Identifying regional skill and training needs for integrated natural resource management planning

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Acknowledgments

Executive summary

Report investigates capacity building and skill and training needs for regional groups to undertake INRM planning

This report investigates the skill and training needs of regional groups responsible for developing Integrated Natural Resource Management (INRM) plans under the National Action Plan for Salinity and Water Quality and the extension of the Natural Heritage Trust. It also considers broader issues related to capacity building for INRM. Report findings are based on a literature review, key informant interviews and responses from members and staff of regional groups to a training needs questionnaire that included a skills template (a listing of skill and knowledge areas relevant to INRM planning).

Two main approaches to learning and capacity building are identified

The report identifies two major approaches to learning: hard and soft systems approaches. The former tends to focus on the need for scientific and technical expertise (specialised knowledge), and often seeks universally generalisable laws and solutions. The second focuses on involving a range of players and different knowledge systems, and tends to emphasise that solutions are context-specific and may need to be re-negotiated over time. A soft systems approach is advocated, focusing on INRM planning and capacity building as human activities taking place in particular social, geographical and institutional contexts.

A range of players is identified with roles in natural resource management capacity building

A range of players has a role in NRM capacity building in Australia. They include agencies like Agriculture, Fisheries and Forestry – Australia and Environment Australia (both of whom have relevant programs and activities outside the immediate policy area dealt with here); the Department of Transport and Regional Services; Department of Education, Science and Training; Murray-Darling Basin Commission; State and Territory NRM and environmental agencies; Research and Development Corporations; and non-government organisations like Greening Australia. The formal education and training system, particularly its Vocational Education and Training sector, has an important role.

Key informants stress need for regional groups to have social skills in areas like communication, group leadership, lobbying, negotiation and conflict resolution

Key informants interviewed in the project came from the areas of NRM or integrated planning; community participation in NRM; providing services to rural and regional Australia; and rural education, training, capacity building or extension. Twenty-two informants were interviewed. They were shown a trial skills template containing a list of knowledge and skill areas possibly needed for INRM planning and asked to comment on it. Overall, they tended to stress the importance of groups having general skills like the ability to communicate and raise community awareness, group leadership, lobbying and negotiation/conflict resolution skills – all social process-related skills. Some key informants indicated that what regional groups most need to effectively participate in INRM planning is a broad general understanding of NRM as well as the ability to integrate and identify the implications of a range of information. They also need to know enough to be able to identify what they don't know, and where to go (or who to go to) to be able to find it. From the perspective of these informants, much of the important knowledge that groups need for INRM planning is process knowledge, knowledge brokering and integration abilities, and the need for highly specialised subject knowledge should not be over-emphasised.

Key informants suggest ways groups can build their INRM planning skills and abilities, and approaches best suited to their needs

Key informants made many suggestions about how groups could build their INRM planning capacities. They included:

∉# draw on leadership models

∉# be patient: allow time to build knowledge, experience and social cohesion

∉# build community support at all stages of the planning process (from preparation to design to implementation to review)

∉# provide long-term 'on the job' training to build group employee and volunteer morale and commitment

∉# develop partnerships with regional service providers, the formal education and training sector, and research providers like the CSIRO.

Many informants referred to the importance of skill and training approaches that are flexible enough to accommodate different regional situations, needs and interests. They also suggested that approaches that value local knowledge, prior learning, use action-learning, measure and promote knowledge integration, and are developed at the regional or local level, are likely to be most effective.

Several informants suggested that regional facilitators and/or coordinators could help to identify group skill and training needs and how they could be filled. It was also suggested that groups could use an iterative workshop process to develop their own capacity building strategies and action plans. This is elaborated further in the report as a recommended process for groups to use.

Questionnaire and skills template developed, listing a wide range of skill and knowledge areas

A training needs questionnaire was developed based on the literature review and key informant comments, incorporating a skills template that listed skill and knowledge areas under the headings:

∉# People management
∉# Administration and financial
∉# Communication
∉# Planning, spatial and risk management
∉# Natural resource management
∉# Socio-economic
∉# Government and policy.

Pilot skills audit finds that group members tend to rate importance of all areas highly, and feel there is room for improving skills in these areas

The questionnaire and skills template were trialled with members and staff of two regional groups, then e-mailed to members and staff of a further five regional groups (one in each State except Tasmania) in a pilot skills audit. A total of 18 people responded representing all five groups. Respondents tended to rate the importance of all the skill and knowledge categories as 'high' to 'very high'. Their corresponding ratings for skill levels in their group were lower than their importance ratings, showing they felt there was room for improvement in groups' skill and knowledge across all categories, particularly the People management; Planning, spatial and risk management; Socio-economic; and Government and policy categories. Respondents reported that the most common process they used to identify their group's skill and training needs was 'informal feedback/comment from group members'. Groups relied mainly on their own sources of information about formal education and training providers. Only two of the five groups had a formally designated training officer. Groups organised a range of training activities themselves. When asked about barriers to training, respondents indicated that 'lack of time/too many other commitments' was the main barrier, followed by 'distance

to travel' and 'cost of training/education'. Overall, respondents indicated that working directly with education and training providers, groups organising their own courses and training activities, and groups disseminating information about what works, were their most useful ways of filling skill and knowledge gaps.

Group situations vary greatly and highlight need for groups to do their own needs analyses and develop their own skill and training strategies

The research revealed that regional groups face very different State legislative and institutional contexts, geographic and socio-economic situations, and vary in membership, designated roles for members, and the staff they can call upon. Recognising these differences highlights the need for capacity building processes or skill and training needs analyses to be tailored to suit regional contexts and carried out by groups themselves, with the help of governments. A process is suggested for developing a skill and training needs strategy that groups could modify to suit their own situations.

Governments need to address issues to help groups satisfy their own skill and training needs

Governments need to address some issues to help regional groups satisfy their skill and training needs. These issues include the need for different government players to coordinate their activities better ('whole of government' approaches); the need for governments to attend to their own capacity in INRM planning; better government support for training packages and training providers; tailoring capacity building activities to regions; learning from activities in other government sectors such as public health; not neglecting the value of informal processes; and broadening the notion of government support beyond providing money.

Other issues affect the formal education and training system

Issues particularly affecting the formal education and training system's ability to contribute are: sectoral changes and funding cuts (affecting further development of new training packages like the Conservation and Land Management Training Package); access and equity (involvement of Indigenous people, women and people from non-English-speaking backgrounds); rural and regional disadvantage in access to higher education institutions; and coordination and integration (fragmented provision of NRM education and training, courses lacking an integrative focus).

Using a training needs questionnaire should be only be part of an ongoing capacity building process driven by regional groups

A major lesson from the research is that any training needs questionnaire, including the one developed in this project, should be seen as only one tool in an iterative and participatory capacity building process driven primarily by groups themselves. Other specific tools that could be used include learning style inventories, and team management and conflict management style questionnaires. But these tools can be used in association with a wide range of events and activities like workshops, meetings and seminars.

Recommendations are made to help guide capacity building and skill and training needs analyses

Based on the research findings, recommendations to improve capacity building activities and help identify regional groups' skill and training needs are:

- terms used in relevant policy and program documents need to be simple and clear, and where necessary, the relationship of any new terms to earlier ones needs to be explained
- capacity building and skill and training needs analyses need to be based on a 'soft systems' approach that recognises the roles of a wide range of players and different types of knowledge and expertise, not only scientific or technical knowledge
- capacity building and skill and training analyses need to be tailored to suit regional situations, not based on a 'one size fits all' approach

- capacity building activities need to recognise, value and accommodate people's differences as much as possible
- groups need to develop their own capacity-building strategies and identify their own skill and training needs
- governments need to focus on their role in enabling and facilitating group capacity building processes
- planning and capacity building need to be thought of as cyclical processes.

Contents

1 Project introduction

Policy context

This project is intended to contribute to capacity building for regional groups as part of implementing the National Action Plan for Salinity and Water Quality (NAP), The Natural Heritage Trust (NHT) and the Trust Extension. In particular, it focuses on the skill and training needs regional groups may have in order for them to participate effectively in integrated catchment or regional natural resource management (INRM) planning as defined in the NAP and the Trust Extension. The overall aim is to contribute to the ability of regional groups and communities to develop, implement, monitor and evaluate and revise INRM plans.

Project brief

The aims of the project as specified in the project brief, are to:

∉# review appropriate literature

∉# review previous regional and catchment planning methodologies and processes

∉# interview experts in planning and community participation in planning

∉# interview members of regional groups to ascertain group skill and training needs.

Required project outputs are:

∉# a skills template detailing the skills and training required by regional groups to successfully undertake INRM planning

∉# a situation statement on skill requirements detailing gaps between the current skills and knowledge of regional groups and what they need for effective regional INRM planning

∉# a recommended process for conducting an audit of existing knowledge and skills held by regional groups

∉# recommendations on the scope of issues that need to be addressed in satisfying regional groups' skill and training needs.

Differences exist in the way some terms are used in the project brief and the way they are used in the formal education and training literature. Formal training needs analyses are most often applied in highly structured organisational workplaces that have well-defined roles and tasks, with sets of inter-related job descriptions and duty statements. It became evident in this project that regional groups undertaking INRM planning present greatly varied situations and organisational structures, and involve a complex mix of paid group staff, representatives from government and non-government organisations (who may or may not be paid for their time on the group), and community volunteer roles (often un-paid). Many group members undertake their group activities as part of their professional roles in other organisations like State or Local Government agencies. Many groups have sub-committees operating at different geographical scales or covering different special knowledge areas. This makes it very difficult to apply formal training needs analyses or skills audits to these groups as a whole and suggests that overly formal approaches may be inappropriate in any case. Therefore, we have used terms like *skills analysis*, *skills audit*, *training needs analysis* and *skills template* in a more flexible way suited to the project's subject matter.

Research approach

Figure 1 illustrates the project's research approach and the report structure.

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┌─────────────────────────┐         ┌──────────────────────────────────┐
│        Phase 1          │         │  ⊄#  Review NAP/NHT               │
│  Review policy context  │         │       structure and policy        │
│  and research literature│◄────────│       background                  │
│     Chapters 1-4        │         │  ⊄#  Identify range of            │
└─────────────────────────┘         │       players involved in         │
            │                       │       NRM capacity-               │
            ▼                       │       buildings, skills and       │
┌─────────────────────────┐         │       training                    │
│        Phase 2          │         │  ⊄#  Examine research             │
│  Conduct key informant  │         │       literature to clarify       │
│      interviews         │◄────────│       terms, concepts and         │
│      Chapter 5          │         │       approaches                  │
└─────────────────────────┘         │  ⊄#  Identify relevant            │
            │                       │       structures, courses,        │
            ▼                       │       providers and issues in     │
                                    │       formal education and        │
                                    │       training sector             │
                                    │  ⊄#  Develop initial training     │
                                    │       needs questionnaire,        │
                                    │       including skills            │
                                    │       template                    │
                                    └──────────────────────────────────┘
┌─────────────────────────┐         ┌──────────────────────────────────┐
│     Phases 3 and 4      │         │  ⊄#  Trial and refine training    │
│  Administer training    │         │       needs questionnaire         │
│  needs questionnaire to │         │       with one regional           │
│    regional groups      │◄────────│       group                       │
│      Chapter 6          │         │  ⊄#  Select further five          │
│                         │         │       regional groups and         │
│                         │         │       administer                  │
│                         │         │       questionnaire               │
│                         │         │  ⊄#  Analyse results              │
└─────────────────────────┘         └──────────────────────────────────┘
            │
            ▼
┌─────────────────────────┐
│        Phase 5          │
│ Formulate conclusions   │
│ and recommendations     │
│      Chapter 7          │
└─────────────────────────┘
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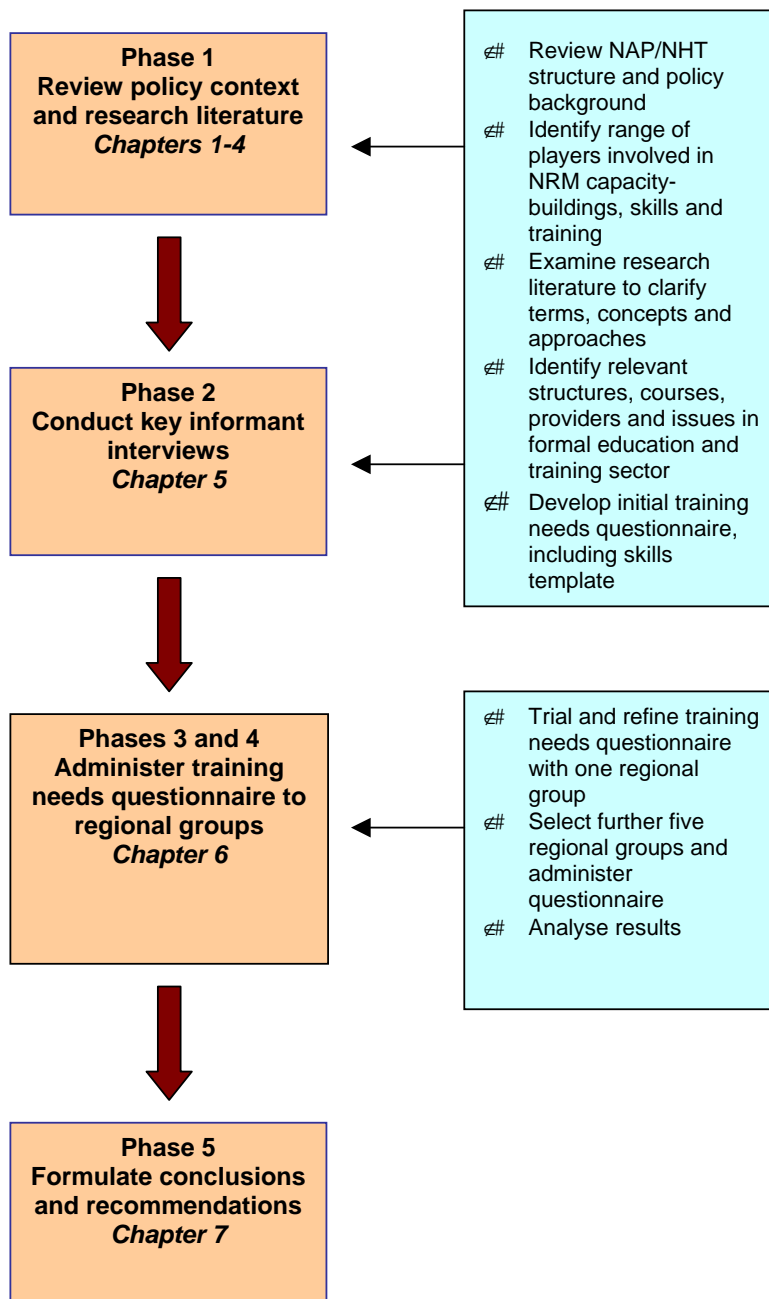
Figure 1 Approach used in the project and report structure

Key terms, concepts and approaches

One of the many definitions of **capacity** is that it:

> … is the ability of actors (individuals, groups, organisations, institutions, countries) to perform specified functions (or pursue specified objectives) effectively, efficiently and sustainably.

(UNDP 1995: 14)

Capacity building or **capacity development** is the efforts made by the actors themselves to achieve or strengthen their ability to perform the functions in question. Capacity can be built through a wide range of activities undertaken by the various actors involved, and is not a restrictive or prescriptive term. It may involve activities the actors organise themselves, or activities organised by others in which they participate.

Education and training are often seen to be the province of the formal educational sector and are usually delivered through structured learning activities like courses, tutorials, lectures and seminars. **Development** is a much more general term and in relation to regional communities is often interpreted as community *economic* development. However, there is also the concept of individual development used by human resource professionals and development of teams and groups so that they can undertake particular tasks or projects. **Extension** is traditionally used to refer to 'outreach' activities by government agencies, particularly those working in the agricultural and NRM sectors. It often refers to the activities of regionally based government staff who work with landholders to encourage adoption of new and improved management practices arising from scientific research and development.

Smith (1992: 2) includes the following definitions:

∉# **training**: a planned process to modify attitude, knowledge or skill behaviour through a learning experience to achieve effective performance in an activity or range of activities

∉# **education**: activities which aim at developing the knowledge, skills, moral values and understanding required in all aspects of life rather than knowledge and skill relating to only a limited field of activity

∉# **development**: the growth or realisation of a person's ability through conscious or unconscious learning.

Human resource development is defined as 'the process of increasing the capacity of the human resources through development. It is thus a process of adding value to individuals, teams or an organization as a human system' (McGlagan 1989).

Skill and training needs are a special category of needs that can be identified through a formal **training needs analysis** or a **skills audit**, or through more informal means. Training needs analyses and skills audits are usually done within formal organisations, corporations or highly structured workplaces that have clearly defined tasks and outputs. They are not easy to apply to community-based organisations and voluntary groups involved in INRM planning where there is considerable flexibility in people's roles and contributions, and where the details of groups and tasks may vary considerably region by region.

The terms discussed above relate to a currently fashionable focus on human and social capital. **Human capital** refers to the skills, knowledge and abilities of individuals, acquired through education and training, or through experience. **Social capital**, a more elusive concept, refers to measures of group norms of reciprocity and trust, and to the networks that provide bonds and bridges between group members and contribute to a sense of community.

All these terms have some relationship to how people learn, and to the different approaches to learning taken by different social sectors and organisations. In this project, the particular interest is on groups and group learning, but this cannot be separated from learning by individual group members or from the contexts where group learning occurs. Nor can it be separated from underlying assumptions about how the world works and how to learn about it.

The idea of **lifelong learning** is an important one here. Its basic premise is that every educational experience builds people's ability to cope with changes, and that education, training and learning activities are not restricted to periods of formal education and training during childhood and early adulthood but can

and should continue throughout life. The idea is growing in popularity and is influencing thinking about how to structure and fund education and training in ways that address lifelong learning needs. Virtually all the publicly funded mainstream education bodies [schools, universities and Technical and Further Education (TAFE) colleges] organise some form of formal education and training specifically aimed at adult or mature age students.

'Hard' and 'soft' systems approaches to learning

In their *srd toolkit*, Dore and his co-workers provide a table that contrasts 'hard' and 'soft' systems thinking (Dore et al. 2000). A modified version is shown in Table 1.

Table 1 Contrasting 'hard' and 'soft' systems views of the world (modified from Dore et al. 2000: 30)

'Hard'	'Soft'
Goal achievement or competitive orientation	Learning orientation
Focus on 'engineering' and technical solutions often dealing with parts of systems	Focus on problem solving and system-wide approaches
Assumes models are an approximation of how the world really works	Assumes models are a social or intellectual construction suited to a particular human purpose
Uses language of 'problems' and 'solutions'	Uses language of 'issues', 'strategies' and 'negotiations'
Focuses on using powerful scientific techniques and seeking advice from scientific experts	Attempts to involve a range of players and recognises the importance of a range of different types of knowledge and expertise beyond the scientific or technical
Seeks universally generalisable laws and final answers	Recognises that all solutions have context-specific aspects and need to be re-visited and re-negotiated as context changes

While this is a very simplified analysis, hard and soft systems thinking relates directly to technical approaches to INRM planning that focus on non-experts gaining access to specialised scientific knowledge and techniques; as opposed to approaches that tend to see INRM planning as a human activity taking place within groups of social actors, and focus more on the social, contextual and institutional factors influencing people's roles or actions. Documents produced by the United Nations' Development Program (UNDP 1995) and Chambers (1998) also consider these differences, describing them as shift from a focus on things and infrastructure (hard), to a focus on people and capabilities (soft). A hard systems approach has also been associated with the linear, transfer of technology paradigm that has dominated much agricultural research and extension in the past (Rajasekaran 1993).

Adopting a soft systems approach, as we have done in this project, means that a range of players need to be acknowledged as part of the INRM capacity building system - a similar range to those identified in a study of training needs for the irrigation industry by Meyer & Taylor (1998). These authors include members of regional groups and their staff; other non-government community organisations; staff of government agencies; local government; regional communities generally; industry bodies; research funders and providers; and education and training providers.

A learning focus means that a learning spectrum covering the range from formal to informal kinds of learning activities needs to be considered, taking place in varied settings, not only classrooms or structured training sessions.

The learning spectrum

A study of small business training needs undertaken by the Office of Vocational Education and Training in Tasmania (2000) includes a diagram of the range or spectrum of training and learning activities. A modified form of this is shown in Figure 2.
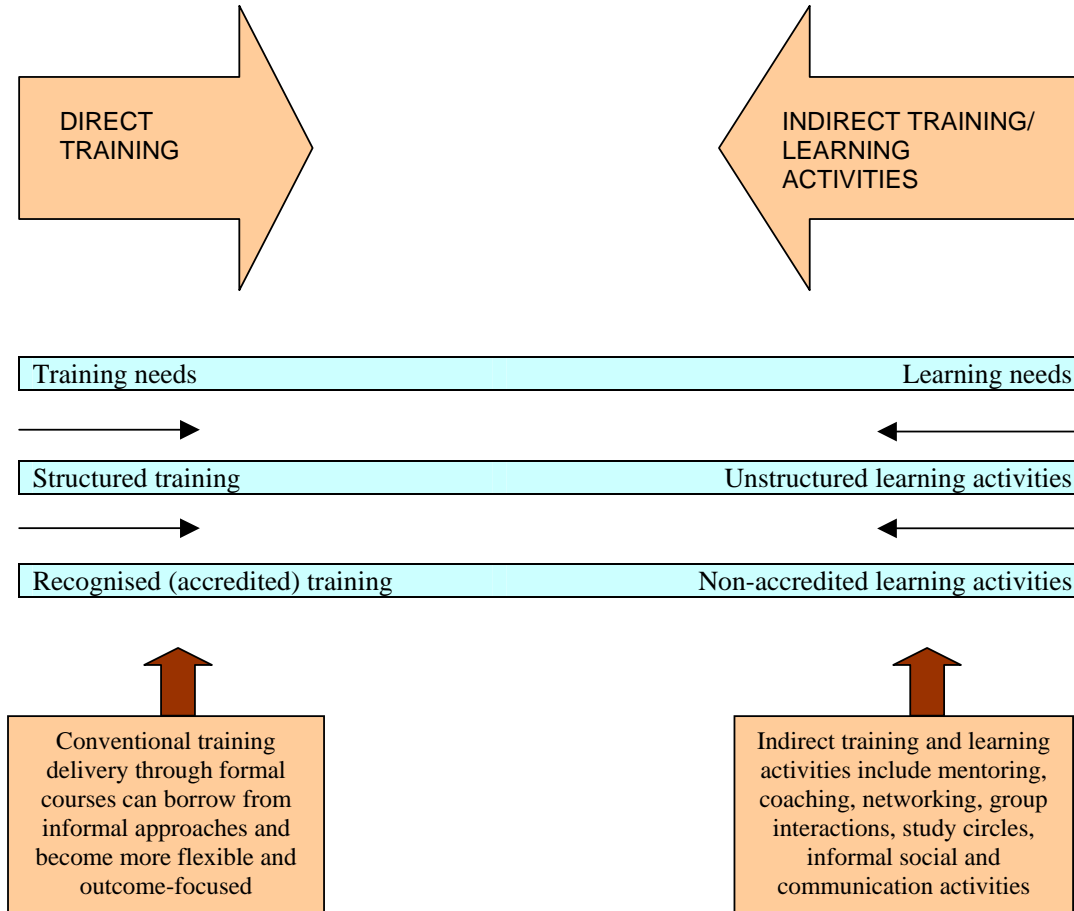
Figure 2 The learning or training spectrum (modified from Office of Vocational Education and Training, Tasmania 2000)

When a spectrum of possible learning activities from formal structured training to informal learning activities is considered, it becomes clear that a wide range of players can be involved in designing, developing and participating in these activities.

Adult and experiential learning, and learning styles

In the case of INRM planning and regional groups, we are talking about the capacities and needs of adult learners. Smith (1992) briefly reviews this subject and discusses the importance of key educational figures like John Dewey and David Kolb. Dewey believed that learning, particularly in western adults, occurs through an applied problem-solving approach using a common sense version of the scientific method. In Dewey's approach the role of the teacher is to facilitate the problem solving process. Dewey's ideas in part led to Kolb's theory of experiential learning (1984). Kolb describes learning on two dimensions. The first is based on the way we grasp experience (whether through concrete experience or abstract

conceptualisation). The second refers to the way in which experience is transformed or worked upon (reflective observation or active experimentation). From the learning cycle, learning styles can be derived that tend to have different stresses on the two dimensions. An example of a set of learning styles is:

∉# activists: involved fully in immediate experiences, tend to act first and consider consequences later

∉# reflectors: tend to stand back and ponder experiences and observe them from different perspectives

∉# theorists: adapt and integrate observations into complex and logical theories

∉# pragmatists: keen on trying out new ideas, theories and techniques to see if they work in practice.

<div align="right">(see Smith 1992; Rogers, Taylor, Lindley, Van Crowder & Sodderman 1998).</div>

There are many different learning style inventories and questionnaires based on these kinds of considerations. Learners can assess their own styles based on their questionnaire responses, or have their styles assessed by others. This assessment can be part of capacity building activities and help to identify the best kinds of activities for particular individuals or groups.

