

**THE APPLICATION OF SOCIAL SCIENCE TO PROBLEMS OF
SOCIAL AND ENVIRONMENTAL SUSTAINABILITY IN THE
RURAL SECTOR**

Presentation to the Seminar

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Introduction

To prepare this presentation I have asked the questions, “how has social science been applied to real life decisions in the rural context?” And, “how has this application contributed to the pursuit of social and environmental sustainability”. In addressing these questions I have focussed on the experience of myself and colleagues over the last ten years in particular. It has been an opportunity to reflect on our achievements in terms of broader society-environment goals.

For environmental or natural resource sociologists, but certainly not all sociologists, it is second nature to consider at all times the interactions between social and natural systems. The New Environmental Paradigm (Catton and Dunlap, 1978) has now been explicit in sociology for over 20 years. It was therefore heartening to hear recently the Commissioner for the Environment, Dr Williams¹, present a basic framework for sustainability that placed economic systems within social systems, that in turn lie within natural systems. While each system level can be analysed in its own right, analysis and policy making for sustainability needs to acknowledge at all times the interlinkages between them. Yet in the current revision of the RMA we have a strong move to limit the definition of the environment to the natural and built environment, excluding the social and economic environment as too problematic for efficient operation of the Act and the achievement of the Act's goals of sustainable development.

Despite the efficacy of an integrated approach, these more narrow approaches still prevail, often based on technical solutions to complex social problems of sustainable resource management. In a recent strategic meeting on possum management convened by the Royal Society, for example, there was a strong school of thought that the key contribution that social science could make was to assist with the marketing of available technologies, including bio-control, to the public. In contrast was the argument that social science should be part of the analysis of complex “natural” problems, considering them as both social and economic problems from the start.

The following are some recent cases where social science has been applied in rural contexts, with implications drawn for the application of social science to social and environmental sustainability.

The Rabbit and Land Management Programme

The Rabbit and Land Management Programme (RLMP), which operated for five years from 1989, was to achieve a reorientation towards sustainable land use in areas of the South Island that are particularly prone to infestation by rabbits, ultimately encompassing 98 properties. The programme, funded through the Ministry of Agriculture, sought to create fundamental changes in the basic philosophy and practices of land use and pest control. Set against a backdrop of the removal of government subsidies, generally, this programme actually provided substantial financial grants to participating runholders to give them breathing space to make changes. Issues addressed by the RLMP included the long-term suitability of these lands for pastoral farming as a monoculture, a reassessment of carrying capacity (stocking rates) under pastoralism, and a range of attitudes and practices which had a bearing on pest control field operations. There were also many administrative and political matters to consider following the end of

¹ Lincoln University's State of the Environment Address, Wed. 21 July 1999.

local pest boards and the creation of regional councils that now oversee pest management. A direct role for landholders in pest control raised questions about the finances, skills and farming systems required for sustainable, land-based farming in these semi-arid regions. It also raised questions about the role of the state in supporting rural private enterprise and the importance of local leadership and entrepreneurship.

Social and institutional monitoring was an integral part of the RLMP², providing information to assist the implementation and management of the Programme, and a base for drawing general conclusions on sustainable land management and planning. Social assessment work included early (1990) profiles of the farm community and pest industry, a first year review, a mid-term assessment, work on community development initiatives and a final assessment (Taylor Baines and Associates, 1996). The work included a number of social research techniques, including community profiling, two comprehensive farmer surveys, other smaller surveys, interviews, discussions with agencies, review of background documents and data bases, and small-group workshops with farmers and agencies.

Social monitoring identified a number of issues for farmers and communities that were fed into the evolving policies and management of the Programme. The mid-term and final social assessment, at the end of the Programme, identified a number of substantial changes in farmer attitudes and behaviour. These included, for example, land tenure change (freeholding with extensive retirement of conservation lands - an ongoing process), considerable rabbit fencing and subdivision of properties, greatly increased secondary (farmer) control operations, property planning, vegetation monitoring and diversification of farm household income through off-farm employment and alternative enterprises such as tourism. There was also considerable institutional change as the regional councils took on their role of pest management, and many community development initiatives were facilitated, including the formation of land care groups. Of course, efforts of the RLMP were apparently superseded by the illegal introduction of RCD and it will be of considerable interest to look in a few years at the extent and persistence of social change generated by the Programme.

