Stakeholder Perceptions & Needs

Stresses and Shocks for the Australian Food System

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What’s the purpose of the Australian Food System?

- “To feed the Australian people”
- “To provide safe and nutritious food for all”
- “To ensure a profitable export market”
- “To generate potential business opportunities”
- “To give high quality food whenever at reasonable price”
- “To reduce diet-related NCDs”
- “To maintain vibrant rural communities”
- “To reduce food-borne disease”
- “To support livelihoods in the value chain”
- “To give +ve outcomes for the population: health, equity and env”
“The Lucky Country”: Why worry?
> 86,500 farm businesses in Australia

• On average, each produces enough food to feed 600 people, 150 at home and 450 overseas.

• Collectively produce almost 93% of daily domestic food supply.

• Gross value of production in 2016-17 was $60 billion (3% GDP)

• Australia’s farm exports about $44.8 billion in 2016-17

“The value of our farm exports, and indeed the future of Australian agriculture, depends largely on conditions in overseas markets, due to our high level of exports.”

“We have probably the best biosecurity in the world”

“Blessed with ‘Brand Australia’”

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“The Australian food system feeds 80 million people”

“This is the land of plenty. We don’t worry about vulnerability; we don’t think about resilience”

“She’ll be right, mate”

Drought-hit Australia to import wheat for first time in 12 years

A rare bulk shipment of wheat from Canada, due later this year, has added to concerns about the Australian grain industry, which is being hit by a perfect storm of severe drought and difficult trade conditions.

The import is the first of its kind since 2007, and was approved by the Australian government on Tuesday after months of lobbying from grain users desperate for product.
But what about other concerns?
Defining Resilience
4 Questions

1. Of what?
2. To what?
3. For whom?
4. Over what time period?

Adapted from: Helfgott, European Journal of Operational Research, 2017
1. Of what?

Food System Functioning (Activities)

OR

Food System Function (Outcomes)

Social Welfare
- Income
- Employment
- Health
- Social capital
- Political capital
- Ethics
- ...

Food Security
- Food Utilisation
- Food Access
- Food Availability

Environment
- Climate change
- Water availability
- Water quality
- Biodiversity
- Biogeochemistry
- Soil degradation
- ...

Adapted from: Ingram, Food Security, 2011
Australian Food System Stresses

“Labour shortage: it’s increasingly scarce, increasingly expensive”

“Agriculture dominated by family farms”

“Tariffs on importing soy”

“Water stress”

“Processing dominated by international players”

“Aging farmer population; hard to maintain skills”

“Australian ‘land grab’ by China”

“Insect pollinators in decline”

“Chilean produce cheaper threatening international markets”

“New landscape caused by changing Trade and Direct Foreign Investment”
Australian Food System

Shocks

“Drought”

“Frost damage in wheat”

“Hail storms”

“Russian wheat aphid”

“Blue tongue limiting exports to China”

“Food scares (e.g. strawberry industry lost $500m)”

“Weather extreme affecting food distribution”

“SARS epidemic hitting 30% of the workforce”

“Electrical cut to the banking system”

“Geopolitical incident affecting export market”
3. For whom?

Food system ‘actors’

“A beef farmer, a processor, a retailer, a consumer, an exporter?”
4. Over what time period?

- **Short-term *interruptions* (usually due to shocks) to e.g.:
  - Fishing or agricultural activities (due to e.g. extreme weather)
  - Critical ingredient shortfall (due to e.g. supply chain breakdown)
  - Just in time groceries delivery (due to e.g. IT malfunction)
  - Consumer shopping patterns (due to e.g. food scares)

- **Longer-term *disruptions* (usually due to stresses) to e.g.:
  - Natural resource degradation
  - Energy price
  - Low-carbon emission regulations
  - Change in dietary preferences
## What can amplify these Stresses and Shocks?

