Implementing Change to enhance resilience– Where are the new ways forward?

Stephanie Brown and Vivienne Ivory

IT'S SIMPLE, YEAH RIGHT?

'Working together towards a more resilient built environment' – it sounds so simple, so appealing. What could possibly go wrong? The reality is that resilience is inherently messy and contested. Pathways to 'resilience' can take more or less challenging routes, from absorbing shocks through existing means (such as bigger pipes), to learning to adapt and adjust (such as enabling easier changes to land-use), through to transforming systems (such as new investment models) (Douxchamps et al., 2017). While much could be achieved through targeting so-called 'low hanging fruit', a transformative goal could provide far greater achievements, both now, and for generations to come.

A recent US editorial describes three building practices that could increase resilience to storms – avoid building in danger zones, address standards and think before rebuilding (Thomas and Mazur, n.d.). Yet experience tells us that gaining agreement on and then implementing such change to building practice in New Zealand would be transformative. It requires recognition that, for example, current building practices reflect values, timeframes and existing power relationships and that change will challenge them. It requires the ability and willingness for parties to listen, talk, communicate, and share values to break down silos and move beyond short-term timeframes. Holistic, transdisciplinary approaches to thinking about and operationalising resilience are increasingly recognised as the way forward (Parsons et al., 2016). Water Sensitive Design (WSD) may be one way of using a common goal to facilitate the common language needed to negotiate and ultimately implement change.

WATER SENSITIVE DESIGN AS AN EXAMPLE

It is hard to argue that we should not be looking at a water sensitive future. Part of this is adopting water sensitive design (WSD) within our communities. Traditional solutions to stormwater problems (eg increasing the size of pipes) are expensive, and although they address the immediate problems, they do not unlock wider benefits in the same way as WSD.

As a concept, WSD recognises that an inter-disciplinary approach to urban development will allow opportunities for integration of land use and water management, for using water as a resource, and for working with nature to enhance ecology and ecosystem services in urban areas. The decisions we make now about development will have a significant influence on what our towns and cities will look like in 50 years and therefore how resilient they will be to known and emerging stresses.

The implementation opportunities are endless but the barriers are significant, particularly for retrofitting. A number of councils have WSD guides but a step change is needed and up-scaling required. Barriers include:

- How to value (economically) not only just tangible benefits but also the intangible – current cost benefit models are too narrow, do not include social and cultural maters and exclude the cost to future generations of not acting now
- The balance of carrots and sticks is not right, ie. the right incentives do not exist and WSD would probably need to be a legal requirement to get transformational change
- A disconnect between what people expect and what people are willing to pay
- The need for the data and evidence that address all the issues and the budget to act.

The successful examples are easier to find for greenfield developments. For example, developments with streets designed as part of an integrated stormwater treatment train; houses with rain water tanks to reduce peak flows; and swales, rain gardens and the wetland to provide aesthetic features. Signage can remind people that the rain gardens are more than just some plants and need to be protected, for example from vehicles driving on them.

Given that 70% of the NZ housing stock of 2060 already exists today, the 'value case' for addressing the challenges sits largely with retrofitted solutions that also provide better intergenerational value, greater resilience and urban amenity. There are lots of small scale solutions that are being adopted but not in a consistent manner, for example, a number of councils require rain water tanks for new developments but there are no incentives for existing property owners.

While piecemeal or single project-level implementation is often well-intended, it can come at significant cost without realising important environmental gains. For example, in 2006, a retro-fitted Christchurch building and carpark (~3ha impervious surface) cost just under $1M but discharged stormwater to surface water where within 300m there were over 30 other stormwater outfalls discharging untreated water (Opus 2006).

The question still remains, if innovative solutions could be implemented retrospectively at a catchment scale, might they be more sustainable and faster to achieve change?

