

### **30. Scenarios for engaging a rural Australian community in climate change adaptation work**

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#### **Keywords:**

scenario thinking, community-engaged research, climate change adaptation, Australia, farming community, agriculture, rural community, drought, water availability, local climate change policy

#### **Summary:**

The Hamilton region in Victoria, Australia, is a rural farming community consisting of several small towns and the regional centre of Hamilton. The region is already experiencing climate change, with a steady decline in annual rainfall and available groundwater, and increased frequency of droughts. A prolonged drought has necessitated ongoing water restrictions and forced farmers to alter cropping and stocking practices. Rainfall patterns are predicted to shift further towards the dry, which will affect farm viability, as will increased transport costs due to rising oil prices. The challenges the community face have led to a high local interest in understanding and responding to climate change. When the authors organized a public meeting in April 2007, over 70 people attended. They wanted to take immediate action on climate change, not wait for new national policies.

A scenario thinking workshop was held in February 2008. Forty-one representatives of different sectors within the community participated. They developed four different stories of the future and undertook an initial analysis to identify implications and adaptation strategies. This revealed that climate change could have far more complex impacts on the region than first imagined. Possible impacts included higher levels of financial pressures, stress, mental illness and addictive behaviours, affecting community cohesion and quality of life; plus possible farm closures, high unemployment and associated population losses affecting the viability of small towns. Strategies identified to reduce the vulnerability of the region included altering farming practices, ensuring water security, building social cohesion, attracting new residents and diversifying employment opportunities. The local shire council, regional health service and others have used the workshop outcomes to rethink their strategic plans.

## INTRODUCTION

Situated 300 kilometres from the metropolitan centre of Melbourne, Hamilton is a significant regional centre in the relatively prosperous farming districts of western Victoria. The area is part of the larger Glenelg Hopkins catchment of Victoria. Hamilton's development as a regional centre over the past 150 years has been founded on a steady expansion of an agricultural sector based predominantly on wheat, sheep and cattle grazing.

A prolonged drought in the region, which in part reflects the onset of climate change, has meant tighter water restrictions, and has compelled farmers to alter cropping and stocking practices. Nationally, the Australian Bureau of Agricultural and Resource Economics (ABARE) (Gunasekera et al. 2007) has identified a range of climate change adaptation options for farmers to use in order to diversify their farm production. Locally, the Victorian Department of Primary Industries (DPI) (2008) is working with farmers to implement climate change adaptation options. In Hamilton, the demarcation between areas of farming land suitable for cropping and that for stocking is changing. The Commonwealth Scientific and Industrial Research Organisation (CSIRO) and Bureau of Meteorology (2007) predict a warming, drying climate with a consequent reduction in groundwater volumes and increased frequency and severity of droughts. Rainfall patterns are expected to become even less predictable, and the combination of drier and hotter conditions increases the risk of dangerous grassfires and bushfires. Since these predictions were made, Victoria has experienced record high summer temperatures, and the hot and dry conditions resulted in the devastating bushfires of 7 February 2009, which claimed over 200 lives and more than 2000 homes.

In an area where the economy is so dependent on farming, water supply is already a critical issue with a current 'supply deficiency of 1000ML per annum based on the last 10 years water yield from the Catchment' (Wannon Water 2007 p1). Wannon Water (2007) has investigated options to ensure water supply. It is now deciding between two options to bring water via a pipeline or outlet channel, both from over 40 kilometres at an estimated cost of \$29 million each. The lack of water has required changes not only to farming practices, but also to water use within homes and gardens in Hamilton itself.

## LOCAL-GLOBAL PROJECT

Researchers from Royal Melbourne Institute of Technology (RMIT) University's Community Sustainability Program within the Global Cities Institute have been conducting a 'Local-Global Project' in the Hamilton region since 2004. The project aims to explore local responses to issues of global scope and character in consultation with a Community Reference Group. Social learning opportunities are created for the community to undertake dialogue and shared research, and decide on and respond to issues of growing concern across the region (see Mulligan & Nadarajah 2008 for further details). Climate change became an area of concern raised by the Community Reference Group in 2006. In response to these concerns, the researchers organized a range of guest speakers to present at a climate change public forum in April 2007.

More than 70 people from across the Hamilton region attended the forum. Different views were expressed regarding the likely impacts of climate change in the region, but the prevailing sentiment was that the time for sitting on the fence had passed. The organizers were asked to look for ways to build on the momentum of this gathering. It was decided that a

scenario thinking workshop on the impacts of climate change and the future of the region would be a useful next step.

