Australian National University

Research led education in food systems

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Overview

- ANU and research led education
- Network of networks and the Grand Challenge of food security
- Linking research to food security education – what skill sets for future global food system leaders?
- Some challenges
- Future directions

ANU: Research led learning

- Founded 1946 is Australia's only Federal university
- Charter to advance Australia internationally
- Research intensive
- Rank 1 in Aust. Top 50 world
- 25,000 students (50% postgrad), 1,700 academics
- 1/3rd students are international
- Located in nation's capital, with strong links to gov and policy

Research networks

Fenner School Environment and Society (eg Human Ecology, Agroecology)
Crawford School Public Policy (eg ecological economics, water policy)
School of Population Health (eg obesity)
Climate Change Institute
Research School of Biology (eg Plant Sciences, Genomics, Translational Photosynthesis)
School of Regulation and Global Governance

Network of networks

Australian Capital Territory Government

CSIRO (eg Ag and Food, Novel Plants, Breakthrough Genetics)

ABARE (Ag economics) ACIAR (International Ag Research) Austrade

Australian National University

National and International Partnerships and Alliances

Australian Federal Government (eg Dept. Agriculture; Foreign Affairs; Env.)

ANU Grand Challenge: food security

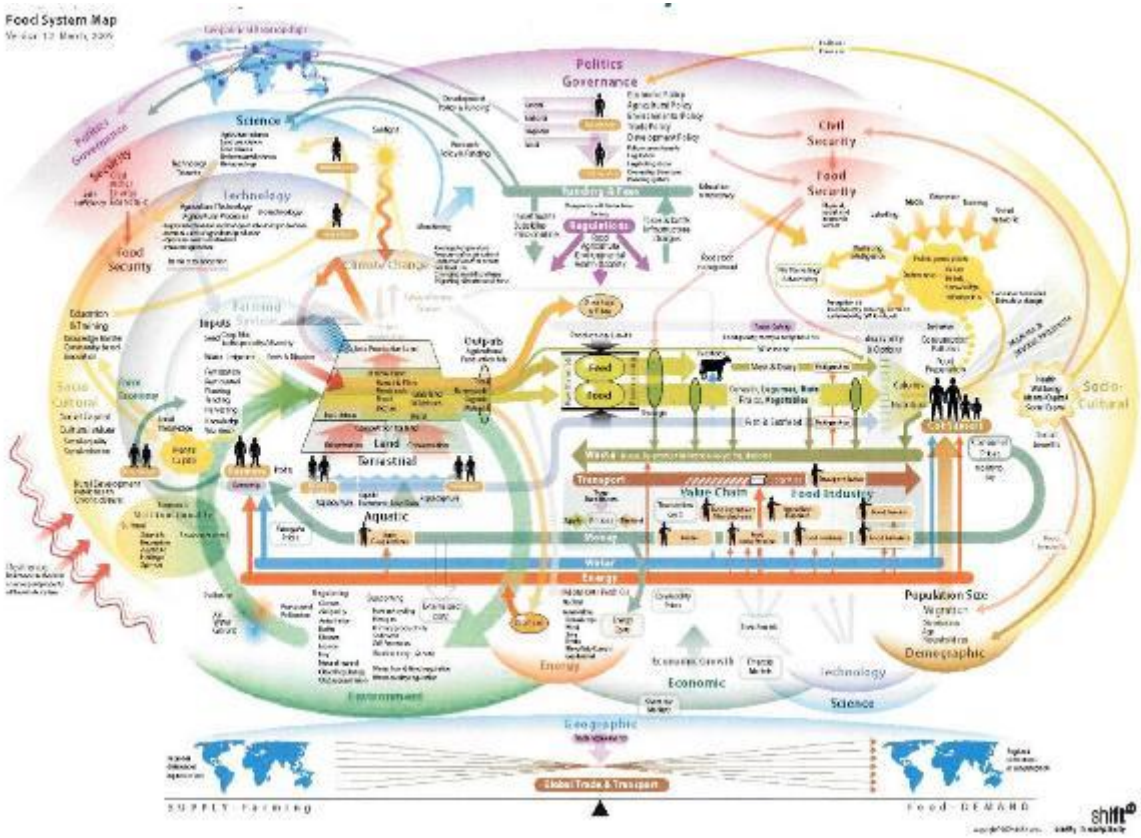
ANU Grand Challenges: to enhance networks such as these and stimulate integrative and interdisciplinary research into globally important problems.

