‘Walking together, working together’: Aboriginal research partnerships

Jocelyn Davies

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CRC

DESERT KNOWLEDGE CRC

Contributing author information

Jocelyn Davies leads the Livelihoods inLand™ project for Desert Knowledge Cooperative Research Centre. She works as a geographer and principal research scientist for CSIRO Sustainable Ecosystems, based in Alice Springs.

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The Desert Knowledge Cooperative Research Centre is an unincorporated joint venture with 28 partners whose mission is to develop and disseminate an understanding of sustainable living in remote desert environments, deliver enduring regional economies and livelihoods based on Desert Knowledge, and create the networks to market this knowledge in other desert lands.

For additional information please contact

Desert Knowledge CRC
Publications Officer
PO Box 3971
Alice Springs NT 0871
Australia
Telephone +61 8 8959 6000 Fax +61 8 8959 6048
www.desertknowledgecrc.com.au

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ABS	Australian Bureau of Statistics
ADEH	Australian Government Department of the Environment and Heritage
AIATSIS	Australian Institute of Aboriginal and Torres Strait Islander Studies
Anangu, Yarnangu	'People' in Western Desert languages [Anangu is Yankunytjatjara, Pitjantjatjara; Yarnangu is Ngaanyatjarra]
ANU	Australian National University
AP/APY	Anangu Pitjantjatjara, also referred to as Anangu Pitjantjatjara Yankunytjatjara
APYLM	APY Land Management
ATSIC	Aboriginal and Torres Strait Islander Commission
ATSISJC	Aboriginal and Torres Strait Islander Social Justice Commissioner
AWS	Australian Wildlife Services
CAO	Combined Aboriginal Organisations
CAT	Centre for Appropriate Technology
CAZR	Centre for Arid Zone Research, Alice Springs (part of CSIRO)
CBD	Convention on Biological Diversity
CDEP	Community Development Employment Projects programme (Australian Government)
CDU	Charles Darwin University
CLC	Central Land Council
COAG	Council of Australian Governments
CRC	Cooperative Research Centre
CRCAH	CRC for Aboriginal Health
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DEH	Department of the Environment and Heritage (Australian Government)
DKA	Desert Knowledge Australia
DKCRC	Desert Knowledge Cooperative Research Centre
DPC	Desert Peoples Centre
IAD	Institute for Aboriginal Development
ICC	Indigenous Coordination Centres
IPA	Indigenous Protected Area
IRRA	Indigenous Research Reform Agenda
LWA	Land & Water Australia
MOU	Memorandum of Understanding
NAILSMA	North Australia Indigenous Land and Sea Management Alliance
NHMRC	National Health and Medical Research Council
NHT	Natural Heritage Trust (Australian Government)
NLWRA	National Land & Water Resources Audit
NRM	Natural resource management
NRMMC	*Natural Resource Management Ministerial Council*
NT	Northern Territory
NT DIPE	Northern Territory Department of Planning Infrastructure and Environment
OH&S	Occupational health and safety
OIPC	Office of Indigenous Policy Coordination (Australian Government)
PIRSA	Primary Industries and Resources South Australia
RCIADIC	Royal Commission into Aboriginal Deaths in Custody
RTO	registered training organisation
SA DEH	South Australian Department for Environment and Heritage
SACOME	South Australian Chamber of Mines and Energy
SAMLISA	Strategy for Aboriginal Managed Lands in South Australia
SCRGSP	Steering Committee for the Review of Government Service Provision
TAGAL	Technical Advisory Group on Aboriginal Lands
TSN	Threatened Species Network

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Key messages

In this report, I identify some considerations for partnerships between research organisations and Aboriginal organisations in desert Australia, and some directions for research. I cover only some issues and I focus on land management.

My report is based on selective consultations and networks. A lot more consultation and negotiation has to happen to develop the research directions I identify here into partnerships and collaborative research projects.

Research can bring benefit to Aboriginal people. Aboriginal organisations do a lot of research. Some Aboriginal organisations do this research in ways that build capacity among their own people.

Outside researchers can bring new ideas, knowledge and networks to desert Aboriginal people. This can help support Aboriginal people to move from welfare dependency to being a strong part of regional economies. But researchers cannot do this alone. Partnerships with Aboriginal organisations and with government are needed for long-term support and outcomes.

Partnerships between organisations start from trust between individuals. It is important for organisations to have a clear agreement about their partnership, what they will put into it and what they will work towards together. Partnership agreements are important for continuity and for conflict resolution, but as one participant in this research said: 'It's what is in the guts of the relationship that will produce outcomes, not the agreement papers'.

To be effective partners with Aboriginal organisations, research organisations need to look at how they develop and scope research projects, how they involve Aboriginal people in research, and how they communicate their research. These research approaches need to suit the way that Aboriginal people and organisations do business.

To develop projects that are valuable to Aboriginal people and organisations, researchers need resources to consult and negotiate with Aboriginal organisations and to consult with Aboriginal people 'on the ground' about research ideas and how to implement them.

Aboriginal organisations often don't have spare capacity to devote to developing strategic approaches to their research needs. They often work in fast changing situations and have to respond to 'crises'. Research organisations need capacity to respond quickly to Aboriginal priorities. Quick response to Aboriginal priorities can cut short the time that is needed for research organisations and Aboriginal organisations to develop relationships and negotiate collaborative projects.

Summary

In this report, I discuss considerations for partnerships involving Aboriginal and research organisations, including research design and research directions. The report is a contribution to the efforts of CSIRO and the Desert Knowledge Cooperative Research Centre (DKCRC) to develop capacity for research that addresses Aboriginal priorities. The report serves as a cross-cultural educational tool for researchers; a catalyst to stimulate management-research partnerships; and a stimulant for establishing resources to meet research requirements, particularly in the area of Aboriginal land management.

Methods

In this report, I present perspectives on partnership, research and priority research directions raised in selective consultations with staff and leaders of Aboriginal organisations in 2004–05. The report and the consultations it draws from focus on land and natural resource management and regional planning arenas, reflecting the interests of CSIRO's Alice Springs–based staff and my own networks and expertise. The consultations were selective and the report is a starting point — a stage along a journey rather than any kind of final word on these issues.

Outcomes

The research directions outlined in this report have influenced the development of the DKCRC research portfolio for 2005–10, informally through the involvement of some of the people I consulted in this project in DKCRC's strategic refocussing exercise, and formally through my involvement in the initial DKCRC management team (2003–05).

Other outcomes from this project are a collaborative effort by CSIRO, Charles Darwin University, NT Government Research and Innovation Fund and DKCRC to establish new research positions in Alice Springs. These positions boost dedicated research capacity to address research directions discussed in this report, particularly in livelihoods and economic development outcomes from Aboriginal management of natural and cultural resources.

Drivers for partnerships

A number of factors are driving research organisations to develop partnerships with Aboriginal organisations. Important drivers are:

- research ethics
- the national priority to address Aboriginal and Torres Strait Islander disadvantage and the focus on partnerships in Australian governments' reformed policy directions and structures for Aboriginal and Torres Strait Islander affairs
- recognition of the value of traditional knowledge to ecosystem research
- efforts to improve the impact of research on complex problems.

These factors all point to partnerships between research organisations and Aboriginal organisations as a mechanism to build benefit for Aboriginal people from research and to manage risk.

Partnerships and research

Effective Aboriginal research partnerships involve 'walking together' and they involve 'working together'. Relationships of trust, respect and reciprocity are at the core of partnerships and are critical to all cooperative behaviour and collaborative undertakings. Partnerships involve sharing decision making, information, knowledge, expertise and wealth and they need to involve hands-on sharing, on the ground.

Individuals are important in partnerships. Relationships between individuals are critical to developing and sustaining partnerships between organisations. Organisations should make agreements or MOUs (memoranda of understanding) as a clear basis for their partnerships. When organisations are implementing partnerships, it is important that individuals throughout the organisations are made to feel they are part of the partnership and are recognised for their skills, knowledge and input.

One approach to partnerships is that they are a means to an end, providing the inputs to achieve something that the partners agree is important. Another approach is that partnerships are an outcome in themselves because they broaden skills, knowledge and networks. Because of this, they can generate emergent properties — new things that no-one has predicted because they come, not from one partner or the other, but from the partners working together.

Some Aboriginal organisations do a lot of research as part of developing and implementing their strategic objectives. Some, such as Tangentyere Council, are using research as an integral part of developing their staff members' and constituents' understanding of problems and commitment to action. The negative experiences that Aboriginal people have about research, caused by them having been the 'subjects' in a lot of research projects, are starting to be balanced by experiences where they have been able to use their involvement in research to make positive changes.

Aboriginal organisations and research organisations have different strategic objectives for research and for communicating research findings. It is not straightforward to identify common priorities for research because different people and organisations see issues differently depending on their own mix of local, regional, national, insider or outsider perspectives. Aboriginal organisations and researchers also have different roles in implementation. There is a danger that involving Aboriginal people and organisations in research projects can raise expectations for change without developing mechanisms for long-term support for implementing the changes.

Research directions

Specific research needs identified by people consulted in this project focus on regional planning and land management, but also encompass some specific issues related to settlement viability and services. Key demands from staff and leaders of Aboriginal organisations are:

- Better access to 'baseline' information — both from existing sources and through new research. Water resources and socio-economic data are key areas.
- Better understanding of the role of the state in the hybrid economies of Aboriginal settlements and lands, to make sure that state responsibilities are properly accounted for in structural change at regional scales.
- Better understanding of issues and pathways for Aboriginal people to gain benefit and manage impact through engagement with mining and tourism industries at a regional scale.

- Participatory evaluation of community development and change processes associated with settlement viability and sustainability.
- Resolution of the technical, design and management issues surrounding effective access by Aboriginal people to services in remote settlements.
- Identified ways in which Aboriginal people and organisations can effectively benefit from the contributions that Aboriginal lands and their management make to national priority goals to build sustainable livelihoods for desert people.
- Sound evidence for outcomes for Aboriginal health and wellbeing from Aboriginal people accessing their traditional lands and 'working on country'.
- Databases and other tools for knowledge management that are designed to serve traditional knowledge systems and empower Aboriginal owners of traditional knowledge.
- Better understanding of issues, and the development of effective management systems for Aboriginal people to address degradation and depletion of valued resources on Aboriginal lands from various land uses (Aboriginal harvesting, pastoral use, mining and tourism activities).
- Better understanding of population ecology and ecosystem dynamics relevant to threatened species and fire management on Aboriginal lands.
- Support for developing natural resource management (NRM) enterprises, through better understanding of markets and pathways for enterprise development.
- Better understanding among the various people involved in collaborative management of land and natural resources, including jointly-managed parks, of each other's goals and objectives, through participatory development of monitoring and evaluation systems.

Research organisations can also support desert Aboriginal people in the land management arena by supporting the development of networks among Aboriginal land managers.

Effective engagement

Effective engagement between Aboriginal people, Aboriginal organisations, researchers and research organisations requires:

- knowledge brokering that improves access by Aboriginal people and organisations to existing information
- communication during research and about research findings that is appropriate to the cultural and linguistic contexts of desert Aboriginal people and that is coordinated in ways that support Aboriginal organisations' strategic priorities
- engagement with Aboriginal youth, through 'situated learning', through projects that target the skills and interest of young adults, and through stronger linkages between research organisations and Aboriginal organisations in science education

- resources for research projects to pay Aboriginal people for their involvement as part of a research team or as sources of expert knowledge for the research process, and strategies for these kinds of roles in research and research governance to contribute to stronger livelihoods for desert Aboriginal people
- policies and operating procedures of research organisations which reflect a sound understanding of the ways that researchers are likely to be working with Aboriginal people and Aboriginal organisations' staff 'on the ground' as part of research collaborations.

Developing partnerships

Finding the fit, or commonality, between the strategic interests of Aboriginal organisations and research organisations is a complex task. The environment is diverse, since Aboriginal organisations are structured in many different ways, with different responsibilities and approaches to their work.

Time and resources are required to establish effective partnerships and collaborative projects if they are to be effective in ensuring benefit to Aboriginal people and avoiding risks. A lot of attention needs to be given to developing the aims and design of projects and to negotiating how the research will take place, how it will build benefit to Aboriginal people during the research process and how communication and governance of the research will happen. This requires that research projects have a well resourced developmental and scoping phase.

Notwithstanding the importance of taking time to develop relationships, it is also important that research organisations have the capacity to respond quickly, since priority needs for research are often recognised in rapidly changing or crisis situations. A research organisation that can respond quickly to Aboriginal priorities can cut short the gradual processes of building trusted relationships.

Until 2010, DKCRC is providing an umbrella framework within which CSIRO Sustainable Ecosystems, and particularly its Alice Springs Centre for Arid Zone Research, is developing its capacity for partnering with Aboriginal organisations in desert research. DKCRC's core projects (2006–10) follow some of the research directions raised in this report. However, there are many Aboriginal organisations that are outside the DKCRC partnership framework. That framework is also not very flexible or well structured to give quick responses to priority Aboriginal research needs because of the complexity of accountabilities to the Australian Government and DKCRC partners. There would be value in establishing a dedicated mechanism — a 'bucket of money' — for developing collaborative projects and partnerships that address Aboriginal research priorities in desert regions.

1. Introduction

CSIRO's Centre for Arid Zone Research (CAZR) and the Desert Knowledge Cooperative Research Centre (DKCRC) aim to engage effectively with Aboriginal organisations for research that supports Aboriginal priorities in the Alice Springs region and other parts of arid and semi-arid Australia. This report is a contribution to these efforts.

In this report, I discuss considerations for partnerships involving Aboriginal and research organisations, including research design and research directions. During 2004 I was based at CAZR where I contributed to developing CSIRO and DKCRC approaches to these issues through DKCRC Project 1.101 and as a member of the initial management team for DKCRC (2003–05). This report draws from issues raised by Aboriginal leaders and staff of Aboriginal organisations. These issues were raised during specific selective consultations in 2004 and at a range of other CSIRO and DKCRC research and management meetings and interactions that I was involved in. In this report, I present my perspectives on these issues and there are undoubtedly many other views that I have not been able to take into account. This report is a starting point, or a stage along a journey, rather than any kind of final word on these issues.

In Section 1 of this report, I present the project's aims, outcomes and methods. In Section 2, I discuss some key drivers for Aboriginal research partnerships, explaining trends that make it increasingly important for research organisations to develop partnerships with Aboriginal organisations for research addressing Aboriginal priorities or affecting Aboriginal people. In Sections 3, 4, 5, 6 and 7, I draw on the views and comments of people I consulted during this project. I present perspectives on partnership, research, CSIRO and desert knowledge. In the remaining sections, I discuss research approaches and directions that were identified by people I consulted in this project and I relate these to broader issues and trends.

1.1 About CSIRO and the Desert Knowledge CRC

CSIRO is Australia's national science agency and Australia's largest research organisation with 6500 staff at 57 locations. It is a statutory organisation that is core-funded from public resources, competes for extra funding to support its research, and earns income from ancillary products and services. CSIRO research is aimed at both public good and commercial outcomes. It aims to deliver benefits to the economy, society and the environment. Its focus is on improving the quality of its science and the impact of its research and education outputs (CSIRO 2005).

CAZR is a regional laboratory of the Rangelands and Savannas Program of CSIRO's division of Sustainable Ecosystems. Its 10 scientists and support staff study desert/arid land environments and natural resource management, including socioeconomic and policy aspects. The division strives for ecosystems that support healthy rural, regional and urban communities; landscapes that sustain viable enterprises; and management that allows biodiversity to prosper (CSIRO 2005).

Desert Knowledge CRC is a research organisation with 28 partners including government agencies, universities, private sector and Aboriginal organisations. The partners collaborate in an unincorporated joint venture. Desert Knowledge CRC is funded through the Australian Government's Cooperative Research Centres programme and by cash and in-kind contributions from its partners. Research is directed at four key outcomes: sustainable livelihoods for desert people, more sustainable settlements in desert Australia, stronger regional economies in desert

Australia, and strengthened social capital. Education and capacity building are also strong components of DKCRC's activities. The DKCRC secretariat is based in Alice Springs at CAZR, and DKCRC also has operational nodes in Kalgoorlie and Port Augusta-Whyalla.

The DKCRC's eight-member Board has an independent chair and deputy chair and six members nominated by major partner organisations ('centre partners'). Three of the Board members are Aboriginal. Centre partners include two Aboriginal organisations — Central Land Council and Desert Peoples Centre. Other partners with particularly strong interests in Aboriginal research and development include the Northern Territory Government, the Australian Government (formerly via the Aboriginal and Torres Strait Islander Commission, ATSIC; now via the Office of Indigenous Policy Coordination) and Newmont.

The DKCRC Board wants to avoid issues for the sustainable development of desert Australia being conceptualised and managed in separate Aboriginal and non-Aboriginal 'silos', as happens in many other institutions. Nevertheless, the Board recognises the need for specific measures that will address Aboriginal disadvantage and vulnerability in relation to research. It has, for example, adopted an Aboriginal Intellectual Property Protocol with the aim of effectively protecting Aboriginal intellectual property in research and commercialisation of research. As well as providing a DKCRC standard for ethical research practice, the protocol provides for any money generated from commercialisation of DKCRC research to be applied to research that is a priority for the Aboriginal community, within the general aims of the DKCRC. This measure applies to all DKCRC research, whether or not that research draws on Aboriginal intellectual and cultural property, and is additional to any benefit that would flow direct to owners of Aboriginal intellectual and cultural property as a result of them authorising the use of their property in DKCRC research. The Board sees its Aboriginal Intellectual Property Protocol is a work in progress — it applies across the DKCRC and will be improved on the basis of experience.

1.2 Project aims

The overall aims of this project have been to:

- build capacity for collaborative research involving Aboriginal and other organisations in the Alice Springs region
- strengthen research networks and linkages between CSIRO, other Desert Knowledge CRC partners, Aboriginal organisations and associated agencies
- build awareness and support for desert Aboriginal research priorities.
- More specifically, the project has been aiming to:
- develop partnerships for future research in ways that help the priorities of Aboriginal people, especially for better land management and regional planning
- help build stronger networks for support and communication between people and organisations about land management and regional planning.

The focus in this project on research related to land management and regional planning reflects CAZR's research strengths and the outcomes that DKCRC is working towards in stronger livelihoods for desert people.

This project has also aimed to develop one or more three- to five-year research projects, to start in 2005 or 2006, that:

- are important to Aboriginal people
- fit in with CSIRO's expertise in central Australia
- have strong support from Aboriginal organisations and other relevant people and organisations, including research funding bodies.

1.1 Outcomes

This project has contributed to strategies for Aboriginal engagement in several other research projects led by CSIRO, notably Bush Foods; Outback Livelihoods, and CSIRO's Connected Communities project. It has added capacity to DKCRC's overall approaches to Aboriginal engagement such as through CSIRO involvement in the Desert Peoples Centre (DPC) project on Effective Research and Development Collaboration. It has also helped identify issues and change processes relevant to building CSIRO's overall capacity to engage effectively with Aboriginal people in research. This has been particularly through my involvement in a national CSIRO Social and Economic Integration Organisation Learning Project on Aboriginal engagement (2004–05).

The priorities for research discussed in this report have influenced the way that DKCRC has been shaping its strategic research directions for 2005–10. Firstly, this happened informally because, as well as working on this project in 2004/05, I was also a member of the initial DKCRC management team (2003–05). In addition, some of the people I consulted about their views on partnership and research directions (see *Methods* below) were also involved in meetings organised in 2004/05 as part of the DKCRC strategic refocussing process. That process led to the DKCRC Board approving the development of six core projects that commit about 60 per cent of DKCRC's resources during 2005–10 as well as attracting aligned external investment.

Desert Knowledge CRC core projects involve DKCRC partner organisations and other end users of research from Aboriginal organisations, government and industry. Core Project 1, Livelihoods inLand™: Livelihoods through natural and cultural resource management, is directed at aspirations for building stronger livelihoods which are discussed in Section 11 of this report. Other core projects contribute to addressing issues and aspirations discussed in other sections of this report.

As a result of considering some of the issues that this report discusses, CSIRO invested in the establishment of two research positions in Alice Springs as part of a collaborative initiative co-funded by Charles Darwin University (CDU) and the Northern Territory Government Research and Innovation Board, and supported by DKCRC. The aim of establishing these positions — one of which is identified for an Indigenous person — is to contribute to a critical mass of dedicated researchers in the Alice Springs region whose work can address research directions and priorities, such as those identified in this report, in partnership with others.

1.2 Methods for developing this report

This report draws on specific consultations from a small number of people in 2004; and presentations and discussions from various meetings in 2004, including a priority-setting workshop of the Alinytjara Wilurara NRM Board (western South Australia) and other South Australian Aboriginal landholders, an Alice Springs Aboriginal consultation meeting for NRM planning, the Lake Eyre Basin Community Forum, and the Indigenous land management forum at the Australian Rangelands Society conference. I met with the CSIRO Board and the executive committee of CSIRO's Division of Sustainable Ecosystems and I participated in CSIRO's national organisational learning project on Indigenous engagement. I also participated in a number of small DKCRC workshops and meetings about research planning and priorities.

The project-specific consultations involved 20 semi-structured interviews, at varying degrees of detail, which addressed the various topics covered in this report: attitudes to research and to partnerships; experiences of research and partnerships; awareness of CSIRO and DKCRC; information sources; and priority issues for research. Most of the people I consulted were staff and/or leaders of Aboriginal organisations in Alice Springs and the surrounding region; I also consulted a few agency staff. The Central Australian Human Research Ethics Committee reviewed the research proposal and ethics protocols for these consultations in March 2004 and approved the project.

I tried to be purposeful and strategic in identifying people to talk with in detail, rather than aiming for a representative sample. I aimed to talk with people in leadership or staff roles in Aboriginal organisations, rather than Aboriginal community members. This was because the project had limited time and resources for effective community consultations, and also because the strategic perspectives of the staff and leaders of Aboriginal organisations are important to understanding directions for partnership development. I targeted people involved in the Aboriginal land use and management arena because of the alignment with CAZR's research strengths.

I set out to talk in detail with 20–30 people. In the end, I talked in some detail with 20 people, and had follow-up consultations with six of these people. In the course of consultations, I visited some people in the Anangu Pitjantjatjara Yankunytjatjara lands of northwest South Australia and the Ngaanyatjarra lands in Western Australia. Time was the main limiting factor in doing further specific consultations, due to demands from other aspects of my work on the project and with DKCRC. In the course of undertaking these specific consultations I also interacted during forums and meetings with about 100 other people with interests in research collaborations involving Aboriginal and research organisations. Their issues and views have also influenced the development of this project and this report.

From my specific consultations, I documented a range of views on research and partnership issues. The consultations returned some 'rich' data about people's experiences of these issues. However, the methods I used also mean that this report has significant limitations which I need to acknowledge. The report presents a window on the issues based on the perspectives of a small number of people. It does not present the full range of research issues relevant to Aboriginal people in desert Australia. Nevertheless, the report and the information on which it is based highlight some of the interrelationships between various issues, and identify some specific and important issues where there is a demand for research investment.

Most of the people I consulted for this project presented their personal and professional point of view, informed by their work experiences and personal values. They said they are not representing the views of the organisations where they work. Some people said they are happy to be identified by name in the report, to help show the context of their comments, where this is important. Other people did not want their views to be identifiable in this report.

In most cases, the comments of people I consulted for this project are given anonymously in this report. When drawing directly from these comments and views, I refer to them as being from 'people I consulted for this project'. Sometimes these comments are from one or two people and sometimes they draw on several people's perspectives.

2. Drivers for Aboriginal research partnerships

A number of factors are driving research organisations to develop partnerships with Aboriginal organisations. The main drivers that I have identified are research ethics, the national priority to address Aboriginal and Torres Strait Islander disadvantage, recognition of the value of traditional knowledge to ecosystem research, and efforts to improve the impact of research on complex problems. These various drivers and the dynamics they create for development of research partnerships are discussed below.

2.1 Research ethics

2.1.1 National guidelines

The National Statement on Ethical Conduct in Research involving Humans (NHMRC 1999, p. 5) states that 'ethical considerations are as germane to good research as are scientific considerations'. It establishes that Aboriginal and Torres Strait Islander people's ethical interests in research extend beyond matters of prior informed consent by individuals. There is also a collective interest given that Aboriginal and Torres Strait Islander peoples are collectivities due to their common beliefs, values and social structures, and customary collective decision-making structures (NHMRC 1999, p. 31). Respect for human beings is the guiding ethical principle for researchers, extending to respect for welfare, rights, beliefs, perceptions, customs and cultural heritage, of both individuals and collectives (NHMRC 1999, NHMRC et al. 2004). This principle drives development of partnerships with Aboriginal peoples as a way to overcome the legacy of past research practice: Aboriginal and Torres Strait Islander people commonly express the view that much research has failed to understand and respect their values and culture.

Aboriginal and Torres Strait Islander people and researchers have collaborated with the National Health and Medical Research Council (NHMRC) to develop guidelines for ethical conduct in health research (NHMRC 2003). These guidelines have wide relevance beyond the health sphere. They highlight the risk that failure to understand the differences in values and culture among people involved in research can jeopardise both the ethics and the quality of research. Some considerations highlighted by these guidelines point to development of partnerships as integral to ethical research. For example, the guidelines ask Aboriginal and Torres Strait Islander communities and researchers to consider whether research processes demonstrate equality, whether research agreements are strong enough to sustain this equality, how research engages with the knowledge and experience of Aboriginal and Torres Strait Islander people, and how Aboriginal and Torres Strait Islander communities will benefit from research in ways that they value and that contribute to their own cohesion and survival.

The Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) *Guidelines for Ethical Research in Indigenous Studies* has provided a standard for ethical engagement between researchers and Australian Aboriginal and Torres Strait Islander peoples since the mid-1980s. The current guidelines (AIATSIS 2000) give an impetus for development of research partnerships by directing that Aboriginal and Torres Strait Islander researchers, individuals and communities should be involved in research as collaborators, and that outcomes and benefits from research should include addressing Aboriginal and Torres Strait Islander community needs.

2.1.2 Ethical considerations for CSIRO

Unlike universities and health research organisations — but like government agencies — CSIRO has no formalised process for reviewing human ethics issues relevant to its research. In considering the ethical dimensions of its research on social and economic issues, CSIRO sets a broad framework for ethical engagement (Katz & Solomon 2003; Pitkin & Katz 2004). It clearly identifies that there are ever-present tensions in research between expert knowledge, local knowledge, justice and power, and the way these are played out across organisations in government, science, industry, communities and other settings. These tensions involve far-reaching issues for society as well as for individual researchers and organisations such as CSIRO. It concludes that ethical approaches to research need to recognise and address these tensions. Considerations include:

- What ideas of justice are being reflected in research design and in allocation of resources to research? Power relations in society determine what science is done and how findings from scientific research get applied. How can there be justice in who bears the cost and who gets the benefit from research when power relations in society are so unequal?
- If research leads to change on the ground — often a desired outcome — it will impact differently on different stakeholders, potentially creating winners and losers. How should this be taken into account in designing research?
- How can research build awareness of — and constructive, critical reflection on — the different ways that different people perceive problems and the 'correct' solutions? For example, scientific knowledge may conflict with local knowledge. Choices must often be made and decisions taken, but one person or group will not respect and trust another if their knowledge is dismissed as irrelevant or wrong.

(Katz & Solomon 2003)

These considerations drive the development of partnerships between CSIRO and Aboriginal organisations because partnerships offer a structure in which to embed ethical approaches to issues of distributive justice, power relations and interfaces between different knowledge systems and knowledge holders.

2.1.3 Indigenous Research Reform Agenda

An interdisciplinary agenda for the reform of relationships between research practices and Aboriginal and Torres Strait Islander people has broad-based ownership among Aboriginal and Torres Strait Islander academics and community workers as a critique of how research has traditionally been conducted 'on' Aboriginal and Torres Strait Islander people. It promotes transformation of research from a process that disempowers people to one in which people are key players, and that supports their self-determination and liberation struggles (Rigney 1999; Tuhiwai Smith 1999; Howitt 2001).

Since 1997, the CRC for Aboriginal Health (CRCAH, formerly the CRC for Aboriginal and Tropical Health) has expressed a commitment to challenge many of the approaches historically underpinning research into Aboriginal health. Their Links project has been defining a change process that is referred to in CRCAH project documents as the Indigenous Research Reform Agenda (IRRA). The project researched participation and collaboration between Aboriginal health researchers, health organisations and Aboriginal people. The IRRA and its development draw on

principles for ethical conduct in research projects but also have a fundamental concern with how research methods and research management can address injustice and power imbalances between Aboriginal and Torres Strait Islander peoples and others. This requires a coordinated approach to institutional reform (see Brown et al. 2002; Henry et al. 2002a, 2002b; Dunbar et al. 2003).

The term 'partnership' is not prominent in the IRRA but the directions that it sets are important for consideration in developing partnerships between Aboriginal groups and external researchers. They include:

- involvement by Aboriginal communities in design, execution and evaluation of research
- mechanisms for ongoing monitoring and Aboriginal surveillance of research projects
- systematic processes to determine research priorities and benefit
- effective mechanisms for disseminating and transferring research findings
- linkages between research, community development and social change.

The difficulties of implementing these kinds of changes in research practice are not underestimated in CRCAH's findings. For example, Dunbar et al. (2003, p. 38) found that researchers say lack of time and resources impacts negatively on the way they negotiate and conduct research, presenting a serious obstacle even to the achievement of current ethical guidelines. These obstacles are compounded when using the participatory action research methods that are widely recommended as part of the implementation of the IRRA.

2.2 Addressing disadvantage and welfare dependency

Partnerships are a core feature of the reconciliation framework adopted by the Council of Australian Governments (COAG) in 2000 to improve the social and economic wellbeing of Aboriginal and Torres Strait Islander people and communities. At a global level, partnerships have been embedded in strategies for sustainable development since the 1992 Rio Declaration and the adoption of Agenda 21 (ATSISJC 2004a). This focus on partnerships for addressing equity, poverty alleviation and disadvantage is also a driver for development of research partnerships — it is developing a model for the kinds of relationships that Aboriginal and Torres Strait Islander organisations increasingly expect to have with others. Some features of the Australian policy framework are outlined below.

In 2000, COAG committed to an approach based on partnerships and shared responsibilities with Aboriginal and Torres Strait Islander communities, on program flexibility, and on coordination between government agencies, with a focus on local communities and outcomes. Three areas identified for priority action include community leadership; practical measures for family, child and youth support; and forging greater links between the business sector and Aboriginal and Torres Strait Islander communities to help promote economic independence (COAG 2000).

