

# The value of longitudinal research as a basis for subsequent social impact assessment

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by

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## Introduction

As an important part of the planning and implementation of projects, programmes and policies, social impact assessment (SIA) is a process that is now used worldwide (Burdge, 1998:3-10). It is defined as a process that uses methods of social research and analysis, as well as monitoring and public involvement (Taylor, *et al.*, 1995). But although definitions of SIA encompass social research, practice is often limited by the existing research base. Little social research is conducted with the specific goal of improved SIA practice.

In particular, comparative analysis for the projection of effects is an integral part of the social assessment process (Taylor *et al.*, 1995; Burdge, 1998). So comparative case studies using systematic social research have a key role to play in SIA. Fifteen years ago, early in the world-wide development of the field, Freudenburg and Keating (1985) made this point, that “extrapolation” about comparative cases with known impacts was a basic technique for anticipatory SIA. But they noted “The frequent failure to make use of the relatively straightforward technique may not be due to oversight, but to the fact that the previous knowledge is often not available. Scientists cannot extrapolate from guesses alone; they need valid, reliable, empirical data” (1985:583-4). Their call for a stronger research base to SIA seems largely to have gone unheard - and for at least ten years!

The purpose of this sort of research base is not simply empirical, or descriptive, either. It is now accepted that social assessment should be tied to a theoretical or conceptual framework and, ideally, the theoretical perspectives that are so much a part of the academic social sciences should be informing and guiding the field. Although there have been attempts to make this relationship explicit (Rickson *et al.* 1998; Taylor *et al.* 1995) most past and current work appears to have been produced in a theoretical vacuum. Reasons for this omission may include the relative newness of the field, its legislative and pragmatic origins and directions, and the diversity of backgrounds among practitioners. On the other hand, it is sometimes very difficult to translate the social science literature into terms that facilitate its use or application to the SIA process.

In most SIA work there is a wealth of official and other statistics and empirical data to draw on for base-line data or social profiling. Time series of these sorts of data allow for trend analysis, which is one of the basic tools used in developing scenarios of change for social impact prediction. Where there is a sufficiently robust set of data, such as statistics on inter-industry economic relationships, then it is also possible to develop tools such as multipliers for prediction of direct and indirect employment and expenditure impacts.

We contend in this paper that the emphasis in most SIA's tends to follow the easy availability of these sorts of data. That is, there is often ample material to develop the social profile or base line conditions, and carry out some trend analysis and projections, sometimes with the use of multipliers, and even quantitative modelling. Analysis of issues identified through consultation with interested and affected parties in the affected area is generally pretty good. There is often much less thorough and rigorous development of scenarios of change using comparative cases, through the development of conceptual models and analysis of likely webs and chains of effects. Estimations of the potential likelihood and magnitude of these effects is usually negligible and there appear to be few tools to guide this work.

We examine here the importance of experiential and comparative research that develops both an empirical data base and conceptual frameworks for SIA. An example of longitudinal research into community formation and change in New Zealand resource communities is presented. Models of the SIA process as both a source and user of comparative cases are discussed.

## The experiential and conceptual basis for SIA

The relationship between empirical and inductive (concept developing) research and the SIA process was developed and illustrated by Taylor *et al.* (1995:114-117) with a discussion of the application of soft-systems approaches to SIA practice. In this process, data gathering is a dominant activity in:

