



# Implementation Plan for Climate Change Adaptation Research: Human Health

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## 1. Purpose of Implementation Plan

The purpose of this Implementation Plan is to indicate a pathway for attracting research investments and capacity to address the research priorities identified by the National Climate Change Adaptation Research Facility (NCCARF), through the *Human Health and Climate Change: National Climate Change Adaptation Research Plan* (Health NARP) process. This Implementation Plan:

- outlines the processes used to develop the Health NARP and this Implementation Plan;
- explores potential sources of funding and opportunities for collaborative arrangements;

- indicates potential sources of research delivery and outlines a broad strategy for building national investment for delivering the Health NARP; and
- identifies potential impediments and risks to the delivery of the priority research.

Although this Implementation Plan addresses funding for research through to 2012, it should not be considered as a static document. NCCARF plans to update the Health NARP at least once during the current phase of operation, and this activity is now scheduled to take place in the period 2010-11. In parallel, the Implementation Plan will also be updated to ensure that emerging opportunities are identified, developed and harnessed for action.

Through a collaborative arrangement between the Department of Climate Change and Energy Efficiency (DCCEE) and the National Health and Medical Research Council (NHMRC), investment is already being made towards delivering research against the priorities identified in the Health NARP (see Appendix 1 for a list of these priorities). This Implementation Plan summarises the process and current state-of-play around this investment. Whilst the NHMRC pathway is very important, a broader approach to investment is needed to encompass the full scope of the Health NARP research priorities and, more widely, the research interest and efforts now being focused on the human health implications of changing climatic conditions.

## **2. Background**

Extreme variability is a characteristic of the Australian climate, and this variability has effects on human health. In southern Australia, there are risks from heatwaves and bushfire, and in northern Australia flooding can lead to contamination of water supplies, and to increased risk of vector-borne diseases such as dengue fever. Adverse effects on the physical and mental health of individuals and groups may occur in the workplace, public places and the home. Climate change can lead to a changed frequency and severity in these extreme events, and therefore to a change in the scale of impacts on human health.

### **2.1 The National Climate Change Adaptation Research Plan for Human Health**

NCCARF developed and disseminated the Health NARP<sup>1</sup> in December 2008 that:

- identifies critical gaps in the information needed to address key issues arising from the impacts of climate change on human health; and
- outlines the priorities for research for the next 5-7 years.

The Health NARP was developed by a writing team with high expertise in climate change and health. The writing team used a process that involved understanding key information requirements and identifying gaps in the information available to stakeholders. Development of the Health NARP also involved widespread national consultation, including a four-week

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<sup>1</sup> The Plan can be downloaded from the website at [www.nccarf.edu.au](http://www.nccarf.edu.au).

public review of the draft Health NARP, during which NCCARF solicited comment from key stakeholders<sup>2</sup> representing a diverse range of interests:

- The research community including universities, CSIRO, Bureau of Meteorology, research institutes and private sector research bodies (as illustrated by the insurance industry sector and private health care providers);
- The DCCEE and NHMRC as key research funding bodies;
- Government bodies (at all levels) whose policies affect resilience and coping which have responsibility for occupational health and safety, hospital and community health care services or the aged; and
- The health sector including primary care, specialist services, hospital facilities, public health surveillance, public health control measures, and health promotion.

All submissions were considered when the Health NARP was finalised. The priority research questions identified in the Health NARP<sup>3</sup> are organised into seven issue areas:

- Heat,
- Extreme weather events,
- Vector-borne disease,
- Food, air and water quality,
- Mental health,
- Community and Indigenous health and
- Health care system and infrastructure issues.

### **3. Existing funding action to address research priorities in human health**

In December 2008 the research priorities identified by the Health NARP were coupled with an NHMRC Special Initiative *Health Challenges of Climate Change* under their research support grants program and the DCCEE and NHMRC each contributed \$3 million for a \$6 million research investment fund. The DCCEE contribution was from the Australian Climate Change Adaptation Research Grants Program, which has a total of \$30 million to address climate change adaptation research priorities.

NHMRC made the first call under the Special Initiative in December 2008, and submitted proposals were evaluated through 2009 ('the 2009 call'). Although the results of the call have not yet been announced, it is known that not all of the money was awarded, and a second call was made in December 2009 ('the 2010 call').

The 2010 call took into account recommendations made during the evaluation and review of the 2009 call. Specifically, NCCARF and the Adaptation Research Network for Human Health (Health ARN)<sup>4</sup>:

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<sup>2</sup> Key stakeholders are listed in Appendix 2.

