2 Social Assessment and TRC-Analysis

This chapter is a brief overview of social assessment in natural resource management. It describes the procedureused in social impact assessment and the use of Town Resource Cluster (TRC) Analysis as a framework for organising social assessment information in a resource management context.

Social Assessment

Social Assessment is an applied interdisciplinary field that emerged within the social sciences. Social impact assessment methods are tools used to predict the future effects of proposals on people, i.e. their way of life (how they live, work and interact with each other); their culture (norms and traditions); and their community (institutions and structures) (Armour, 1990).

To date, there is no generic method that can be used to identify and predict the social impacts associated with development proposals or changes in land and marine use or management. In addition, social impact assessment is a distinct process, in terms of its methodology and objectives to economic impact assessment. While there is considerable interaction between economic and social impacts, they are nevertheless distinct fields with different techniques, methods and objectives.

Although there is no generic method applicable to social impact assessment, the process has a number of procedural steps or stages which include:

1. Assessment
   1.1 Scoping
   1.2 Profiling
2. Prediction
3. Mitigation
4. Monitoring

The assessment component identifies the potential impacts of a proposal or project before the change has actually taken place. In other words, social assessment attempts to predict the likely impacts, at a community, individual and family level, that may result from some specific change. The assessment phase consists of two key activities: scoping and profiling.

Scoping identifies important issues that relate to the proposed change and determines the timing, depth and extent of analysis that may be required. This entails selecting variables necessary for social analysis; identifying possible and likely social impacts (both positive and negative); and identifying the geography or boundaries of any potential impacts. Scoping is one of the most important activities in the social assessment process because it focuses the assessment on issues of immediate relevance and importance to stakeholders and communities.

Profiling describes the social environment in order to provide a basis for assessing and understanding potential changes. Profiling may be used to develop a more detailed understanding of the demography of the area through the use of social indicators and the analysis of census data, or it may be used to describe the historical changes and processes that have occurred within the community. Profiling may also be used to identify contemporary issues within communities and to better understand the political and social structures that exist within a community or region.

After collecting detailed information about a particular community or region, the prediction component of social assessment uses existing information and social data to identify impacts that may result from the change. This can be achieved through different participatory mechanisms, such as discussions or interviews with community residents, community workshops and/or surveys, or through more quantitative social assessment techniques such as multi-criteria analysis or computer modelling. These impacts are evaluated to determine the probability of occurrence, the importance of impacts to those affected and the distribution of impact across groups and geographic areas.

As with any type of change, some individuals or groups within the community may benefit, while others may experience costs. If negative impacts are predicted, it is the role of the social impact assessment to determine how such impacts may be ameliorated or mitigated to produce the minimum degree of social disruption to those affected.

Monitoring is also a key component of the social assessment process. For any particular project or policy, a monitoring program should be developed to identify deviations from the proposed action, and to document any unanticipated impacts that may arise when a policy process or change is implemented. It is only through detailed monitoring that future predictions of impact can be enhanced.

One of the critical questions that confronts any social assessment process concerns the unit or units of analysis that are used in the assessment. Depending on the context and the objectives of the social assessment process, it may be appropriate to undertake the assessment at different institutional levels such as that of family, industry, stakeholder interest groups or through grouping specific types of resource users. Indeed, within a single social assessment process, the unit of analysis may vary depending on the specific research objectives that are to be addressed.

When undertaking a large scale regional social assessment process, one of the core questions that arises is that of defining community. In the context of a large regional social impact assessment, should community be defined in terms of a single town, hamlet or regional area? In a regional context, where changes may occur in the use of natural resources, a direct impact on one town may have consequent and flow-on impacts on other towns in the region. In this example, should

community be defined as a collection of inter-dependent towns within a region? If this is the case, then questions arise as to how we define the boundaries of community and distinguish one community, or collection of towns or communities from another? This issue is one of the more basic questions underlying social impact assessment. It again focuses on what the appropriate 'unit of analysis' is in the social impact assessment process.

