

A CAPITAL CONCEPT OF ADAPTIVE CAPACITY

Australians are renowned for their 'she'll be right' attitude, but how adaptable are cropping businesses to climate change? By Steven Crimp

THERE IS MUCH discussion about climate change and its impact on the future of food production, the environment and rural communities. Yet there is little data to quantify whether our farming businesses have the resilience and capacity to adapt.

A project funded through the Australian Government's Australia's Farming Future initiative is working towards quantifying the resilience, vulnerability and adaptability of cropping and mixed cropping businesses. Project partners include three state agricultural departments, the Department of Agriculture, Fisheries and Forestry, BCG (formerly the Birchip Cropping Group) and the GRDC. This project aims to provide governments with information that will help target appropriate policies to regions, to support farming businesses' ability to adapt to climate change.

In order to put figures on these rather abstract concepts of resilience, vulnerability and adaptability the project used a framework of five factors. These five factors or 'capitals' – human, social, natural, physical and financial (Table 1) – have been previously defined as the factors that hold the key to adaptability and change.

Using survey data from the Australian Bureau of Agricultural and Resource Economics (ABARE) and the Australian Bureau of Statistics (ABS), indicators of these five capitals have been developed.

Each business and community will have strengths or weaknesses in the five different capitals. The concept of adaptive capacity depends on the level of strength and weakness and the balance between the capitals. Adaptive capacity also relates to the flexibility to substitute between the capitals in response to external pressures.

Natural capital, for example, can be transformed into physical and financial capital by growing and selling a crop, but a range of crop types grown or a diversity of enterprises could make a more resilient business. Similarly, financial, social and physical capital can be transformed into human capital by increasing access to education.

Based on the survey data from ABARE and ABS data for 1380 properties, the project has been able to develop a broad measure of the adaptive capacity of broadacre agriculture and hence its resilience to change. Working with grower reference groups across Australia, this measure will be ground-truthed by testing it on real individual situations. Once this process has been completed the measure will be used

in conjunction with climate projection information to understand broadacre vulnerability to climate change.

The analysis will not only identify regions that are more vulnerable than others, but will also provide insight into what is driving that vulnerability. For example, is the human capital low or the physical capital a constraint? This information will support a more targeted approach to regional policy setting by providing policymakers with insights into the regional drivers of vulnerability.

The project has produced a method to collate and analyse data to update regional rankings. It has also produced a web-based tool, which will provide policymakers with the opportunity to interrogate the data on a map to examine adaptive capacity for a specific location. Additional data may be required to increase the robustness of ratings for some regions.

The web-based tool is being tested by stakeholders and refined based on their feedback and it is hoped the site will be available in the next three months. □

GRDC Research Code CSA00022

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Table 1 The rural livelihoods framework – factors influencing the capacity of rural businesses and communities to adapt and change

Human capital	The skills, health and education of individuals that contribute to the productivity of labour and capacity to manage land
Social capital	Collaboration, social relationships, community groups, voluntary organisations
Natural capital	The productivity of land and actions to sustain productivity of land, water and biological resources
Physical capital	Infrastructure, equipment and improvements in genetic resources (crops, livestock)
Financial capital	The level, variability and diversity of income sources, and access to other financial resources, for example credit and savings

Source: based on Ellis, 2000



RESILIENCE AND THE ABILITY TO ADAPT TO CLIMATE CHANGE GO HAND IN HAND.