Whole-of-government trials of new ways of working with Aboriginal and Torres Strait Islander communities have been implemented in eight sites across Australia since 2002/03 with the aim of providing more flexible programs and services based on priorities agreed with communities. Three trials are in desert regions: Anangu Pitjantjatjara Yankunytjatjara Lands (northwest South Australia), East Kimberley Western Australia (including Balgo), and the Murdi Paaki region of western New South Wales. Various elements of the performance monitoring and evaluation framework for the COAG trials give glimpses of what 'partnership' means in these trials. At the community level, priorities are identified by the community, performance is monitored against

benchmarks, milestones are agreed and regular feedback is provided between the partners — community and government (Indigenous Communities Coordination Taskforce 2003). Progress in building partnerships between Aboriginal and Torres Strait Islander communities and governments is identified in the first evaluation of the trials as one of the most significant achievements and the area where the biggest lessons have been learnt on all sides.

COAG's *National Framework of Principles for Delivering Services to Indigenous Australians* (COAG 2004b) extends the emphasis on coordinated approaches by government and the focus on outcomes, capacity building, shared responsibility and 'harnessing the mainstream'. Indigenous Coordination Centres, set up to coordinate government interface with Aboriginal and Torres Strait Islander communities, are progressively negotiating Shared Responsibility Agreements with communities across Australia. These agreements apply to the services available to Aboriginal and Torres Strait Islander people through special programs of government, which include many of the services for remote settlements. They 'spell out what all partners — communities, governments, and others — will contribute to help bring about good long-term changes' (Indigenous Coordination Centres 2005). Regional Partnership Agreements are also being developed, with Aboriginal and Torres Strait Islander people represented through a variety of networks, and state and territory governments also involved in the arrangements (OIPC 2005). The House of Representatives Standing Committee on Aboriginal and Torres Strait Islander Affairs (2004, p. 261) has emphasised that partnerships are not about consultation, nor about the imposition of policy on communities, but about genuine dialogue, and shared and agreed responsibilities and outcomes.

Noel Pearson's strong critique of 'passive welfare' and its adverse impact on Aboriginal and Torres Strait Islander governance and livelihoods on Cape York has influenced the approach of Australian governments to Aboriginal and Torres Strait Islander partnerships. Pearson (2000) argues that passive welfare is destructive because the artificial economy it has generated in remote Aboriginal and Torres Strait Islander settlements does not require recipients of social security benefits or other government transfer payments to exercise any reciprocal responsibility. He called for a 'partnership interface' between governments and Cape York people, with maximum decision making and action taking place at community level, and with the government as a provider of resources, not a dictator of terms. He envisaged that all provision of resources to Aboriginal and Torres Strait Islander people of Cape York through this partnership would be scrutinised to see if it requires a reciprocal commitment from individuals and if it promotes independence and responsibility, rather than perpetuating passivity and an attitude of dependence on government.

This advocacy and leadership led to the Cape York Partnerships process (see <http://www.capeyorkpartnerships.com>), committed to forming partnerships between Cape York people, government and other parties, including the private sector. These partnerships are characterised as being based on 'active, real and fair relationships with Cape York people and based on respect and goodwill, with partnership agreements negotiated to outline the understandings and commitment of the partners to how they will work together on mutual plans' (Department of Premier and Cabinet n.d.).

Pearson's arguments about the need for reciprocity in government–Aboriginal and Torres Strait Islander relationships resonate with the concept of 'mutual obligation' developed in Australian Government social security policy via the McClure Report (2000). Mutual obligation is being implemented as an Australian Government requirement for unemployed people who receive income support to actively look for work, accept suitable work offers and undertake extra activities to improve their chances of finding work. Mutual obligation here is between the state and the

individual. However, as analysed by Rowse (2002), McClure also argues, as Pearson does, that mutual obligation could be developed as a relationship between the state and the communities those individuals belong to, with communities and community organisations establishing and enforcing expectations of social obligations on individuals. Partnership processes between Aboriginal and Torres Strait Islander organisations and governments can thus provide a framework for individuals to contribute to community development. There may be potential for this to progressively happen through the Australian Government's new coordinated policy initiatives with their combined 'bottom up' and 'top down' approach and emphasis on partnerships (OIPC 2005).

It is always a challenging task for people to build community-level institutions that effectively link individual members in sustainable reciprocal relationships of effort and benefit (see Ostrom 1990). Substance abuse and addiction and other social dysfunctions compound the difficulties in many Aboriginal and Torres Strait Islander communities.

Aboriginal and Torres Strait Islander Social Justice Commissioner Bill Jonas (ATSISJC 2004b) highlights further dimensions of current dependency which have implications for effective institutions and partnerships. He argues that Aboriginal and Torres Strait Islander organisations and government are co-dependent. Aboriginal and Torres Strait Islander organisations' operational capacity is very often totally reliant on short-term grants from government for service delivery. In turn, governments are dependent on these organisations to deliver essential services, even where there may be basic defects in the organisation's suitability and capability. These institutional dependencies frame the dependency of many Aboriginal and Torres Strait Islander individuals and families.

Aboriginal leader Pat Dodson (2004) presents frank views about the capacity of current Aboriginal and Torres Strait Islander organisations to overcome dependency. Dodson comments in general terms about the organisations that represent Aboriginal and Torres Strait Islander people and through which much government-funded service delivery takes place in health, justice and education sectors and in the implementation of labour market programs. He says:

> *These were the results of a people's movement ... [set up with] the aim of being controlled by the community people, and to be accountable to them ... as the vehicles through which we might ... develop opportunities for future definition of who we were to the wider society. ... [But] we seem to have stopped the dialogue about their purpose and functions some time ago and as a consequence they now appear as if they are an end in themselves.*

Governments and Aboriginal and Torres Strait Islander organisations are now entering into partnerships as a strategy to overcome these multi-faceted dependencies. As Jonas argues, both governments and Aboriginal and Torres Strait Islander organisations need to put their own houses in order to partner effectively. Governments must give up some control over decision making or resource allocation if they want an effective partnership relationship with Aboriginal and Torres Strait Islander peoples. On the other hand, 'Indigenous people need to develop structures that are capable of interacting with governments while also being representative of and accountable back to Indigenous communities and people' (ATSISJC 2004a).

The role of partnerships in overcoming Aboriginal and Torres Strait Islander disadvantage and dependency on government, through both government- and Aboriginal and Torres Strait Islander–led approaches, has implications for research partnerships. It indicates that desert Aboriginal organisations and individuals are increasingly likely to come into research partnerships with experiences and expectations (good, bad and indifferent) from other partnership processes. It

highlights that partnership must be more than rhetoric. Each partner needs to carry a share of responsibility for implementing the research project and disseminating outcomes. This is important if research partnerships are to avoid creating new unhealthy dependencies. The current situation also sounds a note of caution: research partnerships need to avoid being overly ambitious in their goals.

Box 1: Ngaanyatjarra Council and the Shire of Ngaanyatjarraku

The relationship between the Shire of Ngaanyatjarraku and Ngaanyatjarra Council Aboriginal Corporation is an example of partnership, with a 'huge level of alignment and patronage' between these organisations. Their responsibilities relate to the same geographical area and much the same people, but they are constituted in very different ways.

The shire is a local government authority in Western Australia with the same powers and responsibilities as other Western Australian local governments and an electorate that includes all residents and the few other ratepayers, notably the holders of mining tenements.

The council is a non-statutory Aboriginal organisation which represents the interests of Ngaanyatjarra people, who form the great majority of the shire's population. The council holds Crown leasehold title for most of the land in the shire, and delivers a wide range of services to community members, including through some long-established enterprises. It has also been appointed under the *Native Title Act 1993* as the native title representative body for a region of desert Australia that extends well beyond the boundaries of the shire and the lands it holds leasehold title for. As a result, it now carries extra responsibilities in statutory processes for the recognition of Aboriginal native title across this broader region.

In this partnership, 'personal relations are important — the people and leaders have been around for a long time — and appreciation of each other's strengths is important.' The shire 'treats Ngaanyatjarra Council as a large elector organisation and pays attention to it as you would to any other large elector organisation'.

There are strong interfaces in responsibilities and activities. For example, in land management the shire has the same responsibilities as other local governments for legislation such as the *Native Vegetation Act*, and has responsibilities for land management as part of its overall 'good governance' responsibilities. It exercises these responsibilities through partnership with the Ngaanyatjarra Council's Land Management Unit, and, starting in 2005, will fund more than 50 per cent of the core costs of the unit; the unit's other core funding is currently sourced by the council from the Indigenous Land Corporation. This core funding supports the Land Management Unit's key staff position and infrastructure while externally funded projects (funded, for example, through the Indigenous Protected Area Program, LotteryWest and the Threatened Species Network) allow the unit to operate in the field.

Both the Shire of Ngaanyatjarraku and Ngaanyatjarra Council also have other important partner relationships; for example, the shire has a relationship with the City of Canning for financial management and environmental health support.

Sources: Rodney Edwards, Damien McLean, Chris Paget, John Huigen, pers. comm., 2004

2.3 Traditional knowledge

One definition of traditional knowledge is: 'the information that people in a given community, based on experience and adaptation to a local culture and environment, have developed over time, and continue to develop. This knowledge is used to sustain the community and its culture and to maintain the genetic resources necessary for the continued survival of the community' (Hansen & VanFleet 2003, p. 3). Use of the term 'traditional' 'does not imply that this knowledge is old or untechnical in nature'. Rather it is traditional because 'the way it is created, preserved and disseminated reflects the traditions of local people' (Hansen & VanFleet 2003, p. 3).

Demand from outside Aboriginal and Torres Strait Islander societies for access to and use of traditional knowledge has accelerated in recent years. This increase in demand has been driven by the growth in the Aboriginal and Torres Strait Islander art industry, international tourism interest in Aboriginal and Torres Strait Islander cultures, other Australian people's search for spiritual links to place and for knowledge about sustainable living, and pharmaceutical and food industry interest in commercial uses of Australian plant species. This is a driver for partnerships, though it manifests in a complex way, as discussed below.

2.3.1 Traditional knowledge in the marketplace

Non-Aboriginal interest in traditional knowledge does not directly drive partnerships because considerable Aboriginal traditional knowledge is already in the public domain; for example, traditional knowledge about plants and their use (e.g. Aboriginal Communities of the Northern Territory 1993; Latz & Green 1995) and about Aboriginal cultures (from a host of ethnographies, historical and recent). People do not need partnerships with Aboriginal people to access this

knowledge. In fact, indications are that emerging market interest in desert native foods is leading to expansion of horticultural production in Australia's irrigated regions and overseas with scant, if any, reference paid to traditional knowledge or Aboriginal people (Morse 2005; J Morse, pers. comm.). Pharmaceutical companies who are assaying Australian plant materials for bio-active compounds have a great deal of scope to do so without reference to Aboriginal people or organisations. Only in a few cases, notably cultural tourism, does demand to access traditional knowledge have an inherent link with demand to interact with the owners of that knowledge.

Desert Knowledge CRC's goal to develop a 'Desert Knowledge brand' for desert products and services is to help markets identify — and choose to pay a premium for — products and services that embody desert knowledge (traditional, Aboriginal, local or scientific knowledge of living sustainably in the desert) and that return benefit to the owners of that knowledge. This approach will embed benefit to desert Aboriginal people into the market appeal of the product. Greatest benefit will return where Aboriginal people are also active participants in developing, producing and marketing these products and services. Given the extent of traditional knowledge already in the public domain, this is one of the few remaining strategies that might ensure commercial benefit to desert Aboriginal people from their traditional knowledge.

Box 2: CAT partnership with Rio Tinto

The Centre for Appropriate Technology (CAT) has worked with Rio Tinto since 1999. Steve Fisher, Chief Operations Officer for CAT, comments that this is a 'mutual respect partnership', something that is balanced and works to build value for both organisations: 'Rio Tinto have a clear agenda about what they want to achieve that they cannot achieve by themselves. The same works for us — there are things that we want to do that we could not achieve without Rio Tinto. So the partnership has been very strong in defining what those things are and working towards them. They understand what we can do and can't do and we understand them too.'

The partnership has supported the Akaltye Youth Event that has brought Aboriginal school students to Alice Springs for a week of science and technology experience every year since 1999. Rio Tinto staff also work with CAT in practical projects designed by CAT as part of CAT's research program. They gain experience of working for remote communities, and exposure to the challenges involved.

To operationalise the partnership, 'there has been money put into a bucket to achieve the outcomes that both sides wanted. And that is because the CAT Board did not want the focus to be on financial transactions, but wanted there to be a set of activities that would be funded through the effort of both sides towards the outcomes we each want. A lot of CAT contribution has been in-kind. We pay our staff to do things. Staff time is an in-kind contribution. For things that we couldn't afford to pay for, then Rio Tinto has paid for as their contribution to that particular project. That is a healthy partnership. It's five years old and due for renewal now' (Steve Fisher 2004, pers. comm.).

Sources: CAT 2003; Rio Tinto 2003; Steve Fisher 2004, pers. comm.; see also Finnane 2001

2.3.2 Traditional knowledge for sustainable development

The link between traditional knowledge and drivers for research partnerships is more complex than these market examples. Despite considerable traditional knowledge already being in the public domain, there is still a demand from researchers to develop more informed understandings of Aboriginal cultures, world views and knowledge systems, to add to their personal and disciplinary knowledge of social processes or address specific 'real world' issues. This includes demand from researchers to understand how traditional knowledge and science can work together to build new management approaches for species, ecosystems and people's livelihoods. This is of significant interest to DKCRC and CSIRO.

Action taken under the Convention on Biological Diversity (CBD) has been a significant driver for this kind of research interest in traditional knowledge. Reflecting Article 8j of the CBD, Australia's national Strategy for the Conservation of Biological Diversity (DEST 1996) includes among its actions recording of Aboriginal and Torres Strait Islander knowledge and practices (with approval and involvement of the Aboriginal and Torres Strait Islander people concerned); assessing the potential of the knowledge in nutrition, medical use and conservation management; applying knowledge and practices in ways that make sure benefits are shared equitably; and making

sure that use of traditional biological knowledge in the scientific, commercial and public domains proceeds only with the cooperation and control of the traditional owners of that knowledge, and brings benefit to them. One of the objectives of the *Environmental Protection and Biodiversity Conservation Act 1999* [Cwlth] is to promote the use of Aboriginal and Torres Strait Islander peoples' knowledge of biodiversity with the involvement of, and in cooperation with, the owners of the knowledge.

These directions for involving Aboriginal people, and cooperating and sharing benefit in the use of Aboriginal knowledge, guide those researchers who are interested in Aboriginal ecological knowledge to partnership approaches. Other drivers for partnerships that are relevant to all research interactions come from awareness and commitment by some researchers to best practice ethical standards, and from the high level of concern among some Aboriginal people and organisations for protecting traditional knowledge in research interactions.

2.3.3 Informed consent for use of traditional knowledge

In sharing experiences and building relationships with researchers, desert Aboriginal people invariably share their knowledge. They tell researchers about the country they are travelling through, they show researchers features that make country significant and they explain interrelationships. Many Aboriginal people are very open and generous with their knowledge of country. This happens whether or not traditional knowledge is a focal interest of the research. This situation emphasises the ethical responsibility on researchers to establish informed consent from the Aboriginal people they work with about how the knowledge they are taught can be used.

The collective nature of traditional knowledge poses considerable practical challenges for establishing informed consent from Aboriginal people for use of traditional knowledge. It is not straightforward; Aboriginal people have different intersecting responsibilities from customary law in relation to places, resources and knowledge of these. Different scales and perspectives need to be considered in addressing the question of informed consent — the interests of Aboriginal groups (traditional owners, language groups, communities, native title groups) as well as individuals who are working directly with a researcher. The key role of individuals in traditional knowledge and its management needs to be recognised — not all Aboriginal people are equally knowledgeable, and effective research interactions often rely on particularly knowledgeable individuals. However, in most situations (other than personal oral histories, perhaps), there will also be a collective interest.

There is contest among Aboriginal people about who owns what knowledge and who can authorise its documentation or its use. Some individuals want to document their knowledge, while others do not. Individuals may consider some of their knowledge to be owned personally and other aspects to be part of a body of knowledge whose ownership is shared by other people in varying ways. The question of who will have access to knowledge that is documented or shared in other ways is also important — some knowledge is restricted to particular people or groups, such as on a gender basis.

Box 3: Strong Families project – a good partnership

The Strong Families project is an example of a good partnership. Ngaanyatjarra Land Management Unit and Ngaanyatjarra Health jointly wrote a funding submission to the Western Australia Lotteries Commission. The submission recognised jointly the resources that each organisation was bringing to the project and recognised joint needs. The project shares a car and a driver. The project is two months old and so far there are no problems with each organisation accessing the car. Partnership is about a commitment from both sides to provide resources and it clearly indicates what you are going to commit. The experience from this partnership shows that good communication is needed for effective sharing of resources. And that it is important to recognise upfront what the problems might be with the partnership and how to work through them.

Source: Rodney Edwards [Ngaanyatjarra Land Management Unit] 2004, pers. comm.

2.3.4 Advocacy for protection of traditional knowledge and policy response

Research interest in traditional knowledge, from both academic and commercial researchers, drives demands from Aboriginal and Torres Strait Islander leaders and rights advocates for institutional reform to make sure that people's intellectual and cultural property are effectively protected. This demand arises because the legal mechanisms for protecting intellectual property — copyright, patent, trademarks, etc — are based only on western concepts of intellectual property and do not give effective protection for traditional knowledge. The collective ownership of Aboriginal and Torres Strait Islander knowledge, and traditions of oral expression and dissemination, are examples of aspects of traditional knowledge systems that find no match in western legal institutions for protecting intellectual property. Aboriginal and Torres Strait Islander norms for validating, transmitting and sharing knowledge are also different from those of non-Aboriginal and Torres Strait Islander Australians.

Because of the limitations of western notions of intellectual property, the term 'Aboriginal cultural and intellectual property' is being used by the Central Land Council (2005) in its process for protecting Aboriginal knowledge in research interactions. The council explains that this is:

> *... a general term which includes all aspects of Aboriginal peoples' cultural products and expressions, as well as their intangible cultural knowledge ... [It] means the totality of cultural heritage of Aboriginal people, including, without limitation, their intangible heritage (such as songs, dances, stories, ecological and cultural knowledge), and cultural property, which includes Aboriginal human remains, artefacts, and any other tangible cultural objects. (Central Land Council 2005, p. 3)*

Some others, following Posey and Dutfield (1996), use the term 'traditional resource rights' as encompassing the traditional knowledge that needs to be protected, together with other assets and attributes of value to Aboriginal peoples, including technologies and biological resources. In this report, I use the term 'traditional knowledge' as a general gloss for these various concepts.

A frequent conclusion from Australian and international advocates of effective protection for Aboriginal and Torres Strait Islander knowledge is that *sui generis* legislation is required — that is, unique or specific legislation, developed to reflect the way that Aboriginal and Torres Strait Islander people think of intellectual property in their own knowledge systems. The agenda on these issues was set out for Australia by Terry Janke's 1999 report: *Our culture, Our future*. Caslon Analytics (2004) provide useful global and Australian overviews of issues, and sources for further information. Underpinning advocacy about traditional knowledge protection is an informed understanding of the perspectives of Aboriginal and Torres Strait Islander people — that Australia's wealth has been built on appropriation of their lands and resources and that their knowledge systems are a critical bastion in their ongoing struggle to realise a share of that wealth.

There is no indication that Australian governments have the political will to develop *sui generis* legislation to protect Aboriginal and Torres Strait Islander intellectual and cultural property/ traditional knowledge. However, standards are being progressively set through legislative amendment and use of protocols. For example, policy and legislation for access to Australian biological resources is being developed to address the requirements of the CBD, including those related to respect and protection of traditional knowledge in access to genetic and biological resources. In 2000 an independent public inquiry proposed a nationally consistent scheme for Australia, implemented through regulations and a model contract covering benefit-sharing arrangements (Vounard 2000; DEH 2002). Flowing from this, informed consent and adequate benefit-sharing arrangements with native title holders are among the provisions of 2005 regulations

to the *Environmental Planning and Biodiversity Conservation Act 1999* [Cwlth]. In more general research interactions, ethical standards for research (see above) and protocols address some of the issues. Protocols are used internationally by professional societies and others to communicate about the norms that their members follow for research involving traditional knowledge (see Laird 2002; CLC 2005). However, this process is not well developed among Australian professional societies.

Box 4: Partnerships as outcomes – the CAT perspective

The Board of the Centre for Appropriate Technology (CAT) sees partnerships as an end in themselves — one of the outcomes it works towards is 'networks and partnerships'. So partnerships are more than a means to achieving CAT's other outcomes: informed, capable Aboriginal people; access to technical services; opportunities for enterprise and trading; and supportive policy and program frameworks. As CAT sees it, CAT 'can only be effective if it has strong networks of contacts, allies and supporters. Some of these may become formal partnerships, others will be characterised by regular contact on a basis of mutual respect' (CAT 2004a, p. 25). Steve Fisher, Chief Operations Officer for CAT, comments: 'If the Chairman can see potential, he will say let's have a formal agreement here to work on this' (Steve Fisher 2004, pers. comm.).

The CAT commitment to networks and partnerships is critical to the complex environment and complex issues that CAT's work focuses on. CAT is unique as a national Aboriginal organisation focused on science and technology. The extent and diversity of its engagements with remote Aboriginal people, involving nearly 150 communities in 2003/04, demonstrate the reach of its on-ground networks. CAT research explores problems and appropriate solutions in infrastructure and services for remote settlements. Its services include training and education integrated into planning and problem solving by Aboriginal people (e.g. certificate courses in Automotive and ATwork — applied design and technology); communicating technical and science knowledge and information (*Our Place* magazine, *Our Place* radio, Bush Tech briefs and community visits); water supply and renewable energy planning and infrastructure; hardware testing; and innovation.

CAT's partnership with Rio Tinto is a good example of its partnerships (see Box 2). CAT's other formal partnerships include the Bushlight project (Box 7), the Desert Peoples Centre (Section 7), and the CRC for Water Quality and Treatment. CAT is also part of DKCRC through its partnership with Batchelor Institute of Indigenous Tertiary Education in the Desert Peoples Centre which is a centre partner in DKCRC.

Steve Fisher of CAT sees the partnership with the CRC for Water Quality and Treatment as ground breaking. He says this is because it is an industry-dominated CRC mostly concerned with things that are important to the mainstream Australian population, and there is potentially huge conflict for CAT in developing approaches that are appropriate for dispersed populations and small remote settlements. 'CAT sees it as a very big thing to have an Aboriginal organisation involved as a research partner with these industry players. The Water Quality CRC approached us because it wanted to have a remote and regional program. We had to negotiate with them about outcomes and for them to pay us to deliver outcomes. The other partners were all involved as they all had to sign off on CAT being a member. That was a big, formal process. Now for us it means we sit at the table and we have access to all that expertise and can talk to specialists about the water issues we are working on.'

Sources: Steve Fisher and Bruce Walker [CAT] 2004, pers. comm.; CAT 2003, 2004a

2.3.5 Central Land Council research protocols

As part of its partnership with DKCRC, the Central Land Council (CLC) has developed a process for research management that uses protocols (CLC 2005). CLC developed the protocols through a review of protocols in operation in several other Aboriginal and professional contexts. The protocols incorporate principles that are widely applicable for any research involving Aboriginal people and traditional knowledge.

CLC is linking use of its protocols to the statutory requirement for people to have permits from CLC for accessing land in the CLC's region of southern NT that is owned by Aboriginal people under the *Aboriginal Land Rights (NT) Act 1976* [Cwlth]. For these lands, CLC policy is that researchers have to comply with the protocols to get an access permit, and that the researcher and CLC will make a contractual agreement about how Aboriginal cultural and intellectual property will be managed in the research.

Before granting a permit to a researcher, CLC considers information provided by the researcher about the research design, it considers benefits and risks for the traditional owners of that land and other Aboriginal people, and it seeks the views of relevant other people and organisations. CLC's fundamental purpose for doing this is to make sure that Aboriginal peoples' traditional rights under Aboriginal customary law are recognised and protected in research interactions. The system is not specifically designed to address access to biological and genetic materials but, in

addressing its fundamental purpose, it does also establish a system that can contribute to ensuring Aboriginal benefit from collection of biological material on the lands where Aboriginal ownership is recognised under the Aboriginal Land Rights (NT) Act (CLC 2005).

Requirements for research to effectively protect Aboriginal intellectual and cultural property and to show benefit for Aboriginal people can be most readily met when research is designed and implemented by these Aboriginal people and the organisations that represent them and their interests, or in partnership with them. Thus, the CLC process recognises that 'research that is designed in response to Aboriginal peoples' research agendas, and has the support of Traditional Owners or other Aboriginal people, will be viewed favourably by the CLC in the permit application process' (CLC 2005, p. 6). Research that is initiated or commissioned by Aboriginal people/organisations can be expected to reflect their priorities. Arguably, by involving researchers in developing their research proposals, Aboriginal organisations can gain capacity to develop and implement robust research that meets their needs.

CLC's use of protocols as part of its permit application process has added a further layer of complexity to negotiating research engagement on Aboriginal lands in desert regions of the NT. A catch 22 situation operates in that researchers need to interact with Aboriginal people if they are to develop research proposals in partnership with those people rather than implementing their own predetermined ideas; but the CLC permit application process requires that details of the research proposal be submitted as part of the researcher seeking approval to enter Aboriginal land. This situation requires that researchers develop proposals iteratively, seeking permission to enter Aboriginal land so they can talk with Aboriginal people and develop a research proposal that is targeted to their interests and needs, and then applying again later to carry out the research. The process promotes the development of partnerships between researchers and Aboriginal people, and it also requires long lead times before research can be started.

Box 5: Example of MOU between CAT and ------Council

Memorandum of Understanding ------- Council and The Centre for Appropriate Technology

This Memorandum of Understanding records the basis on which ------- and the Centre for Appropriate Technology (CAT) have agreed to work together, in a spirit of cooperation,on activities that enhance community development in ------- leading toward a happier and safer community.

The partnership is based on a shared commitment to securing sustainable livelihoods for people in -------- resulting in a progressive increase in their standard of living and quality of life.

Sustainable livelihoods are the range of activities that support improved well-being through work, enterprise and trading and that can be maintained into the future.

We have also agreed to share our knowledge and experiences from these activities to assist people in other communities to become happy and safe.

------- is located ------- within the ------- Aboriginal Land Trust and has a population of around ------- people. ------- Council is committed to progressively increasing the standard of living and quality of life for all residents in -------. The goals of ------ include:

- -------
- -------
- -------

The Centre for Appropriate Technology (CAT)

CAT is a national indigenous science and technology organization. Since 1980, CAT has been working to increase the access of indigenous people to a range of services that enable them to live safely and happily in communities- often in remote locations.

Our Vision is for happy and safe communities of indigenous people. Our Purpose is to support indigenous people to secure sustainable livelihoods through appropriate technology.

Appropriate technology is the range of skills- equipment and techniques that meet particular economic, cultural, environmental and social needs of people.

Through this partnership ------- Council would like to achieve

Key community priorities and outcomes including

- -------
- -------
- -------

In addition ------- would like to have access to regular support and advice.

CAT would like to achieve

An improved understanding of how people live in remote communities in a way that is happy and safe

Measurable livelihood improvements for people living in ------- and

Knowledge-sharing and communication of stories about this work to other communities and policy makers so other remote communities can learn from the experiences of the partnership.

To achieve these outcomes CAT agrees to

Regularly visit and support ----------.

CAT staff will visit ---------- regularly- to support people in discussing- planning and implementing their ideas for livelihood activities and enterprises.

CAT will commit a staff member for up to 3 days each month (both in ---------- and at CAT Alice Springs office), providing access to regular support and advice for ----------. A nominated CAT staff member will work with -------.

The type of assistance CAT could provide includes:

- Provide links and contacts to agencies and organisations who can assist ------
- Discuss and research the feasibility of ideas for livelihood activities and enterprises in ----------
- Assist ---------- in planning for the future
- Assist in identifying funding sources etc for livelihood activities and enterprises.

Support ---------- on community infrastructure and development projects

CAT will make staff available to assist and support ---------- in the planning-design and implementation of specific community infrastructure and development projects.

Where CAT is engaged in a project management or similar role, it is understood that CAT will charge fees for project management services on a project basis.

Technical training programs delivered by CAT could also be negotiated as required.

Record the experiences of our work in ----------

CAT will actively record and document the stories coming out of the work carried out under this partnership.

These stories will be published in *Our Place* magazine, used in the *Our Place* radio program and used to influence the decisions of government policy makers.

Council agrees to

- Clearly define projects for project management
- Communicate clearly and in good time
- Pay project management fees promptly Guiding principles

It is agreed this partnership will be based on *Clear and regular communication,* Both CAT and ---------- Council will provide a key contact to manage the partnership. *Regular monitoring of progress,* A partnership meeting will be held at 6 monthly intervals to assess progress. Senior CAT staff and ---------- Council members will participate in this meeting.

Respect for obligations, Both CAT and ---------- Council respect that each organisation will have a range of external pressures and obligations that may impact on the partnership.

Period of Partnership

This partnership will operate for a period of two years.

This MOU may be terminated by either party- giving three months notice or upon completion of two years.

2.3.6 Implications of traditional knowledge protection and management for research partnerships

Recognition of Aboriginal control over traditional knowledge, its definition and its use is critical to effective partnerships, because, as Jonas (ATSISJC 2004a) argues, it is not possible to develop partnerships without 'acknowledgement of distinct Indigenous identity and cultures or … recognition of the distinct status and inherent rights of Indigenous peoples'. Without this, partnerships 'are not between equals' (ATSISJC 2004a).

Research partnerships can be a mechanism to generate benefit for Aboriginal people from their knowledge and also from the use of biological resources from their lands, as Laird's (2002) analysis demonstrates. An equitable partnership approach recognises that both Aboriginal people and the researchers they partner with bring assets to the research process, including prior intellectual [and cultural] property, and that they create new intellectual property together, drawing on these assets and other resource investments. It also recognises that the research process must proceed ethically and that benefits from research must be shared fairly and equitably (Laird 2002). Protocols for researcher conduct are being widely used to promote equitable partnerships through development of norms for good researcher practice. As recognised by CLC (2005), and in submissions to Vounard (2002), education, capacity building and models of best practice are important to generate shared norms among researchers and Aboriginal people.