## SCENARIO THINKING

Scenario thinking has been used for: the development of military and business strategy (Shell International 2003); complex global problem solving (NI 2007); the development of the non-profit sector (Searce and Fulton 2004); the exploration of countries' futures (le Roux 1992; Kahane 1998; Institute of Economic Affairs and Society for International Development 2000); the development of the government policy arena (Ringland 2002); and regional planning (Robertson et al. 2007; Wang et al. 2007; Meadowlark Institute 2009). The value of using scenario approaches for exploring climate change impacts and adaptation options has been recognized by both the United Nations Development Programme Global Environment Facility (2003) and the United Nations Framework Convention on Climate Change (UNFCCC) Secretariat (2005). Both have provided guidance on how to use the tool in this adaptation context. Despite the recommendations, the scenario process has mostly been used for predicting climate change and its impacts (Dessai et al 2005).

It is only relatively recently that the approach has been used as a way to explore adaptation to climate change. Turnpenny et al. (2005) and Jordan et al. (2001) applied scenario thinking to climate change adaptation. However, they used a 'top down' approach to scenarios development. In essence, this involved their team of 'experts' creating the scenarios and then seeking input, feedback and discussion of the scenario implications with people in the targeted regions.

In contrast, a 'bottom up' approach was used in the current study. A group of diverse community members from the Hamilton region participated in the workshop and created the scenarios themselves. They discussed the implications of the scenarios and brainstormed next steps for action. The authors did not expect the community members to develop 'scientifically or technically sound answers' on how the community should adapt to climate change. The scenario thinking workshop was undertaken as a process to (1) find out what community members currently knew about the climate change adaptation issue; (2) engage them in dialogue on the complexity of the issues involved; (3) gather their adaptation ideas; and (4) build their awareness that many different possible futures may unfold based on actions they do or do not take, as well as changes that occur to the climate.

Through undertaking this process, it was hoped that participants would continue the discussions outside of the workshop, leading to ongoing planning and action on climate change adaptation within the region. The scenario stories, once written up, would be a tool for furthering these discussions with those that had not participated in the workshop. The scenario stories would also be useful for government educators and policy makers who could use them to identify any misunderstandings or gaps in awareness of climate change issues within the community. Targeted information and capacity building programs to address such gaps could then be produced.

## SCENARIO THINKING WORKSHOP

The Hamilton scenario thinking workshop was held on 4-5 February 2008 using an inductive scenario approach. Forty-one people participated (18 female, 23 male), including

several farmers, a retired school principal, a church minister, an Aboriginal community leader, a publican (i.e. hotel operator), local shire councillors, a Country Fire Authority representative, artists, business personnel, and two new migrants to the area. Participants were split into four small groups and taken through a process for identifying and discussing the many factors likely to affect their community's development in the future. They explored what they felt were the most critical factors facing their community - those which would have a high level of impact and where the outcome of that impact was highly uncertain. The groups identified their five most critical factors. These were shared in plenary to produce a top 20 list of critical factors, which were then voted on by the individual participants to identify the four overall factors seen as most critical. Each group was then allocated one of these top four critical factors to use as the starting point for generating their scenario. Throughout the two days, a number of plenary sessions were held where each small group reported back on their developing scenario and received input from the other participants. This ensured differentiation between the scenarios.

The scenarios produced did not focus on disputes about what level of climate change would occur nor on the effectiveness of different adaptation strategies. They focused on the adaptation challenges facing the region and the likely impact of these. By lunchtime on day two, four broad scenarios were mapped out. In plenary each group told their scenario, and then a discussion was held about the implications of that scenario for the future of the region. After hearing all four scenarios, a list of possible strategies and desired next steps were generated.

After the workshop, the four broad scenarios and all the associated workshop materials were given to two local writers who were allocated the task of turning them into more detailed scenario stories. The writers worked in consultation with a range of workshop participants to develop four plausible stories set well into the future. Due to space restrictions, only synopses of the stories can be included here. For copies of the complete scenario stories see Nadarajah et al (2009).