This overview of the social impact assessment emphasises that there are multiple stages or processes within the assessmen. Therefore the current study is not a complete social impact assessment, but simply one component of it. It is part of the profiling phase of the social assessment process, where communities and their relationship to marine fishery resources are defined and described.

The information in this report is a first step if potential social impacts associated with changes in fisheries resource use and management are to be understood. Through the framework of TRC-Analysis, this report provides 'baseline' descriptive information about the commercial fishing industry in coastal communities and the relationship between these communities and areas of fisheries resource use.

The report may provide useful information in understanding who might be impacted by future changes in fisheries resource use or management and the regional and community locations of these impacts. However, this study does not constitute a complete social impact assessment. Given a specific change in fisheries resource use or management, additional social assessment research will be required and would be based not only on the quantitative assessments as presented in this report but often extensive qualitative and participatory research with those potential affected within communities. The current report provides information on which to base more extensive and focussed social impact assessment research and participatory programs where required.

Town Resource Cluster Analysis

TRC-Analysis is a methodological framework for examining the social impacts of changes in resource use or management in a regional planning context. The approach is based on several core conceptual and methodological principles, but may be modified to meet the needs of specific impact assessment and resource management contexts (Fenton, in press). TRC-Analysis is not an alternative to any specific and established social impact assessment techniques. It provides a framework in which existing assessment techniques maybe usefully included and embedded.

Objectives of TRC-Analysis

There are three core objectives of TRC-Analysis, which include (i) the identification of Town Resource Clusters (TRCs), (ii) an assessment of the relationship of TRCs to specific areas of natural resource, and (iii) a description of TRCs in relation to specific indices of vulnerability, resilience or sensitivity to change.

Resource Dependency

Resource dependency indicates a relationship between social and resource systems, to the extent that the maintenance of social systems are in some way reliant on one or more resource systems. Previous research undertaken in resource dependent communities (see for example Randall & Ironside, 1996 for a review of this research) adopted a similar definition of resource dependency. However, resource dependency is only one component of the relationship between social systems and broader environmental and resource systems.

In the marine environment, resource dependency may include extractive use of the resource (ie., fishing, hunting, mining) or non-extractive use of the resource (ie., specific leisure, tourism and recreational uses) (Figure 2.1). In addition, the relationship to social systems may be more broadly focussed on environmental rather than resource systems. Therefore, the relationship between social and environmental systems may be defined in terms of the associations people have with the marine environment, which may include symbolic and place meanings as well as specific environmental values.

The current research focuses on one component of the relationship between social and marine environmental systems. While the research focus is on the dependency of social systems on marine fisheries resources, the TRC-Analysis framework also enables broader environmental associations, meanings and values to be examined.

In understanding the relationship between social and resource systems within the context of resource dependency, there are three core issues that need to be examined. The first issue concerns the issue of defining the social system. In the context of TRC-Analysis as a regional planning framework this essentially becomes a question of defining community for the

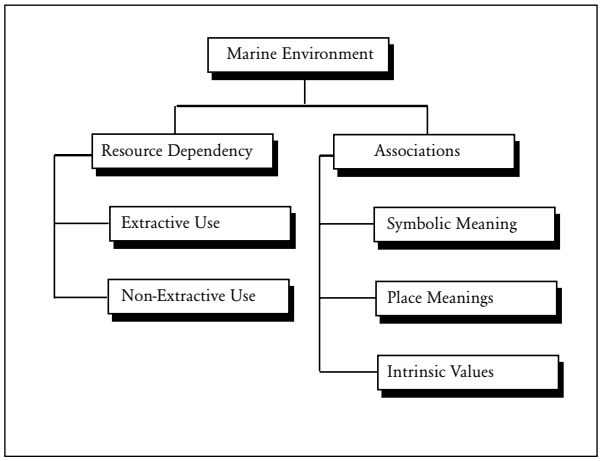

Figure 2.1 Resource Dependencies and Associations

purpose of identifying some level of resource dependency. The second question concerns how we define the resource and the geographic location of the resource. Finally, and given some operational definition of both community and resource, there is a need to describe the 'linkage' between the resource dependent community and the resource itself.

