

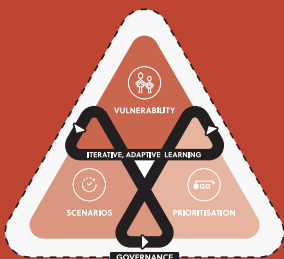
# 03



## Climate and disaster risks:

What they are, why they matter and how to consider them in decision making

## Guidance on Vulnerability



ISBN: 978-1-920996-84-0 (Print)  
ISBN: 978-1-920996-91-8 (Online)

© Commonwealth of Australia 2019

With the exception of the Coat of Arms and where otherwise stated, all material presented in this publication is provided under a Creative Commons Attribution.

4.1 International licence  
([www.creativecommons.org/licenses](http://www.creativecommons.org/licenses)).

For the avoidance of doubt, this means this licence only applies to material as set out in this document.



The details of the relevant licence conditions are available on the Creative Commons website as is the full legal code for the CC BY 4.0 licence ([www.creativecommons.org/licenses](http://www.creativecommons.org/licenses)).

#### **Acknowledgement**

The Australian Government, Department of Home Affairs and the National Resilience Taskforce wish to acknowledge the contribution of its partners and stakeholders for their ongoing encouragement and expertise. Without the guidance, participation and cooperation of representatives from across the governments of Australia, collaboration with business and institutional partners, and invaluable contribution of community members, this work to inspire new conversations about climate and disaster risk would not have been possible.

National Resilience Taskforce specifically acknowledges and thanks our official project partner, the Commonwealth Scientific and Industrial Research Organisation (CSIRO) for drafting the Guidance on Vulnerability.

#### **Disclaimer**

The information within guidance provided, and upon which it is based, has been obtained from engagement with a diverse range of stakeholders and sources that the authors believe to be reliable and accurate. The information in the guidance is solely intended to provide a general understanding of the subject matter and not intended to be complete or comprehensive in terms of content or resources. The guidance documents are a first iteration and have not been fully tried and tested. The guidance should be seen as credible and instructive but not authoritative.

The information contained may not be representative of all audiences and appropriate to all situations. The concepts and knowledge contained in the guidance will improve as the ability to engage more comprehensively with audiences such as the Aboriginal and Torres Strait Islander populations matures and as knowledge about the underlying drivers of climate and disaster risk broadens across society. No liability is accepted for any loss or damage arising from connection with the use of information in all guidance documents.

#### **Citation**

Australian Government, Department of Home Affairs. 2019. Climate and Disaster Risk: What they are, why they matter and how to consider them in decision making. 3 Guidance on Vulnerability

# Foreword

---

The risk landscape is changing quickly, and the stability of natural, social and economic systems can no longer be taken for granted. The scale and seriousness of the momentum of change requires genuine national collaboration, a broad range of knowledge and strategic guidance on navigating growing uncertainty.

Choices made at multiple levels by a wide range of decision makers in both government and industry interact to affect our vulnerability and resilience. Better decision making, guided by new forms of systemic risk governance, assessment and management are key to preventing and reducing climate and disaster risk.

Led by the National Resilience Taskforce and released in April 2019, the co-developed *National Disaster Risk Reduction Framework* (Framework) sets a common agenda for collective action. This new Framework is in part informed by the report *Profiling Australia's Vulnerability* that reflects a fuller understanding of systemic disaster risk and values, choices and trade-offs.

*Profiling Australia's Vulnerability* brings into sharp focus the reality that hazards lead to disaster where there is exposure of a vulnerable society and where the consequences exceed people's capacity to cope. The report also finds that what we value, and the choices that we make between these values, are different during periods of stability compared with disruption. Understanding this can help reframe how we approach climate and disaster risk reduction efforts into a whole-of-society approach.

The Framework sets a foundation for action for decision makers across all sectors of the Australian economy. It seeks to raise awareness of the causes and effects of climate and disaster risks and to enable decision makers to proactively take steps within their spheres of influence and control to reduce these.

To support its implementation and encourage new conversations about climate and disaster risk, a set of interconnected guidance documents has been developed.

This Guidance is foundational and is a first iteration. It is designed to help decision makers in the non-trivial task of contextualising the systemic physical impacts of a changing climate. In particular, it provides direction on how to call upon knowledge, capabilities and processes to apply climate and disaster risk to governance, strategic planning and investment decisions.

As you *Turn the Page*, you will be contributing to the journey from where we are now, to where we need to be.

**Mark Crosweller AFSM**

*Head of National Resilience Taskforce  
Department of Home Affairs*

# Turning the Page

## Reducing Systemic Climate and Disaster Risk for a Resilient and Prosperous Australia

### Momentum is Building

The risk landscape is changing quickly and we need to break from business as usual.

-  Natural hazards are more frequent and intense
-  Demand is growing to address financial impacts of a changing climate
-  People, livelihoods and assets are more exposed and vulnerable
-  Essential services are increasingly hyper-connected
-  Disaster impacts are long-term and complex
-  Costs of disasters are growing
-  Stability of natural, social and economic systems can no longer be taken for granted

"Where and how we place ourselves on the landscape really does matter."

Fragmented framings of risk

Emphasis is on response and recovery

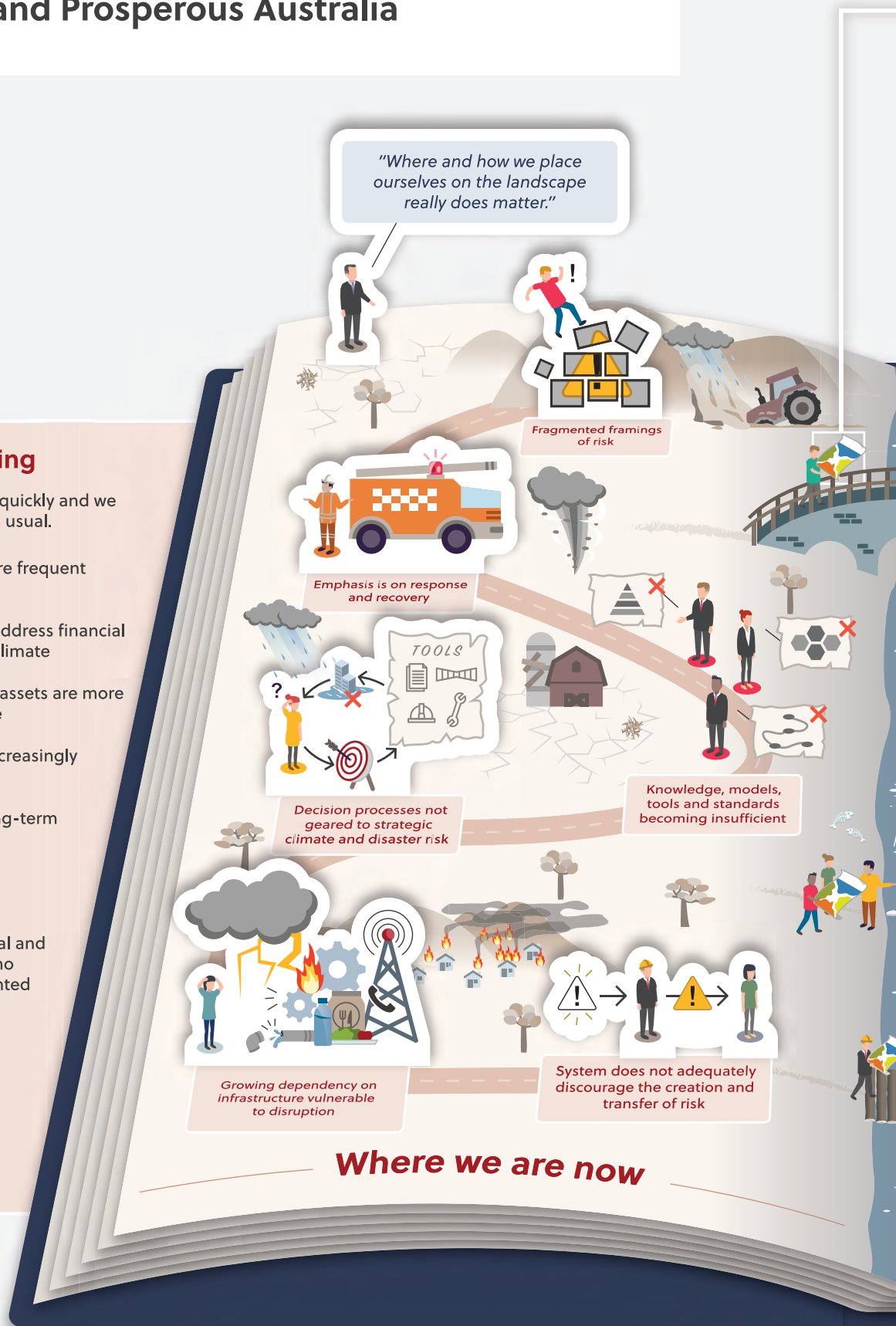
Decision processes not geared to strategic climate and disaster risk

Knowledge, models, tools and standards becoming insufficient

Growing dependency on infrastructure vulnerable to disruption

System does not adequately discourage the creation and transfer of risk

Where we are now



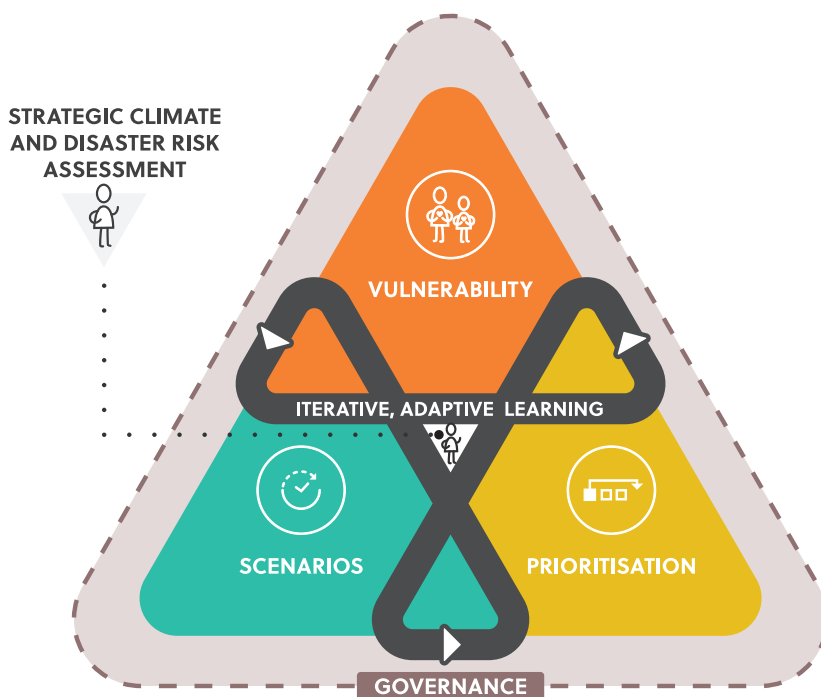


## We are Aspiring Towards

A systems and values-based mindset reduces climate and disaster risks.

-  Risk-informed sustainable development
-  Substantial reduction in loss and harm
-  Successfully living with natural hazards and a changing climate
-  Reduced intergenerational vulnerability
-  Wellbeing, trust and confidence

This document is one of a set of interconnected Guidance documents on *governance, vulnerability, scenarios and prioritisation* for enabling strategic climate and disaster risk reduction.



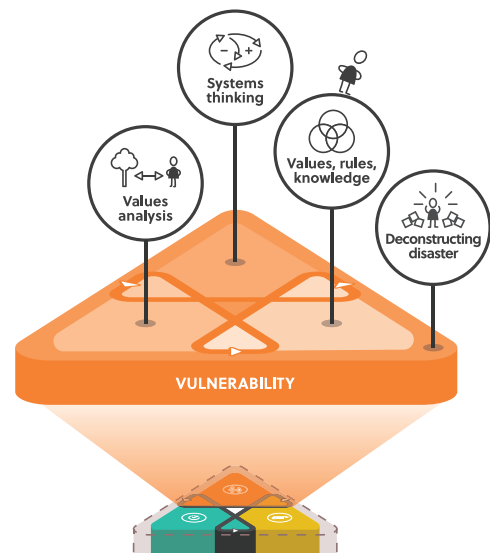
The set of Guidance documents have been developed to help you:

- more holistically understand the systemic nature of climate and disaster risk, particularly the causes and effects of societal vulnerability, using on a systems- and values-based approach to assessment and collaboration;
- explicitly revisit the vision, goals, objectives and decision criteria of relevant stakeholders in the context of changing climate and disaster risk;
- recognise which aspects of uncertainty matter when making strategic long-term decisions and how to apply techniques to make robust decisions in lieu of complete knowledge; and
- understand what types of knowledge and information are important for different stages of strategic plans or risk assessments.