A related approach in the agricultural field is the work done to identify farming styles among farmers in different regions of Australia (Vanclay, Mesiti & Howden 1998; Howden, Vanclay, Lemerle & Kent 1998). But there is also a larger international body of work that considers farmers' and rural people's preferred learning and communication styles in a more general sense (Scoones & Thompson 1993; Ramirez 1997).

In a report for the Rural Industries Research and Development Corporation (RIRDC), Kilpatrick and her co-workers (1999) consider how farmers learn and characteristics of effective learning and training for farmers, and suggest some strategies for improving farmer learning and participation in learning activities. They point out that farmers tend to value immediately relevant knowledge and skills, and may not be particularly concerned about accreditation of training. For this reason their needs may not be well catered for by formal education and training courses. Kilpatrick and her colleagues recommend greater emphasis on self-directed farmer learning groups and more involvement by agricultural organisations in identifying and filling farmers' needs. They also suggest using learning networks and mentoring schemes to enhance skill sharing. These suggestions are relevant to INRM groups although of course farmers form only part of their membership.

Learning and capacity building needs of special sub-groups

Some groups involved in INRM planning may have special learning needs that can to some extent be identified using formal learning style assessments or inventories, but may also require more pervasive thinking about learning activities, how they are structured, and about group membership. Groups often identified as having special needs include Indigenous people, women, and people from non-English-speaking backgrounds.

These sub-groups may also have special knowledge and experience to contribute to the planning process, and the process may need to be developed in a way that acknowledges their experience and encourages them to contribute. For example, the term 'indigenous knowledge' has been applied to all kinds of local knowledge that is unique to a given society and culture, acquired through unique experiences and interactions with local environments (Rajasekaran 1993). Other writers just use the term 'local knowledge' (Brown 1996, 1997). If capacity building processes or analyses of skills and training needs ignore or de-value other kinds of knowledge and only count knowledge derived from western scientific frameworks or westernised education and training, they are likely to alienate some local people. In the Australian situation, processes that do this are likely to alienate and marginalise Aboriginal people.

Action research and Participatory Action Research

Action research and Participatory Action Research (PAR) are research approaches or families of methods in which communities and groups themselves take on the role of researchers or co-researchers, own the research, and are responsible for putting its results into action (Argyris et al. 1986). PAR is particularly used in rural development, organisational learning and change, and participatory evaluation. It requires participants to:

∉# recognise the value of local knowledge (including within-organisation knowledge)

∉# accept and own the research

∉# be willing to be involved at all stages of the research

∉# be willing to include a wide range of other participants (including perhaps some that are often left out)

∉# choose research methods to fit the situation, and learn how to apply these methods so that they can continue the research without outside help.

PAR is designed to break down the barriers between researchers and 'subjects' of research, and ensure that research is immediately relevant and applicable in local situations. It is particularly suitable when a goal is to ensure that research continues in the long-term and that it progressively produces change and improvements for communities or organisations. The idea is to integrate research into everyday practice and ensure continuing feedback loops.

Participatory Rural Appraisal (PRA) and Rapid Rural Appraisal (RRA) are action research refinements developed to enable local people to share, enhance and analyse their knowledge; and to plan, act, monitor and evaluate (Allan & Curtis 2002; Aslin & Brown 2002). While they have evolved particularly in the context of providing aid to developing countries, their basic methods can be applied in rural and regional communities in developed countries like Australia. They can be applied to skill and training needs assessments as well as other kinds of research projects (Allan & Curtis 2002).

Participatory Monitoring and Evaluation (PM & E) is action research applied to the monitoring and evaluation phase of the planning cycle. It is also designed for group members and rural communities to carry out themselves without necessarily having a need to call in outside experts (Woodhill & Robins 1998).

Government's role in capacity building

The capacity building roles of different government players derive to some extent from the commitment to cooperative federalism, and from the constitutional, jurisdictional and legislative responsibilities of different levels of government. In this case, they also derive from the intergovernmental and bilateral agreements entered into as part of the NAP and the Trust Extension. These roles and commitments are reflected in the *Capacity building framework* developed by the Community Engagement and Capacity Building Working Group set up under these two funding programs. The Working Group contains representatives from the States and Territories as well as the Commonwealth, and reports to the NRM Ministerial Council. It is intended that each of the States and Territories will develop their own capacity building strategies in line with the framework, and that the regional groups' own processes will fit within this overarching structure. However, there still appears to be considerable scope for the different players to interpret this in their own ways, and tailor processes to suit their own needs and capabilities.

Much recent work in the area of community capacity building and community-based NRM emphasises government's role as an enabler and facilitator rather than as a 'command and control' regulator or prescriber of solutions. Community ownership and empowerment are seen as key to successful collaborations. So in relation to capacity building for INRM planning and assessing group skill and training needs, there may be need to focus on the enabling and facilitating role of Commonwealth and State agencies. Identifying and marshalling existing local and regional resources is an important part of integrating program activities into local situations and avoiding what might be seen as a 'top-down' approach by government (Cavaye 1999).

Previous Australian regional planning initiatives

Analysing previous Australian regional planning processes and their results offers possible lessons for current initiatives, including those of the NAP and the Trust Extension, and may highlight the kinds of skills and abilities needed by different players.

For example, in her doctoral thesis, Mobbs (2000) reviews regional planning processes directed towards achieving ecologically sustainable development (ESD), and discusses two major perspectives that have emerged: adaptive and collaborative. The adaptive perspective stresses the need to recognise ecological principles and processes, and to acknowledge the contribution of science to achieving ESD. The collaborative perspective stresses the need to recognise people's democratic rights and to follow democratic principles in achieving the social consensus needed for ESD. These two perspectives are not always compatible and exist in tension in many regional planning processes. Mobbs develops a theoretical framework based on relating these perspectives to types of rationality in planning, and applies it to two Australian case studies: the Regional Forest Agreement (RFA) process in New South Wales, and the Cape York Peninsula Land Use Strategy (CYPLUS) in Queensland. She concludes that neither process was built up from the preferences of local or regional communities, nor developed by governments with a clear commitment to wide public participation. Communities were treated more as passive recipients of change than as active agents designing a shared future.

Mobbs points out that both the RFA and the CYPLUS processes were *ad hoc* regional planning processes with no statutory basis, and so they occupied an uneasy place within existing jurisdictional and planning frameworks. It could be argued that the NAP process responds to these weaknesses to some extent by assigning an active planning role and resources to regional groups, and by developing formal agreements between the Commonwealth and the States. However, the statutory bases of the regional INRM groups vary by jurisdiction, and the groups are undertaking their planning in very different legislative and institutional environments. So the uneasiness and mismatches may still persist. Alexandra (2000) has referred to regions as 'the bastard children of cooperative federalism' to stress their illegitimacy within Australian legal and jurisdictional systems. INRM planning suffers from the same problem.

There are many publications that review regional planning initiatives and attempt to draw general conclusions from them, including the LWA regional planning reports mentioned above. For example, Dale and his colleagues discuss the Central Highlands Regional Resource Use Planning (CHRRUP) initiative as an example of a 'new paradigm' for regional planning based on integrated ecosystems management and partnerships among regional stakeholders (Dale, Bellamy & Bischof 1998). Like Mobbs (2000), they conclude that there is an emerging trend towards spreading decision-making power more widely among stakeholders. This means an increasing need for effective and equitable engagement processes that produce genuine collaborations among stakeholders representing different community interests within regions, and between governments and regional communities generally. It also means that more and more stakeholders must have the capacity to be involved in a meaningful way.

There is a large literature about Landcare and its effectiveness in involving communities or leading to better NRM practices at local or regional levels (see for example Campbell 1994; Curtis, Birckhead & De Lacy 1995; Curtis and De Lacy 1996; Curtis 1998; and Curtis & Lockwood 2000). The 1995 paper by Curtis, Birckhead & De Lacy reviews community participation in developing Victorian Regional Landcare Action Plans. It concludes that although participants generally viewed their involvement positively, there was inadequate representation of key stakeholders, which tended to entrench current inequities; and some elements of the participatory process were inadequately spelt out. Key stakeholders who were under-represented included urban residents and businesses, women, and members of river management authorities. Curtis and his co-authors suggest that their research provides evidence of the benefits of adopting a 'community-as-decision-maker' model of participation, and stress the importance of regional context in contributing to major differences in participation processes and outcomes. They comment that regions interpreted their decision-making role differently, and that the role of government agency staff correspondingly varied from region to region. Under the 'technocratic' approach adopted by some regions, agency staff tended to serve as providers of technical information and support to community groups, and the groups **did** make the decisions. Under the more 'consultative' or 'market research' approach adopted by some regions, decision-making power stayed mainly with agency staff. In some cases, community factionalism made the community representatives ineffective as decision makers.

In a later paper, Curtis & Lockwood (2000) also conclude that state-sponsored community participation in regional planning can work. They suggest that key success factors include: separating the roles of regional planning bodies and local organisations; effectively linking local bodies and regional groups; establishing robust, productive agency-community partnerships; adopting benefit-based cost-sharing arrangements for

public investment in private property; acknowledging the importance of professional management of volunteer programs; and designing flexible policy packages that include economic incentives for landholders to continue to supply public benefits.

Contrasting to some degree with these conclusions (which are based mainly on community involvement in Landcare in Victoria), the substantial review of Australian regional resource use planning in rangelands funded by the Land and Water Resources Research and Development Corporation (LWRRDC) concludes that few of these rangeland planning processes have been committed to giving stakeholders the power to make decisions; nor have they seriously attempted to identify and involve all stakeholders, nor resolve conflicts between interests. The authors judge that:

> Few of the projects have done much to empower regional communities to carry on the processes
> themselves and to make decisions about their own futures …

(Dale & Bellamy 1998: iv).

In this report, Dale & Bellamy also review a range of procedural and analytical techniques they consider could improve regional planning outcomes, covering social, economic and ecological assessments, and innovative information technology techniques.

The planning cycle

Discussion of the case studies in Mobbs' (2000) thesis shows the need to think of planning as an on-going cyclical activity and as an on-going learning opportunity, not as a 'one-off' process with a defined start and end date. To continue their planning role, regional INRM organisations face the challenge of maintaining their community support and funding bases into the future after current funding programs finish.

This leads to considering the planning cycle and its variants. Planning can be thought of in a number of ways – sometimes one phase, for example the plan preparation phase, is emphasised, as in much of the NAP background literature. Or planning can be thought of as comprising a logical sequence of steps. But it is more useful to think of it as a cycle, particularly when the need to monitor and evaluate actions and to revise plans in light of findings is recognised, and the process is seen as being iterative. The idea of a planning cycle fits with related ideas of a project planning cycle, a policy development cycle, and a community engagement cycle, and with ideas about adaptive management (Dore et al. 2002, Woodhill & Robins 1996, Brown 1997; Aslin & Brown 2002). There are many versions of these cycles. Their basic phases are:

∉# scoping or describing

∉# designing

∉# implementing

∉# monitoring or evaluating.

On the second iteration, the design phase becomes a revision or re-design phase based on the findings of the first round evaluation. These cycles can also be related directly to the action learning or experiential learning cycle (Kolb 1984).

Thinking of planning as a cycle can be useful in sorting out the skills and training needs relevant to different phases, and also in identifying the different kinds of information and players who may be involved at each stage. For example, the fact that Implementation Committees have been set up by Victorian Catchment Management Authorities (CMAs) explicitly acknowledges that different people may need to be engaged in implementing the plans from those who design them.

The different phases of the planning cycle also direct attention to the role of monitoring and evaluation both in INRM planning and in capacity building activities. Without monitoring and evaluation that is directly related to achieving desired outcomes, there is no feedback to serve as a basis for groups to assess the success or failure of their efforts.

2 Policy and program context

The National Action Plan for Salinity and Water Quality

The NAP was endorsed by the Council of Australian Governments in November 2000, and jointly commits Commonwealth, State and Territory Governments to spend $1.4 billion over seven years to support action by communities and land managers to address salinity and water quality issues Australia-wide. The States and Territories are committed to provide $700 million to match equivalent funding from the Commonwealth. The NAP identifies 21 priority regions for addressing salinity and water quality issues based on biophysical assessments of the severity of these issues Australia-wide and their implications for regional and urban water users as well as the environment.

Key features of the NAP are its focus on standards and targets to assess progress in NRM and to guide Government funding ('strategic investment'); partnerships between governments, and between governments and communities; and a focus on a regional scale as defined by the boundaries of the priority regions (which may include a number of linked catchments).

This rationale is spelt out in *National guidelines for accreditation of integrated catchment/regional natural resource management plan*s. These guidelines emphasise:

⊄# the strong inter-relationships between the various resource and environmental degradation issues occurring in regions, which call for integrated management responses

⊄# regional planning as an effective way to engage all stakeholders and build on activity at the property and local levels while also complementing State and national activity

⊄# an approach that can be adapted to suit circumstances- enabling social, economic and environmental dimensions ['the triple bottom line'] to be considered in an integrated way

⊄# the regional scale as an appropriate scale for negotiating trade-offs, resolving conflict and for determining priorities and shared investment arrangements

⊄# regional community responsibilities for sustainable natural resource management (NRM). The regional planning process is intended to provide a framework within which regional communities can identify issues, develop management responses that reflect their aspirations, achieve ownership of the solutions and convince potential investors that proposed results will be achieved.

The rationale for the NAP is consistent with a policy of devolving responsibility and accountability from central government to other appropriate bodies with more limited geographical spheres of responsibility but who are capable of carrying out the necessary actions ('subsidiarity'). It is also consistent with the policy and philosophy of cooperative federalism - the 'round table' of all spheres of government (see Dore, Keating, Woodhill & Ellis 2000). These policies are expressed formally through partnership arrangements and agreements, and collaborative decision-making bodies that include representatives from all the States and Territories as well as the Commonwealth. This approach in the NRM sphere has been spelt out in the discussion paper *Managing natural resources in rural Australia for a sustainable future* (National Natural Resource Management Task Force 2000), and in subsequent papers delivered by senior Commonwealth Government policy makers (see for example Thompson 2001, Thompson & Heffer 2001).

The major elements of the NAP are shown in Box 1. These elements are part of the overarching Intergovernmental Agreement on the NAP, signed by the Commonwealth and all the States and Territories (full text at http://www.napswq.gov.au/publications/intergovernmental.htm). The agreement specifies that community-based catchment or regional bodies are to develop and implement an integrated catchment/regional NRM (INRM) plan for each priority region, and that this plan will provide the basis for government funding under the NAP. Specifications for catchment/regional bodies are shown in Table 2.

Box 1 Major elements of the National Action Plan for Salinity and Water Quality (NAP)

⍰ Targets and standards for natural resource management (NRM) set with the States and Territories, including for salinity, water quality and associated water flows, and stream and terrestrial biodiversity

⍰ Integrated catchment/regional management (INRM) plans developed by the community in all highly affected catchments

⍰ Capacity-building for communities

⍰ An improved governance framework

⍰ Clearly articulated roles for Commonwealth, State/Territory and local governments, and for the community

⍰ A public communication program to support widespread understanding of the NAP.

Box 2 Specifications for catchment/regional bodies under the National Action Plan for Salinity and Water Quality

⍰ A suitable level of authority to develop and implement catchment/regional plans

⍰ Transparency and equity in decision making and effective mechanisms for participation by all relevant stakeholder groups

⍰ Technical ability and capacity to develop and implement accredited catchment/regional plans, or the ability to co-opt this ability and capacity

⍰ The ability to work effectively in the delivery of cross-border plans

⍰ Adequate arrangements for administration, financial management and accountability for implementing the catchment/regional land and delivering agreed outcomes

⍰ Arrangements to work with local government and other agencies to ensure the integrity of the catchment/regional plans and government investments.

The overarching agreement specifies what the INRM plans need to contain (summarised in Box 3). Each plan is to be assessed against a set of national criteria approved by the Natural Resource Management Ministerial Council, and revised if necessary, in order to achieve formal accreditation. Block funding is to be provided to catchment/regional bodies to develop, refine and implement the plans on the basis of 'clear investment principles' spelt out in the Agreement. On-going funding to catchment/regional bodies depends on them satisfying agreed milestones and performance standards as specified in partnership or bilateral agreements between the Commonwealth and each of the States or Territories. The catchment/regional bodies are required to report annually to the Commonwealth and the relevant State or Territory Government on progress in implementing plans.

The bilateral agreements define boundaries for each agreed region, and identify or establish which are appropriate regional bodies to develop the INRM plans through a regional community consultation process. They allow for different steps, circumstances and timelines for accrediting plans in different jurisdictions and regions.

Funding is also to be provided to regional bodies:

⍰ for well-planned or timed critical actions to achieve priority NRM outcomes, particularly those consistent with nationally agreed standards and targets (this can occur outside the plan accreditation process), and

⍰ to support developing or refining plans through information gathering, modelling of strategies, developing targets and involving communities.

Box 3 Summary of specifications for INRM plans under the NAP (emphasis added)

⊄# Contribute to achieving **nationally agreed outcomes**

⊄# Incorporate **strategies and actions** for progressing a range of NRM issues

⊄# Be within a **framework of standards** agreed by the Commonwealth and the States/Territories

⊄# Be based on **scientific analysis of natural resource conditions** and problems at a catchment level

⊄# Include **catchment/region-specific targets**, developed with reference to national standards

⊄# Outline a **strategy to meet caps** on extractive use of water (to be introduced by the States/Territories)

⊄# Include **milestones** for progressing the targets and national standards

⊄# Involve a **community-based process** in developing the plans

⊄# Outline **strategic approaches in stimulating changes** in land and water resource management and catchment/regional scale action

⊄# Identify **cost-effective actions** to address areas of high hazard in salinity and water quality problems

⊄# Include **accountability, performance monitoring and reporting arrangements**

⊄# Where relevant, **be consistent with basin-wide or State strategies and targets** agreed by relevant jurisdictions

⊄# Include **provisions for periodic review and update**.

The Trust Extension

The Trust Extension is to be delivered in a similar way to the NAP, using a similar funding approach. It builds on experience gained through the first five years of the NHT from 1996 to 2001.

Both the NAP and the Trust Extension are overseen by the Natural Resource Management Ministerial Council. An August 2001 communiqué from the Council announced its commitment to tackling land and water challenges Australia-wide through a cooperative approach based on the arrangements outlined for the NAP and the Trust Extension (Natural Resource Management Ministerial Council 2001).

Capacity-building as part of the NAP and the Trust Extension

Capacity building for communities is a key element of the NAP. The discussion paper *Managing natural resources in rural Australia for a sustainable future* (National Natural Resource Management Task Force 2000), identifies these aspects of capacity building for governments to attend to:

⊄# continued support to landholders and regional communities to enhance skills

⊄# investing in leaders and 'champions'

⊄# a national approach to training

⊄# improving training delivery.

Under the first aspect, the role of facilitators, trainers and extension officers as support people is discussed. The funding from the first tranche of NHT funding to support property management planning training is highlighted, and an evaluation of these planning courses is discussed. The evaluation found that 79% of participants reported they had changed one or more of their land management practices as a result of what they learnt at the course.

Under the second aspect, leadership training is identified as important in improving NRM practices, and the need for governments to provide support for training to develop regional leaders is highlighted. This

need has been recognised by agencies like the Murray-Darling Basin Commission, which advertises leadership training courses for Basin communities, and in a wide range of government and non-government prize and award schemes that recognise outstanding achievements in environmental, primary industry and NRM fields.

The formal education and training sector clearly has a role in capacity building for improved NRM, but there is no national approach to this kind of training. The discussion paper makes suggestions about what is needed to develop a national approach to skills development and training for improved NRM.

Not only does the structure and content of education and training for improved NRM need attention, but the discussion paper also suggests that delivery of training to landholders and regional communities needs to be improved. The paper makes suggestions about the roles of different players in doing this, and what processes and mechanisms might be involved.

In the original NAP outline, the capacity building element is to include re-orienting the existing facilitator and coordinator support network to support INRM planning; developing the management and technical skills of land managers and other stakeholders to adopt sustainable land and water use practices; extending information to communities, including information from the National Land and Water Resources Audit; and developing appropriate catchment or regional delivery bodies and arrangements where they do not already exist.

In relation to the NAP and the Trust Extension, an *NRM capacity building framework* has now been prepared and agreed to by the partner governments. The goal is 'Informed and improved decision-making, leading to the implementation of sustainable natural resource management, with particular focus on NRM at the regional level'. The framework document focuses on the importance of capacity building in ensuring local ownership of, and uptake of new NRM practices and processes. Action areas identified are:

⊄# raising awareness – community members being aware of regional NRM issues and the link between these issues and the long-term viability of the community

⊄# information – natural resource managers and users able to access and use the necessary information, data and science – biophysical, social and economic – to make sound NRM decisions

⊄# skills and training – natural resource managers and users equipped with the necessary technical and planning skills to participate in developing and implementing sustainable NRM at the farm and regional scale (the need for skills in broader disciplines such as people management, negotiation, consensus building, conflict management, team building and project management is acknowledged here)

⊄# facilitation and support – support systems in place to ensure the engagement of communities and to enable skilled natural resource managers and users to exercise ownership over regional NRM decision-making processes, and effectively implement actions arising from these processes.

While this project has a primary focus on the skills and training action area, in order to take a systemic or integrated approach to capacity building of necessity it also deals with the other action areas to some extent.

Under the skills and training action area, the Commonwealth *NRM capacity building framework* suggests that potential areas of activity include:

⊄# developing tools to identify skills and knowledge gaps

⊄# developing new, and modifying existing training materials

⊄# strategic delivery of training based on identified skills and knowledge gaps, and strategic partnerships with training institutions, industry etc.

This project goes some way towards developing tools to identify gaps, and developing recommendations about how to address the other action areas.

3 Other players in natural resource management capacity building

Apart from immediate policy and program details of the NAP and the Trust Extension, and the partnerships they involve, a range of other players are undertaking or supporting capacity building initiatives in areas related to INRM planning skill and training needs.

Agriculture, Fisheries and Forestry – Australia

Agriculture, Fisheries and Forestry – Australia (AFFA) is a lead agency together with Environment Australia (EA), in delivering the NAP and the Trust Extension at the Commonwealth level. However, it also runs other related programs.

In 2000, a $167.5 million program was announced, *Skilling farmers for the future*. It is administered by AFFA and combines the previous FarmBis and Property Management Planning programs (Anderson 2000). While the program has a strong production orientation, it also supports training in NRM and property management planning via course subsidies provided to intending students. A training needs analysis and report of findings have recently been completed for FarmBis (Kilpatrick & Guenther 2002). The authors developed a skills template organised under the broad headings of Natural Resource Management, Production Management, Marketing, People Management, General Business Management and Financial Management. They surveyed 163 organisations, covering a range of regional NRM (including NAP groups), Landcare, Environment and Indigenous groups.

From the survey overall, the People Management training area emerged as the main priority, and within that, communication and leadership were the highest specific priorities. When barriers to training were considered, availability of time and location/access to courses were identified as the main barriers although cost was also a significant factor. Only 54% of respondents were either 'somewhat satisfied' or 'very satisfied' with training available, with levels of satisfaction being lowest for Indigenous, and Landcare and Environment groups. The main reasons for dissatisfaction related to course design/flexibility, access to quality providers who understood the industry, and providers not delivering what the industry required. When asked about their ways of identifying training needs, 65% of respondents reported using informal feedback from members as their main method. Almost 61% indicated that introduction of new practices such as new technology and quality assurance systems had highlighted their training needs. More than half the respondents used planned consultations or less formal meetings with experts, workshops and seminars, and feedback from member bodies, to help identify needs. Only 36% had conducted formal surveys of members to identify needs.

Another report for FarmBis examined conditions influencing on-farm implementation of education and training obtained through the program, and provides "best practice' guidelines for FarmBis training providers or coordinators to help improve the relevance of learning activities to primary producers (Participative Technologies 2002). The main elements of this best practice are shown in Box 4. The relationship of many of these points about best practice education and training to the factors identified as important in improving farmers' adoption of new agricultural practices needs to be recognised (see for example Barr & Cary 2000).

Box 4 Summary of main elements of 'best practice' guidelines for *FarmBis* training providers or coordinators to maximise usefulness and use of learning activities (Participative Technologies 2002).