Answering that question is easier for communities if they have access to good, value-based information and measures that aids communication across silos and encourages a future-focus. Yet too often, information is patchy, or of questionable quality. While there may be data on (for example) the pipe network, it is often not contextualised to the community it serves (Opdyke et al., 2017). Values-based data and indicators can tell a more holistic story about what matters to a community, facilitating connections and shared conversation to negotiate change. A community can then explore and decide whether an investment will deliver the desired outcomes, such as healthy waterways.

THE (NOT SO) SIMPLE STEPS TO CHANGE

So what action we do need to be taking in response to the issues and how do we make it transformational change? We need to:

- 'Stand on the shoulders of giants' i.e., recognise the good examples and ways of thinking that already exist.
- Have decision-making processes that acknowledges there are values at stake – for today's communities and into the future.
- Recognise that old strategies are no longer aligned with community values, expectations, and capacities and are economically and environmentally inefficient.
- Position quality of life for people, now and into the future at the heart of enhancing our resilience and improving our environment. It needs to become something that means something to the entire community - home owners/renters, developers, policy makers, decision makers.
- Deliver clear positive and aspirational messages about implementing resilience to political leaders as ultimately they make the decisions, not technical people.
- Incorporate social and environmental benefits into our information infrastructure so we can develop more meaningful models and cost-benefit analyses. Detailed documentation of case study examples also provides important learning tools for capacity building.

We cannot achieve the above without working in partnership and communicating and showcasing the successful stories to a wide-ranging audience.

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OPUS

Implementing Change to Enhance Resilience

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Overview

- Resilience conversations
- The issues
- Resilience conversation kickstarters
- Barriers to change
- Resilience opportunity – Water Sensitive Design
- The steps to change
- What can you do?

Resilience – It's simple. Yeah, right?

- Conversation gaps in how we talk about resilience
  - Concepts
  - Indicators
- Why won't they just do it?....
  - Interventions
  - Timescales
  - Implications

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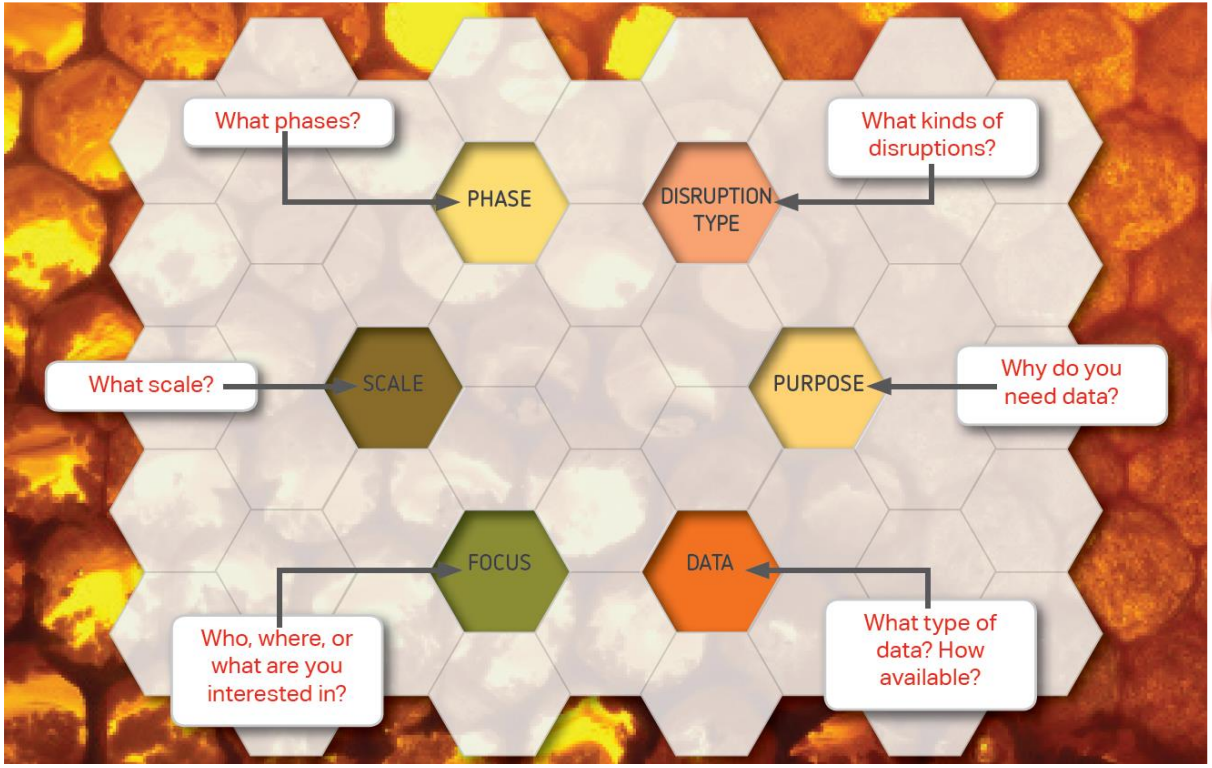
The Issues

