

Authorised for Publication on 15/07/11

	A.C.T. LEGISLATIVE ASSEMBLY COMMITTEE OFFICE
EXHIBIT	5
DATE RECEIVED	14/09/11
INQUIRY	Ecological Carrying Capacity of the ACT and Region

CURF.

CANBERRA URBAN AND REGIONAL FUTURES

CURF paper No. 1

August 2011

Barbara Norman, University of Canberra
Will Steffen, The Australian National University

**Canberra Urban and Regional Futures –
An innovative regional platform for building resilience**

Barbara Norman, University of Canberra*

Will Steffen, Australian National University *

Canberra Urban and Regional Futures (CURF) is an innovative platform for sharing information across institutions in the context of sustainability and climate change. It strives for a collaborative regional response to building resilience through sharing, connecting and co-producing knowledge across boundaries.

The purpose of this paper is to explain the origins of CURF and its objectives; describe the regional context of CURF; outline the nature and scope of the CURF platform; discuss how resilience can be strengthened through collaboration, and consider the potential contribution of CURF to long-term change. CURF is at its formative stage and this paper is the first step in documenting an evolving concept founded by two universities - University of Canberra (UC) and The Australian National University (ANU) with a shared commitment to a more sustainable Canberra region.

This paper is structured in five sections as outlined below:

- i. Explains the origins of CURF;
- ii. Describes the regional context of the platform highlighting the distinguishing characteristics of the Canberra region;
- iii. Outlines the nature and scope of the CURF platform, its qualities and potential in the context of sustainability and climate change;
- iv. Discusses how resilience can be strengthened through the CURF collaboration and
- v. Considers the potential contribution of CURF to long -term sustainable change.

1. The Origins of CURF

The origin of CURF stemmed from an initial discussion between colleagues at a meeting on climate change adaptation on February 2010 in Adelaide (DCC&EE, 2010). The challenge presented was how to better link research, policy and practice in the context of sustainability and climate change. Furthermore the real challenge was how to achieve this in ‘our own backyard’, in this case, the Canberra region- stretching from Mt Kosciusko, Australia’s highest point, to the far south coast of SE Australia. This triggered a series of conversations facilitated by professors Barbara Norman (UC) and Will Steffen (ANU) over the next few months that culminated in a shared commitment to establishing CURF as a joint initiative between UC and ANU driven by urban and regional planning at UC and the ANU Climate Change Institute. The following outlines the key steps during the founding year of CURF leading up the launch of CURF including the website and seminar program:

CURF evolved over a year, beginning in early 2010, with ten key steps:

- i. An initial meeting of minds that ‘something better’ could be done in the Canberra region to progress the implementation of a more sustainable future in the context of climate change (Coastal zone/climate change forum, Adelaide, (DCC&EE, 2010)).
- ii. Further discussion at the ANU Climate Change Institute to pursue this concept of better connecting research with policy with the community.
- iii. A subsequent meeting of Professors Norman and Steffen, Dr Xumei Bai (CSIRO – Commonwealth Scientific and Industrial Research Organisation) with executive members of UC to gauge support for the concept – it was at this meeting that the name of CURF emerged.
- iv. A shared commitment by Norman and Steffen to establish CURF as co-directors with the support of immediate staff and more generally the universities.
- v. A two-stage process within UC on potential ‘urban and regional research’ activity, followed by a more extensive externally focused ‘urban and regional research roundtable’.

- vi. The formal establishment of a CURF team comprising staff of Urban and Regional Planning (UC) and the ANU Climate Change Institute.
- vii. An exchange of letters by the two Vice-Chancellors (ANU and UC) committing to CURF as a joint venture between the two universities as part of the 'Alliance' between the two institutions.
- viii. The formal launch of CURF at the UC on the 19 November 2010.
- ix. The Inaugural CURF seminar by the Chief Executive Green Buildings Council of Australia, Romilly Madew.
- x. CURF website launched on 22 March 2011.