⊄# Accelerate the process of building a learning relationship

⊄# *Learning relationship* – better understand the learning needs of producers by one-to-one interaction and use informal self-awareness inventories etc. at start of activities

⊄# *Sense of self* – help producers identify their own needs, goals and learning capabilities (using self-awareness inventories, self-image exercises and reflective discussions)

⊄# Ensure producers have *control and ownership of learning*, and have a clear understanding of available courses, compatibility with their own needs and measurable learning goals. This can include producers developing a 'learning map'

⊄# *Course scheduling* –suited it to the rhythms of the seasons, tap into current industry issues and locate venues near the intended participants

⊄# Design content, structure and delivery for outcome-focused learning

⊄# *Responding to needs* – ensure learning objectives and training processes are responsive and applicable to identified needs and interests as well as current issues. Encourage view of learning as a multiple event process and present courses in a way that acknowledges where participants are at now

⊄# *Accessing knowledge/experience* – create an environment where participants can interact e.g. through learning groups with diverse members, and with potential to lead to ongoing relationships

⊄# *Challenging environment* – create a stimulating environment that encourages participants to investigate and explore issues for themselves

⊄# *Whole of business context* – ensure course design and learning process take account of all issues impinging on farm businesses. Bring this to bear on a final strategic implementation plan

⊄# *Action focus* – course content needs to include practical demonstration of applying new knowledge or practices. Use own farm-related projects

⊄# *Adult learning style* – include a wide variety of training tools, media and techniques. Use a flexible and adaptable delivery style that emphasises learning not teaching and use investigation and exploration

⊄# *Business decisions* – activities need to result in decisions and plans for action (the third phase of the learning cycle)

⊄# *Course structure* – use both group and one-to-one approaches. Structure courses so they make up a learning process with regular reflection and evaluation that allows the learning cycle to be completed

⊄# *Credible presenters* – use culturally diverse and credible presenters of both genders. Include forward thinking industry leaders, farmers and ex-farmers who know the farming culture

⊄# Sustain the learning outcomes

⊄# *Reinforcing mechanisms* – ensure peer interaction continues and is validated and supported afterwards, and that there are electronic backup mediums e.g. CD-ROMS, videos, online resources

⊄# *Learning pathways* – ensure information on related courses, events and learning opportunities are available in the region and beyond, including information about those that stretch the imagination and intellect.

AFFA has also recently funded a summary and evaluation of 'models and tools' applicable to INRM (URS 2002). The study covers a range of social, economic and biophysical models or tools that can be applied in regional planning and provides a composite list.

Environment Australia

EA has a major role in taking a national perspective on environmental education and training, closely related to some of the needs for INRM planning. The National Environmental Education Council, established to raise the profile of environmental education, has advised the Commonwealth Government about the appropriateness of environmental education approaches and priority environmental education issues and research needs. It also has a role promoting coordinated approaches across sectors. The National Action Plan, *Environmental education for a sustainable future*, was written as a starting point for an enhanced national effort in support of sustainable development and to provide leadership to the many different sectors involved in environmental education (Environment Australia 2000). The plan is built on five principles, which say that environmental education must be:

⊄# a responsibility shared by everyone

⊄# holistic and about connections

⊄# practical

⊄# in harmony with social and economic goals and accorded equal priority with them.

A key element of the National Action Plan for environmental education is to shift from emphasising the need to raise awareness, to equipping people with the knowledge, values and skills to use natural resources more sustainably and to protect and conserve Australia's environment. To accomplish these goals, the plan identifies key areas of need as:

⊄# developing a national framework for environmental education activities

⊄# raising the profile of environmental education in Australia

⊄# better coordinating environmental education activities

⊄# greater access to quality materials

⊄# more professional development opportunities for teachers in the formal education sector

⊄# more integration of environmental education principles into mainstream education (including tertiary level education) and vocational training activities

⊄# better resourcing of community organisations involved in environmental education.

Environment Australia and Agriculture, Fisheries and Forestry – Australia and the Natural Heritage Trust

EA and AFFA either jointly or separately administered the components of the first tranche of NHT funding, which covered a wide range of programs and projects related to INRM. An extensive series of evaluation reports were completed on the effectiveness of the various components of the NHT and how they were administered.

Facilitators and coordinators have had an important role in the NHT in the past. With NHT funding, networks of paid facilitators and coordinators were established for a number of program components. They included Landcare Facilitators and Coordinators, Bushcare Coordinators and Indigenous Land Management Facilitators, for example. These people's role was to maintain links between communities and government, between communities involved in similar issues in different locations, and to work to establish effective partnerships between communities and governments to achieve on-ground changes in land management practices. With completion of the first tranche of the NHT, there has been concern about the future of these networks. A recent address made by the AFFA Secretary to a State Landcare Facilitators conference included assurances that facilitator and coordinator networks would continue to be funded, but that under the NAP and the Trust Extension their roles needed to be re-defined to focus on regional strategies and to have a direct link to achieving regional NRM targets (Taylor 2001). The address also acknowledged the role of facilitators and coordinators in NRM capacity building and 'leading change'.

The National Landcare Program Coordinators produced a resource kit entitled *Setting up for success: a guide for designing, managing and evaluating projects* (n.d.). This kit, intended particularly to help community members managing NHT projects, includes a project management framework and cycle, glossary and resource list that could be useful to regional IRNM planning groups.

A communication manual has been produced for Landcare, *Landcare languages: talking to each other about living with the land* (Brown 1996). It considers the range of players in Landcare, the different 'languages' they use according to the knowledge and professional cultures they come from, and discusses a range of tools that can be used to improve communication among the various players.

Department of Transport and Regional Services

The Commonwealth Department of Transport and Regional Services (DoTaRS) has a major role in providing services and funding programs for rural and regional Australia. This role includes helping regional communities to identify and access Government support for undertaking education, training and skills development; and encouraging service providers to make their offerings relevant to the needs of regional communities. DoTaRS also works to provide whole of government information resources for regional communities.

In 2000, DoTaRS organised a Regional Australia Summit, at which a wide range of issues were aired by people from the regions. In the final report of the summit (DoTaRS 2000), issues relating to improved education and training in regional Australia are discussed and actions taken to address these issues since the summit are listed. Actions relevant to this project include proposals for leadership training under the *Stronger Families and Communities Program*; and a *Partnership with Regional Universities* sub-programme under the *Understanding Rural and Regional Australia Programme*, designed to encourage innovative partnerships between regional universities and community groups to improve regional sustainability.

Many of the barriers to participation in education and training (access to services, higher costs, cultural and socio-economic) were highlighted at the Regional Australia Summit. The following key policy directions for enhancing education and training in regional Australia were identified:

⊄# encouraging networks and partnerships (strategic learning) within regions, between regions and the nation, between educational institutions and these institutions and communities, and between policymakers as well as between policy makers and regions and communities

⊄# local planning — policy formation should include strong regional and community input and involvement

⊄# education, training and learning provision needs to occur through purpose-related cooperatively planned mechanisms, brokers who work across policy silos at the grass roots level, including training brokers who identify needs and arrange appropriate education and training or learning programs, effective use of information technology and other flexible learning methods.

(DoTaRS 2000).

Projects funded under the *Regional Solutions Programme* or the *Local Solutions to Local Problems Programme* may be helpful in relation to INRM capacity building. These programs could offer support to communities wanting to access regional education and training opportunities.

DoTaRS administers a *Sustainable Regions Programme*, launched in August 2001. It is a four-year 'prototype' operating in:

⊄# Campbelltown-Camden, NSW

⊄# Far North East NSW

⊄# Gippsland, Vic.

⊄# Atherton Tablelands, Queensland

⊄# Wide Bay-Burnett, Queensland

≠# Playford-Salisbury, SA

≠# Kimberley, WA

≠# North West-West Coast, Tas.

The program is intended to provide a national approach to supporting the designated regions to help them lead their own development in accordance with locally established priorities; to assist regions undergoing major economic, social and environmental change to build a viable foundation for the future; and to promote a whole of government approach to regions by Commonwealth agencies. Locally based advisory committees have been established to guide development of the program and assess proposals for funding. A number of NAP priority regions coincide wholly or partly with the regions targeted in the *Sustainable Regions Programme*, and there may be a possibility for integrating regional initiatives across programs.

Department of Education, Science and Training

The role of this Commonwealth Department in the formal education and training sector is discussed further in Chapter 4. The Department of Education, Science and Training (DEST) and its predecessor, the Department of Education, Training and Youth Affairs (DETYA) have commissioned work related to the education and training needs of business and industry, going beyond formal education. One example of this is the report *Size matters: small business – small workplaces* (Office of Vocational Education and Training, Tasmania 2000). This is an evaluation of a professional development program for small business, which ran from 1996 to 2000. It considers the extent to which small businesses need formal training and what impediments to training they face. To the extent that regional INRM groups and farming operations are 'small businesses' (and the report advocates using the term 'small workplaces' which would apply well to most regional groups and catchment organisations), the findings of the report are relevant to regional INRM skill and training needs. However, it needs to be noted that members of regional groups are often involved in a voluntary capacity and so may face even greater time and motivational constraints than staff of small businesses. The report suggests that while much learning in small businesses may be informal, incidental and *ad hoc*, it is not necessarily non-strategic. The authors support the value of the 'just-in-time, only-when-necessary, as-we-are-working, contextualised approach' to learning, but also suggest that this may need to be combined with the more structured training that tends to characterise bigger organisations (Office of Vocational Education and Training, Tasmania 2000: 1-2). The report concurs with findings from previous work that small businesses in general are:

> … only interested in training, which contributes to the solutions of today's problems. They simply do not have the time to engage in generic training with a potential to pay-off in the future …
>
> [Dept of Employment, Workplace Relations and Small Business (DEWRSB) 1998]

The report discusses barriers to training under three headings:

≠# economic factors – tighter margins resulting in a low priority for investments that don't seem to provide immediate returns

≠# structural factors – the size and operation of small businesses and the nature of their workforces

≠# attitudinal and perception factors – negative perceptions by employers or employees about the value and relevance of training.

With relatively little modification, these factors could apply to members and staff of regional NRM groups. Particularly for farmers in these groups, drought or low commodity prices may force a focus on the farm business and its viability at the cost of involvement in public good activities. Regional groups may have little in the way of resources to spend on training activities without receiving special purpose support. Groups may have a high turnover of members or staff due to 'burnout', the relatively low salaries paid to NRM professionals, and possible challenges associated with working in regional locations (social isolation, poor access to services, poor office facilities or working conditions). Attitudes to training may vary greatly, but knowledge of preferred learning styles among farmers suggests that unless training is 'hands-on' and locally relevant, it may not be valued.

The recommendations of the study are shown in Box 5. The study also develops strategies to address the recommendations, some of which may apply here.

Box 5 Recommendations of a study on professional training and development needs for small business (Office of Vocational Education and Training, Tasmania 2000)

⊄# The term 'small workplace' should be adopted by the formal training system in preference to the term 'small business'

⊄# Small workplaces' access to publicly funded training support should be improved

⊄# Increased efforts should be made to ensure that the potential of new national frameworks and training packages is maximised in regard to creating better access for small workplaces

⊄# As a matter of importance, improve the training industry's appreciation of small businesses/small workplaces in the Australian economy and society, and highlight the need to increase their participation in the formal training system

⊄# Peak training industry and business sector organisations should work together to ensure that training organisations develop a business culture

⊄# We need to bring the business services sector into a closer working relationship with the formal training system

⊄# Ensure that indigenous small business training and e-commerce small business training receive more appropriate provision

⊄# Promote the outcomes of the Small Business Professional Development Programme as represented by its key publications.

Murray-Darling Basin Commission

The Murray-Darling Basin Commission (MDBC), a joint State/Commonwealth body overseen by a Ministerial Council, is responsible for a range of initiatives related to this project. The MDBC has a particular focus on Integrated Catchment Management (ICM), a very similar concept to INRM, and recently commissioned a major review of ICM around Australia (Bellamy, Ross, Ewing & Meppem 2002). Some major points from this review are that:

⊄# there is a lack of coordination within and between government agencies with responsibilities for NRM generally

⊄# there is a plethora of bodies at the State level with roles in NRM, of which catchment management bodies form only part

⊄# most catchment bodies are inadequately resourced to carry out their functions – the only bodies with ability to raise their own funds are the Catchment Management Associations (CMAs) in Victoria and the Catchment Management Water Boards in South Australia

⊄# there is heavy reliance on volunteers to participate in ICM decision-making at the catchment and sub-catchment levels

⊄# in all States, effective engagement of Local Government is a vexed issue

⊄# achieving a whole of government approach is a highly challenging issue for ICM

⊄# there is little evidence of strategic effort to monitor the effects of ICM and assess the effectiveness of different approaches

⊄# there needs to better involvement of Indigenous people

⊄# capacity building is emerging as a key issue in making ICM structures and processes effective – this includes communication between members of catchment organisations and their stakeholders, communication among catchment organisations, and across parallel government NRM processes, including those dealing with vegetation and water management issues

∉# integration and linking of the many planning processes at all levels of governance is weak or non-existent.

The review deals with ICM trends and issues under the headings Context, Structure and Process. Capacity building is dealt with under Process, and the need to recognise capacity building as an area needing attention in its own right is stressed. The authors suggest that a major issue for capacity building is to help people move from a predominantly private property mindset to one in which individual properties are seen as part of an ecologically and socially connected landscape.

The MDBC *Human Dimension Program* has supported a suite of research projects in the capacity-building area (see for example Aslin & Brown 2002). The MDBC also provides funding for leadership training in the Murray-Darling Basin.

State and Territory Governments

The current situation in each of the States in relation ICM is reviewed in detail in Bellamy et al. (2002), and the brief summary here is mainly drawn from this report. The States and Territories have greatly varying legislative and institutional bases for addressing ICM and INRM issues, and correspondingly varying NRM agency and regional group structures. Under the NAP and the Trust Extension approach, the States and Territories face the challenge of trying to match their existing structures and NRM plans to the requirements spelt out in the Intergovernmental and Bilateral Agreements. Existing regional groups and catchment management organisations face the challenge of operating in a new policy and program context, and relating their existing activities and planning processes to those required under the new programs.

In **South Australia**, there is no formalised structure or recognised process for ICM, and no specific catchment legislation or statutory authority with a mandate to integrate NRM activities. Apart from the South Australian portion of the Murray-Darling Basin, only the catchments in the Adelaide Hills have previously considered resource management on a catchment basis. However, an *Integrated Natural Resource Management Bill* is before the SA Parliament and there are interim INRM groups already operating in a number of NAP priority regions. The report of a recent Select Committee on the River Murray found that:

> A lack of clear direction and difficulty of accessing professional and technical support is hampering the true potential of community groups to deliver change on the ground.

(Parliament of South Australia 2001: 81).

There are three NAP priority regions in South Australia: the Mt Lofty-Kangaroo Island –Northern Agricultural District, the Lower Murray (shared with New South Wales and Victoria), and South East.

New South Wales has operated with a Total Catchment Management concept since the 1980s, and a *Catchment Management Act* was passed in 1989. Virtually all of NSW is covered by the TCM structure, which consists of tiered committees with responsibilities from State to catchment level. The regional level consists of 18 Catchment Management Boards (CMBs) and Catchment Management Trusts, whose members are appointed by the NSW Minister for Land and Water Conservation from nominations provided by organisations in specified categories (nature conservation, primary producers/natural resource users, Local Government, Indigenous, State Government). The CMBs provide a basis for coordinating the activities of a range of local groups including Landcare, Stream Watch and Salinity groups. Each Board is required to produce a Draft Catchment Management Plan. A 1996 review of catchment management in New South Wales highlighted problems with agencies providing support to CMBs because there were so many (numbers have since been reduced); experienced people leaving the process due to 'burnout'; poor agency planning and consultation processes not being coordinated; insufficient resources and unclear status of CMBs; lack of leadership, information, technical expertise and funds; insufficient management skills among members; need for an executive support core group for each CMB; and inefficient process and poor communication leading to time being wasted and no long-term funding being secured (AACM 1996).

There are seven NAP priority regions falling wholly or partly into NSW: the Lachlan-Murrumbidgee, Lower Murray (shared with Victoria and South Australia), Murray, Macquarie-Castlereagh, Namoi-Gwydir, and shared with Queensland, the Border Rivers and Condamine-Balonne-Maranoa.

In **Western Australia**, the preferred policy approach is based on regional and sub-regional sustainable NRM, an approach endorsed by the Western Australian Cabinet in 1999. This non-statutory approach covers developing partnership agreements with regional NRM groups and relevant State agencies in a similar model to the agreements between the Commonwealth and the States under the NAP. No single Western Australian Government agency has responsibility for INRM and there is no overarching integrative legislation. A Soil and Land Conservation Council is the peak body for landcare in Western Australia and is a statutory authority under the WA *Soil and Land Conservation Act 1945*. There are five regional NRM groups operating in the State under the ambit of a State Salinity Strategy, and the intent is that these groups will enter into partnership agreements with relevant State agencies (only one such agreement had been signed at the time Bellamy et al. conducted their research). All the regional NRM groups have developed, or are in the process of developing, regional NRM strategies. The Western Australian Department of Agriculture has supported some recent capacity building initiatives, including a Rapid Catchment Appraisal Process in which landholders make an assessment of their farming operation and alternatives for managing it in the future. This has led to a *Supporting Communities* initiative that takes a broad non-technical view of farming and community futures, and involves mentoring processes and formation of learning 'clusters'. There is also a *Progress Rural Western Australia* initiative that covers five programs designed to build rural capacity through leadership and training opportunities.

Western Australia has five NAP priority regions: Northern Agricultural, Avon, South West, South Coast and Ord-Bonaparte (shared with the Northern Territory).

In **Queensland** an ICM program was launched in 1990 and a State Steering Committee developed an ICM program and strategy in 1991. However, it has no formal legislative basis. The major elements of the Queensland approach are voluntary participation by both government and communities; a community focus with a key role for non-statutory Catchment Coordinating Committees; partnerships between government, industry and community; participatory and consultative processes; and taking a strategic and planned approach to tackling important issues (Rowland & Begbie 1997). The Queensland ICM approach incorporates the network of State Landcare groups (more than 187). There are now more than 30 catchment management groups operating in Queensland, together with 13 regional strategy groups. The advent of the NHT and more recently the NAP, have encouraged a move to a more regional focus on NRM as indicated by establishment of regional planning frameworks under the *Integrated Planning Act 1999*; catchment and property scale planning that includes strategic plans developed by regional NRM and ICM groups; and projects to integrate NRM outcomes into Local Government planning. There are four NAP priority regions in Queensland and NAP funding provides an opportunity to build on and strengthen the existing regional groups. With respect to regional INRM capacity building, the Queensland Government has identified the need for:

∉# leadership and facilitation skills

∉# protocols and agreements for catchment management committees on how to do business (liaison with governments, exchange of information, employment, administrative matters etc.)

∉# capacity building in use of information technology including GIS and decision support tools.

(Queensland Government 1999).

Broad approaches proposed to address capacity building requirements in Queensland under the NAP are strengthening the abilities of regional natural resource managers, strengthening the information and communication channels between them, and strengthening the knowledge base underpinning management actions (Queensland NAP Capacity Building Working Group 2001, Bellamy et al. 2002). To implement these approaches the Queensland Government proposes the following investments:

∉# building effective regional information services

∉# refocusing Government support for NRM

∉# support for building strong regional arrangements

⍧ capacity building of Local Government to enable it to effectively participate in NRM planning

⍧ training for regional bodies (including identifying national, State and regional training priorities)

⍧ supporting the development of a community-owned, regional body information sharing network

⍧ developing a program to share and promote adoption of research findings about best management practices.

(Queensland NAP Capacity Building Working Group 2001).

Queensland's four NAP priority regions, contained either wholly or partly within State boundaries, are the Burdekin-Fitzroy, Lockyer-Burnett-Mary, Condamine-Balonne-Maranoa (shared with New South Wales), and Border Rivers (also shared with New South Wales).

Victoria was the birthplace of Landcare in 1986 and this marked a shift to a more partnership based and integrated approach to land and water management in the State (Curtis 1998). Proposals for legislative reform related to the rise of Landcare led to the passing of the *Catchment and Land Protection Act* in 1994. This Act established a regional Catchment and Land Protection Board in each of 10 Catchment and Land Protection Regions, charged with responsibility for developing a Regional Catchment Strategy. The Boards were also given responsibility for providing advice on Commonwealth funding programs and action priorities in each region. In 1997, nine statutory Catchment Management Authorities (CMAs) were established, covering all of non-metropolitan Victoria. The CMAs were established as formal regional bodies with effective decision-making powers able to implement the regional strategies ('to give them teeth'). They brought together the roles of a range of existing community-based NRM advisory groups. Each CMA has appointed Implementation Committees at the sub-catchment level that are responsible for developing and carrying out detailed work programs in their areas of expertise, and overseeing on-ground work.

The Victorian Department of Natural Resources and Environment (DNRE) is active in the area of capacity building for INRM or ICM, and in working to enhance community engagement in NRM issues. A recent discussion paper sets out a framework for community engagement in ICM and outlines a capacity building strategy and process (Howden 2002). DNRE has recently released *Guidelines for review and renewal of regional catchment strategies 2002-07*, which incorporate the requirements of the NAP and NHT2, and point out that Regional Catchment Strategies developed within Victoria's framework will also be the accredited plans under the two Commonwealth programs (DNRE 2002).

Victoria contains all or part of four NAP priority regions: the Glenelg-Hopkins-Corangamite, Lower Murray (shared with South Australia and New South Wales), Avoca-Loddon-Campaspe, and Goulburn-Broken.

Tasmania has relatively little in the way of NRM issues related to dryland salinity or biodiversity loss, but water use is a major issue because of the State's dependence on hydro-electricity and the socio-economic importance of freshwater based industries like aquaculture, manufacturing and tourism. As a result, Tasmania has a wide array of sectors with interests in water resource management. The main legislation is *The Water Management Act* of 1999, but Bellamy et al. (2002) consider that Commonwealth initiatives such as the NAP, the earlier Commonwealth discussion paper *Managing natural resources for a sustainable future*, and the Council of Australian Governments' Water Reform Framework have provided incentives for a focus on ICM and INRM in Tasmania. The central Tasmanian agency for dealing with ICM and INRM is the Department of Primary Industries, Water and Environment (DPIWE). The State coordinating body for NRM was the Tasmanian Land and Water Management Council, but this was disbanded in 1997 and has not been replaced by an equivalent peak body. There is a proposal to develop a Tasmanian natural resource management strategy to provide an integrated framework, set priorities and establish arrangements for partnerships for managing natural resources at a regional level. At the moment there are no explicit catchment bodies in Tasmania, although a range of water, catchment or river management plans have been developed by different players. The Tasmanian Government has also focused attention on what constitute 'regions' in the island State.

With funding from the first tranche of the NHT, DPIWE and the Local Government Association of Tasmania published a booklet, *Regional natural resource management: a framework for developing*

strategies and setting priorities (Local Government Association of Tasmania 1999). The first part includes a structural framework (setting out principles for NRM, a set of regional boundaries for Tasmania and a checklist for what strategies should contain), and a guiding process for developing regional NRM strategies. The second part is a pilot case study of the Tamar region.

Tasmania has one NAP priority region, the Midlands.

The **Australian Capital Territory** is contained within the large Lachlan-Murrumbidgee NAP priority region, most of which falls into New South Wales. The Territory Government works closely with New South Wales' authorities to manage its catchments, substantial parts of which are covered by urban Canberra.

The Department of Infrastructure, Planning and Environment is the **Northern Territory** agency with primary involvement in the NAP and the Trust Extension. Previous catchment planning exercises have been conducted in the Mary River and Daly River catchments in the Darwin area, the former with strong community involvement through a catchment advisory committee.

The Northern Territory contains two NAP priority regions: the Darwin-Katherine and Ord-Bonaparte (shared with Western Australia).

Research and Development Corporations

Two Commonwealth and industry-funded research and development corporations have a major role in the INRM area and in supporting research related to INRM capacity building. They are Land and Water Australia (LWA, formerly known as the Land and Water Resources Research and Development Corporation, LWRRDC), and the Rural Industries Research and Development Corporation (RIRDC).

One of the foci of LWA's Social and Institutional Research Program is how people learn about and understand NRM, and a second focus is how people live in and manage natural resources. Projects funded under the ambit of this Program (followed by LWA's code for them) include:

⍰ Community participation in Australian natural resource management (ANU21)

⍰ Effective relationships in natural resource management (CAG2)

⍰ Participation in natural resource management: research and development (SYN1)

⍰ Evaluating integrated catchment management (CTC7)

⍰ Institutional knowledge in natural resource management (UTA11)

⍰ Supporting decisions: understanding natural resource management assessment techniques (CLW24)

⍰ Evaluating natural resource management policies and programs (USQ3), and

⍰ Interdisciplinary research in natural resource management (UMU14).

(See the SIRP website for information about these and other relevant projects http://www.lwa.gov.au/sirp)

Findings from these projects are summarised in fact sheets and a booklet *Natural resource management: people and policies* (LWA 2001). The project summaries contain many useful lessons about community involvement in NRM and recommendations about how to enhance it. Among other things, Project CTC7 recommends that that integrated catchment managers and planners need to establish their local relevance and support community learning. Project USQ3 recognises the complexity of the political, institutional, social and biophysical facts involved in NRM, resulting from the fact that effective NRM involves multi-government and multi-actor processes. This is very clear in regard to the NAP and the Trust Extension approach and its relationship to current initiatives in the various States and Territories. Project USQ3 stresses the need to clearly define policy and program objectives, recognise the role of evaluation both in learning and reporting, clearly define outputs and outcomes, and to carefully develop 'program logic' and map program relationships. The project advocates developing and using systems and techniques that contribute to adaptive management and policy learning (LWA 2001).

LWA has previously funded three major R & D projects in the rangelands, each of which examined regional planning processes and ways of engaging communities in these processes. The findings are summarised in three booklets: *Rangeways: community-based planning for ecologically sustainable land use in the North East Goldfields of Western Australia* (Friedel, Holm, Burnside, Duffecy, Fitzgerald & Brennan 2001; CHRRUPP: *Central Highlands Regional Resource Use Planning Project: a planning and learning experience* (Dale, Bellamy & Leitch 2001; and *Rangelands in the 21st Century: seeking sustainability in the Western Division of New South Wales by changing laws, policies and administration* (Abel & Langston 2001). LWA also published an earlier overview of regional resource use planning in Australia (Dale & Bellamy 1998).