<sup>3</sup> Priority research questions are listed in Appendix 1.

- Provided NHMRC with *Notes for Assessors* to guide the assessments being conducted and a list of suitable assessors for the call;
- Encouraged researchers in the Health ARN to register as potential assessors with NHMRC and to name their area of expertise as *Climate Change Adaptation*; and
- Conducted two national workshops (in Adelaide and Townsville) to assist prospective applicants deliver high-quality submissions.

Both the 2009 and 2010 Special Initiative research calls explicitly direct potential proposers to the research priorities identified by the Health NARP. It is expected that the actions taken at the commencement of the 2010 call will lead to closer alignment between the adaptation and health communities of researchers.

The \$6 million DCCEE and NHMRC research investment in human health implications of climate change is one of the largest such investments globally. The value of this investment can be achieved only if the three organisations involved, DCCEE, NHMRC and NCCARF, continue to manage the program towards its objectives and communicate its research findings and knowledge to end users.

Thus the key recommendation of this Implementation Plan refers to the NHMRC Special Initiative *Health Challenges of Climate Change*:

*The three organisations involved in establishing the Special Initiative, DCCEE, NHMRC and NCCARF, must collaborate closely to ensure that outcomes from research funded by the Special Initiative better adapt Australian human health practices and institutions for climate change.*

## **4. Potential sources of research funding**

This section outlines potential sources of research funding to address climate change adaptation in human health. NCCARF has explored potential sources of funding to address climate change adaptation for human health, beyond the NHMRC Special Initiative, through informal discussions with Commonwealth, state and territory health department officials, examining the process used for the 2009 and 2010 research calls under the NHMRC process; interviewing current and potential research partners; and seeking input from members of the Health ARN.

### **4.1 Australian Government**

#### **4.1.1 Department of Climate Change and Energy Efficiency - Adaptation Research Grants Program**

As noted in Section 3, DCCEE has now allocated \$3 million as seed funding for research in climate change adaptation for human health through its Adaptation Research Grants Program. Specifically, in partnership with the NHMRC and NCCARF, the DCCEE has:

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<sup>4</sup> The Health ARN is described in section 5.1.

- initiated two open research calls; and,
- identified successful research projects in the first call (yet to be formally announced).

In separate initiatives, the DCCEE funds research which contributes to understanding climate change adaptation for human health, such as a recent report about risks of climate change to Indigenous peoples of the tropical North (Green et al., 2009). This report identified the following human health risks:

- increasing incidence of heat stress and dehydration, respiratory illnesses and increased transferability of disease such as melioidosis;
- increased vulnerability and reduce adaptive capacity due to poor nutrition, overcrowded housing, and lack of adequate water supplies;
- Indirect impacts such as reduction in bush food yields, disruption of fisheries, loss of livelihoods, and population displacement due to sea level rise;
- disruptions that affect sacred sites and hunting grounds may be felt strongly and adversely affect psycho-social as well as physical well-being; and
- increased pressure on health systems.

Recommendations were made around appropriate adaptation strategies to deal with these risks.

#### **4.1.2 National Health and Medical Research Council (NHMRC)**

The NHMRC is Australia's leading funder for public and individual health research. In addition to the Special Initiative already discussed, a new key area of NHMRC research funding, the *Partnerships for Better Health*, represents a major new focus for the organization: *[Partnerships] aim to lead to more effective connections between decision makers who design policy and researchers, and to improve the availability and quality of research evidence to help inform the policy process.* The partnership program has two parts.

- a. NHMRC Partnership Projects support collaboration on specific projects between researchers and policy or practice agencies. One round of calls in this area has been completed, and the results were announced in October 2009. No projects related to climate change adaptation were funded. The proposals in the second call are currently being evaluated.
- b. NHMRC Partnership Centres for Research Excellence will be established, most likely for a five-year period, as leaders in scientific research relevant to policy and practice. The NHMRC web site indicates that \$70 million has been allocated for this initiative. There has been a public consultation, to which NCCARF made a submission, and the outcomes from this consultation are currently under evaluation. Members of the Health ARN are seeking opportunities to participate in Centres, such as through a potential Centre of Excellence in Climate Change Adaptation.

#### **4.1.3 Other Commonwealth Departments**

Many Commonwealth Government departments have specific interests in the effects of changing climatic conditions on human health.