The second half of 2010 saw the development of the concept supported by local and national government and the building of new partnerships with kindred national research institutions including CSIRO and the University of New South Wales (Australian Defence Force Academy). CURF was launched on 19 November 2010 at the University of Canberra by two Vice-Chancellors (Professors Chubb, ANU; Parker, UC), the Australian Capital Territory and Australian (Federal) Governments (Messrs Cappie-Wood and Carmichael respectively) and Professors Norman and Steffen (Urban and Regional Planning UC, ANU Climate Change). As stated at the launch:

"Urbanization, population pressures, the potential impacts of climate change and an awareness of the environmental and social impacts of urban growth are driving an increasing interest in research to support evidence-based decision-making on cities." (Norman, 2010)

"How we design, build and live in cities of the 21st century is a daunting research challenge. What better place to start meeting this challenge than in our own city and region? And what better way to build the required knowledge than through collaboration among our region's research institutions." (Steffen, 2010)

CURF is an evolving concept and draws on the concept of 'active adaptive management' – learning by doing (Steffen 2009 and references therein, Richardson et al, 2011, p392). It extends this by embracing a wide range of disciplines (urban planning, environmental

science, health, climate change, economics and others) and seeks to make the connections at the regional level through a collaborative framework that transcends the borders of both inquiry and governance.

2. The Canberra Region, Australia

The Canberra region, sometimes called the Australian Capital Region (ACR), is a stunningly beautiful landscape that stretches from the Snowy Mountain Ranges that form part of the Great Dividing Range in South East Australia to the far south coast beaches in the southeast corner of Australia (Map 1 below).

Map 1 Canberra Region



(CURF 2011)

The region includes the national capital, Canberra, the largest inland city in Australia. The national capital is surrounded by regional townships, local villages, agriculture lands with a diversity of land use (sheep, beef, vineyards, horticulture), large sections of public lands for forestry and open space and a range of rivers, estuaries, coast and marine environments. In this respect the region provides a 'rich' laboratory for examining sustainable solutions in a period of urbanization and a changing climate.

The Canberra region covers an area of 54,815.4 km² with an estimated resident population of 541,659 (June 2006) (ACT RDA 2010, p34). There is considerable variation in growth rates, employment and income levels within the Canberra region. Over two-thirds of the population lives in the Canberra/ Queanbeyan region (68 percent) which experiences much higher population growth rates than the surrounding region. Canberra residents in the ACT also experience much higher levels of employment and income:

ACT residents enjoy higher incomes than people living in the ACR; in fact, household incomes in the ACR are slightly more than half of those in the ACT. In the 2006 Census, median individual income for the ACT stood at \$722 per week, compared to \$466 for Australia and \$448 for the ACR; similarly, the median household income in the ACT was \$1,509/week, Australia \$1,027/week and the ACR \$872/week (ACT RDA 2010, p35).

There is also a strong regional dependence on the capital centre for employment and services, for example, '18,000 of the 25,000 people who make up the Queanbeyan City LGA workforce commute to work in the ACT' (ACT RDA 2010, p36). These socio-economic internal variations within the region present significant challenges in developing a cohesive resilient regional future for the whole region.

Reflecting the above, the pattern of urban settlement is very much one of a dominant national capital centre surrounded by smaller settlements in rural and coastal lands. The region comprises several townships with numerous smaller villages scattered between the mountain ranges and the coastline. The connection between these urban centers is predominantly by road transport with relatively little public transport. The seasonal

variations in the tourist destinations of the snowfields and the coastal areas is creating difficulties in providing services and infrastructure to meet the demands of peak visiting periods, a phenomenon shared by many tourist destinations (National Sea Change Taskforce, 2011).

The climate of the region varies considerably, from the mild coastal climatic regime to the alpine climate of the Australian high country. Canberra, which is situated inland in the middle of the region, has a mild temperate climate. The long-term average annual maximum temperature is 19.6 °C and the minimum is 6.5 °C. Average annual rainfall is 623 mm, distributed approximately evenly through the year. In 2010 Canberra experienced its highest temperature of 39.8 °C on 12 January and lowest of -5.0 °C on 28 June (BoM 2010).

As for the rest of the world, the region's climate is changing rapidly. Average temperature has risen by nearly 1 °C over the past century, and the region experienced an intensive drought during the 2001-2010 period, broken in the past year by very intense rainfall. Through the rest of this century, the region will experience continuing temperature rises, along with an increased risk of heat waves, intense storms, droughts and bushfires (Steffen 2011). The coastal part of the ACR is also at risk from sea-level rise. Global average sea level has risen by about 20 cm since the late 1800s and is projected to increase by about another 50 cm by 2100 (IPCC 2007).

The Canberra region comprises multi-jurisdictions providing a complex scenario for effective governance. Three levels of government – Federal government administration of the national capital (National Capital Authority), one State government (NSW), one Territory government (ACT) and seventeen local municipalities — govern the region. In addition there are several regional organizations, in particular, the newly established Regional Development Australia Committees (ACT, Southern Inland and Far South Coast) that collectively cover the whole region. There is also a regional leaders forum comprising the ACT Chief Minister, the Minister for Regional Development NSW and the Mayors of the local councils. This is supported further at the executive level by the *ACT-NSW*

Regional Management Framework Agreement ‘based on a number of principles including fostering a closer working environment for the ACT and NSW Governments’ (ACT Chief Ministers Department 2010, p19).