LWA and AFFA are funding another project closely related to the present one and arising within the NAP and Trust Extension policy context. This is the *Mapping regional capacity* project, proceeding concurrently with this project. It is designed to develop an indicator-based, standardised method to map regional capacity to help identify current and future capacity building needs and priorities (Webb & Curtis 2002). It draws on previous research into adoption of sustainable land management practices, some of which has been done for the National Land and Water Resources Audit (Cary, Kelson & Aslin 2001; Cary, Barr, Aslin, Webb & Kelson 2001.); evaluations of Landcare (see for example Curtis et al. 2000); the Monash Regional Australia Project (MRAP & CRLRA 2001); extensive international and Australian literature on social capital; and the *State of the Regions* report (National Economics and the Australian Local Government Association 2001).

RIRDC has supported a number of relevant research projects mainly under the auspices of its *Human Capital, Communications and Information Systems Research and Development Program*. These include *Building capacity for change in the rice industry* (Macadam, Drinan & Inall 2002) which makes some general points about the nature of the agricultural extension system, not only as it applies specifically to the rice industry. The 'extension system' is interpreted as including a wide range of players like agribusiness, research organisations and cooperative research centres, government agencies, Landcare and other community organisations, the media, industry associations, landholders, and vocational education and training providers. While identifying strengths, the report concludes that the extension system suffers from these problems:

∉# relatively low level of farm business management expertise

∉# low level of use of business management support services

∉# confusing array of courses offered by different agencies

∉# business, technical and NRM foci generally not well linked

∉# poor linkages creating conflicting and confusing demands on farmers' and contributors' time

∉# lack of training in modern extension methods

∉# lack of training in strategic management of change at all levels

∉# producers experiencing anxiety and information overload

∉# low profile and involvement of women

∉# low profile of the formal education system

∉# low profile in, and sub-optimal use of, the mass media.

Lack of coordination and integration of services provided by different agencies is identified as a major issue. The report's authors consider that the narrow technical focus of some agencies is slowing progress towards whole farm business management aimed at longer-term economic and ecological sustainability. They believe that the emergence of these issues reflects a lack of common understanding of the system's purpose and how it should develop. This is a specific example of a more general point made in the report *Social and community dimensions of natural resource management* (Aitken 2001) about the need to shift the focus from a predominantly biophysical or technocratic one where social aspects are an 'add on', to a

more broadly based, whole of systems approach where a variety of perspectives are given equal significance.

RIRDC has funded a series of reports focused on the education and training of farmers or farm families. These include an evaluation of training activities to improve business management skills (Daniels & Woods); identification of research and development issues for farmer education and training (Synapse Consulting 1998); a review of how farmers learn (Kilpatrick, Johns, Murray-Prior & Hart 1999); and a report on revitalising agricultural extension (Falvey & Matthews 1999).

A further relevant RIRDC report is *Community participation in rangeland management* (Kelly 2001). Kelly identifies the need for different kinds of participatory approaches in different contexts, and proposes a checklist to guide selection of appropriate processes. This checklist could also be applied to developing capacity building processes for improved NRM.

A range of agencies, including LWA and RIRDC, are partners in a cooperative venture entitled *Capacity building for innovation in rural industries*. This has four principal objectives and accompanying core projects for each:

∉# Objective 1 What works and why – to identify current 'best practices' in rural extension/education and training to assist in the design and delivery of learning activities

∉# Objective 2 Foster involvement – to improve understanding of non-participation in learning activities, and to increase accessibility of learning activities and involvement of the farming community

∉# Objective 3 Optimising institutional arrangements – to promote and rethink rural extension/education through government, industry, and community groups so they respond to new and changing environments and enhance rural learning and practice

∉# Objective 4 Support for rural educators – to enhance the capacity of rural service providers to deliver and enable effective learning activities.

While it has a primary focus on industry-related capacity building and on farmers rather than on a broader range of landholders or rural communities as a whole, this cooperative venture and the projects it is funding relate to the broad topic of capacity building for INRM.

Greening Australia

The non-government organisation Greening Australia has developed a reputation for producing practical and innovative guides to help rural communities and other stakeholders work towards more sustainable NRM practices. These guides include *Participatory evaluation for Landcare and catchment management groups* (Woodhill & Robins 1996), and the *Sustainable regional development srd kit* (Dore et al. 2000). Both these guides emphasise a learning systems or soft systems approach to planning and project management, discussed in Chapter 1. They also provide advice and references to a range of information sources relevant to regional INRM planning groups.

4 The formal education and training system

Major players

The formal education and training system can support capacity building in regional communities engaged in natural resource and environmental management. The major players who provide formal education and training qualifications in Australia are shown in Figure 3. The two main types of post-secondary education are vocational education and training (VET), and higher or university-based education. Adult and community education programmes are also offered by a number of institutions and complement the formal educational programmes. This chapter is primarily concerned with the higher education and VET sectors. The Australian Qualifications Framework (AQF) is the national framework for 'recognised' education and training qualifications in Australia.

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                    The Australian
                    Qualifications
                      Framework
                        (AQF)


  Schools Sector          VET Sector (Cwth, State        Higher Education
  (Primary/Secondary      and Territory public              Sector
     schools)             systems, private providers     (Universities)
                          and employers)
  Senior Secondary                                           Diploma
   Certificate of         Certificates I – IV          Advanced Diploma
     Education               Diploma                    Bachelor Degree
                         Advanced Diploma                   Graduate
                                                            Certificate
                                                         Graduate Diploma
                                                         Masters Degree
                                                         Doctoral Degree

          Australian                       State/Territory
          National                          Training
          Training                          Authorities
          Authority                         (TAFE
          (ANTA)                            systems)

             Registered              Industry Training
              Training               Advisory Bodies
            Organisations              (ITABs)
              (RTOs)
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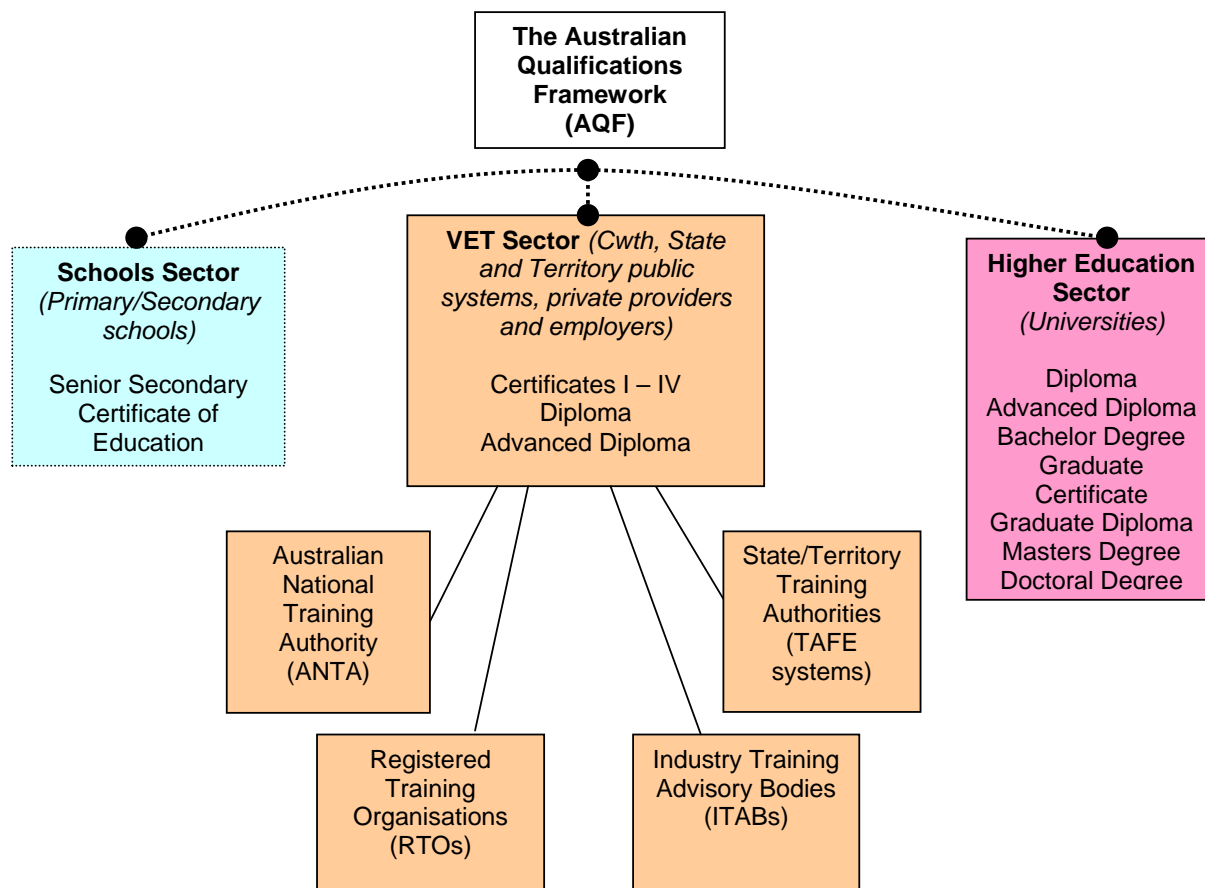
Figure 3 Key players in the Australian formal education and training system

Table 2 shows that the Commonwealth and the States and Territories share responsibility for the system. The States/Territories have primary authority for the funding, administration and delivery of the VET sector, while the higher education sector is largely self-governing.

Table 2 Roles and responsibilities in the Australian VET and higher education sectors

Sector	Policy	Government funding	Administration and delivery
Vocational education and training	Shared	Mainly States and Territories	Mainly States and Territories
Higher education	Shared	Commonwealth	Autonomous universities (within agreed policy framework)

Brief overview of the higher education sector

The higher education sector in Australia is comprised of 39 universities and four self-accrediting higher education institutions [Batchelor Institute of Indigenous Tertiary Education, Australian Maritime College, Melbourne College of Divinity, and the Australian, Film, Television and Radio School]. There are approximately 85 other higher education providers accredited by State and Territory authorities (e.g. theological colleges and providers with specialist interests in particular vocational or artistic fields). A total of 695,485 domestic and overseas students were enrolled in undergraduate and postgraduate higher education courses at these universities in 2000. Approximately 75% of students were studying in bachelor degrees and 21% were enrolled in post-graduate courses (DETYA 2001).

The Commonwealth Government states that the purpose of higher education is to contribute to the fulfilment of human and societal potential and to advance knowledge and social and economic progress through:

⊄# inspiring and enabling individuals to develop their capabilities to the highest potential throughout their lives (for personal growth and fulfilment, for effective participation in the workforce and for constructive contributions to society)

⊄# advancing knowledge and understanding

⊄# aiding the application of knowledge and understanding to the benefit of the economy and society

⊄# enabling individuals to adapt and learn, consistent with the needs of an adaptable knowledge-based economy at local, regional and national levels

⊄# enabling individuals to contribute to a democratic, civilised society and promote the tolerance and debate that underpins it.

(DEST 2002).

Australian universities are expected follow national protocols, which contain criteria that must be met for recognition. Universities must demonstrate the following features:

⊄# authorisation by law to award higher education qualifications across a range of fields and to set standards for those qualifications which are equivalent to Australian and international standards

⊄# teaching and learning that engages with advanced knowledge and inquiry

⊄# a culture of sustained scholarship extending from that which informs inquiry and basic teaching and learning, to the creation of new knowledge through research and original creative endeavour

⊄# commitment of teachers, researchers, course designers and assessors to free inquiry and the systematic advancement of knowledge

⊄# governance, procedural rules, organisation, admission policies, financial arrangements and quality assurance processes, which are underpinned by the values and goals outline above, and which are sufficient to ensure the integrity of the institution's academic programs

⊄# sufficient financial and other resources to enable the institutions' program to be delivered and sustained into the future.

The history of the higher education sector is one of continual, and widely contested, reform. Currently the Commonwealth government is undertaking a substantial review of the sector. The issues being debated include whether the sector is 'in crisis', the need for further specialisation and differentiation, and further private sector investment.

In response to the Commonwealth's overview paper, *Higher education at the crossroads: a review of Australian higher education*, the Australian Vice Chancellor's Committee (AVCC) voiced its concern over a decline in higher education investment (AVCC 2002). The AVCC felt that universities should be allowed greater flexibility in meeting student and community needs, including:

⊄# more support for under-represented groups across the sector (e.g. disabled, indigenous, students from remote and isolated areas, low socio-economic groups)

⊄# support for universities' engagement with communities (e.g. funding tied to verifiable level of regional engagement with productive outcomes

⊄# through inclusive consultation, identification of (short and long term) priority fields of study that need particular support.

(AVCC 2002).

In their response to the Government's policy, the University of Southern Queensland's Faculty of Sciences stated that as regional universities make significant contributions to the social and economic well being of regional communities, the Commonwealth Government should encourage and support their growth (Hazell 2002). Other voices of concern cite increasing corporatisation of formal educational systems as a negative trend, forces they consider to work against lifelong learning and alternative learning approaches to achieving sustainability (Hill et al. 2001). These discussions are relevant to capacity building for INRM, particularly for regional delivery and the focus of regional programs.

The VET sector

In 1997 there were 2,110 registered VET providers, which included government providers (operating in around 1,000 locations), commercial providers, community providers and employers. There are 3,009 registered provider locations, 33% of which are TAFE and other government providers, and 20% community centres (DEST 2002).

In 2000, 1,627,285 people participated in VET. Participation varies from a 12-week course to full-time attendance at college. Some 63% of VET participants are part-time (DETYA 2001). In 1997, 74% of post-school VET students were enrolled in TAFE colleges, which are funded and administered by State and Territory governments. In 1998 it was estimated that $8.5 billion was spent on vocational education and training. Forty-four percent of funds are public, 56% is provided from the States/Territories, and 25% comes from the Commonwealth (DEST 2002).

The VET sector has traditionally been industry-oriented. A key feature of the VET system is competency-based training – what an individual can do as a result of training. The AQF for vocational education and training provides national recognition of competency-based training on endorsed competency standards. Competency is defined as the ability to apply a specified level of knowledge and skills to achieve standards of performance required in the workplace.

The VET sector offers Nationally Recognised Training programs across Australia. These programs have met nationally agreed standards and can be offered by training organisations that are formally recognised by relevant State Training Authorities to deliver training. The National Training Framework specifies the arrangement for recognition of training organisations and products, and training packages, which integrate nationally available training products.

Training packages have been developed in an effort to ensure quality training outcomes and meet current and emerging vocational skill needs. They are designed to support a range of training pathways and provide a more flexible approach to training delivery. All packages incorporate:

⊄# national competency standards (workplace skills and knowledge requirements)

⊄# assessment guidelines (advice on assessment of competencies)

⊄# national qualifications (combining competency units that form national qualifications).

Packages may include a number of other tools and resources, such as:

⊄# a learning strategy (information on how training can be delivered)

⊄# assessment materials to support assessment guidelines

⊄# professional development materials (resources to assist trainers, teachers, employers and trainees).

Qualifications from training packages comprise combinations of endorsed competencies relevant to the industry or enterprise context. They may include a range of qualifications from across these levels, including more than one qualification at a particular level where it is necessary to accommodate different needs of industry streams or sectors, or to support multiple entry and exit points.

Formal environmental and NRM education and training

Education and training in NRM can be considered a subset of environmental education or training. The term 'natural resources' generally refers to a variety of *environmental* assets that humans rely on for a variety of needs. They can be separated into different categories (atmosphere, soils, minerals, energy, plants, animals etc.) and the systems they form (rivers, coasts, estuaries, landscapes etc.). A critical requirement for INRM is to understand the interrelationships and connectedness of resources and systems. Learners also need to appreciate more than the relationships of elements in the biophysical world. Natural resources can be seen as the 'epiphenomena' of human practices. They include parts of the biophysical environment where social interactions take place and which are often directly involved in these interactions, and parts of the environment that humans use and incorporate into their social systems (Clark et al. 2000). Environmental and NRM education develop skills, knowledge and values that may help enable people to achieve more sustainable environmental and natural resource use (EA 2000).

The environmental education sector has evolved significantly in recent years. There has been substantial growth in programs, projects and resource materials, as well as significant increases in environmental and NRM degrees offered by the tertiary sector (University of New England 2000). There is a wide array of environmental and natural resource management courses (approximately 622) on offer in the tertiary sector (EnviroNet 2002). Table 3 lists some of the universities offering undergraduate and postgraduate courses, and the different foci of these courses. In addition, the VET sector has study courses and training programs that cover natural resource management. Certificate and Diploma courses in Environmental Management and Natural Resource Management are offered through TAFE at various locations.

It should also be pointed out that we could also examine formal education and training in planning and design or other areas which are highly relevant to INRM planning, but have not done so here.

Table 3 Universities and course topics in environmental and natural resource management

Universities offering courses	List of course topics
Victoria	
Deakin University (Geelong, Rusden, Warrnambool)	Biodiversity
La Trobe University (Albury/Wodonga, Bendigo)	Cleaner production
University of Ballarat	Ecology
University of Melbourne	Eco-tourism
Victoria University of Technology	Environmental Education
NSW	Environmental Engineering
Australian National University	Environmental Health
Charles Sturt University	Environmental Law
University of New England	Environmental Management
University of Canberra	Environmental Planning
Macquarie University	Environmental Science
University of Newcastle	Environmental Studies
University of New South Wales	Heritage Management
University of Sydney	Natural Resource Management
University of Western Sydney	Toxicology
University of Wollongong	Waste Management
Queensland	Water Resources
Griffith University	
James Cook University	
University of Queensland	
Queensland University of Technology	
Northern Territory	
Northern Territory University	
Tasmania	
University of Tasmania	
Western Australia	
Curtin University	
Murdoch University	
University of Western Australia	
South Australia	
University of South Australia	
University of Adelaide	

In addition to degree courses on offer in the tertiary sector, there are some short courses and training packages offered through the VET sector and other providers. For example, the Conservation and Land Management Training Package (CLMTP) was developed after a Rural Training Council of Australia (RTCA) scoping project sought to address problems arising from the independent development of competency standards by a number of industries and sectors involved in conservation and land management. It is designed to provide qualifications for those seeking to work in sectors defined as: natural area restoration; vertebrate pest management; weed management; Indigenous land management; conservation earthworks; land, parks and wildlife; community coordination and facilitation; and general land management. It aims to support different learning pathways such as institution-based programs, workplace and school-based training, and other combinations of workplace and off-the-job training and assessment. Development of the CLMTP was led by ANTA and the RTCA with input from wide range of stakeholders including organisations such as AFFA; EA; the Australian Local Government Association; State agricultural, land management and parks and wildlife agencies; TAFE; CSIRO; and several unions.

The CLMTP may eventually function as an overarching framework for vocational education and training for those engaged in conservation and land management work, and serve as an 'umbrella' for other existing training courses and packages such as the *NHT skills tool kit* (Foreman 1999a, b) or the *Building regional capacity* short course (Mack & Stevens 2002).

The *NHT skills tool kit* is a competency-based, national training resource aimed at needs of regional facilitators, project coordinators, Landcare leaders and volunteers in rural and regional areas. It was designed to build skills and capacity base in rural and regional Australia to underpin sustainable and viable regional industries and communities. It has several elements including a manual and a skills planner that guides users in their skill development process.

The *tool kit* was developed when the National Landcare Program conducted a series of program reviews during the mid-1990s, and recommended that improved education and training should be provided to people working in NRM. Skills development is still seen as a significant issue for individuals working in this area. The program embraces a more holistic version of training and education, which encompasses a focus on vocation (training and qualifications), as well as broader notions of skills development for multiple purposes such as personal interest, professional development, program planning, setting group objectives and community development) (see www.nht.gov.au/skills/manual.html).

A pilot course, the *Building regional capacity* short course*,* was developed for the NHT. It has targeted community leaders, facilitators, and coordinators in rural and urban Australia to boost their skills in leading natural resource management. It aims to improve understanding of community leaders, ensure effective contributions of short-term workers funded by NHT, improve skills and understanding of NHT assessment panels, advance understanding of NHT criteria, improve focus of projects, and improve integration of NHT programs through networking. Eight pilot courses were conducted across several regions in Australia, following a training needs analysis. The course used material from the NHT *skills tool kit*, other material, and some provided by training providers themselves.

The short course was formally evaluated, received a high approval rating from participants and achieved most of its objectives (Mack & Stevens 2002). Participants were keen to see clear statements of course objectives, a regional focus for delivery, expansion of cross-cultural issues and communication, and greater attention in the future to applying newly-learned principles to work practices, networking, and diverse stakeholder involvement in design and delivery of courses.

Sectoral changes

Emerging trends in education and training and differences in sectoral approaches are relevant to formal education's contribution to NRM capacity building in communities. The growing emphasis on a knowledge economy and flexible delivery systems for education and training will have impacts, and is already leading to a blurring of conventional boundaries and to new responsibilities and initiatives. For example, research has been undertaken recently on existing and potential creative associations and networks between the education sector and regional communities in order to develop 'Learning Communities' and 'Learning Regions' (Shoemaker et al. 2000). More seamless forms of education which link different education sectors are being sought as changes in learning requirements shift learning environments and infrastructure. New structures linking different sectors are developing to accommodate the changing needs of students and their desire for flexible delivery systems.

While the higher education and vocational sectors still remain largely distinct, there are increasing overlaps and connections being forged between them. A number of universities offer programs under the National Training Framework and some Bachelor degrees are offered by vocational education and training institutions. Links between vocational education and training programmes and specific degree-level programs at universities are now well developed. Credits may be granted in one sector for studies undertaken in the other. Some institutions offer qualifications in both sectors. Some universities offer non-award courses (DETYA 2001). These shifting roles of players in the training and education sector provide expanded opportunities for delivering environmental and NRM courses or programs.

Alongside increased opportunities are emerging issues that may frustrate education and training for NRM capacity building. The delivery of formal training packages will be affected by substantial cuts to funding of Training Advisory Councils and State Industry Training Advisory Boards. These cuts will limit the full development of training packages, and has already delayed delivery of the CLMTP. Currently, the CLMTP has not yet had supporting resources developed (e.g. learning strategies, assessment materials,

professional development for training providers), and at the time of writing, there were no Registered Training Organisations delivering the package.

Access and equity issues

Access and equity issues affect the degree to which training and education sectors can support NRM capacity building. Six groups have been identified as targets for equity planning given their long-standing relative disadvantage in accessing higher education and training. They are:

∉# Indigenous Australians

∉# people from a non-English-speaking background who have arrived in Australia within the last ten years

∉# people with disabilities

∉# people from rural and isolated areas

∉# women, particularly those in non-traditional areas of study

∉# people from socioeconomically disadvantaged backgrounds.

(DEST 2002).

For Indigenous Australians, vocational education and training offers an important pathway to self-determination, community building and economic independence. Successful provision requires high levels of community consultation, must be culturally appropriate and sensitive, needs to recognise prior learning or current competencies, and enable learners to meet family, community and traditional 'caring for country' obligations.

Women represent small percentages of students and workforces in some fields related to INRM. They may need additional training support and assistance given their current situation in these fields and their challenges of having to juggle competing home and workplace responsibilities.

These access and equity issues may be relevant to both formal and informal education or training activities and produce marked inequities in participation. In rural and remote communities, access (proximity to universities) and socio-economic factors affect participation rates, with lower rates frequently found in non-metropolitan areas than in metropolitan ones. In a report on skill needs for rural industry produced by the Rural Industry Working Group, several barriers to satisfying skill needs were identified:

∉# training opportunities are not always seen as appropriate for all rural industry sectors

∉# group training companies tend to operate in larger regional centres, but do not reach all rural communities given large travelling distances and 'thin' markets

∉# there tends to be poor communication of training options and confusion about the proliferation of recognised and unrecognised training courses

∉# the rural industry labour force tends not to be accurately captured in statistics that determine VET funding allocations

∉# while VET participation may be higher in regional and rural areas, completion rates tend to be lower than in metropolitan areas.

(Rural Industry Working Group 2001).

While the Commonwealth Government has stated its commitment to improving access for rural and isolated students though measures such as new places targeted to regional universities and campuses, and the development of educational precincts in rural areas (DEST 2002), these promises may sit uneasily alongside the concerns raised earlier in connection with possible funding cuts and restructuring of the higher education system, and their implications for regional universities.

Coordination and integration issues

Other factors relevant to the ability of the higher education and vocational sector to meet the skills and training needs of regional groups are the organisation of, frameworks, and learning approaches taken in environmental and NRM education and training.

There are many signs that overall provision of natural resource education and training is uncoordinated and fragmented across sectors and providers. An analysis of irrigation education and training in Australia found that provision tends to be fragmented, sporadic and diverse, and recommends:

⊄# greater coordination and consistency to be facilitated in part by a strong, well-led national overview body

⊄# continued recognition and encouragement of varied roles for different education providers

⊄# stronger regional orientation in delivery of education and training

⊄# accommodating flexible delivery systems (e.g. short courses, distance education material)

⊄# accommodating the needs of different client groups and geographic diversity.

