COOPERATIVE RESEARCH CENTRE

FOR

CLIMATE VARIABILITY AND DROUGHT RISK MANAGEMENT

DISCUSSION PAPER No.1

Developing the Vision and Mission Statements, Objectives, Research Programs and CRC Structure.

Prepared by Kiri-ganai Research Pty Ltd

for

the Partners of the Steering Committee

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Executive Summary

A proposal to establish a world-class centre of expertise in the area of climate variability and risk-management research in Australia by July 2005 is now underway.

This discussion paper is the first of two that will be produced in 2003 to assist workshops of prospective partners and supporters develop an application for a national Cooperative Research Centre (CRC) for Climate Variability and Drought Risk Management to be considered in the 2004 round of CRC applications.

The time has arrived for climate variability and drought risk management R&D to be part of the national research agenda that falls under the CRC Program. We lack an integrated national focus on climate variability and drought risk management research that has close connections to the market place of users of such research. The CRC Program provides the opportunity to build on the outstanding research that has taken place in Australia and to establish a Centre that sits with the 145 CRCs established since 1990. The Program has involved investment of $1.15B of Commonwealth funds, $680M from other levels of government and industry and $2.73 M of in-kind resources.

The process to prepare an application for a CRC for Climate Variability and Drought Risk Management has been initiated by the Department of Primary Industries Queensland and CSIRO Sustainable Ecosystems. An independent research company, Kiri-ganai Research Pty Ltd, has been engaged to assist in developing the concept of the proposed CRC.

The next step in the process is to prepare an application in the 2004 round for CRC funding from the Commonwealth expected to be due in May.

It is intended that the CRC will play a central role in ensuring that Australia maintains its standing as a global leader in the application of climate science in management decisions in agriculture, natural resources management and other industries where climate variability risk management is critical to sustainability.

There are a number of benefits of a CRC over and above more loosely coordinated collaborative research ventures. They:

- provide the opportunity for a new focused and coordinated effort, and for additional resources for national climate variability and drought risk management R&D and post-graduate education.
- are the only way to formalise cooperative research ventures in a way that is enduring and not subject to the exigencies of short-term funding;
- are the main way to attract substantial new funding into climate variability research over and above re-allocation of existing funds across the research ‘system’;
- not only offer the opportunity to optimise the use of existing research expertise, but also foster the next generation of researchers and provide pathways from academic nurturing to exciting career opportunities; and

- provide a single intellectual, commercial and social space in which to negotiate new endeavours, inspire creativity and move beyond incremental approaches to resolving complex problems.

The recent drought has highlighted the economic and social costs associated with Australia's unique climate variability. The costs are enormous for the nation, industries, business, individual farmers and for communities particularly in rural and regional areas. Despite advances in research, knowledge and policy dealing with climate variability and drought, it is clear that Australians still have difficulty living and producing in such a variable environment. However, we now have a timely opportunity to establish a CRC that is fundamental to Australia's unique production, environmental and social challenges.

Prospective Partners are Being Sought for the CRC

Prospective partners are now being sought for establishing and funding the CRC for Climate Variability and Drought Risk Management. Initial core partners, the Department of Primary Industries (DPI), Queensland and CSIRO Sustainable Ecosystems, have committed funds and resources for taking the first steps in preparing the business plan and application.

A Steering Committee has been established and is managing the development of the application. The initial members are Dr Roger Stone, Acting Director, Queensland Centre for Climate Applications, DPI and Dr Brian Keating, Acting Chief, CSIRO Sustainable Ecosystems. The Steering Committee has written to prospective partners about the opportunity for other core partners to join the Steering Committee in the development phase and help shape the elements and function of the of the proposed CRC. Members of the Steering Committee are happy to brief potential partners about the CRC proposal.

The CRC proposal will need to clearly identify its key stakeholders: core partners, strategic partners and support partners. Core partners will be highly credible organizations in the business of climate variability and drought risk management research as research providers or funders. Strategic partners will be influential organizations in the business of the application and dissemination of R&D results through rural services, consultancy advice, extension, education or training. Support partners will be organizations with state or national profiles unable to provide significant investment funds or resources for the CRC, but willing to support its establishment in representations to the Australian Government.

Prospective partners of the CRC now have the opportunity to be involved in the establishment of a world-class centre for climate variability and drought risk management R&D. Fundamental benefits will be gained from partners as the CRC aims to generate social, economic and environmental benefits for Australia, our industries, regions and individual producers.

Discussion papers, workshops and Website to enable prospective partners to shape the proposed CRC

Participating partners and other stakeholders will be kept up-to-date with developments in the CRC proposal process through discussion papers, workshops, a website, and monthly newsletters.

The website is currently being designed and will monitor the bid progress over the next year with regular information updates. It will go live in the second week of November 2003 at www.crcclimaterisk.org.au

Two workshops are being planned for 2003 supported by discussion papers. The first will be held at the Lancemore Hill Conference Centre, Kilmore, Victoria on 17th and 18th November. Prospective partners are invited to attend to discuss important issues as set out in this discussion paper and pertaining to:

- the proposed vision and mission of the CRC;
- research themes, objectives and key research questions that will allow the development of the research programs; and
- CRC scope and structure.

The second workshop will be held in Toowoomba on the 11th and 12th of December. This workshop will also be supported by a discussion papers and will focus on education, extension, communication, intellectual property and evaluation.