- Department of Health and Aging: the impacts of extreme weather events and prolonged heatwaves on aging populations. This department sees its research needs being fulfilled primarily through the NHMRC.
- Department of Agriculture, Forestry and Fisheries (DAFF): the health of rural of communities and mental health of people working in the agricultural sector.
- Attorney-General's Office:
  - extreme events and demands for emergency management provision;
  - legal capabilities of local governments and understanding of liabilities under changing climatic conditions; and
  - risk analysis and prioritisation of climate change in the context of other stresses and risks which have implications for human health.
- Department of Defence: heat impacts on personnel, water-borne vectors and mosquito distribution, especially in tropical and sub-tropical training areas.
- Department of Education, Employment and Workplace Relations: potential work place implications and capacity building to address climate-related health issues.
- Department of Environment, Heritage, Water and the Arts (DEWHA): the management of national parks and world heritage areas, assessing projects and water resources.
- Department of Families, Housing Community Services and Indigenous Affairs (FaHCSIA): climate change adaptation generally as part of a wider consideration of multiple stresses affecting the lives of Australians. For example, FaHCSIA supported the National Rural Women's Summit in 2009 which explored issues around climate change and set out priority recommendations for action.
- Department of Infrastructure, Transport, Regional Development and Local Government (DITRDLG): a wide spectrum of portfolio interests have embedded concerns over health implications of climate change.
- Department of Innovation, Industry, Science and Research (DIISR): improving tools and capacity and the role of innovation for climate change adaptation decision-making by state and local government, business owners and local groups, research integration and good international engagement, all in relation to human health implications.
- Department of Veterans Affairs (DVA): the health and welfare of personnel who have served or are serving overseas, including physical and mental health, homecare and support. DVA's dedicated research and development area may be able to collaborate in research activities into health implications of climate change adaptation on core areas of departmental interest.
- Department of Resources, Energy and Tourism (DRET): health impacts for tourism operators in coastal areas and around eco-tourism, including the effects of increased incidence of extreme events and time to recovery. DRET is also concerned about

possible negative images of Australia overseas, such as arising from increases in health and safety incidents arising from climate change-related disasters.

#### 4.1.3.1 National data provision

Empirical research is dependent on data, and there are two main providers to underpin research around climate change and human health. Each has statutory obligations with respect to data quality, providing a level of assurance for researchers drawing on national scale datasets.

- The Australian Institute for Health and Welfare is Australia's national agency for health and welfare statistics and information.
- Australian Bureau of Statistics (ABS) has as its vision statement: '*We assist and encourage informed decision making, research and discussion within governments and the community, by leading a high quality, objective and responsive national statistical service*'.

## 4.2 State and Territory Government Organisations

All state and territory governments have departments and research capacity concerned with human health. These encompass primary health care and the provision of hard and soft infrastructure to support wide ranging health services. There is demonstrated awareness of the potential impacts of extreme weather conditions and climate change on vulnerable cohorts: the very young, the aged and people receiving institutional and at-home health care services. While these departments are interested in collaborative research activities, no new immediate and easily accessible sources of funding have been identified.

## 4.3 Australian Research Council (ARC)

The Australian Research Council grants program is often the first port-of-call for many researchers and research institutions that seek financial support for projects. Grants offered by the ARC under its National Competitive Grants Program (NCGP) include the well-known *Discovery Projects* and *Linkage Projects* grants. Through the NCGP, the ARC aims to support research and research training of national benefit. *Responding to climate change and variability* is identified by ARC as a priority goal under the national research priority of *An environmentally sustainable Australia*.

Another recent ARC scheme, *ARC Future Fellowships*, promotes research in areas of critical national importance by giving outstanding researchers incentives to conduct their research in Australia. The aim of *ARC Future Fellowships* is to attract and retain the best and brightest mid-career researchers and significantly boost Australia's research and innovation capacity in areas of national importance. Preference will be given to those researchers who can demonstrate a capacity to build collaboration across industry and/or research institutions and/or with other disciplines.

Over a five-year period (2009-2013), *ARC Future Fellowships* is offering four-year fellowships to 1,000 outstanding Australian and international researchers in the middle of their career. In addition, each researcher's Administering Organisation will receive funding of

up to \$50,000 per year to support related infrastructure, equipment, travel and relocation costs. The first 200 *Future Fellowships* were announced in September 2009.

#### **4.4 Private Sector and Non Government Organisations**

A wide range of peak bodies for industry sectors, non government organisations and advisory bodies are aware of the need to adapt to climate change. For example, insurance companies are addressing the human health implications of extreme weather and changing climatic conditions, as in the Insurance Council of Australia policy paper '*Improving Community Resilience to Extreme Weather Events*'.