The Programme allowed us to draw some important conclusions regarding the concept of sustainable land use and development, not as some form of "blue print" or prescriptive development strategy, but rather as an anticipatory and proactive approach that avoids unsustainable risks and outcomes" (Taylor and Baines, 1991). The key attribute of sustainable development is the establishment of management regimes that are based on a partnership between social systems and the natural environment. For these there is a hierarchy of interdependence, as follows

- I ecological sustainability (at an ecosystem level);
- II sustainable resource use (in this case based around, but not exclusive to healthy farming systems and backed by appropriate societal institutions) and
- III sustainable social and economic development (as in viable farm-family enterprises).

Ecological sustainability (reflected, for example, in land degradation, soil loss, flooding, or neophobia - bait avoidance by rabbits) requires ecological principles to be recognised and given status in management institutions along with other management objectives. So ecological, economic and social objectives are incorporated from the start. Sustainable resource use maintains productivity, along with

² The social monitoring was funded by the Ministry of Agriculture and Fisheries.

management systems such as family farming, skills and techniques for rabbit control, or institutional arrangements such as the Resource Management Act. Sustainable development requires viable farming systems that provide returns to the farm household through the vagaries of natural and economic cycles, and generate sufficient financial returns to fund rabbit control measures and arrest or, better still, reverse land degradation. Losses in productivity lead to further ecological and social-economic stress, personal and family stress, and social disruption. There are feedback loops between the three levels. It also became clear that, over long periods, much of the natural capital of the land (fertility, bio-diversity) had been extracted and transferred to financial capital, which then leaked away in the form of payments to family members no longer involved in the farming enterprise.

Changes in family farming

Family farming, based firmly in agrarian traditions, remains the organisational platform for agricultural production in New Zealand. But since the early 1980s, New Zealand farm families have increasingly diversified their sources of income from the core farm business operation (Benediktsson, et al., 1990; Le Heron, 1991; Rhodes and Journeaux, 1995). They do so to maintain farm household incomes, provide for retirement, and in many cases to defend farm equity and the possibility of family succession. Today, therefore, farm households are marked by their multiple economic activity, or pluriactivity. This multiple economic activity is primarily i) off-farm employment and ii) alternative, on-farm enterprises.

Over a five year period, there were several, interrelated studies by myself and Heather McCrostie Little, in particular a study of off-farm employment (Taylor and McCrostie Little, 1995), a study of alternative enterprises on farms (Taylor et al., 1997) and a study of farm succession (McCrostie Little and Taylor, 1997)³. In the course of these three studies 180 farm couples were interviewed using in-depth, structured interviews of a purposive sample, supplemented by literature reviews, scoping and community interviews, and field observations. The great majority of the interviews were conducted with farm couples and designed to provide for both farm women and men to tell their stories about changes to their farm, family and their personal lives. In a few cases single, male farm operators were interviewed. After the interviews were analysed in each study, participants were provided with a summary of results and invited to take part in a feedback meeting and discussion. This feedback step proved invaluable for validating findings and developing conclusions, including implications for rural policy.

The research has shown the social impact of the changed (reduced) role of the state as farm families pursue pluriactivity to maintain household income. Both off-farm employment and additional enterprises are a response to financial restructuring in New Zealand, and the agricultural sector in particular. The removal of government interventions at the levels of agricultural subsidies and rural services has been driven by successive governments since the mid 1980s. A private enterprise culture has predominated. Additionally, there has been wide social and economic change for women specifically and families generally. While it is governed by the local and regional labour market, off-farm employment, especially of farm women, is fundamental on a majority of New Zealand farms. Alternative enterprises, which range across a number of sectors, are also market driven. A characteristic is their niche nature and the ability of the farm entrepreneurs to adapt to market demands and command competitive marketing strategies. Alternative enterprises can be run separately from the farm operation having no connection with or influence on land use. Or, they can be integrated with existing or changed forms of land use.