## **HAMILTON FUTURE STORIES IN SYNOPSIS**

### ***Lake Condah Sustainable Development Project, 2030***

After many years of persistent drought in the Hamilton region, many farmers have gone out of business and many enterprises associated with farming are struggling to survive. There has been a significant dieback of trees and exposed grasslands and a noticeable reduction in biodiversity. Early mornings that were once filled with birdsong have become eerily quiet. However, the wetland system surrounding the old Aboriginal mission at Lake Condah, which was restored before the long dry began, has become a refuge for birds. The Aboriginal community is benefiting from the success of the Lake Condah Indigenous Discovery Centre and the Lake Condah Bush Foods factory and outlet. Local farmer and bird enthusiast 'Old Jack' Murphy had thought the reflooding of the Lake Condah wetlands a waste of time and money when it took place; but 20 years later, on a visit to the Lake Condah Indigenous Discovery Centre in 2030, he is blown away by the refuge that has been created, and especially by the presence of so many species of birds that are no longer sighted anywhere else in the region. He has to admit to Aboriginal community leader Billy Lovatt, whom he had coached in junior football, that his earlier criticism of the project had been well wide of the mark. 'It only took you whitefellas about 200 years to realize that you might have something to learn from us about how to look after this country around here,' Lovatt told his old coach.



***Danny's story***

Danny Brown did it tough. He grew up with struggling parents and he found himself alone, with his beloved dog Beetle, when both parents died soon after he managed to find a job drawing cartoons for the *Weekly Times* newspaper. Danny's talent for drawing had been noticed by one of his teachers at high school and she helped him to get into an appropriate course at technical college and then into the job at the *Weekly Times*. Danny had always been a survivor and, in particular, he managed to accumulate some personal assets by selling rare plastic bottles that he had collected as a child. Because he knew what it was like in his childhood to struggle with so little support and resources, Danny made a special effort to support young people living in the camp for Vietnamese climate change refugees that was set up at the showgrounds in 2030. He became a regular visitor to the tent city. However, others in the town were much less hospitable to the refugees who had been assigned to the region. Violent conflicts broke out between rival youth gangs from the camp and the town in 2035, resulting in seven deaths. Hostility towards the refugees intensified when it was learnt that hungry camp residents had killed and eaten some 'stray dogs' who had come into their camp; when Danny discovered that his beloved Beetle had gone missing he went to the camp to find him. When Danny confronted some people he knew about what might have happened to his dog, a scuffle broke out and Danny died when his head struck a rock after he was knocked to the ground. Danny's death provoked some strong reactions in town and in the refugee camp. Danny's tragic death helped Hamilton's community leaders to see that they must take action to prevent a further escalation of dangerous social conflicts, and it helped some of the young people he worked with in the refugee camp to understand that there are people in the wider community who could help them break out of their isolation and anger.

***Damian McCrae and Georgia D'Ambrosia***

When Damian McCrae took over the management of the historic family farm in the district of Cavendish from his father Donald McCrae, the effects of climate change were already causing major adjustments in farming strategies. Damian had just returned from agricultural college with new ideas about how to survive the crisis - ideas that his father found difficult to accept. Soon after taking responsibility for the farm, Damian met and married regional health worker Georgia D'Ambrosia. Georgia had grown up in Melbourne in a family that most farmers would disparagingly label as 'urban greenies'. Georgia had not been adequately prepared for the role of rural health promotion officer at a time when new and acute health problems were emerging as a result of severe heat stress and the spread of new diseases related to climate change. To make matters worse, a lack of transport options and deteriorating roads made it expensive and difficult to cover the district, and she felt she could never keep up with the demands of her job. Georgia had chosen a rural life because she wanted to be 'closer to nature,' but nature was making her life difficult and her husband Damian was equally stressed. Unexpectedly, Georgia found solace in talking to Damian's grandfather, Fergus, who was still living on the farm, and she came to understand that his deep local knowledge could be more of an asset in the new conditions than Damian had ever thought.