- social profiling
- social monitoring
- evaluation studies

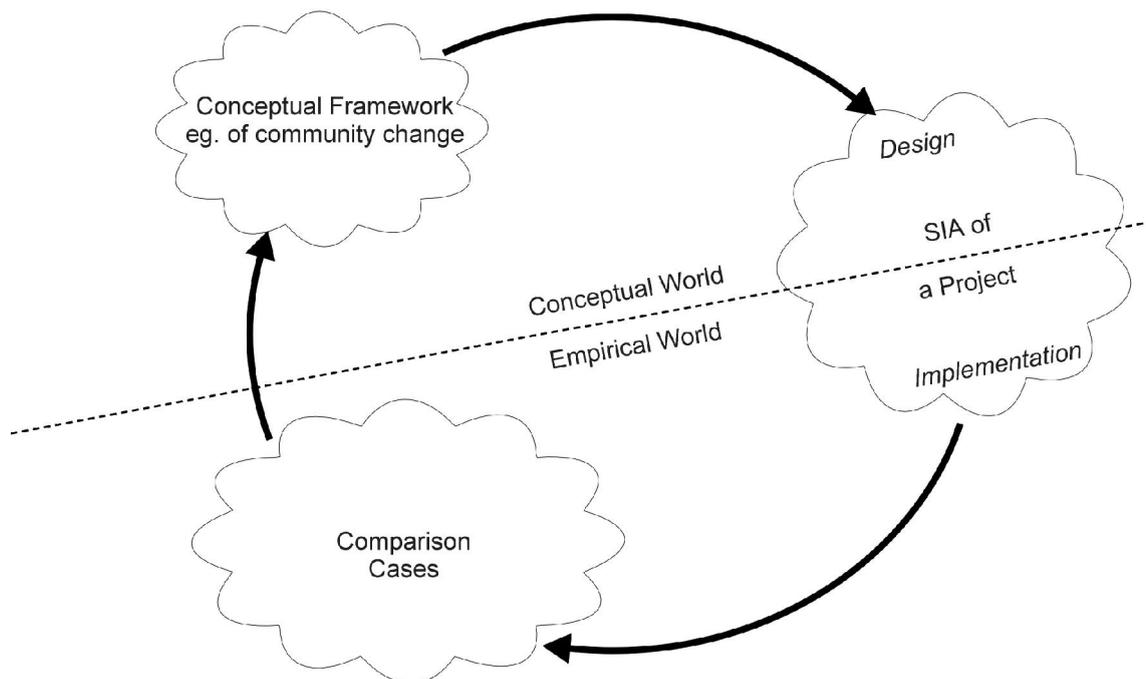
Conceptual development takes place in;

- formulation of conceptual frameworks to assess effects
- the application of comparative studies and scenario development to the estimation of effects

A simplified diagram of this process of experiential learning is shown in Figure 1.

**Figure 1**

### Experiential Learning in SIA



Empirical and inductive research provides the necessary “road maps” for future SIA. But suitable comparative cases are often limited. Efforts to develop full scenarios of change are therefore frustrated.

There are two major sources of empirical data and conceptual development for SIA, the first is comparative cases generated through independent, ideally longitudinal, research. The second is work carried out as part of particular SIA cases, usually as part of social profiling and monitoring, and sometimes as part of evaluations and reviews, or ex post studies. So SIAs themselves both use AND generate research findings that can in turn feed into other work.

## **Example - research on resource community formation and change in New Zealand**

The natural resource sectors such as agriculture, mining, energy, forestry, fishing and tourism will experience increased global pressure for utilisation in the first ten years of the 21<sup>st</sup> Century. Future development projects, technological change, resource conflicts and resource policy initiatives will all place heavy demands and pressures on the impact assessment process. One focus for impact assessment will be on the people who live and work at the interface between societies and their natural resource base. These are the “resource communities”.

Yet, despite a large legacy of rural sociological and community research, changes in resource communities are often poorly conceptualised for the purpose of impact assessment and there is no unanimity regarding conceptual frameworks of community formation and change for SIA practice. There has been limited longitudinal research and development of conceptual frameworks for understanding the processes of community formation through economic and resource management restructuring, emphasising a comparative approach (Tykkylainen and Neil, 1995:31).