Kiri-ganai Research Pty Ltd will be distributing an e-newsletter on a monthly basis. This newsletter will also be available from the CRC website.

1. Introduction

Events in Australia in the past year have highlighted key national issues of variability and uncertainty. This relates both to our climate and world events bringing a focus on managing in uncertain contexts. Despite advances in research, knowledge and policy dealing with climate variability and drought, it is clear from the national and local impacts that we still have difficulty in living and producing in an environment of climate variability and uncertainty.

With these events at the head of the national policy agenda, the 2004 CRC round of applications provides a unique opportunity to establish a CRC for Climate Variability and Drought Risk Management that is so fundamental to Australia's unique production, environmental and social challenges.

With the progress made to date in climate variability and risk management research, Australia can establish a world-class centre of expertise in this area. Such a CRC would be dedicated to developing innovative science and research applications that will enable our producers and communities to prosper through the extremes of the Australian climate.

2. National challenges of climate variability and drought

The recent drought has highlighted the major social, economic and environmental impacts of living with Australia's unique climate variability and the tremendous management and policy challenges it presents in developing resilient agricultural and landscape systems.

The economic costs are enormous for the nation, industries, businesses, individual farmers and for communities, particularly within rural and regional Australia. The estimated budgetary cost to the Commonwealth alone from 2002-03 for around three years is over $1 billion for drought exceptional circumstances support. State governments are also making substantial budgetary expenditures on drought assistance.

ABARE estimates that the drought reduced Australia's economic growth by 1% 2002-03:

- the volume of production of the farm sector declined by 23%; and
- the net value of farm projection declined by 75%.

2.1 Benefits of climate variability and drought risk management R&D

The major benefits planned to flow from the proposed CRC's R&D programs will arise from improved climate risk management. The last decade has shown what is possible from climate variability and drought risk management research. The drought of 1982-83 was the catalyst for significant advances in that it was the first major Australian drought which to be recognised as an impact of an El Niño event. By 1989, the Bureau of Meteorology introduced an operational seasonal outlook which incorporated seasonal forecasts.

During the 1990s, research, extension, drought experience, and extensive media coverage of major El Niño events resulted in increased, but patchy awareness by many Australian farmers, of the opportunities to re-evaluate their climate risk management approaches. Currently as shown by a number of surveys, about one half of Australian farmers take seasonal forecasts into account in farm management decisions.

Farm level benefits from a new focus on climate variability and drought risk management R&D program will result from both:

- an increase in the number of farmers taking seasonal climate forecasts into account, and
- an increase in benefits for existing farmers through improved and more relevant information.

The benefits will include economic gains in the form of increased profitability, and environmental benefits, for example from reductions in soil erosion or in salinity where deep drainage is reduced. The environmental benefits are not readily quantifiable. There will also be benefits to the extent that some farmers will operate at reduced levels of income variability, and those benefits will not be readily quantifiable in economic terms.

The recognition that climate change is already having a significant impact on temperatures and that major droughts, such as the 2002 drought, are associated with record temperatures is another key driver. Farmers now confront increased uncertainty and the nature of the risks have changed considerably. Seasonal climate forecasts which take account of climate change will be a major pathway for improved adaptation to climate change.

Risk management is difficult to prescribe and describe. Uncertainty is uncomfortable in a business sense and farmers have evolved ways to cope with a variable environment. New information has to relevant to their context. An improved forecast is only useful to farmers who already make risky decisions. They recognise the clear distinction between good decisions and good outcomes.

The first major issue for an economic evaluation of the potential benefits is the inherent difficulty in isolating and estimating the additional benefits attributable to the CRC compared to benefits that may accrue to other possible sources of information. The difficulty is inherent for research which provides information compared with research where adoption is defined by a more specific indicator, or from a transaction for a physical product.

An economic evaluation is often seen as a late, marginalised, and optional extra following the definition of a research agenda driven primarily by researcher interests and organisation capacity. Clearly the potential benefits should drive the research agenda. This could be readily achieved if potential partners provided their own assessments of the value potentially added from their role.

The scope of the CRC is also relevant. If the CRC focus is on applications, then the benefits are restricted compared with a CRC that focussed on more accurate forecasts, and included partners with the capacity and resourcing to achieve improved forecasts.

To further illustrate the complexity, Australian farmers are exposed to two major seasonal climate forecasts, the SOI phase system as promoted by QDPI as a Queensland Government product, and the Bureau of Meteorology forecast based on sea surface temperatures in the Pacific and Indian Oceans. In addition farmers have access to many other information sources which will contribute to their assessment of the season ahead. For many farmers it is likely they are more influenced by their intuitive assessment of a media headline than by a science-based probability forecast.

Potential partners will want to know which seasonal climate forecast systems will be within the ambit of the CRC.

The second issue is estimating increased profitability. The two approaches are prescriptive analyses which estimate essentially theoretical benefits using bio-economic models, and descriptive approaches which estimate how farmers use improved information. Given the inherently subjective and intuitive nature of decisions, descriptive approaches have difficulties in attributing multi-objective decisions to specific bits of information.