The Guidance on Vulnerability can be read and applied in parts, independently or as an integrated set with the Guidance on Governance, the Guidance on Scenarios and the Guidance on Prioritisation. It should be read in conjunction with the Introduction and the supporting Terms and Concepts.

The Guidance on Vulnerability:

- provides structured frameworks and a workshop process to focus on the least understood dimension of disaster risk, namely societal vulnerability;
- provides a systems and values based approach to understanding the causes and effects of vulnerability;
- builds an understanding of how societal rules, values and knowledge incentivise and inform trade-offs and decisions; and
- aims to help decision makers, researchers and practitioners learn together to identify possible interventions to reduce climate and disaster risks.



# Contents

---

1. Vulnerability Overview	6
2. Deconstructing Disaster Workshop	16
3. Values Analysis	27
4. Systems Thinking	36
5. Values, Rules and Knowledge	44
6. Learning into the Future	48

The Guidance on Vulnerability has been derived from the approaches used and developed and lessons learned in developing the report *Profiling Australia's Vulnerability: The interconnected causes and cascading effects of systemic disaster risk*. The report is supported by a detailed Technical Report titled *Approach, methods and results for co-producing a systems understanding of disaster*. These and other supporting publications can be downloaded from the Australian Institute of Disaster Resilience (AIDR) website: <https://knowledge.aidr.org.au/collections/disaster-risk-reduction/>

The Commonwealth Scientific and Industrial Research Organisation led the co-development of this guidance. It has been constructed on the principles of building on and drawing from existing capabilities, resources, decision processes and initiatives in order to complement existing practices and enable the implementation of the National Disaster Risk Reduction Framework.



# 1. Vulnerability Overview

---

## 1.1 Introduction

The **Guidance on Vulnerability** focuses on ways to understand and talk about systemic sources of vulnerability. These insights are central to effective climate and disaster risk reduction. It examines the value of vulnerability assessment, outlines a potential workshop process, and discusses its key components and possible outcomes.

Hazards (which are simply anything that can cause harm) only lead to disaster if they intersect with an exposed and vulnerable society. They cause most harm when the consequences exceed people's ability to cope.

There is a lot of information on natural hazards readily available. Research and information on exposure are rapidly increasing. Vulnerability, however, is the component of climate and disaster risk and disaster risk reduction that is least understood.

## 1.2 Purpose of assessing vulnerability

Hazards and risk are inevitable. Disasters are not. The root causes of disaster are embedded in the familiar patterns of how society operates and how we live our daily lives. These patterns have developed in times of relative stability.

A vulnerability assessment brings together the information we need to answer the questions:

- ❓ **What changes are required for society to become more resilient to disaster?**
- ❓ **Where, when and how can we start making change?**
- ❓ **Who needs to make them?**

We need to work together to understand the ways in which the choices which underpin our current ways of living make us vulnerable to disaster. We have the opportunity to intervene now to identify alternative choices which will sustain us into the future.

As you conduct a vulnerability assessment for your organisation, community or sector, you can begin to identify both problems and potential solutions. You can work collectively with stakeholders to build resilience to severe natural hazards. You will also be better prepared to learn from future hazardous events and use those insights to continue to adapt.

**Assessing vulnerability is about understanding 'why' and 'how' naturally occurring events can lead to devastating loss and suffering, when they impact upon what people and society value.**



---

The Guidance on Vulnerability focuses on a suite of key activities which, when used in combination, assist with:

- 1 Recognising vulnerability, in terms of
  - What people already know they value which could be lost in the event of a disaster
  - Things that are only fully recognised to be of value after a disaster, e.g. community cohesion
  - Disparities in vulnerability across different groups in society
- 2 Identifying the underlying causes of vulnerability
  - The value trade-offs between what is valued in times of stability and times of disruption
  - Interdependent societal patterns that reinforce the status quo and make it difficult to change, including interdependencies between sectors
  - Disparities in people’s interests and capacity to initiate change
- 3 Identifying changes that could reduce vulnerability
  - Ways to initiate different societal patterns to enable resilience
  - Alternative value trade-offs that enable resilience
- 4 Embedding ongoing learning about how to reduce vulnerability
- 5 Working out how to start to take action
  - Who needs to be involved?
  - Enabling different decisions to be made
  - Processes for developing next steps



---

## 1.3 Structure

There are six sections in the Guidance on Vulnerability.



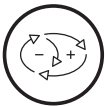
**Vulnerability Overview** – this section.



**Deconstructing Disaster Workshop** is a concrete example of one way to put vulnerability assessment into action. It discusses ways to engage with stakeholders to share perspectives and knowledge about vulnerability to disaster. It looks at systems, processes and choices. It aims to build agency and networks for taking action to reduce risks. The sections following it add more detail to the concepts and frameworks used in this workshop.



**Values Analysis** introduces a values framework that can be used to identify how and why people and society value the things they do. It directs attention to how individuals' and community values interact and are prioritised. It highlights the tensions and possible conflicts between value priorities that prevail during periods of relative stability and those more likely to reduce vulnerability to disaster. It also provides a series of questions to support users to conduct a values analysis for their own domain of interest.



**Systems Thinking** explains the benefits of taking a systems approach to deal with the complexity of disaster risk reduction. It introduces approaches for identifying and analysing typical systems patterns, root causes and impacts of disasters, potential points of intervention and the interplay between values, rules and knowledge.



**Values, Rules, Knowledge (vrk)** is an approach that has particular relevance for moving from insights to action. It draws attention to the constraints on action posed by prevailing formal and informal values, rules and knowledge.



**Learning into the Future** discusses the ongoing learning necessary to act upon the insights gained through the vulnerability assessment process.

**“Recognising and understanding our shared vulnerability is an essential aspect of strengthening our resilience”.**

**Source:** Australian Government, Department of Home Affairs. 2018.  
*Profiling Australia’s Vulnerability: the interconnected causes and cascading effects of systemic disaster risk.*

## 1.4 Using the Guidance on Vulnerability

1. Many of the concepts in this guidance interconnect. If this is your first interaction with the Guidance on Vulnerability, you might want to read through them to see what's here. As you do so, think about the following:

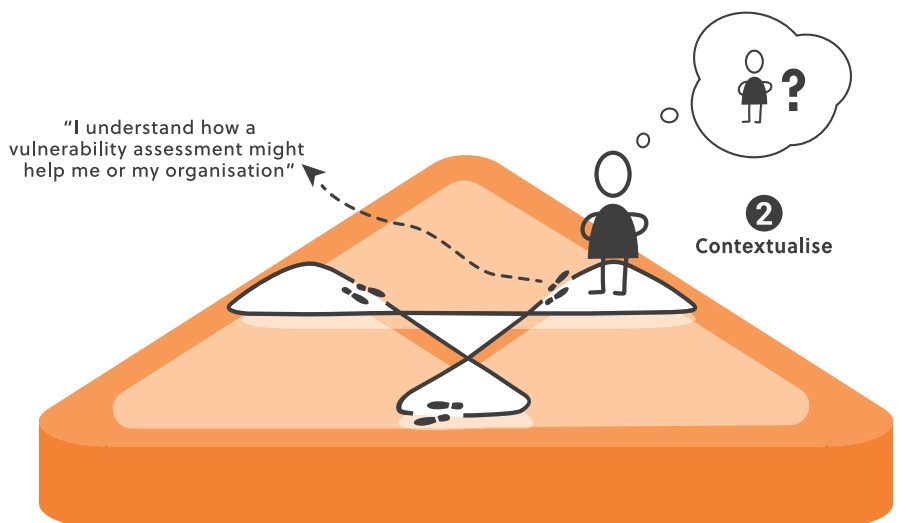
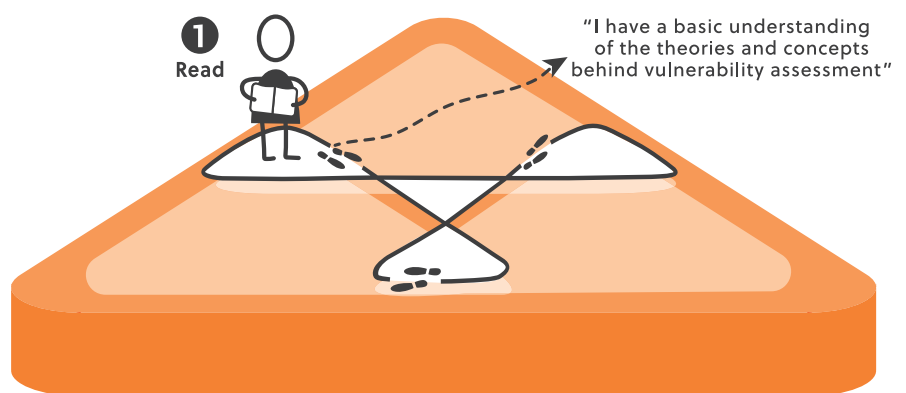
- 1 ? **How does this relate to my context?**
- 2 ? **How might I use this?**
- 3 ? **Who might I share this with?**

At this stage you will understand how vulnerability contributes to disaster risk, and why an overview of the core constructs is needed to assess vulnerability.

2. After you read through the Guidance on Vulnerability you might want to engage with it more thoroughly. It is likely that you will want to relate it to your own situation and context. As you work through the materials, consider:

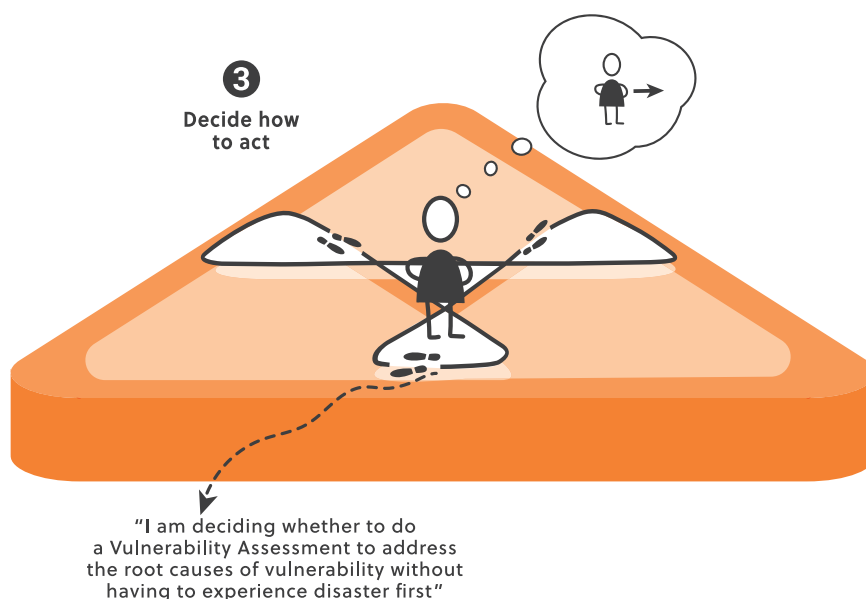
- 4 ? **What things are of value in my context?**
- 5 ? **What are the areas that are at risk or are sources of risk?**
- 6 ? **What are the barriers for change?**
- 7 ? **Who do I need to engage with to share this?**

At this point, you will understand how a vulnerability assessment might help you or your organisation or community. You will have some initial ideas of what might be at risk in your domain of interest as well as some insights into what might need to change.