However, problems can arise when norms are linked to prescriptive approaches in situations where exclusion is not possible; that is, when it is not possible to make sure that unauthorised people are excluded from access to a resource. Here the resource is Aboriginal traditional knowledge, Aboriginal land or opportunities for research with Aboriginal people. Exclusion is very difficult in large sparsely populated desert regions, where 'research' is conducted by people from many different agencies, not just research organisations. There are situations where Aboriginal people who want to work with researchers do not see the relevance of an outside body giving approval, even if it is an organisation that represents them and their interests, as is the case with CLC.

Some researchers will see the approach as unnecessary or unwarranted gatekeeping. In practice, they may be able to do their research without complying with prescriptions for permits and agreements and their risk of being sanctioned will be low. Researchers who are initially cooperative can be frustrated or alienated by the complex procedural requirements and the knowledge that other researchers are avoiding those requirements.

The danger in relying on prescriptive approaches without effective enforcement is illustrated by findings from field research on common property institutions and experimental economics which help to show why some institutions succeed and others fail. Elinor Ostrom concludes a review of experimental research that tested people's responses in various laboratory situations requiring cooperation by saying:

> *These studies typically find that a social norm, especially in a setting where there is communication between parties, can work as well at generating cooperative behaviour as an externally imposed set of rules and system of monitoring and sanctioning … Norms seem to have a certain staying power in encouraging a growth of the desire for cooperative behaviour over time, while cooperation that is enforced by externally imposed rules can disappear very quickly. Finally, the worst of all worlds may be one where external authorities impose rules but are only able to achieve weak monitoring and sanctioning (Ostrom 2005, p. 130).*

These findings indicate that what is important for the management of research interactions with traditional knowledge is good communication among the people involved about expected standards and behaviours, and feedback about how these are being applied in research.

Overall, management of traditional knowledge presents considerable challenges for research and its governance. The situation drives development of research partnerships because they can generate trust among Aboriginal people and organisations that there will be benefits for them from the research without the risk of them losing control of their knowledge and its use.

2.4 Research impact

2.4.1 Research linkages to policy, industry and community

The development of partnerships is being driven by efforts to improve the impact of research on policy and action. Engagement between researchers and end users of research is advocated as a way to make sure that research is relevant to policy and action and that policy is based on the best available knowledge. These goals lead to structures for research that are very different to the old-fashioned model of 'ivory tower' academics producing knowledge to enlighten the world. The genesis of DKCRC with partners from more than a dozen research organisations and from government, Aboriginal organisations and private sector, is itself a response to these goals.

The re-conceptualisation of effective relationships between research and policy has emphasised that policy should be based on evidence and that researchers have a valid role as part of 'policy networks' or 'policy communities' — informal and formal relationships that shape decision making in particular arenas. Jones and Seelig (2004) provide a useful overview of international literature tracing these trends. 'Partnership' and 'sustained interaction' emerge as key concepts for enhanced research–policy relations. These can be promoted through a variety of structures, but it is important that they provide for 'informal and multiple exchanges' and 'personal contact' between researchers and policy makers (Jones & Seelig 2004, pp. 22–3). In Australia, Cooperative Research Centres, the Australian Research Council's Industry Linkage Grant program, and Australia's statutory research and development agencies such as the Rural Industries Research and Development Corporation have been established in the past two decades with the overall aim of promoting more effective linkages between research, policy and action. Policy sectors have also been increasingly concerned with engaging the community.

Paralleling this increasingly close engagement between research, policy and industry, critical social science has challenged researchers to adopt a stance that is committed to social justice and empowers people whose voices are marginalised in mainstream policy and industry forums (see for example Young 1990, Harvey 1992, Howitt 1993, Howitt 2001). The Indigenous Research Reform Agenda has also been developed from this critical stance (Section 2.1.3).

In response to these trends, some research organisations are actively positioning themselves to play an active role as leaders in knowledge economies through closer ongoing engagement with community and industry. Holland (2001) identifies the work of the engaged university as 'responsive to community-identified needs, opportunities and goals in ways that are appropriate to the campus' mission and academic strengths. The interaction also builds greater public understanding of the role of the campus as a knowledge asset and resource'. In Australia the University of Ballarat provides an example where a research organisation is actively exploring its future as a regional knowledge resource. As part of this, the university's Institute for Regional and Rural Research (2003) is seeking to develop 'collaborative research partnerships' — teams

of researchers and community and industry partners working together over the long term. The approach is seen as mutually beneficial, particularly in enhancing capacity and levering resources to contribute to better local outcomes and to internationally significant applied research.

Bruce Walker, Director of the Centre for Appropriate Technology in Alice Springs, explains how he sees the role of partnerships in this evolving context of linkages between research, community, policy and industry:

> *Science and research today is not clunky with products that pop out. It is an engagement about knowledge and values. To be relevant in a region you have to be a knowledge resource for the region. You have to engage with the knowledge of the region in all sorts of issues so you build the regional knowledge base. You improve the general economic circumstances by engaging with issues wherever they are and feeding knowledge in. This implies a long-term, multi-disciplinary way of working, rather than just applying knowledge from a strict discipline or working in specific projects.*
>
> *You need to be trying to build a body of knowledge with the community and you develop some strategic partnerships to enable you to do that. Things will come up, from these partnerships and in other ways, that have a project focus and you can seek funding to pursue them. But you would not want to walk away from the partnerships after that.*

The changing nature of research–policy–community–industry relationships is a significant driver for the development of partnerships. In the context of these relationships, research partnerships are a means to achieve specific outcomes and they also form the basis of enduring collaborations for sustainable futures.

Box 6: Tangentyere Council – a problem solving culture

'Aboriginal people have been researched to death. But through research we can move ourselves back to life.'

(William Tilmouth [Tangentyere Council Director] 2004, pers. comm.)

Tangentyere Council in Alice Springs has been developing a culture of research in its organisation as a team process of problem solving. A major catalyst was a survey of town camp residents about the Alice Springs alcohol restrictions trial in April 2003. This was successfully undertaken as a collaboration of researchers from town camps and external institutions. An environment of mutual respect and reciprocity was a key to the success of this collaboration.

Town camp residents are able to research effectively because they draw on skills, knowledge and understanding of the issues being researched. They have developed these skills, knowledge and understanding from living in their own social and cultural environment, and from their experience of various interventions. As researchers, town camp residents are able to access family and kin networks and they bring fluency in multiple languages. A lack of these kinds of skills makes external researchers ineffective.

A team approach between town camp residents and external researchers was built throughout the alcohol restrictions research. By pooling skills, the team was able to survey town camp residents, and build understanding of the situation among both town camp residents and external researchers. The research stimulated interest, discussion and action among town camp residents about associated issues. It also led to the development of an ongoing relationship between Tangentyere Council and Curtin University's National Centre for Drug Research, the Centre for Remote Health (Flinders and Charles Darwin Universities), and Edith Cowan University to support research collaboration and foster an environment of Aboriginal research. This relationship is recognised by an MOU between these organisations, launched in 2004.

The research process developed by Tangentyere in the alcohol restrictions trial survey is being used in the 'Mobility Study' — a DKCRC-funded project involving Tangentyere, the Centre for Remote Health and other DKCRC partners. John Wakerman of the Centre for Remote Health reports that Tangentyere's approach to research is resulting in a high and growing level of interest from, and engagement of, Aboriginal people. He says that, in his experience, other ways of promoting Aboriginal engagement in research have been less successful.

Jane Ulrik, Research Coordinator at Tangentyere, says that in the Tangentyere approach the process of doing the research is itself the research training. Both the Aboriginal researchers, community members and the external academics participate together in training to develop and conduct the research in appropriate and sensitive ways. This training encompasses the mutual and reciprocal process of how the research is designed and undertaken. The reciprocal process carries through to the analysis and interpretation of results, which continues the same team approach. Aboriginal researchers develop the knowledge further, for example, undertaking data analysis, preparing presentations for conferences, and giving feedback to their organisation's executive and to town camps. They go back to the survey data to follow up on issues that are talked about as part of this feedback. They are able to extend knowledge through their kinship relationships in the course of the research process. This places the research results firmly in the hands of the people being studied, who are also the community members and the ones who can most directly effect change.

'Our approach to research was organically developed, not planned. It developed as a solution to a problem. Tangentyere is all about developing a need and addressing it.

The research project is working. People are getting information back about their lives. It's empowering people through information and employment.'

(William Tilmouth 2004, pers. comm.)

Sources: Jane Ulrik, William Tilmouth, John Wakerman 2003, 2004, pers. comms. Thanks to Julia Mitchell, other staff at Tangentyere research hub and Jane Vadivaloo for revising my draft.

2.4.2 Participatory methods

The use of participatory research methods has blossomed in recent years as part of the response by researchers to the changing nature of relationships with policy, community and industry discussed above. Participatory methods are themselves a further driver for research partnerships.

Participation in research, as with other arenas such as land use planning and natural resource management, can take various forms, from tokenism to empowerment to reciprocal and mutual collaboration (Arnstein 1969; Pimbert & Pretty 1995; Synapse Consulting 2000; Ross et al. 2002). A critical question for contemporary research practice is: How can participation generate the crucial buy-in by stakeholders that is needed for them to adopt research findings? This needs shared understanding about the nature of the problem and its cause and effects, and about how research might help address the problem. It requires that participation goes far beyond tokenistic consultation.

In a detailed review of principles for good practice in participatory research, Vernooy and McDougall (2003) characterise partnership as both a prerequisite and an outcome of good participatory research. For example, they conclude that a key principle is that research must reflect a clear or coherent agenda (or set of priorities) among stakeholders and it must contribute to partnership building. Collaborative and transparent processes are required for setting the research agenda, which themselves require an established relationship and a commitment to partnership.

The complexity of contemporary institutions and action situations and the pace and unpredictability of change highlight the value of action research and action learning methods — iterative, participatory approaches to defining and addressing problems, with inbuilt review, evaluation and capacity building. These methods have their foundations in education, in organisational change, and in rural settings in developing countries. Their extension to Australian natural resource management and associated social processes has been fostered by increased acceptance among scientists of the need for adaptive management of natural resources.

Adaptive management (see Salafsky et al. 2002) is required because the impact of any particular action on complex ecosystems can never be known with any certainty. So, ecological variability, diversity and resilience cannot be sustained unless people treat all natural resource management as experimental and learn quickly from their actions. This requires effective monitoring and review systems and a capacity for people to adjust the rules and institutions that govern their actions. It requires considerable interaction among the people whose various actions affect the ecosystem. As well as conventional ecological data, it requires qualitative information as feedback from people who are part of the social-ecological system to indicate what direction management should take (Berkes et al. 2003, p. 187).

In these kinds of action situations, research can be part of the innovation process. It must be responsive to, and shaped by, the interests of many diverse people and, so, must be participatory (Synapse Consulting 2000; Pound et al. 2003). What distinguishes participatory research from participatory and collaborative action is that research is concerned with communicating lessons learned to broader audiences — those outside the immediate action situation.

Researchers can have valuable roles in building capacity in participatory action situations by:

- bringing relevant information and models for action from other contexts that are not readily available to local stakeholders
- breaking down the monopoly that more powerful interests can have over what is accepted as ‘true’, by facilitating communications in a way that all stakeholders voices are heard
- bringing expertise in design, collection, storage and retrieval, and analysis of data
- adding value to local innovation, such as by additional expertise for development and testing
- fostering communication among stakeholders about lessons they have learned and ways to improve performance
- publicising local efforts and successes so they are respected and acknowledged by others.

Efforts from researchers and stakeholders to develop interactions that capture these kinds of benefits drive the development of research partnerships.

Box 7: Policy change based on research – Bushlight

The Bushlight project is a good example of research that has been effective in changing policy. Bushlight is a four-year joint venture (2002–06) that came out of a partnership between the Centre for Appropriate Technology (CAT) and the CRC for Renewable Energy. It has been funded through ATSIC and the Australian Greenhouse Office.

Bushlight was developed as a new approach to the clearly identified need for better, more sustainable energy services in remote communities. CAT research had made a very strong argument for a different way of delivering energy services in small settlements. CAT's 1999 survey of energy systems in 88 small settlements found that only 65 per cent were working, because of the lack of demand management, complex and non-standard technology, a lack of trained staff, and insufficient technical support. The problems identified by the research are addressed by the Bushlight project's integrated approach to understanding the performance capabilities and limitations of components of renewable energy power systems; improving the capacity and confidence of Aboriginal people and organisations in managing power systems, such as through planning and energy audits; and improving community and regional access to technical support. Bushlight also reached agreement with nine ATSIC Regional Councils on how Bushlight services would be delivered in their regions.

Steve Fisher of CAT comments that the process of research influencing policy is not at all straightforward because research can come up with great ideas but they are changed in the process of translating them into policy. 'All these other policy things get in the way', such as the way that governments interpret the economics of the proposed policy changes in their accounting. 'But in the Bushlight case the translation from research to policy has been a success. We are working to get more of those successes. We are starting to have them in telecommunications also.'

Sources: Bushlight 2003; Steve Fisher 2004, pers. comm.

3. Learning lessons from elsewhere

There is a wide variety of collaborative and partnering processes in research, social change and environmental action that offer some relevant lessons for research partnerships. Although this project has not attempted an exhaustive literature review, it is clear that people are talking a lot about 'partnerships' without explaining what they mean by the term or how strong partnerships are developed and sustained. Three recent reviews and analyses of collaborative processes do offer pertinent lessons. These come from inter-sectoral collaboration for public health, Aboriginal and Torres Strait Islander experience in negotiated agreements, and global experience in the co-management of natural resources.

Wakerman and Mitchell (2005) review literature on inter-sectoral collaboration for public health and identify factors that facilitate or inhibit effective collaboration. Critical factors for facilitating collaboration that seem particularly relevant to Aboriginal research partnerships are:

- a shared vision and joint understanding of issues and underlying causes
- involvement of key players — those whose legitimacy and credibility is recognised by stakeholders and who have power to effect change in their own organisations
- time to develop relationships and trust, including long timeframes for collaborative projects
- sufficient capacity — knowledge, skills and resources — in the partnership to engage with communities
- recognition of interdependence in the partnership, sharing power and resources rather than rigidly adhering to jurisdictional boundaries
- 'runs on the board' early in the collaboration
- adequately resourced monitoring, evaluation and feedback
- evidence of the effectiveness of the collaboration (cost:benefit).

Australian experience of agreement-making processes involving Aboriginal and Torres Strait Islander groups for land access, mining, local government relationships and native title has recently become more readily accessible due to the significant work of Marcia Langton and others in developing the Agreements, Treaties and Negotiated Settlements database (see <http://www.atns.net.au>). In analysing these kinds of agreement-making processes, both O'Faircheallaigh (2002, 2004) and research by the National Native Title Tribunal (Neate 2004) show that *implementation* of agreements, which is critical to establishing their effectiveness, has had very little attention. Neate (2004) points to the importance of agreements including an implementation plan, with monitoring and review mechanisms to make sure there is ongoing communication and that the expectations and objectives of various parties are managed. There is also a need for resources for implementation, and parties need to agree on who will provide this and how it will be managed.

A new guide to global experience in co-management of natural resources (Borrini-Feyerabend et al. 2004) offers lessons that are significant for Aboriginal research partnerships because co-management situations also often involve both powerful actors and Indigenous peoples. The authors characterise co-management partnership as a situation where the relevant social actors share benefits and responsibilities among themselves; contribute knowledge, skills and/or financial resources; are held accountable for their agreed responsibilities; and 'learn by doing'. Equity considerations for the development of such partnerships include acceptance of institutional innovation, flexibility to adjust plans on the basis of experience, and effective enforcing of negotiated agreements and rules. A key lesson from global experience is the importance of all parties preparing adequately for partnership.

4. What is partnership?

People I consulted in this project offered views and described experiences that explore the meaning of 'partnership' and provide valuable guidance for CSIRO and DKCRC approaches. They also described some examples of effective partnerships, at different scales. These are outlined in text boxes in this report. Box 1 describes some features of the partnership between Ngaanyatjarra Council and the Shire of Ngaanyatjarraku. Box 2 describes some of the Centre for Appropriate Technology's perspectives on their partnership with Rio Tinto. Box 3 outlines a project-level partnership — the Strong Families project in the Ngaanyatjarra lands.

4.1 Trust, respect and reciprocity

Relationships of trust, respect and reciprocity are at the core of partnerships, according to many of the people I consulted in this project. Personal relations are important, as is appreciation of each other's strengths.

> *'It's like when you are courting and come into a relationship in marriage. The courting is: Who is this person? Can I trust them? Are they going to be there if something goes wrong? Will they follow through with it? In a relationship with someone, you can't stand on your own — you are nothing [on your own]. When you have a relationship with someone, it establishes what you do.'*

These comments echo the importance that the NHMRC's Guidelines for Ethical Conduct in Aboriginal and Torres Strait Islander Health Research place on trust and robust relationships: 'Where trust persists, research can be sustained' (NHMRC 2003, p. 3).

More broadly, trust and reciprocity are critical to all cooperative behaviour and collaborative undertakings (Pretty 2003; Ostrom 2005). In research, trust is critical to people accepting information as valid knowledge (see for example Turnbull 1997; Weeks & Packard 1997). For Aboriginal research partnerships, trust of Aboriginal people and organisations in the researchers is critical to their assessment of the trustworthiness of the research. A weakness in scientific training is that it rarely emphasises the need for researchers to establish relationships of trust and respect when working on issues that are important to people.

Box 8: Who does what? Consultation about a research proposal on Aboriginal land

This is a hypothetical example showing steps involved in field consultations about research on Aboriginal land. It is presented as an indication of the process involved. However, every situation is different, including because of differences between state and territory policy and legislation for research access to Aboriginal land. In this example, the research is about environmental issues on Aboriginal land and traditional knowledge. For research that only involves issues in settlements, involving traditional owners in decisions may not be so crucial.

The researcher has a proposal and phones the community council for the settlement near the research location.

The community council staff talk to the researcher and advise the researcher on procedures. They think the proposal has potential for community benefit, so they are positive in their attitude to the researcher. They note that the research is about environmental issues and they advise the researcher to also talk to the land council because the traditional owners for the land do not all live in the settlement, and the community council does not represent all their interests.

The researcher contacts the land council and talks to a staff member. The land council staff member advises the researcher to write a letter. They are reasonably positive about the researcher's proposal but explain that they cannot approve the research without authority from the traditional owners.

The researcher writes a letter to the community council and the land council.

Community council staff use the information in the letter to consult with members of their council's executive and other key relevant people in the community and then contact the researcher to tell them the outcome.

The community people consulted are interested in the research proposal. They ask the community council staff member to arrange for the researcher to meet them. The meeting is to be held in the settlement as this is the closest accessible place to the country where the research is proposed to be undertaken. This makes it the best location for effective community consideration of the proposal and it is the location nominated by the community council members. The researcher talks to the staff of the organisation about a suitable meeting time. Since the meeting location is on Aboriginal land, the community council staff advise the researcher that they will need a permit from the land council to enter Aboriginal land.

The researcher contacts the land council to talk about the research proposal and to apply for a permit to attend the meeting. Staff in the permit and policy sections of the land council both talk to the researcher and talk to each other about the proposal and the permit application. Staff from the land council and the community council also talk to each other about the research proposal and the permit application.

Staff from the land council note that the community council is interested in finding out more about the research. Land council staff need to find out the attitude of traditional owners of the land where the research is proposed. They make some inquiries and find that the traditional owners are positive about the research proposal and want to find out more and be involved in future decisions. The land council grants the permit. Land council staff advise the researcher and send the permit to the researcher. The land council land management staff arrange to attend the meeting themselves.

The researcher prepares to travel to the meeting. Guest accommodation in the settlement where the meeting is to be held is pretty tight. To save time and cost of driving, the researcher is going to fly in to the meeting and has no luggage space for a swag. Community council staff offer to personally host the researcher during their visit, offering accommodation in the staff member's home and use of council vehicles.

Some traditional owners don't live at the settlement where the meeting will take place but they need to attend because the meeting is talking about their country. They ask the community council staff and the land council staff for transport or petrol and food money so they can attend. The land council staff pick up some of the traditional owners and travel with them to the meeting.

A one-day meeting has been scheduled, outdoors in a shady place. Three or more staff from the land council and community council are involved. One of them has arranged for community members to attend and made sure the community chairperson will attend. Between them, they have also organised an interpreter and lunch for meeting participants.

Community members are interested in the research proposal. They listen to the researcher, the land council and community council people, and the interpreter and they talk about the research proposal. They also have several other issues that need to be resolved and these also need to be talked through. There is a lot of talk because everyone needs to work through how this research proposal could fit in with the other things that are going on and are planned. This is hard to do at one meeting but this is the only chance to learn about what the researcher wants and talk about what they want.

There are many interruptions to the meeting — dogs fighting, kids playing, people going to the store before it closes, the mail plane arriving, the police coming for an irregular visit. There are four hours or so of actual meeting time. People at the meeting want to go to some places on country that are important to their interests in the proposed research, but there isn't enough time and this is put off to the next day.

After the meeting, the researcher writes up their own notes.

Land council staff still need to talk about the research proposal with some traditional owners who could not get to the meeting because of sorry business. These people live a long way away and are difficult to contact.

The land council staff follow up on these consultations over the next few weeks and talk to the community council about the outcome. The community council staff write a letter reflecting the outcome, explain it to authoritative community members and get their signature.

The researcher reads the community council's letter. It says that the community people are interested in the research starting, and they want to be involved in it and to contribute and share knowledge. They want the researcher to spend several weeks at a time with them on the ground so they can work together. They have nominated some community people for the researcher to liaise with, and some other people who want work on the research project. The community council says it has accommodation and a vehicle available that the researcher can use, and that the researcher will need to pay the people working on the project, and contribute to vehicle running costs. The letter also informs the researcher about procedures for making and monitoring research agreements.

The researcher contacts the land council staff who confirm that the traditional owners are also happy for the research to happen and for the researcher to work with the community council and the community members nominated in the council's letter to do the research. The researcher contacts the community council staff and they discuss liaison and work arrangements and the research governance and agreement procedures.

The council's staff propose an MOU between the researcher's organisation and the community council, reflecting the outcomes of the consultation to date as well as ownership and use of intellectual property. They propose the MOU as an interim short-term agreement because the community wants the research to start but key people don't yet understand fully what the research might involve. Staff say the researcher will need to develop a longer-term agreement to cover the full term of the research, and that this will involve the land council and traditional owners. But community members first need to build a relationship with the researcher, understand how the research will operate on the ground and consider their attitude to the research in the light of these experiences.

By this time, Aboriginal organisation staff have spent at least five full days over several months responding to the researcher's proposal.

The researcher is now able to proceed with their application to their own organisation for ethics approval, and authorisation to negotiate the proposed MOU. They probably also have further work to do on applications for funding to make sure they have enough money in their budget to fund the involvement of community members in the research.

4.2 Working together

People I consulted in this project say that partnerships involve working together; sharing decision making, endeavour, information, knowledge, expertise and wealth; and supporting each other. They should involve hands-on sharing, on the ground. Otherwise it is hard to see how expertise can be shared. Partnerships need to be inclusive of everybody's ways of working.

Individuals are important in partnerships. When there is a partnership between organisations, it is important that people in those organisations are made to feel part of that relationship. Individuals need to be recognised for their skills and knowledge and their input.

Partnerships also mean taking shared responsibility for the outcomes — getting it right and getting the changes. Partnership signifies shared responsibility to achieve something that two groups of people are going for, something that cannot easily be achieved by either one alone. A partnership is not driven by only one party's agenda.

4.3 Partnerships are a way to achieve a goal

One approach to partnerships is to see them as a means to an end. A partnership provides the inputs to achieve something that the partners agree is important.

People I consulted for this project say that partnerships have a commitment from both sides to provide resources, which clearly indicates what each is going to commit to a specific outcome. Partnerships involve supporting each other in achieving an outcome, with specific aims and resources to make sure each partner is able to participate adequately. They can soak up a lot of time, so they need to produce clear outcomes fast. Importantly in the complex political and operational environment of Aboriginal organisations, partnerships can provide a framework that makes it clear that partners agree on the particular project, but may disagree or be in conflict over other issues.

When these kinds of functional partnerships operate well, they can stimulate the development of networks and relationships, and be sustained beyond the scope of the project. They provide a basis of trust for ongoing communication and collaboration.

Partnerships may be important for the financial resources they can bring to a local project. However, this is not always the key consideration. For example, in the land management sector some Aboriginal organisations have succeeded in accessing adequate project operational funding via the Natural Heritage Trust (NHT) and other sources. What they seek are the skills, outsider perspectives and interaction that partnerships can bring when they operate 'on the ground' in ways that engage local people. Operating on the ground together is critical and requires a realistic time commitment:

> *'[Outside people] need to stay for blocks of two to three weeks if they want anything to eventuate. Lots of wonderful programs run in remote areas are doomed to failure because people try to run them by remote control. You have to give local people the view that whatever they can tackle can work – turn things around from the usual expectation of failure.'*

Although access to funding may not be the key motivator for partnerships, the material poverty of remote Aboriginal people means that economic dimensions of partnership inputs and outcomes always have a fundamental relevance, as the following comment suggests:

'This is a very isolated area. We are trying to change that if it will benefit local people ... People here want outside contacts, they don't want to be protected ... What people want out of outside contacts is to lift them out of their $80 a week[1] poverty.'

4.4 Partnerships are outcomes in themselves

The broadening of skills, knowledge and networks that partnerships bring can lead to partnerships being seen as outcomes in themselves. This is important to the way that the Centre for Appropriate Technology (CAT) approaches partnerships, as outlined in Box 4.

People I consulted for this project say that 'walking together' is a useful metaphor. This characterises partnership as much more than a solution to a problem or an approach to a project, rather as a shared journey through a range of things where 'sometimes one partner may be leading and sometimes they will be led' (Cooley & Thomsen 2004).

People I consulted for this project say that, on these journeys, partnerships need to give balance so that there is a holistic outcome — they are lopsided if one side dominates the other. Organisations also must give attention to bringing individuals along on these journeys — not just Aboriginal people, but all people need to feel they are individually important in the partnership.

People I consulted for this project say that out of the partnership relationship comes shared understanding and vision. Sharing and respecting knowledge of a problem provides a framework for defining action and research. This approach to partnerships builds in capability to respond to change. It recognises that the partnership has the capacity to generate emergent properties; that is, knowledge and ways of doing things that people don't expect at the start of the partnership because they don't come from one partner or the other, but from the partners working together.

4.5 Private sector partnerships

Private sector partnerships are seen by some people I consulted for this project as particularly important in developing enterprises and in innovation. They are valued for the entrepreneurial skills and attitude of self reliance that the private sector brings, and because Aboriginal people want to get away from dependence on government.

4.6 Partnership agreements

Staff turnover and conflict resolution are two reasons for having signed-off partnership agreements. In remote desert Australia, 'you have to assume turnover, not stability, in staff' and patchy corporate memory, at best, of partnership commitments. Agreements make a relationship between organisations — they define what the obligations are and what each party gets out of it. Negotiation of agreements provides a focus for governing bodies and/or senior management of organisations to develop and commit to a corporate relationship, usually building from relationships of trust between individuals.

The Centre for Appropriate Technology (CAT) uses the preparation of MOUs as a process to develop a relationship with other organisations, building a clear foundation for the partnership to operate and be reviewed after a period of time:

1 Estimated income of average Aboriginal adult in one region via CDEP (Community Development Employment Projects) part-time wages, after deduction of rent and other levies.

'You need to work the MOU out from scratch each time. If we started with a template, people might think it was a bit dry. There's more opportunity to make it a mutual thing. ... But when you work with organisations who are not used to working that way, they can get their lawyers involved and then they want to change all the wording and the spirit goes out of it.'

(Steve Fisher, pers. comm.)

Box 5 is an example of an MOU developed by CAT and the council of an Aboriginal settlement.

CAT's approach to partnerships as outcomes in themselves carries risks when the other partner really just wants a particular thing from CAT and is 'prepared to flaunt the rest of the MOU, just to get the one thing they really want. They will drag themselves into doing the MOU but then only pay lip service to the partnership.' (Steve Fisher, pers. comm.)

Other risks exist in partnerships when 'one person signs and another actually implements and the two do not talk'. Language barriers and cultural barriers can come in. People who are brought into the partnership through agreements developed by their organisations can be quite unaware of the partnership. People I consulted in this project also say that:

'You can't get ownership and commitment to an agreement when they are negotiated by lawyers with community in the background.'

'The agreement papers are not the thing that articulates a vision; this is created by the people.'

'It's what is in the guts of the relationship that will produce outcomes, not the agreement papers.'

People I consulted in this project say that to make an agreement with Aboriginal people real, it is often best to start with everyone sitting on the ground talking, telling stories and listening to each other. A standard written agreement is fine as long as the process of developing it is conducive to the people. So the process needs to start in a way that matches Aboriginal people's way of having meetings and sharing stories.

4.7 Conflict and conflict resolution

Partnerships have dangers. The risk of a partnership being unequal, or having no real substance, is particularly recognised by Aboriginal organisations in remote regions:

'Some partnerships are takeovers – they say we will do it in partnership, but they are the boss and they claim the kudos.'

'They *changed the priorities – but it is supposed to be a partnership!'*

People I consulted for this project say that from experience with partnerships comes appreciation of the need for good communication between partners and an upfront recognition of potential problems and how to work through them:

'If you don't agree with the other partner and what they are doing and there is no mechanism to let them know, then they'll say, "You can't criticise us". You need a mechanism to communicate openly on both Anangu side and white side.'

Partnerships need to have substance. They need ways of tracking contributions, evaluating outcomes, ensuring effective communication, and addressing any conflicts that arise. These are all issues for effective implementation of collaborative ventures involving Aboriginal people that go far beyond the research domain.

5. Research

'Some research is good, some is nothing. It is only good if people take it up.'

'Examples of where other people want to know things are not necessarily helpful here.'

Aboriginal organisations have a wide range of experiences in research. Some are experienced in directing, commissioning and managing research to support their strategic directions, while others interact with researchers only if and when outside researchers seek permission to work in their area of responsibility.

5.1 Benefit from research

'The important thing is that we can use research outcomes to make things better.'

'Our main concern is often whether the research is going to change anyone's lives on the ground'.

In Aboriginal contexts, there is always a concern with the ethical requirement that research on or about Aboriginal people or their interests has benefit for Aboriginal people, and that those benefits outweigh the risks to Aboriginal people. Aboriginal leaders may assess benefit in various ways, for example, distinguishing 'between whether the research will produce statistical data (which they know is needed), will make a difference to policy, or make a clear difference on the ground'.

People I consulted in this project also say that staff of Aboriginal organisations appreciate the functional value of research if it provides better tools for the work that their organisation needs to do and allows them to do their jobs more efficiently. For organisations to get good benefits from research, the individual people involved with those organisations need to see the research as valuable. It is important to talk widely with individuals about it and help them to see why it is valuable.