The ‘Food Security Grand Challenge’: To develop innovative approaches in how we produce, sell, and consume food while at the same time enhancing sustainable use of resources and biodiversity and addressing issues of justice and fairness for both producers and consumers.

Linking food system research to education

- Research led learning – exposing students to research *and* building research training into all coursework
- What skill sets for food system research?
  - Understand complex interactions between key change processes in social and ecological systems;
  - Critically select and apply appropriate methods for managing complex human-ecological problems;
  - Respect biophysical limits, human wellbeing and justice issues in the context of food systems;
  - Undertake interdisciplinary research partnerships with community, government or private institutions
- Focus on learning how to learn, not told what to learn

Understanding complex interactions



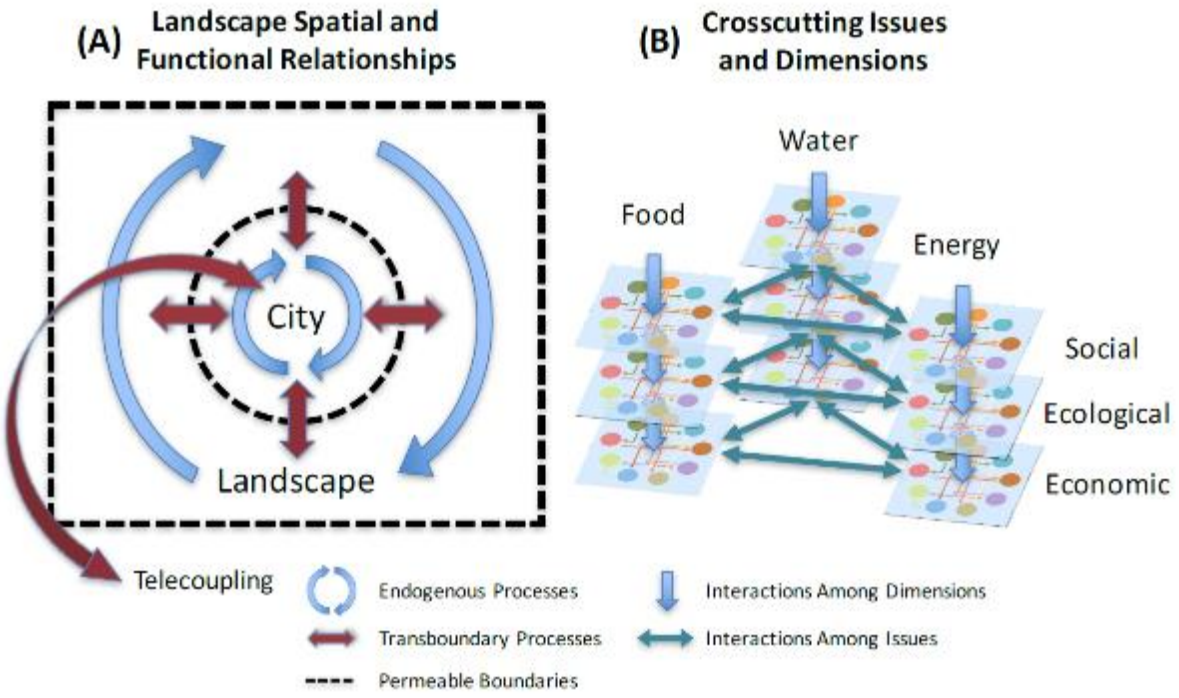
Food systems are inherently complex, but need to be understood holistically.