³ All three studies were funded by MAF Policy, Wellington

Interlinked cycles of farm and family provide an explanatory model for the extent and timing of pluriactivity by farm households. The research confirms a traditional division of labour and decision making along gender lines for the farm and farm households. In comparison the picture changes dramatically for the alternative enterprises. Here there is no distinct gender division for roles or for decision making. Women have considerable involvement, as either major or joint operator. The research has shown that pluriactive New Zealand farm women commonly maintain four or even five major roles. For farm families, careers, personal relationships and life course intermesh with farm and family roles and obligations to provide a set of complex, and regularly stressful, challenges.

These research projects add to our understanding of the links between farm viability and farm family income, in the context of sustainable agriculture. There is a strong relationship between farm viability and sustainable agriculture. Whereas farm viability is the immediate, short-term concern of any farmer, sustainable agriculture is a more complex question to be addressed by succeeding generations and the wider community. In the face of short-term economic trends and climatic stress, such as the droughts experienced by many farmers in the 1980s and 1990s, farmers look to alternative means to maintain their household income through farm diversification, off-farm employment and alternative enterprises. Multiple sources of farm household income can enhance sustainable farming systems by taking pressure off a farm's natural resource base. The mix of economic activity undertaken by a farm household will depend on the natural, economic and personal resources available to them, external factors such as commodity price cycles, costs of capital, and the nature of the labour market, all balanced against personal needs. Productivity "gains", or even holding productivity in the face of bio-physical factors such as pests or a difficult period climatically, can turn out to be a short-term expediency that results in environmental degradation.

Sustainable tourism development

Tourism is a major component of the New Zealand economy and considerable growth has been experienced in recent years, with more forecasted. Many rural communities, having experienced multiple social and economic effects of economic restructuring over the past two decades, look to tourism as an economic development option. Indeed, they typically look to tourism as the "saviour" of their local economy, the big hope for rebuilding employment, maintaining or increasing population, and most importantly for reviving the local economy and social services. There are high expectations for business development, employment generation and infrastructure development. A two year programme of research into rural tourism in New Zealand compiled a database listing details of over 3000 businesses, and carried out a national survey of 500 plus operators and eight community case studies.

The case studies (Taylor and Warren, 1998) covered a range of rural localities and examined community capacity for sustainable tourism development, including the social and economic effects of tourism development. They have identified opportunities and constraints for rural communities developing sustainable tourism, and provided frameworks to assist communities in strategic tourism planning and management. Some communities had well established tourism products and local development strategies, others had only recently started. Two were predominately Maori communities. The research identified a need for coordination within local areas and between local, district and regional groups, as well as adjoining regions, such as the top of the South Island. Despite the major benefits of community identity and apparent social cohesion, local groups often struggle with the issue of cooperation or competition in establishing an agenda and the organisation to implement it. Publicity and promotion is usually the basis on which a local group is formed, although there is potential to work

on a much broader set of issues, and within regional strategic plans. Local government and organisations such as the Community Employment Group play a key role in supporting local group initiatives and individual business development, as well as wider networking and cooperation between local groups.

Rural tourism contrasts to mass tourism, with an emphasis on social and ecological impacts, scale and sustainability. It frequently has “eco” or “heritage” as a focus. There has been a dramatic increase in the amount of eco-tourism, based on management strategies primarily aimed at sustainable use of natural resources without major alteration of the local eco-system. A research project into eco-tourism in New Zealand (Warren and Taylor, 1994) has considered the impacts of different forms of tourism on the environment. If eco-tourism is to play an important role in the future development of many rural communities that are initiating or investigating eco-tourism projects, then information is needed on social and economic effects. The research identified strategies for enhancing and sustaining social and economic benefits and minimising costs of tourism development for the host communities. The concepts of social carrying capacity, specialisation, substitutability, resource cycles and community viability and development were used in a conceptual framework for examining a number of case studies of eco-tourism developments. These studies covered host communities with different resource bases, including national parks and marine mammals in particular. It is apparent that issues of social acceptability, cultural sensitivity and environmental sustainability are integral to the strategic planning of eco-tourism. These issues can best be addressed by a policy framework and process of impact assessment and strategic planning that are community based.