Peak organisations representing public and environmental health professionals and private sector health care providers are well aware of the human health dimensions of changing climatic conditions in broad terms and the need for ongoing research. However they were not able to identify immediate and easily accessible sources of funding for this research. These organisation are able to aid the Health ARN in communicating to their members about both research calls, collaborations and results, including encouraging national and state/territory based non-government responses to research calls.

NCCARF will continue dialogue with bodies such as:

- The Public Health Association of Australia, regarding its involvement in promoting more innovative climate change and human health research and in helping to lever research funding;
- UnitingCare regarding research funding into climate adaptive hospitals and home care services, the latter being a particular interest of BlueCare as the nursing arm of UnitingCare;
- The Royal Australasian College of Physicians, that is already collaborating with the Health ARN;
- The Australian Local Government Association and state based Local Government Associations regarding the human health dimensions of climate;
- Regional Development Australia, an emerging on-the-ground initiative of the DITRDLG and specific regions, such as the Kimberly, Goldfields-Esperance and South West in WA and the Sunshine Coast in Queensland, regarding research into the human health dimensions of climate change for regional Australia;
- National Seniors Australia regarding potential research partnerships into the impacts of climate change on aging populations;
- The Insurance Council of Australia regarding collaborative research into the human health impacts of extreme weather involving NCCARF and Health ARN partners; and
- The National Farmers Federation regarding collaborative and co- funding for research into the mental health dimension of extreme weather events and their impacts.

#### **4.5 International**

Many international organisations could interface with research in Australia to address the research priorities in the Health NARP as indicated by the World Health Organisation (WHO) Collaborating Centre for Environmental Health Impacts at Curtin University. While no immediate opportunities for program-to-program collaboration have been identified with such organisations, opportunities remain for scientific exchange and collaboration on a project-to-project basis. For example, the Australian National University, through the National Centre for Epidemiology and Population Health, is carrying out research funded by AusAID and WHO *on human health vulnerability assessments*. There are also possibilities for collaborative work with individual overseas research organisations, such as universities.

#### **4.6 Summary**

Beyond the NHMRC Special Initiative there are limited immediate potential sources of funding to address climate change adaptation for human health. Potential sources include Commonwealth programs, including from the DCCEE, the NHMRC and the Australian Research Council (ARC). The CSIRO Climate Adaptation Flagship is an additional potential partner for collaborative activities.

Additional funding for climate change-related health research (with a more distinct jurisdictional and regional focus) may come from state, territory and local governments, although the potential at present is judged to be small. Research funding could also be generated through strategic partnerships with non-government organisations, the private sector, charities and philanthropies. With respect to the prospects for collaboration and support from the private sector, there is increasing interest in this general topic of impacts and risks from climate change in particular from the private hospital and insurance sectors.

### **5. Potential sources of research delivery: engaging with stakeholders**

Australia has a long history of human health research but relatively less research about the effect of climate change on Australia's human health. Similarly, there has been only limited synthesis of regional and jurisdictional clinical and public health data to produce national scale perspectives. This situation is being addressed through integration and synthesis work being undertaken by NCCARF partners and the first projects under the DCCEE-NHMRC jointly funded Special Initiative described in Section 2.

To date, consideration of the human health dimensions of climate change adaptation has been mainly recognised by research centres within universities, by individual researchers and by focused private sector groups (eg Insurance Group Australia). Research capacity in climate change adaptation for human health is distributed sparsely across Australia in relatively small research groups housed within various university centres and departments or in specific groups within government health departments and agencies.

The key research organisations that could help implement the Health NARP were identified and engaged through its consultation process. In some cases, these research organisations have access to resources that might be used to co-fund research to address the Health NARP's priority research questions.