- Climate change & uncertainty
- Urbanisation and intensification
- Competing values & understandings

- Reducing levels of service, ageing infrastructure
- Affordability pressures
- Higher expectation with no impact on cost

Need to innovate well beyond current practice

Resilience conversation kickstarts: measurement



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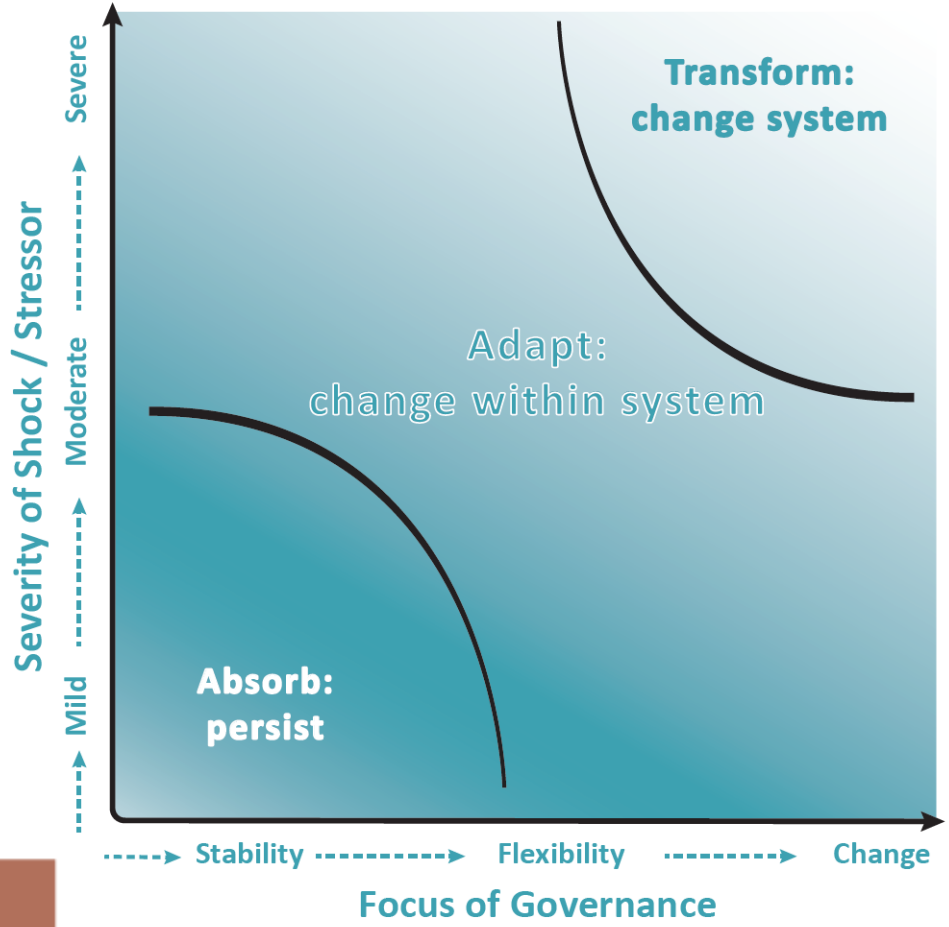
Resilience conversation kickstarts: goals