Aboriginal community members may not be clear about the outcomes from research and why it is done. People I consulted for this project say that what Aboriginal people often see is: 'researchers getting kudos for when they do work. For them this kudos is related to remuneration – recognition of the value of knowledge is related to remuneration.' Aboriginal people often consider that they 'provide the information and don't get the kudos'. They are aware of the very big difference between their own material circumstances and those of external researchers.

Scientific analysis is rarely meaningful to Aboriginal people, so 'they don't see the need for a high-cost scientist to be funded for this work.' Research might help their organisations secure more resources and do more work 'on the ground' but 'the cause and effect around this is whitefella logic.' From community members' point of view: 'the whitefella still drives the car and they still get paid just a little bit, though maybe more often.' From their perspective 'the research doesn't change anything'. Such experiences mean that there is low demand from Aboriginal community members for research and the information it produces. It is important to work on communication so that Aboriginal community members take ownership of the research.

Some Aboriginal organisations have built research into the way they do business. For example, Tangentyere Council is using research to create a problem-solving culture in its organisation (see Box 6). It uses research teams from the council and its constituent communities to build the range of skills necessary to understand issues that affect the lives of its constituents. The approach is very effective in building understanding and commitment to action.

Ngaanyatjarra Council has commissioned and conducted research to address key issues for its own development and that of its constituents, such as a review of education and training and equity in access to government funding (Ngaanyatjarra Council Aboriginal Corporation 2003). This kind of research is seen by people I consulted for this project as very important to informing policy change. This is because it has promoted awareness of current systemic discrimination against remote Aboriginal people in access to subsidies and support services compared to those available to poor people elsewhere. Development of Ngaanyatjarra Council's 2005 Regional Partnership Agreement was informed by this and associated other research.

Research in 2004 by Ruth Raintree for community planning at the 11 Ngaanyatjarra settlements met a lot of resistance because, as perceived by Ngaanyatjarra people, planning does not lead to change. It took six months to develop a methodology. Ngaanyatjarra people decided to take a regional approach and there were five major planning meetings. Then they focused their attention on the process, and said who they would invite to the meetings. Now the process is at the implementation phase with a whole lot of issues that need to be addressed. One issue is the capacity of service providers to service Ngaanyatjarra people (Ruth Raintree 2004, pers. comm.).

Education and training research was carried out by Inge Kral and Daisy Ward in 2000. Lots of people got involved. Over a six-month period, 100 people were interviewed. They told a lot of their stories about schooling and education and a very rich report resulted. It was the first time that something like that had been done in that depth. It led to a process of discussion with government which led to the establishment of the Ngaanyatjarra Education Area under a Memorandum of Agreement with the Government of Western Australia in 2001 — a partnership agreement for education appropriate to the needs of people of the Ngaanyatjarra lands.

The Central Land Council (CLC) conducts research for its strategic purposes, in its statutory role in land claims, and as a native title representative body. Its own research supports its advocacy in public policy processes (e.g. CLC 1998, 2004a) while developing evidence for land claim hearings. As well as using its own research staff, CLC engages specialist research expertise, such as in resource economics for analyses in the mining area, and has a small pool of trusted researchers that it calls on. CLC research into Aboriginal attitudes to land management issues (Rose 1995) and development of collaborative planning approaches for land management (Walsh & Mitchell 2002) set national benchmarks for utility, innovation and communication in these arenas.

Aboriginal Legal Rights Movement Inc[1] (South Australia) uses research to help it to understand the perspectives of non-Aboriginal stakeholders who are involved in native title negotiations and to help identify opportunities and incentives for policy change that will have positive outcomes for these stakeholders as well as for native title holders (see Agius et al. 2003, 2004).

CAT embeds research in its work on appropriate technology, education and services to remote settlements. This is a part of CAT's approach to achieving its outcome of 'supportive policy and program frameworks'. The approach is 'about bringing knowledge that Aboriginal people have to the table at policy discussions. The Board of CAT wishes to be right at the table talking about these

1 Native title representative body for South Australia

things' (Steve Fisher [CAT], pers. comm.). CAT research helps build the knowledge base for these policy discussions. The development of the Bushlight project is an example of where research has been effective in fostering policy change and outcomes on the ground (see Box 7).

Research initiated by the Combined Aboriginal Organisations of Alice Springs in the late 1980s on the Aboriginal role in the central Australian economy had high and enduring impact and ownership among Aboriginal organisations and leaders (see Box 10). This was due to its design and governance. For example, it was initiated and steered by a committee of Aboriginal organisations, it involved Aboriginal people as research assistants, and it fostered communication and debate about strategic issues.

Anangu Pitjantjatjara Yankunytjatjara[2] (APY) was involved with South Australia's Department for Environment and Heritage in a 10-year research partnership to conduct a biological survey on the APY lands in north-western South Australia (see Box 9). One of the things that the survey generated was more focused interest among Anangu and APY Land Management (APYLM) on effective strategies for land management. This has carried through into the establishment of Indigenous Protected Areas and the development of the Kuka Kanyini regional wildlife management plan and management approach (see Box 13).

From these kinds of experiences, some Aboriginal people have positive views of research which balance their other encounters with research:

> *'In the 40s and 50s it might have been different, with non-Indigenous researchers taking knowledge and keeping it for themselves, but it has changed now.'*

> *'Working here gives a more positive view of research because we work in the technical area that is relevant to Indigenous people and improving our lifestyle … A few positives come out of research, there are outcomes on the ground. Research is a tool that has to be done to develop the technologies that benefit individuals.'*

> *'Research helps some of us to know things and take up further knowledge and findings, and try to do things and have them happen. Research is a good thing to get information out in the open for Anangu. Other people might come behind and put the ideas in place. It is a foundation to build on. You have to have a foundation to build on. It is good to have that foundation written down.'*

5.2 Control and empowerment

Low demand from remote Aboriginal people for research is related to the low levels of influence and control that they have over external institutions that affect their lives:

> *'It is when you have to plan that you realise that you need information … People won't articulate the need for information until they have some control.'*

On paper, in some spheres, some desert Aboriginal people have a high degree of control, such as where they hold title to their lands. However, their marginalisation — economically, culturally, linguistically, politically and spatially — from power centres means their actual control and influence is very limited outside the sphere they operate in from day to day.

Some Aboriginal leaders and organisation staff see involvement in research as a pathway to empowerment for remote Aboriginal people:

> *'Engaging communities in research, so they are able to articulate what is important to them and bringing that to the marketplace … they need to be heard.'*

2 **Landholding body for the A**nangu Pitjantjatjara Lands, north-western South Australia, referred to as APY in this report

People I consulted for this research see dangers in deductive research approaches — approaches that take a general statement or hypothesis and test it in local situations. This is 'an alienating approach for local control and capacity'. Inductive approaches, building broader understandings from the local situation, such as by generating grounded theory, are seen as more appropriate.

> *'Work with the people you want to help, not just bringing outside idea about what the question or the problem is.'*

5.3 Research comes at a cost

Research interactions can lead to staff of Aboriginal organisations carrying a personal load of responsibility that is way beyond their formal duties.

> *'Outsiders come with their own agendas and want to talk to people who know the people here. Reciprocal obligations are put on the few white people such as me who are in this situation of being able to arrange outsiders' access to local people. For example, if someone wants a meeting with local people or to get some information from them, and I talk to the local people and pass on their information, I have an obligation back to the local people. The outsiders do not carry this obligation themselves. I do.'*

It also takes time and money to establish a research project in a community setting:

> *'It needs resources to broker and negotiate. You need to build in a lot of time considerations. What goes to council needs to be well-informed and locally negotiated. This can be difficult in relation to funding. Researchers don't have the funding to do the leg work. There may be no funding at expression of interest stage, but if this stage doesn't involve consultations there can be problems. The council and its staff can get upset.'*

Box 8 gives a hypothetical example, based on real-life situations, of the process that Aboriginal organisations, their staff and community members, go through with an external researcher who proposes a research project in their area. As is apparent from this example, Aboriginal organisations and their staff are the lynchpin in the community consultation processes that are required. They are not at all resourced for this function. In comparison, the researcher gets off lightly.

Research has further opportunity costs for organisations and at community level.

> *'The more researchers are around, working with people here, the more it congests the capacity of those people to do other things. There is a limit to the number of things that people are able to know about and be involved in – so the establishment of outside links has to be tempered by this.'*

The capacity of Aboriginal people and organisations to engage with researchers is being further challenged by their need to understand and influence the changing landscape of the Australian Government's Aboriginal and Torres Strait Islander affairs policy. This operating environment raises the question of:

> *'... whether communities will have spare capacity to do anything ... [There is] a limited capacity for people on the ground to engage beyond what they have to do, which is already so great.'*

One of the costs of research to Aboriginal organisations and people arises from research bringing in new ideas or directions to local situations. The problem arises because researchers will inevitably have a different view of the institutional context than that of local or regional Aboriginal organisations or other actors. Research processes are rarely resourced for the long haul of support that is necessary to fully work ideas through into practice. Aboriginal people and their

organisations have no shortage of 'good ideas' about what changes or new initiatives could or should happen. But what is hardest to achieve is long-term support to make sure these ideas are implemented properly. People I consulted in this project said:

> *'The role of research and researchers is not in community development. The researcher should provide background — options, baseline data, develop reflection on data and options. There is an issue about how much research actually engages with longer term processes of change when the researcher does not have engagement or responsibility for the broader process of change.'*

Where research is part of a full and effective partnership involving Aboriginal organisations, government, or others with ongoing responsibilities for implementation, researchers can bring expertise to change processes that other people and organisations are committed to implementing. Research needs to be designed and implemented in a way that makes sure that Aboriginal community members do not get false expectations, developing support and enthusiasm for something that cannot be properly implemented.

People I consulted in this project say that these issues, challenges and barriers to partnerships mean that it is important for individuals and organisations who are working together to fully acknowledge one another for their expertise and their contributions, and to work on bringing these together as a holistic balance.

6. CSIRO

Box 9: Anangu Pitjantjatjara Yankunytjatjara Lands biological survey

'Finding out about the animals and what used to be around and is not around, and about the bushes and trees and birds and mingkari — it is good knowledge to know about these things. We have got to care for the environment and animals.'
'This was good research — it didn't upset people. The way they talked and asked questions was good. Asking old people who had knowledge. The good report came from putting it on paper and acknowledging the people who gave information. It went for a long time and that was good. And the income for Anangu was good — people like that.'

The proposal for the Anangu Pitjantjatjara Yankunytjatjara (APY) Lands biological survey developed over six years and led to a survey project that was a 10-year partnership between Anangu Pitjantjatjara (APY) and the South Australian Department for Environment and Heritage (SA DEH). The idea of the joint survey started during visits in 1985 to the APY lands by some staff of SA DEH looking for evidence of stick-nest rats. Meetings were held at Mimili, and Ananangu were interested. In 1989 Greg Snowdon who was working for APY invited Tony Robinson and Peter Copley to discuss a proposed biological survey. Two years later, workshops held in three communities in the lands and some survey sites were sampled, building on-ground knowledge of what the collaborative project would involve. Further workshops in 1992 developed protocols for the survey program and use of the data.

Grant funding was secured by SA DEH and APY in 1992, and the first full survey trip was held in 1993. More than 35 scientists and 100 Ananangu participated in the joint field survey over the 10-year survey program, recording scientific and traditional knowledge and sampling the region's flora and fauna at selected sites.

The basis of the relationship that developed between SA DEH and Ananangu came down to trust. Trust developed through ethnoecologists Lynn Baker and Brad Nesbitt, who worked closely with Ananangu on the survey and were key trusted links between Ananangu and the SA DEH scientific teams. Also, Peter Copley and Peter Canty, both central people in the SA DEH team, did not move on elsewhere during the project, or plan to move on before the project was completed. The long timeframe allowed strong relationships to develop and a two-way flow of information (P Copley 2004, pers. comm.).

Only 'public' information was recorded from Ananangu. Discussions with Ananangu before any survey information being collected clarified what kind of information the scientists were looking for and how it would be made available to the general public. Ananangu then determined what kind of information to provide during the survey. Survey sites, camp sites and survey techniques were cleared by traditional owners. Scientists acknowledged that they were the guests of traditional owners of the places they were surveying and accepted responsibility for the safety of the survey teams while on their country (Nesbitt et al. 2001).

Information collected from Ananangu was entered into an ACCESS database which is the property of APY, and cannot be used for any purpose without the written permission of APY. Little of this information is included in the published report of the survey; only species names (see Robinson & Whitehead 2003).

Other than the agreed protocols for how the research would be undertaken, there is no formal agreement between SA DEH and APY for their partnership or for the ownership and use of information from the survey. However, the principle of Ananangu ownership of information is embedded in the funding agreement for the research.
Peter Copley from SA DEH explains:

'Because the funding that SA DEH had for the survey came from the Commonwealth government, the Commonwealth also had an interest in the survey data. The protocol developed by SA DEH, AP and Ananangu about ownership of information is reflected in some words in the formal agreement between SA DEH and the Commonwealth. There is a clause on intellectual property, as well as the fact that the survey is a joint SA DEH and AP project. AP was put in the agreement as a third party that has to be consulted each time any of the survey data is provided to the Commonwealth or elsewhere. An example is the inclusion of bird survey data in the 2nd Australian Bird Atlas. Provision of data to Birds Australia was conditional on AP's agreement. They agreed.
The Commonwealth had not initially addressed these intellectual property issues, but the way we have dealt with them has meant that AP is always in the loop in considerations of how the survey information is used.'

It is notable that AP's consent role for use of the survey information applies to all the information collected during the survey, not just the information that derives from traditional knowledge.

Sources: Nesbitt et al. 2001; Robinson et al. 2003; Peter Copley 2004, pers. comm.; and people I consulted in this project.

Staff of CSIRO's Alice Springs Centre for Arid Zone Research (CAZR) tend to see effective research as research that leads to or supports positive change on the ground and/or in the policy arena. Overall, their concern is for the sustainability of desert systems — ecosystems and associated human livelihoods and regional economies. In this field, individual staff members have particular interests and specialities such as ecology, GIS, database management, socio-economic modelling, and complex systems science. Staff are conscious that CAZR needs to secure external resources (i.e. from outside CSIRO) to support its research program, including to partly cover staff salaries, with a target of 40 per cent external funding. Their performance as researchers is also measured by the number of publications they achieve, ideally in high impact refereed journals, and the number of invitations they receive to present their research at scientific conferences and similar forums.

CAZR staff members have been involved in some significant research projects that have responded to Aboriginal priorities, such as the Uluṟu Fauna Survey (Reid et al. 1993). However, staff members consider these involvements as sporadic. They relied on the networks and capacities of particular staff, such as former staff member Graham Griffin who served as a member on the Uluṟu–Kata Tjuta National Park Board of Management for 18 years. Staff are concerned that they have not been able to build on this experience to develop sustained engagement or partnerships with Aboriginal organisations.

An outside perspective on CSIRO's research history in Alice Springs and the surrounding region is provided by long-term Alice Springs resident Dr Bruce Walker, Director of the Centre for Appropriate Technology (CAT). As he sees it, CSIRO and its Alice Springs-based staff have had a lot of positive influence on the development of Aboriginal organisations in Alice Springs:

> *'Going back to 1978, there were three sets of issues: community development, which became the IAD [Institute for Aboriginal Development] direction; land management, which became a CLC [Central Land Council] direction, and appropriate technology, which became the Batchelor [Batchelor Institute for Indigenous Tertiary Education] and CAT direction.'*

Bruce Walker identifies four key people at CSIRO who were involved in initiatives about Aboriginal land and settlements through which CAT got going and progressively developed support:

> *'Basil Hetzel, with Nugget Coombs and others, was behind the push to get the original money for looking at land management, appropriate technology, and community development approaches back in 1978. Then Barney Foran pulled together the TAGAL [Technical Advisory Group on Aboriginal Lands] workshop that provided a focus and a coming together of land management, remote technology and health sectors [see Foran & Walker 1986]. John Hall from CSIRO was on the National Advisory Committee of CAT when we got national funding from ATSIC. He also introduced us to Rio Tinto and that was the basis for the Rio Tinto–CAT partnership that we have now. Mark Stafford Smith and CAT's role in DKCRC and all the desert thinking that sits behind it has been the most recent thing.'*

Other people I consulted in this project who know some of CSIRO's Alice Springs staff through their personal networks see them as: 'friendly', 'very open to new ideas, not traditional conventional researcher types … natural thinkers', 'people of integrity and ability' and 'keen champions'.

Away from these personal networks, people's impressions about CSIRO, its culture and performance, present a much duller image: 'a quiet achiever', 'a secret squirrel', 'prestigious, a centre of excellence … elite', 'a 1950s old-time Canberra institution, very staid and conservative', 'sandals and socks'. Among Aboriginal people in remote communities there is almost certainly very little awareness of CSIRO and what it does.

Professionals working in Aboriginal organisations may recognise CSIRO's role as Australia's largest research organisation, linking science and industry. This is 'what we learn at school'. Those working in the NRM sector tend to be aware of the long record of research by CSIRO in central Australia, particularly that on pastoral lands, though they may not recognise this as having influenced their work. Bruce Walker, while recognising CSIRO's influence on CAT's development, comments that this has not come from applying CSIRO research. Rather, the influence comes from:

> *'... different insights that researchers have. These might be drawn out of a paper or a conversation. We are not necessarily using published research outcomes, but the knowledge brokering role of researchers is important and that comes through in what CAT does and helps us to realise that what we are doing needs to be pointed in a particular direction. This knowledge transfer happens a lot through personal interactions.'*

Despite this influence, CAT senior staff, and some other people I consulted in this project, say they have found it hard to engage CSIRO in cooperative projects or access its technical expertise (Bruce Walker, Steve Fisher 2004, pers. comm.).

The interest of CSIRO CAZR staff in research that addresses Aboriginal research priorities in their areas of expertise in land and natural resource management and in regional systems and planning has been heightened by the development of the DKCRC partnerships, the close involvement of many CSIRO CAZR staff in DKCRC projects and the co-location of the DKCRC secretariat at CAZR from 2003 to 2007. CSIRO staff at CAZR recognise that developing effective research on Aboriginal priorities requires trust between researchers and Aboriginal people and organisations. They want to develop research that addresses priorities for Aboriginal people and that is appropriate to Aboriginal people's cultures and interests, rather than being driven by their own research interests. They see that developing these opportunities is a challenge that needs consistent long-term effort and appropriate skills in CSIRO.

Since 2004, CAZR has been strengthening its capacity to engage in research that addresses Aboriginal priorities. Key developments include:

- The appointment of ethnoecologist Fiona Walsh and technical officer Mitch Jones to CAZR staff in 2004, both of whom have experience in working with Aboriginal people in research and in community development, and with participatory approaches.
- Most CAZR staff participated in the Institute for Aboriginal Development's introductory Aboriginal cultural awareness program in 2004.
- CAZR staff have sought reviews from the Central Australian Human Research Ethics Committee and its Aboriginal subcommittee for some of their new research projects.
- In the Wild Harvest component of the DKCRC Bush Foods Project (DKCRC Project 1.112), Fiona Walsh and Mitch Jones are using CLC's research permit application process for research on Aboriginal lands.
- CSIRO CAZR staff member Craig James participated on the Project Shaping Committee for a DKCRC collaboration project (Rea & Young 2006) that developed a strategy to build the contribution that research engagements can make to sustainable livelihoods for desert Aboriginal people.

- CSIRO CAZR staff together with researchers from other agencies who are working on four DKCRC projects are trying to coordinate their research engagement with Anmatjere Community Government Council so that the research is organised in a way that supports the council in addressing its strategic priorities (see also Section 12.2).

Box 10: Research on the Aboriginal role in the Alice Springs economy

Research from the late 1980s on Aboriginal economic development in central Australia (Crough et al. 1989; Howitt et al. 1990) has wide recognition and ownership among Aboriginal leaders in Alice Springs. It had political impact in Alice Springs and it provided a catalyst for stronger coordination in and between Aboriginal organisations for economic development. It also informed Aboriginal organisations' strategies to maximise the impact of the 'Aboriginal dollar' for Aboriginal benefit.

The research found, in brief, that a third of the central Australian economy derives from the presence and activities of Aboriginal people and organisations and Aboriginal land in Alice Springs and the surrounding region. This point is still commonly made by Aboriginal leaders in Alice Springs to support their arguments that the interests of Aboriginal people are far from marginal to the future of the town and its region.

The research process was initiated by Aboriginal organisations and involved 20 students from the Institute for Aboriginal Development's Advanced Certificate in Management (Aboriginal Organisations) as research assistants. The brief for the research was developed through discussions among Aboriginal organisations involved in the Combined Aboriginal Organisations (CAO) of Alice Springs, including the Central Land Council, the Central Australian Aboriginal Congress, Tangentyere Council and the Institute for Aboriginal Development (IAD). CAO commissioned the Economic and Social Policy Unit of Sydney University's Geography Department to do the work via researchers Greg Crough, Ritchie Howitt and Bill Pritchard. The research brief required documentation of the size of the Aboriginal component of the central Australian regional economy and a strategic assessment of the capacity of Aboriginal people to influence economic development in the region.

The impact of the research came from its collaboration with IAD and its students and from the strategic significance of the research to CAO and its member organisations. The aim of involving the students, all of whom also worked for Aboriginal organisations, was to give them basic economic and research training by integrating the research into their course, and to help the research establish strong links with CAO. For the university researchers, the students' involvement provided 'unique access to data, feedback and strategic debate' (Howitt et al. 1990, p. 3). The students and Aboriginal leaders progressively became more committed to the research and familiar with the data and its implications. A steering committee from the CAO and the Aboriginal Development Commission met weekly to supervise the research.

Students collected budget data from Aboriginal organisations, participated in its analysis and follow-up interviews with managers and accountants, interviewed Aboriginal leaders in their own organisations about economic and community development, and prepared class papers about their own interpretation of the issues. As a result, collection of this local data to supplement the broad picture from published data and government reports was completed in only two months and the report was presented to the steering committee two months later. Communication and discussion about the research findings was extended further through the Aboriginal Economic Development Conference hosted by Tangentyere Council in June 1989, and attended by a hundred Aboriginal delegates from communities and organisations. A business conference held as part of the broader conference involved Aboriginal delegates and 120 local business people who discussed their common interests for the first time.

Sources: Howitt et al. (1990) and comments from people I consulted in this project

7. Desert Knowledge

'Something is happening, but we don't know what it is …'.

During the course of this project in 2004/05, people in Alice Springs and the region were hearing about 'Desert Knowledge' but there was limited awareness among staff and leaders of Aboriginal organisations — and the broader community generally — about what it actually is, how they can engage with it, and how it might be of benefit. There was very variable understanding among the people I consulted in this project about what 'Desert Knowledge' and DKCRC are. Some people had been very closely involved in developing the various Desert Knowledge initiatives. Some people work for organisations that are partners in DKCRC. Others had no involvement at all in DKCRC and had heard little or nothing about 'Desert Knowledge'.

'Desert Knowledge' is a brand more than anything. It means using knowledge of desert people and science to live sustainably in arid and semi-arid regions. Sustainability encompasses human wellbeing and wealth and ecosystem health. Lots of different people have knowledge that can contribute to sustainable living in deserts. The Desert Knowledge vision is to build from existing scattered knowledge and to generate new knowledge about 'living sustainably and harmoniously whilst creating wealth in desert regions' (Wand & Stafford Smith 2004). Desert people and regional economies will benefit from this:

- immediately and locally, by improvements in the quality of life for people in desert Australia through the better use and exchange of ideas
- by desert Australia developing such a good reputation for sustainable living that people are attracted to live there and to visit for education or as tourists
- by people in Australia and overseas recognising the Desert Knowledge brand as signifying products and services that are smart, produced sustainably, and that return benefit to the desert people whose knowledge has been used to develop them. Global market trends show increasingly strong consumer preferences for these kinds of products and services (World Resources Institute 2002).

There have been a number of Desert Knowledge and associated initiatives progressively rolling out in Alice Springs since 2000, many of them catalysed by the 'Alice in 10' planning process:

- The Desert Peoples Centre (DPC) was established formally in 2002 as a joint venture between two Aboriginal organisations — the Centre for Appropriate Technology and Batchelor Institute of Indigenous Tertiary Education. It is a strategy for education and training for economic, social and cultural improvement and development for desert Aboriginal people. During the DPC's formative stages, from 1998, the Institute for Aboriginal Development was also part of the initiative. A new facility to be developed in the Desert Knowledge Precinct in Alice Springs (see below) will link to remote community knowledge centres. The DPC seeks to be a catalyst for change in the desert. Curriculum themes are targeted to areas where Aboriginal people excel and have immediate needs: language and culture; learning, knowledge sharing and communication; wellbeing and human services; human expression; land and resources; technology and infrastructure; and livelihoods and economic futures (DPC 2002, 2003).

- The Desert Knowledge Precinct is under development on a site on the Stuart Highway in southern Alice Springs. The first facilities on the site, a Business and Innovation Centre with facilities for Desert Knowledge Australia and for the DKCRC secretariat, are to be occupied in 2007 with DPC facilities to follow.
- Desert Knowledge Australia (DKA) was the first of the Desert Knowledge initiatives. It was formed in 2000 with support from the Northern Territory Government as a consortium of people and organisations working together to build a critical mass of knowledge applied to an economically sustainable future for Australian desert regions. In 2004, DKA was constituted as a statutory corporation under Northern Territory legislation, and in 2006 a Board was appointed representing stakeholders from all regions of arid and semi-arid Australia. DKA's activities include developing linked networks of businesses in the tourism, bush foods and mining service sectors; fostering communication among local government bodies through the Inland Local Government Alliance; and managing the development of the Desert Knowledge Precinct in Alice Springs.
- Desert Knowledge CRC was initiated through DKA in 2001 as a proposal which would target the Australian Government's Cooperative Research Centre program. Development of the proposal and of the DKA concept involved an Aboriginal steering committee, and a roadshow that visited town centres across desert Australia. Development of the DKCRC proposal also involved negotiations with government, private sector and Aboriginal organisations and universities about becoming partners in DKCRC. Funding for the successful DKCRC proposal was announced in March 2003.
- A position of Professor of Desert Knowledge was established by Charles Darwin University (CDU) in 2004. Based in Alice Springs, it was the first dedicated research position to be established on CDU's Alice Springs campus (formerly Centralian College).
- Numerous conferences, events and public forums with a Desert Knowledge theme have been held in Alice Springs since 2002, such as the Desert Knowledge symposium hosted by CDU in November 2004.

CSIRO has been closely involved in many of these developments. Planning for the Desert Knowledge Precinct involved CSIRO releasing some of the land that it occupied. Mark Stafford Smith of CSIRO managed the development of the DKCRC proposal and was subsequently appointed by DKCRC as its first chief executive officer on secondment from CSIRO (2003–05). CSIRO is a centre partner in DKCRC; its interests are represented in the nomination process for Board members, and the DKCRC secretariat is located in CAZR. Relocation of CAZR to the Desert Knowledge Precinct is under consideration. CAZR staff are researchers in a number of DKCRC projects.

Some of the comments from people I consulted in this project give valuable insights to the challenges for the Desert Knowledge initiatives and for DKCRC, particularly related to development of Aboriginal partnerships:

> *'We see the money going into 'Desert Knowledge' but things are still getting built that are wrong for this environment. If Desert Knowledge comes up with the best ways of living here that will be good – but having no enforcement of these is a problem.'*

> *'There are dangers in the Desert Peoples Centre development that it will make training and education more centralised. There will be a push for this to make sure the centre is viable in terms of use of its student accommodation etc. This won't really be helpful for people out here.'*

'The real commonality between Desert Knowledge and organisations like ours is we all need to make what we are doing known to people in the mainstream. Desert Knowledge also has to make sure what it does has real relevance, reaches more people in central Australia, and is heard by more people in the community.'

'People in our organisation are really confused between all the Desert Knowledge things. They are like overlapping circles and I spend a lot of time explaining how they fit together and the differences.'

'Being at the table with industry players is what is important to us in our partnerships. We get a bit of this through DKCRC but it is not growing yet to the level we get from our other partnerships.'

'There is confusion on the ground about DKCRC and issues about how to interact and what it offers. The perception is that it takes up time and does not offer benefits. We don't want to be distracted by a hotchpotch of small projects but to focus on some that are useful to our directions. If we can get a few big things out of DKCRC this will be a great outcome.'

'DKCRC is facilitating people coming together in a broad framework and what happens then is up to the individuals. We don't have a critical mass of people around Desert Knowledge yet. We are drawing people in to be involved and understand what is here in central Australia. There are others who it would be good to get involved but they are not yet.'

8. ‘Baseline’ research

Staff members of Aboriginal organisations who I consulted in this project say they need better baseline information about desert Australia — its biophysical characteristics and resources, and its socio-economic characteristics.

> *‘There are big difficulties in operating in a region where the baseline is not clear.’*

In some cases, what staff say they need is better access to existing knowledge. They know the information they need probably exists, but they don’t have people to find it and sift through it. They want agencies to provide more accessible information. In some cases, they do not know what information might be available. In other cases, they know that the information they want does not exist and needs new research. For example, in one region:

> *‘No comprehensive data base exists that we can use in tracking progress from what we are doing, such as through health and wellbeing data. There has been no attempt to draw the data there is together for regional description.’*

People I consulted for this project said they need better information on water, plants and animals, and demography. These issues are discussed below. These are important needs in themselves but because my consultations were very selective, these needs are also only indications of the extent of demand among Aboriginal staff and leaders for better information.

8.1 Water

Limited knowledge about water resources is a common concern among remote Aboriginal people and their organisations.

> *‘Water is critical for sustainability – it is the number one story’.*

> *‘The most important is water. In the desert, water is very valuable. We don’t have enough information about water resources. It would be good for people to find out more about water – underground water and good drinking water.’*

Improved knowledge of water resources is important to Aboriginal people and organisations for planning, for understanding what options are realistic for Aboriginal livelihoods, and for understanding the impacts of other people’s land uses. Whereas much of the water resources planning and development in desert Australia has been driven by development in the pastoral and mining industries, Aboriginal people’s own water needs are the priority to the people I consulted in this project:

> *‘Water for livestock is the last issue for Anangu; water for people is the priority.’*

Risks to settlement water supplies may arise from lack of knowledge. For example, there may be ‘no understanding of groundwater at communities with reference to rubbish and sewage disposal’. Lack of knowledge about ground water also leads to people I consulted seeing risks from the demand for water for future mining activity because this could impact on community water supplies or prevent groundwater flows to natural water sources — rockholes, springs and soakages — which are arguably the most important determinant of desert Aboriginal people’s relationships to country.