3. If you decide to explore the feasibility of doing a vulnerability assessment, it will be helpful to think about:

- ① **What is the system that I would want to explore if I were to use this?**
- ② **Who needs to be involved, from this organisation and other stakeholder organisations?**
- ③ **What resources and skills will be needed?**
- ④ **Whose support will be needed to make this happen?**



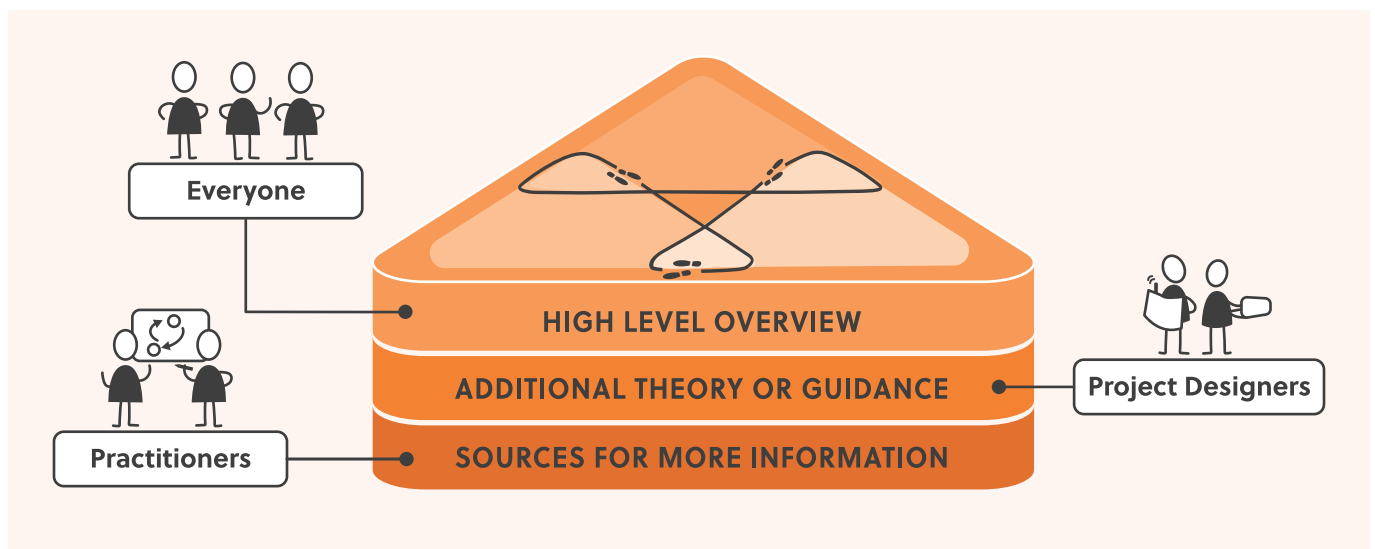
4. A range of reference materials listed throughout the guidance can provide more in-depth information.

At this stage, you will have a good understanding of what is involved in doing a vulnerability assessment and be prepared to undertake one.



## 1.5 Users of the Guidance

Ideally a vulnerability assessment will be viewed as a capability-building initiative, with users and participants progressively learning how to assess risk and act upon the insights acquired through successive iterations.



If you are in a senior or executive leadership position or a reader from any organisation with an interest in this topic, most of the guidance will be relevant. It will assist you as you start to reframe disaster risk reduction for your context, consider ways to use the processes and concepts outlined and share insights and possibilities with your team.



If you wish to or have been asked to commission or conduct a vulnerability assessment, the additional detail in the guidance will help you to understand the competencies required to do so. It will enable you to effectively commission outside assistance and/or develop the internal skills and capacity needed.



If you are an experienced facilitator or practitioner with the requisite skills to conduct specific elements of a vulnerability assessment, the steps outlined in this guidance are probably insufficient for you to conduct the analysis. However, useful additional materials are signposted to help you in delivering and/or modifying the activities, while keeping consistent with the key principles behind the methods described here.

## 1.6 Key considerations

### Collaboration

If you decide to do a vulnerability assessment, it is really important to collaborate with stakeholders who are impacted by and can influence the domain you want to explore. Vulnerability is often reinforced through interdependencies between sectors. Working together makes it possible to develop a broader understanding of the sources of vulnerability, what the constraints are, and what would be needed to address them. Working together on a vulnerability assessment can help build the mutual understanding and relationships that are needed to address systemic issues.

### Ethics and Empathy

Effective discussion of vulnerability can be demanding. Considering the impacts of disaster and risks and responsibilities can be challenging. Asking people to move beyond assumptions can be the most difficult of all. It is therefore vital to create a safe and exploratory space for dialogue.

This is a balancing act requiring a sensitive, pragmatic and courageous approach. If the conversation stays too close to the current discourse, it may not achieve the core objectives to create potential for change. If it moves too far into alternative discourse this could potentially lead to resistance and mistrust or even outrage.

Therefore, the issues of ethics, psychological safety and ideological or political risk should be addressed in any projects or activities where stakeholders are involved in a co-production process, or where monitoring and evaluation is being conducted. Different organisations have different mechanisms to do this, and you may need to explore what approaches your organisation has in place.

### Iterative Learning

An iterative process works towards a decision or result by repeating rounds of analysis, discussion and problem solving. The objective is to bring the desired result or change closer to discovery with each repetition (Figure 1).

It is a highly effective way to respond to complexity and to reach novel solutions particularly when working to understand and respond to a systemic problem. It is discussed in detail in section 6 of this Guidance, Learning into the Future.

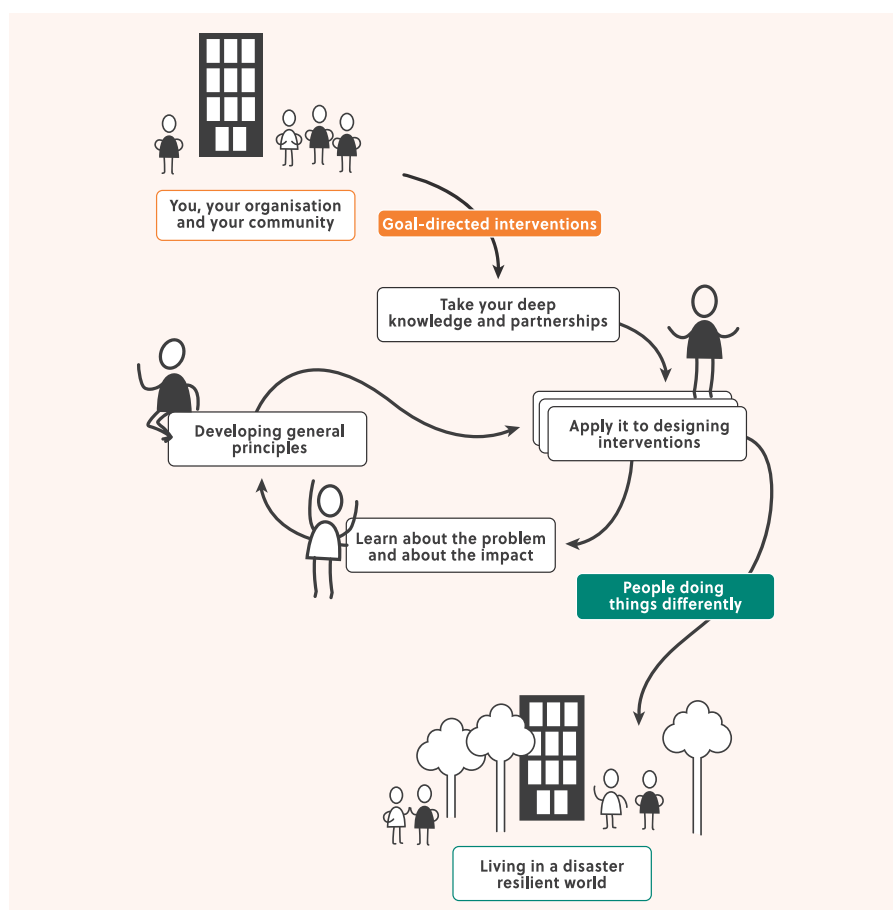


Figure 1: An iterative learning journey

---

## 1.7 Challenges and Opportunities

It is almost inevitable there will be challenges to face as you work towards developing a clearer and deeper understanding of vulnerability with your organisation, sector or community, and as you work to create interventions and change.

There may be a lack of knowledge, agency and resources, or social and institutional support.

All guidance documents aim to support your thinking, communication and action as you overcome these challenges. By undertaking a Deconstructing Disaster workshop (or other discussion or workshop process) you can develop an understanding of gaps in knowledge and capacity. You will also have connected and engaged with others to inspire a commitment to change, strengthen networks and create agency.

There are approaches and tools to consider the complex nature of vulnerability in Values Analysis and Systems Thinking. There are also many approaches and tools in the area of resilience thinking for combining vulnerability assessment with planning options and pathways for designing low-regret interventions. Some of these are explained in the Guidance on Scenarios.

Questions of resourcing and investment can be answered by a deeper, more accurate understanding of value and loss as discussed in Values Analysis and in the Guidance on Prioritisation. The barriers to action based on cultural values, regulation or legislation are considered in Values, Rules and Knowledge and in the Guidance on Governance.

Learning into the Future can guide your processes as you work with stakeholders in ways that build continual iterative learning. They can assist you as you work to build capacity, increase knowledge and maintain commitment.

As you work to prepare a system for change you can shift assumptions, build capacity, develop or engage specialist skills and network with stakeholders to build relationship and agency. You can create the readiness to take advantage of windows of opportunity as they open.

## 1.8 Other Tools

There are of course many other tools, approaches and resources which can guide your vulnerability assessment.

**Theory of Change** has emerged as an approach to create a shared system understanding with partners and key stakeholders, and to assist with the design, planning and implementation of an intervention. Theories of Change can be used as a systematic approach to assist stakeholders in making their assumptions explicit, and reflect on their vision of the future, as well as their values, perspectives and assumptions about how the system they operate in works.

**Monitoring, Evaluation and Learning (MEL)** frameworks are designed to test the theories and assumptions of an intervention, what is working, what needs adjusting and what needs to be dropped or changed completely.

These approaches can be used to determine the impact of an intervention during and after a project. Less narrow and restrictive approaches are key to encouraging innovation. They can recognise and acknowledge incremental change or proximal goals and help maintain momentum and commitment.



## Further reading

### For more detailed information on the Theory of Change we recommend:

- The Resilience, Adaptation Pathways and Transformation Approach (RAPT Approach). The Global Environment Facility Scientific and Technical Advisory Panel funded the development of the RAPT Approach to support the design, implementation and evaluation of interventions for achieving sustainability goals. The RAPT Approach is an adaptive learning and governance approach that comprises three modules focused on 1. Understanding people's values and visions; 2. Analysing the system; and 3. Identifying options and pathways to action. The Theory of Change underpins these modules and enables the iterative identification of shared goals and mutually reinforcing actions.  
<https://research.csiro.au/eap/rapta/>
- The Learning for Sustainability website, which provides practical resources for those who work with communities (in the wider sense of the term) to help them identify and adopt more sustainable practices. It provides a guide and links to a wide range of on-line resources that support social learning and constructive action in multi-stakeholder settings. Site content is sourced from the sustainable development, natural resource management, urban development, public health and agricultural sectors. Typical site users include policymakers, agency staff, community and business leaders, and practitioners working in collaborative settings. The information on this website is provided for information only, is general in nature and does not constitute any form of advice for a particular organisation, individual or situation.  
<http://learningforsustainability.net/theory-of-change/>
- The guide to working with Theory of Change for research projects developed by Isabel Vogel under the 9-year Ecosystem Services for Poverty Alleviation (ESPA) research programme. The ESPA programme was funded by the UK to explore the links between the environment and human wellbeing. The purpose of the guide is to support Principal Investigators and research teams who wish to work with a theory of change approach when developing their pathways to impact and impact strategies. The guide may also be of use to other programmes with a similar approach to ESPA.  
<http://www.espa.ac.uk/files/espa/ESPA-Theory-of-Change-Manual-FINAL.pdf>

### For more detailed information on Monitoring, Evaluation and Learning, we recommend:

- The section on 'Tracking Systemic Change' in the Technical Report supporting *Profiling Australia's Vulnerability* which provides the approach to understanding and testing whether desired changes to a system from an intervention have been achieved or not.  
<https://knowledge.aidr.org.au/collections/disaster-risk-reduction/>
- The international collaboration and public-good project '*Better Evaluation*' created to improve the practice and theory of evaluation by developing and curating information on choosing and using evaluation methods and processes, including managing evaluations and strengthening evaluation capacity. Better Evaluation has contributors from many countries and organisations with the core team based at the Australia and New Zealand School of Government (ANZSOG) in Melbourne, Australia.
- The World Bank's 'knowledge note' on 'Monitoring and Evaluation in Disaster Risk Management' that addresses the importance of quality monitoring and evaluation in the disaster context. It provides an overview of how each can be used differently in the ex ante and ex post disaster scenarios. General guidance is given on how to construct a logical framework for evaluating disaster risk management projects by presenting best practices from three recent projects.  
<https://openknowledge.worldbank.org/handle/10986/10119>



## 2. Deconstructing Disaster Workshop

---

### 2.1 Introduction

**Even as we obtain more knowledge about climate change, natural hazards, exposure, potential impacts and risk, it can be difficult to shift the existing patterns of decisions, behaviour and investment that presently increase our vulnerability to disaster.**

What can we do to translate the complex and dry data on natural hazards and exposure into something that motivates people? How can we increase understanding of ways that this abstract information may manifest on the ground as a devastating disaster? How can we give insight into what to do about it, especially when everyone is a part of the system which is creating the vulnerability?