***Nguyen Pham's campaign speech in 2050***

Nguyen Pham arrived in Hamilton as a climate change refugee from Vietnam when she was just 14. She lived with her parents, a brother and a sister in the tent city established at the Hamilton showgrounds in 2030, and the whole family found the bitter winter hard to take. As dysentery and tuberculosis claimed the lives of other children in the camp, Nguyen and her

siblings were cheered by the generous donation of clothes and toys from the local Red Cross and Combined Churches group, and the whole family benefited from English lessons run by some retired teachers in the Ram Sale shed at the showgrounds. Sadly, Nguyen's older brother was killed in the gang wars of 2035 that rocked the Hamilton. The son of the eminent Hamilton heart surgeon Charles Cameron, Brett Cameron, had been the nominal leader of the gang responsible for Nguyen's brother's death, and although Brett was not present at the time, Charles decided to make a special effort to support the bereaved family. Many years later Nguyen Pham and Brett Cameron met by chance in the United States, and a shared love of music brought them into a relationship that resulted in marriage. Nguyen and Brett returned to live and work in the Hamilton region, and in the year 2050, Nguyen is launching her campaign to become mayor. Her opening campaign speech recounts the story of what has happened in the district since the tragic death of her brother in 2035, and explains why she thinks that things are looking up for the district in 2050.

## ANALYSIS AND IMPLICATIONS ARISING FROM SCENARIOS

As a result of creating the scenarios, participants in the workshop could see a range of implications that they as a community needed to consider and for which they needed to plan responses. They saw a need to find ways to influence individuals to take action to reduce their carbon emissions and adapt their homes and lifestyles sooner rather than later. They saw the opportunity to learn from other cultures and those who have already taken action. They recognized that their current mental health and community welfare services were not sufficient to cope with the increased demand predicted in many of the scenarios. They identified a need for preventative programs and early intervention programs for farmers and families at risk. The idea of creating a National Centre for Farmer Health was raised. Nutrition and healthy lifestyle education programs were also suggested as a way to prevent health problems. Diversifying sources of farm income by moving away from monocultures to a range of different crops and other sources of income were seen as ways to minimize the vulnerability of farmers to climate change.

The participants saw a need to undertake activities to build community cohesion and support each other through tough times. They saw a need to develop disaster response plans to cater for a possible influx of climate refugees from southern Asia and the Pacific; they wanted to start cultural exchange initiatives and awareness raising initiatives now, so that it would not be such a shock to the current population if an influx of migrants did occur. Participants also highlighted a need to consider ways to attract people and businesses to the region. Expanding educational and employment opportunities were seen as key in this regard. This was also seen as a strategy to help stop the trend of youth leaving the region. The participants saw an opportunity for their educational organizations to specialize in environmental education and teach Aboriginal and Asian perspectives of environmental management.

The participants also identified a range of further research required. This included research into ways to farm effectively under drought conditions, minimize water use and ensure water security. It also included research on the implications of a future shortage of oil and oil-based products on farming practices, transport of produce and the functioning of other aspects of the community life. Research into the implications of 'corporate farms' run by large multinational companies and increased mechanization of farming practices on employment levels in the region were also recommended.

## OTHER OUTCOMES

Towards the end of the workshop, participants were asked what they would like to see as the next steps of this project. The participants identified a range of strategies including: generating a report on the scenarios that could be widely distributed throughout the community; having secondary school students comment on the scenario stories, possibly to make movies about them; and having the scenarios narrated on Radio National. Of course, a starting point would be for participants to share insights they had gained at the workshop with family and friends in order to inject more urgency into community discussions about future lifestyles in the region, which, in turn, might encourage people to think more urgently about what they can do now to reduce greenhouse gas emissions. Some participants raised the difficulties involved in getting local organizations and agencies to work together, and so an emphasis was placed on a need to build more effective partnerships. There was enthusiasm for completing the local future stories so that the challenges they raise could be discussed widely across the community. It was noted that the shire council and other government organizations needed to review their strategic plans for the future.

One participant in the scenario thinking workshop—regional health worker Rosie Rowe—was sufficiently stimulated by the workshop to go back into the Western District Regional Health Service and work on a policy for how health services might respond to a wide range of health challenges, and this report has been circulated across Victoria (Rowe and Thomas 2008).

## CONCLUSIONS

The authors are encouraged by the outcomes of the scenario thinking workshop. A plethora of ideas and suggestions for action were generated. To move from ideas into action will require engaging the wider community with the stories generated. Stories based on a combination of expert knowledge and local experiences have the ability to mobilize hearts as well as minds. As a result, rather abstract predictions about climate change impacts become more real to local sensitivities and good stories can have a rather ‘visceral’ impact on people who may have thought that the problems of climate change can be safely left to scientists and politicians.

This use of scenario thinking techniques to provoke deeper community engagement with the challenges of climate change adaptation is the first step of many to be taken. Ongoing initiatives will be required to ensure the scenario stories are widely distributed, and that discussions, planning and adaptation actions occur within the Hamilton region.

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