Resilience in the Goulburn Murray: Overview

WHAT IS RESILIENCE?

Resilience is the capacity of system to cope with change while creating opportunities towards a shared vision.

The Goulburn Murray Region is a complex dynamic system, with many interacting elements, inputs and outputs, that influence each other in predictable and unpredictable ways. This system is changing. While some of the change is outside our control (climate, global markets, technology), we can shape the trajectory of change, rather than being forced to respond in a particular unwanted direction.

GOULBURN MURRAY RESILIENCE STRATEGY

An evolving strategy that describes streams of interventions that will increase resilience in agricultural landscapes in the Goulburn Murray system.

TYPES OF RESILIENCE

Resilience is not a synonym for dogged maintenance of the current situation, or a return to the past. Resilience is a spirit of courage and enterprise and encompasses a system or the components within a system's capacity to:

Persist: Capacity to stay essentially the same in the face of change. Assumes that things will at some point return to "normal".

Adapt: Capacity to deliberately adapt to change. Adaptation assumes that change will endure but that the same overall system can continue.

Transform: Capacity to fundamentally transform in response to change. Transformation is a product of deliberate, significant change in response to enduring change.

In the face of major drivers of change, some parts of industries within our region will be focused on persisting. However, it is more likely that we will need to continually adapt. And sometimes we will need to fundamentally transform.

To be resilient, our region needs to be able to shape and respond to known and anticipated changes, while maintaining capacity to cope with unknown and unexpected future change.

RESILIENCE PRINCIPLES

The following principles describe the characteristics of systems that demonstrate resilience. They must underpin any interventions taken to increase resilience within a system.

- Develop a complexity perspective
- Manage networks and connectivity
- Develop governance that embraces change
- Value, retain and build response and recovery capacity
- Foster cohesion, self-organisation and local responsibility
- Focus on slow variables, leverage & tipping points
- Design for flexibility
- Learn for change

Finland has a self-identified national spirit called sisu, which loosely translates as pluck, grit, resilience. It is a powerful spirit in a country that has survived with poor soil, harsh winters and geopolitical conflict.

Resilience principles in action

Principle 1.
Develop a 'complexity' view of the world

The tendency to focus on enterprises or industries in isolation from the whole system has reduced resilience by missing critical linkages, feedbacks and unintended consequences. While agricultural production and food processing are critical to economic and employment growth, the long term resilience and wellbeing of the region is dependent on other factors such as ageing and declining populations, lifestyle land ownership, access to health services, biodiversity and ecosystem health. Developing an understanding and capacity to plan and work with this complexity is one of the most powerful steps we can take towards building a resilient region.

Principle 2:
Develop governance that embraces change

Governance approaches that embrace change help a region to prepare for, respond to and learn from change. The Shepparton Irrigation Region Irrigation Futures Project in the early 2000's clearly identified a suite of issues that were the precursors to most of the serious challenges the Goulburn Murray Region now faces. A recent review of that work showed that despite its high quality, extensive process, the governance system was unable to move away from business as usual. There are a range of possible reasons for that failure including: lack of leadership; broader political dynamics; policy and internal agency dynamics.

Principle 3:
Foster cohesion, self-organisation and local responsibility

Because no one group has control of a complex system, no one can build resilience on their own. Resilience building must be a system wide, collective process. Self-organisation, local decision making, and cohesion are important for addressing local scale problems. There is very clear evidence that communities with strong social capital and capacity to self-organise suffer less during shocks and disasters and recover faster.

While in theory the current governance structure is well set up for increasing local decision making and responsibility, the prevailing trend is for power and decision making to be centralised. This stems in part from a lack of trust and at times a lack of capacity for communities to self-organise.

Principle 4:
Design for flexibility

Flexibility offers long term regional resilience in the face of uncertainty by allowing for future adaptation at lower cost.

It is crucial to avoid "lock-in traps", which occur when particular system feedbacks become self-reinforcing, preventing change. It is possible that parts of the Goulburn Murray Region are currently caught in lock in traps, such as the relatively 'fixed' footprint of the modernised irrigation system that may reduce land use and production system diversity. A key lesson from the Connections project is that while there may be a higher up front cost for investing in flexibility, in the longer term it is likely to be worth it, providing the least disruption to the overall system.

Principle 5:
Manage networks and connectivity

Shifting demographics and land uses create new system dynamics for the region. For example:

- The shift from largely rural communities to increasingly urban or lifestyle communities may have implications for how agriculture is practiced.
- Management of wastes and emissions from intensive animal systems and how those wastes connect to existing networks requires system wide focus.
- Habitat connectivity is crucial for biodiversity, allowing species to move, but habitat corridors can also allow invasive species, and pathogens to spread.

Principle 6:
Value, retain and build response and recovery capacity

Buffers, reserves, diversity and redundancy provide long term shock absorption and rapid recovery capacity to systems, but they also impose short term costs. A number of recent studies suggest the economic benefit of building response and recovery capacity are significant, but that those benefits are realised over longer time frames. The prevailing paradigm is focused on shorter term efficiency and economic return at the expense of these capacities. These capacities are required at differing scales and across the private and public domains.

A Goulburn Murray example is maintenance of surface and subsurface drainage capacity, which will support future response and recovery capacity to wetter periods if and when required. Another example is Victoria's water allocation policy. By using a rolling 2 year process it creates reserves and buffers against dry conditions.

Principle 7:
Focus on slow variables, leverage & tipping points

There are a number of slow variables that continue to play a critical role in shaping the Goulburn Murray Region, including terms of trade on traditional commodities, labour costs and regulations, water policy and water availability, and climate change. Slow changes make the system more vulnerable to short term shocks by eroding capacity to prepare, respond and recover.

For example, lower commodities prices over time reduce buffers and reserves of capital. As a result, short term spikes in input costs or interest rates, limit the capacity to pay debt. These immediate challenges can become acute when the system has ground slowly towards major tipping points. Teasing out the short and long term dynamics and the presence of tipping points can generate important insights for dealing with the underlying cause of change.

Principle 8:
Learn for change

Learning is critical in complex systems. Learning needs to be fostered and structured to allow local scale innovations to develop, be tested and then scaled up.

The decline in government funded Research, Development and Extension (RD&E) means a new approach to learning and innovation needs to evolve that best suits the complexity of the Goulburn Murray Region system. This model requires novel partnerships across private and public institutional boundaries. It requires mechanisms to collect, synthesise and share learning and a governance system that can support and enable innovations to scale up and out.