Most people struggle to translate scientific projections and data into something which is tangible, and can feel overwhelmed when they realise the nature of the profound environmental and social change that we face. It is difficult to consider what we can do to make a difference to such a complex problem.

It is a challenging task to address systemic risk. The root causes of the risk, and the actions to mitigate them, are complex. They lie outside the management of any one person or organisation, and often in a space where nobody is 'in charge'.

This section of the Guidance on Vulnerability describes a two-day experiential 'discovery and learning' workshop process that focusses on deconstructing the systemic causes and effects of disaster. The workshop is designed to navigate answers to questions like 'What makes Australia vulnerable to disaster when severe to catastrophic disasters impact what we value?' The guidance provides explanations of how to execute a 'deconstructing disaster' workshop and the types of outcomes generated from the process.

---

## 2.2 Objectives

**A Deconstructing Disaster workshop is designed to help people unpack vulnerability in a way which focuses on the context of their situation. The workshop provides an opportunity to translate complex and dry data into a powerful learning experience. It provides a structured format and a range of conceptual tools to start the process of understanding causes and potential points of intervention to create change.**

Participants are exposed to some of the confronting ideas and feelings around catastrophic disaster, to provoke the shifts in perceptions and knowledge that tend to occur following a disaster event. The intention, is to go beyond raising awareness and towards catalysing behaviour change in people, in a transparent, ethical and safe way.

The workshops are meant to generate discussions across sectors, to build capacity and to create connections. They provide a forum where participants can start to build their own agency and the vital networks needed to make changes in the parts of the system that they influence.

The completion of a Deconstructing Disaster workshop would be expected to provide or realise the following:

- a forum for dialogue between levels of government, sectors, organisations, scales of operation, different disciplines, community members and perspectives;
- raised stakeholder awareness of different ideas and approaches especially relating to systems thinking and associated capabilities for identifying and understanding the systemic causes and effects of risk and how to deal with these;
- improved capabilities and capacity – including knowledge, networks and trust – for thinking, talking and acting on the systemic causes and effects of disaster beyond the workshop and particularly in stakeholders' everyday activities;
- raised awareness of a range of service providers about the importance of involving and working with communities; and
- greater and wider appreciation for the diversity of perspectives about the causes and effects of climate and disaster risk and the value of, or need for, triple-loop learning approaches to reveal the many ways participants frame the challenge and generate novel potential ways forward.

---

## 2.3 Design Principles

The key design principles are also key factors of success:

### 1. Effective stakeholder engagement

This provides a forum for getting relevant and possibly new stakeholders involved in an appropriate way. The process is inclusive and enables exploration of a range of perspectives and sectoral interests. It is aimed at minimising any distortions due to politics and power imbalances, marginalisation of vulnerable groups, gender and so on, so that there is voice for all participants.

### 2. Active participation and sponsorship by senior and executive leadership of organisations





This provides an authorising environment for participation by all. It also encourages commitment and a sense of expectation that senior leaders will be aware of and involved in learning about the root causes of problems, the cascading impacts and the pathways to addressing them.

### 3. Use of multiple approaches around psychology, education and effective learning.

Experiential learning and learning cycles are complemented with future-oriented learning approaches. Triple-loop learning is also embedded in the design.

### 4. Credibility of the science underpinning scenario development and analysis processes

The format combines theory and practice across many different fields of research including:

- participatory systems analysis 
- understanding values 
- scenario planning (see Guidance on Scenarios)
- systems theory/thinking  

### 5. Recognition of emotion and creativity as well as logic, and different types of knowledge as necessary tools

These are critical when dealing with the context of disaster, reframing thinking about the future as well as influencing behaviour<sup>2</sup>. Different modes of sense-making, including emotional, creative and rational forms of processing information, have value for both individual and collective tasks.

### 6. Creation of a safe space, working under clear ethics protocols and a legitimate environment for dialogue between people with different perspectives

This includes providing a structured way of listening and holding space for multiple perspectives without judgement and without having to resolve them. Informed consent includes communicating to participants that the workshops and surveys are intended to keep all participants within a respectful process and to acknowledge the intellectual contribution that all individuals make to the project.

<sup>2</sup> Brown, V. 2008. *Leonardo's Vision: A Guide to Collective Thinking and Action*, Sense Publishers.

**Did you know?**

The Deconstructing Disaster workshops and the broader stakeholder engagement activities throughout the co-design and co-development of *Profiling Australia's Vulnerability* were conducted under CSIRO Human Research Ethics protocols<sup>3</sup>.

This required informed consent to be provided by all participants. The consent process included communicating to participants that the workshops and surveys were intended to keep all participants within a safe and respectful process for sharing knowledge and to acknowledge the intellectual contribution that individuals made to the project. Participation was voluntary, and participants could withdraw from the workshop process at any time.

**7. Use of story-telling and narrative.**

Narratives are a powerful tool to create change in perception, decisions and actions. The stories that we tell ourselves help to define who we are as an individual, a family, a community, an organisation, a state or a nation<sup>4</sup>.

Narratives used in the workshop included:

- non-fictional stories of lived experience;
- fictional or aspirational stories for exploring and explaining a vision for living with natural hazards in the future, or for demonstrating how the system works or how it could be changed;
- exploration of narratives underpinning ideologies or political discourse; and
- synthesising 'meta-learnings' across multiple perspectives, formal studies or mental models to create evidence-based system narratives.

It is important to remember that stories have real power and to use them consciously and choose them wisely. To work with complexity, which is central to assessing vulnerability, you will need to include, acknowledge and respect many narratives and perspectives and look for ways to integrate them.

**8. Role of the facilitation and analysis team**

Facilitating a Deconstructing Disaster workshop requires a range of skills. The roles require facilitators to explain, provoke, synthesise and integrate multiple perspectives. They also include managing and processing participatory systems analysis, problem solving, strategic storytelling and the capacity to effectively reframe conversations. It is crucial to manage a range of personality types, ensuring power imbalances are kept in check, and to manage emotions or mediate conflict with empathy.

<sup>3</sup> Ch 2 and 3 in O'Connell, D. Wise, R. Williams, R. Grigg, N. Meharg, S. Dunlop, M. Veronica, D. Meyers, J. Edwards, J. Osuchowski, M. Croweller M. 2018. Approach, methods and results for co-producing a systems understanding of disaster. Technical Report Supporting the Development of the Australian Vulnerability Profile. CSIRO, Australia.

<sup>4</sup> Monbiot, G. 2017. *The Power of Stories: Why We Need More Than Facts to Win*, Verso Books.

Coninx, I. Bentz, J. Michalek, G. and de Rooij, B. 2018. Using strategic narratives to help integrate climate change adaption and disaster risk reduction. Available: <https://www.placard-network.eu/using-narratives-to-help-integrate-cca-drr/>.

---

## 2.4 Design Elements

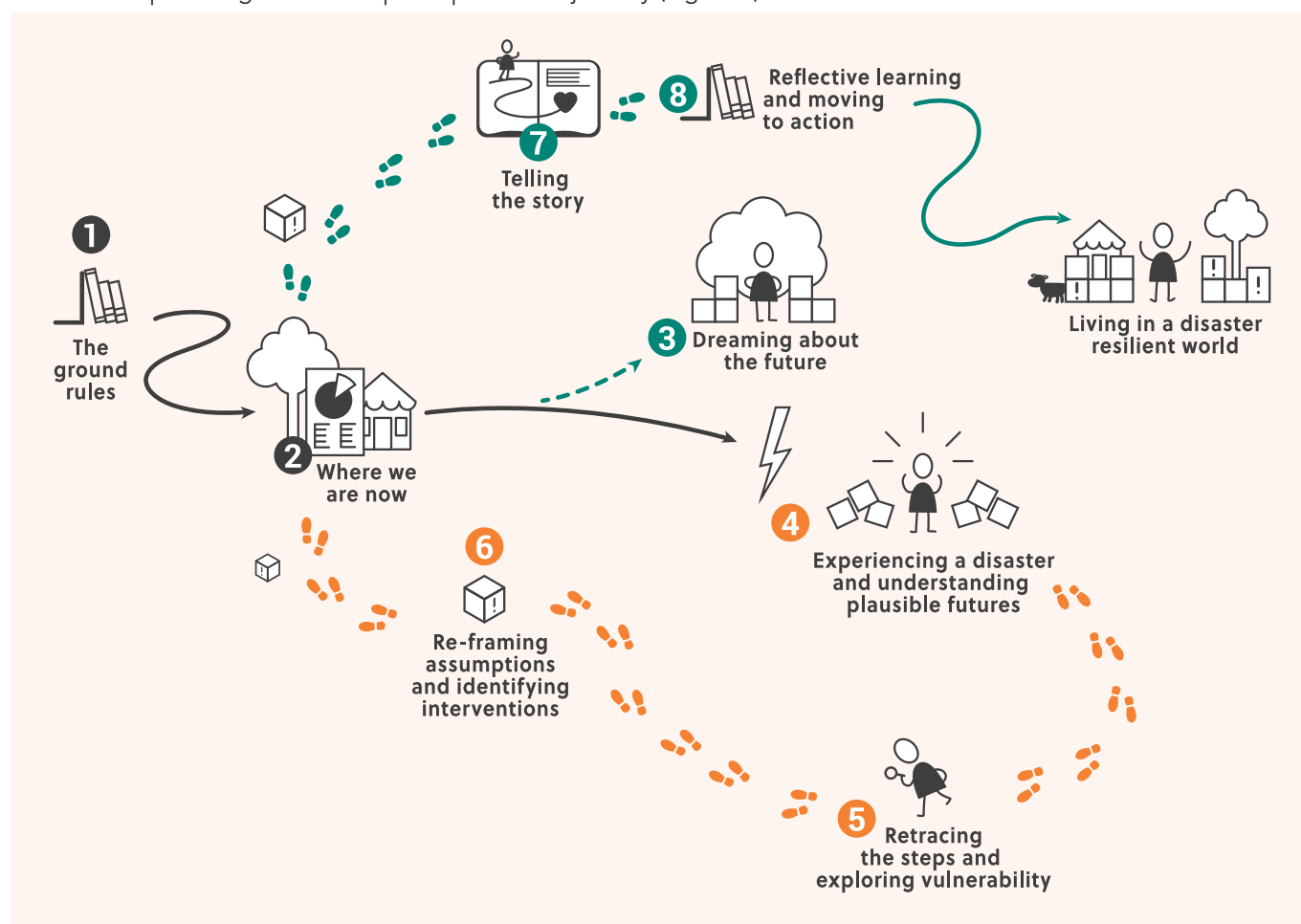
The Deconstructing Disaster workshop is divided into eight sessions over two days.

	<i>The ground rules</i>	Welcome and introductory session
	<i>Where we are now?</i>	Understanding the current context
	<i>Dreaming about the future</i>	Vision for living well, alongside natural hazards in the future
	<i>Experiencing a disaster and understanding plausible futures</i>	A plausible future highlighting vulnerability to catastrophic disasters if we do not make major changes to current practice
	<i>Retracing the steps and exploring vulnerability</i>	Exploring vulnerability under plausible future catastrophic events – a systems based approach
	<i>Reframing assumptions and identifying interventions</i>	Identifying interventions – a systems based approach
	<i>Telling the story</i>	Vulnerability narratives about and for change
	<i>Reflective learning and moving to action</i>	Workshop evaluation and closure

Each session has specific learning outcomes and structured activities, designed to blend intellectual, emotional and creative aspects of participation. An overview is shown in Table 1. These sessions include concepts and frameworks described within this guidance.

Each table should have 6 – 12 participants and an experienced facilitator. Each of the eight sessions is carefully structured and sequenced to build shared understanding of problems and potential solutions, raise the familiarity of participants with the concepts and tools and promote considered and reflective discussions and learning outcomes.