## 5.1 Adaptation Research Network for Human Health

The NCCARF Adaptation Research Network for Human Health (Health ARN) is hosted by the National Centre for Epidemiology and Population Health at the Australian National University. The Health ARN is working to *'improve Australian knowledge about climate change adaptation and human health to enable decision-making by government, industry and communities. This will be achieved by fostering interdisciplinary research, building research and decision-making capacity, facilitating collaboration between all stakeholders and communicating research findings broadly'*. The main aims of the Health ARN are (to quote):

- *To foster interdisciplinary research and emerging research methods (time-series methods, spatial analyses, systems-based modelling of complex ecological relationships and processes, and scenario-based modelling of future health risks).*
- *To build research and decision-making capacity by attracting and leveraging new funding, and focusing on mentoring and support for early career researchers and policymakers.*
- *To facilitate collaboration between researchers, policymakers and practitioners, including regional conditions to strengthen Australia's capacity to anticipate and mitigate the human health consequences of climate change.*

Currently the Health ARN has a membership of 21 partner institutions and over 150 researchers from universities, government research institutions and industry. Collectively, the members have access to a wide range of field and laboratory research facilities and have knowledge of the pathways to public and private sector research investment funds. Thus, the Health ARN could serve as a vehicle to lever cash and in-kind research investment.

Examples of current collaborative research activities through the Health ARN are:

- Developing a collection of State of the Science and Policy papers on priority themes, to inform research planning within the Health ARN's thematic nodes.
- Funding climate change adaptation research planning workshops on mental health and vector-borne disease, and contributing to a national workshop on thermal impacts, hosted by the Victorian Government. The 2010 Australian Academy of Science Fenner Conference on the Environment with the theme *'Co-Benefits for Health from Action on Climate Change'*, and taking place in June 2010, is being organised by the Health ARN.
- Hosting annual science writing workshops for PhD students who are members of the Health ARN, jointly with the Royal Australasian College of Physician's Faculty of Public Health Medicine.
- Engaging with relevant initiatives led by other Adaptation Research Networks, such as the initiative on Climate Change and the Urban Environment led by the Australian

Academy of Technological Sciences and Engineering and supported by the Adaptation Research Network for Settlements and Infrastructure.

The Health ARN is the key vehicle for extending the breadth and depth of the research agenda. Its activities should be encouraged, and more innovative ways of obtaining funding explored.

## **5.2 State and Territory Government Departments and Agencies**

Each state and territory government has a health department. Across the country these institutions of government have widely differing levels of research capability and professional researcher awareness and capacity in the field of climate change adaptation. As, the human health dimension of climate change is an emerging research issue, NCCARF will seek to foster greater collaboration and innovative ways of harnessing some of the resources of the State and Territory health departments as active research partners with the Health ARN, primarily through the Forum for NCCARF Interaction with States and Territories (FORNSAT).

Much of the emerging research effort focusing on climate change adaptation in the States and Territories is being delivered in collaboration with universities and other partners in the Health ARN. An example is research into the human health implications of the impacts of extreme weather events, leading to the development of adaptive strategies and on-the-ground responses, in Victoria, South Australia and Tasmania. This focused area of research effort has been given considerable impetus by the southern heatwaves of 2009.

NCCARF is aware of intergovernmental mechanisms in the field of human health that could be used to inform the research agenda in the future, from the demand side, and offer advice on optimal ways for disseminating research product so that it has the maximum utility for users. Specifically, the implications of climate change adaptation and human health and research outputs could be brought to the attention of the Australian Health Ministers Advisory Council (AHMAC), which supports the Australian Health Ministers Conference (AHMC). These intergovernmental mechanisms are the responsibility of the Department of Health and Aging and the Department of Veterans Affairs. Two intergovernmental mechanism linked to the AHMAC are the national Aboriginal and Torres Strait Islander Council and the Australian Commission on Safety and Health Care. Both should be informed of the benefits that could accrue from encouraging funding of targeted research around climate change and adaptation.

The concerns of States and Territories around climate change adaptation and human health are different depending on geographical location: heatwaves and bush fire are important issues for southern States are around while managing impacts of cyclones and floods for states and territories that extend into the tropical North. For all, the climate change-related risks for human health are associated with changes in the intensity and frequency of such extreme events.

## **5.3 Commonwealth Scientific and Industrial Research Organisation (CSIRO) activities**

### ***5.3.1 Urbanism, Climate Adaptation and Health Collaboration Cluster***

The Australian National University, National Centre for Epidemiology and Population Health, and University of Queensland's School of Integrative Biology have been selected to lead a three-year, \$3.94 million 'Collaboration Cluster' in partnership with CSIRO. Other organizations involved include the University of Melbourne; the University of Western Sydney; Curtin University; Monash University; James Cook University; Queensland Institute of Medical Research; New South Wales Department of Primary Industries; and Arup.

The Urbanism, Climate Adaptation and Health Collaboration Cluster will develop adaptation strategies to safeguard the health of our urban populations in the face of a variable and changing climate. The Cluster's research program will focus on heat stress, food security and safety, air quality, and the changing risk posed by vector-borne diseases such as dengue fever due to climate change.