Rehabilitating and protecting natural water sources — ‘rockhole cleaning’ — is a core focus of desert Aboriginal people’s contemporary work on country (see also Section 11.1.5). However, there are thousands of these sites, relatively few are under active management, and the locations

of others are often known to increasingly few people: 'young people don't know where the springs are'. Action is being taken by some Aboriginal organisations and researchers to monitor water sources. For example, in the APY lands the Kapi Atamankupai project, which started in 2004, addresses both natural water sources and bores. In the Ngaanyatjarra lands, Ngaanyatjarra Council is developing a bore logging database.

Decisions are always being made about water, for example about service provision, water quality and supply, irrigated agriculture, protected area management, mining needs, and transport and road works, to mention a few. In the Anmatjere region, a capacity-building research project is enabling traditional owners to discuss how they would like to engage in decision-making processes that relate to water and how cultural values can be communicated in appropriate ways, developing participation pathways for Anmatyerr rights and values to be better recognised (see DKCRC 2006). The project also engages school students and trainees in learning about water resource management, including water quality monitoring (see also Section 12.4).

8.2 Plants and animals

Traditional ecological knowledge of Aboriginal elders is stronger in some parts of desert Australia than anywhere else on the continent. So, it is ironic that Aboriginal organisations and leaders see a need for research to help with understanding plants and animals. Yet, this is reality. It arises because transmission of traditional knowledge to younger generations is threatened. Recent decades of settlement living mean traditional knowledge is no longer used as actively as it was, so it has been losing its currency and its capacity to evolve as ecosystems change. Traditional knowledge also lacks well-developed tools to address contemporary threatening processes — feral animal populations, weeds, changed fire regimes. Further, threatened species management projects are the main driver of current work by Aboriginal organisations in land management (see also below). These projects focus on limited areas of country and a few components of the ecosystem. Knowledge of other areas and their ecology is neglected in comparison. This makes it difficult for Aboriginal organisations to assess the relative priority of specific land and wildlife management issues or develop coherent planned approaches.

There has been little biological survey on most Aboriginal-owned desert lands. Exceptions are the APY lands (see Box 9), and Uluru–Kata Tjuta National Park (Baker & Mutitjulu Community 1992a; Baker et al. 1990, 1992b; Reid et al. 1992, 1993). In the southern Tanami, the Tanami biodiversity monitoring program was developed from 2004 as a collaboration involving CLC Land Management, Warlpiri rangers and Newmont (Stoll et al. 2005).

Collaborative biological survey is a kind of research that is well received by communities. It engages both Aboriginal people and scientists, respects both their knowledge systems, and builds relationships. It fosters new insights into ecology for both wildlife scientists and Aboriginal community members as well as action on land management issues. It honours and rewards Aboriginal knowledge and skills, gets families out on country, and promotes sharing and transfer of knowledge between generations (Nesbitt et al. 2001; Horstman & Wightman 2001; Baker & Nesbitt 2004).

Regions where people have raised the need for better baseline information on biological resources during consultations for this project include the Maralinga lands in South Australia, where some survey work is now underway (Dodd 2004), and the Ngaanyatjarra lands.

Management of specific threats on Aboriginal-owned lands, such as weeds and feral animal populations, also suffers from lack of baseline information. Little attention has been directed by government NRM programs to data collection on Aboriginal lands compared to pastoral regions. Issues in the management of buffel grass and camels are discussed further below (Sections 11.3.4 and 11.4.2). People I consulted in this project said that it is also important for agencies and NHT program managers to understand more about the capacity and ability for weed management on Aboriginal land.

8.3 Socio-economic

The need for demographic data that is regionally or locally specific and trusted is a recurring theme in comments from people I consulted for this project. John Taylor, who has contributed extensively to understanding of desert demography, including through recent DKCRC-funded research, agrees, commenting that: 'One of the more pressing research tasks for the desert region revolves around the validation and improvement of demographic data' (Taylor 2003, p. 360).

Population data drives the funding formulas for community service delivery. Inconsistencies between ABS census data and the locally managed client and population databases of Aboriginal health and other service organisations mean that staff of Aboriginal organisations often do not trust the ABS data. Factoring an understanding of mobility into population projections is critical — both mobility within desert Australia, and from the desert to other regions. For example, Taylor's 2003 demographic analysis of arid regions is predicated on the assumption that Aboriginal migration in and out of arid Australia is balanced, which he sees as its biggest flaw.

The potential for Aboriginal organisations' data (for example, people using health clinics, people's patterns of CDEP participation) to contribute to improved understanding of mobility and other demographic issues is noted by Taylor (2003) and also by some of the people I consulted for this project.

9. Regions

Regions of desert Australia make a big contribution to the fabric of non-urban Australia. Aboriginal organisations of these regions and the residents they represent articulate with national agendas in significant ways; for example, through the roads they maintain, the safety and security presence they provide for travellers, and the transport services they own. These regions and people are part of 'mainstream' Australia. Their future as thriving regions depends on how well the rest of Australia can manage its relationship with them. Ways of doing business that are designed in capital coastal cities do not work in these regions for a host of geographical, economic and institutional reasons, not only because of culture and language. This does not mean that their residents do not have the same aspirations as other people, and the same entitlement to have their issues considered by government, in good faith — points which are well made by Ngaanyatjarra Council Aboriginal Corporation (2003).

9.1 Interdependency: small settlements and towns

Desert Australia is characterised by a large number of small dispersed settlements, most of them with populations that are predominantly Aboriginal. The main drivers for the establishment of these settlements have been government policies and the 'homelands movement'. Government policies have been most significant for the larger settlements, many of which were government stations or missions before the 1970s. Homelands or outstations developed from the 1970s, both as a driver and a response to the recognition of Aboriginal land rights.

Taylor (2002) establishes that there are 1172 settlements with populations under 1000 people in remote and very remote areas of Australia, and that 80 per cent of these are very small (less than 50 people). Only 26 per cent of desert Aboriginal people live in major service centres such as Alice Springs, but these service centres have a large catchment area for the services they provide. For example, 259 small settlements in desert NT, WA and SA with a combined population of 15,000 access most of their banking services via Alice Springs (Taylor 2002). A large proportion of income to remote settlements is as wages to people delivering government-funded community services — notably health, aged care, education and essential services. Few of these jobs are held by local people.

Nevertheless, the existence of these jobs, which are among the things that attract non-Aboriginal people and Aboriginal people from other regions to desert Australia, is very important to the economy of desert Australia, as Crough et al.'s (1989) study for the Combined Aboriginal Organisations of Alice Springs shows (see Box 10). Small, remote, mainly Aboriginal settlements need the services in the larger, mainly non-Aboriginal towns like Alice Springs, and the economies of the larger towns benefit from the existence of remote Aboriginal settlements. They are interdependent, such that the 'future of desert Australia depends on real partnerships among all desert peoples' (Wand & Stafford Smith 2004). Aboriginal economic development, a common goal for governments and Aboriginal people, cannot happen in isolation from broader economic processes because of these significant interdependencies.

9.2 Strategic Aboriginal engagement for economic development

9.2.1 Aboriginal economic development and competitive advantage

Altman (2004) characterises Aboriginal economic development as a process of building Aboriginal capabilities to engage with local, regional and national economies. He uses the term 'hybrid economies' (Altman 2001, 2004) to characterise the economic activity on Aboriginal lands, consisting of three interdependent sectors: customary (which includes new technologies and knowledge among its traditions), market and state. In remote Aboriginal lands and settlements of desert Australia, the state is dominant, with most people gaining their income through social security and CDEP employment or work for Aboriginal organisations funded by government grants for providing health, education and other social services. Market activity is low; exceptions are the arts and crafts industry. Other than arts and crafts, production from the customary sector is not high, especially compared to remote regions of northern Australia. It is limited by low productivity in the arid environment, people's health and depletion of resources close to settlements through harvesting pressure.

Altman (2004) sees Aboriginal competitive advantage as embedded in the customary sector, whether in production of good and services for domestic use or for sale and exchange. This is also one of the key premises of the Desert Knowledge 'brand' (see Section 2.3.1 and Section 7). The customary sector is the area of activity where Aboriginal people excel and have skills and a knowledge base. More market engagement by Aboriginal people building from their skills and knowledge in the customary sector will contribute to diversity in regional economic activity. Insights from complex systems science (see for example Bar-Yam 2005, pp. 207–15) show the importance of this kind of diversity in developing regional economies that can withstand the kinds of challenges that are ubiquitous in desert Australia because of variability due to climate, policy processes and distant markets (Wand & Stafford Smith 2004). Research directions associated with building livelihoods through work on country in ways that draw on Aboriginal competitive advantage in the customary sector are explored below (Section 11).

9.2.2 Strategic economic engagement by Aboriginal organisations

Aboriginal organisations in the Alice Springs region have been operating strategically for over 20 years, recognising and building on interdependencies between Aboriginal people and other economic actors so that Aboriginal people can benefit from the economic activity in their regions. For example, Ngaanyatjarra Council, formed in 1981, operates a range of business enterprises in the Ngaanyatjarra Lands such as Ngaanyatjarra Air, Ngaanyatjarra Services' Building Division, Ngaanyatjarra Agency and Transport Services, Marshall Lawrence Insurance Brokerage and Ampol Alice Springs. These enterprises generate income for the Ngaanyatjarra communities and for Ngaanyatjarra Council's operations. In developing these enterprises, Ngaanyatjarra Council has often been responding to its constituents' need for services which neither the market nor the state were providing.

One of the earlier strategic actions for Aboriginal economic development in the Alice Springs region was the establishment in 1985 of Centrecorp Aboriginal Investment Corporation by CLC, Tangentyere Council and the Central Australian Aboriginal Congress. Centrecorp is owned on behalf of all Aboriginal people in Central Australia to raise money for investment in resource development and tourism projects on Aboriginal land, to create longer-term economic security for Aboriginal traditional owners (CLC 2004b). CLC's establishment of Centrefarm Aboriginal

Horticulture Ltd in 2002 continues this strategic action. Centrefarm brokers and facilitates land access, investment and joint ventures for horticultural development on Aboriginal freehold and native title land in central Australia.

Royalty associations have also been established with CLC support, to manage money returned to traditional owners and other Aboriginal people affected by mining on Aboriginal land. Some have been strategic actors in economic development, though many have suffered from tensions between expectations for social and commercial outcomes. An example is Ngurratjuta Aboriginal Corporation, one of the earlier royalty associations, established in the mid-1980s. Its mission is to use royalty equivalent payments returned from the development of Meereenie and Palm Valley oil and gas fields on Aboriginal land southwest of Alice Springs to build an active investment base and stimulate economic and community development activities for its members (Altman & Smith 1999).

Other strategic action by Aboriginal people for economic development in the Alice Springs region includes the development of Nyangatjatjara Aboriginal Corporation and Wana Ungkunytja Pty Ltd. These organisations were established by Anangu in the Uluru region to develop economic, employment and education opportunities. Their establishment followed the vision set out in the first ATSIC Regional Council plan for that area — to capture regional economic activity for Anangu benefit (Impiyara Regional Council Inc. of ATSIC 1993). Wana Ungkunytja runs the award-winning Anangu Tours and other businesses, and distributes profits to trust beneficiaries, being the four main Aboriginal settlements in the Uluru region. The two organisations assess that the half million dollars they distributed annually for community enterprise and other development projects in 1998–2001 has been one of the largest injections of non-government money into Aboriginal groups in central Australia (Nyangatjatjara Aboriginal Corporation & Wana Ungkunytja 2001).

These and other Aboriginal initiatives in economic development are often sources of pride to Aboriginal people. And they raise questions about how they can operate better. Where they are providing services to remote regions, they are often operating in a monopoly situation and so competition does not provide an incentive for efficiency or customer service. Benchmarking community enterprises and developing standards and indicators for monopoly situations is an important research direction. Other relevant questions raised by people I consulted in this project are about governance and the cultural fit of things. How do people assign authority and responsibility in their desert Aboriginal cultures? Is this reflected in how their organisations are structured?

9.2.3 The role of the state in the hybrid economy

Getting a better understanding of the role that the state has in the Aboriginal hybrid economy is very important to the strategies of many Aboriginal organisations because the state's role is so big. Aboriginal organisations' interest in this is also very much driven by their concerns that the level of government expenditure on services to Aboriginal people is inequitable and inadequate, and that the money allocated could translate to services on the ground in ways that more effectively build short- and long-term benefit for Aboriginal people. As well as concerns about funding for Aboriginal health, education, infrastructure and similar services, there are also concerns about Aboriginal people's access to social security payments. For example, Tangentyere Council routinely helps Aboriginal people who have no source of income to get a pension and/or other social security entitlements.

Some Aboriginal organisations undertaking health or family support services also have concerns about how well they perform compared to government, such as in the working conditions of their staff. Because of the limited and insecure financial situation of Aboriginal organisations, government and Aboriginal organisation employees typically experience vastly different working conditions, for example in occupational health and safety management, supervision and support. Research on benchmarks has potential to be a valuable learning process for such organisations and to inform their strategies.

Developing a model of the citizenship entitlement of Aboriginal people to services such as housing, health and education is important to Aboriginal organisations in their advocacy roles. Regional authorities and agreements are being advocated as mechanisms that will improve Aboriginal people's access to these services.

From its research on the views of community members, community organisation staff and government staff on government services, Ngaanyatjarra Council Aboriginal Corporation (2003) developed a proposal for a targeted specific regional agreement with federal and state governments to address issues highlighted by the research. In 2005, the council concluded the first regional partnership agreement under the Australian Government's 2004 policy framework.

The Central Land Council endorsed a proposal in 2004 for the establishment of a new statutory body with elected members representing Aboriginal people in the land council region and with a secure direct funding base. This body would monitor, control and coordinate service delivery to Aboriginal people (e.g. health, housing, education), either directly delivering these services or contracting the delivery of these services. It would be a complementary body to the land council itself, with its focus on service delivery. The closest parallel in Australia now is with the Torres Strait Regional Authority (CLC 2004). This proposal followed on from the Kalkaringi Statement, a framework for action set out by Aboriginal people from central Australia in 1998 in the context of proposals for NT statehood, and other aspirations expressed by the Combined Aboriginal Nations of Central Australia about recognition of Aboriginal rights and effective mechanisms for government funding to Aboriginal communities and organisations.

Research is needed to deliver hard data about adequate resourcing of these kinds of new institutions. Aboriginal organisations need this research to support their arguments in their advocacy to governments.

9.2.4 Research needs

The data required to support advocacy for these kinds of institutional changes include current government funding flows and their impact, demography, and the socio-economic circumstances of Aboriginal people in the region. At a macro scale, some of the people I consulted in this project identified the need for better understanding of what economic drivers will influence the future of their regions. Others identified the need for an integrated model of regional development, incorporating social, cultural and ecological health, and identifying barriers and opportunities for regional development from Aboriginal economies.

People I consulted for this project also raised industry-specific issues for building healthy interdependencies between Aboriginal people and private sector economic activity. They identified the need for research on how to capture economic benefit from tourism while at the same time managing the impacts of tourism use. Similar issues were raised about mining.

A significant added question for mining activity is how Aboriginal people can realise a sustainable flow of benefit. Mining activity is welcomed by some Aboriginal people for the money that it brings through royalty equivalent or compensation payments; however, considerable ongoing effort is needed, involving collective decision making and individual and family financial management, to lever long-term developmental benefits rather than only short-term windfalls. How can long-term benefits be made more certain?

For these latter issues, research has a potential role in contributing to building strong self-governing Aboriginal collectivities and developing micro-finance approaches. Research can be particularly valuable in the design and evaluation of change processes.

Culturally appropriate enterprise strategies are other important issues raised by people I consulted in this project. Desert Knowledge CRC research that is contributing to these issues includes a PhD project by Louise Moylan (funded by the University of Adelaide through PIRSA, SACOME and DKCRC) on strategies for Aboriginal enterprise development in association with the mining industry in South Australia. Moylan is researching the strategies of Aboriginal enterprise owners and managers for accommodating both social and commercial outcomes.

Some of the analytical issues discussed above about the role of the state in the hybrid Aboriginal economy are in the scope of research of the Centre for Remote Health (Mitchell et al. 2005). This project developed over a couple of years from discussions between ATSIC, the Centre for Remote Health, CLC and the Combined Aboriginal Nations of Central Australia. It has developed a map of resources — financial data on service provision — and guidelines for citizenship entitlements, and is considering issues relevant to these. Valuable ground truthing and learning would be provided by a follow-up project that takes the data to some of the settlements in the region and hears the stories of people in those places about how funding for services affects their lives (Mitchell et al. 2005). With further collaborative development, this research direction has potential to support strategic action by Aboriginal organisations related to the state's role in Aboriginal economic development.

People I consulted in this project said they would like to see a re-run of the 1980s research on the Aboriginal role in the central Australian economy (see Box 10). Action on issues that were highlighted in that research process also continues to be important. Securing employment for Aboriginal people in Alice Springs businesses is one of a number of areas where there is still a pressing need for action, and where research may have potential to provide support.

Box 11: Indigenous Protected Areas in the desert

The Indigenous Protected Area (IPA) program, funded through the Natural Heritage Trust (NHT), is managed by the Australian Government's Department of the Environment and Water Resources in association with state/territory governments. It has attracted keen interest from many Aboriginal landholders across Australia.

In desert Australia, several Aboriginal landholders have entered into voluntary declarations to manage land that they own under freehold or leasehold title as protected areas, following World Conservation Union (IUCN) management principles and planning frameworks. These declarations do not change the tenure of the land. Incentives for Aboriginal landholders to declare IPAs include availability of funding for Aboriginal people and their organisations to plan for management of their country as part of exploring the feasibility of IPA declaration, and to fund management activities consistent with their plan for the IPAs that they declare.

IPAs in desert Australia include the Ngaanyatjarra lands, Wataru and Walalkara IPAs comprising some 25 per cent of the APY lands, Yalata lands on the Great Australian Bight coast, Nantawarrina in the Flinders Ranges, Mt Willoughby on pastoral lease land in central South Australia, and Paruku (Lake Gregory) in Western Australia. Together, these Indigenous Protected Areas cover 136 000 km^2 — an area more than half the size of Victoria. They include woodlands, ephemeral wetland systems, mountain ranges, gorges and sand dune complexes, and are habitat for a wide range of species. Feasibility studies for IPA establishment are being carried out by CLC with Warlpiri people for the northern Tanami desert region of the Northern Territory, and at Angas Downs station in the south-west of the territory.

Sources and more information: Smyth & Sutherland 1996; Thackway et al. 1996; Gilligan 2006; and see <http://www.environment.gov.au/ipa>

10. Settlements

10.1 Sustainability

Aboriginal desert settlements face significant problems for sustainability because of the costs of infrastructure and human services, poverty, poor health of residents, and the lack of income-generating industries. These settlements, particularly those located on Aboriginal freehold land, are often invisible to planners, and their infrastructure needs are readily overlooked in regional/state planning frameworks.

People I consulted in this project raised the meaning of sustainability as an issue where research might contribute better understanding by:

> *'... stretching and exploring all aspects of what sustainability is. What gets people there to that point of sustainability? Everyone wants desert Aboriginal people to have happy, healthy lives. But what is their notion of sustainability? What are the different ways of thinking about it?'*

10.2 Property rights and governance

Issues of services to Aboriginal desert settlements and the governance of settlements are often quite distinct from those of the surrounding land. This is because few of the resource inputs that the population needs to support themselves come from the surrounding land. Also, even where the surrounding land is Aboriginal owned, residents of the settlement are not necessarily the traditional owners of that land.

Property rights in these settlements and associated institutions are important issues for their future. Effective governance needs to address issues of authority and accountability for management of settlements and services, including the rights and responsibilities of residents vis a vis those of traditional owners. Institutional reform — to articulate property rights in towns on large areas of Aboriginal-owned land in a way that distinguishes them from the surrounding land tenure, such as through a long-term lease — was canvassed in 2003 by the Central Land Council (Ross 2003). Changes to the *Aboriginal Land Rights (NT) Act 1976* were effected by the Australian Government in 2006 to allow for the leasing of land in townships on Aboriginal land, with the aim of encouraging home ownership and economic development. Research could contribute to building understanding of the issues and options for these kinds of changes. Residents of settlements and traditional owners are among the key people who need to understand the potential for change and its implications. Others need an understanding that is informed by Aboriginal people's perspectives on these issues.

People I consulted in this project raised concerns that the local government and essential services that are central to sustaining life and wellbeing in settlements are not comparable with those enjoyed by other rural Australians. The match between this aspiration and the issue of settlement sustainability presents some critical questions:

- To what extent is desert Aboriginal people's aspiration for equivalent quality in services a human right, or a citizenship right?
- Are there equivalent responsibilities — mutual obligations — of desert Aboriginal people for these rights or entitlements?
- How might these mutual obligations be articulated in ways that make sense to local people?

Understanding and recognising the role of Aboriginal organisations in managing the interface between the individual residents of remote communities and the state is critical to making concepts of mutual obligation operational. However, there are also significant issues about how to build capacity and manage risk when staff are changing all the time. People I consulted in this project said there needs to be continuity. At present, there is too much that is personality driven, and too many ad hoc solutions.

Research has some potential to illuminate and inform these issues, such as through participatory evaluation where researchers input options and issues informed by 'outsider' understandings to change processes, as outlined earlier (Section 2.4.2).

10.3 Access to effective services

A further related area for research raised by people I consulted for this project is in exploring appropriate levels of consultation and engagement with Aboriginal people about services to their remote settlements. How much do people want or need to be involved in service design? Remote Aboriginal people carry a heavy load of consultation about the design and access of services to their settlements. This has developed out of policy goals for Aboriginal self-governance and self-determination and a concern that services fit local culture and capabilities. However, as Cornell and Kalt (2003, p. iv) argue: 'Self-government and service delivery are not the same thing and need not be organized the same way'.

High levels of concern among governments and Aboriginal organisations about the effectiveness of services for remote settlements suggest that much of the current consultation is ineffective. Is there a framework for designing and managing services that is more efficient and effective? And how much does Aboriginal people's consideration and advice on these servicing issues constitute part of their mutual obligation to broader society?

My consultations in this project had no strong focus on settlement issues. So the issues reported here are very selective. Nevertheless, some important issues were raised. As well as those concerns outlined above, people I consulted in this project raised some key concerns for sustainability of settlements, which indicate some directions for research and knowledge brokering:

- Energy costs are significant in remote settlements. Research on ways of reducing these costs has focussed on high capital cost renewable energy installations. Simpler technologies also warrant research, for example turbine or heat exchange systems that capture the energy lost as heat from large township diesel generators.
- Management of stores on remote settlements is a significant issue. There is a need for research that informs community control over stores and associated businesses in a way that leads to improved nutrition. This should identify the factors about store management (e.g. placement, price, choice) which are most critical to getting good nutrition.
- Maintenance costs of infrastructure are a significant issue for remote settlement. Often, capital costs of installation are grant funded, but with limited or no provision for maintenance. Research is needed to inform assessments of viability of infrastructure, such as housing and new communications technologies. For housing, research is needed to identify ways to secure resources for maintenance.

10.4 Education and training

There are considerable issues associated with education and training for remote Aboriginal settlements. In general, they come down to a mismatch between the way training approaches are designed in cities and the skills needs of people in remote settlements. This same issue underlies

training resources, curricula and funding which are not responsive to needs and demands from remote areas. Some of these issues are the focus of the National Centre for Vocational Education Research and DKCRC's Growing the Desert research project (see Guenther et al. 2005).

Pam Collier (formerly of Ngaanyatjarra College, Western Australia) comments about these issues:

> *'There is a need in training for development of "life skills" rather than specific industry focused training. Life skills include things like: what does a job entail?, tax issues, receipts and records, telephone banking, using the internet. To get resources, the college has to deliver things that are not appropriate. Resources might be available for Ngaanyatjarra College to deliver an industry training package, part of the Australian Qualifications Framework. However only some of the competencies in these packages are relevant, and it is very hard to get funding for stand alone training that targets the competencies people need. Research can help illuminate issues like this and help argue for change.'*

10.5 Water quality and health

Poor quality drinking water is reported by some Aboriginal people I consulted for this project as the cause of the epidemic of kidney disease among their families. Biomedical science cannot readily explain the patterns of incidence of end-stage renal disease among Aboriginal people in Australia, according to the recent review by Cass et al. (2004). The authors review evidence for social, cultural and environmental factors that contribute to the most disadvantaged Aboriginal and Torres Strait Islander people in Australia also being those with the highest incidence of the disease. Water quality is not identified as a specific risk item in this review, whereas foetal malnutrition and low birth weight of babies, scabies, obesity, stress and associated psychosocial factors, smoking, and poor communication during health treatments are all strongly implicated.

Cass et al. (2004) conclude that community-based interventions that build healthier lifestyles and livelihoods are needed to prevent the kidney disease epidemic from getting even worse. This supports the importance of building stronger livelihoods through 'work on country' (as discussed below). However, if Aboriginal people attribute the cause of kidney disease to poor water quality, it seems important to also take that construction of cause and effect into account if interventions and public health education are to establish credibility with Aboriginal communities.

11. Country

'The key aspiration is strength and health of family — managing country for family.'

11.1 The value of sustainable livelihoods

11.1.1 National interest

Large areas of desert Australia are under Aboriginal ownership, as inalienable land rights grants (held by Aboriginal lands trusts or statutory landholding bodies), Aboriginal-owned pastoral leases and other forms of lease tenure. These tenures encompass 16.6 per cent of Australia's rangelands and probably more than 20 per cent of desert (arid and semi-arid) regions[1]. Fifty per cent of the arid region of the Northern Territory is Aboriginal freehold land. Progressive recognition of native title is also opening opportunities for more confident Aboriginal use and involvement in managing traditional lands in pastoral regions (see for example Agius et al. 2003). Taking native title into account, Aboriginal people may have entitlements to some kind to use and manage more than 90 per cent of the arid regions of Australia.[2]

Management of these lands aligns with national interests and priorities in several ways. The prime example of economic intersection is the mining industry. Considerable mining activity takes place on Aboriginal lands, almost invariably involving negotiations with Aboriginal people for access, and benefit sharing or compensation. For example, nine per cent of Aboriginal freehold land in the Central Land Council area was subject to exploration licences in June 2003 (CLC 2003, p. 66). Newmont (2004) expected gold production for 2004 from its Tanami mines on Aboriginal land northwest of Alice Springs to realise $178 million in sales, while Ross (2004) reports that the new Giants Reef Mine, on Aboriginal land near Tennant Creek, produced 50 000 ounces of low-cost gold (estimated worth $13.7 million) in 2004, its first year of operation. Such mining operations are major contributors to Australia's export earnings.

The national significance of desert Aboriginal lands for biodiversity conservation goals is recognised through the support that Aboriginal land holders gain for management of country through various programs under the Natural Heritage Trust (NHT). Prime examples are the Indigenous Protected Areas (IPA) program (see Box 11) and threatened species conservation projects. The area of desert freehold and leasehold land that is owned by Aboriginal people and managed as Indigenous Protected Areas is more than 136 000 km^2. This is 15 per cent of the total area covered by Australia's national reserve [protected area] system (based on DEH 2004, NRMMC 2004).

Desert Aboriginal people and land management organisations are very active in projects for the conservation of nationally threatened species in their Indigenous Protected Areas and elsewhere on their lands. Bilby, giant desert skink or tjakura, malleefowl, marsupial mole and black-footed rock wallaby are species whose conservation across their remaining range is dependent on action by Aboriginal landholders. The threatened species recovery projects being carried out by desert

1 Pollack (2001) concludes that the aggregated total of Aboriginal and Torres Strait Islander land in Australia would appear to fall within the range of 16% (with certainty based on reliable data) to 18% (speculative, with estimates for data gaps) . The aggregate area comprises diverse land tenures, property rights and obligations to the land, and many different types of land ownership governance structures . Data reported in the National Land & Water Resources Audit (NLWRA 2001) returns 16.6% for Aboriginal owned pastoral leases and other Aboriginal statutory and leasehold tenures in the rangelands. The estimate here of more than 20% for desert regions recognises the very large areas of these tenures that are in semi-arid and arid rangelands.

2 Freehold tenures (9% of rangelands (NLWRA 2001)) and Western Lands leases have extinguished native title. However, there is little freehold or Western Lands lease in arid regions (see Taylor 2003 for arid region boundaries).

Aboriginal people and their land management organisations are mostly funded through NHT via Envirofund and the Threatened Species Network. This kind of project funding is what Aboriginal land management organisations rely on to get out on country with local people. Their work involves locating and monitoring populations at risk, baiting foxes, burning strategically to protect habitats, and working with scientists on species ecology (see Benshemesh 1997; McAlpin 2001; Noble 2002; AWS 2003, 2005; Robinson et al. 2003).

There is arguably also a national interest in maintaining desert Aboriginal languages and cultures because of their contribution to an Australian sense of identity and creative expression. Aboriginal land and connection to land underpins the creative vitality of the desert art and craft industry which generates the most economically significant production of marketable goods by remote Aboriginal people, and is recognised and in demand internationally. There are significant other benefits to the Australian economy from desert Aboriginal cultures, albeit less direct and less readily measured than marketed arts and crafts. For example, international attention was drawn to the creative vitality of desert Aboriginal women's cultural traditions in the dance they performed as part of the opening ceremony for the Sydney 2000 Olympic Games. This has contributed to the image of Australia internationally as an interesting and culturally rich country — an exciting place for international tourists to explore.

A key question for research is how to lever from contributions that Aboriginal lands make to national priorities in these kinds of ways and generate investment that supports stronger livelihoods for desert people. Better understanding of the value of desert resources to the rest of Australia is also needed to address this question.

Box 12: Why work on country?

In explaining outcomes from land rights in the Northern Territory, the Central Land Council (1998) outlines the many reasons why spending time on country — 'working on country' — is important to many desert Aboriginal people.
Firstly, the land needs to be looked after, which for Aboriginal people involves 'ceremony, attention to sacred sites, cleaning of water sources and so on'.
CLC explains that 'hunting and other subsistence activities are also a high priority for Aboriginal people, who will willingly endure heat, rough car rides and other discomforts in order to engage in hard work to dig two kilos of bush potato or kill half a dozen sand goannas. These activities are pursued with a rich sense of purpose and a depth and sophistication of knowledge. Such knowledge is necessary to be successful in them'.
There are many reasons why desert Aboriginal people continue to hunt, gather and do associated activities.
CLC summarises these reasons as:

- Obtain goods for sustenance, medicinal purposes and other essential needs.
- Teach children and maintain cultural knowledge.
- Provide items for sharing and exchange.
- Strengthen the cohesion of peer, family and social groupings.
- Improve health through exercise and using better foods and other goods.
- Eat tasty foods that are more preferred than store foods.
- Provide goods required for ceremonies, rituals and other events.
- Continue what people have done in the past and feel comfortable with.
- Reinforce sense of tradition and dignity.
- Confirm individual identity and self-worth and to pursue activities over which Aboriginal people prime control.
- Provide intellectual stimulation and topics for discussion.
- Provide feelings of well being and enjoyment.