The workshop is designed to take participants on a journey (Figure 2).



**Figure 2:** The journey participants experienced during the Deconstructing Disaster workshops. The footsteps represent ongoing, iterative learning.

---

## 2.5 Key Learning Outcomes

Feedback from participants of a Deconstructing Disaster workshop found that the workshops were effective at building capacity. The nature and depth of conversations, analysis of the problem and types of interventions suggested can be expected to fluctuate over the course of the two days.

The workshop will alter the ways that participants consider natural hazards, the causes of systemic disaster risk and the scope of possible interventions. They lead to increased awareness of the usefulness of evidence-based story-telling as a way to create deeper understanding. Finally, the workshops also foster participants' intentions to translate their learning into actions in their personal and professional contexts.

It is important to acknowledge the importance of executive leaders and champions driving change and to give them practical processes to enable their work. Deconstructing Disaster workshops are one tool that they can use.

Deconstructing Disaster workshops have the potential to initiate conversation and build momentum towards understanding and reducing climate and disaster risk. They can connect and expand local-level innovations and shift thinking broadly by spanning sectors, institutions and regions to raise collective awareness of large system change in reducing vulnerability.

Deconstructing Disaster workshops can also motivate and support other analysis and assessment for decision-making described within the Guidance on Governance, Guidance on Scenarios and Guidance on Prioritisation.

As stakeholders collaborate in a range of processes they can work towards:

- scaling up (impacting overarching limitations and possibilities by changing institutions at the level of policy, rules and laws);
- scaling out (impacting greater numbers by replication, involving increasing numbers of people, organisations and communities); and
- scaling deep (impacting socio-cultural roots e.g. by changing inter-personal and socio-material relationships, cultural values, norms and beliefs).




### Further Reading

**For more information on the underlying theory and methods used to inform the Deconstructing Disaster workshop approach, we recommend:**



- Kolb, D. A. 1984. *Experiential Learning: Experience as the Source of Learning and Development*, New Jersey, US, Prentice-Hall.
- McCarthy, B. 1996. *About Learning*, Barrington, Excel, Inc.
- Scharmer, O. 2018. *The Essentials of Theory U: Core Principles and Applications*, San Francisco, CA, Berrett-Koehler Publishers.




Table 1 The workshop sessions with activities and learning outcomes

Workshop session	Key features and suggested activities	Work done by core elements	Key outcomes
 <p><b>1</b></p> <p><i>The ground rules</i></p> <p>Welcome and introductory session</p>	<p>Welcome and introduction</p> <p>Scene-setting by high level champion(s)</p> <p>Explanation of ethics protocols and developing 'ground rules' or 'group norms' for the workshop</p>	<p>Process is given legitimacy by strong support from high level champions.</p> <p>People understand the process, are clear about their roles and rights, and feel safe knowing that there are ethics protocols and a psychological safety net.</p>	<p>All participants feel welcome, included, safe, respected and that they have a valuable and equal voice.</p>
 <p><b>2</b></p> <p><i>Where we are now?</i></p> <p>Understanding the current context</p>	<p>Presentation – 'Deconstructing Disaster: Drivers of natural hazards'</p> <p>Activities</p> <ul style="list-style-type: none"> <li>• Table groups develop a list of things that are vulnerable, or make Australia vulnerable, to catastrophic disaster</li> <li>• Participants develop cause-effect diagrams of vulnerability to disasters (see Systems Thinking)</li> </ul>	<p>Participants are given the opportunity to hear about the increasing risk profile in the usual way.</p> <p>Participants are able to describe their understanding of the system, hear multiple perspectives.</p> <p>Key assumptions about the participants' view of how the system works are documented.</p>	<p>Participants have a raised awareness of the drivers of natural hazards and their changing nature, and how this intersects with existing vulnerabilities.</p> <p>Participants develop a greater appreciation and shared understanding of the interactions between the causes and effects of vulnerability in Australia today.</p> <p>Participants start gaining insight into values at stake, and multiple perspectives.</p>
 <p><b>3</b></p> <p><i>Dreaming about the future</i></p> <p>Vision for living well, alongside natural hazards in the future</p>	<p>Activities</p> <ul style="list-style-type: none"> <li>• At table groups, create an aspirational vision for successfully living with natural hazards</li> <li>• List values, rules and knowledge underpinning this aspiration, and create a short narrative (see Values Analysis and Values, Rules, Knowledge)</li> <li>• Present a 2-minute 'pitch' back to the whole group, in an atmosphere of fun</li> </ul>	<p>Draws people's thinking in a creative, unconstrained way to the future, in a way where scientific or other specialist knowledge is not privileged.</p> <p>Raises the level of positive emotions and hope for the future.</p> <p>Elicits some of the core values.</p>	<p>Opportunity to share and capture perspectives on what successful living with natural hazards looks like.</p> <p>Participants have a raised awareness and understanding of what is important to people, and the desirable attributes of the 'things of value' to be successfully living with natural hazards (e.g. healthy – a potential attribute of people and the environment; resilient – a potential attribute of communities; and accessible – a potential attribute of information and opportunities to learn).</p>

Workshop session	Key features and suggested activities	Work done by core elements	Key outcomes
 <p><i>Experiencing a disaster and understanding plausible futures</i> A plausible future highlighting vulnerability to catastrophic disasters if we do not make major changes to current practice</p>	<p>Introductory note – trigger warning and reminder of resources at hand to support psychological safety of participants</p> <p>Presentation – ‘Imagining the future: A Story to Deconstruct Disaster’ – a plausible catastrophic disaster scenario with impacts outlined, presented by credible scientists. A key feature is that the disaster must be of sufficient magnitude to greatly exceed the capacity for emergency services and other key services to respond (see Guidance on Scenarios)</p> <p>Activities</p> <ul style="list-style-type: none"> <li>• Time for quiet reflection, perhaps asking participants to capture their responses on sticky notes (or other means such as zeetings or sli.do)</li> <li>• Facilitated discussion at tables or with the whole group</li> <li>• Presentation – ‘Thinking differently about disaster preparedness’ – credible senior leader providing some context and emphasising the intentions and learnings for this exercise, and through this session modelling ethical and compassionate crisis leadership</li> </ul>	<p>This session is designed to flow from the high point and fun of the Visions session 2, to the low point of the very plausible possibility of catastrophic disaster framed to the local context of the participants.</p> <p>An emotional response is first provoked. This experience is intended to expose participants to the possibilities, shock and feelings they might experience in a real disaster, albeit in a ‘safe’ way.</p> <p>Participants see the pragmatic behaviours and compassionate responses from senior and respected leader modelled in the final presentation of the session. This provides some of the ‘practice’ of any simulation or emergency drills, helping to dispel initial responses of surprise or fear and instead create a sense of agency.</p>	<p>Participants experience the cognitive dissonance required to put people into a learning frame to change mindset, world views and desire to act proactively.</p> <p>New insights and reframing of mental models emerge as participants start understanding the possibility and implications of catastrophic disaster (which is usually not obtained from the first presentation on climate and natural hazards).</p> <p>Some capacity to envisage and deal with disaster is built through exposure to the ideas – as is the case with any emergency drill.</p>
 <p><i>Retracing the steps and exploring vulnerability</i> Exploring vulnerability under plausible future catastrophic events – a systems based approach</p>	<p>Activities</p> <ul style="list-style-type: none"> <li>• Table groups return to the cause-effect system diagrams done in Session 1, and the table facilitator checks in with any processing done overnight</li> <li>• Participants consider the diagrams in the light of the catastrophic disaster (see Systems Thinking)</li> </ul>	<p>Participants revisit their views of the system, and the assumptions about how it works.</p> <p>They have the chance to discover for themselves some reasons why the system has failed, the interdependence and cascading impacts. By looking at a system in ‘vicious cycle’ state, they are able to discover and discuss some of the key principles of vulnerability and the converse, resilient systems.</p>	<p>In the context of a plausible catastrophic disaster, participants develop deeper understanding of:</p> <ul style="list-style-type: none"> <li>• the causes and effects of vulnerability (including the people involved, their motivations for doing things and who benefits or loses)</li> <li>• what this means for the relative importance of the things people value and the attributes of these things</li> <li>• the concept of systemic risk.</li> </ul>

Workshop session	Key features and suggested activities	Work done by core elements	Key outcomes
<p><b>6</b></p>  <p><i>Reframing assumptions and identifying interventions</i> Identifying interventions – a systems based approach</p>	<p>Activities</p> <ul style="list-style-type: none"> <li>Table groups start to identify interventions to reduce vulnerability to disaster</li> <li>Presentation to the workshop group about the key features of the system vulnerabilities, feedbacks, and proposed interventions</li> </ul> <p>Note: A full analysis of interventions is not possible in a two-day workshop. A worked example of how to design an intervention using these tools is provided in the Technical Report supporting <i>Profiling Australia's Vulnerability</i>.</p>	<p>The session aims to provide some tools and give space to the thinking process to reconcile the different discordant futures that they have been exposed to in previous sessions – the vision with high hopes, and the catastrophic disaster.</p> <p>Participants will start the process of identifying some options for interventions that:</p> <ul style="list-style-type: none"> <li>tackle systemic causes of vulnerability and</li> <li>reduce impacts and suffering (drawing upon values, knowledge and rules thinking)</li> </ul> <p>Participants present the work that their table has done.</p>	<p>Participants gain improved capacity for applied systems thinking, and start exploring practical and transformational ways of overcoming barriers and exploiting opportunities to reduce vulnerability.</p> <p>Discussions and multiple perspectives in the table groups and beyond can generate profound shifts thinking and reframing for some participants.</p> <p>New cross-system networks are starting to form on the basis of the discussions and ideas generated through sessions 1 – 5.</p>
<p><b>7</b></p>  <p><i>Telling the story</i> Vulnerability narratives about and for change.</p>	<p>Presentation/discussion – How do we learn? What makes a story impactful?</p> <p>Activities</p> <ul style="list-style-type: none"> <li>Table groups are challenged to create stories or narratives about the issues of systemic risk, vulnerability and resilience as explored through sessions 1 – 5</li> <li>Stories are presented back as a creative response in an atmosphere of fun and uplifted emotions</li> </ul>	<p>Participants discover/are given the elements of an impactful story, and given some simple tools and guidance. They are challenged to tell the systems narrative as an engaging story.</p> <p>Use of fiction or other creative devices releases them from the constraints and obligations of formal roles and positions, while still challenging them to capture key aspects of the system dynamics from previous sessions.</p> <p>Discussion and creation of stories helps to embed the learning and shift in mindset.</p> <p>Finishes the workshop on a fun and positive emotional note.</p>	<p>Participants gain some tools and practice in story-telling as a form of communication of complex ideas and multiple perspectives by:</p> <ul style="list-style-type: none"> <li>creating engaging illustrative narrative, based on threading stories of some aspects of their cause-effect diagrams, including 'vicious cycle' feedbacks, key interventions and changing to a 'virtuous cycle'</li> <li>experiencing the utility of story-telling by seeing how much more engaging and profound the systems stories were, compared to the session 5 presentations of the diagrams.</li> </ul> <p>Creating and telling the story helps to embed the learning.</p>

Workshop session	Key features and suggested activities	Work done by core elements	Key outcomes
 <p>Reflective learning and moving to action Workshop evaluation and closure</p>	<p>Presentations – Synthesis commentary by high level champions of the workshop, and outline of next steps in process</p> <p>Activities</p> <ul style="list-style-type: none"> <li>• Reflections, and time for sharing some plenary insights and discussion</li> <li>• Filling in the Monitoring, Evaluation and Learning (MEL) survey</li> </ul> <p>Closing thanks provided and workshop closed.</p>	<p>Participants have a chance to do some reflection and synthesis – through discussion and sharing, closing statements from high level sponsors and through completing the MEL survey.</p>	<p>Participants start the reflective learning process through the synthesising comments and the MEL feedback process.</p> <p>Participants have improved capacity for systems thinking, and appreciation for the power of narrative and importance of problem-framing.</p> <p>Improved cross-system networks; motivation and agency to start to instigate necessary changes in their areas of influence.</p>



## 3. Values Analysis

### 3.1 Introduction

Considering values is an important part of better understanding vulnerability. Values are what people consider important in life. We express them in many different ways: as desirable goals, moral principles or preferences. They may seem obvious, until we try to clearly explain them. We may assume that everybody shares them. We may not even be consciously aware of them or how they affect our choices.

