

WHAT DOES IT TAKE TO GROW IN THE DESERT?

Murray McGregor⁵, Mark Stafford Smith⁶, Craig James⁷, Bruce Walker⁸, John Childs⁴, Elizabeth Ganter⁹ and Jocelyn Davies⁵
Desert Knowledge CRC

Abstract

Semi-arid and arid lands cover approximately two-thirds of Australia. These heartlands are the focus of a 7-year research project (Desert Knowledge Cooperative Research Centre – DK-CRC) that has the vision of developing a sustainable future through the development of thriving desert knowledge communities. The research aims to deliver:

Sustainable livelihoods for desert people, based on new natural resource and service enterprise opportunities that are environmentally and socially appropriate.

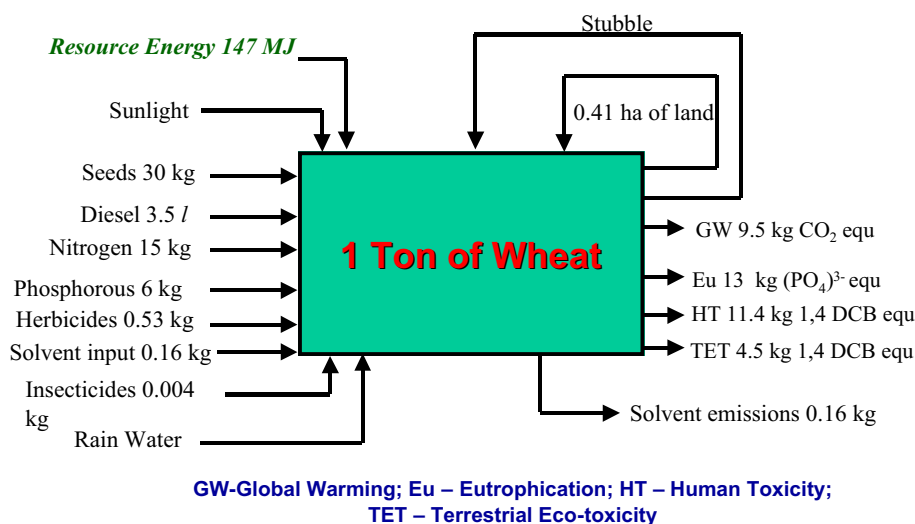
- More viable remote desert communities to support the presence of desert people, as a result of facilitating access to more attractive services that are delivered more efficiently
- Thriving desert knowledge communities that build self-sufficiency and minimise public subsidy.

The poster provides an overview of the DK-CRC's operation with a special focus on the management of environmental, cultural and economic resources.

Desert Regions

Desert regions of the world are important because approximately one third of the earth's surface area is comprised of desert regions and more than 1 billion people live and work in a desert environment. Semi-arid and arid lands ('deserts') cover approximately 70% of the Australian continent.

Figure 1: The World's Deserts



Desert Australia is valued because of:

- **Its unspoiled open spaces**, their clean remoteness, their icons and history and their unique ecosystems. These values underpin the Australian psyche but are also widely sought by tourists and keenly observed by our international peers.
- **The products** we already obtain or could obtain from there – minerals, energy, plants and animals, as well as arts and crafts. Mining, nature-based tourism, arts and pastoralism are worth \$14 billion per annum today. New enterprise options, such as bush tucker and remote services, as well as 'social entrepreneurship' in the arts, sport and cultural activities, are evolving.

⁵ Murray McGregor is Theme Leader of Theme 4- 'Business and Regional Development' in the Desert Knowledge Cooperative Research Centre and Professor of Agribusiness, Curtin University of Technology, Western Australia. His contact address is – Muresk Institute of Agriculture, Curtin University of Technology, Northam, WA 6401. m.mcgregor@curtin.edu.au