These activities are 'integral to spiritual responsibilities to look after country'. They also are 'recreation ... providing a change from [settlement] environments'.

Source: Central Land Council 1998

11.1.2 Ecological and cultural services

In managing land as Indigenous Protected Areas and for conservation of threatened species, Aboriginal people and lands are helping to maintain and enhance flows of ecosystem services from their lands. Ecosystem services, or ecological services, are the functions that ecosystems perform that lead to desirable environmental outcomes for people — air and water purification; mitigation of dust, flood and wildfire hazards; and climate stabilisation are examples.

The concept of 'cultural services' is an extension of the concept of ecosystem services. Non-Aboriginal people, governments and industry benefit from the cultural services that desert Aboriginal people provide through their maintenance of language and culture, as indicated above. Culture and nature are also intertwined — the work that Aboriginal people do on country to support the flow of ecosystem services is cultural work, as discussed further below (Section 11.1.5).

The total value of ecosystem services to people around the world was calculated as US$36 trillion annually in 1997, or 92 per cent of the annual gross value of all goods and services produced on the planet (Costanza et al. 1997 cited in Hargroves & Smith 2005, p. 24). Valuation of these services is not a straightforward exercise and there is controversy about how to do it and whether it is a valid thing to do at all. A particular issue for Aboriginal people is that it takes the assumptions and tools from one culturally determined way of thinking (that of market economics) and applies it to aspects of nature and society that are so precious and so embedded in their identity that they cannot be 'bought and sold'. Nevertheless, valuation of ecosystem services is proving to be an important technique to demonstrate to policy makers in government and industry how important the services that nature provides are.

The resources that desert Aboriginal people draw on to manage country, and therefore to maintain flows of ecosystem and cultural services, are patchy and often short term and uncertain. This can be disastrous for ecological sustainability. For example, findings from the APY Lands Biological Survey (Robinson et al. 2003) highlight that long-term timeframes for planning and action are critical to achieving outcomes for species recovery and other biodiversity and cultural land management goals. In management of the APY lands, there are 'a wide range of issues that need addressing but few paid staff and few suitable vehicles to enable much of it to happen' (Robinson et al. 2003, p. 355).

The lack of budget security for land management functions for desert Aboriginal landholders is indicative of a broader situation. Like many other people who contribute to the benefit that society as a whole gets from ecosystem services (Murtough et al. 2002, p. viii), Aboriginal people 'are not rewarded for all the benefits they provide to others' just as 'those who reduce ecosystem services [also] do not bear all the costs they impose on others'. So, desert Aboriginal people provide ecosystem and cultural services for the nation, but the nation lacks effective institutions to cover the real costs of securely maintaining those services. Compared to many other landowners, desert Aboriginal people are particularly economically marginalised by this situation because production of goods from their lands that are valued by others (such as food and fibre crops) is limited by the arid environment. In contrast, many other landholders are rewarded (in the marketplace) by selling the goods they produce from their land, which provides income to address other land management issues, at least to some extent.

Among Australian Aboriginal organisations, those in northern Australia have been most active in identifying potential for Aboriginal land management to be better resourced through recognition of the ecosystem services that Aboriginal landholders provide. Armstrong et al. (2004) identify this as an area for strategic action by the North Australian Indigenous Land and Sea Management Alliance (NAILSMA). The Arnhem Land Fire Abatement Project (which involves the Tropical Savannas CRC and the Northern Land Council) is a concrete example. It estimates that Aboriginal people will prevent at least 300 000 tonnes of carbon from being released into the atmosphere by doing early dry-season controlled burning in areas of western Arnhem land that are now unpopulated and

experience destructive intense late dry season wild fires. This would also generate employment for community rangers and a suite of other benefits for biodiversity conservation and environmental management (Altman & Whitehead 2003; Williams & Russell-Smith 2003).

Many people around the world — businesses, government, researchers, landowners — are working on how to use market-based instruments such as carbon credit trading, biodiversity offsets and stewardship arrangements to give incentives and rewards to landholders for the ecosystem services they provide. Effective systems need to give investors (e.g. tax payers, governments, companies, non-government conservation organisations) security and confidence that they are getting value for the money they invest in the production of ecosystem services by landowners. They also need to minimise the cost (including time and money) of transactions between landowners and investors. Monitoring by landholders is important for them to be able to show investors what their management is producing and to build investors' confidence in their management.

In Australia, CSIRO, the Productivity Commission, Land & Water Australia and the Murray-Darling Basin Commission are among the Australian research and development agencies working to design market-based instruments and support the emergence of markets for investment and trade in these instruments (see Whitten et al. 2004). Desert Knowledge CRC research for the Australian Government Department of the Environment and Water Resources scoped opportunities for market approaches to biodiversity, focusing on Aboriginal lands to the west of Alice Springs (Davies et al. 2007) and explored metrics and incentives for pastoralists to enhance biodiversity outcomes from the management of their pastoral leases (Gorddard et al. 2007). Research that supports engagement of Aboriginal people in emerging markets for ecological and cultural services will support efforts by Aboriginal people and organisations to gain adequate resources for managing their desert lands.

11.1.3 Sustainable livelihoods

Stronger livelihoods are important if the flow of benefits from desert Aboriginal lands to the rest of Australia is to be sustained. Developing stronger livelihoods is also important to reducing the financial and social costs to Australia of Aboriginal poor health and social dysfunction in desert settlements.

The concept of 'sustainable livelihoods' is central to international approaches to rural development, poverty reduction and environmental management, and has been since the late 1990s (Scoones 1998), drawing on antecedents in 'people centred development' (for example Chambers 1983; Korten 1984). Because it has achieved this prominence internationally during a time when 'bottom up' community development approaches had very limited overt support in government policy frameworks for Aboriginal and Torres Strait Islander affairs (at least compared to the early to mid-1990s), the concept of 'sustainable livelihoods' is marginal and poorly understood among many people concerned with Aboriginal and Torres Strait Islander issues in Australia.

CAT has used the sustainable livelihood concept since 2003 to frame its purpose — 'securing sustainable livelihoods through appropriate technology' (CAT 2003). Several DKCRC projects are using the sustainable livelihoods framework in their research.

Internationally, the concept of sustainable livelihoods has led development agencies and researchers to redefine the 'problem' of development. As a result, they have increased the effectiveness of their efforts dramatically. The sustainable livelihoods concept and framework for analysis has led them away from a sectoral focus on particular natural or financial or physical resources to a more sophisticated understanding of how multiple factors affect people's needs, opportunities and choices and how interventions can be better targeted (Fisher 2003).

CAT defines sustainable livelihoods as 'the range of activities that support improved well-being through work, enterprise and trading and that can be maintained into the future' (Fisher 2003; CAT 2004b). Livelihoods include jobs, but are more than jobs. Livelihoods encompass the range of activities that people meaningfully pursue to improve their sense of happiness, safety, health, wealth and wellbeing — they include employment, enterprise and trading, care for family and community members, volunteering, creative expression, teaching and learning. Approaches to building stronger livelihoods starts with the strengths of local people, as encapsulated in their assets:

- natural capital (natural assets such as fuel wood, water, fruit trees, bush plant foods, landscape, wildlife)
- social capital (human contacts and relationships, group membership, clans, networks etc)
- human capital (knowledge, skills, and capacity to work)
- physical capital (basic infrastructure such as roads, shelter and tools)
- financial capital (money for credit, savings, pensions etc).

In analysing their asset base, key strengths and weaknesses can become more apparent to people. Environmental factors (history, politics, markets, climate etc) also need to be understood as these affect the capacity that people have to address problems with their asset base, and make them vulnerable to trends (such as population changes), shocks (disease or natural disasters) and seasonality (Scoones 1998; Fisher 2003).

11.1.4 A reality check for Australian deserts

The concept of 'sustainable livelihoods' is potentially powerful because it puts a focus on human agency — the assets and opportunities that people have, the choices that people make as individuals and as groups to address problems they experience, and to target problems where policy change could make a difference. However, it can also conjure up romantic visions of desert Aboriginal people leading productive and engaged lives in remote places.

Such visions are very much at odds with the realities of ill health, poor infrastructure, substance abuse and addiction, and violence on remote settlements. Further, because social security provides basic cash income as a citizenship entitlement in Australia, and because the government supports services to settlements, there is no fundamental compulsion for desert Aboriginal people to produce goods and services, work for income, or trade to meet basic needs for food, water and shelter. This is a very big contrast to the rural development settings in developing countries where the sustainable livelihoods framework is proving effective.

Folds (2000) argues, on the basis of his experience at Kintore, that some desert Aboriginal people have brought the 'government' and the non-Aboriginal people who work for government or Aboriginal organisations into their kinship networks in such a way that the government's obligation to provide for them is a natural and expected part of the relationship. Development of new institutions (i.e. incentives, norms and rules) to promote sustainable livelihoods can readily conflict with such culturally embedded practices. The choices of individual Aboriginal people to do things differently can be greatly constrained by these aspects of their culture, as discussed by Sutton (2005, p. 7). For example, if individuals are obliged culturally to give resources that they produce to their relatives, even when those relatives never fully reciprocate, incentives for those individuals to continue to produce are eroded.

Even without these cultural factors, it is unrealistic to expect that conservation and natural resource-based enterprise on Aboriginal lands can provide sustainable livelihoods for significant numbers of Aboriginal people, just as pastoral leases bought for Aboriginal people have invariably failed to provide livelihoods for more than a few people. A fundamental constraint is the limited capacity of the arid environment for food and water production. As Fisher (2004) emphasises, there are some economic realities about living in remote Aboriginal settlements that cannot be ignored: in short, 'remote living is expensive'. So is active management of remote Aboriginal lands.

Many of the people I consulted for this project have a day-to-day awareness of these realities. No-one would suggest that there are any 'magic wand' solutions to improve the livelihoods of remote Aboriginal people. It is, however, important that the conceptual frameworks applied to these issues are sufficiently robust and comprehensive to account for the complexity of factors that affect people's wellbeing. The sustainable livelihoods framework has that potential.

Significantly, it does account for the role of country and its management in addressing opportunities for stronger livelihoods. This does not happen in approaches to development that focus only on infrastructure and services in settlements, or on training and education. Kinship and cultural attachment to traditional country are reasons why Aboriginal people continue to live in remote settlements to a far greater extent than other Australians; so it makes fundamental sense to base efforts to build stronger livelihoods on a framework that can account for the resources of that traditional country.

There are also strong indications that younger generations do not share the same priority that older Aboriginal people place on living in remote parts of their traditional country. It is not clear how much this preference is affected by 'pull factors' (services and attractions of towns) or 'push factors' (nothing to do in remote settlements). Population migration from remote settlements to towns might reduce some of the challenges of service delivery to dispersed populations, but will also reduce the cultural and ecological services that remote people provide to the rest of Australia through biodiversity conservation and maintenance of cultural and language diversity. Stronger livelihoods in remote settlements will at least reduce the 'push factors'.

Research cannot build stronger livelihoods, but it can have a powerful influence when undertaken in partnership with Aboriginal people, organisations and other agencies (government and the private sector), as discussed above (Section 2.4). In particular, livelihood research that incorporates a systems perspective has potential to contribute to understanding how the choices that people make (individually in their own lives or as part of policy and investment decisions) impact on the prospects for sustainable livelihoods for desert Aboriginal people.

Box 13: Kuka Kanyini – management for healthy people, healthy country

'Kuka Kanyini' means 'looking after game animals'. Aṉangu Pitjantjatjara Yankunytjatjara Land Management (APYLM) has been developing Kuka Kanyini as a regional approach through which Aṉangu build stronger livelihoods using adaptive management. For Aṉangu, developing stronger livelihoods means more kuka (game meat animals, such as kangaroos and emus) and other bush tucker (e.g. plant foods); maintaining culture; improving health; and increasing income levels.

Kuka Kanyini is a brand or trademark as much as anything. Some people say it is like 'an Ara Irititja for land management'. What it shares with Ara Irititja — the electronic archive of Aṉangu history (see <http://www.irititja.com>) — is that it addresses Aṉangu cultural needs, it is dynamic and innovative, and it has strong interest and ownership among Aṉangu involved in its development.

APYLM's work on Kuka Kanyini is part of its role in bringing 'voice to Aṉangu aspirations with regards to the stewardship of the land' (Young & Knight in Davies 2004). Kuka Kanyini recognises that 'the key aspiration for Aṉangu is strength and health of family. Whereas we whitefellas might regard the APY lands as an important region to manage for its biodiversity, APYLM works to manage the land for Aṉangu — the people who live here. The primary aim is looking after country because that is where Aṉangu live and want to live' (L Knight, pers. comm.). Frank Young, Aṉangu Indigenous Land Management Facilitator, and Lexie Knight, coordinator of APYLM from 2002 to 2006, also comment that:

'There is a synergy between the land management projects that APY facilitates and biodiversity outcomes, even though the starting point for APYLM is Tjukurpa and the aim is managing country for family, not for biodiversity. For example, rock holes in the Aṉangu Pitjantjatjara Lands are a key water source for many native animals. Cleaning rock holes has a major impact on biodiversity with minimal input. Patch burning stimulates the regeneration of sweet grasses and vegetable foods used by Aṉangu. Patch burning creates mosaics of vegetation that increase biological diversity.'
(Young & Knight in Davies 2004)

As a regional plan, Kuka Kanyini links action in fire management, threatened species conservation, management of water holes, development of land based enterprises, management of livestock grazing, training and employment. Projects on these various components are being implemented by local groups in several areas of the APY Lands, generally funded by NHT through the Alinytjara Wilurara NRM Board, and the Indigenous Protected Area and Envirofund programs.

At Watarru in the south-western APY lands, South Australia's Department for Environment and Heritage is supporting Kuka Kanyini projects (see *Arid lands* 2004) including a local enterprise mustering camel for sale.

APYLM's Kuka Kanyini approach has a coherent vision and strategy underlying its various components. Its foundation and its accountabilities are in tjukurpa/wapar (Aṉangu customary law or 'dreaming').

'Senior men and women say that most social and health problems are the result of a breakdown in the old ways and that law and culture – the tjukurpa – is being lost. They say the land is the basis of the law'.
(APYLM & AWS 2004).

The Kuka Kanyini approach is to rebuild Aṉangu social controls and environmental management systems, supporting the maintenance and transmission of traditional knowledge, and using scientific knowledge and technologies as valued tools to assist in this process.

Kuka Kanyini is using traditional knowledge and science to look at the match between culturally and biologically important places, and identify sanctuary areas. The aim is to build populations of game animals by improving habitat quality in these places (e.g. through fire management and fencing waterpoints to exclude feral animals). An integral part of this management is rebuilding social controls for human behaviour in relation to these places (e.g. hunting). Lexie Knight comments that 'getting Aṉangu and others across the concept is the first step'. What Aṉangu and APYLM are learning is that 'We can set goals ... We can work out what [animals] we want to increase and we can use Indigenous techniques and put some pattern into what we are doing.'

Following customary law is critical to the integrity of this approach. This means that the people who have responsibility in customary law for particular places are the people who need to be doing the land management work. This approach to management planning embeds customary law and traditional knowledge with science. It also means a management plan cannot be picked up and implemented by just anyone because maintaining the right relationship between people and country is fundamental to the integrity of the plan.

Although it has been developed progressively over the past decade as part of APY's land management work, 'the key to delivering the full concept is coordination between land management, health, education and other service provides in the APY region' (APYLM & AWS 2004, and see Baker & Nesbitt 2004).

Sources: George Wilson, Lexie Knight 2003–05, pers. comm.; AWS 2003; APYLM & AWS 2004, AWS 2005

11.1.5 'Working on country'

The concept of livelihoods embeds a broad definition of 'work'; this does not just mean employment in paid jobs or even other income-earning activities. As Baker et al. (2001, p. xxii) discuss, for Aboriginal and Torres Strait Islander people, 'working on country' also means

preventing degradation through practical activities such as rockhole cleaning and burning and through land assessment and planning; negotiating with government and industry; and teaching and learning about country, ceremony and creative expression.

The work that Aboriginal people do on country includes customary activities of ceremony, hunting and gathering food for their own use, and care of cultural places. These activities continue to be the priority for older desert people: 'going back on country, harvesting plants and visiting places that are important to them'. Box 12 outlines the reasons why these activities are important, and their multifaceted benefits for wellbeing, as seen by CLC (1998). As well as benefits to national Aboriginal and Torres Strait Islander priorities, such as improved health and family cohesion, there are benefits from these activities for other national priorities. For example, safety and security, including biosecurity, is improved through the observation network that Aboriginal and Torres Strait Islander people comprise when 'working on country' in remote regions of Australia where there are few other observers.

Burgess et al. (2005) review literature for health outcomes from 'working on country' and find evidence for a positive relationship. The Healthy Country Healthy People (2005–06) project in the Top End of the Northern Territory, and the DKCRC Livelihoods inLand™ project are both directed at research questions arising from the relationships between Aboriginal people's engagement with land and natural resources, and their health and wellbeing.

Desert Aboriginal people draw on their own income (typically social security, CDEP, and some earned income from, for example, arts and crafts sales) to fund the cost of hunting, gathering and visiting places on country. The work of Aboriginal organisations in land management and educational projects, heritage management associated with mining or infrastructure development, native title claim research, and management of homelands infrastructure also supports desert Aboriginal people to visit their traditional country. In this case, Aboriginal community members typically travel in the Aboriginal organisation's vehicles with staff of those organisations, and may be paid for work associated with the project, either directly or through top-ups to the part-time wages they get through CDEP. Incidentally, this can have perverse outcomes in that buying and supplying food for Aboriginal workers as part of the organisation of these trips reduces their motivation to get food from the bush during the trip; so some of the benefits indicated in Box 12 for exercise, nutrition and knowledge transmission may be compromised. Such compromises are difficult for Aboriginal people and staff of Aboriginal organisations to avoid, given that project funding is typically granted to them to achieve specific sectoral outcomes, such as species conservation, rather than to contribute to Aboriginal people's wellbeing.

Aboriginal land based enterprises and entrepreneurial activities — which, in desert regions, include livestock grazing, tourism and environmental education, camel harvesting — provide important opportunities for Aboriginal people to generate income while working on country. Increased incomes can bring other changes; for example people I consulted for this project said:

> *'We here see a direct impact from the enterprise, as a social impact, because people are better off and then become more open-minded to other land management issues – for example buffel grass.'*

Outcomes for improved health, knowledge transmission and productive engagement add to the value of income-generating activities, even though these are typically not viable in strictly commercial terms. Where markets are accessible, harvesting plant foods for sale and timber for use

in carvings and artefacts are ways that desert people use their knowledge and skills to supplement their cash income and generate the non-market benefits of working on country that are outlined in Box 12.

Changes from increased income in small settlements, coupled with attention to nutrition and family financial management, can be dramatic. For example, people I consulted for this project said about one small settlement that is very actively engaged in land management projects through enterprise and NHT:

> *'Income is up, people are eating better and want to work. There are no mai wiya (no food) days here because of increasing income and also teaching people how to spread their money. Because the community is income rich, people are sending money to other places. Also there are more vehicles. There is a rising standard of living. People are getting furniture now, fridges and TVs and are using the inside of houses more and locking houses when they go away to protect these things from others.'*

While 'working on country' can have very positive outcomes, it does need to be recognised that it will not engage everyone and that big changes in Aboriginal health and mental wellbeing in desert Australia need more than small scale engagement in land management projects. For example, they will also need substantial changes in diet and exercise levels, sustained over time.

11.1.6 The customary sector in the hybrid economy

Desert Aboriginal people's work on country engages with all three spheres of the 'hybrid' economy. The state sector supports it directly through grants from NHT programs because of its biodiversity conservation and other land management outcomes. The state also supports it indirectly through the funding it provides for infrastructure and services for settlements and homelands/outstations, and by providing basic income support to individuals and families via social security and CDEP income. This support allows people to live in remote settlements and to pay for some of their monetary costs of accessing country. Aboriginal people's work on country also generates income for organisations through market engagement, such as contracting land management services to the private sector, particularly the mining sector, and for individuals through other enterprise activities such as arts and crafts.

The activities that comprise working on country are embedded in the customary sector. Even where their overt purpose and the technologies used are relatively recent innovations, such as camel mustering and biodiversity conservation, the knowledge and skills that are applied by Aboriginal people draw from their culture and custom, and the outcomes for wellbeing are similar to those that derive from hunting and gathering, as outlined in Box 12. Further, as John Chester, Manager SA Aboriginal Lands Trust, observes from his own long experience in facilitating Aboriginal land management action in desert and other regions of South Australia: 'most successful projects are closely linked with culture' (Chester 2004.) People I consulted in the development of this project also said:

> *'Traditional land management is the underpinning of any other land management work. And is the entrée to other work.'*

There is very limited research, especially in desert environments, about the extent of Aboriginal people's work on country or the resource flows associated with it. The quantitative data and estimates that are available suggest very strongly that desert Aboriginal people's production from hunting and gathering is far less than for tropical Aboriginal and Torres Strait Islander people (see Cane & Stanley 1985; Devitt 1988; Palmer & Brady 1991; Walsh 1990; Walsh 1993). This is an unsurprising consequence of the lower productivity of the biophysical environment and its more

irregular rainfall. These factors mean that resources are depleted faster when harvesting pressure is focused on them, and the costs of travel to alternative areas are higher because of comparatively longer distances.

11.1.7 Adaptive management, complex systems and policy responses

The proposition that positive outcomes for health and wellbeing of people and country are supported by active engagement of Aboriginal people in management of their country, as outlined above and in Box 12, is consistent with a wide array of varied empirical evidence and argument. However, there is no extensive body of research that has specifically examined and tested it (see Burgess 2005).

The Anangu view of change in the APY lands that underlies the APYLM's Kuka Kanyini framework for regional wildlife management (see Box 13) is that health and social problems result from breakdown of Anangu law and culture, which is tied to the land. This speaks very strongly to emergent scientific understandings.

Kuka Kanyini is an adaptive management approach — it integrates design, management, and monitoring to test assumptions in order to adapt and learn how to manage complex systems in the face of uncertainty (see Salafsky et al. 2002). The model (or set of assumptions) draws from customary law, science, observation and experience about what is occurring in the human-environment system and how land management actions affect this. It says that stronger livelihoods for Anangu will come from engagement in culturally authorised and meaningful actions; exercise, which has direct health benefits; increased availability of kuka and plant foods; and improvements in income through paid land management work and enterprise activity. The process involves action, evaluation, and feedback to understand how to target actions better, and learn how to improve the model. The approach is directed at strengthening the resilience of the human-environment system — its capacity to absorb or buffer disturbance and shock and adapt to change (Berkes et al. 2003). Arguably, disturbance and shock have been the ongoing experience of Anangu over the past century of rapid change. In the environment system, this has manifested in, for example, changed fire patterns and mammal extinctions.

Complex systems science explains that the critical determinants in human-environment systems are 'slow variables', recognising that 'slow' and 'fast' are relative concepts. Fast variables are more sensitive to short-term events than slow variables, but changes in slow variables have the greatest impact on the resilience of human-environment systems, i.e. their capacity to recover to the same state after disturbance, rather than shifting irreversibly to a different state (Scheffer et al. 2001; Stafford Smith & Reynolds 2002). Attention to the slow variables is critical for building resilience and reducing vulnerability in human-environment systems. Senior Aboriginal people's perspectives on contemporary social issues affecting their communities talk strongly to this scientific understanding.

The crisis in health and social conditions among desert Aboriginal people necessarily directs government attention to 'fast variables' — the prevalence of petrol sniffing, youth suicide, and poor access to settlement services. These create crises that demand new approaches to government intervention (see ATSISJC 2004b). What senior Aboriginal people are saying is that there needs to be a focus on the slower variables — the relationships of people to country, the interactions between their rights as landowners and their responsibilities to know and manage the country, the transmission of traditional knowledge and the reciprocities from customary law — if there is to be real lasting change in current poor health and social conditions.

Research to inform this holistic model, providing hard data of the relationship between outcomes and inputs, would refine conceptual thinking about the contemporary Aboriginal hybrid economy (Altman 2001, 2004) and contribute to policy frameworks for more effective resourcing of sustainable livelihoods for remote desert people:

> *'Research that is important is on health and livelihoods, so we can get money to fix the problem. Funding is based on empirical evidence.'*

11.2 Knowing about and accessing country

11.2.1 Traditional knowledge

There is widespread demand among Aboriginal and Torres Strait Islander people for documentation of traditional knowledge. As discussed above (Section 2.3), this needs to happen in ways that make sure Aboriginal and Torres Strait Islander people keep control over their knowledge and how it is used. People I consulted in this project say that when Aboriginal knowledge holders 'don't know how their knowledge is being used and don't understand what it is used for' then they do not want it documented. Nevertheless, some people recognise the impossibility of getting informed consent from every single Aboriginal knowledge holder, pointing out the complexities of the intersecting responsibilities in customary law for knowledge, use and management of particular places and species. They say informed judgements need to be made about the risk of exploitation of traditional knowledge with full clearance procedures for activities where there is such a risk.

Some people say the present time is critical for 'recording and getting information from the tjilpis (old men/old people) … documenting knowledge'. This is important, first and foremost to support younger people in learning about country. Teaching about country is an overriding priority for all Aboriginal and Torres Strait Islander people involved in or concerned about management of their country.

Several desert Aboriginal organisations are actively documenting traditional knowledge and making it accessible to desert Aboriginal people; for example, the Ara Iritija and Kuka Kanyini projects in the Anangu Pitjantjatjara lands (see Box 13), APY Land Management's work with schools, and the Tangentyere Council's NHT-funded Land for Learning program. The DKCRC Plants for People project developed a community-owned database of plant knowledge with Tapatjatjaka Community Government Council at Titjikala and is working with Kado Muir and Ngalia people at Laverton in management of traditional knowledge and cultural heritage. Desert Knowledge CRC research by Smallacombe et al. (forthcoming) has been undertaken to raise awareness of the role of Aboriginal traditional knowledge in research, policy and programs concerning desert peoples.

The ARC-funded project 'Indigenous Knowledge and Resource management in northern Australia: building collective memory with computers', led by linguist Michael Christie, CDU, is setting new benchmarks for partnerships in traditional knowledge management. The project audited 38 databases used to store Aboriginal knowledge from northern Australia (Scott 2004). Scott found that most of the knowledge data stored in these databases is accessible to Aboriginal owners 'if they know where it is stored and know whom to ask' — a big proviso in most situations. Scott also concluded that 'the most common users of the databases are the staff of the various organisations', and that Aboriginal community members use these databases where access is relatively easy, as is the case with the Ara Irititja project from the APY lands (see <http://www.arairitija.com>), but in very few other examples.

Christie (2004) critically explores the role of databases in knowledge and its management, and sets out a significant agenda. He says that the connectedness of knowledge 'needs to be enabled and enhanced by the database if it is to serve the community which owns the knowledge' (p3). Databases and data, like knowledge systems, need to be read discursively, while asking questions such as: 'Who does it belong to? Whose interests does it serve? Which structures or concepts does it embrace and which does it marginalise? What possibilities for knowledge making does it support and prevent?' (p3). 'For it to be an Indigenous database, its architecture and structure, its search processes and interfaces, its ownership and uses must … reflect and support context specific Indigenous ways of being and knowing, and people's control over their own knowledge' (Christie 2004: 5 citing Agrawal 1995).

Given the increasing engagement of Aboriginal youth with digital technologies and the concern of elders for traditional knowledge transmission, there are important opportunities for research partnerships to contribute to addressing the challenges of designing databases and other knowledge management tools that serve traditional knowledge systems rather than doing structural violence to them. Such research, and the awareness of standards for knowledge management that it generates, contributes to an environment where researchers can be more confident that they are acting respectfully in their research interactions with Aboriginal people.

11.2.2 Access to country

On the ground in desert Australia, securing practical means to access traditional country is a major issue for Aboriginal people — 'that is the only way of keeping the country alive'.

The broad outcomes for Aboriginal and Torres Strait Islander health and wellbeing from Aboriginal and Torres Strait Islander people's access to their traditional country are recognised by COAG (SCRGSP 2003) in its national indicators to monitor and target action to address Aboriginal and Torres Strait Islander disadvantage. The indicators also recognise that accessibility is not necessarily correlated with land ownership.

Aboriginal peoples' ownership of their traditional country may be recognised by governments and others, but individuals and families may not have the means to access their country because they lack reliable vehicles, licensed drivers and money to cover the costs of trips. People's health also affects accessibility. Pastoral lease or other private or state tenures may inhibit traditional owners' access, compounding other barriers to ready and secure access. Research to date and data currently available to COAG to monitor Aboriginal and Torres Strait Islander access to country does not allow the relative impact of these different kinds of factors to be appreciated. This limits capacity to design policy and interventions that will help address disadvantage by supporting improved access to country. Access to country also generates demand for research because observation, such as changes in environmental conditions and depletion of valued resources, and active engagement in management of country leads people to inquiry. It generates a demand for knowledge to help solve problems that are observed or encountered.

11.2.3 Sustainability of Aboriginal resource use

Adjacent to settlements on Aboriginal-owned lands, valued resources — animals and plants used for food, firewood and timbers and other bush resources for artefact and arts and crafts manufacture — are typically depleted. Cane and Stanley (1985) estimated that bush foods comprised 10–50 per cent of the diet of people living at homelands/outstations on desert Aboriginal lands, depending on location, and they observed that some foods are harvested 'vigorously' (p185). They foreshadowed

that some natural resources will become progressively depleted further and further from these small settlements. Walsh (1992, 1996) highlights the importance of contemporary mobility and customary social controls for sustainable resource use in the desert environment.