2.2 Climate variability and drought risk R&D – The research effort

2.2.1 Climate applications science nationally

Australian research is world class in applications and in the development of operational seasonal climate forecasts. The driver is clearly the exceptional variability of rainfall compared to the rest of the world. For example, Australian dams need to be on average four times the capacity of reservoirs in the rest of the world because our streamflow is twice as variable.

A significant proportion of our extreme rainfall variability is related to ENSO (El Niño Southern Oscillation). Queensland has extreme ENSO-related variability which has been the catalyst to developing a lead role in simulation models to research-coping strategies.

The Agricultural Production Systems Research Unit (APSRU), a partnership of Queensland State, University and CSIRO groups, is at the forefront of international and national efforts to understand and better manage climate variability in agri-business systems and natural resource management. There may be opportunities to also build improved links with groups in CPI and CLI with significant skills in the study of climate impacts in grazing and cropping systems. These groups recognize the need for a strong injection of leading edge climate science, such as exists in CSIRO's Climate Program.

To date, climate variability R&D has tended to be drought-driven and an over-arching issue is the difficulty of sustaining a user focus in such research. However, climate variability R&D now has overlaps with climate change R&D from which it has benefited.

There is no national climate R&D agenda and the national effort is fragmented. An attempt was made by the Bureau of Meteorology in the late 1980's to develop a

national climate agenda, but this did not eventuate and the current R&D effort continues to lack a national focus.

An issue in the case for a CRC is whether the current fragmented national effort can out-perform seasonal climate forecasts increasingly being provided by international agencies operating globally.

Major national players in climate R&D are the Bureau of Meteorology and CSIRO Atmospheric Physics, both of which have their R&D effort located in Melbourne. Both organisations are developing capacity in coupled ocean-atmosphere models. These are likely to provide the next generation seasonal climate forecasts which can cope with climate change and also provide forecasts at longer lead times, and hopefully at critical times (particularly autumn to contribute to improved forecasts for grain farmers).

The generic nature of much climate R&D creates difficulties for consultation on R&D priorities. Regional initiatives such as IOCI (Indian Ocean Climate Initiative) and the climate modelling R&D by Queensland agencies have evolved to focus on regional issues. IOCI evolved as a Western Australian initiative to better understand the decline in rainfall in the south west of Western Australia. The decline has major implications for decisions on Perth water supply.

2.2.2 The Managing Climate Variability Program

The only significant national initiative in applications R&D has been the climate variability R&D program (previously NCVP, CVAP, now Managing Climate Variability , MCV) launched by the Department of Agriculture, Forestry and Fisheries Australia as part of the National Drought Policy of 1992. Developing the self-reliance of farmers to manage in drought was the major factor in the establishment of the program. Subsequent funding averaging about one million dollars annually has underpinned a relatively sparse national program potentially spanning climate science and applications in all regions and industries. The research-to-user emphasis of the Program was recognised as essentail to ensure good climate and ocean science contributed to information that farmers could use. The reverse flow of information from farmers to forecasters is also fundamental, if communication of climate variability information is to be strongly based.

The MCV Program has a current call for projects, with likely funding for a three-year program of $2-3 million. For the first time, the R&D corporations, particularly the Grains R&D Corporation (GRDC), are the major funders. Other R&D corporations involved include Sugar, Dairy, RIRDC and Land & Water Australia. GRDC funding is from the Southern and Western Panels. Meat & Livestock Australia (MLA) and Australian Wool International (AWI) are not program partners at this stage. AWI currently funds climate applications projects in the pastoral zone. MLA is funding a project with the Bureau of Rural Sciences for southern sheep meat producers. There are also Natural Heritage Trust funds involved.

The process of developing the MCV Program has demonstrated the difficulties in stakeholders efficiently and effectively funding research. The R&D is inherently generic, and accountability standards inhibit pooling of funds from the numerous

potential beneficiaries. The free rider/market failure aspects are powerful drivers of the need for public funding.

Potential partners in the proposed CRC will seek views on how the MCV Program and the CRC will complement each other. MCV is an independent national R&D funder, which should inherently complement a CRC which is a research provider and has specific core partners. MCV has long recognised that the absence of a CRC has been a deficiency in the national effort, and supports in principle a CRC which has a national focus

2.2.3 User applications

Weather risk management

Since the first market opened in the USA in 1996, there has been rapid growth in the weather derivative market as firms seek to reduce profit volatility related to weather variability. (In this context weather also includes seasonal time scales). The first Australian deal by Snowy Hydro was on Melbourne temperatures in June 2000. Snowy Hydro guaranteed earnings by a hedge compensating if temperatures were either much warmer or colder than average. The Australian Financial Market Association (AFMA) published a Weather Risk Management Brochure in December 2002 (brochure sponsors: were Westpac, Element Re, TFS, Aon, NAB, Bureau of Meteorology and AXA Re, see www.afma.com.au and www.wrma.org).

The National Australia Bank (press release 1/9/03 by Agribusiness GM , Mike Carroll) announced it's first precipitation option protecting a Wagga Wagga farmer against low September district rainfall. The deal was based on a customer payment for every millimetre of rain below the strike rate of 21.19 mm. CLIMAG (June 2002) demonstrated an SOI-linked strategy such that the derivative is only contracted in low SOI years. In a Echuca example based on an article by Harvey Stern (Bureau of Meteorology), it was demonstrated that an SOI-linked strategy taken out in only 40% of years resulted in a payout in 9 out of 12 low rainfall periods as defined by decile 1.