(Meyer & Taylor 1998).

For example, while the consultation process for developing the CLMTP brought together a wide range of stakeholders to identify key skill and training needs in NRM, it is not clear whether the resulting package is informed by sustainability principles, or structured in the integrated way necessary for highly complex, real world environmental and NRM planning.

5 Key informant interviews

Twenty-two key informants were interviewed for Phase 2 of the project (see Table 4). They were contacted and interviewed because of their special expertise in NRM or integrated planning; community participation in NRM; providing services to regional and rural Australia; or rural and regional education, training, capacity building or extension. Informants were identified on the basis of the researchers' previous experience and knowledge, the literature review, guidance from the project's Steering Committee, and their availability for an interview within the project's timeframe.

The interview schedule (which includes a first version of the skills template) appears as Appendix 1.

Table 4 Sectoral and organisational locations of key informants interviewed (n = 22)

Sector	Informants
Commonwealth Government	Regional policy officers – DoTaRS (group interview – four staff members) EA NRM officer EA Bushcare officer 2 AFFA NAP officers State Indigenous Land Management Facilitator (Cwlth funded) AFFA Rural Policy and Innovation Division staff member
State Government	DNRE NAP officer 2 DNRM officers SA regional NAP officer
Formal education and training	University educational researcher Member Rural Training Council of Australia TAFE NSW staff member
Non-government organisations	2 Greening Australia staff members Australian Conservation Foundation staff member
Private sector	Private sector educational researcher Private sector facilitator

INRM meaning and program approach

Key informants were asked to comment on the meaning of 'INRM' and the approach being taken to achieving it. This was to clarify understandings of these aspects and see if they were interpreted consistently. A definition of INRM based on one used by Bellamy & Johnson (2000) was provided to them. Their replies suggest that INRM may have some problems as a concept. Informants had mixed views about its usefulness or appropriateness. Some were concerned that the term has been introduced rapidly by policy makers and may not be understood outside specialised policy circles. Consequently, regional and Indigenous communities in particular may not have a common understanding of, nor support for and engagement with, INRM initiatives. Use of this new term may in fact alienate them.

In relation to the approach being taken in the NAP and the Trust Extension, some informants thought that that it was a 'top-down' approach and that communities had not been adequately consulted in its developmental phase. Also the emphasis on competitive funding applications was seen to possibly be working against engagement of some communities. Informants who supported the approach thought that the regional scale was appropriate for program delivery as long as it was supported by a well-resourced, highly interactive process between all levels of government and regional groups.

Identifying and prioritising INRM knowledge and skill areas

Regional groups may require a range of generalised or specialised knowledge, skills and attitudes to be involved in successful INRM planning. Many key informants felt that a regional group's ability to identify what it does *not* know, as well as how to fill particular knowledge and skills gaps, was critical.

Several key informants pointed out that filling gaps could not be addressed through a 'one size fits all approach', but that a 'horses for courses' approach was needed. They suggested that groups needed to be able to determine their own requirements and be supported in doing so by regional facilitators who are skilled networkers and have a good understanding of requirements for INRM, and of the education and training sector. It was thought that Indigenous interests would be best served by ensuring that local knowledge and Indigenous communication styles and language are taken into account in designing any training programs. Other issues raised included deficiencies in baseline information about group capacities; the need for training packages like the CLMTP to incorporate a more holistic or systemic approach to NRM; and the need for resources to develop package support materials.

Key informants were shown a list of knowledge and skills under two main headings, generalised or specialised knowledge or skills, and asked whether they felt that these were: '*essential for groups to have inside the group*'; '*necessary to have but could be provided from outside the group*'; or '*dependent on regional circumstances*'. This question served as a starting point for developing a skills template.

Not all informants were asked to or were willing to rate each knowledge/skill area separately (this was inappropriate for some informants on the basis of their responses to other questions). From those who did provide ratings (13 informants), the generalised knowledge/skill areas that the highest number of respondents thought was essential to have **inside** a regional group (see Figure 5) were:

∉# group leadership

∉# negotiation/conflict resolution

∉# ability to communicate and raise community awareness

∉# lobbying.
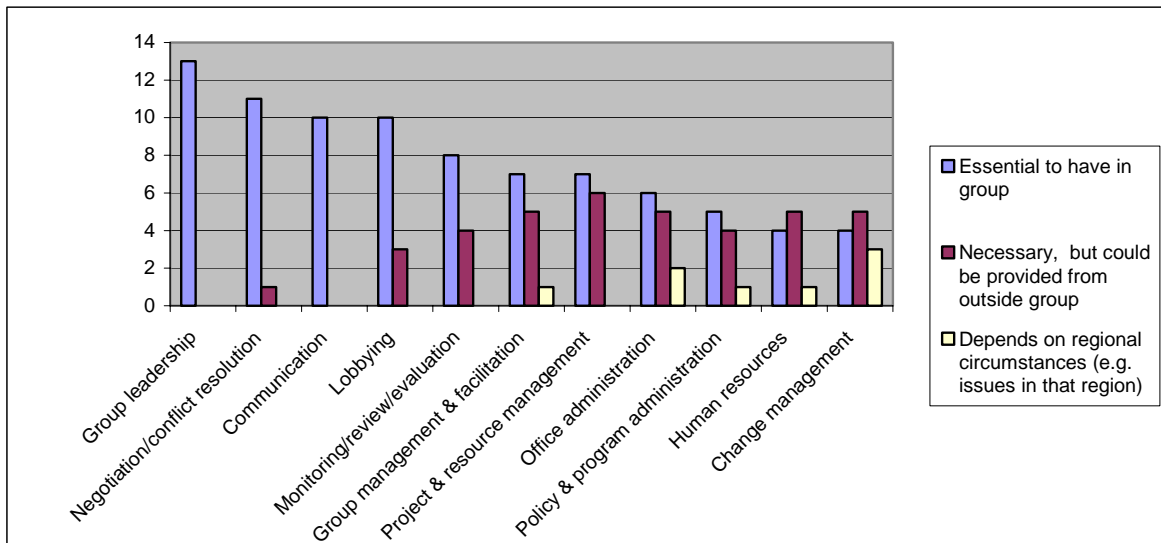
Figure 4 Key informants' ratings of generalised knowledge and skill areas (n = 13)

As shown in Figure 5, the **specialised** knowledge and skill areas that were most frequently assessed as essential to have in the group were:

⊄# public participation/community development

⊄# knowledge of particular rural industries.

For the remaining categories, most informants who responded indicated that having knowledge in these areas was essential but it could be provided from outside the group.

When commenting about what knowledge and skills regional groups need to undertake INRM planning, many key informants noted that some basic knowledge across many disciplines was important in order to be able to identify and access the appropriate expertise. Moreover, informants thought that groups needed to be able to:

⊄# integrate diverse information

⊄# identify implications flowing from that information

⊄# make appropriate management decisions from a range of options.
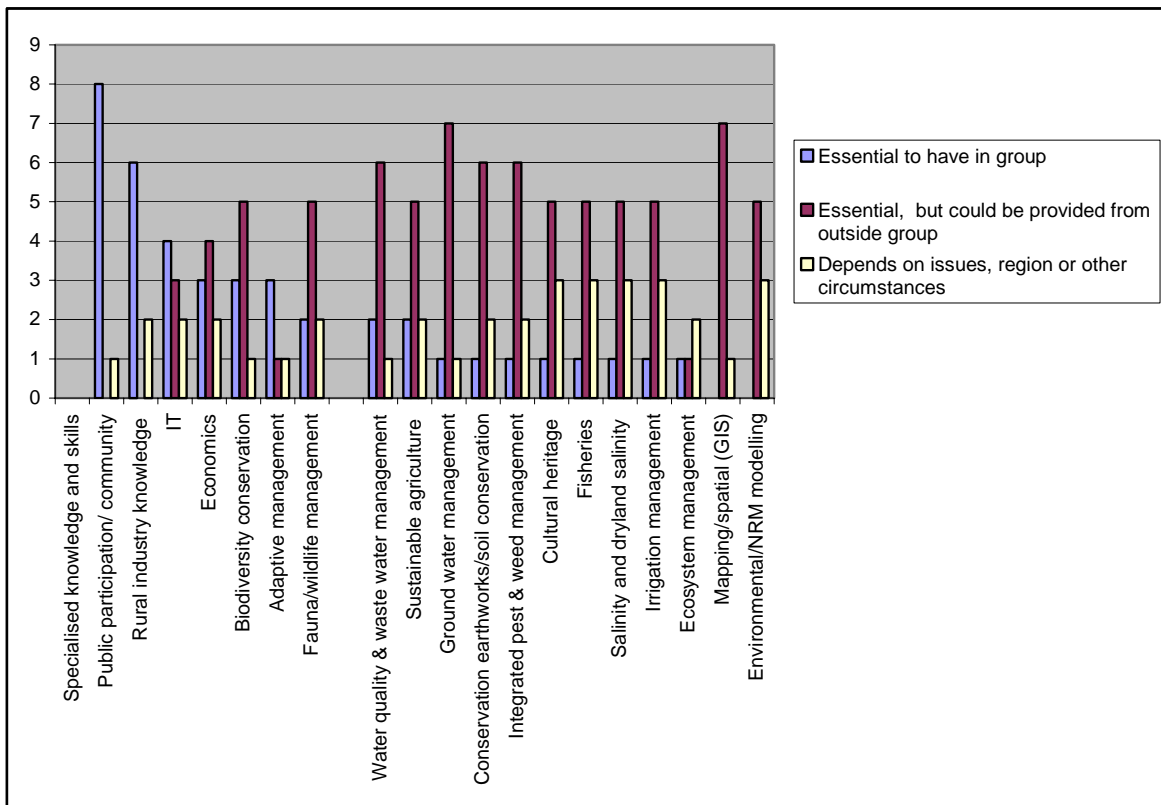
Figure 5 Key informant's ratings of importance of specialised knowledge and skill areas (n = 13)

When asked whether they felt there were any additional knowledge or skill areas that should be considered, informants mentioned the following:

⊄# socio-economic impacts

⊄# cultural awareness

⊄# local social and community knowledge

⊄# networking skills

⊄# facilitation skills

⊄# planning processes and policy and legislative contexts

⊄# accessing education and training resources

⊄# linking funding cycles with ecological cycles

⊄# structural adjustment and business development.

Regional considerations

In addition to rating particular knowledge and skill areas, key informants were asked about special needs or situations that may affect regional groups' capacity to undertake INRM. They mentioned:

⊄# lack of cross-regional learning (groups sharing success stories)

⊄# need for abilities to re-develop or re-work existing resource management plans in new policy or program contexts

⊄# need to be able to integrate knowledge across general and specialised skill and knowledge areas

⊄# insufficient understanding of, and appreciation for, Indigenous culture and cultural heritage.

They also noted that access to training and education is an issue for some regions. While the TAFE system is well placed to provide NRM training and education given its geographical spread and applied focus, non-metropolitan areas are less well-serviced than metropolitan ones. A key informant from the TAFE sector highlighted the problem that not all colleges can run all NRM courses and that distance learning is expensive. Universities have a significant role, but the growing expense of university education was seen to restrict access and usefulness of university education.

Most key informants felt that assessing regional capacity needed to happen on a case-by-case basis given widely varying group situations. Differences in State agency support and capacities were mentioned; variations in group awareness and understanding of Commonwealth and State expectations for INRM planning; differences in social, economic and environmental conditions; and different levels of social and human capital. Several regions were repeatedly cited as examples of 'best practice', such as the Goulburn-Broken region of Victoria. But it was also noted that groups have different strengths and that care is needed to ensure that groups who have highly developed INRM capabilities do not receive the 'lion's share' of attention and funding. Groups at earlier stages of development need appropriate forms and amounts of support as well. In addition, several key informants spoke about the significant amount of time needed to build the kind of social and human capital needed for groups to be effective in INRM planning.

Filling gaps

Key informants made suggestions for addressing gaps in INRM skills and knowledge. Broad issues for consideration by all INRM players included:

⊄# the need to acknowledge and address structural and jurisdictional barriers to integrated planning (e.g. from local to regional scale, taking a systems approach to planning, and understanding the elements of the planning system)

⊄# developing greater Indigenous representation in INRM planning (e.g. land management facilitators, more accessible funding programs and processes)

⊄# providing the support training providers need to develop resources and teaching materials for the CLMTP

⊄# using flexible, region-specific approaches to building capacity with the help of regional and State facilitators

⊄# looking to other sectors for lessons in capacity building (e.g. the public health sector)

⍯ avoiding excessively short timelines that produce 'policy on the run' and do not allow regional groups time to respond properly to policy initiatives

⍯ recognising the value of, and developing non-formal education and training partnerships and activities (e.g. developing consortia of regional groups, running information courses tailored to needs, holding yearly or six-monthly conferences to report and exchange information between groups, developing informal mentoring arrangements, and using e-mail discussion groups that circulate lists of groups and members, identify key issues being addressed, and disseminate 'best practice' case studies).

Key informants were also asked to specify the ways in which governments can support groups in building their INRM knowledge and skills. Their suggestions were that government needs to:

⍯ play a coordinating and organising role (e.g. in setting up e-mail discussion groups and interactive websites, providing support for regional facilitators or coordinators who help groups identify and meet their education/training needs)

⍯ be clearer about what is expected of regional groups and more open about uncertainties when still developing program requirements

⍯ recognise and build its own capacity (e.g. planning expertise)

⍯ move beyond conventional notions of providing support (e.g. in addition to funds, to provide services and encouragement)

⍯ recognise and act to improve coordination and integration across NRM training and education providers (all sectors)

⍯ recognise time needed to develop cohesive and effective regional groups and provide support for group development

⍯ evaluate NRM education and training initiatives (e.g. the MDBC's evaluation of tertiary NRM education).

Key informants also made many suggestions about how groups could build their INRM planning capacities. They included:

⍯ draw on leadership models

⍯ be patient: allow time to build knowledge, experience and social cohesion

⍯ build community support at all stages of the planning process (from preparation to design to implementation to review)

⍯ provide long-term 'on the job' training to build group employee and volunteer morale and commitment

⍯ develop partnerships with regional service providers, the formal education and training sector, and research providers such as the CSIRO.

Approaches to developing future skill and training programs

Many informants referred to the importance of skill and training approaches that are flexible enough to accommodate different regional situations, needs and interests. They also suggested that approaches that value local knowledge, prior learning, use action-learning, measure and promote knowledge integration, and are developed at the regional or local level, are likely to be most effective.

Several informants suggested that regional facilitators and/or coordinators could help to identify group skill and training needs and how they could be filled. One informant described an iterative workshop process that regional groups could use to develop their own capacity building strategies and action plans. This could involve group members completing a training needs questionnaire and other surveys like learning style inventories; bringing members together to discuss results at a workshop; and feeding back

outcomes to check that priorities identified are consistent with group members' needs and interests. Then further workshops could be held to develop a training and development strategy for the group and an action plan clarifying roles and responsibilities for implementing the strategy.

6 Regional group interviews

A comprehensive survey of all regional groups was not possible within this project's timeframe and resources. To pilot test the training needs survey and skills template, five groups were selected, representing a NAP priority region in each State except Tasmania. This selection represents a form of maximum variation sampling, aiming to capture central themes or issues that cut across high levels of variety (Patton 1990). It is also consistent with dimensional sampling in grounded theory approaches (Strauss & Corbin 1990). This approach aims to shed light on important types of variation between groups and identify common issues across groups, but not to obtain statistically generalisable findings.

Because of confidentiality and anonymity issues, regional groups are only identified by their key characteristics, and group members who responded are not named. Respondents were promised confidentiality and some group members expressed concern about any (inadvertent) links between this project and the NAP accreditation process. Exposing information considered damaging or embarrassing by research participants contravenes ethical research practices and can harm stakeholder relations (Christians 2000).

Questionnaire design and administration

The questionnaire, and in particular the skills template, were developed mainly on the basis of information from the key informant interviews and the background literature. Substantial changes were made to the skills template from the version used in the key informant interviews. The version of the planning cycle used in the key informant interviews was also simplified because some key informants thought it was too complex. The questionnaire used mainly closed questions, unlike the key informant interview schedule that consisted mainly of open questions. Table 5 shows the specific information sources drawn upon for the different questions.

To administer the questionnaire, we first contacted each group's nominated contact person, usually an executive officer or Chief Executive Officer (CEO), a paid staff member. These people were asked to respond to the questionnaire themselves. They were also asked to identify group members who might be willing to complete the questionnaire and how to contact them. The questionnaire was first trialled with two regional groups. A total of five people responded and they reported no significant problems in answering the questionnaire. Their information has not been analysed further.

For the pilot survey proper, five additional regional groups were identified. In most cases, following an initial explanatory phone call, the questionnaire was e-mailed to the group members as access to e-mail was almost universal. Follow up reminders were needed to obtain completed questionnaires, which were returned by e-mail or fax. This is a selective sampling process that was necessary because we did not have contact details for group members usually only for the CEO or equivalent, and also because we needed to consult this person as 'gatekeeper' and seek his or her support for the survey before contacting group members. It also seemed appropriate to ask the nominated contact person to respond to the questionnaire, as he or she was likely to have a good overview understanding of the group and its needs.

Table 5 Training needs questionnaire items and supporting information sources

Questionnaire item	Principal information source
Group characteristics	∉# Consultation with NAP Team Leaders
	∉# Key informant interviews
	∉# Review of State/Territory approaches to ICM
	∉# Kilpatrick & Guenther 2002, Kilpatrick & Loechel 2002, Mack & Stephens 2002
Group processes for identifying skill and training needs	∉# Kilpatrick & Guenther 2002, Kilpatrick & Loechel 2002, Mack & Stephens 2002
	∉# Key informant interviews
Group information sources on training	∉# Kilpatrick & Guenther 2002, Kilpatrick & Loechel 2002, Mack & Stephens 2002
	∉# Key informant interviews
Group formal or informal education/training activities	∉# Kilpatrick & Guenther 2002, Kilpatrick & Loechel 2002, Mack & Stephens 2002
	∉# Key informant interviews
	∉# NAP accreditation criteria, Intergovernmental Agreement on NAP
Skills template 　Importance of having certain knowledge/skills 　Existing knowledge or skill level in group	∉# Planning as a cycle: Dore et al 2002, Woodhill & Robins 1996, Brown 1997; Aslin & Brown 2002, Mobbs 2000
	∉# Kilpatrick & Guenther 2002, Kilpatrick & Loechel 2002, Mack & Stephens 2002
	∉# Key informant interviews
Perceived barriers to training	∉# Kilpatrick & Guenther 2002, Kilpatrick & Loechel 2002, Meyer & Taylor 1998, Rural Industry Working Group 2001
	∉# Key informant interviews
Usefulness of ways of filling knowledge/skill gaps	∉# Kilpatrick & Guenther 2002, Kilpatrick & Loechel 2002, Mack & Stephens 2002
	∉# Key informant interviews
Ways for government to assist	∉# Intergovernmental Agreement s for the NAP
	∉# Kilpatrick & Guenther 2002, Kilpatrick & Loechel 2002, Mack & Stephens 2002
	∉# Key informant interviews

Regional groups contacted

Table 6 and the following section briefly profile each of the five regional groups contacted in the pilot survey. The key sources of information are responses to the training needs questionnaire itself, and the *State of the Regions 2001* (SOR) report (National Economics and Australian Local Government Association 2001), which provides an assessment of how Australia's regions are performing in the knowledge-based economy. There is considerable overlap between the NAP priority regions and the regions used n the SOR report but in some cases information needed to be taken from several SOR regions to cover the relevant NAP regions.

Table 6 *State of the Regions 2001* (SOR) **classifications and regions covered by the groups contacted in this study (National Economics and Australian Local Government Association 2001)**

SOR regional classification	Regional group	Typical features of classification
Core metropolitan region	Group 1 Group 3	⊄# central area of Australia's major cities ⊄# economic performance and prospects linked to size, history, location, economic structure, innovative capacity and position relative to state and territory boundaries ⊄# most give priority to knowledge-based strategies
Dispersed metropolitan region	Group 1	⊄# accommodate most population growth (i.e. urban sprawl) ⊄# predominantly residential areas with high commuting rates ⊄# high growth rates driven by residential growth, construction, service industries, and industrial firms
Resource based (and remote) region	Group 2	⊄# mineral and energy production important part economy, typically in addition to pastoralism and tourism ⊄# some reduced impacts from resource production for regional due to globalisation (e.g. global sourcing of supplies, fly-in fly-out operations) ⊄# rural production mostly confined to extensive pastoralism
Rural based (and remote) regions	Group 3 Group 4 Group 5	⊄# agriculture major driver for wealth ⊄# slow growth rates ⊄# some high unemployment rates ⊄# increased efforts to integrate agricultural activities with value-added food, fibre, other manufacturing, higher order services and tourism ⊄# diverse factors affecting economies (e.g. economic base, climate, infrastructure, skills, location in relation to major ports and centres) ⊄# wide range of growing and grazing conditions

Group 1

Group 1 (G1) covers a core metropolitan region and a dispersed metropolitan region. The area includes national parks and conservation areas, some agricultural production, tourism and manufacturing. The region has well developed education infrastructure with three universities. Unemployment declined slightly in the inner metropolitan area and increased in the outer area in the period 1998-2001. Analysis of local industry demand for occupations analysed in the SOR report shows that in the inner metropolitan area, there have been *surpluses* of higher education teachers, general managers, medical practitioners, finance managers and sales and marketing managers. There were *deficits* in demand for clerical workers, project and office managers, computing professionals and accountants. In the outer metropolitan area, the occupation balance showed *surpluses* of science, building and engineering professionals, production managers, medical and science technical officers and general managers. There were corresponding *deficits* of computing professionals, building and engineering associate professionals, accountants, clerical workers and higher education teachers.

Five members of this group responded to the questionnaire. They included two State Government representatives, two community representatives, and an independent chair.

G1 is an interim group for the purposes of NAP planning, and has been in existence for approximately a year and a half. The group has 12 members: 7 community representatives, 1 Local Government representative, 3 State government representatives, and 1 member of the Indigenous community. G1 has a chair and 5 paid staff: executive officer, technical manager, finance officer, and administrative assistant/office coordinator. G1 did not report having any special purpose subcommittees. Currently, G1 in the stage of developing an accredited plan for the NAP process and is also preparing an investment strategy.

Group 2

The NAP priority region where Group 2 (G2) is located is part of a much larger region identified in the SOR report as a resource based (and remote) region. The region includes wheat country, extensive pastoralism and a major mineral province. While the population increased slightly from 1998–2001, there was a decrease in the workforce and a rise in unemployment. Based on local demand, there has been a *surplus* of building and engineering associate professionals; medical and science technical officers, science, building and engineering professionals, and health services managers. Correspondingly, there have been *deficits* of computing professionals, accountants, project and officer managers, administrative staff and general managers.

Five people from G2 responded to the training needs questionnaire. They included the group's executive officer, three community representatives, and a project manager.

G2 has existed for over five years. It was formed to develop a regional NRM strategy and has since been 'revamped' to undertake the accredited INRM planning process for the NAP. G2 has 21 members, 13 of whom are community representatives/local landholders, 1 a Local Government representative, and 7 are State Government representatives. Currently there are no Indigenous, industry group or environmental/conservation group representatives, but the group has approached some non-government organisations and Indigenous groups to address these representational gaps.

The group's structure includes standard office bearers such as chair, secretary, and treasurer. It employs three paid staff, two of who are project officers. The executive officer works on a part-time basis through short-term contracts and doubles as the regional coordinator. The group does have a training officer, however, this position is temporary – it is funded through a special twelve-month project. G2 operates several special purpose sub-committees that oversee specific projects managed by the group. The group is currently developing an accredited plan, although one respondent indicated that the group had 'done everything and now [they were] having to do it all again', suggesting they were experiencing some frustration about the difference between previous NRM planning requirements and initiatives and what was now being asked of them.

Group 3

Group 3 (G3) operates in both a core metropolitan region and a rural based region. The metropolitan section of this region includes urban areas, hobby farms and national parks. Population has risen and unemployment declined between 1998 and 2001. There are several universities in this part of the region. Data on local demands for particular occupations show *surpluses* of computing professionals, planning managers, miscellaneous business and information professionals. There were *deficits* in clerical workers, building and engineering associate professionals, accountants and advanced clerical and service workers. The rural area includes a larger regional centre with defence and educational facilities. This region includes high rainfall pastoral country, wheat and sheep country, irrigation areas and agricultural processing industries. Its population and workforce have increased between 1998 and 2001, but unemployment has risen slightly as well. The occupational balance analysis in this region shows a *surplus* of construction managers, finance associate professionals, emergency medical workers, medical and science technical officers. Occupational *deficits* include project and office managers, computing professionals, sales and marketing managers, accountants and miscellaneous business and information professionals.

Four members of this group responded to our survey. They included the group's chair, a Landcare project officer, a non-government organisation representative, and a community member.

