



## Opening Plenary: Farming systems facing global challenges: Capacities and strategies

### Keynote: The converging insecurities of food, water, energy and climate, and their implications for 21<sup>st</sup> century farming systems

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Rural landscapes and natural resources are becoming increasingly contested. The era of easily extracted fossil fuels is coming to a close. Inherent climate variability, exacerbated by underlying climate change, is increasing pressure on water resources. Climatic extremes are more frequent and intense, stressing farming systems and food security. Energy prices are reflected in the cost of transport and nutrients, particularly agrichemicals and fertilisers. Population growth and changing demographic and consumption patterns see increasing demand for food, but the traditional means of increasing food production through expanding and intensifying the footprint of agriculture is increasingly squeezed by land, water, energy, nutrient and carbon constraints. In rich industrialised countries, the general public and consumers are also concerned about biodiversity conservation, landscape amenity, water quality, animal welfare, GMOs, public health and safety, and fair trade. These concerns are reflected in policy, planning and governance systems for rural landscapes and natural resources to varying degrees in different countries.

Against this backdrop, the task of developing sustainable and resilient farming systems that meet societal needs in volatile climates is formidable. Rich economies like Europe, North America and Australia should set high-level strategic objectives for our agricultural and natural resource management systems. For example: to double food availability for consumption; to double water and energy productivity; to become a net producer rather than consumer of energy; and to become carbon-neutral — by say 2030. Each of these goals is technically ambitious. Pursuing them in parallel represents a daunting integration task for both science and policy. Doing so, while respecting broader objectives around biodiversity, landscape amenity and social cohesion, will be a searching test for traditional approaches to research investment and management, for the interface between science and policy, and for knowledge management and science communication.

This presentation will explore how such objectives might be achieved, and their implications for research and extension, from research investment through to broader industry, stakeholder and community engagement.

**Professor Andrew Campbell** is the Director of the [Research Institute for the Environment and Livelihoods](#) and Head of the School of Environment at Charles Darwin University in Darwin, Australia. With training in forestry, rural sociology and knowledge systems from the University of Melbourne and Wageningen Agricultural University in The Netherlands, his research interests span the interactions between climate, water, energy, food systems and biodiversity, and the interface between knowledge, science and policy.

Andrew Campbell was previously Managing Director of [Triple Helix Consulting](#), Chief Executive of Land & Water Australia and a senior executive in the Australian Government Environment portfolio. He was instrumental in the development of Landcare, as Australia's first National Landcare Facilitator. He chairs the board of the [Terrestrial Ecosystem Research Network](#), is a Visiting Fellow at the Fenner School at the Australian National University, a Commissioner of the IUCN World Commission on Protected Areas, and a Fellow of the Australian Institute for Company Directors. Andrew Campbell still maintains an involvement in his family farm (forestry, grain crops and sheep) in south-eastern Australia, where his family have been farming since the 1860s.