Currently Australian farmers make extensive use of Farm Management Deposits (FMD) to provide a degree of protection against income volatility (The Weekend Australian 25-26 October 2003). Money can be deposited untaxed in a good year and withdrawn and taxed in a low income year. Of Australia's 112,000 farmers 43,000 hold FMD. Deposits in June 2003 were approaching $2.5 billion. Currently 24,605 farmers are receiving drought assistance, following a drought that reduced the net value of farm production by 75% to $2.7 billion in 2002-03.

The examples of current and emerging approaches to climate risk management and measures available to farmers to reduce income volatility demonstrate the scope for research and for development of more effective policy options from both farmer and public revenue perspectives

However, experience with income variability related to price has shown Australian farmers are generally reluctant to use strategies such a s Futures markets. But there are opportunities, for example an FMD product that was SOI linked.

2.2.4 International relationships

The numerous international programs on various aspects of climate are part of an integrating framework - the Climate Agenda. The agenda covers four main thrusts:

- New frontiers in climate science and prediction
- Climate services
- Observation networks
- Climate impact assessments and response strategies to reduce vulnerability.

In Australia the Bureau of Meteorology has key responsibilities for international coordination. The Department of Environment and Heritage has coordinated matters relating to environmental aspects of climate impacts. The Bureau publishes a report 'Climate Activities in Australia - 2001' which outlines international arrangements. As the report states, 'Australia did not establish a National Climate Program or any other formal national mechanism for overall coordination of climate matters'.

In climate research, a number of Australian agencies have programs aligned with the CLIVAR program (Climate Variability and Predictability), a component of the World Climate Research Program (WCRP). WCRP is jointly sponsored by the World Meteorological Organisation, International Council of Science, and Intergovernmental Oceanographic Commission of UNESCO.

In addition to these formal arrangements, Australian agencies have developed numerous bi-lateral arrangements with international agencies. The QDPI and the QDNRM have various formal and informal links with the International Research Institute for Climate Prediction at Columbia University.

A CRC would clearly strengthen the effectiveness of international arrangements by providing a much stronger focus both within Australia and internationally.

The consultancy being undertaken by QDPI for NOAA will be a valuable input to the CRC development.

3. Establishing a Cooperative Research Centre

The CRC Program commenced in 1990 to '*match the technology push provided by Australia's strong research base with the demand pull of industry and other research users*.' The Program supports R&D across a broad range of industries and resource sustainability particularly to conserve, repair and replenish the nation's natural capital. Some 145 CRCs have been established with $1.15B being provided by the Commonwealth and $680M from other levels of government and industry. Investment of in-kind resources has added another $2.73 M to the total resource contribution.

The Program is based on the policy that publicly supported collaborative R&D can deliver major benefits to the national economy, industry and the community through the creation and application of knowledge to enhance international competitiveness. The Program also addresses market failure in natural resource management and agricultural research that enables an appropriate level of investment in R&D that delivers substantial public benefits.

3.1 Why a CRC for climate variability and drought risk management R&D?

The time has arrived for climate variability and drought risk management R&D to be part of the national research agenda that falls under the CRC Program. The CRC will have a central role in ensuring that Australia maintains its standing as a global leader in the application of climate science in management decisions. National leadership can also extend to international collaborative arrangements in applications which require a coordinated national approach.

There are a number of benefits of a CRC over and above more loosely coordinated collaborative research ventures. CRCs provide an excellent opportunity to access new funds from the Commonwealth for leading-edge R&D. They also have a key national role to play in fostering education and training for future researchers, policy makers and managers. Perhaps above all, CRCs focus the collective minds of Australia's best researchers to tackle substantial issues facing the nation in a way that enables creativity and innovation to prosper.

Specifically, a CRC:

- provides the opportunity for a new focused and coordinated effort, and for additional resources for national climate variability and drought risk management R&D and post-graduate education.
- is the only way to formalise cooperative research ventures in a way that is enduring and not subject to the exigencies of short-term funding;
- is the main way to attract substantial new funding into climate variability research over and above re-allocation of existing funds across the research 'system';
- not only offers the opportunity to optimise the use of existing research expertise, it fosters the next generation of researchers and provides pathways from academic nurturing to exciting career opportunities; and
- provides a single intellectual, commercial and social space in which to negotiate new endeavours, inspire creativity and move beyond incremental approaches to resolving complex problems.

For core partners involved in climate science, a key benefit of involvement in a CRC in this area include enhanced connections between the underpinning science and climate impacts R&D capability and other research providers and the marketplace for application in industry and public good sectors. CRCs provide the pathway of science and research to the market. They are required to focus on end-user needs, achieve connections between researchers and end users and operate in the space the research and end-user connections meet the market place. The are a highly successful vehicle for coordinating the delivery of science and knowledge to the market.

A CRC can provide a stimulus to the partners' own research efforts and lead to a critical mass that may not be able to be achieved singularly. In addition, the partners' external relationships can be enhanced and provide access to a wider range of researchers with like-minded attitudes.

3.2 Action to date on preparing the case for a CRC

The bid is in its early stages of development. The lead has come Dr Roger Stone (Director, Queensland Centre for Climate Applications) with strong support from the Minister and Queensland Government. CSIRO Sustainable Ecosystems (CSE) has

also strongly committed to the establishment of a CRC and is facilitating communication amongst CSIRO divisions on the case for participation.