Frequently our values come into sharper focus and are clearly revealed or even reprioritised when they are threatened; when the things we value are at risk of being lost or after they are actually lost.

The importance of feeling safe and secure and in a familiar environment or having strong relationships and ease of communication may not be clearly recognised until disaster strikes.

**‘What do you value, and what do you stand to lose in disaster?’ This is a fundamental question for everyone who might face disaster.**

Much of the current effort and evidence about damage and loss relates to economic value. While this is of course important, it does not consider loss which has no agreed standard of measurement but does have great significance.

Recognising what can be lost in a disaster that we value greatly, can help us understand the importance of reducing disaster risk. Recognising that the priorities we have in relatively stable times can actually increase our vulnerability to disaster, can guide us to consider alternative choices so that our vulnerability is reduced before a disaster occurs.

**Most damage and loss (e.g. memories, sense of place, social cohesion and identity) cannot be expressed or measured in monetary terms but instead needs to reflect the nature of people’s lives as determined by values, place and experiences<sup>6</sup>.**

<sup>6</sup> Tschakert, P., Barnett, J., Ellis, N., Lawrence, C., Tuana, N., New, M., Elrick-Barr, C., Pandit, R. & Pannell, D. 2017. Climate change and loss, as if people mattered: values, places, and experiences. *Wiley Interdisciplinary Reviews: Climate Change*, 8, e476

### 3.2 A Values Perspective

Values can be expressed in terms of the things that are valued (e.g. house or family, essential services, rules and norms). The value or importance of a thing derives from how people relate to and experience the thing (Figure 3). These relationships are reflected in the behaviours and interactions people have with these things, including what they do to look after them and to benefit from them.

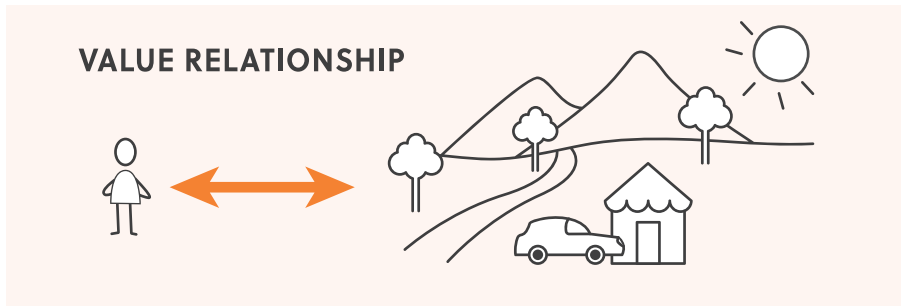


Figure 3: Values are a product of the relationships people have with things they value

### 3.3 Value Tensions and Trade-Offs

Our values influence our choices, behaviours and priorities. We draw on our values to decide how to use our time and effort, and how to allocate resources. Different people can have contrasting, even conflicting values in the same situation.

A typical example is disagreement around land use. Some may wish to conserve an area of bush as environmentally significant whereas others may value the trees for their timber. This creates value tensions between the two groups (Figure 4).

Individuals also experience tensions within their own values. People may wish to live in the bush in order to be close to nature but may also consider the time involved in commuting or the risk to their safety if there is a bushfire.

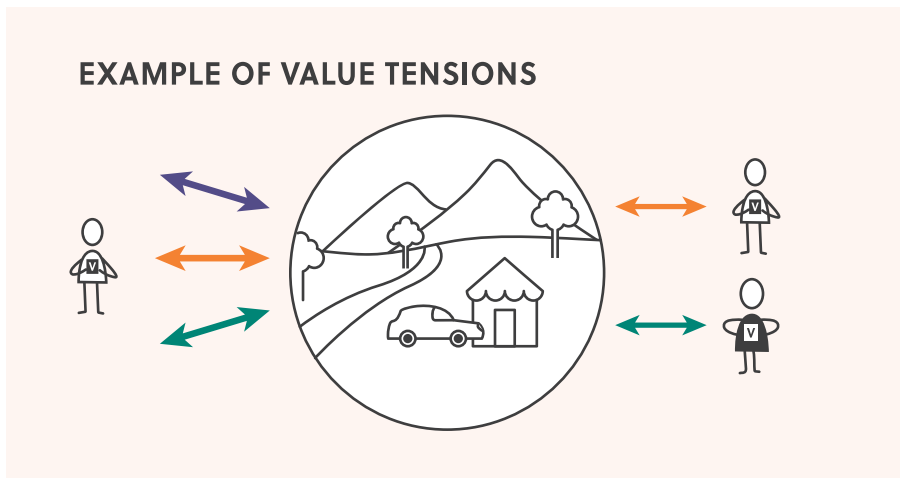


Figure 4: Value tensions

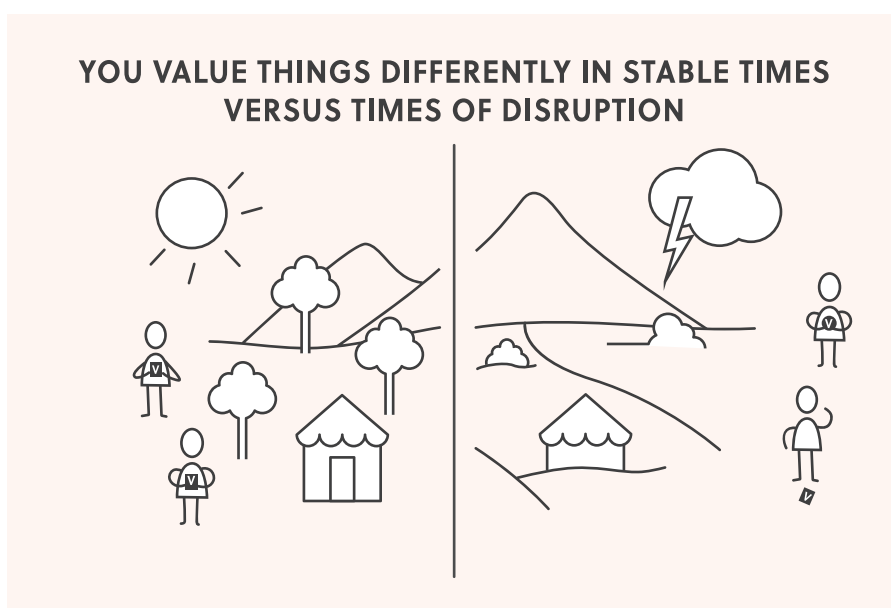
In order to make many of the key choices in our lives, value trade-offs need to be made. Individuals will weigh up their own differing values to guide their decisions. Choices that impact groups and communities can be influenced by the values that people outside the group might hold.

### 3.4 Changing Priorities

Values change from one context to another. A disaster can trigger a value reassessment (Figure 5).

For example, people choose to live in forested areas or near water for the joy of being in those environments or for access to activities associated with them. In the event of a bushfire or flood, the relationship they have with those places and the values they prioritise may be fundamentally different. Safety and security of their family and home are likely to become urgent and crucial.

Where there are value tensions between different groups, priorities are also likely to change when the context changes. Businesses typically focus on efficiency in the supply of goods and services. This creates a risk that people might run out of essential goods, particularly in smaller towns if there is a disruption causing extended delays. In a disaster, however, health and safety might become much more apparent to both the community and the businesses that serve them, shifting the emphasis away from efficiency to an ethical obligation to have a surplus of goods in stock to keep people provisioned.



**Figure 5:** Values change from one context to another such as between stable times and bad times

It is crucial to recognise the cumulative effect of the choices people make in times of relative stability. These choices can create or increase vulnerability to disaster when a severe natural hazard occurs. A values analysis provides an important lens for understanding the trade-offs, damage and loss associated with disruption or disasters, and how to reduce this through prevention, preparation, response and recovery.

## 3.5 A Values Framework

Analysing values and their impacts on vulnerability should reveal:

- 1 The ways in which people value certain things and why they value them in those ways
- 2 How this changes in different contexts, specifically between times of stability and times of disaster
- 3 Value trade-offs made in times of stability that make us vulnerable to disaster

Assessing these three aspects within a framework can help determine what needs to change to reduce vulnerability<sup>7</sup>.

Key categories of 'things of value' include: living things such as nature, animals and people; non-living physical things such as buildings, roads, money; critical services such as communications, health services, transport, energy and information; processes and rules such as regulations and standards, land-use planning and governance.

The value of a thing derives from how people relate to and experience it. This includes how they benefit from it and what they do to look after it. Benefits can be tangible, such as financial wealth, or less tangible, such as power and influence or a sense of wellbeing. Deriving benefits also includes satisfying fundamental or held values, core motivators and intrinsic beliefs.

Attributes are typically adjectives, reflecting the state of a thing. For example:

- healthy – a potential attribute of people and the environment;
- resilient – a potential attribute of communities;
- transparency – a potential attribute of governance; and
- accessible – a potential attribute of information and opportunities to learn.

An effective values analysis needs to account for the different dimensions and aspects of value. We need to consider the factors that determine which values are relevant to us and to those we interact with, manage or lead. We need to acknowledge the tensions between values and how they are prioritised by different people and in different situations.


In this values framework qualities such as health, for example, have been treated as an attribute (healthy) rather than as a thing of value in itself. This distinction is important because different benefits can be derived from the same thing if it has different attributes.

**Contrasting the way things are valued in times of stability and in a disaster reveals the value trade-offs that have been made in more stable times. It is these trade-offs and the behaviours and choices which result from them which make us vulnerable to disaster.**

Making these value trade-offs explicit is a starting point for considering what different choices could be made if society is to become less vulnerable to extreme natural hazards. By assessing the influence of values in different contexts we can build understanding of potential mechanisms of change and inform effective interventions.

<sup>7</sup> Further detail is provided in Chapter 4 of the Technical Report supporting *Profiling Australia's Vulnerability*



A man and a woman are seen from behind, embracing each other in a scene of destruction. The man is wearing a light blue ribbed sweater and dark trousers, and the woman is wearing a grey cardigan and dark trousers. They are standing on a paved area next to a rusted, mangled car. In the background, there is a brick wall and several trees, some of which appear to be charred or bare. The sky is clear and blue.

Stories of the lived experience highlight what emerges when we lose the things we love and value, experience unpleasant circumstances and do not have our wishes fulfilled. These stories draw attention to some desirable goals, including:

- protecting those who are important to us, investing in relationships, maintaining human connection and preserving those things we regard as valuable (shelter, water, food, power, communications, pets, animals, the environment, artefacts, identity, place, etc.);
- preventing and/or mitigating mental and physical harm, building resilience and improving adaptation; and
- preserving, protecting and maintaining a safe and secure society where hope, free will and opportunity flourish, where we learn and grow through increased knowledge, skills and experience, and where we have an opportunity to change our life perspective.



### 3.6 Applying a values framework

A values framework can be applied by any group or organisation using questions to support dialogue and engagement<sup>8</sup>. It can also be used with rigorous qualitative analysis if the skills and resources are available.

Ideally, find a way of including your stakeholders in the process. Consider people affected by what your group or organisation does and those who influence it. Ask them directly about their values and priorities rather than making assumptions (remember ethical considerations).

It can be beneficial to conduct a values analysis in tandem with a disaster scenario. The experiences within the scenario will have a significant influence on people's perceptions of what they value and why, as well as what helps to mitigate disaster risk (See Deconstructing Disaster and Guidance on Scenarios).

The questions can also be used in discussions reviewing experiences or historical events. They can be used for individual reflection or form the basis of a questionnaire. Responses can be expressed in the form of conversation, text, drawings, diagrams or stories.

The questions are grouped into three parts.

- 1 questions to consider in relation to a time of relative stability, in the absence of disaster.
- 2 questions to consider in the aftermath of a disaster.
- 3 questions to guide analysis and comparison of the answers from the first two parts.

<sup>8</sup> Note: Another values framework is: Young, C. Jones, R. Kumnick, M. Christopher, G. and Casey, N. 2017. *Risk Ownership Framework for Emergency Management Policy and Practice*. Bushfire and Natural Hazards Cooperative Melbourne, Victoria Institute of Strategic Economic Studies (VISES), Victoria University.

# 1 Stable Times

Questions to consider in relation to times of relative stability, in the absence of disaster:

## 1. Who are the people (groups) with an interest (stake) in your business, organisation, community or area of activity?