The Department of Conservation (DOC) is a key agency in a community based approach to conservation management, with the conservation estate providing a major natural resource base for tourism. A study of the social and economic impact of the Kahurangi National Park, which was gazetted in 1996, followed up a social and economic impact assessment carried out in 1993 as part of the decision making process (Taylor, et al., 1999). This study considered the impacts of the new Park on local economies, tourism and recreational use, examining management issues and interactions with neighbouring communities. The research develops longitudinal data on the effects of the Park for use in Park management and the investigation of future park proposals.

Since the Park was gazetted there has been an increase in demand for all types of walks, including lesser known tracks and short walks, by both domestic and international visitors. It is widely considered that the Park will continue to attract even more use. Corresponding impacts will need to be managed to protect the visitor experience and limit damage to natural values. Furthermore, there is concern about inadequate funding of facilities by DOC, including the creation of new amenities such as visitor centres. Issues for Park management are being tackled by the draft management plan for the Park, including issues such as helicopter access, mountain bike access, road proposals, hunting policy, water use and eeling.

There were characteristic falls in population from the mid 1980s as a result of economic restructuring, but since 1991 the populations of neighbouring communities have been relatively stable, although they are ageing populations and have a characteristic loss of young people that is typical of rural communities. There has been growth in tourism businesses in Golden Bay and Karamea, and to a lesser extent in Murchison over the last five years, although tourism remains seasonal. There would have been growth without the Park, but, nonetheless, Kahurangi is now a key feature in the promotion of the top of the South Island. To maximise social and economic benefits of the Park the study found a need for investment in amenities and information, from private, public and community sources. A proactive approach and close community liaison by DOC is supported by the neighbouring communities.

Similarly, a recent study by Gerard Fitzgerald (1999) found that there is considerable potential for agencies such as DOC to work closely with local community groups to advance goals of conservation and sustainable land management. Techniques that can be used are based on action research and community development principles. The Department has also conducted and funded a number of research projects on the topic of visitor perception, attitudes and satisfaction.

Resource communities

This programme is providing data and developing a model of community formation and change in rural New Zealand (Taylor, et al., 1999). It will assist in planning for sustainable resource use, provision of social services and building of stronger communities. The research this year has covered the social and economic characteristics of communities based on energy, fishing and tourism resources, adding to information collected in the first two years on forestry, mining and agriculture-based communities.

The research has analysed wider social-economic trends in the six sectors being considered, with working papers produced on each. Ten communities were selected from each sector and short profiles of them produced using secondary data sources. A comparative statistical analysis was conducted on 175 communities from all six resource sectors on the basis of the proportion of people employed in the sector workforces. In addition, ten more detailed community case studies have been prepared on the mining, forestry and agriculture communities, and a further nine case studies will be carried out this year on the energy, fishing and tourism communities.

The research has identified substantial social and economic change in these types of resource-based communities over the last 20 years. 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. Low cost housing has 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. 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.

The work provides a stronger conceptual and empirical basis for social assessment and resource planning, especially in communities that depend on the primary production or processing of natural resources. Future cycles of growth and decline are inevitable in these types of communities, necessitating a proactive approach by social service agencies, local government and the communities themselves in managing change. A particular challenge is posed by the evident link between community viability and sustainable resource use in the development and diversification of these resource-based economies.

The siting of waste management facilities

Analysis of core-periphery relationships is essential to the understanding of resource sustainability in rural areas. The final example of research in this paper is a three-year programme that aims to assist the process of urban and rural planning in New Zealand⁴. The research begins by identifying historical patterns and trends in landfill siting and then leads on to document actual host community experience of the effects of landfill siting decisions and operations (Baines, et al., 1999). There are now fewer, larger landfill facilities and landfill siting decisions are focussed around the desire to balance 'distance from residential areas' (reflecting costs to host communities) against 'proximity to waste sources' (reflecting costs to source communities). Overall, there is a clear trend towards greater separation distances from residential areas with the emphasis on more rural locations where farming is the predominant land use on or around the site. This trend reflects deliberate attempts to try to minimise the impacts of solid waste facilities on their host communities - seeking more remote rural sites, or sites with a degree of screening provided by topography or tree planting. There are typically fewer dwellings involved. But, as recent experience in Canterbury shows, there is considerable concern from host communities about protection of water quality and other natural environment features, as well as local 'quality of life'.