Queensland DPI and CSE have made a contribution to the resourcing of the CRC bid and are the initial members of the Steering Committee on behalf of the Queensland Government and CSIRO respectively. Additional partners will be added to this Steering Committee as the bid develops and funding contributions of at least $25,000 will be required for membership of the Committee.

A contract has been let to Kiri-ganai Research Pty Ltd to support the bid process. The principal of Kiri-ganai is Dr Richard Price (ex LWA senior manager). Other members of Richard Price's team are Barry White (Program Coordinator of the Managing Climate Variability Program (MCVP), Ken Moore (ex WA Agriculture Executive Director and DPIE SES) and Jeff Coutts (Queensland, ex leader of the University of Queensland Rural Extension Centre). This is a strong team of consultants supporting the bid who are well connected to climate variability and drought R&D nationally.

Participation of prospective partners in the development of a Prospectus and Business Plan through input to discussion papers and participation in workshops is essential to support the bid and form the foundation for the business case.

3.3 Building a business case

It is a fundamental requirement of CRC applications to develop a detailed Business Plan for the establishment of the CRC. Based on previous selection criteria, the key elements of the business case for a CRC are as follows:

- A vision, mission and objectives that will ensure the CRC makes a significant national contribution to Australia's sustainable economic and social development. These aspects of the business plan must address specific community and/or industry needs.
- A high quality and relevant research program that addresses national objectives, the needs of user industries and communities, innovative and multidisciplinary fields of research, complimentary activities with other research agencies, balance between long and short term projects, integrating and building on existing research, and building critical mass and a broad base.
- An innovative strategy for utilization and commercialization of research outputs including an intellectual property plan.
- A strong education and training programs for postgraduate students, and innovative extension and training activities for users of research.
- Committed collaborative arrangements with research partners, users and international links.
- A well funded budget of cash and in-kind resources from partners.
- High quality corporate governance arrangements and management structure.
- Clearly defined arrangements for performance evaluation and accountability.

If the recommendations of the recent evaluation of the CRC Program by Howard Partners are accepted by the Commonwealth Government, preferential treatment will be given to proposals that provide robust and compelling investment propositions in which the proposed research is a means to fulfilling national objectives (see below).

The Howard Partners' report recommends that successful applications will first and foremost be based on demonstrating the strength and value of the collaboration of partners and the extent to which the CRC will meet the objectives of the CRC Program.

The business case will need to detail the pathways to end uses, specify the costs of attaining objectives, the CRC's scope, value of benefits, anticipated risks, and the feasibility/desirability/practicality of implementing the proposal.

Beyond the above, selection will be based on assessment of:

- credibility in terms of methodology, approach, significance of the problem and issues being addressed, handling of risk and uncertainty and probability of success
- standing of the researchers in applicable research (including track record in collaboration)
- governance principles for the Board
- a position profile of the CEO with the necessary management and leadership capabilities
- commitment to collaboration and achieving outcomes.

3.3.1 Articulating the vision, mission and objectives

Required workshop output

An agreed vision, mission statement and set of objectives that are well defined, address specific industry, research, education, community and government needs and lead to outcomes that make a significant contribution to Australia's sustainable economic, environmental and social development.

This is the most critically important activity for the prospective partners to be accomplished in the early stages of the bid preparation, for it not only lays down the foundations upon which all other activities build, but it articulates the capacity and resolve of the partners to work together to come to common consensus on the strategic directions of the CRC.

The ownership of these statements by workshop participants is essential and the workshop will challenge participants to define what success would look like if the proposed CRC was to be reviewed in the years 2012 and 2020. The process is intended to find a fine balance between aspiration and practicality that essentially captures the nature of a CRC dealing simultaneously with blue-sky research and risk management applications.

It will be necessary for the CRC's vision, mission and objectives to deliver outcomes that help meet the CRC Program's mission and objectives. The Howard Partners' evaluation report recommends that the Program objectives be re-defined as:

- contributing to Australia's economic growth, social well being and environmental outcomes

- developing Australia's public and private research capacity in areas of national need or global opportunity
- producing applicable research that is of an excellent standard
- adding to the nation's intellectual property and promoting its adoption, application, and use in businesses and public programs
- producing graduates with skills, knowledge and experience in the application of research in a national, industry and/or business context
- enhancing collaboration among public and private researchers
- upgrading the innovative capacities of Australian business enterprises.

The Vision

While the CRC Secretariat requires a Vision to be articulated in a CRC Business Plan, this should not be seen as a worthless requirement. A vision is a guiding image of success formed in terms of a contribution to society. If a Business Plan is the "blueprint" for an organization's work, then the vision is the "artist's rendering" of the achievement of that plan. It is a description in words that conjures up a similar picture for each member of the group of the destination of the group's work together.

The workshop will move towards developing a vision statement that in very few words conjures up what it is the CRC sees as the mark of success. Two examples of some vision statements include:

From the American Probation and Parole Association:
We see a fair, just and safe society where community partnerships are restoring hope by embracing a balance of prevention, intervention, and advocacy.

From a hotel chain:
To be a premier hotel company by exceeding industry standards through innovation and team member excellence, ensuring the satisfaction of our guests and shareholders.