The above provides a brief regional context for CURF. The Canberra region is rich in its diversity of landscape, land use, socio-economic profile and governance arrangements. The following describes the ‘platform’ of CURF and the contribution it potentially brings to better integrating such diversity through the sharing of information and knowledge, thereby building collaboration and fostering innovation.

3. CURF — A platform responding to sustainability and climate change

The cornerstone of CURF is the ‘platform’ created to build the bridge between researchers within the research community, and between researchers, policy makers and the communities in the Canberra region. While considerable advances continue to be made within each of these sectors, there is currently no identified mechanism to effectively link these different constituencies to foster communication and exchange of ideas and research.

The development of the CURF platform was generated through the collective contributions of the CURF team (Urban and Regional Planning UC and ANU Climate Change Institute) in partnership with the ACT Government through the Planning and Land Authority, who provided the digital platform. The process involved regular meetings to discuss CURF. While not expressed explicitly (except the first by the co-directors), the development of CURF has been largely based on the following seven principles:

- i. Trust
- ii. Inclusiveness and openness

- iii. Connections and Communication
- iv. Shared commitment to sustainability and responding to climate change
- v. Building on synergies of current arrangements
- vi. Taking a long term view of change
- vii. Innovation

There are a number of issues that have arisen in the process of building the CURF platform, the foremost being acceptance of a new concept that transcends existing institutional arrangements. Was this really another research institute in disguise? What ‘added value’ does CURF bring, what’s in it for us, or more importantly them? How is this any different to the past, and the inevitable, is this ‘just another organization’? All valid questions deserving answers as discussed below.

CURF is not a traditional research institute or research program, but rather a ‘platform’ for building connections between research organizations, and between them, governmental bodies and communities. The Canberra region, home of the national capital, uniquely hosts a range of national research bodies including environment, infrastructure, science, medicine, social science, and defense. There is no better place in Australia with the opportunity to develop structures that can facilitate interdisciplinary research and link it to the leading policy makers in the nation. The complex issues of planning for sustainability and responding to climate change demand such innovation (Norman 2010) and CURF is designed to help fill that gap.

In developing the platform there was an early commitment to build on the ‘synergies’ of current organizations, the added value being in ‘making the connections’ and through that improving ‘the communications’. The establishment of an inclusive, public and open platform enables maximum participation, providing for the first time a ‘snapshot’ of current research activity within the Canberra region. Immediately this has triggered further conversations on future research opportunities, either building on existing strengths or

exploring the ‘gaps’. The simple act of two major universities deciding to work together for the benefit of its own region has been welcomed by many. As was stated at the launch of CURF: ‘this kind of research work, co-operative, cross-institutional and in concert with specific requirements of industry and of local and state and territory governments, is precisely the research that is proven to be most effective’ (Cappie-Wood 2010).

An early challenge for CURF was gathering the data and developing the platform for information and knowledge exchange. It was important that CURF did not duplicate or unnecessarily design a new system. Fortuitously an early conversation with the ACT Chief Minister’s Department revealed a process in train to develop a ‘virtual Canberra’ data system for public sector knowledge. Immediately the opportunities were evident and a partnership between CURF and the ACT Planning and Land Authority was quickly established to exchange ‘information and share knowledge’, the first step being to map research activity in the region. Considerable effort was then undertaken by key staff at UC and ANU to gather information on their research projects and build the initial database, the outcome being a significant regional profile of research activity by ANU and UC. This initial partnership has now established the foundations for a deeper on-going partnership between the ACT Government and CURF. It has also provided the basis for other national research bodies to collaborate with CURF, such as CSIRO, Geoscience Australia and ADFA.

One of the initial tasks was to develop the research themes to capture the diversity of research activity in the Canberra region. The CURF team developed the following as an initial grouping, recognizing that these will be refined over time as the region’s research quantum grows:

- i. Climate Change and the Environment
- ii. Infrastructure, Transport and Urban Form
- iii. Sustainable Regions
- iv. Healthy Communities
- v. Social and Cultural Heritage

- vi. Economic Development
- vii Coastal and Marine Planning
- viii Policy, Governance and Institutions

While CURF is at a formative stage, the response to share research activity has been very positive. The research activity includes a range of research projects including water, climate change, health, regional development, tourism, transport and governance. It is anticipated that this regional map of research will develop quickly as other research organizations join in, using this as the primary site for collecting and accessing meta-information on research in the Canberra region

The next stage of the CURF platform is to develop a comprehensive regional profile. One of the key functions identified at the 2010 Urban and Regional Research Roundtable (University of Canberra) was the benefit of CURF providing synthesis reports on key regional themes. This was identified by external stakeholders as a gap not filled by existing research institutes and suggested as a suitable role for CURF in ‘making the connections’. An example of this role is the ANU-led scoping report on climate change vulnerability and adaptation in the ACT and region (Webb 2010). This is a role that CURF will develop in the near future in consultation with government and industry.