G3 is a sub-group of one of the larger regional groups that has recently submitted an INRM plan for NAP accreditation. G3 is not formally responsible for the area in which it is active: it is a voluntary committee with wide ranging membership from organisations throughout the area, including Local Government, State agencies, service providers, Landcare and non-government organisations, special interests and individuals. The group has existed for over five years and has 25 members. Twenty of those people are community representatives/local landholders, 5 are Local Government representatives, 3 are State Government representatives, 2 belong to the grazing/farming sector, and 2 are environmental/conservation

organisation representatives. The group has a chair, deputy chair, secretary and treasurer, and employs a part-time coordinator/facilitator. The remaining members serve on a voluntary basis.

Group 4

The executive officer of Group 4 (G4) was the single respondent.

G4 is located in rural based (and remote) region. It is considered 'classic' wheat and sheep country and has two major town centres. The population was largely unchanged from 1998 to 2001 and unemployment decreased in that period. In terms of occupations in demand by local industry, the SOR report showed there has been a *surplus* of construction managers, ambulance and paramedics, advanced clerical and service workers, finance professionals, and manufacturers; but a *deficit* in computing professionals, project and office managers, secretaries/personal assistants, higher education teachers and miscellaneous business and information professionals.

G4 has been in existence for approximately three and a half years. It is a catchment management organisation (CMO). The group has already submitted a plan for accreditation. G4 has 11 Board members, who are not chosen on basis of major affiliations or interests, but on what are considered to be the best interests of the region. There are 19 full time staff of whom 5 have postgraduate qualifications, 10 have graduate degrees, and the remainder are support staff. The group operates four functional teams to address business management, floodplains and waterways, natural resources, and strategic planning and projects. G4 also has two sub-committees: audit processes and implementation.

Group 5

The NAP priority region in which Group 5 (G5) operates corresponds roughly with several rural based (and remote) regions identified in the SOR report. Collectively these regions include pastoral country, intensive agricultural areas, mineral and energy production, and tourism. Four major centres, one of which has major university and defence facilities, are an integral component of its economic base. In all three SOR regions covered, population increased from 1998 to 2001, while two regions had slight declines in unemployment and the other had a slight rise. The local demand for particular occupations was comparable for the three regions, showing a *surplus* for building and engineering professionals, medical and science technical officers, emergency medical officers, and health services managers. There were *deficits* for town planners, computing professionals, accountants, clerical workers, project and office managers, and sales and marketing managers.

Three people from this group responded to the questionnaire.

G5 has been operating for over five years. It was originally formed for catchment management, having a role in formulating a regional strategy funded by the first tranche of the NHT. It is a complex group with a management committee consisting of a president, vice-president, secretary, treasurer, a conservation delegate, 4 Local Government representatives, an Indigenous representative, an industry representative, a Landcare representative, and a State agency representative. It has a very large stakeholders' council of more than 70 members. The stakeholders' council provides strategic level management and leadership, and includes representatives from the grazing industry, irrigated and dryland agriculture, fisheries, mining, education, Indigenous groups, Landcare, conservation, State and Local Government, tourism, forestry and several catchment groups. G5 has two sub-committees that oversee implementation of a regional strategy and arrangements for NAP and Trust Extension processes.

G5 employs a regional coordinator, an action planning team of five people, a research and development officer, a Waterwatch officer, and a media officer. The group will soon be employing a CEO. The group respondents reported that they were very close to submitting a plan for accreditation

Training processes

Each group was asked whether it had a process for identifying skill and training needs for INRM planning and to specify what the process involved.

G1: Respondents from the group did not agree that there were processes in place for identifying training needs for INRM planning. One respondent saw the group as a skills-based Board that did not have a training process *per se*, particularly given that G1 was an interim body. The two respondents who thought there were processes in place mentioned:

∉# informal feedback/comment from group members, or as per perceived need

∉# regular meetings or consultations with informed sources (in this case, State Government staff).

G2: The executive officer reported that their process for identifying skill and training needs is primarily through a formal survey undertaken at a State or regional level. This survey is being funded by the State's training department to improve NRM training in three regions. It includes building education and training information networks and a training audit. This respondent and another group respondent indicated that the group used informal feedback/comment from group member, or as they saw the need. Two other respondents did not think there was a process for identifying skill and training needs.

G3: Respondents also disagreed about whether this group had a process for identifying skill and training needs. One respondent said the group did not have a process. Another three respondents reported that the group used 'informal feedback/comment from group members, or as we see the need' and one person cited the use of 'regular meetings or consultation with informed sources'.

G4: The CEO reported that this group uses three means to identify its skill and training needs:

∉# formal surveys of group members done by a group member or group employee (including a formally identified training officer)

∉# formal surveys run for the group by someone from outside the group (e.g. private sector consultant)

∉# regular meetings or consultations with informed sources (e.g. education and training providers, State Government extension staff).

G5: One respondent did not think the group had a process for identifying training needs. The other two respondents indicated that G5 relies on:

∉# informal feedback/comment from group members, or as per perceived need

∉# formal surveys run for the group by someone from outside the group (e.g. private sector consultant)

∉# regular meetings or consultation with informed sources (e.g. education and training providers, State government extension staff).

One G5 respondent explained that training was provided for professional development of both staff and volunteer Board members. Training was provided to meet the evolving needs of the organisation, given that it was perceived that regional groups were 'picking up' more of the extension roles that State Governments once carried out. The group is keen to deliver this service at a level equivalent to what they thought the State Government had provided in the past.

Figure 6 shows that the most commonly cited process for identifying groups' skill and training needs for INRM planning overall was 'informal feedback/comment from group members'. The disagreement within groups about whether there was a process or not may be attributed to different interpretations of what a 'process' is in this context. The disagreement may also have resulted from confusions about which group to refer to. For instance, a member of a regional group may receive training from another organisation that is their official employer (e.g. as a Landcare project officer or as a State Government staff member) but not specifically from the regional group itself nor specifically to support their role in this group.
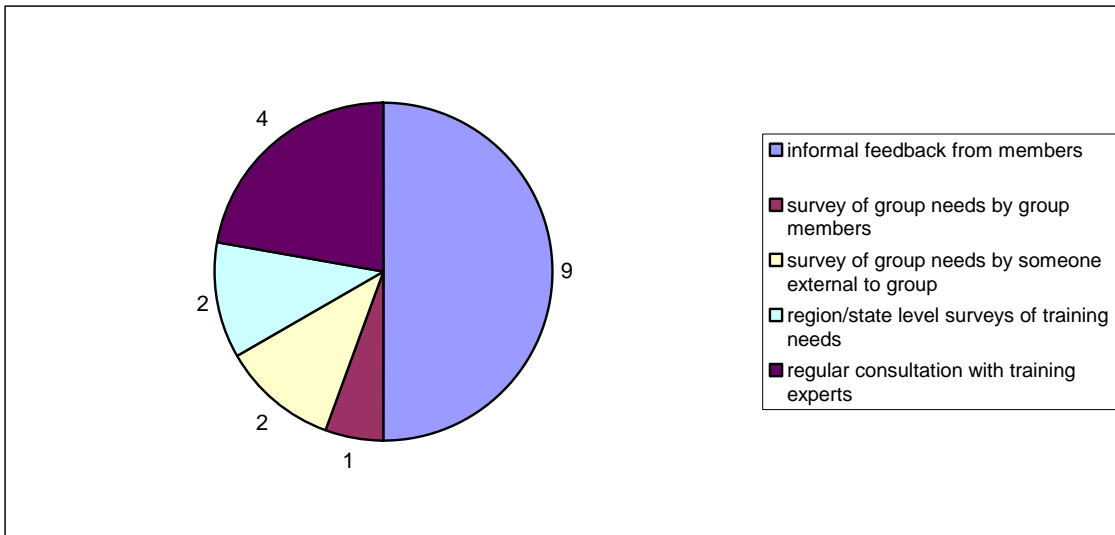
Figure 6 Number of times sources of information on training resources were cited by respondents (n = 15, 21 responses)

Sources of information about education and training

Groups were asked to indicate how they obtained information about formal or informal training courses or other resources relevant to improving their INRM planning abilities.

G1: All respondents stated that they rely on information provided by individual members from their own sources, as needed. One respondent said they did have a training officer. Another indicated that informal exchanges with skilled individuals are an important source of information for the group.

G2: This group reported using all suggested information sources, including having a designated training officer, individual members collecting their own information, maintaining a database, and regular consultation with formal education and training providers. This response can be explained by the project funded by the State's training department, as mentioned earlier.

G3: In this group, individual members primarily provide information and education and training. The group also maintains a database that all members can access. Sometimes the group receives unsolicited information from registered training organisations.

G4: This group regularly consults with formal education and training providers and relies on information provided by members of the group from their own sources.

G5: This group regularly consults with formal training providers, relies on members to provide information, and project leaders will notify the group of project staff's training needs (e.g. Geographic Information Systems training).

Figure 7 suggests that overall these groups rely primarily on information about training and education that members provide from their own sources. After that, the most common method is to consult regularly with formal education and training providers. Two groups reported having a formally designated training officer. Maintaining databases or registers was reported twice.
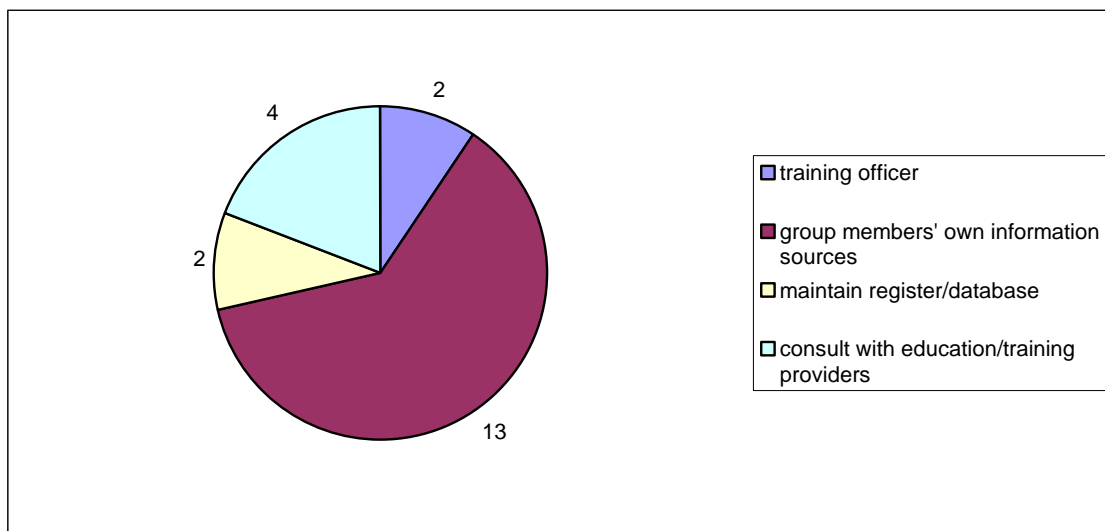
Figure 7 Number of times sources of information on training resources were cited by respondents (n = 15, 21 responses)

Formal and informal education or training activities

Respondents were asked whether their group organised and/or ran formal and informal education or training activities designed to improve their INRM planning skills. Table 6 lists some of the topics they mentioned under the different types of activities listed in the questionnaire.

Table 6 Topics covered in groups' education and training activities

Type of activity	Topics covered
Talks, seminars or lectures	Broad range of NRM issues, hydrology, farm diversification, regional planning
Workshops	Farm planning, forestry, weed management, gully erosion, revegetation, landscape function analysis
Conferences or public forums	Catchment to coast, integrated NRM
Formal training courses	Seed collection, plant propagation, forestry, chemical use, project management, GIS, geomorphology, Director's training, *Building Regional Capacity* short course
Field days or open days	Herbarium, farm visits, riparian management, weed management, revegetation
Shows, displays or exhibits	Regional shows, agricultural shows
On-site demonstrations or trials	Pasture improvement, direct seeding
'Hands-on' training e.g. computer training, land management activities like tree-planting, soil conservation	Herbarium, plant identification, seed propagation, revegetation
Study groups, study circles or learning circles	Follow on from *Building regional capacity* short course, project officer support networks
Other	Coordinator training

The five groups reported organising and delivering across the full range of training and educational activities listed, and relating to land management and natural resource management. Figure 8 shows that talks/seminars, workshops and field days were mentioned most frequently and study groups or learning circles were reported least frequently of the activities listed.
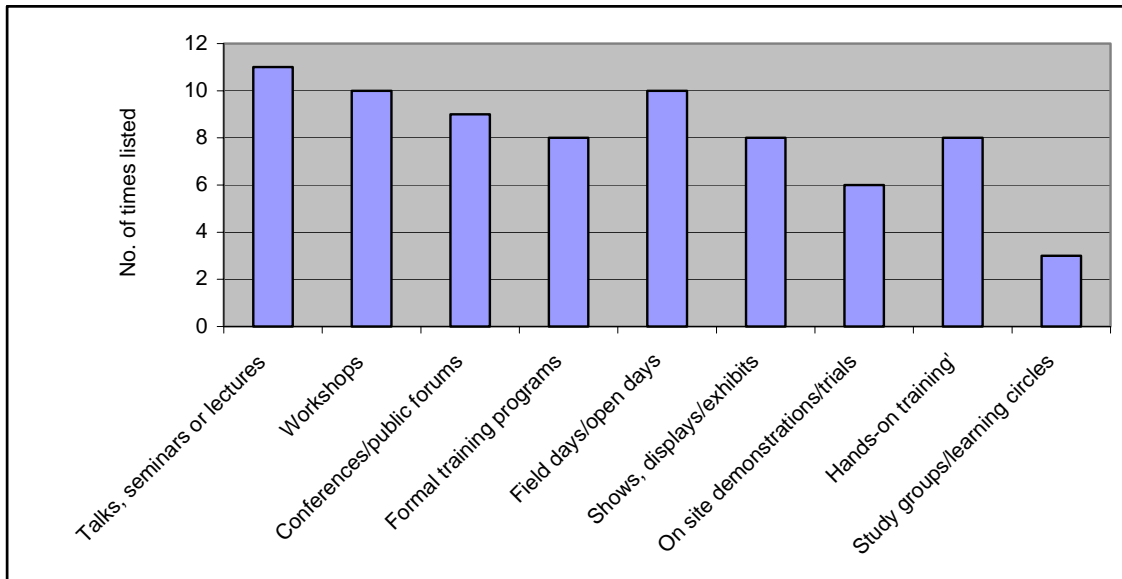
Figure 8 Number of times formal or informal education or training activities were cited by respondents (n = 12, 70 responses)

Ratings of skill and knowledge areas

Based on the key informant interviews and literature review of other training needs analyses and skills audits, the original skills template was substantially revised to incorporate broad skills and knowledge categories, and specific skills and knowledge areas under each. (see Appendix 2).

Group respondents were asked to rate the importance of and current skill levels of their group either for the broad categories as a whole, or to rate each of the specific skill areas individually. What follows is a summary of respondents' ratings averaged across all the specific areas listed under each broad category.

Figure 9 shows that respondents tended to rate the importance of all the broad skill and knowledge categories as high to very high. Corresponding ratings for the skills levels of the group were lower than the importance ratings, showing that respondents felt there was room for improvement in groups' skill and knowledge across all categories, particularly people management; planning, spatial and risk management; socio-economic; and government and policy.
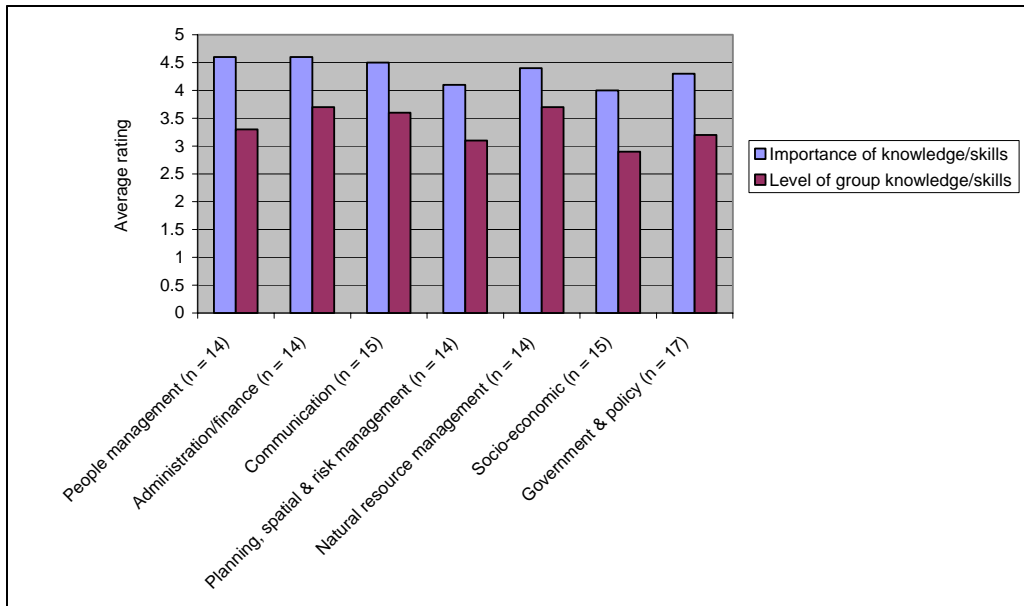
Figure 9 Respondents' average ratings of the importance of INRM skill and knowledge categories and the level of these skills in their group

Barriers to training

Respondents were asked what (if any) barriers there were to group members participating in formal or informal training activities for improving INRM planning skills, and what might help overcome these obstacles. Figure 10 shows that 'a lack of time/too many commitments' was listed most frequently, followed by 'distances to travel are too far', and then the 'cost of training/education'. Respondents in each group responded similarly to this question and listed more than one barrier. Other barriers mentioned included the difficulties associated with training and education delivery that coincided with particularly busy periods (e.g. harvesting), the challenge of organising group members to attend training, and training not being pitched at the right levels. These results are consistent with findings from a training needs analysis conducted for FarmBis (Kilpatrick & Guenther 2002), which found that availability of time, location/access to courses, and costs were key barriers to training in NRM and property management.
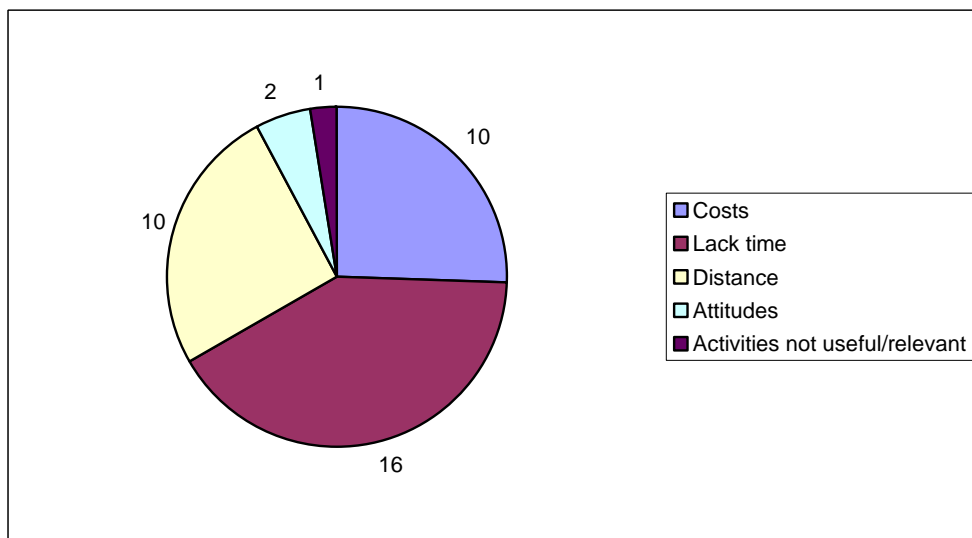
Figure 10 Number of times particular barriers to training listed by respondents (n = 17, 39 responses)

Respondents were also asked to comment on what they felt might help *overcome* these obstacles.

G1: One member of this group thought that recruitment strategies that target skilled individuals would reduce groups' needs for additional training and education.

G2: Respondents from this group thought that landholders should be paid for their time. Other suggestions included resource support officers for groups to free up members' time to meet other commitments and provision of electronic courses.

G3: This group cited the need for training to be relevant, flexible in its delivery (e.g. be offered on weekend), and targeted to meet group activities and requirements. Respondents also thought that there needed to be a greater focus on informal training and cost subsidisation schemes.

G4: The single respondent from this group did not make any suggestions.

G5: Respondents from this group thought training needed to be targeted to meet community needs and be relevant to key issues.

Filling gaps

Respondents were provided with a list of possible activities and asked to rate the usefulness of each for filling skill and knowledge gaps on a scale of 1 to 5.

Figure 11 shows a summary of the usefulness ratings averaged across groups. Working directly with education and training providers, groups conducting their own courses and training activities, and disseminating information about what works received the highest average ratings. However, there was substantial variation within groups. For example, G 3 respondents' ratings for the usefulness of accessing formal training and education courses ranged from as low as 1 to as high as 5.
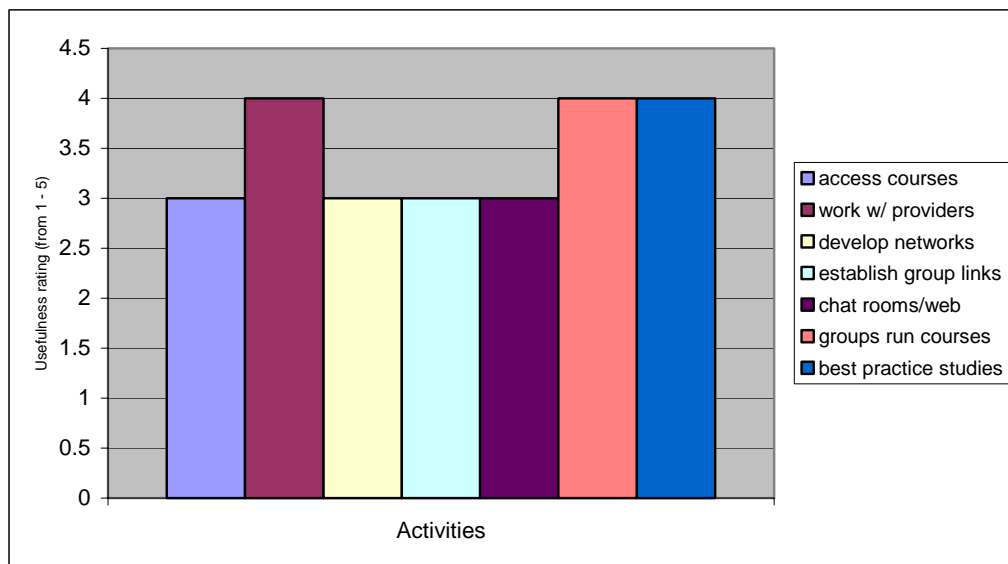
Figure 11 Respondents' average ratings of usefulness of different activities to fill skill/knowledge gaps (n = 12)

How government can help

After rating the usefulness of these activities, respondents were also asked what they thought government might do to help fill regional groups' skill or knowledge gaps.

G1: Respondent comments included the need for government to fund participation in training when gaps have been identified, and to support recruitment of skilled individuals to groups.

G2: Respondents reported receiving unclear and/or mixed messages from government about its expectations about accreditation requirements and the skill levels groups would need to meet government standards. They wanted more clear and open communication and a greater 'on-ground', regional and sub-regional presence from government. G2 respondents stated that providing funds was not enough, and also called for staff to assist in identifying training and education needs.

G3: Respondents from this group hoped that government could provide greater certainty about future funding for NRM facilitators, which would enable them to continue building their strengths in information exchange and network development. Respondents were also interested in free workshops and training courses, which could be delivered on weekends for members and facilitators. They called for more skilled staff and rebates or subsidies to be provided for training – as well as the time taken in identifying the need for that training. One respondent suggested a devolved grant system to support education and training programs.

G4: The single respondent from the group felt that government should provide appropriate resources to regional organisations for education and training activities.

G5: Respondents felt that training should be targeted to meet the needs of individuals and groups implementing NRM at the 'grassroots' level, and that sufficiently large budgets were needed to deliver training in the regions.