The Mission

The Mission Statement differs from the Vision Statement in that it describes how the CRC will work to achieve its vision. It too should be a pithy statement that everyone Good mission statements tend to define:

1. the key market/s
2. the key contribution of the organization
3. the distinctive element of the contribution.

Examples of some mission statements include:

From Otis Elevator:

Key market:	*To provide any customer*
Contribution:	*a means of moving people and things up, down and sideways over short distances*

Distinction: *with higher reliability than any similar enterprise in the world.*

From the Public Sector Company of Mexico:

Key market: *Our mission is to work for the success of people we serve*

Contribution: *by providing our customers reliable electric, service, energy information, and energy options*

Distinction: *that best satisfy their needs.*

3.4 Defining the scope and structure

The scope of the CRC could cover 2 potential program areas: agri-industry (to include emerging enterprises in an agricultural context) and landscape systems. A third potential program area may be required to cover an emerging high level of interest in climate variability applications from the insurance, emergency management, energy, urban planning and tourism industries.

The focus of the CRC will be on management in the face of climate variability in a diverse range of systems and sectors (rural production and associated NRM, natural ecosystems, possibly urban systems and others depending on the level of interest and preparedness of different sectors to co-invest).

There is also a significant potential role for the CRC in informing policy at State and Commonwealth levels. Inclusion of drought risk management would capture public, industry and government attention, but the CRC will need to demonstrate it is capable of delivering value for all climate variability extremes, not just in preparing for droughts.

It is important to note that the proposed venture is not a "climate change CRC" but a climate variability CRC that is cognizant of climate change issues and factors realistic assessment of climate change impacts into management responses to climate variability.

The following table sets out the scoping issues and the assumptions made by the Steering Committee on the boundaries of a CRC for Climate Variability and Drought Risk Management.

Scoping issue	**Assumption for boundary of CRC**
Weather versus climate	The CRC will place its emphasis on climate science, although taking cognisance of weather risk applications that can be applied to climate risk.
Climate change versus climate variability	The emphasis will be on climate variability, but in the context of its management within longer-term climate change.
Drought versus non-drought periods	The CRC will not step away from dealing directly with both drought and non-drought periods. Although drought is a

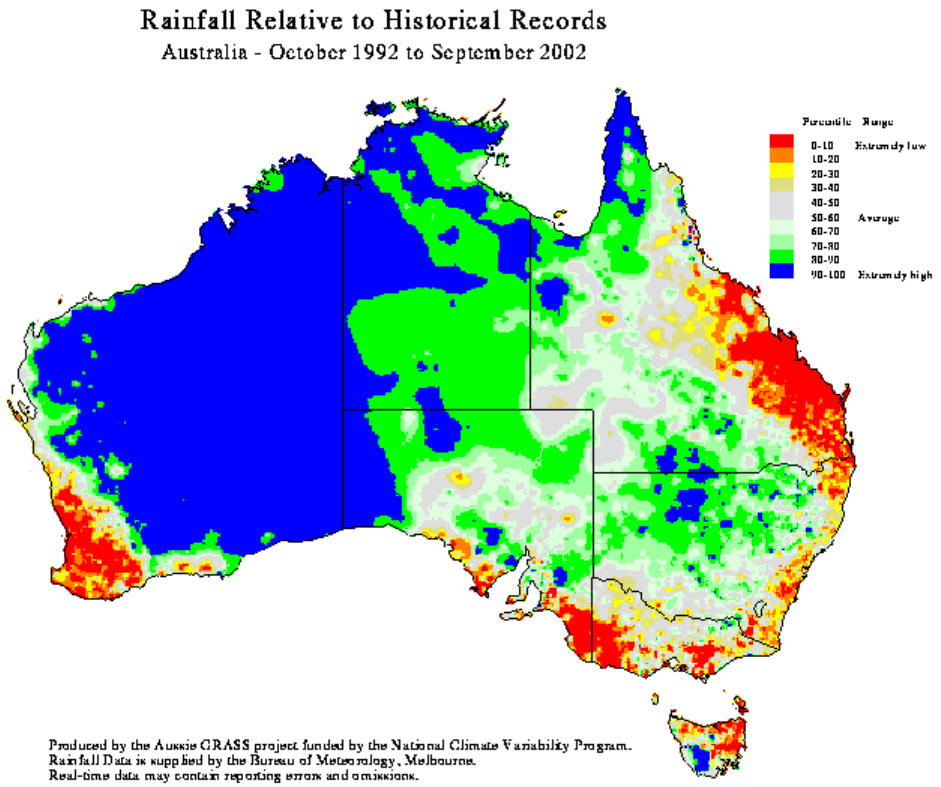
	policy driver, management applications are needed in inter-drought periods. The term drought, although debatable in some Australian contexts, has strong sociological and cultural associations that warrant its use in the CRC lexicon.
Climate science versus climate applications	The CRC will emphasise climate applications based on robust climate science.
Agriculture versus natural resource management	Both agricultural and natural resource management demands, an integrated context, will drive CRC programs.
Rural versus urban focus	The CRC will maintain a rural focus, but will be open to emerging interests of insurance, banking, emergency management, tourism, etc
Policy informing versus policy development	Informing policy will be a key basis for CRC activity. The CRC will not be directly involved in policy development or advocacy.
Technology informing versus technology development	Results of CRC research will inform a wide range of technology development activities, and will not necessarily be fully involved in developing all potential technologies through to the market. The CRC may form partnerships with technology developers as a pathway to the market.
Statistical approaches to climate forecasting versus mechanistic approaches	The CRC will give equal validity to both statistical and mechanistic approaches to climate forecasting.