One example of a longitudinal research programme is the “Resource Community Formation and Change” programme funded by the New Zealand Foundation for Research Science and Technology over a four year period since 1996<sup>1</sup>. The focus of the research is on communities that depend on the primary production or processing of natural resources, which we refer to as resource communities (Taylor and Fitzgerald, 1988). The aim of the research has been to provide baseline data and an understanding of community formation and change in rural New Zealand. It is expected that by providing increased knowledge and understanding of the processes of social change in communities that depend directly on the primary production or processing of natural resources, the research will contribute to

- thinking about sustainable development and the relationship between people and communities and their natural resource base - as recognised in the Resource Management Act, 1991 (RMA), New Zealand’s principal legislation for resource planning and environmental management;
- natural resources policies and plans;
- the assessment, monitoring and evaluation of resource consent applications as required under the RMA;
- planning of social services by central and local government and private sector providers;
- improved social assessment practice through substantive baseline information for future social assessments in the case study areas;
- improved social assessment practice through improved understanding of the processes of community formation and change in these types of communities.

Between 1996 and 2000 the research has examined community formation and change in the six resource sectors of forestry, mining, agriculture, fishing, energy and tourism. A number of methods have been used including:

- a review of experiences in resource communities in New Zealand and overseas, emphasising cycles of social and economic change, technology development, labour processes and the role of the state and private sector;

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<sup>1</sup> Funding from the Public Good Science Fund, contracts TBA601 and TBA801.

- a review of the international and New Zealand contexts for community formation and change in each of the six sectors;
- short profiles of 58 communities in the sectors using secondary data sources, including comparative census statistics;
- comparative case studies of 19 communities;
- comparative statistical analysis of 175 communities from the six sectors, according to social characteristics as recorded in the 1986 and 1996 Census.

The research has identified substantial social and economic change in these types of resource-based communities over the last 20 years. Major findings of the research include:

- Populations generally have fallen, with losses of key community people, particularly through redundancy and centralisation of jobs into larger centres.
- Changes in technology and the organisation of work, including subcontracting and shift work, have increased labour productivity while reducing employment overall. People commute further to work within sub-regional labour markets.
- Substantial industry restructuring has added to job losses, coinciding with restructuring and centralisation in social services and other sectors.
- Local over supply has reduced the cost of housing and attracted newcomers, often characterised by low social-economic status, higher proportions of Maori, more social and cultural diversity, and reduced community cohesion.
- Communities are also less clearly defined spatially, with many locales being absorbed into larger, composite communities or mosaics of communities.

Through comparisons with international experience (particularly in Australia and North America) the research has contributed to a wider conceptual framework of resource community change (Taylor *et al.*, 1999). Previous frameworks have tended to be based on single-sector explanations of boom-bust cycles, and use levels of population and employment as primary social indicators. These frameworks can now be expanded by an understanding of external linkages and processes that influence communities. Such external influences include shifting emphasis between the roles of the state and private sector, industry ownership and investment, technological changes, product markets and price cycles, environmental policy and resource management, and social policy and community development.

The research has strengthened the model of resource cycles in communities, adding an understanding of the interconnections between sectors at sub-regional levels, showing few rural communities are dependent on a single resource sector. They also provide an understanding of changing community boundaries within clusters of economic activity and regional mosaics of resource use. Furthermore, the research found persistent periods and pockets of rural poverty that are likely to hinder creative, participatory approaches to sustainable resource and economic development and proactive approaches to impact assessment (Taylor *et al.*, 1999).