The CSIRO Climate Adaptation Flagship's goal of assisting Australia develop practical, equitable, effective and cost-effective adaptation options, especially for urban populations, will be significantly enhanced by the cluster's research.

### **5.3.2 South East Queensland Climate Adaptation Research Initiative (SEQ-CARI)**

This three year research program is assessing south-east Queensland's vulnerability to climate change, and seeks to develop practical, cost-effective strategies to help the region adapt. Research will focus on the implications for agriculture, infrastructure, the environment, public health and emergency services. The partnership brings together:

- CSIRO Climate Adaptation Flagship
- Griffith University
- The University of the Sunshine Coast
- The University of Queensland.

### **5.3.3 Other CSIRO initiatives**

The CSIRO Health Cluster is already involved in researching the human health dimensions of climate change adaptation through the Health ARN and this avenue for collaboration and partnership is expected to be enhanced in the coming years.

## **5.4 Cooperative Research Centres (CRCs)**

Cooperative Research Centres (CRCs) bring together researchers from universities, CSIRO, other Australian and state government research organisations, private industry, and/or public sector agencies in long-term collaborative research arrangements. CRCs are funded to support research, development, and education activities to achieve real outcomes of national economic and social importance. Two health and medical CRCs have interests that may resonate with the climate change adaptation aspects of human health. They are the CRC for Aboriginal Health (CRCAH) and the CRC for Asthma and Airways. Additionally, the research activities of the Bushfire CRC, the CRC for Remote Economic Participation, the CRC for

Sustainable Tourism (now being wound up) and the Desert Knowledge CRC (also being wound up) are relevant, but not central, to climate change and human health.

It is the case for all activities within the Australian Climate Change Adaptation Research Grants Program that opportunities with CRCs are still to be fully explored for their potential for collaboration to fund and deliver national level research. In the light of the operational and funding mechanisms, there may be only limited opportunity for collaboration between the DCCEE and these CRCs, at the program level, at this time. Greater opportunities could arise on a project-by-project basis. NCCARF will explore opportunities for collaboration with relevant CRCs, as a part of the overall research investment strategy.

One avenue with potential for collaborative activity in the area of human health is the CRCAH, which is a partnership between Aboriginal people, communities and organisations, health policy makers, planners and service delivery organisations, and educational and research institutions. Like all CRCs, the CRCAH seeks to make links between industry and research and promotes research transfer aimed at getting research findings into policy, practice and service delivery. The CRCAH is funded between 2003 and 2010 and supports research that will lead to improvements in Aboriginal health.

## **5.5 Universities**

Public and private universities in all jurisdictions are actively engaged in widely varying research activities across the broad field of human health. The work encompasses highly theoretical questions that challenge the ways in which problems are framed through to policy formulation and decision making processes for practical problem solving. The operational arrangements that focus the research effort within and between universities range from formal institutes and centres through to project-by-project collaborative activities between institutions and individual researchers. The scope of participation of the university sector in this research space is well illustrated by the membership of the Health ARN.

Within the climate change field, there are new opportunities for large groups of researchers across universities to tackle complex multi-faceted problems in innovative ways. Collaborative research can be a highly dynamic process, and universities generally welcome partnership arrangements such as those with CRCs and other research groups (including overseas) and agencies. Universities are no longer purely '*a public good*' and due cognisance is taken of the costs and benefits of collaborative activities which are assessed on a case-by-case basis.

## **5.6 Regional Strategic Partnerships**

Currently there are a number of emerging regional partnerships between universities, state, and national agencies with research interests in the climate change dimensions of human health. The geographic spread of these partner groups potentially provides a rich resource to address national-scale research questions in the health sector. Some cross-institutional arrangements exist and many of the researchers in these partner groups are active members of the Health ARN. A number of these partnerships have expressed keen desire to connect into the national research agenda and work with NCCARF in the delivery of the Health NARP (e.g., the Centre for Rural and Remote Mental Health Queensland, based in Cairns).

Regional Development Australia provides another example of an emerging strategic partnership base. Effort should be focused into harnessing regional linkages to obtain national perspectives. This could entail low cost 'action research' and utilise the integration and synthesis component of internally funded NCCARF activities.

## **6. Strategy for the Building the National Investment**

### **6.1. Situation**

Australia has a history of high-quality national and sub-national research and research cooperation in the health area. These provide a sound foundation for the research required to address the effects of climate change and to develop adaptation response strategies. However, new funding initiatives will be required to develop the national-scale research required to address climate change adaptation and human health, especially as Australia is likely to experience climate-induced health impacts different from those that will affect most or perhaps all other developed nations.