A comparison of a number of social and economic indicators of social disadvantage and powerlessness between host and source communities suggested that there is no overall, systematic bias towards relatively disadvantaged host communities in the site selection process for landfills. But comparison of selected host communities with alternative candidate host communities suggested that during the process of site selection, more powerful candidate communities are consistently more effective in avoiding final selection. While the planning process therefore appears to be sensitive to issues of physical effects, the social-demographic analysis suggests that there is an additional feature of the planning process to consider in relation to the fairness of the siting decisions taken. The findings suggest a need to analyse the socio-economic status of the various candidate host communities as part of an integrated approach to environmental analysis throughout the site selection process.

Conclusions

There are two major conclusions relating to this overview of our research effort and various case studies of rural research. The first relates to the shift in funding for such research, the second to the development of a conceptual base for understanding the social dimensions of sustainability.

Research funding

A small group of private sector researchers⁵ have carried out a large amount of research on rural social issues. Sustainability has, implicitly and explicitly, been a theme of their research. In the RLMP work, for example, it was an explicit goal of the overall Programme. In the off-farm employment research it was part of the conceptual framework of the research in terms of rural sociological research on sustainable agriculture. In the tourism research, sustainable tourism has been seen as a major objective for host communities.

⁴ The research has been funded by FRST projects TBA602 & 802.

⁵ Taylor Baines & Associates, CRESA, Fitzgerald Applied Sociology, Ruris Consulting.

During the 1990s, following state withdrawal from subsidising agriculture and a direct role in sectors such as mining and forestry, there was considerable funding by the Ministry of Agriculture for research on rural social change⁶. This might be dubbed the Pomeroy era, as the work was organised and greatly stimulated through the efforts of Dr Ann Pomeroy. The work reflected in part the Ministry's official recognition of social and environmental implications of their policy advice, along with the more obvious economic implications. Today the Ministry funds little, if any, social research, presumably indicating that a much narrower policy focus has now been adopted. With the exception of DOC, which does fund some social research, there appears to be little operational research that is focussed on rural, resource sustainability.

The longer-term longitudinal and fundamental analysis of social change and sustainability is now being carried out by social researchers primarily under the auspices of the Foundation for Research Science and Technology (FRST). It is therefore heartening to see in the "Blueprint for Change" that the Minister of Research Science and Technology (1999) has set both social and environmental goal statements for public research. These follow through into "Target Outcome Statements" such as "... healthy, diverse and resilient ecosystems that sustain nature and people" and the "sustainable use of natural resources". The challenge for social science is to see these goals translated into well-focussed research projects.

Conceptual development

A conceptual framework for examining issues of sustainable resource use, social change and community viability in rural areas needs to include an historical context and a wide economic perspective, including an understanding of technological changes and changes in social organisational structures, especially the role of the state. These are in addition to recognition of ecological constraints.

Pretty (1999) describes an "assets-based" model of agricultural systems - a model that can be expanded readily to natural resource based systems in general. The model is an extension of the concept of economic systems working within broader social and natural systems. In an assets-based approach, economic systems are seen to rely on flows that result from "the total stock of natural, social, human, physical and financial capital". Economists will be able to put value (prices) on some, but not all, of these flows. Sustainable resource systems accumulate stocks of these five assets over time, unsustainable ones run their total capital down. Furthermore, as indicated in our model above, there are important linkages or feedback loops between these assets. For instance, in pastoral farming systems there are loops through

- natural assets, eg soils, vegetation and water that support livestock
- social assets, eg family farming, land care groups
- human assets, eg skills and technology of pest control, the RMA that guides land use
- physical assets, eg local infrastructure, communications systems that support production
- financial assets, eg stocks of money, credit.

The assets-based model is a useful guide for policy making and research. But its use suggests a wide and coordinated approach between the economic, social and environmental agencies of government, so that an integrated framework of policy forms the basis for environmental improvement and social development in rural areas. Social researchers can assist, orientating their work more to encompass environmental issues. As social researchers we can help to address the Eleventh Commandment:

"Thou shalt inherit the holy earth as a steward, conserving its resources and productivity from generation to generation" (McCaskill, 1973).

⁶ For an overview see Anderson, Ed. (1996).

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