Depletion of some resources may be widespread. For example, consultations with Anangu over the past decade about land management issues on the APY lands have consistently recorded that Anangu consider that kangaroo and emu populations are declining (South Australian Centre for Economic Studies 1994; Breckwoldt et al. 1996; AP Land Management 1997; ABC 1997; Anangu Pitjantjatjara Regional Wildlife Management 2002; Robinson et al. 2003). The only quantitative survey of kangaroo populations undertaken (up to August 2004) was done by South Australia's Department for Environment and Heritage in 1995. It used the same methods as for the annual survey of kangaroo populations in pastoral regions and found red kangaroo populations on the APY lands to be one sixth the density as those adjoining pastoral leases (Last c. 1997). This was a limited survey but, even if substantial error factors are taken into account in interpreting its findings, it does broadly confirm what Anangu are saying — that there are far less kangaroos on the APY lands than there ought to be. A number of factors contribute to explaining this, including the nature and productivity of ecosystems, altered fire regimes, high hunting pressure — at least in some areas — and the erosion of social controls on hunting. Compared to adjoining pastoral leases, the APY lands also have a comparatively low density of permanent water points and high density of feral grazing animals and predators. APY Land Management's Kuka Kanyini framework is an integrated approach being implemented to address these issues and others (see Box 13).

The management plan for the Ngaanyatjarra Lands Indigenous Protected Area (Noble 2002) identifies 'intensive resource use zones' of 50 kilometres radius around eight major settlements in or adjacent to the IPA — the places where the large majority of Ngaanyatjarra Council members live. These zones were identified as a result of Ngaanyatjarra people's interest in sustainability of resource use, and observations that use is more intensive around settlements.

While these zones are delineated on paper, there has been no quantification of the nature and extent of the resources in these zones or issues of depletion, and no study of what this means for long-term sustainability of Aboriginal resource use. There is no robust information to address the question of what will be useful in the long term for management of areas that are subject to intensive resource use.

This question itself raises other questions for people I consulted for this project:

> *'Which people are harvesting resources in these areas, at what rate, how, when and why? How does harvesting and use of fire relate to resource availability? What factors affect people's decisions about where they harvest? And how can these things be investigated in innovative ways that are accessible to local Indigenous people and provide them with better information to support their long term management?'*

In current DKCRC research, questions of resource sustainability are being considered as part of the bush harvest component of Bush Produce Systems research. An initial impetus for this research was the concern of bush food product manufacturers and consumers that commercial wild harvest of bush foods be ecologically sustainable. It is unlikely that current harvest levels present any risk for ecological sustainability, but social dimensions of sustainability are an important dimension for the research if it is to support stronger livelihoods for desert Aboriginal people. Understanding about ecological sustainability that comes from the research may also prove to be important to ensuring harvests continue to be sustainable should demand increase significantly (Walsh & Jones 2005).

11.3 Ecological processes

11.3.1 Fire and its management

Fire management on Aboriginal lands has attracted a comparatively large amount of research interest. It is also a significant issue for Aboriginal people. For Aboriginal land management organisations, fire management is an underpinning and structuring issue for many of their other activities.

There is widespread concern among Aboriginal people that current fire management practices are causing damage to the country. The fundamental issue relates to the now well documented situation where the fine-grained habitat mosaic maintained in desert regions 50–100 years ago by routine Aboriginal patch-burning practices was lost when Aboriginal people moved or were moved to settlements, with a consequent increase in vast and often intense wildfires when seasonal conditions produce high fuel loads (Griffin & Allan 1986; Kimber & Smith 1987; Latz & Green 1995; McAlpin 2001; Burrows et al. 2004). Buffel grass, where well established, adds to these concerns. For example, its high fuel loads and its habit of growing up against tree trunks puts trees at greater risk of being killed by fires.

People I consulted for this project are concerned at the change in fire patterns:

> *'People only burnt small areas when we were kids. Burning now is done the wrong way.'*

This concern extends to the places where fires are lit, the time of year, etc:

> *'What is the long-term damage? People say that traditional owners are asking how to stop areas being burnt.'*

Aboriginal 'patch burning' happens today on Aboriginal lands, as part of land management projects and routinely by Aboriginal people lighting fires for various reasons. Because the pattern of human use is different to what it was historically, so is the pattern of fire. For example, most fires today are lit along roads. Some places are burnt very frequently. Places remote from roads tend to burn only in large wild fires — there is no patch burning there to create a mosaic of different habitats and fuel loads. People I consulted for this project commented:

> *'Two tjilpis do most of the burning, mostly on roads. Young people also light fires and tend to burn the same areas all the time.'*

> *'Cultural patterns for burning have been taken over by other things such as people breaking down on the road and starting a fire to attract attention. Some people are very angry about how burning is now being done. How does a culture deal with that?'*

Current fire management action by Aboriginal land management organisations is particularly directed at habitat management for threatened species, in association with broader management projects for these species. These organisations do not have the infrastructure and capacity (e.g. vehicles, access roads) to patch burn extensive areas. APY Land Management has been working on a strategic approach to fire management throughout their area of responsibility in northwest South Australia, starting the development of a draft regional fire management plan in 2003 (Yates & Morse 2003). In this case, the immediate trigger was that the legal framework for protecting native vegetation in South Australia constrains traditional Aboriginal patch burning because of the way it includes burning in its definition of clearance of native vegetation. APY has had to convince the Native Vegetation Council, which is constituted primarily to protect native vegetation remnants in southern South Australia, that its approach to fire management supports rather than

inhibits conservation of native vegetation. This situation raises the broader question of how blanket application of legislation and other institutions developed for people and lands outside desert Australia constrains effective management of desert lands by desert people (see also Hughes 1995).

Significant research questions about the ecology of fire on Aboriginal lands raised in development of the DKCRC Desert Fire project (2003) include:

- Is seasonality of fire (by affecting patchiness) important to the presence of small mammals and reptiles?
- How big are the patches that we should be leaving behind, or burning?
- What is the fire regime we should be trying to promote? What fire regimes really work?

As with other action in the Aboriginal land management arena, the approach 'needs to be *cultural* natural resource management. There needs to be a social, cultural and economic approach to land and particularly fire management' (Nic Gambold [CLC], in DKCRC Desert Fire Project 2003).

For non-Aboriginal agencies and researchers, an overall question is:

- How can we best supply knowledge to Aboriginal people? What tools would be best, how are they delivered? (DKCRC Desert Fire Project 2003)

Forthcoming research outputs from the DKCRC Desert Fire project address some of these issues.

11.3.2 Wildlife population dynamics and management

Action by Aboriginal land management organisations over the past decade to protect nationally threatened species is generating questions for research on wildlife population dynamics. Fox baiting is used as a strategy to protect populations of threatened species from predation. People I consulted for this project raised issues about the ecological context and consequences of this effort and whether it is well targeted:

> *'The Black-footed Rock Wallaby colony has been baited several times and is now undergoing a population increase. But what part of this is due to decreased hunting pressure? The traditional owner for the area is usually quite clear not to allow hunting. He discourages hunting there. And what part of the population increase is due to recent fire, what part to recent good seasons?'*

Other questions raised by people I consulted for this project include: What are the dynamics of fox, dingo and camp dog populations and their impacts on other species? What is the natural balance in population level for dingos? To what extent does the baiting disrupt dingos' social system, leading to more aggressive behaviour and increased predation? How can we do selective baiting for cats? And what will happen to the fox population when you remove cats?

People I consulted for this project also raised questions about effective technologies for the desert environment:

> *'At rockholes, what sort of covers can work to deter donkeys, camels, horses, but not kangaroo, emus, birds? What is the impact on camels and other animals from blocking their access to waterholes? Do you need to provide trough water for animals?'*

> *'What is the best fencing method for tjakura (Giant Desert Skink)? Can we realistically keep camels out to stop the tjakura habitat being trampled? Do camels actually cause problems for tjakura? We think the problems manifest in really dry times, but fencing at tjakura sites can cause problems if camels get through and are trapped inside the fence.'*

Innovative design and engineering by staff of Aboriginal organisations is addressing some of the technological issues in some places.

11.3.3 Regeneration

Regeneration and sustainability of valued resources is a broad issue of concern underpinning much of the action of Aboriginal land management organisations. In the course of consultations for this project, one specific issue raised was regeneration of Iga trees (native orange, *Capparis mitchellii*) in the northern Flinders Ranges. The tree is a totem and a valued food for Adnyamathanha people and gives its name to the Couthard family's cultural tourism enterprise of Iga Warta. People at Iga Warta have observed that there has been no regeneration in the eight years that Iga Warta has been established. They think this might be linked to fire, seasonal conditions, goats and other feral animals, or cattle grazing. They are keen to have some research attention to the problem.

11.3.4 Buffel grass

Desert Knowledge CRC research (Friedel et al. 2006) has found that 'buffel grass is now a significant environmental weed of the arid conservation estate' and modelling suggests that it has the capacity to expand across a large proportion of desert regions. Aboriginal people have the same kind of range of views about buffel grass as non-Aboriginal people. It is a weed for some people, and it is valued in some situations such as for its role in suppressing dust around Aboriginal settlements.

Some people I consulted in this project are concerned about the prevalence and spread of buffel grass because of displacement of native plants and the change to more intense and frequent fires supported by buffel fuel loads with consequent impacts on survival and recruitment of trees and shrubs.

> *'Buffel is not so much a problem here as it is where there are big watercourses. But there is buffel all around the community, and if it is not sorted within the community it will become a broader problem.'*

In the eastern APY lands, where buffel was widely planted for dust control in the 1980s, some people I consulted in this project now see it as a problem because they want to develop market gardens and horticulture, but first need to find a way to get rid of the buffel.

> *'Buffel grass is a problem for native revegetation and anything you want to do with land. The river red gum regrowth is stunted due to buffel. Just here is where buffel planting for revegetation and dust control started and the buffel is shocking now.'*

Some people I consulted in this project said they do not trust herbicides to control buffel:

> *'Herbicide won't get rid of buffel and causes problems — toxicity in soil, health and we don't like the idea of using it. Pesticides are not healthy for people and add to health problems. People here have all kinds of health problems and they don't want new things that will make that worse.'*

> *'People here are not comfortable with spraying and prefer traditional methods, such as burning.'*

People I consulted for this project described local experiments for buffel control:

> *'Cattle could be a way of controlling buffel — it won't get rid of it but will graze it down to low height. We can rotate grazing through paddocks to control buffel. Other things will get a chance to grow if the buffel is grazed down.'*

> *'The old people have been looking at how to control buffel here using similar methods to how they control kangaroo grass on the watercourses. They suggest that fire is good management for buffel. Burn it, then burn it again soon after. This will control buffel but won't get rid of it. '*

Research and communication about weeds and their management need to encompass Aboriginal perspectives. People I consulted for this project said that NRM agencies lack good information about weeds on Aboriginal lands and the capacity and ability of Aboriginal landholders for weed management. Projects that address weed issues across tenures are important in addressing this, such as a current Centralian Land Management Association project northeast of Alice Springs.

11.4 Natural resource enterprise activity

The major commercial activities and enterprises that desert Aboriginal people are developing or want to develop on country, and that were identified by people I consulted for this project, are camels, native plant harvesting for use in food and cosmetic products, and livestock grazing. These are discussed below.

Arts and crafts is currently the most significant industry that draws on desert traditional knowledge and customary activities for market engagement. Nature- and culture-based tourism is another industry sector with some innovative Aboriginal engagement in desert Australia (e.g. Iga Warta in the Flinders Ranges). There is strong market potential for more Aboriginal involvement in the tourism industry and there are a range of views from Aboriginal people about the costs and benefits involved. However, these issues were not addressed in consultations for this project.

11.4.1 Native animals

People I consulted for this project did not express interest in commercial uses of native animals, in contrast to the active involvement of northern Australian Aboriginal groups in this emerging industry sector. In part, this is a function of low and dispersed animal populations in arid regions limiting opportunities for sustainable harvest. It also reflects the limits of the consultations for this project.

Desert Aboriginal people were strongly involved in the emu industry when it was first being developed and some retain an interest though the failure of the industry to develop as forecast caused a lot of local disappointment, such as at Ceduna. Farming to increase wild emu populations and to substitute for imported meats is one of the ideas being considered in APY's Kuka Kanyini wildlife management strategy (see Box 13).

Opportunities exist for stronger Aboriginal engagement in the commercial kangaroo industry which currently has little or no Aboriginal involvement at any level. Consultations in South Australia in 2003/04 found that Adnyamathanha people in the Flinders Ranges have a clear interest in being involved in the industry through enterprise and participation in decision making. There is a small niche market for whole-carcass kangaroo among Aboriginal people in towns, particularly Port Augusta, and one Aboriginal harvester is working to set up a business to meet this demand. In Western Desert cultural regions (approximately north of Coober Pedy), authoritative senior men are very offended by the kangaroo industry's harvesting practices because these practices treat red kangaroo very differently to what is prescribed in their customary law. This limits the potential for Aboriginal people from that region to be involved in kangaroo harvest enterprises, though they still do very much want to be involved in decision making about kangaroo management (Thomsen et al. 2006).

In southwest South Australia, some Aboriginal landowners have had a longstanding interest in the commercial harvest of southern hairy-nosed wombats for a small niche market in the Aboriginal community and potentially for restaurants (Davies 1999). Planning, policy and legal changes that

are needed to develop this opportunity need to be informed by a robust population model. The work of Ostendorf et al. (2002), which contributes to the development of such a model, shows a 300 per cent increase in warren density in some areas between 1995 and 2002.

11.4.2 Camels

Camels tend to be seen by Aboriginal people as a resource rather than as a threat to biodiversity, a pest, or a feral animal problem, as they are generally seen by ecologists. People I consulted for this project said:

> *'For the community they are not a problem until they foul rockholes ... people are scared of camels, of what they will do, but they regard them with affection, at least the herds they know.'*

Removing dead or dying camels stuck in rockholes is often part of Aboriginal people's work in cleaning rockholes. And designing and constructing fences to effectively exclude camels from these natural water sources is a significant technical challenge for Aboriginal land managers. Camels can also cause problems for remote Aboriginal people when they congregate around homelands looking for water, and some Aboriginal people are concerned about their impact on quandong trees, a food source in demand by both people and camels.

However, most Aboriginal interest in camels is in mustering and selling camels to generate income. People I consulted for this project say that the mustering works through local Aboriginal people's skills and knowledge — 'knowing the country and knowing where the camels are' — and through old people at rockholes who 'see the camels and report their movements'.

Sales of camels to date have been to live export markets via the Central Australian Camel Association. Weak markets are a significant limitation to developing this enterprise effort. It is much easier to capture camels than it is to sell them. Transport options limit live export sales. People I consulted for this project say the main research need is markets — 'anything to help with markets'. Understanding more about camel population dynamics and the impact of harvesting were other research questions raised.

From involvement in mustering, some Aboriginal people develop deeper understanding of the management options for camels, including an appreciation that some camels need to be culled. Such experiences show how land management activities promote observation, problem solving and innovation. This contributes to the benefits of land management for health and wellbeing of people and country.

An NHT-funded camel project managed by DKCRC began in 2006 to support local initiatives in camel management and build capacity for coordinated action across tenures and state borders in central Australia.

11.4.3 Native plants

There is widespread interest from desert Aboriginal people in the possibilities for enterprises based on native plants — producing essential oils, cosmetics, pharmaceuticals and bush foods. Some people I consulted in this project also have broader objectives for rebuilding 'an economy around bush tucker and those things that uphold bush tucker and knowledge of bush tucker'. From this perspective, non-market engagement of Aboriginal people in harvesting plants is as important as market engagement.

Wild harvest of species in commercial demand is undertaken in some places, with most active engagement by Aboriginal harvesters from areas to the north of Alice Springs (Morse 2005). The cost of harvesting is high when resources are not abundant and easily accessible. People I consulted for this project say that in these situations:

'Picking is a good day out when funded from somewhere else, rather than a business.'

Aboriginal commercial interest in bush foods may be part of a broader suite of activities, particularly tourism — tourists picking their own bush foods, and bush food ingredients being used in food prepared for tourists.

People I consulted for this project are interested in how horticulture can be used to supplement wild harvest for local consumption and for use in tourism. The DKCRC Bush Produce project has identified that horticulture is also important to the development of the central Australian bush produce industry because it can even out seasonal peaks and troughs in supply of wild-harvested bush foods.

Horticulture draws less on traditional knowledge and skills than wild harvest. It relies on water resources and effective infrastructure and support services, which can be problematic in remote settlements. Trials of native plant horticulture are underway in some Aboriginal settlements. These include several commercial trials (e.g. Mimili in the APY lands, Nepabunna and Yapala in the Flinders Ranges) involving Reedy Creek Nursery (Outback Pride brand) and the Indigenous Land Corporation; CSIRO research trials in southern Australia led by Maarten Ryder; and DKCRC horticultural research on bush tomatoes in Alice Springs.

People I consulted in this project say that desert Aboriginal people often are not very interested in working in horticulture, and that there can be problems in getting people to do the hard work of harvesting horticultural produce within critical time constraints. They also said better knowledge of water supplies is critical for planning horticulture. Other research needs identified by people I consulted for this project are best practice models that optimise benefit to Aboriginal people from native plant horticulture, given the industry reliance on biotic resources that Aboriginal people widely see as part of their intellectual and cultural property.

Desert Knowledge CRC research projects in commercial use of native plants have a goal of supporting stronger livelihoods for desert Aboriginal people. There is high demand from Aboriginal people for this kind of research approach.

11.4.4 Livestock grazing

Aboriginal-owned freehold lands tend to be marginal for livestock production, and infrastructure is very often poorly developed and run down. In desert regions, large-scale operations are needed to get an economic return from pastoralism, and Aboriginal people are often not interested in such intensive industry involvement. Expectations among Aboriginal people that cattle enterprise will give an economic return for a large number of people are misplaced — most properties in desert Australia are small family operations that do not support a lot of people. Management requirements for effective participation in the contemporary industry are complex, in relation to governance of enterprises, market specifications, and broader community expectations for sustainable NRM.

Research about Aboriginal pastoralism has been directed to illustrating these complexities and to developing tools to support Aboriginal pastoral operations through more effective governance and production management (see for example Young 1995; Tilmouth & Mitchell 1998; Phillpot 2001; Walsh & Mitchell 2002). In addition, Aboriginal pastoralists have requirements from customary law to be accountable to cultural requirements for sustainable management, including accounting

for the decision-making role of traditional owners and protecting culturally important resources and places. Like other activities on Aboriginal land, pastoral enterprises are set inside a social context of control and responsibility.

There is widespread demand from Aboriginal land owners to re-establish cattle. Often their land has a history of use for cattle grazing but has more recently been destocked, either during the brucellosis and tuberculosis eradication campaign of the 1980s or at the time of purchase and transfer to Aboriginal ownership. Demand is particularly coming from older Aboriginal community members; some other people note with concern how little evidence there is of younger people's interest or involvement in the re-establishment of pastoral uses.

Demand to re-establish pastoralism is also coming from the industry itself pursuing opportunities for agistment grazing on Aboriginal-owned lands and from agencies who seek to support Aboriginal people to realise the economic production value of their lands. In the Northern Territory, re-establishment of livestock production on Aboriginal freehold lands is being supported by the Indigenous Land Corporation and a partnership between the Northern Territory Department of Primary Industries, Fisheries and Mines; and Central and Northern Land Councils. Agistment grazing is included in this approach as a strategy to secure start-up contributions and an income flow from the private sector that can support re-establishment of Aboriginal-owned cattle operations. It also aims to develop livestock management skills in younger Aboriginal people, equipping them for stock work opportunities both on and off Aboriginal-owned lands.

In the eastern APY lands, agistment grazing is widespread and is mostly being negotiated locally between pastoral operators, Aboriginal entrepreneurs and homeland/outstation groups. Local negotiations have meant that the transaction costs involved in getting formal permission and a lease or licence through the landholding body are avoided. There are also considerable risks for sustainability as there have been very weak checks and balances to make sure grazing does not lead to land degradation. The risk is that the short-term flow of benefits (in cash, cattle and fencing) to traditional owners and other people from the agistment arrangements will be accompanied by a long-term legacy of degraded natural and cultural resources. The situation has been of concern to various people I consulted in this project.

People I consulted in this project raised a number of research questions about livestock grazing on Aboriginal lands. These include:

- How do local people see the country in relation to cattle production (and other concurrent activities)? What are their indicators of the health of country? How can Aboriginal people's indicators for the health of country be monitored?
- Do local people want meat or money? If they want meat, does managing the country for meat necessarily mean cattle? If the option was to go with less cattle and get more kangaroos, would people like that? More kangaroos would bring more meat to people. But kangaroos like creek country with short grass and there are more kangaroos where there are cattle from the water and short grass.
- What is the relationship between traditional owners and their interests and the cattle operations? Some Aboriginal people might want cattle, but where do traditional owner interests lie?
- Can production be increased in key areas on Aboriginal-owned properties by augmenting resources, such as by establishing irrigated growing of saltbush for grazing by young steers?

The question of resource augmentation, by growing supplementary fodder plants, is of concern to those (relatively few) Aboriginal people who have small cattle operations and are restricted by tenure issues or other constraints from getting access to additional lands.

Research that explores how pastoralism can play a role in supporting other non-pastoral objectives of Aboriginal land managers is important for informing how Aboriginal lands can be effectively managed for multiple uses. For example, is Aboriginal people's access to country and harvestable resources improved through well managed pastoral operations, given that these can result in better road maintenance and more water sources? Understanding interactions between pastoral use, Aboriginal uses and values, and biodiversity and other public good outcomes is important for pastoral lease management (see Chappel & Maconachie 2004) as well as for promoting flow of ecosystem and cultural services from those Aboriginal-held lands that are used for pastoralism.

11.5 Managing country together

11.5.1 Contrasting values and objectives

Aboriginal people and organisations are involved in a range of collaborative arrangements with scientists and government agencies for resourcing their work on country. These range from grant funding under various Natural Heritage Trust programs to negotiating and implementing joint management for protected areas. People I consulted for this project say they work really hard to make sure these kinds of externally funded projects are done in a way that meets the expectations of the funding bodies because their future capacity to secure ongoing operational funding depends on this. Nevertheless, these externally funded projects are directed at outcomes that are qualitatively different to the holistic orientation on health and wellbeing of country and people that is important to Aboriginal people. People I consulted for this project say:

> *'Here, land is managed for the people who live here, and biodiversity is extra or additional. There may be a synergy with those kind of environmental considerations, but the primary aim is looking after country because that is where people live and want to live: managing country for people.'*

> *'We often talk about land management and NRM ... For [non-Aboriginal people] it is about protecting plants and animals. It is quite a different thing for Aboriginal people, and I don't think we understand that very well and that must frustrate Aboriginal people because of their expectations ... foods, being able to stay on their country, being able to pass knowledge to their kids. We are coming from two different definitions and I don't think we handle that very well.'*

A prime example of contrasting values and management objectives is provided by current work on Aboriginal lands in management of threatened species. Despite the importance that Aboriginal land management agencies place on threatened species conservation, threatened species do not have the same inherent management priority for desert Aboriginal people that they do for ecological scientists and for public investment. As noted above, species that desert Aboriginal people may see as threatened, such as kangaroos and emus, are very common in other parts of Australia, so they do not attract the attention of scientists and funding bodies. However, funding is available for conservation projects for nationally listed threatened species, and this provides an incentive for Aboriginal organisations and people to work on their conservation. One informed view of these projects from people I consulted for this project is that:

> *'The threatened species issues are not meaningful to local people. They don't know why these species are important to others because they don't see them as so important ... Even with bilbies, they say that cats taste better, while foxes are regarded as a medicine food.'*

This quote gives a partial perspective and does not attempt to encapsulate all the relevant issues. Threatened species do have cultural and spiritual significance to desert Aboriginal people, sometimes very high. This significance motivates elders to seek reintroduction of those species that are now regionally extinct. However, the quote does serve to highlight that desert Aboriginal people value animals differently to most conservationists and scientifically trained wildlife managers.

For Aboriginal people, animals are valued as food, as well as for their intrinsic significance. Aboriginal people do not make the same distinction between feral and native species in ascribing value to animals that ecological scientists and conservationists make (see Nugent 1988; Rose 1995; Bowman & Robinson 2002; Robinson & Whitehead 2003). Some desert feral animals are valued by Aboriginal people for food (notably cats) or for sale (e.g. camels; see Section 11.4.2). All tend to be seen as having a place on country.

Aboriginal people are well aware that some feral animals are degrading resources that are important to them (e.g. camels drowning in water holes or knocking over water tanks). In these situations, feral animals are a problem for Aboriginal people, but the problem is because of their behaviour and specific impacts in these kinds of situations, not simply because they are feral animals. Different values towards feral animals lead to desert Aboriginal people having different objectives for their management to those of conservationists. Generally, scientifically trained NRM managers and conservationists want to reduce the size of feral animal populations whereas desert Aboriginal people want to 'make more use of feral animals'.

In the case of threatened species, scientific and conservationist interest has brought new considerations that Aboriginal people are factoring in to their management. As Nesbitt et al. (2001, p. 196) explain about Anangu involvement in the biological survey in the APY lands (see Box 9): 'Once Anangu became aware that particular species are under threat, some groups expressed a strong desire to conserve and protect the species'.

Aboriginal people's knowledge and skills are a foundation of current research and action by scientists, conservationists and Aboriginal organisations to address threats to priority threatened species in desert regions. People I consulted in this project say that as a result of this work:

> *'Community awareness about the species has been raised so educationally there has been huge benefit ... The value of threatened species has been raised within the community, and the recognition of the community people involved with this.'*

People I consulted in this project also comment that the strong emphasis on threatened species in the on-ground work of Aboriginal land management organisations, which is driven by availability of funding, is leading to changes in how desert Aboriginal people see 'land management':

> *'Local people now recognise "land management" as looking for threatened species. This is a change, but is it a useful change?'*

Social science considers that this process of 'structuration', where human-created institutions change human values, behaviours, and identity, is universal (Giddens 1984). Aboriginal people can also be active agents in shaping the 'mainstream' institutions through which land management priorities are set and funded, if those institutions are structured in ways that allow their voices to be heard. For example, this happened in South Australia in the process that led to the Strategy for Aboriginal Managed Lands in South Australia (SAMLISA Steering Committee 2000; Chester & Last 2002) and the formation in 2004/05 of the Alinytjara Wilurara NRM Board as the regional

NRM body for the western third of the state. As a result, Aboriginal priorities for recording and transmitting traditional knowledge and protecting culturally important values and places are embedded in the planning for NRM programs in that region.

As a consequence of power imbalances, structuration rarely happens equitably for Aboriginal and Torres Strait Islander people. Most of the experience of Aboriginal and Torres Strait Islander people is of non-Aboriginal and Torres Strait Islander institutions changing or seeking to change their values, behaviours and identity. A fundamental concern raised by people I consulted for this project is whether mainstream NRM and land management institutions change through their engagement with Aboriginal people. How can change be promoted so that the interactions are equitable and mutually beneficial?

These questions are important to Aboriginal people on pastoral lands as well as Aboriginal lands. On pastoral lands these questions are getting some attention in regional NRM research and engagement processes. For example, the Lake Eyre Basin Coordinating Committee held its first Aboriginal forum in 2004; the Murray-Darling Basin Commission is actively seeking the involvement of Aboriginal nations in restoration and management of the river system for the first time; while in South Australia, effective participation by native title holders in government decision making for NRM is a concern for the Statewide Native Title negotiations and Indigenous Land Use Agreement process (Agius et al. 2003, 2004).

11.5.2 Joint management of protected areas

Joint management of protected areas is another sphere where there is a vast difference between Aboriginal people's management objectives and those of the people they work with — government protected area managers. Critical questions raised by people I consulted in this project include:

> *'What do the two joint management parties want? What do they understand about each other's objectives for land? [People here] have very poorly developed understandings of what [the agency] might want from joint management, and the situation is probably mutual. What do the other side mean? Want do we mean? For example, when they say 'training' they probably mean a course in town. They certainly mean training about whitefella ways. We mean training young people on country.'*

> *'[People here] tend to see everything in cultural terms, but this tends to be ignored. It's not part of that joint management equation – there's no melding. This is a big issue ... [Older people here] are hoping to get something from the joint management process that is meaningful to them. But the management regimes proposed are giving power to younger people, people who can do the ranger-type jobs ... the old men worry about what the young ones are going to learn.'*

There is interest and goodwill from conservation agencies in learning about and addressing Aboriginal objectives and priorities for management of country, but it can be hard for them to do so. For example, people I consulted for this project pointed out:

> *'Scientists want to have management based on the cultural geography but don't know how to or are scared to transgress or be disrespectful.'*

So a fundamental question is how responsive are joint management institutions to the objectives and cultures of both traditional owners and conservation agencies. This is something that longstanding joint management institutions at Uluru–Kata Tjuta and Kakadu National Parks continue to grapple with. The challenges are becoming much more widespread now as governments and Aboriginal people in the Northern Territory, Western Australia and South Australia are all establishing new joint management regimes for desert protected areas.

Issues raised by people I consulted for this project concern the development of effective equitable partnerships in joint managed situations:

> *'It's not "joint" now because what will be managed jointly is not defined. It has a long way to go to be understood by the people themselves ... understanding what the rhetoric means.'*
>
> *'Traditional owners tend to see everything in cultural terms, but this tends to be ignored, not part of that joint management equation and can't get a melding. This is a big issue.'*
>
> *'How can a partnership be effective? It needs to involve more than just funding from the agency to this organisation to manage the country, and more than just traditional owners doing what they see as important to their way of managing country. It needs to be value adding to what traditional owners do through skills, networks and linkages.'*

The significant issue here, and in much broader contexts than joint management or even land management, is 'understanding the rationale of why we, each other, are doing things'.

> *'There has to be an understanding on both sides – this issue also flows through into mining agreements and service delivery.'*

Addressing this issue is integral to the design of monitoring and evaluation frameworks for joint managed parks and for other situations where Aboriginal landowners are collaborating with others in 'working on country'. In designing research that might help to address these issues, it is particularly important to build understanding among Aboriginal land managers of non-Aboriginal institutions, values and behaviours. Research typically works the other way, revealing Aboriginal people's institutions and values for non-Aboriginal audiences. As people I consulted for this project commented:

> *'Research on whitefellas by local Aboriginal people would help them understand what we are getting at.'*

Without such understanding, partnerships — and associated notions of shared responsibility or mutual obligation — can have no basis of meaning.

11.5.3 Monitoring and evaluation

Monitoring and evaluation is an important area for building capacity. If Aboriginal land managers are to engage effectively in emerging markets for ecosystem and cultural services (see Section 11.1.2), investors need to have confidence that the outcomes from Aboriginal land management are what they are claimed to be. As also discussed above (Section 11.5.1), Aboriginal land managers' objectives for joint managed parks can be quite different to those of others such as NRM funding agencies and governments. If investments, partnerships and collaborations involving Aboriginal land managers are to be robust and sustainable, it is important to develop participatory monitoring and evaluation systems that encompass indicators appropriate to the outcomes that each party is seeking. This is an area where there has been limited work to date (but see Nazarea et al. 1998; Smyth & Beeron 2004). Research partnerships have potential to play a valuable role in developing effective systems.