https://foodtechconnect.com

Interactions across sectors and scales

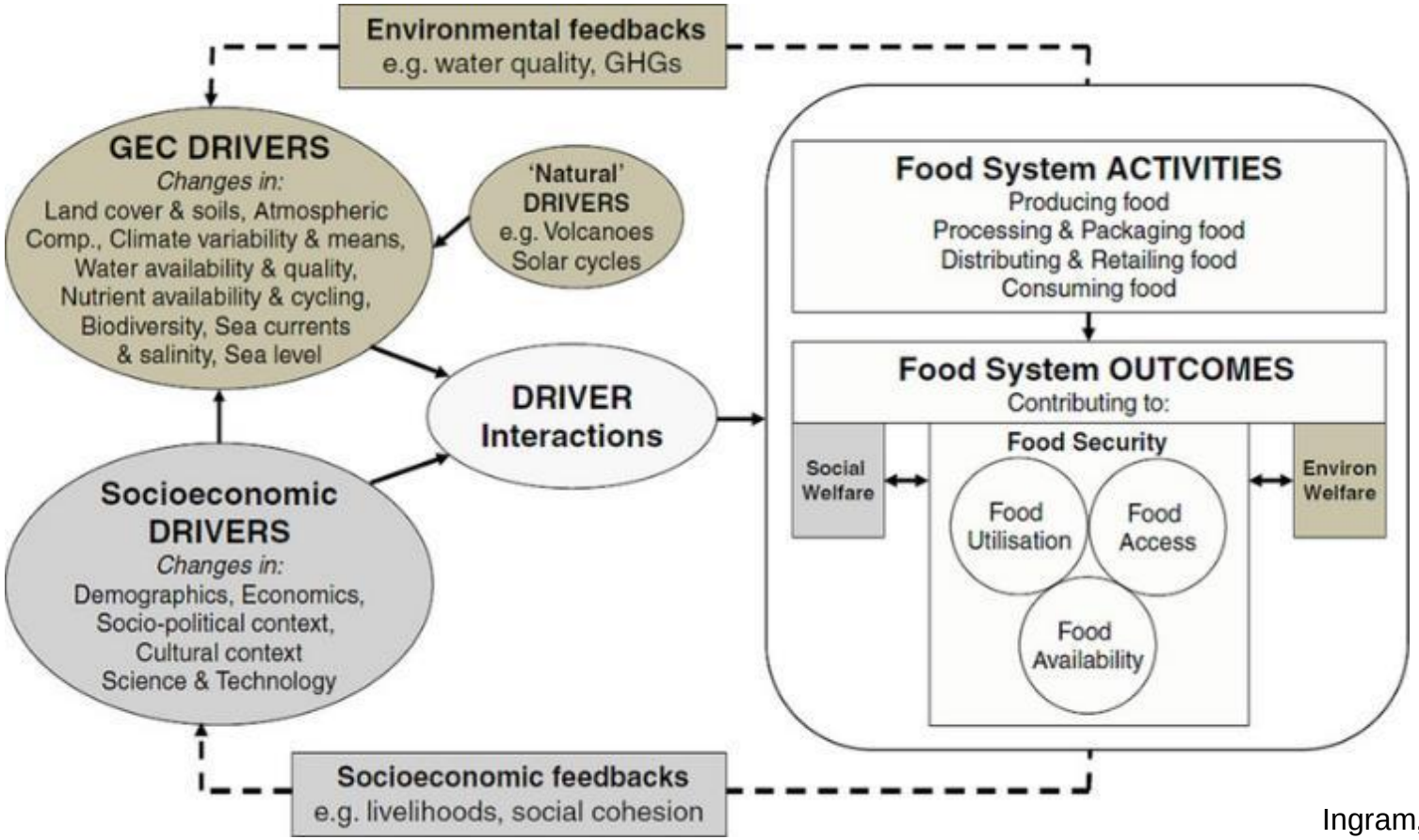
Drivers affecting food security outside agricultural policy eg

- economics of energy option
- Security of urban water supplies
- Decisions taken in foreign jurisdictions



Association of Pacific Rim Universities (APRU) Cities-Landscapes Hub working paper