### **6.2. Strategic Directions**

As a dynamic document, this Implementation Plan seeks to identify strategic directions for furthering the building of national scale research effort to address the human health dimensions of climate change.

As noted in section 3, the initial research investment of \$6 million by DCCEE and NHMRC is one of the largest sums of money allocated to this topic anywhere in the world. Properly managed, it has the potential to create a world-class body of research into climate change adaptation for human health which, properly communicated to policy- and decision-makers, will greatly strengthen the capacity of Australia to manage climate change effects on this sector.

The discussion which follows takes into account this funding initiative. It explores additional possibilities around research needs and funding possibilities, with a view to moving closer to the goal of mainstreaming climate change adaptation into health-focussed policy- and decision-making in Australia.

#### *6.2.1 Cross-cutting issues*

New thinking and new approaches to partnership building are required to broaden the scope of research beyond the traditional academic areas of human health research and funding mechanisms. One way to foster such partnership building is to strengthen cross linkages between the Health NARP and other NARPs that have specific human dimensions such as Primary Industries, Settlements and Infrastructure, and the cross cutting Social, Economic and Institutional Dimensions NARP.

#### *6.2.2 Mainstreaming*

For Australia to successfully adapt to climate change, NCCARF's role and work will need to become 'mainstreamed' into decision- and policy-making throughout Australian society.

Integrative approaches are needed to mainstream the human health dimensions of climate change adaptation into areas such as:

- occupational health and safety;
- environmental health;
- health promotion;
- climate adaptive built environments;
- accommodating and caring for the aged;
- operation of the public and private hospital sectors; and
- the delivery of health care services in the home.

One example of the proactive way forward using public sector funding is the NHMRC *Partnerships for Better Health* program described in Section 4.1.2. This initiative, and some of the other funding mechanisms of the Council such as Fellowship Awards at one end of the scale and individual scholarships at the other, should be pursued to lift the profile of research into climate change adaptation for human health.

### **6.2.3 Private sector funding**

Funding through the private sector, philanthropic bodies and non-government organisations also needs to be further explored. This will entail maximising the involvement of current partners in the Health ARN and fostering new and innovative collaborations. A key focus should be on the benefits to be gained from supporting targeted research that will help to better inform investment and resource allocation. For example, the human health dimension of climate change adaptation is of considerable importance to:

- the insurance and financial security sectors;
- primary industry (agriculture, forestry and fisheries);
- mineral extraction and processing;
- tourism facility and activity operators;
- private hospital and health care providers,
- the industrial, trade and professional components of the union movement;
- community service organisations; and
- sporting and recreation bodies.

## **7. Impediments and Risks**

### **7.1 Impediments**

Australia has a small research community in the field of human health, especially considering the challenges that will be involved in building and delivering a national research program to address the priorities in the Health NARP. Thus, it is recognised that building research capacity to address the climate change adaptation dimensions of human health is very important, but will not be easy or straightforward. It will require long-term strategies to encourage high quality graduates to undertake honours projects and proceed to research for higher degrees. It will also require that a new cohort of mid level researchers be encouraged into the health field from other professions. Implementing the research agenda will thus be an on-going process, building strength with time.

## 7.2 Risks

The DCCEE and NHMRC have jointly invested \$6 million in the NHMRC Special Initiative *Health Challenges of Climate Change*. If adaptation around human health needs in Australia is to be well-informed, this program must deliver world-class and relevant research outcomes, well-tailored to the needs of decision- and policy-makers. To achieve this goal, the three organisations involved, DCCEE, NHMRC and NCCARF, must collaborate closely to ensure that the outcomes from the research are managed and communicated so that Australian human health practices and institutions are able to effectively adapt to the challenges and opportunities that arise from climate change.

## 8. Monitoring

The following activities will be undertaken:

- NCCARF, together with the Health ARN, will continue to track research being conducted across Australia to implement the Health NARP research priorities. It will monitor the progress of research under the NHMRC Special Initiative *Health Challenges of Climate Change*.
- The Implementation Plan will be updated periodically.
- The Health NARP was the first to be completed by NCCARF. As part of its Funding Agreement, NCCARF should update the NARPs at least once in its five years of operation. It is clear that thinking around climate change adaptation for human health has progressed, as the body of research has grown. It is planned to revisit the Health NARP during the operational period 2010/11.