3.5 Geographic distribution

Climate variability and drought risk are significant issues over most of Australia, particularly if the perspective is beyond that of seasonal drought. Our traditional perspective of droughts occurring over a period of up to a year or rarely, back-to back droughts, is now being enlarged by a decadal perspective and trends from climate change at longer time scales. This suggests there would be advantages of distributed nodes for the CRC to ensure genuine engagement with a wide range of issues and potential research users. The other important perspective is that shorter term droughts, whilst wide-spread, rarely cover most of the continent. In some events, the El Niño influence from the Pacific can be counteracted by developments in the Indian Ocean. This spatial extent of drought combined with the tendency to ignore drought lessons once the drought is over, again suggests value in a distributed approach which can maintain momentum.

The map below showing rainfall for the last decade relative to the historical record perhaps indicates a logical location of CRC nodes in the north-east, south-east and

south-west of Australia if the pressures of the last decade were the major driving force. The key point recognising we don't know likely trends over the next few decades is our recognition of the range of time scales involved and that different users will have quite different perspectives and planning horizons. For example, the south west corner of Western Australia has experienced a drying trend over several decades, and this has serious implications for planning Perth's water resources. The other two 'hot-spots in the south-east and the north-east also have major concerns for reliability of water resource systems. Our approach will recognise the range of issues and users. The drying trend in parts of southern Australia has seen an expansion of cropping in areas previously considered to wet. This benefit to the grain industry contrasts with the concerns of the water authorities.



3.6 Outline of the research programs

Required workshop output

A research program outline that is relevant to the CRC purpose, vision, mission and objectives; will deliver the highest quality science and research possible; and is well defined with clear outputs achievable during the life of the CRC.

The research programs need to demonstrate critical mass in terms of scale, scope and focus. In line with future directions of the CRC Program, other required features of the research program are flexibility to respond to opportunities and issues as they emerge and a systematic context with alignment across other parts of the national R&D and innovation support framework.

Other key issues that need to be addressed are:

- fields of research and integration of disciplinary approaches
- relationships with other CRCs in complementary areas
- balance between short term and long term research
- integrating and building on existing research
- building a broad base of participants including collaborators who are not partners
- identifying required research outputs that result in outcomes of benefits in the hands of research users, industry and Australia's economic, environmental development
- physical location of researchers and major nodes of the CRC's activities.

3.7 Partnerships

Required outcome for application

Firm collaborative arrangements with strong commitments to build value-adding links between research groups, and with users including industry and policy participants. The arrangements will integrate research, technology transfer and education, and build international linkages where these are relevant to the objectives of the CRC.

The Steering Committee has identified that there will be three levels of participation in the CRC comprising core partners, strategic partners and support partners.

Core partners will be those organizations that are highly credible in the business of climate variability and drought risk management research either as research providers or funders. They will have demonstrated their commitment to invest significant cash funds in the establishment of the CRC and may also provide in-kind research infrastructure or resources.

Strategic partners will be those organizations that are highly influential in the business of the application and dissemination of R&D results through rural services, consultancy advice, extension, education or training. They will have demonstrated their commitment to provide investment funds for the establishment of the CRC and/or in-kind research infrastructure or resources.

Support partners will be those organizations with state or national profiles that are unable to provide significant investment funds and/or in-kind resources for the CRC, but are willing to support its establishment in representations to the Australian Government.

The Department of Primary Industries, Queensland and CSIRO Sustainable Ecosystems have initiated the process to prepare an application in the 2004 round for CRC funding from the Commonwealth, and as initial core partners, have committed funds and resources for developing the application. This initial commitment may merge into a whole of government commitment by Queensland and whole of organization commitment by CSIRO.

The Steering Committee believes the establishment of a CRC has major benefits for and will be attractive to state agriculture and natural resources agencies, climate research and service provision agencies, universities, rural industry R&D corporations, agribusiness companies (including banks with strong agribusiness operations), local government, water management authorities and companies and insurance companies with high rural industry exposure.

The Howard Partners' evaluation report found that the more successful CRCs are those with a relatively small number of core partners who are highly committed to the objectives of the CRC.

A decision on the number of partners required may ultimately rest on the funds needed for the CRC to be successful. Adopting an expertise-based board with

appropriate accountability arrangements for reporting back to core partners can overcome the negative consequences of having a larger number of partners.

3.8 Funding

Required outcome for application

Budgeted resources, cash and in-kind, from all participants that demonstrates their firm commitment to the CRC (including the time allocation of people) and meet the CRC Program expectations for continuity, stability of funding and long-term viability.

Core partners are required to enter a contract with the Commonwealth (the Commonwealth Agreement) and a separate contract with other partners to regulate the operations of the CRC. Contracts may be up to 7 years.

The Commonwealth can provide a maximum of 50% of the total cost of establishing and operating each CRC, but the average contribution is below this amount. The amount sought from the Commonwealth needs to be based on an initial phase-in period of up to 2 years over which funding will be ramped up to the full amount sought with a corresponding reduction over the final 2 years.