Awareness of existing initiatives

Several key NRM education and training programs and resources are under development or are already available, as revealed by the literature review and key informant interviews. To test broad awareness of these initiatives we listed some of them and asked respondents to indicate whether they had heard of them or not. Figure 12 shows how many times each was cited. The *Building regional capacity* short course and the guide *Participatory evaluation for Landcare and catchment groups* were cited most often.
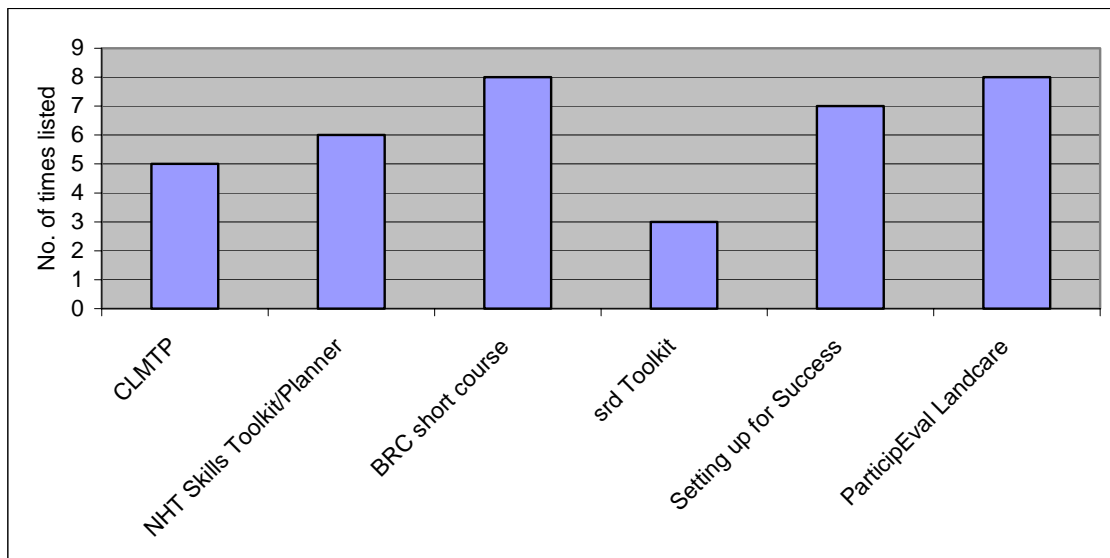
Figure 12 Number of times respondents cited awareness of existing NRM education and training initiatives (n = 12, 37 responses). CLTMP – Conservation and Land Management Training Package; BRC short course – *Building regional capacity* **short course; srd toolkit -** *sustainable regional development toolkit* **(Dore et al. 2000); Setting up for success –** *Setting up for success – a guide for designing, managing and evaluating projects* **(National Landcare Coordinators n.d.); ParticipEval Landcare –** *Participatory evaluation for Landcare and catchment groups***: a guide for facilitators (Woodhill & Robins 1998).**

Other comments – issues of concern to groups

Respondents were given the opportunity to provide additional comments in the questionnaire. One group thought they did not know enough about the context and reasoning behind the development of the NAP or its capacity building strategy. They were concerned about what they saw as a conflict between the substantial responsibilities they were expected to fulfil (e.g. submitting plans for an accreditation or funding process), and having had little involvement in developing the process. Consequently, they were feeling somewhat disenfranchised. One respondent from this group was encouraged by the regional-scale approach to INRM, and was keen to see effective ways to merge scientific and 'official' knowledge with local knowledge.

7 Conclusions and recommendations

Recommendations for regional capacity building and identifying regional skill or training needs for INRM

This project's literature review and research findings suggest some recommendations to guide any capacity building strategies for regional groups, or processes for identifying groups' skill and training needs.

Terms used in relevant policy and program documents need to be simple and clear, and where necessary, the relationship of any new terms to earlier ones needs to be explained

Most key informants indicated they had some difficulty with the term 'Integrated Natural Resource Management' and some suggested this term was unfamiliar to, or not commonly used, in some jurisdictions. Key informants did not react well to the definition of INRM we gave them. The relationship of INRM to earlier initiatives focusing on ICM was unclear. Use of the term INRM appears to reflect 'policy fashion', and if it continues to be used, it would be helpful to develop and cite a simple definition in all relevant policy and program literature. Unclear and contested meanings of INRM could present obstacles to developing and delivering relevant education and training in the formal education system.

We need to be clearer about how capacity building relates to terms like education, training, development and extension; to the activities of the different players involved in each of these areas; and about their roles as part of a capacity-building system. This may help develop more systemic approaches to capacity building that include formal and informal education, and focus on life-long learning at individual, group and community levels.

Capacity building and skill and training needs analyses need to be based on a 'soft systems' approach that recognises the roles of a wide range of players and different types of knowledge and expertise, not only scientific or technical knowledge

Capacity building and skill and training needs analyses need to be tailored to suit regional situations, not based on a 'one size fits all' approach

Building capacity to deal with applied NRM issues requires attention to concepts and frameworks people use to understand and learn about the way the world works, and about NRM issues in their country, region and locality. A soft systems approach that acknowledges and responds to different knowledge systems and learning styles, focuses on learning, and acknowledges the importance of context, is most appropriate (Dore et al. 2000, Rajasekaran 1993). This approach encourages consideration of social and institutional factors that affect how regional groups operate. PAR approaches may have particular relevance in involving regional groups in identifying their own skill and training needs (a type of research project), and ensuring that capacity building activities are owned by groups and their communities. Developing skills in these approaches can have benefits in ensuring that groups can carry on activities themselves even when government support ends. They can help 'institutionalise' learning and help ensure progressive improvements in group performance.

It is also important to decide whose capacity needs to be built, and whose skill and training needs are in question. This project identified issues around who the 'regional group' actually consists of, and who should answer any training needs questionnaires (e.g. volunteers on groups, paid group staff, sub-committees and advisory committees?). Using the planning

cycle directs attention to the need to consider who is involved at different stages, and particularly the need to involve local landholders in implementing plans and monitoring and evaluating outcomes. An additional complication is that the staff the groups employ, and group members who are paid staff of other organisations, may have other forums where they can identify their needs and ways of satisfying them without requiring specific support from the group itself.

The great differences between the groups surveyed in this project (history, size, geographical areas covered, numbers of support staff and committees etc.), and their institutional contexts (State policy and legislation etc.), were very apparent in questionnaire responses. This strongly argues against any 'one size fits all' approach to regional capacity building. Similarly, strategies to engage regional communities or encourage community participation in INRM processes need to be tailored to suit regional circumstances.

Capacity building activities need to recognise, value and accommodate people's differences as much as possible

A soft systems approach means that the differing learning styles and preferences of adult learners need to be recognised. Learning activities need to accommodate differences in the ways people grasp, then transform and work on their experiences (Kolb 1984). This encourages using a learning spectrum, which recognises a range of learning activities organised by different players and using varied settings. Applying this spectrum allows greater flexibility in designing capacity building strategies and programs to suit the preferred learning styles of different potential participants. Less structured activities may be more suitable for an applied problem solving focus on INRM planning issues than highly structured ones.

Education and training activities need to consider the special learning requirements of sub-groups like Indigenous people, women, and people from non-English-speaking backgrounds. Practitioners in the formal education and training system also face access and equity issues like these.

Taking a soft systems approach automatically means that differences need to be recognised and valued. This includes acknowledging different kinds of knowledge and knowledge systems; not focusing only on formally acquired western scientific knowledge.

Groups need to develop their own capacity building strategies and identify their own skill and training needs

Capacity building strategies and training activities need to be based on action research approaches carried out by groups themselves rather than ones carried out by governments. Action research done by regional groups at the regional level will ensure that outcomes are immediately relevant and applicable, and will automatically accommodate differences in regional circumstances. If groups carry out the research themselves, they are much more likely to own the outcomes and take responsibility for acting on them. Undertaking the process of identifying needs is capacity building in itself. This is not to say that governments should not be involved in developing guidelines, frameworks and targets, and providing support to groups for their own processes to identify skill and training needs. These aspects are essential.

The success of regional planning activities overall depends on effective engagement of regional communities in processes that produce genuine collaborations and encourage these communities to accept responsibility for regional outcomes (Mobbs 2000).

Rural communities do face barriers to education and training that differ in kind or extent from those faced by city dwellers. So rural communities may require special purpose assistance in capacity building for INRM. Responses to the training needs questionnaire suggest that the

five regional groups sampled rely heavily on informal activities and consultation with experts to identify their education or training needs and obtain information about training activities, and provide a range of different training activities themselves. The responses suggest that regional groups are particularly challenged by time, distance, and cost issues.

Key informants suggested that ways to help groups overcome barriers included targeted recruitment of new group members; providing financial support in exchange for time spent in training programs; other cost subsidisation schemes (including a devolved grant system); and developing training and education that is informal, flexible and targeted to needs.

We can learn from challenges faced by small businesses or small workplaces in obtaining relevant training and apply this to regional groups undertaking INRM planning. Regional groups share features and face similar challenges to small businesses (may be small, have highly variable tasks, have limited time and funds for training), and could benefit from the same kind of 'just-in-time, only-when-necessary, as-we-are-working, contextualised approach' to training and development (Office of Vocational Education & Training, Tasmania 2000).

Governments need to focus on their role in enabling and facilitating group capacity building processes

Under cooperative federalism generally, and in seeking to foster community ownership of INRM planning and capacity building activities specifically, one appropriate role for government is as enabler and facilitator. (Government of course also needs to show leadership in setting policy directions, establishing programs, setting standards and targets for NRM initiatives, and in evaluating and learning from its own activities.)

The idea of regional facilitators or coordinators providing ongoing support to regional groups to help them identify and satisfy their capacity building needs arose several times in the key informant interviews. Existing networks of facilitators and coordinators established under the Trust could play an important role in INRM capacity building activities and INRM planning if support continues for them. Another appropriate role for government, particularly the Commonwealth, is in setting up communication processes and developing support material to help regional groups communicate with one another and share lessons learned. Examples include electronic networks and websites that can be accessed by regional groups, case study and best practice publications, and resource materials like toolkits and guides in electronic or paper forms.

Planning and capacity building need to be thought of as cyclical processes

Planning should not be thought of as a process with a distinct start and end point. Nor should capacity building. There are advantages in viewing both as cyclical, on-going and iterative. This way of thinking encourages recognition of different cycle phases and the different skills and abilities that may be needed for each phase. It also encourages recognition that different players may need to involved at different phases. In particular, the support and engagement of regional landholders is essential for INRM plans to be implemented. Thinking of planning cycles reinforces the need for effective monitoring and evaluation phases to enable continuous improvement to occur over successive cycles. Many guides and resources to help in planning and evaluation like *Participatory evaluation for Landcare and catchment groups: a guide for facilitators* (Woodhill & Robins 1998) are already available and need to be more widely distributed and promoted. There needs to be a focus on outcome evaluation linked to the overall aims of the NAP and the Trust Extension in each of the regions. While capacity building activities may have intermediate outcomes of their own, the ultimate test of whether capacity building is working or not is whether it produces improved regional NRM.

Skills template

While we have some reservations about use of a skills template as it may tend to reinforce an un-integrated and discipline-based approach to NRM education and training rather than a more systemic one, we included a listing of skills and knowledge areas in the training needs questionnaire under the general categories of:

∉# People management
∉# Administration and financial
∉# Communication
∉# Planning, spatial and risk management
∉# Natural resource management
∉# Socio-economic
∉# Government and policy.

A range of more specialised subject areas within each of these categories is listed in the template. All these general categories received 'high' or 'very high' importance ratings from the regional groups who responded in this project, suggesting that their inclusion in the template is appropriate.

Situation statement detailing gaps between the current skills and knowledge of regional groups and what they need for effective regional INRM planning

It is inappropriate at this stage to make any general statements about 'gaps'. By applying a skills audit process and developing their own training and development strategies, groups can make these assessments themselves and work out how to address them. It may also be advisable not to make any possibly invidious comparisons between groups given their greatly varying histories, membership, access to support staff, and regional situations.

∉# differences between ratings for importance of particular skill and knowledge areas and ratings for groups' corresponding skill and knowledge levels suggest there may be gaps between what groups need and their current abilities. Gaps existed for all the categories used in the template but were largest in the People management, Socio-economic, and Government and policy categories

∉# regional groups need a broad general understanding of NRM, the ability to integrate and identify the implications of a range of information, and to know enough to be able to identify what they don't know and where to go (or who to go to) to be able to find it (knowledge brokering ability and research skills)

∉# groups could use further information on approaches to and availability of appropriate education and training for INRM planning

∉# groups need appropriate support to develop, implement, and monitor and evaluate their own capacity building strategies and action plans.

In saying this, we recognise that some groups are in regions with poor access to formal education and training while others are in core metropolitan areas that have several universities, larger population bases and therefore better access to professional staff and advice. Some groups are involved in well-developed ICM approaches already including capacity building frameworks and activities, whereas others may be 'starting from scratch'.

Another important point emerging from the research is that groups have very differing access to support staff. The availability of support staff, and the kinds of skills and knowledge these staff have, makes a big difference to the skills and knowledge group members need themselves.

66

Recommended process for assessing regional groups' skills and training needs

Drawing on what has already been said, groups need to own the process of identifying their skill and training needs. They can be supported by agencies and individuals with expertise in a range of areas – including those covered by the key informants (environmental and natural resource management, service provision in rural and remote areas, adult learning, and community participation in NRM). The interviews and survey responses suggest that at present groups rely on a range of informal, in-house processes although there was some disagreement within groups about what constituted 'processes' for identifying skill and training needs.

We support the suggestion of using a series of workshops in conjunction with surveys, training materials and presentations as part of a process for groups to assess their current situation, and design, implement and evaluate a group training and development strategy. Groups could organise these workshops on their own or in conjunction with other groups. Workshops could attempt to involve all group members, but if some members were unable to participate, a sound reporting back and checking process would be essential. Workshops could cover the following areas (many of which are included in the training needs questionnaire but which could be built on and expanded in a workshop process):

- key social, economic and environmental issues in the region
- knowledge and skills needed for effective INRM planning in the region
- group strengths (knowledge and skills they have - both as individuals and as a group)
- what knowledge and skills they would like to improve (gaps), and how to improve them
- different environmental and NRM education and training approaches
- individual and group learning processes, styles and preferences
- what programs and resources are already available *in* and *for* the region
- what kind of programs or activities (from formal to informal) would best address those learning needs
- what (if any) barriers are there to or education and training and how might they be overcome.

Professional facilitation could help groups discuss these areas, and design and implement a process to feed information back to other group members. Further workshops or meetings could be held to develop a training and development strategy for the group, and to further clarify roles, responsibilities and support needed to implement the strategy. A suggested process that groups could modify to suit their circumstances is shown in Figure 13. The training needs questionnaire and skills template developed in this project have a place in the scoping phase of the cycle but could be applied in successive cycles to help revise strategies and ensure they continue to be relevant to group needs.
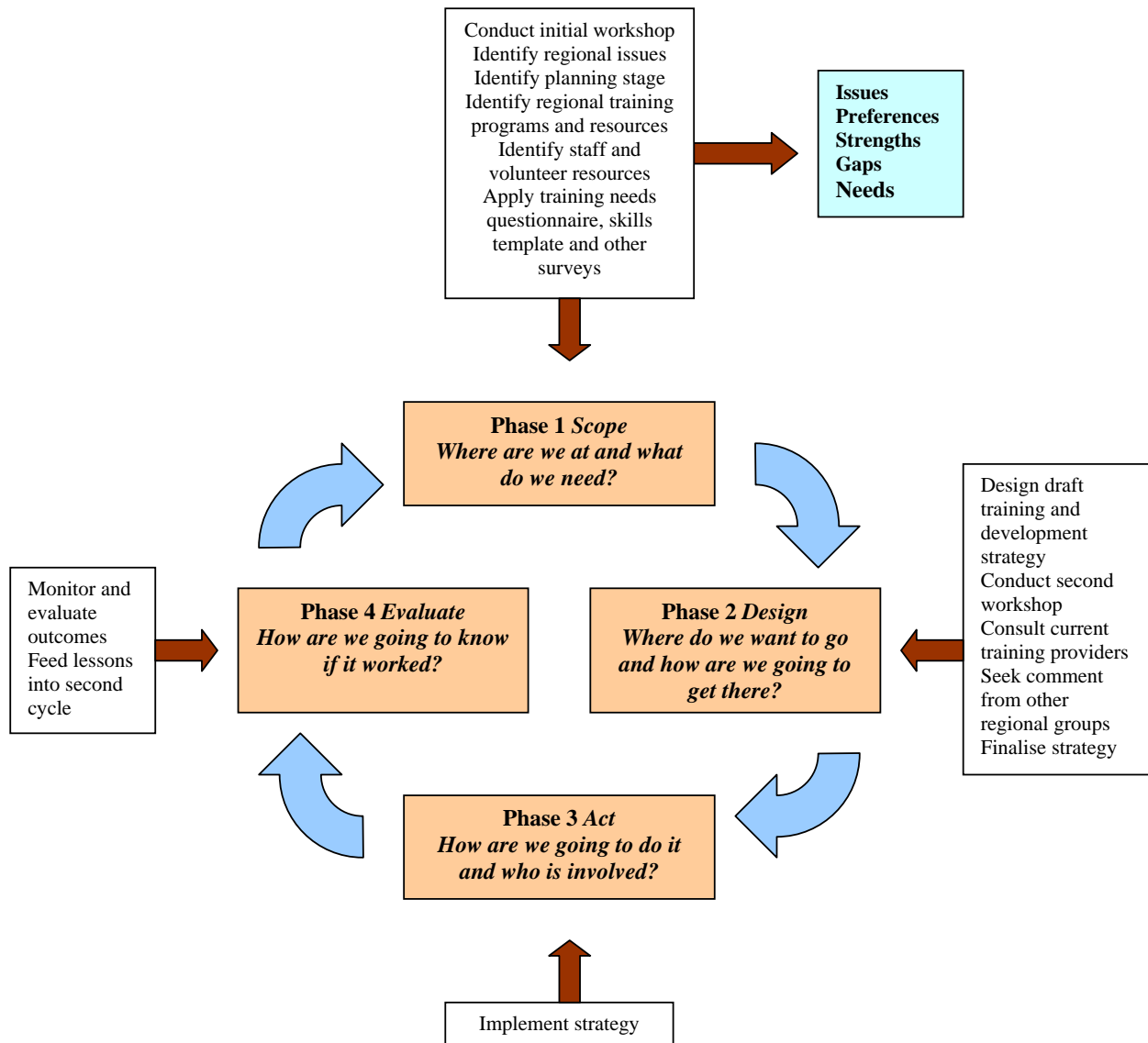
Figure 13 A cyclical process for a training and development strategy

Scope of issues that need to be addressed in satisfying regional groups' skill and training needs

Some major issues this project identified have been covered in developing the recommendations. Other issues warrant further mention.

Issues for governments generally

Key informants and regional groups provided ideas about how government could help groups fill their knowledge and skill gaps, including:

⊄# better coordinate government processes (including Commonwealth to State, State to State, and across levels of government)

⊄# consider its own capacity building needs particularly with regard to INRM planning expertise

⊄# provide better support for full development of training packages and for training providers

- ✏ ensure capacity building activities are tailored to regions
- ✏ look to other sectors like the public health sector for lessons in capacity building
- ✏ not neglect the value of informal processes and activities
- ✏ include service provision and encouragement, not just money, in notions of 'support'.

Examining ICM processes across the States shows the different institutional structures and approaches in the different jurisdictions, which in turn create a range of policy and planning contexts that regional groups must deal with (Bellamy et al. 2002). The evaluation of ICM suggests that regional planning initiatives are often compromised by a lack of coordination among the players (organisations, groups and individuals); lack of whole of government approaches; insufficient resources for catchment and regional groups who often rely heavily on volunteers; inadequate engagement of Local Government and Indigenous communities; and lack of appropriate communication networks. Similar issues arise in INRM planning and in building capacity among regional groups. These are all issues for which governments have some responsibility.

An analysis of the extension system, traditionally managed by State agricultural agencies, has revealed similar issues of fragmentation and lack of coordination (Macadam et al. 2002).

Issues for the higher education system

Higher education and training sectors have many different players providing NRM or environmental programs and courses. The situation in NRM training appears similar to that in irrigation industry education and training: namely a lack of coordination and integration of programs and courses. The irrigation industry evaluation called for the roles of all providers to be recognised, greater consistency and coordination among providers (which could be facilitated through an overview body), stronger regional orientation in program delivery, flexible delivery options and ensuring that different and special needs were accommodated (Meyer & Taylor 1998). While there may be some contradictions here (coordination and integration versus opportunities for regional differentiation and flexibility), the need for a higher education system that is more responsive to current NRM issues and to regional needs is evident.

Formal education and training for INRM planning need to be based primarily on developing integrated courses rather than putting together packages consisting of aggregations of many separate specialised subjects. An applied problem-solving focus using regional examples and case studies is one way of developing more integrated approaches.

Education and training providers need to be encouraged to tailor and target their programs specifically to the needs of regional communities. Forming closer links between regional groups and training providers in their region can help with this. Groups in adjoining regions may be able to form consortia to approach providers to develop the programs they need. With more devolution of resources to regions, regional groups may be able to significantly influence local providers. The idea of 'participatory curriculum development' is a useful one for regional groups and for players in the formal education system.

Reform across the higher education system has also created issues around:

- ✏ levels of support and investment, with special implications for regional universities and their ability to provide relevant training for INRM
- ✏ sourcing funds for full development of training packages such as the CLMTP, and for professional development for training providers
- ✏ ongoing problems relating to access and equity.

Other issues

Some other issues mentioned as important by key informants included:

- ⊯ a lack of cross regional learning
- ⊯ insufficient understanding of cultural heritage and Indigenous needs
- ⊯ rural and remote areas' restricted access to education and training
- ⊯ already well-resourced groups occupying too much attention and capturing too much support
- ⊯ the time needed to build cohesive and effective groups.

Lessons from developing and applying the training needs questionnaire

Developing and applying the questionnaire generated some lessons about further investigating regional groups' skills and training needs in this kind of way.

See the questionnaire as only one possible tool within a wider range of tools, techniques and processes

This is a major lesson from this research. Any training needs questionnaire is only one tool in a larger, iterative and participatory process driven primarily by groups themselves. It may be useful in the scoping or assessment phase of developing a training and development strategy. Other specific tools that could be used include learning style inventories, team management and conflict management style questionnaires. But these tools can be used in association with a wide range of events and activities like workshops, meetings and seminars held at different stages of the cycle shown in Figure 13. Human resource professionals apply many relevant tools, techniques and activities as well as education and training providers.

Take better account of group size and complexity

Groups vary greatly in complexity and in members' roles and responsibilities. Some groups have many members from government and non-government organisations, while others have more community members or landholders who may not be part of formal organisations. There are correspondingly varied interpretations of, and attitudes to, training and education, and differing commitments to lifelong learning. Related to this, it is more difficult for group members to answer questions about skill and training needs if they are being asked to comment on groups that are large and complex and consist of people with widely varying backgrounds, interests and expertise.

Clarify focus and terms

It must be clear who the group in question is, and whose skill and training needs are being assessed. Terms like 'INRM' need simple definitions. The meaning of 'process' in the sense of process to identify groups' skill and training needs, requires clarification.

Consider differences in roles within groups and among group staff

Given varying group sizes and structures, there are challenges in identifying appropriate contact points and deciding who should answer questionnaires or respond to surveys. The method used for this project relied on initially contacting a group staff member – usually a CEO or equivalent – who was able to describe the group and comment on the skills and training needs of group members. For future surveys to be more meaningful, it will be important to clarify the respective roles and responsibilities of voluntary group members and group staff in carrying out different tasks around the planning cycle. These roles and responsibilities vary between groups and influence what skills and training voluntary group members need themselves as opposed to those they can rely on staff to provide or can access from outside the group.

Involve as many group members as possible

Determining knowledge and skill gaps and training needs should not rely on a selective sample of members within groups, as in this project. Samples need to be more comprehensive

to obtain a better range of views about group capacity as well as individual group members' learning needs and preferences. Ideally the training needs questionnaire, if it is used, should be completed by *all* group members not only a few. For those groups that have sub-committees, members of these sub-committees may need to be included too. Given the variation in groups and their situations, we would question the value of trying to make too many generalisations about needs across groups in different States, or even from region to region within States.

Make the questionnaire (or any other written material used to assess skill and training needs) easier to use

In this project, completed questionnaires were returned by e-mail or fax and were often incomplete, in particular for responses to the skills template (which was quite lengthy). In-person or telephone administration could reduce misunderstandings both about who should answer the questionnaire and how to interpret and answer specific questions. Our questionnaire was not easy to answer electronically as it was in the form of a Word document. There are many demands on members of regional groups already – this kind of process and any surveys it involves need to be made as simple and efficient as possible.

Pay attention to ways of assessing the integrative, coordinating and knowledge-brokering capacity of groups

The questionnaire and any other instruments used to help identify skill and training needs may need further development in this respect. A skills template listing separate knowledge or skills areas may work against integrative thinking and a more process-related focus, although it is very hard to get away from a disciplinary basis given the structure of western knowledge and the formal education system. This or any other survey would be strengthened if it had ways of recognising and assessing use of local or Indigenous knowledge, and ways of assessing group ability to integrate and use these different kinds of knowledge. The survey would also be improved if it included questions about groups' abilities to identify and use sources of information from outside the group.

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Appendix 1 Key informant interview schedule

Identifying the skills and training needs of regional groups for integrated natural resource management planning

[Read out as appropriate] Good morning/afternoon. My name is ……………………… and I am a member of a team at the Bureau of Rural Sciences undertaking a project to help identify the skills and training needed by Australian regional groups to successfully undertake Integrated Natural Resource Management [INRM] planning, supported by Government. The project is being funded by Agriculture, Fisheries and Forestry – Australia (a Commonwealth Government Department), and Land and Water Australia (a research and development corporation jointly funded by the Commonwealth Government and industry). Regional groups are being identified or established in priority regions under the National Action Plan for Salinity & Water Quality (NAP) to develop, implement and monitor regional plans for INRM, addressing priority issues like dryland salinity and vegetation management. (*A map of these priority regions and a diagram of this project have been attached for your interest. Alternatively, you can view the map of NAP regions at: http://www.napswq.gov.au/publications/priority_regions.html.*). A similar approach is also being used for the extension of the Natural Heritage Trust (NHT2). This project has been designed to help the Commonwealth Government ensure that these regional groups are supported so that they can carry out their roles effectively. The focus of the survey is on the regional *groups*, and the roles these groups are required to play rather than on individuals within groups.