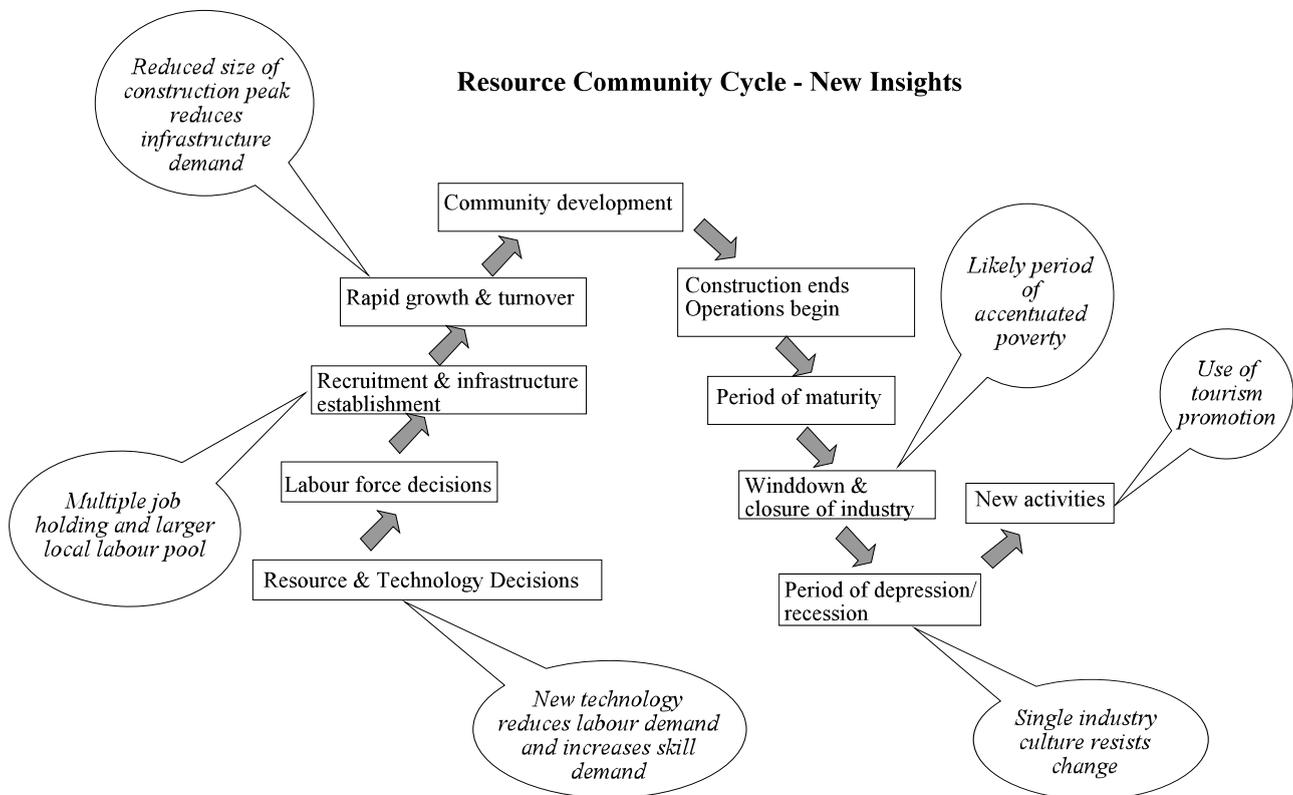
## Application of the resource community research findings to SIA practice

There are a number of ways by which the findings of the resource communities project can be applied to SIA practice. One example is through an improved conceptual framework based around the well-established concept of the resource community cycle (Taylor and Fitzgerald, 1988, Taylor *et al.*, 1995). Periods of rapid change in a community have been typical points for application of SIA. For instance, SIA has been utilised in planning and monitoring periods of rapid growth in a community as a result of incoming workforces. It has also been applied during periods of workforce wind down or plant closures. Less common, but still important, are applications of SIA during periods of relative economic stability, to assess social needs or assist with economic development initiatives and strategic planning.

The concept of the resource community cycle assists the SIA practitioner to understand the process of community formation and change, as rural communities go through cycles with their associated social and economic benefits and costs. It assists social and economic planning through a knowledge of the importance of diversified economies, sustainable resource management practices and the potential of community based strategies for social and economic development. A considerable amount of SIA work is undertaken in rural areas. Research provides the potential to move beyond the idiosyncratic to data that enables us to develop and understand the “bigger” picture.

Examples of how new insights from the research can be applied to the resource community cycle as formulated in previous work and the early stages of the present research programme (Taylor *et al.* 1999) are shown in Figure 2 and listed below. It will also be possible to utilise these sorts of findings to revise and reformulate this framework through ongoing iterations between research (theory building) and practice.