Contributions may be in cash or in-kind, although cash contributions at a certain level are required to fund the proposed research program and meet the operational costs of the CRC. Partner organizations must indicate clearly the resources they will commit each year of the contract period.

Core partner contributions for the operation of the proposed CRC for Climate Variability and Drought Risk Management will be for years from 2005-06.

4. Governance arrangements:

4.1 Principles

- strong governance arrangements for the agreed model that covers all legal requirements (e.g. corporations, intellectual property and taxation laws), corporate obligations, board duties, CEO appointment, subsidiaries, financial control, auditing, accountability and reporting and committee operations;
- clearly defined values and principles for outstanding leadership from the executive team to build cooperative, productive and creative partnerships and networks that will enable achievement of CRC objectives; and guidelines for a highly effective management structure, and administrative and business processes and systems relating to staff, finance and operations.

4.2 Corporate entity and governing boards

The CRC Program has stated its preference for incorporated CRCs, or the adoption of a corporate structure for selected aspects of its operations and this has been supported by the Horward Partners' evaluation report. The preference is for a legal structure that separates the CRC from the joint venture partners so that management and operations are carried out in the name of the CRC rather than the individual joint venturers. However, CRCs that are not incorporated are required to adopt governance standards and fiduciary responsibilities that equate to an incorporated body and the critical question becomes one of effectiveness in meeting the objectives and the strength and commitment of partnerships.

There are obvious strengths and weaknesses of having a few key partners in the CRC as against having many partners or a large representational board as against a smaller expertise based board in terms of ease of gaining agreement and working relationships. These are matters that will be addressed by the Steering Committee following the input of prospective partners to the discussion papers and workshops. The principle to be adopted is that form should follow function and the Steering Committee will seek to develop an optimal model for meeting the CRC's objectives.

Issues that will be addressed by the Steering Committee include:

- The corporate entity based on the premise that the CRC will have governance standards and fiduciary responsibilities that are best practice amongst CRCs and meet the accountability standards of public sector corporations or Australian corporation law.
- Governing Boards are required to be accountable for the performance of the CRC and directors have corporate responsibilities and commitment to the objectives of the CRC. The trend of CRC corporate governance is for a small board of members selected on the basis of expertise required to direct the CRC's management and operations at a strategic level rather than represent the interests of individual partners or other groups.
- The directors need to be selected through an objective and transparent selection process involving core partner participation.
- Appointment of the chief executive officer (CEO) is a key responsibility of the CRC. The trend is for the CEO to be an ex-officio member of the board and selected by the Board. The CRC application will need to outline the expected position profile of the CEO.
- Boards are responsible for setting the strategic directions of the CRC and for the approval of its strategic and operational plans. They are required to establish appropriate sub-committees to ensure high standards of corporate governance including at least finance and audit committees.
- Management structures and arrangements need to be at the leading edge of CRC practice.

4.3 Accountability

CRC's are required to produce an annual report and audited financial statements in accordance with the Commonwealth Agreement and best practice in reporting by CRCs. The annual report is used by the Commonwealth Government to monitor the performance of the CRC in relation to the CRC Program objectives as specified in the Commonwealth Agreement.

The Howard Partners' evaluation report recommends that the Annual Report, and present Second Year and Fifth Year Reviews be integrated into a single reporting process that focuses on assessing the achievements of the CRC against credible milestones specified in the CRC's operational plan. The report also recommends quarterly reporting on income and expenditure against budget, and that the Board be required to commission a Performance Audit at least every 3 years.

Most CRCs have arrangements for reporting back to its partners either through advisory committees or an 'AGM' of members which are subject to high standards of accountability and transparency and the requirements of the Commonwealth Agreement.

5. Next steps in the application process

5.1 Timetable and steps in the application process

The process to establish a CRC requires the development and submission of a preliminary proposal and a full proposal (business plan) between now and May 2004. As mentioned, a Steering Committee has been instigated and an independent research company engaged to coordinate the development of these documents.

The next steps will involve:

- briefings and discussions with prospective partners following a letter from Dr Stone on behalf of the Steering Committee seeking support and partners
- expansion of the Steering Committee as core partners commit
- consideration of a discussion paper (Vision, Mission Statement, Objectives, Research Program and Corporate Governance) and workshop at Lancemore Hill Melbourne on 17/18 November to develop these elements of the Business Plan that needs to accompany the final application
- preparation of a second discussion paper addressing research utilization, adoption and commercialization; the education and training program; and evaluation arrangements)
- holding a second workshop in Toowoomba to develop the above elements
- preparation of a CRC prospectus and settlement of partnerships
- preparation and submission of a preliminary proposal (if this is required under revised guidelines from the CRC Program)
- if invited following a decision of the CRC selection panel, preparation of a final application and accompanying business plan for submission in May 2004
- presentation to the CRC selection panel
- if successful, establishment of an interim board to prepare for the establishment of the CRC.

5.2 Application and CRC business plan

This will formally incorporate elements from the Prospectus that have been agreed by the core partners and others including the purpose, vision and mission statements; the objectives and national benefits; the research program; education program; research utilization and commercialisation program; communication strategy; governance, leadership and management; financial plan; and performance management.