Effective systems need to give investors (whether governments or companies) security and confidence that they are getting value for the money they invest in the production of ecosystem services by landowners, and they need to minimise the cost (including time and money) of transactions between landowners and investors. Monitoring by landholders is important for them to be able to show investors what their management is producing and build investors' confidence in their management.

11.6 Networks

11.6.1 Desert networks for management of country

People I consulted in this project raised the issue of cross-border issues, networks and linkages among Aboriginal landholders — particularly how to get stronger Aboriginal networks up and running. Stronger linkages than exist at present are important to support organisation and community learning about effective approaches to issues, sharing of knowledge and expertise, and developing capability for sustainable land management.

Aboriginal land managers in the APY lands, Ngaanyatjarra Lands of Western Australia and the Northern Territory are addressing similar issues and some draw from very similar foundations in Aboriginal culture, tradition and kinship. However, there is no formal network linking the Aboriginal land management organisations in these regions — CLC, APYLM and Ngaanyatjarra Land Management Unit — and little informal networking.

Rodney Edwards of Ngaanyatjarra Land Management Unit comments:

> *'There is a big need for better networks – e.g. CLC has been around a long time and Ngaanyatjarra LMU could learn a lot from them. Also we may be able to avoid some duplication in services. DKCRC is a cross-border agency with cross-border linkages. More of these kind of linkages would be helpful. Land Council boundaries are in effect the same thing as state borders – there is little communication flow across them. For Ngaanyatjarra, stronger networks with Goldfields Land Council and Yamatji Land and Sea Council could also be valuable.'*

The similarities in the work that Aboriginal land managers in different states are doing in threatened species conservation and Indigenous Protected Area management means they all interact with some of the same funding bodies. This has generated some opportunities for them to interact at meetings.

For example, in 2003 the Threatened Species Network (TSN) organised for Aboriginal threatened species managers from various desert regions to meet in Dryandra, Western Australia. Activities included use of Palm Pilot™ data logging systems, or Cybertrackers. Icon-based data entry has since been further developed by Joe Benshemesh and the devices are being used in various projects on Aboriginal lands in the desert region. At the Dryandra meeting, the people involved said they want to meet more often, and have a common badge between ranger services (Colleen O'Malley [TSN], pers. comm.). People I consulted in this project said that some Aboriginal land managers also want to have their own capacity for managing data, rather than being the means through which data about threatened species is collected for scientists and funding bodies to manage.

As well as commonalities in the issues and land management activities among Aboriginal groups, it is important to recognise differences and diversity. Aboriginal organisations involved in land management in WA, SA and NT are structured differently, reflecting differences in their legislative and other responsibilities, size, resources and associated capacity. They organise their land management activities in different ways.

For example, at Yuendumu and Lajamanu in the Tanami region, CLC has supported local Aboriginal organisations to develop ranger programs, training and employing teams of local people in natural and cultural resource management. Their work includes contract weed management for Newmont's Tanami mines, development of collaborative management with Birds Australia for Newhaven Gap bird sanctuary, a biological survey in association with Newmont, and a feasibility study for the management of the Tanami Region as an Indigenous Protected Area.

In the APY Lands and the Ngaanyatjarra Lands, the land management organisations have been much less focused on establishment of ranger groups. Staff, who include some respected traditional owners and scientifically trained professionals, work to priorities that have emerged from their planning, engaging other traditional owners and community members in various ways depending on the nature of the project and funding source. The two Indigenous Protected Areas in the APY lands — Walalkara and Watarru — have been the location of much of APYLM's work in recent years, working closely with traditional owners for those areas. The organisation has been building capacity to work more broadly and is extending its services to other parts of the APY lands.

11.6.2 Comparison with northern coastal Australia

Nic Gambold of CLC Land Management observes that, compared to northern Australia, Aboriginal land management has been slow to emerge in Central Australia. 'Support has been limited and discrete. Few formal structures exist and most community-based Aboriginal land management "programs" are little more than a series of disjunct land-based projects. In this context there have been few opportunities for training, capacity building or the development of impetus within or between communities' (in Davies 2004).

Factors that seem to have been important in the development of strong NRM capacity among Aboriginal people in several places in northern Australia — Kowanyama, Dhimurru and Bawinanga — include leadership; culturally sanctioned authority; staff continuity; wide and strong networks with scientists, government and others; strategic planning and evaluation; a willingness and capacity to commit funds from community sources to NRM priorities; and a capacity to generate some earned income (Davies et al. 1997, Davies et al. 1999; and see Robinson & Munungguritj 2001, Altman & Cochrane 2003). Research, education and training have all played important roles in supporting the development of capacity for Aboriginal land and sea management in northern Australia. Action on issues that affect a number of local groups — such as dugong and turtle management and response to weed threats, particularly *Mimosa pigra* — has contributed to development of regional networks.

In the savannah and tropical regions of Australia, the North Australia Indigenous Land and Sea Management Alliance (NAILSMA) has been developed by Aboriginal organisations over the last few years, with grassroots involvement from many Aboriginal land managers. It is a developing network of Aboriginal groups, organisations and communities involved in land and sea management. NAILSMA also coordinates Aboriginal land and sea management projects that are relevant across the region. The Tropical Savannas CRC provided core support to NAILSMA, funding a coordinator since 2003. NAILSMA expanded its activities through a project funded by NHT and LWA and in late 2004 was managing a $1 million budget with four staff in three projects, and anticipating that upcoming projects would increase its project budget to $5 million. As well as managing externally funded projects, NAILSMA offers flexible scholarship support to Aboriginal land and sea managers from northern Australia for participation in workshops and other training and capacity building opportunities (Joe Morrison [NAILSMA Coordinator] 2004, pers. comm., October).

NAILSMA is 'essentially an alliance based on supporting customary land and sea management' (Armstrong et al. 2004, p. 15). It is working to facilitate a proactive approach to accessing new economic opportunities and developing capacity for regional coordination and strategic planning. Its governance involves representatives from the three major north Australian land councils; the Indigenous Land Corporation; the NT Government Department of Infrastructure, Planning and Environment; the Tropical Savannas CRC; and the NAILSMA coordinator (Armstrong et al. 2004).

11.6.3 Developing desert networks

Many factors undoubtedly contribute to Aboriginal NRM capacity developing faster in northern Australia than it has in deserts. These include differences in biophysical and cultural geography. In central Australia, it is important that opportunities for engaging Aboriginal organisations and people in research also contribute to strengthening Aboriginal land management capacity at local and regional levels. Immediate tangible ways for this to happen are by research organisations such as DKCRC and CSIRO contributing support for initiatives from Aboriginal people and organisations for meetings of Aboriginal land managers on common issues, such as the 1st National Indigenous Land and Sea Management Conference, hosted by CLC in April 2005. Such meetings give Aboriginal people a chance to extend networks and discuss common issues. Exchange visits between groups from different places who have common interests also build effective learning.

12. Engagement

12.1 Communication

The diversity of languages in central Australia is an important consideration in communication during research and about research findings. People I consulted in this project indicated that research needs include the effectiveness of communication processes in multilingual contexts, and how concepts are understood and articulated between languages. Engaging linguists and interpreters as part of research projects is critical for effective communication with Aboriginal people in much of desert Australia.

People I consulted in this project said there should not be any research without effective communication of the research. Aboriginal organisations and research organisations such as universities and CSIRO use different pathways to communicate about their research.

Research organisations and their staff need peer review and publication of research, preferably in 'high impact' journals — those that are targeted and read by others in the research community. This kind of publication is built into their performance measures. Reporting to research funders is also important. These reports are typically self-published or published by research funders. CSIRO also has an active and innovative science communication program with public and school activities that draw on its own research and other developments in science and technology.

Peer review and refereed journal publications are less important to Aboriginal organisations. Most of their communication about their own research and other activities is at meetings and conferences, on the Internet, in magazine articles, media releases and/or submissions to public policy processes.

'Picture stories' (books or posters with photographs and minimal text) are effective for communicating between researchers and Aboriginal community members. They are a valuable tool for researchers to use in reporting to local people on progress and findings from field work, providing quick feedback from the research and a focal point for checking whether information and views from local people are being interpreted correctly by researchers.

Partnerships between research organisations and Aboriginal organisations need to consider the diverse communication needs and skills of different partners and make sure they are accounted for in research design and budgets.

12.2 Information – knowledge brokering

Some of the research needs of local Aboriginal people are not for 'new research' but for better, more accessible 'outsider' knowledge. How can knowledge effectively be transmitted, or targeted, to meet local demand? This is a research question in itself.

Based on consultations and workshops involving people from NRM agencies, Aboriginal organisations, industry groups and non-government organisations, CSIRO in its Connected Communities project (Chewings et al. 2004) identified two important directions for using information and communication technologies for NRM information and knowledge brokering. These are:

- promoting coordination among outside agencies who are interacting with remote settlements
- developing an information hub or 'one-stop shop' as a gateway to NRM and other information about desert Australia.

These directions provide an opportunity for CSIRO and DKCRC to build 'brand' recognition and credibility among leaders and staff of Aboriginal organisations without the complex challenges of on-ground engagement. As a follow on from the Connected Communities project, Vanesssa Chewings of CSIRO and researchers working on several DKCRC projects in the Anmatjere region looked at ways of using the Connected Communities pilot web site to help them coordinate their activities while also making information about the research projects accessible to people in the Anmatjere region. This has promise as a pilot for a web-based coordination system that could help address the issue of uncoordinated consultation of remote Aboriginal people by government and other outsiders, a problem highlighted in RCIADIC (1991) and many subsequent inquiries into Aboriginal and Torres Strait Islander affairs.

12.3 Youth

An important way for research projects to foster youth engagement is by developing or supporting youth projects as part of a research project's communication and community engagement strategy, or through initiatives that run parallel to the research.

'Situated learning' (Lave & Wenger 1991) is an important method for doing this. It is the normal process of learning that takes place through social interaction and participation in an activity, context or cultural setting, rather than through structured training activities. External researchers typically bring novel skills and technologies to the Aboriginal settlements or lands where they work. Through interaction with researchers, Aboriginal people extend their knowledge of what researchers/scientists do, and how and why they do it. Such learning builds life knowledge — incidental skills and deepened understandings of the workings of society and the world — which can be particularly significant for young adults.

From her work and research on education on the Ngaanyatjarra lands, Inge Kral (see Kral & Schwab 2003, Kral & Falk 2004, Ngaanyatjarra Lands 2003) points out the opportunity for research to support situated learning. She comments about young adults in the 16–25 year age group:

> *'These are young, creative, competent people. But the world they go into from school rarely pulls this out of them. They are stuck in a deficit hole formed by other people's views that "they don't/can't do anything". Actually the world has not got any public structures for them to engage in. In the private domain, they make their own world.'*
>
> *(Inge Kral 2004, pers. comm.)*

To engage with these young people effectively, Kral emphasises that researchers need to become relationship focused. By focusing on building and strengthening relationships with young people, researchers can get them involved in things that they wouldn't otherwise be doing. Situated learning is extended through these interactions. It provides a way of working with young people in an equal way, so that learning happens as an outcome of the relationship, rather than expecting young people to focus on formal training with its preoccupation on streaming people into work. The latter fails to engage young people because there is almost never any work outcome from training in remote settlements (Inge Kral, pers. comm.).

Projects and activities that engage young people in ways that use their skills are important, such as using their interest in IT and video to build them into documentation roles in research. It is important to do this in a way that gives young people a clear role, so they are not hanging around on the edges but are responsible for doing work that needs to be done, and that uses their skills (Inge Kral, pers. comm.).

For example, researchers could engage with youth support services, youth workers, or local Aboriginal media organisations to develop youth projects that parallel the research but that are run independently, directed by young people. This might involve activities such as making a video, a community web site, a radio program or a theme song related to the research.

Box 14: Non-monetary benefits to Aboriginal harvesters from wild harvest research

Fiona Walsh and Mitch Jones of CSIRO expect the non-monetary benefits to Aboriginal harvesters from participation in research on their harvest of bush produce for commercial sale to be extensive. The expected benefits are:

Resource provision

- Opportunity provided to access country through vehicle travel
- Opportunity to monitor and update knowledge of bush resources and the natural environment through travel and ancillary activities associated with bush harvest for sale.

Skill recognition and skill sharing

Recognition, affirmation and valuing of traditional ecological knowledge, expertise and its use
Introduction to ethnoecological tools and techniques (possibly to include GPS, GIS, ground mapping, satellite imagery, local resource assessment)
Skilling of locally-based resource managers in longer-term

Information exchange

- Information exchanges about bush produce business opportunities and limitations
- Facilitated opportunities for knowledge exchange within Aboriginal groups (including from senior people to younger people) on country and in settlement contexts (former is particularly important)
- Enterprise development support
- Networking of Aboriginal harvesters to other Aboriginal harvesters directly (e.g. workshops) and indirectly (e.g. local reports)
- Networking of Aboriginal harvesters to buyers
- Information exchanges about bush produce business opportunities and limitations
- Enhanced opportunities for active participation of Aboriginal harvesters in bush harvest and components of the wider value chain
- Policy recommendations to representative Aboriginal organisations in development of cross-cultural industry

Applied management outcomes

- Information on contemporary resource species (small-scale commercial and subsistence) and appropriate management needs directed to Aboriginal rangers, traditional owners and other Aboriginal land users
- Media that communicate above to on-ground managers (e.g. rangers, Aboriginal land users, other land users)

Ethical principles and protocols that would be respected to include:

- Appropriate cross-cultural behaviour by researchers
- Participatory action and planning approaches in conjunction with ethnoecological ones
- Establishment of expert Aboriginal and non-Aboriginal subproject steering committee
- Option for co-authorship of publications with Aboriginal individuals or representative groups
- Copyright for ethnographic materials (e.g. stories, artworks) to individuals
- Permission requested for taking of photographs and acceptance of response
- Permission for use of photographs in community reports
- Written permission for use of photographs in circulated publications or presentations.

Source: Fiona Walsh and Mitch Jones 2004. Extract from application to Central Land Council for permit to enter Aboriginal land for research purposes. DKCRC Project 1.112. Bush Produce Systems, Bush Harvest component.

12.4 Science education

Research can provide support for learning via land management — literacy and numeracy, biology of species and ecology (drawing on traditional knowledge and science), physics (e.g. in fire management), IT and GIS.

Some of the work of desert Aboriginal organisations related to traditional knowledge (see Section 11.2.1) has significant links to education in schools. Typically, these activities are NHT-funded, and some struggle to get continuity from one short-term grant to the next. The CAT-Rio Tinto partnership (see Box 2) has provided a more secure basis for action in science education, supporting achievement by Aboriginal school students in science and technology through the annual Akaltye Youth Event.

Science Week, held annually in August, has provided a focus for CSIRO's Alice Springs-based communicator Karen Eva-Stirk to work with staff and students from bush schools and the Alice Springs Campus of Batchelor Institute of Indigenous Tertiary Education on activities that are fun and educational. CSIRO also has a national program for Aboriginal and Torres Strait Islander cadetships and for student work experience. These potentially provide resources that can be used to promote educational outcomes for Aboriginal people as part of research partnerships.

In central Australia, the Anmatjere Kwatj project (DKCRC 2006) is an example of how science education can support engagement between researchers and Aboriginal people and organisations. Charles Darwin University researchers Naomi Rea and Lucas Jordan worked with schools in the Anmatjere region:

> *'Each group, one from Laramba School and one from Ti-Tree School, consisted of approximately 15 young adults. The schools focused their language classes for 2005 on water, and followed this up with field trips organised and delivered by Lucas. Modules of the NT Waterwatch Kit, which is part of the NT Education Department curriculum, were delivered by Lucas at water sites, with students keeping field books and digital records of their findings.'*
>
> *'This format achieves a training outcome in freshwater ecology and natural resource management. It also provides an opportunity for participants to compare and contrast western knowledge and approaches to describing and managing aquatic ecosystems with cultural knowledge and customary law. The presence of extended family, including traditional owners, and custodians extends the project's awareness and capacity building'.*
>
> *(Rea 2005)*

Education is important for Aboriginal people to have a strong role in the central Australian knowledge economy, as is recognised by Aboriginal organisations, particularly the Desert Peoples Centre. Practical support and on-ground involvement by CSIRO and DKCRC researchers in Aboriginal science education in schools, VET and higher education will contribute to Aboriginal goals.

12.5 Building livelihoods through involvement in research

Research can contribute directly to livelihoods for desert Aboriginal people by providing employment and building new skills and knowledge, particularly when it uses participatory methods. However, there are risks that research engagements are patchy, short term and not well integrated or coordinated with the activities of Aboriginal organisations, or government agencies and industry bodies that are engaged with Aboriginal organisations and communities. In these cases, they will fail to provide long-term developmental support or to develop mechanisms to implement research findings. Research partnerships are a strategy to address these risks.

Non-monetary benefits from research are multifaceted and can be extensive. Box 14 sets out the non-monetary benefits to Aboriginal harvesters of the acacia seed and the bush raisin (*Solanum centrale*) from participation in the bush harvest component of the DKCRC Bush Produce research project. In this case, the project does not provide employment to these people as they are generating their own income through their harvest activities. Rather, the project supports those harvest activities, such as by facilitating transport to harvest sites. Here, the main beneficiaries will be senior and middle-aged Aboriginal women as these are the main harvester group. They are also one of the most economically marginalised subgroups in central Australia. The project also pays harvesters and other people for their time when the researchers engage them in interviews.

As well as the kinds of strategic issues for research partnerships that are considered in this report, participatory research raises a number of logistic questions about employment mechanisms, pay rates and conditions, links to research training and skills development for Aboriginal community members, and achieving non-monetary livelihood benefits. These issues are explored in the central Australian region by Rea and Young (2006) who provide tangible guidance for designing participatory research involving Aboriginal people in central Australia for DKCRC, CSIRO and other organisations. Their Collaborations Project has also had an important strategic agenda in exploring parallels between opportunities, skills and engagement mechanisms for participatory research and those for government and industry consultation with Aboriginal communities. The question is how the resources that are allocated for research and for government and industry consultation processes can contribute effectively to building stronger livelihoods for desert Aboriginal people. Waltja's Training Nintiringjaku project (described in Box 15) is one approach with potential to extend to research and consultation activities that help build livelihoods.

12.6 Research governance

To be partners in research, Aboriginal organisations need to build their partnership engagements and their governance of research projects into their organisational structure. Aboriginal organisations have a variety of roles and structures and they approach research governance in various ways. Some Aboriginal organisations have a research subcommittee or reference group that is responsible to the organisation's executive. In others, research interactions and coordination may be the responsibility of particular staff. Or many different staff may deal with researchers and issues arising from research.

Efforts to build partnerships for research will be frustrated if the people in Aboriginal organisations who have responsibility for research governance do not understand the research. People I consulted in this project said Aboriginal people and Aboriginal organisations cannot have any control over research if they do not understand it. For effective partnerships, it is important that there is effective ongoing communication and capacity building as a reciprocal process involving researchers and the people in Aboriginal organisations who are responsible for research governance.

Box 15: Training Nintiringjaku

Waltja Tjutangku Palyapai is an Aboriginal family support organisation. The name means 'doing good work for families'. Waltja's Training Nintiringjaku project is working with people from remote settlements who have been nominated by or have the support of community councils as 'Training Nintiringjaku' (people knowledgeable about training). The project started in 2004 and is continuing to develop in 2005.

The role of the Training Nintiringjaku is to facilitate access by Aboriginal people to training that meets their needs by understanding those needs and working with those people and registered training organisations (RTOs) to promote effective training. The work of the Training Nintiringjaku is resourced through the RTOs as part of their delivery of specific training courses, and they are paid via Waltja. Waltja also provides mentoring, networking, training and other support for the Training Nintiringjaku.

In 2004/05 Waltja is also doing participatory research to evaluate the project, with funding from the Office for Women through the Security for Women Program.

Sources: K Lawrence and M Orr [Waltja] 2005, pers. comm., February [at DKCRC Project 3.114 Project Shaping Group meeting]; Waltja and WAVE 2005; and see <http://www.waltja.org.au>

12.7 Research organisations – skills and capacity

Scientists who want to partner with Aboriginal organisations in research face a number of barriers from their own training and organisational structures. To be effective in operating independently, they need a good understanding of the roles and strategic approaches of Aboriginal organisations,

the policy environment and cultural contexts. Developing this knowledge takes time, even with a steep, and sometimes traumatic, learning curve. Developing research proposals that respond to Aboriginal priorities also needs time and field engagement. Participatory approaches require facilitation skills and budgets for community engagement and communication. It can be difficult to convince funding bodies why these factors are important.

The complex research issues associated with promoting ecologically and culturally sustainable development in desert Australia require multidisciplinary approaches, with concerted interaction between people with different kinds of knowledge and ways of thinking about problems. As McMichael et al. (2003) discuss, in some specialist scientific disciplines that should be central to our understanding of sustainability — such as demography, economics, ecology and epidemiology — there are relatively few people who give attention to critical relationships between people and their environment. CSIRO is actively engaged in developing its capacity for integrating social and economic issues into its core capability in scientific research, and has a strong record in team approaches to research. Nevertheless, it lacks extensive experience and expertise in Aboriginal cultural settings. Tangentyere is demonstrating the effectiveness of ensuring that Aboriginal people's knowledge and skills are an integral part of team approaches to research (see Box 6).

Effective research partnerships to address Aboriginal priorities and 'make a difference' need to provide for teams of people from research organisations, Aboriginal community members and organisation staff, and government working together and travelling together in undertaking research projects. In the course of this project, it also became apparent that CSIRO's very high organisational standards for managing occupational health and safety (OH&S) risks to staff can present logistical barriers for field work in these kinds of team situations. For example, they may preclude CSIRO staff from travelling in other organisations' vehicles where those organisations' OH&S standards are not as high as CSIRO's.

Issues associated with policy, standards and capacity for Aboriginal and Torres Strait Islander engagement within CSIRO, at a divisional or national level, are beyond the scope of this report. However, CSIRO has been addressing such issues through an organisational learning project in 2004/05 and an Aboriginal and Torres Strait Islander engagement strategy for organisational change. This approach has involved Professor Mick Dodson of ANU through an agreement between ANU and CSIRO.

13. Developing partnerships

13.1 Summary of research directions and engagement pathways

The research questions and directions identified in this report have come from discussions involving a small number of individuals. Further action on them needs much more detailed discussion with wider numbers of people, and corporate support from organisations. Recognising these limitations, the research directions identified above do nevertheless encompass a broad and strategically informed agenda for research that can support stronger livelihoods for desert Aboriginal people, particularly associated with land management and regional development. Key areas of research demand in parts or all of desert Australia are:

- Better access to 'baseline' information – both from existing sources and through new research. Water resources and socio-economic data are key areas.
- Better understanding of the role of the state in the hybrid economies of Aboriginal settlements and lands, to make sure that state responsibilities are properly accounted for in institutional change at regional scales.
- Better understanding of issues and pathways for Aboriginal people to lever benefit and manage impact through engagement with mining and tourism industry development at a regional scale.
- Participatory evaluation of community development and change processes associated with settlement viability and sustainability.
- Technical, design and management issues involved with effective access by Aboriginal people to services in remote settlements.
- Identifying ways in which Aboriginal people and organisations can effectively lever the contributions that Aboriginal lands and their management make to national priority goals to build sustainable livelihoods for desert people.
- Sound evidence for outcomes for Aboriginal health and wellbeing from Aboriginal people accessing their traditional lands and 'working on country'.
- Databases and other tools for knowledge management that are designed to serve traditional knowledge systems and empower Aboriginal owners of traditional knowledge.
- Better understanding of issues and development of effective management systems for Aboriginal people to address degradation and depletion of valued resources on Aboriginal lands from various land uses (Aboriginal harvests, pastoral use, mining and tourism activities).
- More robust understanding of population ecology and ecosystem dynamics relevant to threatened species and fire management on Aboriginal lands.
- Support for development of NRM enterprises, through better understanding of markets and pathways for enterprise development.
- Improved understanding among the various people involved in collaborative management of land and natural resources, including joint managed parks, about each other's goals and objectives, and participatory development of monitoring and evaluation systems.

Research organisations can also support desert Aboriginal people in the land management arena by supporting the development of networks among Aboriginal land managers and between Aboriginal people and the private sector for enterprise development and employment.

Effective engagement between Aboriginal people, Aboriginal organisations, researchers and research organisations requires:

- knowledge brokering that improves access by Aboriginal people and organisations to existing information
- communication during research and about research findings that is appropriate to the cultural and linguistic contexts of desert Aboriginal people and that is coordinated in ways that support Aboriginal organisations' strategic priorities
- engagement with Aboriginal youth through 'situated learning', through projects that target the skills and interest of young adults, and through stronger linkages between research and Aboriginal organisations in science education
- resources for research projects to pay Aboriginal people for their involvement as part of the research team or as sources of expert knowledge for the research process, and strategies for research to contribute to stronger livelihoods for desert Aboriginal people
- policies and operating procedures of research organisations, which reflect an understanding of the ways that researchers need to be working with Aboriginal people and Aboriginal organisations' staff 'on the ground' as part of research collaborations.

13.2 Ways forward

Development of research partnerships starts from individuals — researchers, staff and leaders of Aboriginal organisations, and others — building relationships. Networks are important in this process. Professional, social, business and policy networks all contribute opportunities for building relationships. Various Desert Knowledge initiatives (Section 7) are actively expanding and building networks in desert Australia. However, effective and equitable engagement of Aboriginal people in these networks is an ongoing issue. For researchers, what is important is that they are able to consult with Aboriginal people 'on the ground', and scope research projects and partnership opportunities with them. This gives a realistic basis for seeking approvals from governing bodies of relevant Aboriginal organisations and from their own organisation. Working in this way requires an allocation of 'start up' resources before specific research projects or partnership opportunities can be identified.

Where a specific research project or partnership proposal emerges from discussions between individuals, those individuals need to build corporate support. In Aboriginal organisations, involvement and authorisation by governing bodies is often essential. Researchers also typically need corporate support. Partnership agreements need to be developed with full corporate support, and organisations need to allocate resources for effective governance and implementation of the partnership. Corporate action has to be championed and communicated in partner organisations so that individuals throughout the organisation feel part of it.

A key question raised by people I consulted for this project is 'Where is the fit, or commonality, between the interests of "outsiders" (researchers and research organisations) and "insiders" (Aboriginal community members and organisations)?'. To become the basis for a partnership, issues and opportunities have to be meaningful. And they have to be supported by Aboriginal people and/or organisations operating at local and regional levels, and by research agencies and research funders, often at national level.

Aboriginal leaders and staff of Aboriginal organisations ask themselves: 'What is in it for us? It needs to fit our agenda. It might be useful if it addresses strategic issues.' The potential for supportive relationships and sharing of knowledge extending over several years may make

research partnerships appealing; for example, if the involvement of researchers can help to bridge discontinuities resulting from their own short-term project funding and staff turnover. Research organisations will look at the potential for innovative research approaches, and at opportunities for publication and professional development of their personnel, expanding their income base and enhancing their reputation for 'making a difference' to real world problems.

Such considerations focus attention on the two different approaches to Aboriginal research partnerships discussed in Sections 4.3 and 4.4. A key question for CSIRO raised by people I consulted for this project is whether, in developing Aboriginal partnerships, CSIRO is 'trying to develop something where CSIRO, a group that holds one lot of knowledge, partners with a group that holds another lot of knowledge, to address issues as they unfold? Or is CSIRO just looking at particular projects to get involved in, sign off and provide a solution and move onto the next project?'.

The complexity of issues discussed in this report indicate that a long-term developmental commitment is needed from CSIRO if it is to include Aboriginal people of desert Australia among the 'governments, industries, business and communities across the nation' that it serves (CSIRO 2005). This challenge suggests that CSIRO should be forming partnerships 'to address issues as they unfold' rather than having a discrete project focus. However, this developmental approach to partnerships conflicts with some realities for Aboriginal people and their organisations.

Few Aboriginal organisations have spare capacity to devote to development of long-term strategic approaches to research partnerships. They are often working in situations where policy frameworks, 'on ground issues', and available sources of funding and personnel change rapidly. This means they often need funding and expertise quickly. People I consulted in this project said 'crisis situations present research opportunities, and a quick response is important to support Aboriginal priorities'. This reality contrasts markedly with the emphasis expressed throughout this report on the time that it takes to build strong relationships and develop them into partnerships. However, a capacity for quick responses can have spin-off benefits by cutting short the gradual processes of building relationships. Quick response by research organisations to priorities identified by Aboriginal people and organisations can result in greater confidence among Aboriginal people and organisations in the capacity of research organisations to provide effective support. It can catalyse relationships that promote longer-term collaborative research effort.

People I consulted in this project suggested that if there was a 'bucket of money' under the control of a trust, or jointly controlled under a partnership between a research organisation and their own Aboriginal organisation, this could provide a focus and resources for their partnership efforts, including a capacity for quick response. Establishing a dedicated 'bucket of money' has been important for CAT in their partnership with Rio Tinto as it has allowed them to focus on activities rather than on financial transactions (see Box 2).

Up to 2010, DKCRC provides an umbrella framework within which CSIRO, particularly its Alice Springs laboratory, can develop its capacity for partnering with Aboriginal organisations in desert research. Desert Knowledge CRC core projects are providing opportunities for action on some of the research directions raised in this report. However, there are many Aboriginal organisations that are outside the DKCRC partnership framework.

In February 2005, the DKCRC Board approved the development of an 'affiliate partner' mechanism to extend the partnership umbrella to additional organisations that have a key role in DKCRC meeting its outcomes, and that become involved in DKCRC research and education projects.

But even with this new mechanism, DKCRC is not well structured to give quick attention to the research needs of Aboriginal organisations unless these organisations come forward as funded consultancy proposals. This is because of the complexity of DKCRC's partnership environment and accountabilities to partner organisations and the Commonwealth for how funds are expended.

There will be long-term advantages for CSIRO's capacity and reputation for Aboriginal research partnerships if it commits from its own resources to develop a 'bucket of money' that can provide a quick pathway to resources for Aboriginal organisations with research needs, and for researchers to scope and negotiate projects in collaboration with Aboriginal people and organisations; and a focus for developing longer-term partnerships. Experiences from the corporate and philanthropic sectors (e.g. the Rio Tinto Aboriginal Foundation, the Lingiari Foundation) will be important in developing such an approach.

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