⁶ CEO Desert Knowledge CRC - Mark.StaffordSmith@csiro.au

⁷ Theme leader, 'Natural Resource Management' - Craig.James@csiro.au

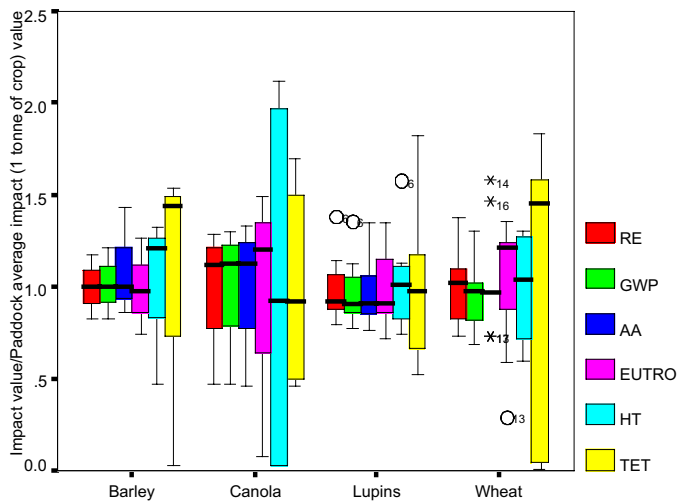
⁸ Co-theme leaders, 'Improved Viability of Communities' - bruce.walker@icat.org.au & john.childs@nt.gov.au

⁹ Co-theme leaders, 'Governance, Management and Leadership' - Elizabeth.Ganter@nt.gov.au & jocelyn.davies@adelaide.edu.au

• **The remarkable range of cultures** that it supports, both indigenous and western societies and traditions. True reconciliation is the process of reconciling these traditions with positive outcomes for all.

Australia needs people living securely in these lands, to service major tourism and mining industries, and to manage our vast arid areas in the national interest. Indeed, many people do want to live there, particularly our large core indigenous population, but they need sustainable livelihoods to enable them to do so.

Figure 2: Desert Australia



The Australian deserts, like the rest of the world, are sparsely populated supporting a population of 573,000¹⁰ people and as a result have become everybody's 'backyard'. This means that our desert regions are accorded a low political and business priority and because they span five State and Territory jurisdictions many efforts to engage with desert communities and businesses are disjointed – none more so than in service delivery. The Australian deserts are the home and workplace for 120,000 indigenous people or 25% of the total desert population. The numbers of indigenous people residing in desert areas is expected to increase by 22% by 2016 population⁶ compared with a total desert population increase of 6%. Urban drift (especially within desert regions) and net emigration out of regions to the coast have also been a major problem because of declining job opportunities, increases in the indigenous population and the normal drift of young people to urban centres because of their inherent attractions.

Australia's desert economy, like that internationally, relies on a narrow economic base, which is at the mercy of external forces such as commodity price fluctuations, climate (particularly drought), major global events and business fortunes. These economies are truly on the edge. They are characterised by a heavy reliance on social service delivery, mining, tourism and the pastoral industry. For instance the regional economy of the Alice Springs region in the Northern Territory relies on tourism followed by mining and social services. Agricultural production is shown to be a significant contributor to the economy but is also extremely variable because of the impacts of seasonal and international market variability. Whereas the regional economy of the Goldfields region in Western Australia is dominated by mining and associated manufacturing but agriculture, tourism and social services are all significant contributors. These figures indicate that solutions to desert problems are rarely generic. This and the harsh environment mean that adaptive management strategies must be adopted to cope with the climatic extremes and uncertainty.

¹⁰ Taylor, J. 2002. Population Futures in the Australian Desert, 2001-2016, Australian National University, 22pp

Table 1: Relative importance of selected industries to regional economies

	Alice Springs (\$ m.)	Kalgoorlie (\$ m.)
Tourism	415	248
Mining	240	3,788
Manufacturing	not applicable	699
Social services	150	192
Defense	80	52
Agriculture		350
Cattle production	19-80	
Horticulture	20	

Desert Knowledge Cooperative Research Centre

In May 2002 a group comprising 12 universities from 6 of Australia's 8 jurisdictions (NT, WA, SA, NSW, ACT and Queensland); five indigenous organizations; four private enterprise companies; five state governments; eight state government agencies; plus a support network of business, regional development and indigenous organisations from across the country presented a formal proposal to the Australian Commonwealth Government for funds to develop a research centre with the mission to "... develop and disseminate an understanding of sustainable living in remote desert environments, delivering enduring regional economies and livelihoods based on Desert Knowledge, and creating the networks to market this knowledge in other desert lands".

It proposed to achieve this mission through strategic and tactical research in partnership with our client groups. The DK-CRC expects to generate the following outcomes for desert Australia –

- **Sustainable livelihoods for desert people**, based on new natural resource and service enterprise opportunities that are environmentally and socially appropriate.
- **More viable remote desert communities** to support the presence of desert people, as a result of facilitating access to more attractive services that are delivered more efficiently
- **Thriving desert economies** that are based on unique desert knowledge and which are more self-sufficient.
- **Increased social capital** of desert people, their communities and service agencies.