The above provides an insight into the process of developing CURF as a concept and the platform that is now found on the CURF website (CURF 2011). It does not convey the many conversations and thinking behind the scene or the growing consensus and commitment to making CURF work. This is an intangible strength of the process that is best illustrated by the high level of camaraderie and progress in a relatively short space of time.

4. Strengthening resilience through collaboration

Resilience is a term that is emerging in a number of contexts including sustainability (Walker et al. 2004), climate change adaptation (Richardson et al 2011), regional planning and development (Crean 2011) and emergency management (COAG 2011). In relation to

CURF, resilience involves all of these fields in that it is concerned with facilitating the connections through collaborative action. Resilience in this sense means strengthening the regions ability to adapt to change through better connections, communication and sharing of information and knowledge in the context of sustainability and climate change. In other words, resilience is strengthened by enabling a deeper understanding by researchers and the communities of the issues, the risks and the scenarios for a more sustainable region.

A critical key element to strengthening resilience is to build the 'partnerships', particularly ones that cut across traditional boundaries – academic disciplines, sectors, and jurisdictions. CURF is designed to facilitate this in research, education and conversations through seminars, roundtables and workshops. Its design is open-ended, making it well placed to receive new ideas, again returning to the underlying theme of 'learning by doing'. CURF has quickly established partners at the territory and national level and will progress to develop regional and local research connections. The year 2011 will see the hosting of the inaugural regional symposium in partnership with the federal government and a coastal council, a series of leading CURF seminars and the consolidation of a regional database. The building blocks for CURF platform will then be in place for exploring new ideas for the Canberra region.

5. An evolving pathway for long- term change

Several features of CURF's design and operation emphasise its role in evidence-based decision-making as a key ingredient in building the long-term change needed to meet the climate change, peak oil, demographic and other challenges of the 21st century. The key feature here is the linkage of research, policy and practice throughout CURF's research activities, from the earliest stage of question or problem formulation through the implementation of the research to its application in practice. Thus, the aim is to move from the earlier notion of "transmission of knowledge" from the research community to practitioners to the co-production of knowledge jointly by the research community and practitioners (Kates et al. 2001).

A second feature of the CURF approach is an emphasis on learning by doing through not only focusing on adaptive management, but on what is often called “*active adaptive management*” (Steffen et al. 2009 and references therein). In this approach policy and management become part of the research itself, as in the face of the daunting uncertainties associated with the challenges of the 21st century, it may often be more productive to design new policy and management directions as experiments themselves. An important aspect of active adaptive management is that one should expect failures on occasion as a normal part of the research process. However, in this context a failure is only truly a failure if one does not learn from the experiment.

Finally, CURF can be an important agent for change by providing a more long-term and evidence-based approach to decision-making. This becomes even more important as evidence mounts that a “business-as-usual” approach – in which decisions are based on criteria used in the past – will not be effective, and in fact is becoming counterproductive, in dealing with the 21st century challenges. In the role of change agent, CURF will undertake three key activities:

- *Synthesis reports*: As noted above, providing syntheses of a large body of research is a critical feature in providing the evidence base to support visionary leadership and decision-making.
- *Scenario studies*: Building scenarios is an excellent way to engage the community in possible futures for their city and region. CURF, in collaboration with the ACT Government, is embarking on a scenario project for Canberra and the region that will be based on a global axis – a 2 °C world or a 4+ °C world – and a local axis – a proactive or reactive approach by Canberra and the region to 21st century challenges.
- *Transformative ideas*: Often it is difficult to break out of incremental change to business as usual. An important role for CURF is propose transformative ideas and projects that can break current, inadequate approaches to sustainability and jump-

start a switch to a significant new trajectory in, say, urban form or transport or in regional development.

CURF is an evolving process of inquiry, innovation and connections. The partnerships will be strengthened over time building on the themes and principles of CURF. It is intentionally an open -ended process hopefully making a lasting contribution to a more sustainable regional approach to managing urban settlement and responding to climate change. As such, CURF provides a potential model as 'an agent for change' that could be considered more widely both within Australia and internationally.