Resource Dependent Communities

TRC-Analysis aims to define meaningful spatial units on which to ground later social impact and assessment processes. Such locationally and geographically distinct social units are referred to as Town Resource Clusters (TRCs). Many natural resource management units used by natural resource management agencies are clearly defined on the basis of specific ecological and resource management characteristics, but there is no corresponding unit associated with the social environment. Without a locationally distinct unit which defines the social environment, any attempt to understand social and community processes, particularly in the context of

natural resource management will be fragmented and disparate (Murphy, 1991).

In defining resource dependent communities, there is an issue of what defines community. There is also an issue of defining communities which are at some level identified as resource dependent. In the first instance, conceptual and methodological issues associated with the definition of community continue to be problematic and depending on the research context, and often issues of data availability, community has been defined in various ways from town to county or Local Government Area to regions (Machlis & Force, 1988; Machlis, Force and Balice, 1990). More meaningful boundary definitions are required in relation to community. Definitions of community should be meaningful in relation to prevailing social structures, levels of community organisation and interdependence. They should not be defined purely on the basis of convenient administration boundaries or data availability.

Machlis & Force (1988) suggested that to better understand resource dependent communities, community may need to be considered as a hierarchical or nested concept. This approach is similar to that considered in central place theory (Fairbairn and May) where in a regional context, a network of central places or towns exist in relation to specific trade areas and the supply and consumption of goods and services. As Cramer, Kennedy, Krannich & Quigley (1993) have emphasised in the context of timber production and natural resource dependency, changes in resource availability often lead to "chain reactions...affecting not only loggers and mill workers, but businesses, social services and people not generally involved in timber production" (p. 477).

A recognition of the 'mutual interdependence' of communities and townships in a regional resource planning and management context is given in Mayfield's (1996) study on the relationship between small farms and the location from which farm goods and services were purchased. This research suggested significant micro-economic and financial interdependence among farming communities. Through better understanding the interdependencies amongst communities, clusters of mutually interdependent townships (Town Resource Clusters) can be identified, providing a more appropriate theoretical and conceptual rationale for defining community.

This approach defines community as what is commonly referred to as social catchments, which are interdependent towns and communities dispersed throughout a region. The towns, at the same time, can also be hierarchically arranged as is the case in central place theory. Based on previous research in several natural resource management contexts (Fenton, 2000, 1999a, 1999b, 1998) the interdependencies among towns were defined on the basis of (a) the location of business purchases, (b) the location of purchases of household goods and services and (c) the location from which social infrastructure services and facilities were used. This locational information was used as the basis for identifying clusters of towns and communities which are referred to as Town Resource Clusters (TRCs).

In the current study, the description of communities by the identifying Town Resource Clusters (TRCs) used locational information from survey data collected from interviews with commercial fishers. Therefore, the number of fishing businesses and location of their use of services and facilities, and purchase of goods and services, was used to define the TRCs. Although the TRCs were defined within the context of commercial fishing, these TRCs are probably relatively constant across industry groups and sectors within the community. Distance between townships plays a significant role in the use of services and the purchase of goods and it is unlikely that there would be significant variation across different industry and occupational groups.

The Resource

Much research has focused on the resource dependent community, and not on issues related to the resource itself. The resource is often defined in terms of a simple resource typology, to the effect that communities are dependent upon fishing, native timber harvesting, mining or agriculture. Concurrent consideration given to defining and describing resource systems on which communities depend is also needed. This requires considerable integration of conceptual and theoretical approaches between the social and natural sciences. Typical of such an integrative approach is research on social and ecological resilience (Adger, 2000) where consideration is given to defining resilience within social and resource systems, and to how changes in the resilience of either systems may impact alternate systems.

Questions also arise about defining the resource on which communities depend. This is particularly the case in resource contexts such as fishing, forestry and the use of water resources where the resource itself may be dispersed throughout a geographic area.