You are being contacted as someone who has a special expertise in the area of *[read out and check off appropriate category or categories]*:

[Key informant category]:
- Natural resource management planning/integrated planning

- Community participation in natural resource management

- Providing services to rural and regional Australia

- Rural and regional education and training, capacity building or extension

As part of this phase of this project, we are contacting people who have special knowledge in these areas to ask them about:

- the approach being taken to INRM and how it relates to other programs (Commonwealth, State, Local government etc.)
- how this approach relates to other skills and training initiatives for regional Australia or for particular rural industries
- the knowledge, skills and abilities needed by regional groups to carry out INRM planning successfully
- the present knowledge, skills and abilities of regional groups and any perceived gaps/deficiencies they may have
- how these gaps/deficiencies might best be addressed
- any examples of best practice regional planning processes.

The survey should take about 45 minutes. Your answers to the questions will be confidential and in reporting results, we will not associate names with particular responses. Only aggregated results will be reported in the survey findings. Most of the questions are open-ended ones that you can answer in your own words.

Are you willing to answer the survey questions now? If now is not convenient, would you like me to ring at another time? I would greatly appreciate your help in completing the survey and providing information to help meet regional needs for INRM.

Context and roles

1. 'INRM' is a term that is being used to describe current approaches to managing natural resources. How well does the following definition match your understanding of this term?
Using inclusive, participative and coordinated strategies to manage interrelated natural resources in a way that maintains productivity, ecological processes and environmental quality.

1a. Can you comment on the overall approach being taken to INRM in the NAP/NHT2?
[For example: is it appropriate, does it give community groups appropriate roles and responsibilities etc., is government's role appropriate in relation to communities and community groups, are there better models, is too much being expected of communities?]

2. On the basis of your knowledge and experience, how do you think this approach relates to other current *[select appropriate option for interviewee]*

- rural education and training initiatives, or
- government programs or other activities (Commonwealth/State/Local), or
- community nrm activities, or
- any other natural resource management activities?

[Prompt: are their duplications/overlaps, is there a need for coordination and integration, what about State versus Commonwealth initiatives, what other activities are communities involved in?]

3. How well-placed do you think regional groups are to undertake the kinds of roles assigned to them under the NAP/NHT or related nrm initiatives, in terms of:

- Provision and access to education and training *[Prompt: are services provided appropriate in content and form (short course, distance ed, hands-on versus theoretical, locally grounded versus generic etc.), can groups access them, are the education and training providers responsive to INRM and user group needs?]*
- Provision and access to services generally *(Prompt: are services appropriate and accessible e.g. Internet and telephone connections, distances that need to be travelled, costs, coordination and integration of services, government versus private sector-provided services?)*
- Knowledge, skills and abilities *(Prompt: do rural community groups have appropriate knowledge or skills, is capacity building needed, in what areas?)*
- Resources available to them *(Prompt: office facilities, administrative support and equipment, software, finances etc.).*

Knowledge, skills and abilities needed by groups

4. Looking at this planning cycle (*e-mail, show or fax diagram to interviewee*), and thinking about INRM planning generally, what do you think are the key knowledge areas, skills or abilities that regional groups need to carry out their roles successfully?

Describe
place in relation to principles

Principles
Policy, program and planning guidelines etc.
ICM principles
Planning goals and objectives

Place
Apply goals and objectives to region
Identify regional skills and knowledge
Collect regional information

Decide
on future practice in relation to principles

INRM

Design
plans
for place in relation to potential

Practice
Implement plans
Monitor and evaluate outcomes against goals Revise plans in light of findings

Potential
Develop regional plans
Identify and analyse options
Develop actions to implement plans

Do
Put plans into practice to achieve potential

Action:	Describe	Design		Do	Decide	
Knowledge:	Place	Potential			Practice	Principles

5. There are many kinds of knowledge, skills and abilities a regional group might need to undertake integrated regional planning. Groups might also seek specialist advice from outside their immediate organisation. I have a list of **general** and specialised knowledge and skills which groups might need. For each item, could you please tell me whether you feel it is: *essential for the group to have within the group; necessary, but could be found outside the group (eg. consultant, specialist advice);* or *It depends on particular conditions*.

General knowledge and skills				
	Essential to have in group	*Necessary, but could be provided from outside group*	*Depends on regional circumstances (eg. issues in that region)*	*Can't answer/ not applicable*
Ability to communicate and raise awareness in the community				
Group management and facilitation				
Group leadership				
Project and resource management (including finances and budgets, priority setting)				
Human resource management (staff recruitment and training, supervision etc.)				
Office administration and support (record keeping, filing, correspondence etc.)				
Change management				
Policy and program administration				
Plan, project or program monitoring, review and evaluation				
Lobbying (obtaining additional resources, influencing politicians and other decision-makers)				
Negotiation and conflict resolution				

Specialised knowledge and skills				
	Essential to have in group	*Essential but could be provided from outside group*	*Depends on issues, region of other circumstances*	*Can't answer/not applicable*
Information technology (internet, email, word processing, spreadsheets				
Mapping/spatial (GIS)				
Knowledge of particular rural industries or industry sectors (cropping, grazing, livestock, forestry etc.)				
Ecosystem management				
Cultural heritage management				
Integrated pest & weed management				
Fauna/wildlife management				
Public participation & community development				
Fisheries management (including inland waters, rivers and streams)				
Conservation earthworks/soil conservation				
Adaptive management				
Salinity and dryland salinity management				
Water quality and waste water management				
Ground water management				
Irrigation management				
Biodiversity conservation				
Economics e.g. cost-benefit analysis				
Sustainable agriculture or crop & pasture ecology				

6. Are there any others you would add that I haven't mentioned? And how important is it for a group to have them?

7. Thinking of the knowledge, skills and abilities we have talked about, do you think there are any areas where regional groups may have gaps or special needs?
[Prompt: can you make any overall assessments or assessments of needs in particular regions or states? Or do you think there is wide variation and assessments need to be situation-specific? What kind of variation is there?]

8. What do you think are the best ways for regional groups to fill these gaps?
[Prompt: Is it through formal training or education e.g. at TAFE colleges, universities, private sector providers; through on the job training; through experience; through being provided with better information and best practice examples; or some combination of these? Or something else?]

9. What do you think is the best way or ways governments can go about helping regional groups fill these needs?

Best practice

10. *[Ask if appropriate for interviewee]* Are you aware of any regional planning initiatives involving community groups that you think exemplify or come close to being best practice?
 [If yes] What do you think was the secret of their success?

Other comments and referrals

11. Do you have any other comments?

12. Are there any other people you think I should speak to about these matters?

Thank you for your time. Would you like to receive a copy of the final report when it is completed?

Appendix 2 Regional group training needs questionnaire (including skills template)

Identifying the skills and training needs of regional groups for integrated natural resource management planning
Phase 4 Regional group interviews

This project is being funded by Agriculture, Fisheries and Forestry – Australia and Environment Australia (Commonwealth Departments), and Land and Water Australia (a research and development corporation jointly funded by the Commonwealth Government and industry).

Regional groups are being identified or established in priority regions under the National Action Plan for Salinity and Water Quality (NAP) to develop, implement and monitor regional plans for Integrated Natural Resource Management (INRM), addressing priority issues like dryland salinity, water quality and vegetation management. A similar approach is also being used for the extension of the Natural Heritage Trust (NHT2).

I am contacting you in relation to your role with the ……………………………… Group to ask you who would be the best people to talk to about characteristics of the group and about the group's skill and training needs. We would like to talk to several people in each group. Your replies will be kept anonymous and no names will be associated with particular responses in reporting results. Only the researchers will have access to your direct replies.

PART 1 Skill and training needs analysis

1. Does your group have any existing process in place to identify the group's skill and training needs for INRM planning?

❏ Yes ❏ No ❏ Unsure

1a. *If yes,* what kind of process is it? *[several responses possible]*

❏ Informal feedback/comment from group members, or as we see the need

❏ Formal surveys of group members done by a group member or group employee (including a formally identified training officer)

❏ Formal surveys run for the group by someone from outside the group (e.g. private sector consultant)

❏ Formal surveys done at a higher level (e.g. Regional or State-wide training needs analyses that include the group)

❏ Regular meetings or consultations with informed sources (e.g. education and training providers, State Government extension staff)
   [If so, please specify which informed sources the group uses]

   ………………………………………………………………………………………

   ………………………………………………………………………………………

❏ Some other kind of process? *[Please specify]*

   ………………………………………………………………………………………

2. How does your group obtain information about formal or informal training courses or other resources relevant to improving its INRM planning ability? *[More than one response possible, please indicate all those that apply]*

❏ Has a designated training officer responsible for providing information to others

❏ Relies on information provided by individual members from their own sources, as needed

❏ Maintains a register, database or information file that can be used by all members

❏ Regularly consults with formal education and training providers

❏ Uses other means *[Please specify what these are]*

   ……………………………………………………………………………………

3. Does your group organise or run any formal or informal education or training activities designed to improve INRM planning skills? *[Either for group members alone or for members and the wider community?]*

❏ Yes   ❏ No   ❏ Unsure

    3a. *If yes*, what kinds of activities does the group organise? *[Please fill in the appropriate boxes in the table]*

�»➤	Type of activity?	Topics covered?
	Talks, seminars or lectures	…………………………………………………
	Workshops	…………………………………………………
	Conferences or public forums	…………………………………………………
	Formal training courses	…………………………………………………
	Field days or open days	…………………………………………………
	Shows, displays or exhibits	…………………………………………………
	On-site demonstrations or trials	…………………………………………………
	'Hands-on' training e.g. computer training, land management activities like tree-planting, soil conservation etc.	…………………………………………………
	Study groups, study circles or learning circles	…………………………………………………
	Other kinds of education or training activities? *[Please specify]* ……………………………………	

4. There are many kinds of skills and knowledge a regional group might need to undertake INRM planning. Groups may seek specialist advice from outside the group as needed for particular tasks, or employ people to carry out these tasks for them. INRM planning also covers a planning cycle, which can be shown like this:

START HERE

DESCRIBE
POLICY AND
PRINCIPLES,
RELATE TO
REGION

DESIGN
PLANS AND
STRATEGIES
FOR REGION

IMPLEMENT
PLANS AND
STRATEGIES

MONITOR
AND
EVALUATE
OUTCOMES
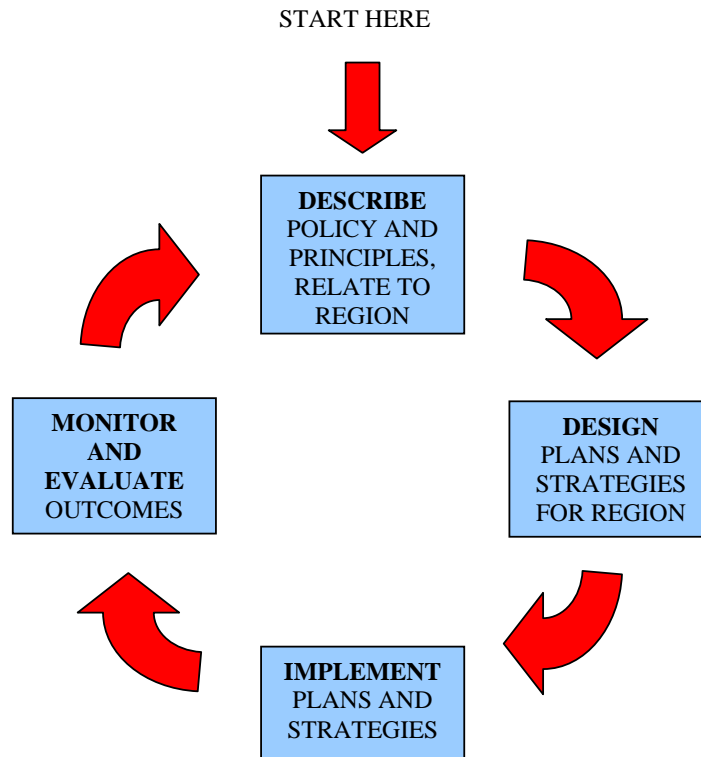
Looking down this list of **People management** skills or knowledge, and thinking of the planning cycle, how would you rate the *importance of your group having these skills within the group*, and how would you rate the *current level* of these skills in your group, using a scale of 1 to 5 where 1 is 'Very low' and 5 is 'Very high'?

[In these questions you can either rate each of the individual skills sets or just rate the overall group of skills at the end of each section.]

People management	Importance of having these skills in the group					Current level of these skills in the group				
Time and stress management	1	2	3	4	5	1	2	3	4	5
Retirement and succession planning	1	2	3	4	5	1	2	3	4	5
Industrial relations	1	2	3	4	5	1	2	3	4	5
Occupational health and safety	1	2	3	4	5	1	2	3	4	5
Negotiation and conflict resolution	1	2	3	4	5	1	2	3	4	5
Group leadership	1	2	3	4	5	1	2	3	4	5
Group management and facilitation	1	2	3	4	5	1	2	3	4	5

OR

People management skills generally										
	1	2	3	4	5	1	2	3	4	5

5. Looking down this list of **Administration and financial** skills or knowledge, and thinking of the planning cycle, how would you rate the *importance of your group having these skills within the group*, and how would you rate the *current level* of these skills in your group, using a scale of 1 to 5 where 1 is 'Very low' and 5 is 'Very high'?

Administration AND financial	Importance of having these skills in group					Current level of these skills in group				
Financial management (budgeting, accounting, invoicing etc.)	1	2	3	4	5	1	2	3	4	5
Meeting and event organising skills	1	2	3	4	5	1	2	3	4	5
Maintaining files and records (paper or electronic)	1	2	3	4	5	1	2	3	4	5
Insurance and funds management (including superannuation and investment)	1	2	3	4	5	1	2	3	4	5
Contract management	1	2	3	4	5	1	2	3	4	5

OR

Administration and financial skills generally	1 2 3 4 5	1 2 3 4 5

6. Looking down this list of **Communication** skills or knowledge, and thinking of the planning cycle, how would you rate the *importance of your group having these skills within the group*, and how would you rate the *current level* of these skills in your group, using a scale of 1 to 5 where 1 is 'Very low' and 5 is 'Very high'?

Communication	Importance of having these skills in group	Current level of these skills in group
Ability to communicate and raise awareness in the community	1 2 3 4 5	1 2 3 4 5
Lobbying (obtaining additional resources, influencing decision-makers)	1 2 3 4 5	1 2 3 4 5
Cross-cultural awareness and communication (e.g. with Indigenous people, non-English-speaking background people)	1 2 3 4 5	1 2 3 4 5
Ability to write for or speak to different audiences, including media	1 2 3 4 5	1 2 3 4 5
Information technology (Internet, e-mail, word processing, spreadsheets etc.)	1 2 3 4 5	1 2 3 4 5

OR

Communication skills generally	1 2 3 4 5	1 2 3 4 5

7. Looking down this list of **Planning, spatial and risk management** skills or knowledge, and thinking of the planning cycle, how would you rate the *importance of your group having these skills within the group*, and how would you rate the *current level* of these skills in your group, using a scale of 1 to 5 where 1 is 'Very low' and 5 is 'Very high'?

Planning, spatial and risk management	Importance of having these skills in group	Current level of these skills in group
Planning laws and regulations applying in the region	1 2 3 4 5	1 2 3 4 5
Ability to use Geographic Information Systems (GIS) and specialised spatial or mapping tools	1 2 3 4 5	1 2 3 4 5
Ability to interpret and apply maps and other spatial information (including aerial photos)	1 2 3 4 5	1 2 3 4 5

Ability to use specialised natural resource modelling tools and software	1	2	3	4	5	1	2	3	4	5
Ability to interpret and apply spatial models and diagrams	1	2	3	4	5	1	2	3	4	5
Understanding of different approaches to land use planning/ regional planning	1	2	3	4	5	1	2	3	4	5
Managing natural hazards and risks (including flood or fire)	1	2	3	4	5	1	2	3	4	5
Environmental impact assessment (EIA)	1	2	3	4	5	1	2	3	4	5
Social impact assessment (SIA)	1	2	3	4	5	1	2	3	4	5
Adaptive management (systematic ways of learning or setting out to learn)	1	2	3	4	5	1	2	3	4	5
Monitoring, review and evaluation of plans	1	2	3	4	5	1	2	3	4	5

OR

Planning, spatial and risk management generally	1	2	3	4	5	1	2	3	4	5

8. Looking down this list of **Natural resource management** skills or knowledge, and thinking of the planning cycle, how would you rate the *importance of your group having these skills within the group*, and how would you rate the *current level* of these skills in your group, using a scale of 1 to 5 where 1 is 'Very low' and 5 is 'Very high'?

Natural resource management	Importance of having these skills in group					Current level of these skills in group				
Soil conservation/ conservation earthworks	1	2	3	4	5	1	2	3	4	5
Salinity and dryland salinity management	1	2	3	4	5	1	2	3	4	5
Water quality and waste water management	1	2	3	4	5	1	2	3	4	5
Ground water management	1	2	3	4	5	1	2	3	4	5
Irrigation management	1	2	3	4	5	1	2	3	4	5
Vegetation management (including re-vegetation)	1	2	3	4	5	1	2	3	4	5
Fisheries management (including inland waters)	1	2	3	4	5	1	2	3	4	5

	Importance of having these skills in group					Current level of these skills in group				
Fauna/wildlife management	1	2	3	4	5	1	2	3	4	5
Pest and weed management	1	2	3	4	5	1	2	3	4	5

OR

Natural resource management generally	1	2	3	4	5	1	2	3	4	5

9. Looking down this list of **Socio-economic** skills or knowledge, and thinking of the planning cycle, how would you rate the *importance of your group having these skills within the group*, and how would you rate the *current level* of these skills in your group, using a scale of 1 to 5 where 1 is 'Very low' and 5 is 'Very high'?

Socio-economic	Importance of having these skills in group					Current level of these skills in group				
Develop socio-economic models, cost-benefit analyses etc.	1	2	3	4	5	1	2	3	4	5
Interpret and apply results of socio-economic models, cost-benefit analyses etc.	1	2	3	4	5	1	2	3	4	5
Develop social profiles (collect and apply existing social information about communities and regions)	1	2	3	4	5	1	2	3	4	5
Conduct social surveys (e.g. questionnaires and interviews)	1	2	3	4	5	1	2	3	4	5
Interpret and apply results of social surveys	1	2	3	4	5	1	2	3	4	5
Develop participatory monitoring and evaluation processes (e.g. involve communities in assessing whether targets are met)	1	2	3	4	5	1	2	3	4	5
Interpret and apply findings of participatory monitoring and evaluation	1	2	3	4	5	1	2	3	4	5

OR

Socio-economic skills generally	1	2	3	4	5	1	2	3	4	5

10. Looking down this list of **Government and policy** skills or knowledge, and thinking of the planning cycle, how would you rate the *importance of the group having these skills within the group* (bearing in mind that the group may be able to obtain skills from outside if needed), and how would you rate the *current level* of these skills in the group, using a scale of 1 to 5 where 1 is 'Very low' and 5 is 'Very high'?

Government and policy	Importance of having these skills in group	Current level of these skills in group
Roles of the three tiers of government and how government operates (Local, State, Commonwealth)	1 2 3 4 5	1 2 3 4 5
Government accountability and reporting mechanisms	1 2 3 4 5	1 2 3 4 5
Policy and program development processes	1 2 3 4 5	1 2 3 4 5
Policy tools and instruments	1 2 3 4 5	1 2 3 4 5
Departmental structures and responsibilities (State or Commonwealth)	1 2 3 4 5	1 2 3 4 5
Laws and regulations relating to regional natural resource management	1 2 3 4 5	1 2 3 4 5

OR

Government and policy generally		
	1 2 3 4 5	1 2 3 4 5

11. Are there any other kinds of skills or knowledge that you would add that I haven't mentioned? And if so, how would you rate them?

Additional skills	Importance of having these skills in group	Current level of these skills in group
	1 2 3 4 5	1 2 3 4 5

12. Are there any important barriers to group members participating in formal or informal training activities designed to improve their INRM planning skills?

❏ Yes   ❏ No   ❏ Unsure

12a. *If yes,* what are these barriers? *[More than one response possible]*

❏ Costs
❏ Lack of time/too many other commitments
❏ Distance to travel to attend activities
❏ Attitudes or motivation e.g. lack of interest, resistance to further training
❏ Activities currently being offered not useful or relevant

Other barriers *[Please specify what these are]*

……………………………………………………………….………………….…..

…………………………………………………………………………………………

13. What do you think would help overcome these barriers?

………………………………………………………………………………………..

………………………………………………………………………………………..

14. For your group, how would you rate the usefulness of these ways of filling any gaps the group has in skills or knowledge? *[Please circle the appropriate number where 1 is 'of very little use' and 5 is 'extremely useful']*

Accessing existing formal education and training courses e.g. at TAFE colleges or universities, or provided by private sector training organisations	1	2	3	4	5
Working with formal education and training providers to develop and provide new training courses e.g. though consortia or partnership arrangements	1	2	3	4	5
Developing new networks of facilitators or using existing ones to exchange information between groups and communicate successes and failures (could be Landcare Facilitators, Indigenous Land Management Facilitators etc.)	1	2	3	4	5
Regional groups developing better direct links with one another to share information and experiences	1	2	3	4	5
Regional groups making better use of information and communication technology to share information e.g. websites, chat rooms	1	2	3	4	5
Regional groups developing and organising their own training and development activities e.g. workshops, forums, conferences, field days, demonstrations	1	2	3	4	5
Developing material on best practice case studies or examples to share in printed or electronic form	1	2	3	4	5
Other ways? *[Please specify what these are]* ……………………………………………………… ………………………………………………………	1	2	3	4	5

15. What do you think is the best way Governments (State or Commonwealth) could help your group fill any gaps it has in skills or training?

…………………………………………………………………………………………

…………………………………………………………………………………………

16. Have you heard of these training initiatives or information sources related to developing INRM planning skills and capacity? *[Please indicate which ones you have heard of.]*

- ❏ Conservation & Land Management Training Package
- ❏ *Natural Heritage Trust Skills Toolkit* and *Skills Planner*
- ❏ Building Regional Capacity Short Course
- ❏ *sustainable regional development srd kit* (Dore, Keating, Woodhill and Ellis, 2000)
- ❏ *Setting up for success – a guide for designing, managing and evaluating projects* (National Landcare Program Evaluation Coordinators, 1997)
- ❏ *Participatory evaluation for Landcare and catchment groups: a guide for facilitators* (Woodhill and Robins, 1998)

PART 2 Group characteristics

17. What is the history of your group? Was it:

- ❏ Formed specifically for NAP/NHT2 purposes

- ❏ A pre-existing Catchment Management Organisation or Committee

- ❏ Some other kind of pre-existing group? *[please specify what kind]*

………………………………………………………………………….

18. What geographical area is your group responsible for?

………………………………………………………………………….

19. How long has your group existed?

- ❏ Less than a year

- ❏ 1-2 years

- ❏ 2-5 years

- ❏ Longer than 5 years

20. How long have you been involved with the group?

- ❏ Less than a year

- ❏ 1-2 years

- ❏ 2-5 years

- ❏ More than 5 years

21. How is your group made up? *[Please put numbers in appropriate boxes corresponding to the major affiliations or interests represented by members]*

- ❏ Total no. of members *[not including any staff employed by the group]*
- ❏ No. of community representatives/local landholders
- ❏ No. of Local Government representatives (Local Govt staff or Councillors)
- ❏ No. of State Government representatives

❏ No. of Indigenous (ATSI) representatives
❏ No. of industry group representatives (non-government)
❏ No. of environmental/conservation organisation representatives (non-government)

22. What specially designated roles are there for group members? *[Please tick those that apply – this is roles within the group itself, not with other organisations]*

❏ Chair/President

❏ Secretary

❏ Treasurer

❏ Coordinator

❏ Facilitator

❏ Training officer

22a. Are there any other special roles identified for group members that I haven't mentioned? *[Please specify]*

……………………………………………………………………………………

23. Does your group have any special purpose sub-committees?

❏ Yes ❏ No

If yes, what are they responsible for?

…………………………………………………………………………………………

24. Does your group employ any paid staff?

❏ Yes ❏ No

If yes, what are their jobs? *[Please specify]*

…..………………………………………………………………………………………

…..………………………………………………………………………………………

25. In relation to the NAP/NHT2 process and the planning cycle, what stage would you say your group is at?

❏ Is implementing an accredited plan
❏ Has an accredited plan but has not yet started implementing it
❏ Has submitted a plan for accreditation
❏ Is currently developing a plan
❏ Is currently collecting information to develop a plan
❏ Some other stage? *[Please specify]*

…………………………………………………………………………………………

26. Do you have any other comments?

…..…………………………………………………………………………………………

…..…………………………………………………………………………………………

Many thanks for your time and help. Would you like to receive a copy of the project report when it is completed?

❏ Yes   ❏ No