**Figure 2**



Some examples of insights from the research that can be applied to the model in Figure 2 are:

- New technology has changed the whole nature of labour force demand and the skills required. For example, construction of a hydroelectricity generation tunnel at Manapouri is using a massive Tunnel Boring Machine with a much smaller workforce than the original tunnel required. Fibre optic cabling has enabled the computerised operation of hydroelectricity generation stations from remote sites, with minimal on-site workforces - spelling the end of the hydro-electricity “village”.
- Multiple job holding by individuals in the rural labour force, including farm families, better roads, and a willingness to commute, means that the rural labour market has changed substantially, and moved from local to regional pools of labour.
- Reduced demand for immigrant workers means reduced demand for infrastructure such as workforce housing and associated facilities. The “new town” syndrome was last seen in New Zealand the early 1980s.
- Periods of workforce wind down and industry closures can lead to periods of economic depression and accentuated rural poverty. Newcomers taking advantage of low housing costs do not necessarily have the skills to take part in economic diversification and make heavy demands on social services.
- Long associations with a single resource industry in some communities develops a culture that reflects that industry and its work and social organisation. It appears that this dominant culture can be inherently conservative and inflexible in relation to economic diversification and change compared to those communities with a more diversified economic base and social composition.
- Diverse economies are better positioned to reduce the social effects of cycles of boom and bust. They have positive attitudes to economic change and entrepreneurship, including ‘newcomers’ starting and operating new types of businesses, and sustainable resource management practices.

### **Application and production of research through the SIA process**

An understanding of the experiential nature of the social assessment process over the project cycle helps us to ask questions about the potential to generate research through the social assessment process itself. We need to ask HOW and WHEN research is used in the SIA process.

A simplified diagram of the SIA process is provided in Figure 3. This diagram includes the main elements of the process as defined by Taylor *et al.* (1995:77-93): scoping, profiling, analysis of alternatives, estimation of effects, monitoring to inform mitigation and management, and evaluation. These core SIA activities are depicted in Figure 3 with an indication as to whether they mainly produce data that could be used to build comparative cases, or whether they are activities when there is, or should be, heavy use of comparative cases. The analysis is developed further in Table 1.