The funding bid was approved in December 2002 and the Centre's funding commenced on 01 July 2003. DK-CRC has been funded at a level of approximately \$90 million over seven years made up of approximately \$3 million per annum from the Commonwealth Government, and a contribution of \$9 million per annum of in-kind and \$1.2 million per annum in cash from partners..

So why establish a desert research centre? The answer to this is that the DK-CRC has been established to increase the research capacity focused on desert regions, particularly but not exclusively in Australia, and bring together new groups of researchers. Secondly the CRC will address issues that researchers elsewhere won't solve because of their coastal or global problem focus. The particular issues that differentiate the desert environment from the coastal are:

Small and mobile populations, which results in a low critical mass for service delivery and inefficient and costly connectivity. Variable environment in the broadest sense including climate, markets policy, etc. In many cases this leads to distant and uncontrollable drivers, which in turn can result in governance tensions. It also means that businesses and communities have to cope with extremes and uncertainty.

The desert is everyone's backyard and is split between a number of jurisdictions, which means that a coordinated approach to problems is often not forthcoming.

Finally, the Centre will look for a competitive advantage for Desert Knowledge research which means that the effort is not just more dollars doing more of the same or what could be done anywhere but is new innovative research focused on working collaboratively with desert peoples and businesses to resolve their problems.

Four Broad Research Themes

The research program has been structured around the following four semi-independent disciplinary areas with their own outputs but in practice they are run 'without walls' with much cross theme activity being undertaken.

Theme 1 – Natural resource management for better livelihoods

This Theme will provide the knowledge to soundly manage the natural resources of desert Australia for economic profitability, environmental sustainability and social and cultural well-being, through a combination of collation of existing knowledge, transfer of knowledge among people, and research in new areas.

The purpose of this Theme is to ensure that management of desert natural resources provides for long-term rewarding and fulfilling livelihoods for the people of desert Australia and the nation as a whole. The benefits of sound management will include economic profitability, environmental sustainability and social and cultural well-being. This will contribute towards thriving desert economies by creating new options for existing land uses and seeking new economic opportunities for remote areas based on natural resource management, whilst ensuring that the image of sustainable desert living is not undermined by inappropriate practices. Theme 1's objectives will be achieved through a combination of collation of existing knowledge, transfer of knowledge among people, and research in new areas.

The Theme takes a cutting edge approach to dealing with temporal variability (particularly driven by rainfall and externally-driven markets) and large spatial scale (driven by low productivity but with implications for transport and difficulties in monitoring for feedback). The research builds on the partners' internationally-acknowledged expertise in managing for these drivers, including the National Land and Water Resources Audit work, use of remote sensing for monitoring desert health and biodiversity, on-ground inclusion of indigenous knowledge in conservation management and bush produce development, and approaches to fragmentation of semi-natural environments.

In the light of on-going stakeholder interactions, the breadth of possible research in the Theme is initially focused into three key areas:

Knowledge baselines, capture and exchange.

New enterprise development and improvement of the terms of trade for existing enterprises.

Understanding and monitoring of regional-scale processes that impinge on economics of enterprises and affect the maintenance of biodiversity.

Theme 2 – Technical services for improved community viability

This theme addresses demand responsive access to services such as housing, energy, sanitation, telecommunications, etc. focussing on the application of cutting edge technologies and innovation to overcome the unique problems of accessing services in remote desert areas.

The objective of the theme is to improve the viability of communities in desert Australia. Viability is important because it is at the heart of the future growth and prosperity of desert Australia. Without new thinking and new approaches to tackling the big questions that underlie viability of communities, tangible improvement is much less likely. Viability refers to the ability of a community to sustain itself over time withstanding and adapting to gradual or sudden shock. Unviable communities are characterised by depleted or inappropriate natural resources and assets, poor access to services, unreliable infrastructure, limited livelihood activity and ineffective governance.