*Professor Barbara Norman, Foundation Chair, Urban and Regional Planning, University of Canberra, Canberra, Australia – barbara.norman@canberra.edu.au

*Professor Will Steffen, Executive Director, ANU Climate Change Institute, The Australian National University, Canberra, Australia – will.steffen@anu.edu.au

* An outline of this paper was presented to the Resilient Cities 2011, 2nd World Congress on Cities and Adaptation to Climate Change, Bonn, ICLEI, Germany June 2011

References

ACT Chief Minister's Department, 2010, *Annual Report 2009/10*, Canberra

ACT RDA, 2010, *ACT Regional Strategy Plan*, ACT Regional Development Australia, Canberra.

Australian Parliament, 2009, *Managing our coastal zone in a changing climate – the time to act is now*, House of Representatives Standing Committee on Climate Change, Water, Environment and the Arts, Canberra.

BoM (Bureau of Meteorology), 2010, *Annual Climate Summary 2010*, Melbourne.

Cappie-Wood, A, 2010, *Launch of Canberra Urban and Regional Futures and the Masters of Urban Planning Course at University of Canberra*, University of Canberra, ACT.

COAG, 2011, *National Strategy for Disaster Resilience*, Council of Australian Governments, adopted February 2011, Canberra.

CURF, 2011, *Canberra Urban and Regional Futures* accessed at www.curf.edu.au, 13 June 2011.

Crean, S, 2011, *Investing in Regional Australia*, Budget 2011-12, statement by the Honourable Simon Crean MP, Minister for Regional Australia, Regional Development and Local Government, Canberra.

Department of Climate Change and Energy Efficiency (DCC&EE), 2010, *Developing a national coastal adaptation agenda – a report on the national climate change forum*, 18- 19 February, 2010, Adelaide.

Gurran, N, Hamin, E & Norman, B, 2008, *Planning for climate change: Leading practice principles and models for sea change communities in coastal Australia*, prepared for the National Sea Change Taskforce, Planning Research Centre, University of Sydney, Sydney.

Intergovernmental Panel on Climate Change (IPCC), 2007, *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. (Eds: Solomon S., Qin, D., Manning, M., Chen, Z., Marquis, M., Averyt, K., Tignor, M.M.B., Miller, H.L. Jr and Chen, Z.) Cambridge University Press, Cambridge, UK and New York, NY, USA. 996 pp.

Kates, RW, Clark, WC, Corell, R, Hall, JM, Jaeger, CC, Lowe, I, McCarthy, JJ, Schullnhuber, HJ, Bolin, B, Dickson, NM, Faucheux, S, Gallopin, G., Grübler, A, Huntley,

B, Jäger, J, Jodha, NS, Kasperson, RE, Mabogunje, A Matson, P, Mooney, H, Moore B III, O’Riordan, T and Svedin U, 2001, Sustainability science. *Science* **292**: 641-642.

National Sea Change Taskforce, 2011, *Preliminary Report*, 2011 Australian Coastal Councils Conference, Torquay, Australia.

Norman, B, 2010a, *A Low Carbon and Resilient Urban Future*, prepared for the Department of Climate Change, Canberra.

Norman, B, 2010b, *Sustainable coastal planning for urban growth and climate change*, NSW Coastal Conference, Batemans Bay.

Richardson, K, Steffen, W, & Liverman, D, 2011 *Climate Change – Global Risks, Challenges and Decisions*, Cambridge University Press, Cambridge UK.

Smith, I, Dodson, J, Gleeson, B & Burton, P, 2010, *Growing adaptively?: Responding to climate change through regional spatial planning in England and Australia*, Urban Research Program, Research Paper 31, Griffith University, Brisbane.

Steffen, W. 2009a Learning by doing: managing for ecosystem services. *Proceedings of the National Academy of Sciences USA*, **106**: 1301-1302.

Steffen, W, 2011, *The critical decade: climate science, risks and responses*, prepared for the Climate Commission, Canberra.

Walker, B.H, C.S. Holling, S.R. Carpenter, and A. Kinzig. 2004. Resilience, adaptability and transformability in social-ecological systems. *Ecology and Society* **9**(2): 5. [online] URL: <http://www.ecologyandsociety.org/vol9/iss2/art5>

Webb, B., 2010, *Australian Capital Territory & Region Climate Change Vulnerability and Adaptation Project. Phase 1 Report – Scoping Phase*. Report to the ACT Government, Canberra.