**Table 1 Application and sources of comparative case data by SIA activity**

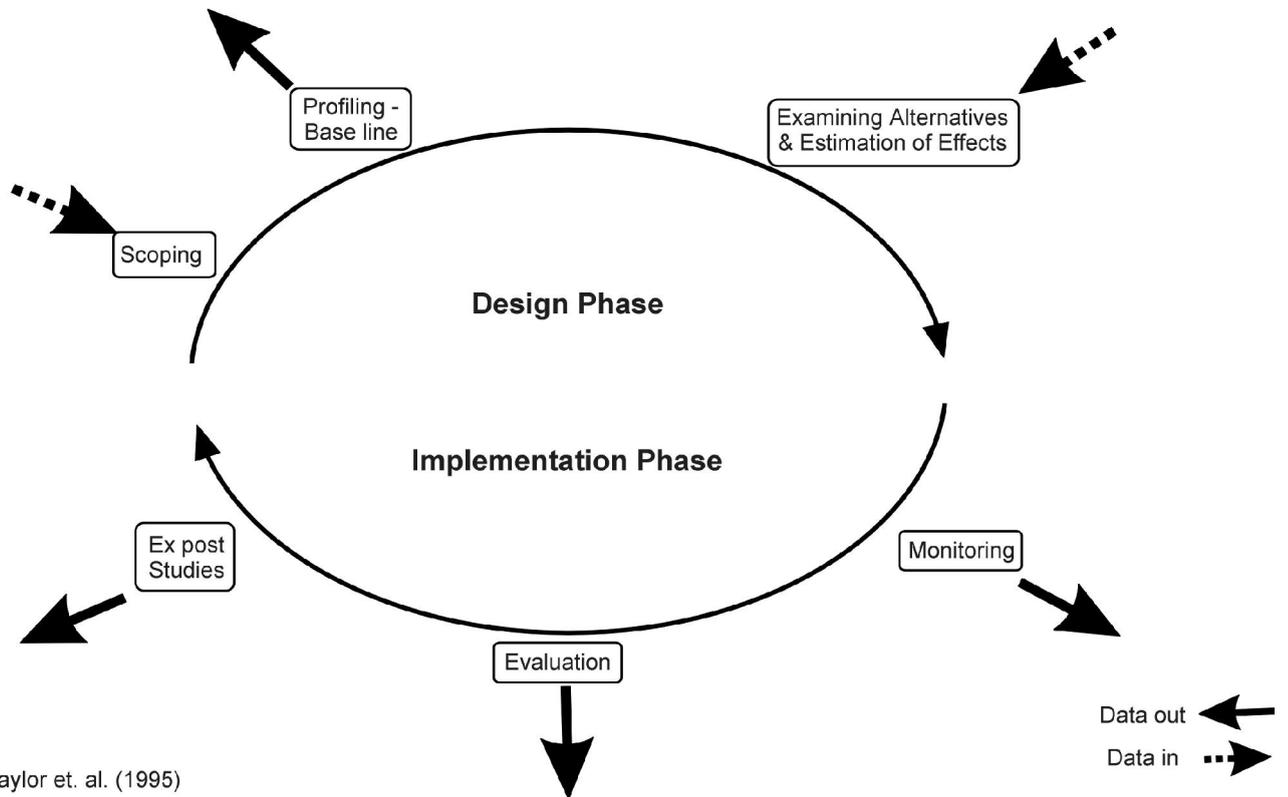
| <b>SIA Activity</b>                             | <b>Description</b>   | <b>Use and sources of comparative case data</b>  |
|---|--|--|
| <i>Scoping</i>                                  | Identification of key issues & stakeholders, & variables to be described/measured in the profile. Early consultation, and an initial identification of impacts and likely areas of impact. | This is a key period for establishing the likely level of use of comparative case study data in the analysis. Initial analysis is often based on practical knowledge of similar cases by the practitioner. Should also include systematic search of literature for relevant cases. |
| <i>Profiling</i>                                | Overview and analysis of social context and trends (base-line analysis)  | As “host” communities often experience more than one case of social impact the profile for a new case can produce important data on how previous events have impacted the area   |
| <i>Formulation of alternatives</i>              | Examination and comparison of options for change   | Comparative case material is used to help develop scenarios of change for the options in question.   |
| <i>Projection and estimation of effects</i>     | Detailed examination of the webs and chains of impacts generated by one or more options, with estimates of their likelihood and magnitude  | Comparative case material is used to identify the likely webs and chains of effects based on experiences in other similar cases or social environments.  |
| <i>Monitoring for mitigation and management</i> | Collection of information about actual effects, and the application of this information to mitigate negative effects and manage change in general  | Data gathered for the purposes of managing change in a particular case provides useful comparative case data about the actual effects experienced.   |
| <i>Evaluation</i>                               | Periodic, retrospective review of social effects   | Systematic looking back at a case using monitoring data or other additional analysis is an important source of comparative cases & learning- although this opportunity often goes begging.   |

If SIA practitioners are carrying out impact predictions (including the development of scenarios of change and effects) then they are likely to draw on information from comparative cases as illustrated in Figure 3 and Table 1. They should also draw on relevant conceptual frameworks to develop models of social change, such as the application of the resource cycles model in a community that is likely to experience a resource based project.

A diachronic model for this use of comparative cases in impact assessment is shown in Figure 4. This basic model was originally developed and published in 1977 by Burdige and Johnson (1998). It was then developed further by Rabel Burdige in 1987 (Burdige, 1998). Despite its long period of availability, the model appears to have had only limited recognition and use. We have developed the model further in Figure 4.

