, and social workers)
- other communities and agencies who have experienced similar developments (see, for example, construction projects in the Atlantic region described in Gardner 1985).

PUBLISHED SOURCES

The following list is only a brief list of published material dealing with community-based impact assessment and impact management. Each item listed has a bibliography which represents additional sources of information on particular topics.

These items are obtainable through university libraries and many can be obtained through the public library system.

a) Community Development

Dorsey, Jane, and Ellen Ticoli (eds.). 1982. The Nuts and Bolts of Community-based Development. Edmonton Social Planning Council, Edmonton, Alberta.

Ross, David, and Peter Usher. 1986. From the Roots Up: Economic Development As Though Community Mattered. James Lorimer and Co.

b) Impact Assessment

Bowles, Roy. 1981. Social Impact Assessment in Small Communities. Butterworth's, Toronto.

Canter, L.W, S.F. Atkinson, and F.L. Leistritz. 1985. Impact of Growth, A Guide to Socio-Economic Impact Assessment and Planning. Lewis, Chelsea, Michigan.

Couch, W.J., and B. Rigby (eds.). 1986. Environmental Assesment in Canada, Directory of University Teaching and Research 1985-1986. FEARO, Ottawa.

Finsterbusch, Kurt. 1980. Understanding Social Impacts: Assessing the Effects of Public Projects. Sage Publications, Beverly Hills, California.

Finsterbusch, Kurt, Lynn G. Llewellyn, and C.P. Wolf. 1983. Social Impact Assessment Methods. Sage Publications, Beverly Hills, California.

Leistritz, F. Larry, and Steve H. Murdock. 1981. The Socio-economic Impact of Resource Development: Methods for Assessment. Westview Press, Boulder, Colorado.

Northern Alberta Development Council. 1982. Community Impact Assessment Handbook. Peace River, Alberta.

Soderstrom, E.J. 1981. Social Impact Assessment. Praeger, New York.

Tester, Frank J., and William Mykes. 1981. Social Impact Assessment: Theory, Method and Practice. Detselig Enterprises, Calgary, Alberta.

Waiten, Cathy M. 1981. A Guide to Social Impact Assessment. Prepared for the Research Branch, Corporate Policy, Indian and Northern Affairs, Ottawa.

Wildman, Paul, and Geoff Baker. 1985. The Social Impact Assessment Handbook: How to Assess and Evaluate the Social Impact of Resource Development on Local Communities. Social Impact Publications, Armidale, NSW, Australia.

Wolfe, Larry D.S. 1987. Methods for Scoping Environmental Impact Assessments: A Review of Literature and Experience. Report prepared for the Federal Environmental Assessment Review Office, Vancouver, B.C.

c) Impact Management

Boothroyd, Peter. 1984. The Keephills Steering Committee: an experiment in community-based impact monitoring. Social Impact 87/88/89: 12-14.

Carley, Michael J., and Eduardo S. Bustelo. 1984. Social Impact Assessment and Monitoring. Westview Press, Boulder, Colorado.

Connor, Desmond M. 1985. Constructive Citizen Participation: A Resource Book (Revised edition). Development Press, Victoria, B.C.

Davidson, J.E. 1984. Monitoring and management of social and economic impacts - the experience in B.C. on hydroelectric dams. Social Impact 87/88/89: 22-27.

Detomasi, Don D., and John W. Gartrell. 1984. Resource Communities: A Decade of Disruption. Westview Press, Boulder, Colorado.

Gardner, Michael. 1985. Comparison of major construction projects and offshore hydrocarbon developments in Atlantic Canada. Environmental Studies Revolving Funds Report No. 015, Ottawa.

Gilmore, John S., and Mary K. Duff. 1974. A Growth Management Case Study: Sweetwater County, Wyoming. University of Denver Research Institute, Denver, Colorado.

Gilmore, John S., and Mary K. Duff. 1975. Boom Town Growth Management. Westview Press, Boulder, Colorado.

Halstead, John M., Robert A. Chase, Steve H. Murdock, and F. Larry Leistritz. 1984. Socio-economic Impact Management: Design and Implementation. Westview Press, Boulder, Colorado.

Leistritz, F. Larry, and Brenda Ekstrom. 1985. Social Impact Assessment and Management: An Annotated Bibliography. Garland Publishing, New York.

Leistritz, F. Larry, and Steve H. Murdock. 1986. Impact management measures to reduce immigration associated with large-scale development projects. Proceedings, Conference on Speculative Migration and Community Impacts, Memorial University of Newfoundland, St. John's, Newfoundland, 6-7 February 1986. Institute for Social and Economic Research, Memorial University of Newfoundland, St. John's, Newfoundland.

Myhra, David. 1980. Energy Plant Sites: Community Planning for Large Projects. Conway Publications Inc., Atlanta, Georgia.

Northern Alberta Development Council. 1984. Interagency Coordination Handbook. Northern Alberta Development Council, Peace River, Alberta.

Reiff, Isabel S. 1976. Managing the Social and Economic Impacts of Energy Devleopments. Prepared for the U.S. Energy Research and Development Administration, Washington, D.C.

Roberts, Richard, and George Kupfer. 1985. Growth Management Strategies: Recommendations to Assist in the Management of Boom Bust in the Beaufort. Report prepared for the Energy, Mines and Resources Secretariat, Government of the Northwest Territories.

Roberts, Richard, Lynn McNeill, and George Kupfer. 1985. Dictionary of Growth Management Strategies. Report prepared for the Energy, Mines and Resources Secretariat, Government of the Northwest Territories.