<table>
<thead>
<tr>
<th>Factor</th>
<th>Description</th>
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<tbody>
<tr>
<td>Good harvests outside Aus leading to drop in world prices</td>
<td>“Good harvests outside Aus leading to drop in world prices”</td>
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<tr>
<td>Horticulture at highest risk as essentially self-regulating</td>
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<td>Frequency of cyclones</td>
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<tr>
<td>Volatility in markets, esp. beef price fluctuations</td>
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<tr>
<td>Politics around migrant labour</td>
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<td>China politics and losing market</td>
<td>“China politics and losing market”</td>
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<tr>
<td>Fuel price hikes and transport costs</td>
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<tr>
<td>Public opinion, e.g. shocking news about live animal exports</td>
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<tr>
<td>A few big producers can organise political power</td>
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<tr>
<td>No sense of vulnerability</td>
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Notions of Resilience of Food System Outcomes

1. **Robustness**
   - Aim to resist disruption to *existing* FS outcomes

2. **Recovery**
   - Aim to return to *existing* FS outcomes after disruption [bounce back]

3. **Reorientation**
   - Accept *alternative* FS outcomes before *or* after disruption [bounce forward] (transformation)

*All involve*

**Reorganisation**
- Making changes to the system *activities* (adaptation) either directly or via ‘environments’
‘Reorganise’ to enhance Robustness

“Trade deals aiming to diversify market”

“Planting N-S instead of E-W”

“Protect reputation”

“Focus on food safety”

“Future Proofing”

“Maintain good relationships with China”

“Improve transport infrastructure”

“Even stronger biosecurity”

“Phase out bad farmers”

“Guardsmanship”

“Protect reputation”

“Focus on food safety”

“Future Proofing”

“Maintain good relationships with China”

“Improve transport infrastructure”

“Even stronger biosecurity”

“Phase out bad farmers”

“Guardsmanship”
‘Reorganise’ to enhance Recovery [bounce back]

“Better coordination post-farmgate”

“Joining together into associations”

“Enhance State Emergency Service”

“Import food temporarily (e.g. Sunrice)”

“Use scenarios and foresight”

“Adaptability of social and institutional structure”

“Improve logistics infrastructure”

“Enhance biohazard response”

“Path dependency vs. deviant dependency”

“Automation”
‘Reorganise’ to encourage Reorientation [bounce forward]

“Introducing sector-led minimum standards of operation/efficiency”

“Using renewables in production”

“Aim for high-value commodities for sale on world market”

“Healthier diets; eating seasonally”

“Reduce food waste”

“Reduce processed foods and aim for NOVA classification”

“Reduce red meat consumption”

“Food/diet classes need to be part of national policy”

“Recommission National Agriculture White Paper”

“Aim for systemic innovation (i.e. avoid component innovation)”
Challenges for enhancing resilience to shocks and stresses

- "3-5 yrs max planning timeframe for ag enterprises"
- "There is no real use of scenarios or foresight"
- "Need both public and policy ‘will’ to work on interventions"
- "No comprehensive strategy in place; more planning is needed"
- "Need to take consumer sentiments seriously"
- "Reliance on mixing of supply in food processing"
- "People value eating out; changing hospitality culture difficult"
- "No sign of legislation because of fear of "nanny state"
- "Need better understanding of the dynamics and sensitivity of the system"
- "Need Food Systems thinking"
Food System Stresses and Shocks and Food Security

**CONSUMERS**
Constraints on dietary choice and diversity
affordability, preference, allocation, cooking skill, convenience, cultural norms, …
=> Consumption by Sub-populations

**FOOD CHAIN ACTORS**
‘Post-farm gate’ Food System Activities
processing, packaging, trading, shipping, storing, advertising, retailing, …
=> Final Cals/Nutrient Quantity and Price at shop

**PRODUCERS**
Local, Regional & Global Production Activities
farming, horticulture, livestock raising, aquaculture, fishing, …
=> Basic Cals/Nutrient Quantity and Price at farm

Productivity
Diversity & Quality

Stresses and Shocks

Social, Political, Business, S&T, and Biophysical Environments

Insufficient cals
Insufficient nutrs
~ 1 billion

Sufficient cals
Insufficient nutrs
? 3 billion

Excess cals (incl. many with insufficient nutrs)
> 2.5 billion

Sufficient cals
Sufficient nutrs

Insufficient cals
Insufficient nutrs
~ 1 billion

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