In the management of natural resources, geographic areas are often delineated. For instance, in the management of water resources, specific water catchments are often geographically defined. Forest resources are often defined on the basis of Forest Management Areas, timber supply zones or other resource-based units. Marine resources on the Great Barrier Reef are delineated by a zoning system which specifies the permitted use of reef resources. Similarly, several states manage their natural resources on the basis of spatially defined biogeographic regions which encompass the entire state.

There were no a priori regional classifications of marine coastal areas in Queensland to assist in defining the spatial extent of the resource. Therefore, the spatial extent of the marine resource used for commercial fishing was defined on the basis of the use of the resource by the commercial fishing businesses. Information drawn from interviews with commercial fishers on the location of resource use was recorded on a 15-minute grid overlay. Each 15 minute grid provided information about the number of commercial fishing businesses using the resource.

For Queensland as a whole, the analysis of information within the 15-minute grids provided information about the density of fisheries resource use within specific areas. However, it was also important to examine the spatial extent and density of fisheries resource use to each of the defined TRCs. Analysis of resource use among fishers from each TRC provided consistently meaningful spatial patterns of resource use associated with each one. In all cases and based on the count of fishing businesses using an area, resource areas of high, moderate and low use were identified. In the majority of cases, 15-minute grids with high use were spatially proximate and adjacent, as were grids associated with moderate use. Areas of high use associated with each TRC were referred to as primary resource catchments, while areas of moderate resource use were referred to as secondary resource catchments.

Resource Dependent Linkages

Another objective of TRC-Analysis is to establish a relationship between the use of natural resources and specific Town Resource Clusters (TRCs). This allows an understanding of what communities and townships are likely to be affected by changes in the management and use of natural resources and to determine the values that individuals and groups place on particular resource areas. As such, this establishes a core 'linkage' between the natural resource and the TRC, such that given a change in the status of the natural resource, the probable location of any potential social impacts and changes may be clearly identified.

Defining a TRC and understanding the spatial location of the primary and secondary resource catchments associated with the TRC provides a better understanding of how changes in the resource system may impact on associated social systems and conversely how changes in the social system may impact on resource systems.

Figure 2.2 shows the linkage between the natural resource and the TRC. On the one hand, changes in natural resource management may have identifiable impacts on specific TRCs, given the identified dependency of communities within the TRC on specific areas of natural resource (ie., primary and secondary catchments). Conversely, knowing the characteristics or profiles of communities within TRCs, and in particular their level of sensitivity to change and their resilience to change, can provide important information along with environmental and ecological criteria to assist in the management of areas of natural resource. The TRC represents the social unit in which potential social change may be identified and managed.

Identifying social units (TRCs) and concurrently understanding the relationship or level of dependency between the TRC and areas of natural resource enables managers to better consider the social impacts and consequences of changes to natural resource management.

Although dependency on fisheries resources is the focus for the current TRC-Analysis, there are nevertheless other significant social and community relationships with the marine environment as discussed earlier and as shown in Figure 2.1. The current study has only examined marine resource dependency of specific communities, and in particular dependency as defined through extractive resource use based on the commercial fishing industry. In understanding the broader linkages between communities and the marine resource other forms of marine resource dependency would need to be examined as well as the specific associations between individuals and groups in communities in relation to the marine environment.

Describing Town Resource Clusters

Defining a TRC and its associated primary and secondary resource catchments provides the framework to develop further social impact assessment procedures including community involvement programs and the use of additional quantitative social assessment techniques. For instance, community involvement programs can be more effectively directed at those communities where a known relationship exists between the area of resource use and the community.