The theme will contribute to this objective by facilitating demand-responsive access to technical services that underpin viability through focussing on the refining of cutting edge technologies and innovative service solutions that overcome barriers of distance and poor inherent infrastructure levels. The pattern of settlement in desert Australia has no precedent. Aboriginal people may have occupied the land for 40,000 years or more but until fifty years ago, never in small settlements comprising formal houses with water, sanitation, electricity, communications and road access. In many ways, proponents of outstation development are still working to find the best model for small remote communities to be sustainable. This is the rationale for the research in this theme.

In the light of on-going stakeholder interactions, the breadth of possible research in the Theme is initially focused into four areas:

How to provide innovative, advanced and robust telecommunications and computer technology for remote areas.

Resource flows and human movement - demand responsive service and infrastructure depends on understanding where people need and can receive services.

Analyse and improve the current lifecycles of critical infrastructure.

Ensuring that basic services are maintained and improved, while avoiding increasing per capita service costs.

Theme 3 – Governance, management and leadership

The objective of this Theme is to research and trial institutional models that will enable the capture of socioeconomic opportunities in desert Australia, recognising regional geography, demography and market failure as key drivers of socioeconomic performance.

This will be achieved by building stakeholder understanding about the characteristics of good governance, management and leadership in desert regions, and create an environment for institutional development and change that promotes these characteristics. The goal is to enable the capture of socio-economic opportunities in desert Australia by desert peoples, recognising regional geography, demography and market failure as key drivers of socio-economic performance. The literature suggests that an effectively resourced capacity for governance will be critical to sustained economic or social development in desert communities and regions.

Research will focus on understanding the strengths and weaknesses of the processes, institutions and structures, both formal and informal, currently in place; how better to articulate Indigenous and remote community governance arrangements with the Australian state and economy, and enable people effectively to use the outcomes of this research. It will develop a clear relationship with other initiatives in improved governance so that it adds value in what is currently a largely uncoordinated sphere. The research in this theme will be closely linked to research processes and outputs from the other Themes to maximise the likelihood of effective implementation of results.

The research in the Theme is initially focused into the following three areas:

Systems of governance for community development.

Institutional issues in economic development.

Capacity for governance, management and leadership.

Theme 4 – Integrated systems for Desert livelihoods

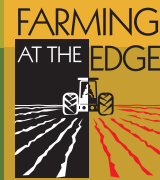
The objective of this theme is to study the 'commercialisation' of DK-CRC outcomes, in terms of both private and public investments, using a mixture of action learning case studies and synthetic complex systems modelling. Its purpose is to understand how to invest public and private resources in the most effective way in deserts, in order to create sustainable business outcomes and regional economies. This will be achieved through a range of R&D projects that will investigate new options for remote businesses, adapted to the variable biophysical, economic and social environments found in desert areas, and with a particular focus on how networks, clusters and other approaches can create critical mass for different purposes. It will also integrate the outputs from other Themes to help to provide both commercial and public good outcomes, which include economic profitability closely aligned with environmental sustainability, and social and cultural well-being.

The research effort is focused into the following two broad areas that involve multi-organisational and multidisciplinary project activities coupled with significant participation from desert communities, businesses and policy makers:

Business systems for desert communities – this focus area contains a small number of case studies of evolving new business systems in desert regions, which will carry basic bio-technical research through to commercialisation plus innovative research on new business and marketing models. By its nature it will evolve during the course of DK-CRC to seek additional case studies emerging from Themes 1 and 2. Projects will identify current impediments to business profitability and sustainability in an arid environment. This meta-analysis will develop, in close collaboration with stakeholders (communities, SME's and larger corporations), new business and marketing models tailored to desert environments, and an understanding of formal and informal financial and business information flows operating in desert regions.

Regional development - regions function as complex systems, combining human decision-making and institutional structures with economic, social and cultural feedbacks, founded on an environmental resource base. The research required to tackle these problems involves a series of systems analyses of regional function, including mobility among settlements, demographic trends, patterns of industry development, etc. The outputs from these studies will be linked with those from Themes 1 and 2 to produce current profiles and future scenarios for different regions to assist community, private and public sector, and CRC research investment prioritisation.

INTERNATIONAL FARM MANAGEMENT CONGRESS 2003



Further Information

The Desert Knowledge Cooperative Research Centre (DK-CRC) is interested in building partnerships with Australian and international researchers and research organisations. Further information on the DK-CRC can be obtained from the Centre's website: http://www.desertknowledge.com.au/crc_main.html or for particular information on each of themes contact the theme leaders direct.