- Consider all stakeholders – the people affected by what you do and those who can influence it.
- Note relevant individuals and groups/organisations.

## 2. What things do these people value in times of relative stability?

- Note things of value for each individual or group identified in Q.1
- Consider the following categories:
  - **living things** such as nature, animals and people;
  - **non-living physical things** such as buildings, roads, money;
  - **critical services** such as communications, health services, transport, energy and information; and,
  - **processes and rules** such as regulations and standards, land-use planning and governance.

## 3. What benefits (or costs) does each group currently experience from the valued thing?

For example, critical services provide the basic requirements for living, such as food, water, electricity, heating and cooling. At the same time, service providers earn income from providing them.

## 4. What does each group do to access those benefits or to look after the things they value?

For example, people have expectations that critical services should be affordable. Those who can afford them may take them for granted and can reduce their use of power and water in times of scarcity. Some invest in self-supply (e.g. solar panels and water tanks). Service providers endeavour to keep their production and distribution costs down.

## 5. What attributes are desirable to each group if they are to experience benefits from it? And to what extent are their preferred attributes present?

For example, consumers prefer affordable, accessible, reliable supply of critical services. Providers often care about centralised and efficient delivery of services, to keep their costs down. Reliability of supply is also important.

## 6. Reviewing your answers so far, who currently benefits most and least from the current situation in times of stability and why?

- In this example, providers seek to keep their own costs down. However, many critical services are becoming increasingly unreliable and unaffordable to greater numbers of people. There is a high dependency on single sources of critical services.

## 2 In the aftermath of a disaster

Consider what things people value in the aftermath of a disaster and how they value them:

### 1. What are the impacts, costs, loss and suffering caused by the disaster, in relation to each thing of value identified in part 1?

In the examples described in part 1, prolonged service failure can impact all sectors. The interdependency of critical services means that damage in one creates cascading failure across the others. For example, power is required to pump water, lack of food and clean water leads to disease and infection, and so on.

### 2. What additional things are valued in a disaster by each group?

#### For each thing of value:

- a. Which of the desirable attributes identified in part 1 are also important in a disaster?  
For example, in the above example, reliability of supply.
- b. What are additional attributes which are important to each group, in a disaster? In other words, what might the attributes look like to be successfully living with natural hazards and disaster? For example, in the above example, back-up capacities such as distributed sources of supply, stockpiling, equity of access, individual and collective self reliance or realistic expectations about reliability of supply.

## 3 Comparing values across contexts

Questions to guide analysis and comparison of the answers from parts 1 and 2:

### 1. What contrasts or conflicts (tensions) do you notice between the attributes of things of value during periods of stability or normalcy and the attributes of those things which are valued in a disaster?

For example, the need for back-up capacity and multiple options for supply of critical services in a disaster context may be in contrast to a focus on efficiency and centralisation of supply in stable times. Equity of access to critical services is also a key requirement for people.

The tensions identified in part 3 are examples of value tensions between consumers and suppliers and between stable times and a disaster, most commonly these tensions and trade-offs are unconscious. Both groups value critical services but for different reasons. Therefore, they care about and try to maintain different attributes of critical services in order to meet their needs and interests. Reducing systemic climate and disaster risk and their impacts on people requires better balancing the choices and trade-offs between stable times and times of disruption.

Figure 6 shows some examples of value of tensions that the values analysis may expose. They were revealed from Deconstructing Disaster workshops and are described in *Profiling Australia's Vulnerability*.

The concept of 'values that are in tension' highlights that in most instances these values cannot be simultaneously held or reconciled without a compromise, which can involve conflict or contestation. These value tensions are not authoritative or exhaustive. They may be helpful as a thought provoker in conducting your own values analysis.

### 3.7 Key Learning Outcomes

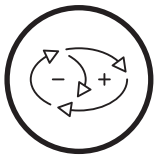
Values analysis can reveal the critical things that are important to people in a disaster that are not necessarily apparent or taken for granted during times of stability. A low awareness of these shifts in value between stable times and times of disruption is a source of vulnerability.

*Profiling Australia's Vulnerability* describes how individuals, communities, organisations and governments each have different capacities to prevent, prepare, resist, cope and recover from disasters.

For example, some groups have disproportionate power to increase or reduce vulnerability while others disproportionately experience vulnerability. The capacities to reduce vulnerability are not equally shared. The values analysis is likely to raise awareness of what trade-offs are currently being made as well as which groups benefit most (and least) from the current situation. When an understanding of values is combined with the lessons learned from applying other tools, an understanding of climate and disaster risk in all of its dimensions begins to emerge.



**Figure 6:** Values that are in tension and cannot be reconciled at the same time – choices and trade-offs are necessary



## 4. Systems Thinking

### 4.1 Introduction

**Systems thinking explicitly recognises that we are a part of the system that we seek to understand and influence. It provides tools to assess and discuss causes, influences and interactions, and identify barriers to and opportunities for change.**

Systems thinking expands the range of choices and possibilities available for solving a problem. It can help us articulate problems in new and different ways, highlight our assumptions and encourage deeply considered interventions and solutions with collective impact.

We are all part of a system that is growing in uncertainty and complexity – and it's not easy to know where and how to create change when nobody is 'in charge' of the system working together as a whole.

Governments and other organisations establish roles and responsibilities so that there is some clarity and authority to make decisions. But these divisions can limit analysis and problem solving by making the interactions between various parts of the system more difficult to see (see Guidance on Governance).

Taking a more holistic view of disaster, vulnerability and resilience, encourages using all forms of knowledge and experience to reduce systemic disaster risk. A system-level intervention is the act of intentionally seeking to shift the status quo of a situation or system. Interventions include policies, legislation, investments or projects. They can be made to steer or guide the systems, at a range of scales, onto different trajectories and toward different future options.

The purpose of this section is to provide some background on how systems thinking is useful as we assess vulnerability.

**We are all part of a system that is growing in uncertainty and complexity**

### 4.2 Systems

System is a term used to describe an entity or a sector (for example the health system, education system, finance system) with interrelated and interdependent parts. It has defined boundaries and is more than the sum of its parts. Changing one part of the system affects other parts of the system and the system as a whole.

Systems thinking is a way of understanding the world, which takes account of complex relationships between the various systems. It identifies and works with patterns – system dynamics and systems archetypes. It acknowledges that systems are in part constructed by the way people think about and perceive aspects of the system (mental models) as well as the biophysical realities which are visible or tangible and can be measured and modelled. It explicitly includes considering multiple perspectives and tacit assumptions about how the system works.

In the simplified methods presented here, systems thinking is used to explore immediate causes of vulnerability and the root causes behind them, as well as immediate consequences and the follow-on consequences that they produce. Systems thinking assesses possible points of intervention to create change, and considers what the consequences of those interventions might be. In this guidance we do not cover the design of interventions, but provide some signposts to other materials where this is explored.



### 4.3 System diagrams

A range of systems analysis tools can be used to help understand vulnerability and causality. Cause-effect diagrams are a technique described in this guidance as they were piloted in the Deconstructing Disaster workshop. However, other methods and techniques can also be used.

The practice of drawing cause-effect diagrams brings a team together to share their perspectives on the system they are assessing. Often people have completely different ideas about how a system works and gaining an understanding of each other's perspectives is very useful. The diagrams are an effective tool for identifying, describing and communicating these perspectives, particularly in groups. They function as a short hand description of what the group understands.

These diagrams capture how specific elements of the system (key variables) are connected to and influence one another. They are very helpful to show where there are repeated patterns in systems. They can also be further developed and tested, using data and information (i.e. turned into quantitative models underpinned by evidence).

Cause-effect diagrams are made up of:

<b>Key variable</b>	words and phrases that represent the key variables of a system
	arrows that represent processes or mechanisms in which one variable affects another
	feedbacks that show the way in which the variables impact each other; (+) shows that the effect is reinforcing or amplifying (-) shows that the effect is balancing or dampening.

Some of these can be represented in quite simple diagrams with few variables, for example the 'fixes that fail' system (Figure 7). This shows the basic pattern where a 'Problem symptom' needs a solution, and when a 'Fix' is implemented it temporarily fixes the problem but over time may have 'Unintended consequences' and may even exacerbate the problem.

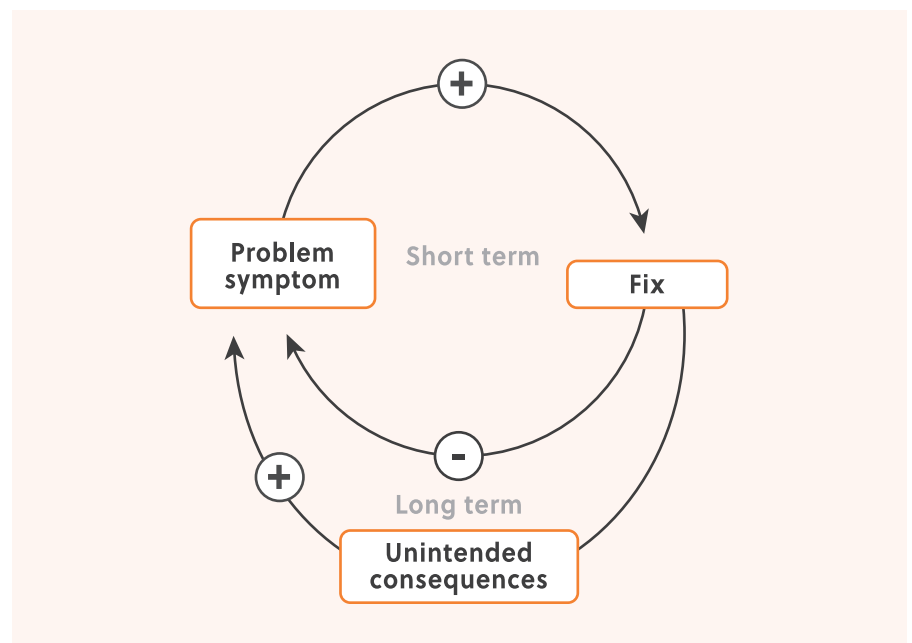


Figure 7: A simple systems diagram showing 'fixes that fail'

### 4.4 Cause and Effect

Cause and effect is an important aspect of systems thinking. An initial step is choosing a 'focus variable' central to the issue of concern.

Participants brainstorm and discuss what they value that is vulnerable to disaster to select a set of central issues. A focus variable is given to each table and participants map out the immediate causes and root causes, and immediate consequences and follow-on consequences (Figure 8).

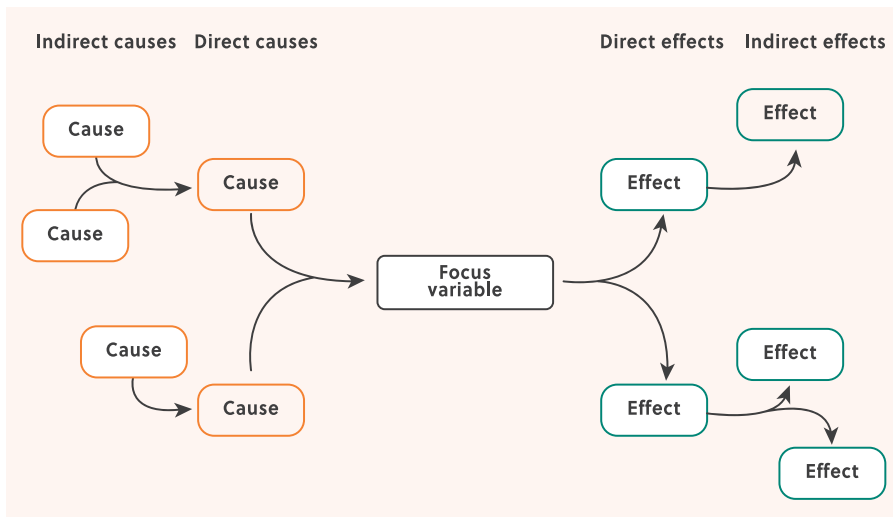


Figure 8: Layout of simple cause-effect diagram

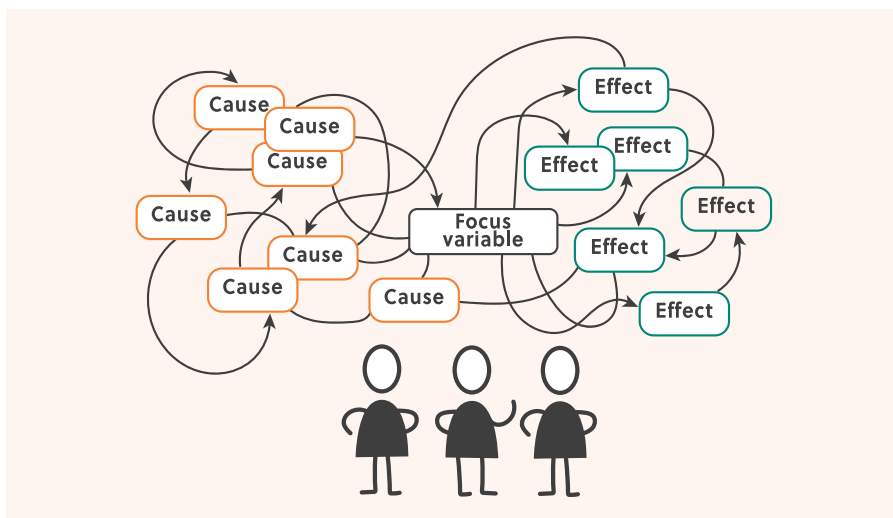


Figure 9: First step of participatory cause-effect mapping

This can start out very simply and be systematically built, or they can be 'brain stormed' and then distilled and simplified in later steps.