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Barriers to Change

- Current cost-benefit models are too narrow

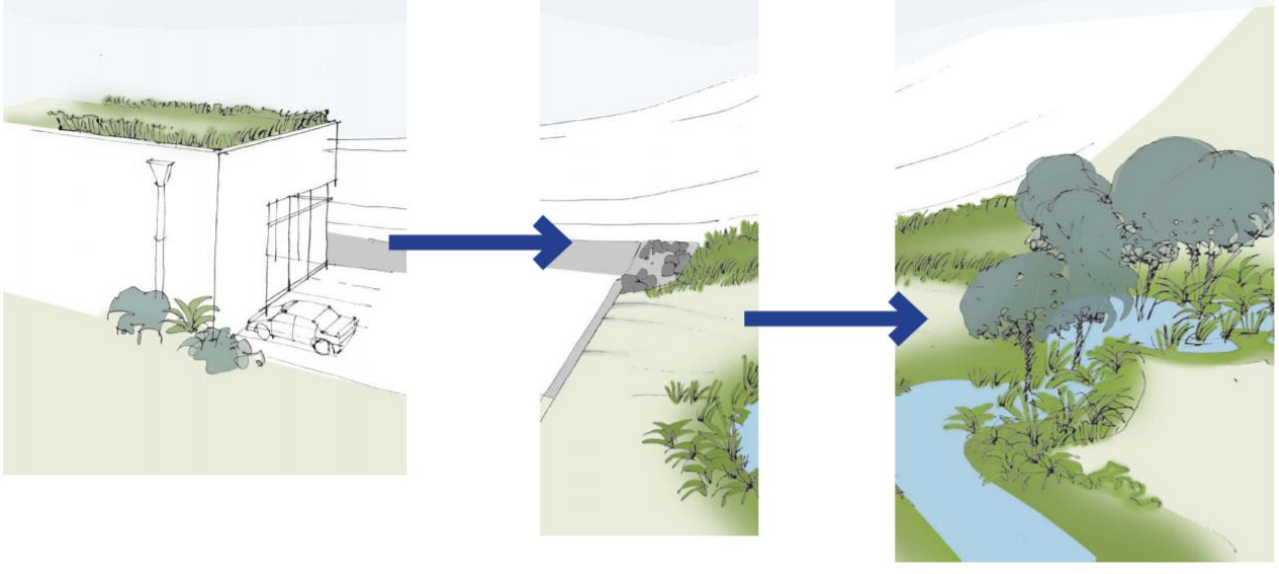
$$\beta a = \left[\frac{Ve}{(Ve + Vd(1-T))} \beta e \right]$$

- The balance of carrots and sticks is not right

- A disconnect – expectations & willingness to pay

- Data and evidence that address all the issues
- The budget to act effectively

Opportunity: Water Sensitive Design



Where do we start?

- If solutions could be retrofitted at a catchment scale, might they be more sustainable and faster to move towards resilience?

(not so) Simple steps to change

Recognise our ‘old ways’ are out of alignment

‘Stand on the shoulders of giants’

Decision making processes – values at stake

Evolve our economic models

Policy, Governance and Politics

Connecting conversations

What can you do? Maybe it is simple

As environmental practitioners…

- Ensure good science and engineering, as well as sound financial data and advice so the issues are well understood
- Be part of the solutions
- National Policy Statement for Natural Hazards (Resilience)

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As community members…

- Be part of / start the conversation about the future