Success in developing and implementing research directed towards priorities in the Health NARP will be measured in terms of:

- the extent to which the research budget is built nationally;
- the degree of collaboration and coordination to maximise the efficiency of resource use; and
- the extent to which the research delivers nationally to the needs and expectations of research funders, decision makers, and stakeholders.

## Reference

Green D, S Jackson and J Morrison, 2009, Risks from Climate Change to Indigenous Communities in the tropical North of Australia. Department of Climate Change and Energy Efficiency, Canberra.

**Priority Research Questions in the  
National Climate Change Adaptation Research Plan: Human Health**

<b>Heat</b>
<ul style="list-style-type: none"> <li>• Which categories of persons, in city, town and countryside, are at greatest risk of death or serious illness event (i.e. most 'vulnerable') from short-term extremes of heat? Do levels of understanding of the nature of these risks, and personal/household-level ways to ameliorate them, vary between these population sub-groups? Are there changes that are needed for mainstream policy for public health?</li> <li>• Do early warning systems for heat waves and other extreme weather events reduce adverse health impacts? Which types work best?</li> </ul>
<b>Extreme weather events</b>
<ul style="list-style-type: none"> <li>• Does public education about the risks of extreme events, and their avoidability, alter people's knowledge and behaviour?</li> </ul>
<b>Vector-borne disease</b>
<ul style="list-style-type: none"> <li>• What are the future risks associated with arbovirus diseases, with a particular focus on population movements and changes in Northern Australia, and monitoring of potential vectors? Does climate-driven predictive modelling of any particular vector-borne infectious disease outbreaks reduce its occurrence?</li> <li>• Can meteorological forecasts of impending seasonal weather conditions provide useful advance warning of altered risks of vector-borne infectious disease outbreaks? Does this differ between human-only and zoonotic VBDs? Are such forecasts enhanced by inclusion of information about changes in environmental indicators (e.g. surface water, vegetation levels, etc.)? Will the implementation of such early warning systems result in reductions in outbreaks or infection rates?</li> </ul>
<b>Food, air and water quality</b>
<ul style="list-style-type: none"> <li>• Where will the likely climate change impacts on food safety and quality be observed, and what measures/practices can be implemented to reduce the risk of food-borne disease outbreaks?</li> <li>• What is the role of water authorities responsible for treating water in the management of climate change impacts?</li> </ul>
<b>Mental health</b>
<ul style="list-style-type: none"> <li>• What interventions are required to minimise the potential adverse mental health effects of natural disasters (such as drought and adverse climatic events), building on the established models and frameworks in disaster mental health planning?</li> </ul>

### **Community and indigenous health**

- Which types of intervention most effectively increase the level of community resilience? What key characteristics of rural and urban communities determine their level of resilience to the stress of long-term changes in climatic and environmental conditions?
- How might climate change and climatic extremes affect aspects of indigenous culture and living conditions that affect health

### **Health care system and infrastructure issues**

- What models of integrating the entire health sector's adaptive responses best support co-ordination of adaptive activities?
- What models of linkage and knowledge exchange between climate change researchers and policy-makers best provide relevant decision support in planning health sector responses?
- What role should the primary health care sector play as part of a broader public health adaptive response to climate change?
- Is the healthcare system adequately structured and staffed to handle increased demands from (a) extreme weather events, and (b) outbreaks of infectious diseases? What improvements are needed, feasible and effective?
- What forms of in-career training of healthcare professionals best prepares them to identify and respond to climate-related health impacts?

### **Stakeholders Involved in the Preparation of the *National Climate Change Adaptation Research Plan: Human Health***

ACT Health  
Australian Institute of Health and Welfare  
Australian Medical Association  
Bureau of Meteorology  
CSIRO Climate Flagship  
CSIRO – Dr Kevin Hennessy  
Department of Emergency Services QLD  
Department of Environment and Climate Change NSW  
Department of Health and Ageing  
Department of Health and Families NT  
Department of Health WA  
Emergency Management Australia  
Environmental Health Committee (enHealth)  
Great Barrier Reef Marine Park Authority (GBRMPA)  
Griffith University – Professor Pat Dale  
Griffith University – Professor Paul Scuffham  
Public Health Association of Australia  
Queensland Health – Dr Jeanette Young  
Queensland Government  
SA Health  
National Blood Authority  
National Health and Medical Research Council – Caroline Mills  
Macquarie University – Professor Lesley Hughes  
Menzies School of Health Research