**Figure 3**

Application and Generation of Data to/from Comparative Cases During the SIA Project Cycle



**Figure 4 Diachronic model of comparative cases for impact assessment**

**Time (past) (present) (future) (far future)**

*Effect of impact source X on*

|                                       |   |       |                             |  |  |  |
|---------------------------------------|---|-------|-----------------------------|--|--|--|
| Impact Study (a)                      |   |       | $X_a$                       |  |  |  |
|                                       |   |       | $T_{2a} \rightarrow T_{3a}$ |  |  |  |
|                                       |   |       | (prediction)                |  |  |  |
| Monitoring (b)                        |   | $X_b$ |                             |  |  |  |
|                                       | $T_{1b} \rightarrow T_{2b} \rightarrow T_{3b}$                    |       |                             |  |  |  |
|                                       | (monitoring)  |       |                             |  |  |  |
| Longitudinal Comparative (c) Research | $T_{1c} \rightarrow T_{2c} \rightarrow T_{3c} \rightarrow T_{4c}$ | $X_c$ |                             |  |  |  |
| Control (d) Research                  | $T_{1d} \rightarrow T_{2d} \rightarrow T_{3d} \rightarrow T_{4d}$ |       |                             |  |  |  |

After Burdge (1998:34)

It can be seen from the model that an “ideal type” of impact study (a) predicting change from the present state to a possible future state as the result of a particular impact source, has the potential to draw on comparative case material of several types:

- monitoring and evaluation data (b) that are available from a similar impact source that has already taken place in a similar type of community;
- comparative research (c) that is longitudinal, i.e. that provides historical information and also possibly continues into the future, on a similar impact source in a similar community;
- research in a similar (control) community (d) that has not experienced such a source of effects.

There are some caveats that should be applied to this model. First, it is important to acknowledge that all social contexts are dynamic and changing. It is therefore often difficult to sort out what, specifically, is the source of social change, despite the availability of “control” research. Second, robust, longitudinal research should be an important source of empirical data and provide inductive, conceptual understanding of change, especially over multiple cases or sites. But profiling, monitoring and evaluation work undertaken as part of an applied SIA also have great potential to contribute comparative case data, certainly more often than usually happens. There seems, however, to be little incentive for SIA practitioners to get off the ‘treadmill’ of applied, action-oriented work and optimise the experiential, learning potential of their practice. Of course, it will be argued that clients of a impact study do not necessarily want to research the “big” picture - or contribute to the generation of research *per se*. In fact this tension between research and action is a natural tension in SIA (Taylor, *et al.*, 1995, chapter 2). One way around this dilemma may be the development of case-specific data bases by practitioner organisations such as IAIA.

## Conclusions

The comparative case is a fundamental part of social impact assessment, and longitudinal research is essential to the development of useful material on comparative cases. Longitudinal analysis that provides empirical data and a source of conceptual development can be derived both from specific research studies and from social assessment practice at various stages of the project cycle.

In considering where good practice in SIA might be in ten years time, we have drawn a number of conclusions in relation to longitudinal research and comparative cases.

- Project related SIA needs to be carried out with the potential for developing comparative case data and learning in mind, and to avoid the treadmill of case-by-case approaches. There are two key activities. The first is social profiling with analysis of the social context, and the second is monitoring and evaluation work.
- There is a need for wider monitoring frameworks and analysis to be aware of their potential to provide information on comparative cases. State of the “environment” monitoring and reporting by territorial authorities or central government is often at a very general level and could be aimed more specifically to provide information on comparative cases. For example, monitoring of the social impacts of land use change, transportation systems or the location of retail facilities could all provide information relevant to specific projects.
- The Foundation for Research Science and Technology has a major role supporting research such as the existing programme through the Public Good Science Fund. It is highly unlikely that longitudinal research programmes in support of impact assessment practice will be generated without central government support.

- There is a need also to encourage and support social science and resource management graduate students who carry out research projects that provide comparative case material. This support often requires only a low level of funding, such as assistance with living costs and field expenses. Internships for graduates to gain practical research experience is another option that should be considered.
- There is a need to develop a national bibliography and case study data base accessible on the internet. The New Zealand Association for Impact Assessment could help to set up and maintain this site. There is also a key role for IAIA in developing an international data base of relevant cases, drawing from and linking national data bases.
- Finally, there is a need to emphasise conceptual development - not just empirical cases. Practitioners need to understand and apply frameworks for understanding the typical processes of change that they experience, including the processes of community formation and change in resource communities.

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