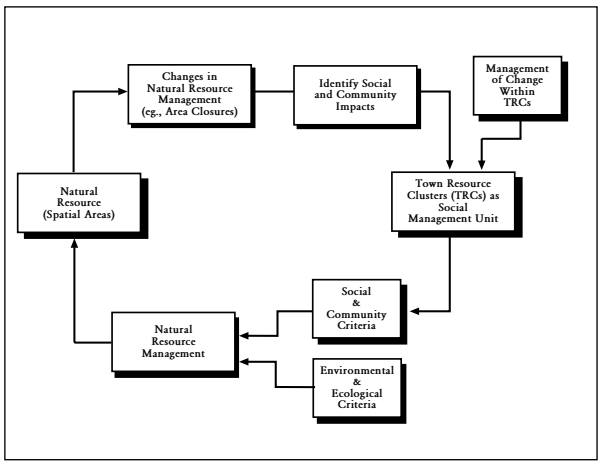

Figure 2.2 Social Assessment Research Projects

Ecosystems within the primary and secondary resource catchments can be described by ecological indicators, such as those of ecosystem health, resilience and biodiversity. Such descriptions are important in monitoring the condition of ecosystems and evaluating the impact of human activities.

TRCs and communities within TRCs can be described using a range of social indicators. Of particular importance in this context is the description of TRCs on the basis of indicators which provide information on resource dependency and social resilience or sensitivity to change. Although such social indicators are not developed, analyzed and presented in the current report they are nevertheless an important part of the current research program (Figure 1.1) and will be developed in a later research report.

The current study has collected considerable social and financial profile information about harvest businesses within TRCs. The profile information provides research information for a variety of uses. The information collected in developing of profiles can also be used later to develop social indicators of resource dependency, social resilience and sensitivity to change.

The current study adopts a TRC framework for undertaking social assessment of the harvest fishing industry in Queensland. This report is the first stage in this assessment which includes basic descriptive information to identify and describe TRCs. Within the TRC framework this report (a) identifies specific TRCs, (b) identifies primary and secondary resource catchments associated with TRCs and (c) provides basic profiles of fishing businesses and employees within the defined TRCs.

Adger, W.N. (2000). Social and ecological resilience: Are they related? *Progress in Human Geography*, 24(3), 347-364.

Armour, A. (1990). Integrating impact assessment into the planning process. Impact Assessment Bulletin, 8(1/2), 3-14.

Cramer, L.A., Kennedy, J.J., Krannich, R.S., Quigley, T.M. (1993). Changing forest service values and their implications for land management decisions affecting resource dependent communities. *Rural Sociology*, 58(3), 475-491.

Fenton, D.M. (1998). *Resource, Forest Industry and Employee Catchment Analysis for the South East Queensland RFA Region.* Report prepared for the Department of Primary Industries and Energy (Canberra).

Fenton, D.M. (1999a). *TRC-Analysis for the Barron water allocation and management plan (WAMP).* Report prepared for the Department of Natural Resources, Brisbane, QLD.

Fenton, D.M. (1999b). *Forest industry activity and linkages for the West CRA region.* Report prepared for the Social Assessment Unit, AFFA, Canberra.

Fenton, D.M. (2000). *Social Catchments and Socio-Demographic profiles for the South Brigalow CRA/RFA Region (NSW).* Report prepared for the Department of Urban Affairs and Planning, NSW.

Fenton, D.M. (in press). Town Resource Cluster Analysis. In H. Becker, F. Vanclay (Eds.) *International Handbook of Social Impact Assessment: Conceptual and Methodological Approaches.* Edward Elgar Pub: Cheltenham

Machlis, G.E., Force, J.E. (1988). Community stability and timber-dependent communities. *Rural Sociology*, 53, 220-234.

Machlis, G.E., Force, J.E., Balice, R.G. (1990). Timber, minerals and social change: An exploratory test of two resource dependent communities. *Rural Sociology*, 55, 411-424.

Mayfield, L.H. (1996). The local economic impact of small farms. *Tijdschrift voor Economische en Sociale Geografie*, 87(5), 387-398.

Murphy, A.B. (1991). Regions as social constructs: The gap between theory and practice. *Progress in Human Geography,* 15(1), 22-35.

Randall, J.E., Ironside, R.G. (1996). Communities on the edge: An economic geography of resource-dependent communities in Canada. *The Canadian Geographer,* 40 (1), 17-35.