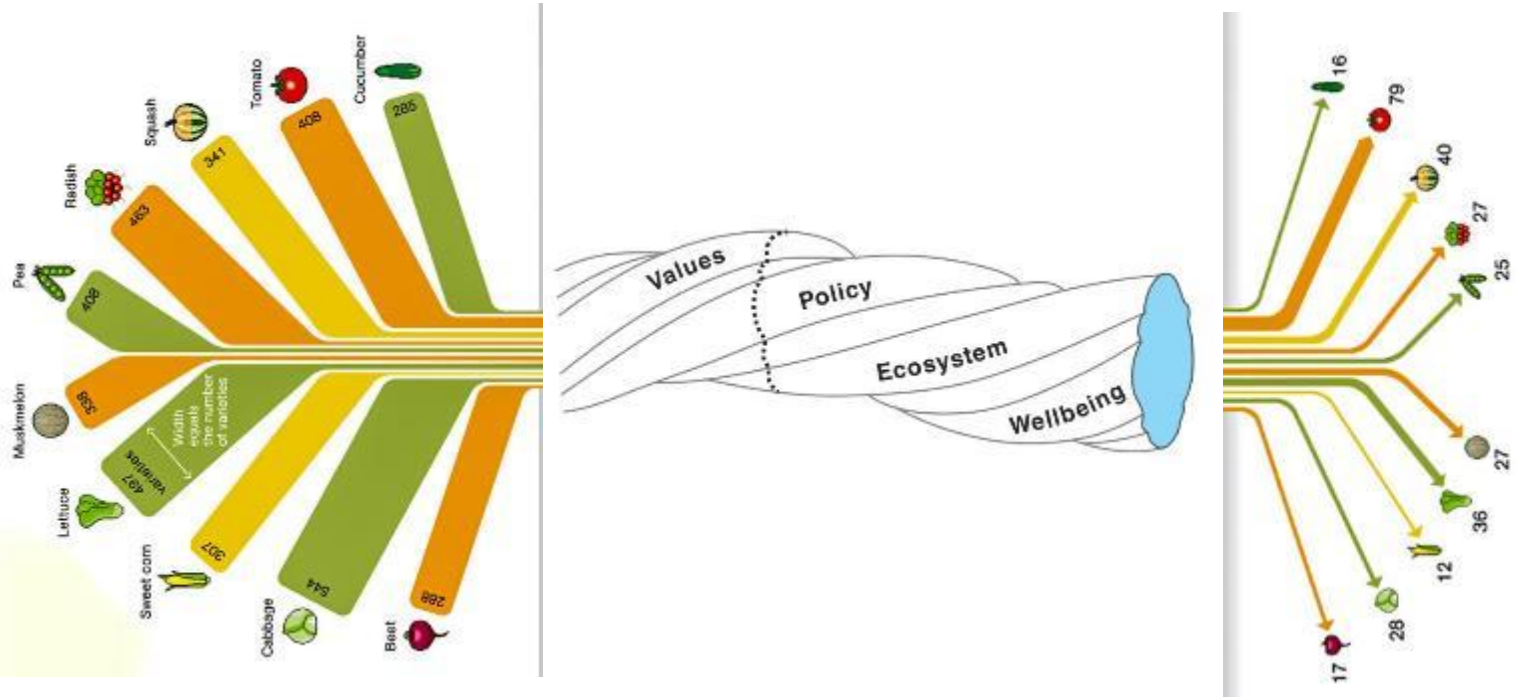
Systemic conceptual frameworks



Ingram, J. 2011

Systems thinking: to put things in context and see relationship between parts

Critical methodology: the right tool for the job?



Studying changing crop genetic diversity. What methods to collect data about changing values and policy and outcomes for ecosystem health and human wellbeing? How resilient is each food system?

Source: Rural Advancement Foundation

Integrating biophysical and social questions

Students viewing free-range chicken in rotational grazing in mobile home alternating with cattle

- Field studies of different farming enterprises eg conventional, organic, soil restoration, permaculture
- Interview farmers – eg motivation, goals, challenges, perspectives on sustainability *why do they do what they do?*
- Gather data – eg land and soil capability assessment and fractional cover, climate *what does what they do, do?*
- Report: just and sustainable?

Independent research questions

Student research projects into areas such as;

- Nutrient mining of alternative productions systems
- Fractional cover dynamics under different land management
- Developing producer education tools around fractional cover
- New land degradation models, are they useful to management?
- Economic simulations of modifying production systems
- Value-adding, innovation, and on-farm processing (inc. o/seas)
- Farm to fork value chains and ethical food trade standards
- Building connections between producers and consumers, including inclusion of drivers of food choices
- Enhanced dialogue and alliances between all actors – producers, processors, retailers, policy makers, and consumers

International research partnerships

Visioning sustainable food systems – Filipino farmer workshop

- Australian food systems are ‘telecoupled’ to overseas consumers
- Research aimed at improving outcomes for smallholder farmers and fishers in dev nations
- Research guided by community’s needs
- Education, knowledge sharing and capacity building avenues
- Avenues to involve our students in these activities

Challenges to getting students' hands dirty

Photo: J Dow

- Field classes are expensive
- Health and safety (insurance)
- Time – for trips and for maintaining farmer networks
- Highly dependent of volunteers
- Silos remain across academia
- Funds for interdisciplinary and long-term research hard to find
- Reward is in the quality of education outcomes

Going forward

- Continue to develop interdisciplinary study
- Master of Agriculture – cross school teaching program
- Not training agronomists, but specialists relating to agriculture (policy, ecologist, biologist, engineers etc)
- An interdisciplinary program combining material across schools and colleges to apply specific traditional degree knowledge to future agricultural leadership and research.
- Further explore education partnerships internationally including role of hybrid courses with online and interactive elements

Thank you

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