This process should be facilitated with the intention of drawing out the different mental models that people have, encouraging curiosity about why they think certain things happen or are connected, and the assumptions that underpin those ideas.

It must be recognised that different stakeholders are likely to evaluate the credibility and legitimacy of information according to a range of factors. These include past experience with the individuals and groups generating the information, whether it is conveyed in language they can understand, and who they perceive may win or lose if the information is believed.

The first step of participatory cause-effect mapping can be messy and tangled, but is an important step to recognise multiple perspectives (Figure 9). This discussion and exchange of ideas is valuable in and of itself.

**Did you know?**  
 Vulnerability assessments often also include a capacity assessment. The process of drawing out casues and effects is comparable to the process of assessing capacity



## 4.5 Consolidating diagrams

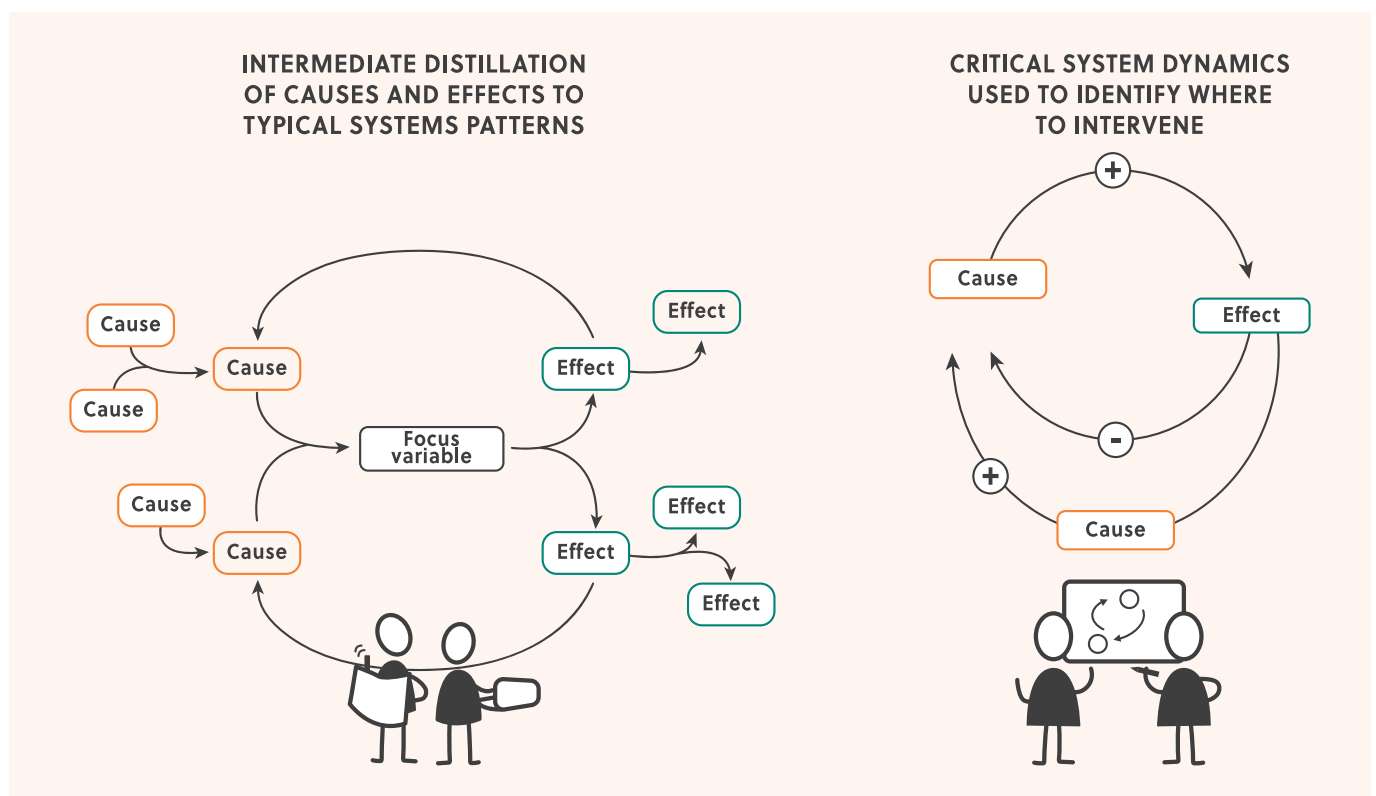
The diagrams then need to go through a process of sorting and simplifying to settle on a diagram which participants agree captures their thinking at this point.

This can include (depending on the skillset of the group and the facilitator) consolidating the diagram, clarifying and systematising the

names of the key variables, checking the connections and directions of arrows and identifying the feedbacks and providing some simple explanations. Cross-checking against other forms of evidence (for example data or models from published literature) is one way to consolidate the model of the system.

At this stage, the diagram might look like Figure 10a.

It can be further distilled into the 'critical system dynamics' – i.e. the simplest description of the system which focuses on only the most important variables and feedbacks (Figure 10b).



**Figure 10:** a) Intermediate level of processing of a systems diagram and b) critical systems dynamics used to identify where to intervene

---

## 4.6 Systems Patterns

Central to systems thinking is the understanding that any intervention will have an impact on other parts of the system. By anticipating these impacts, we can seek to minimise negative consequences and make informed choices. Considering systems patterns helps people to understand these impacts and anticipate likely outcomes.

**Typical systems patterns are the many repeating patterns across our social and environmental systems.**

Typical systems patterns highlight the systemic structures that lead to common, highly likely or inevitable outcomes independent of the type of disaster, the timing or the geographic location. They describe system dynamics in a way in which learnings can be transferred to other places or contexts. This is the basis for the typical systems pattern being judged to be of 'national-level significance'.

Some examples of defined and universal systems patterns referred to as 'archetypes' that describe systems patterns include: 'Fixes that Fail', 'Tragedy of the Commons', or 'Seeking the Wrong Goal'.

These three types of commonly recurring patterns<sup>10</sup> are clear in many different systems, including those which relate to climate and disaster risk and reduction.

Each systems archetype has a specific identifiable structure, patterns of behaviour over time, intervention points and storylines. Once someone is familiar with these archetypes, it makes it easier to spot these recurring patterns and intervention points in ways which are applicable (see Further Reading).



10 Kim, D. 1992. Systems archetypes: Diagnosing systemic issues and designing interventions, Pegasus Communications, Inc. <https://adaptpeacebuilding.org/blog/pocket-guide-systems-archetypes-at-a-glance>

### An example of a system archetype in disaster

Figure 11 shows an example of a 'Fixes that Fail' system archetype familiar to the context of disaster and insurance.

More houses on flood plains (1) leads to increased losses due to flooding (2). This would decrease the number of houses built on the flood plain (1).

But some of those losses are reduced by insurance (3), which is good if your house is flooded.

This reduces the perception of potential loss by households and planners leading to more houses being built on floodplains (1), which increases losses due to flooding (2), and more insurance payouts (3).

This then leads to premium increases (4), which reduces insurance coverage (3) and increases losses (2). (This loop is slower to operate – insurance only becomes unaffordable once there are many houses on the flood plain.)

An increased frequency of extreme events (5) increases losses (2) and causes premiums (4) to skyrocket making insurance unaffordable (3).

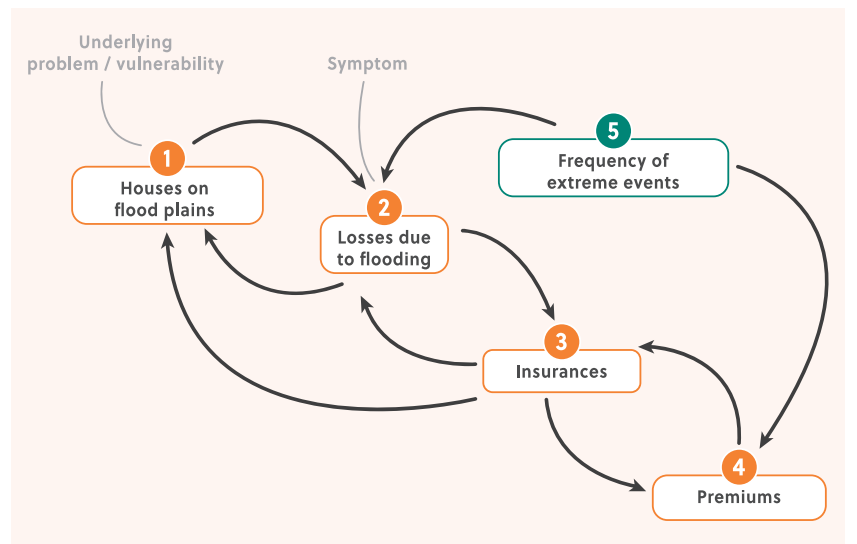


Figure 11: A systems diagram of a typical vulnerability pattern

---

## 4.7 Levels of Analysis

Systems thinking can be used by an individual or in groups, in a variety of ways at a variety of levels of complexity and sophistication. Cause-effect diagrams are an easy introductory step and are quite intuitive for people to use.

Even a somewhat messy raw diagram, will help to elicit different people's mental models and provide an object for discussion of underlying cause and effect mechanisms. It will make tacit assumptions more explicit. It can show where there may be feedbacks, where better information might be required, where consequences amplify feedbacks and where there may be patterns emerging.

More experienced practitioners may become familiar with a range of system archetypes and start to see some of the more complex patterns embedded in the diagrams. A higher level of systems analysis skill will build capacity to produce simplified causal loops, diagnose points of intervention and design the interventions themselves.

This level of systems analysis is time consuming and complex, with many interconnected parts. It can be applied at a range of levels, and the level depends on the purpose of the analysis. An in-depth analysis will benefit from skilled individuals facilitating, a high level analysis can be performed by non-experts as insights for discussion.

## 4.8 Key Learning Outcomes

Systems analysis can enable root causes to be understood, key feedbacks to be identified, and vulnerabilities diagnosed. It can raise awareness of a wide range of possible interventions that could be designed and sequenced, which may also highlight areas and opportunities for collective action (see Guidance on Governance).

This can lead to raising collective awareness and designing possible interventions to nudge systems into desired cycles which produce desired and intended outcomes.

## Further reading

**For those interested in further developing their understanding and capabilities in systems analysis, we recommend:**

- The Systems Thinker website with a stated purpose of “working to catalyze effective change by expanding the use of systems approaches” provides an excellent overview of systems thinking and systems approaches along with a range of tools and perspectives (<https://thesystemsthinker.com/systems-thinking-tools-a-users-reference-guide/>).
- The RAPT Approach (see 1.8) which gives step-by-step guidance on undertaking a systems analysis.

**For more guidance on how to build causal loop diagrams, we recommend:**

- The Collaborative Conceptual Modelling approach to building causal loops through inclusive participatory processes<sup>14</sup>.
- The Systems Thinker website (<https://thesystemsthinker.com/systems-thinking-tools-a-users-reference-guide/>)
- Chapters 3 and 5 of the Technical Report supporting *Profiling Australia's Vulnerability* (<https://knowledge.aidr.org.au/collections/disaster-risk-reduction/>)
- Two journal papers<sup>15 16</sup> explaining the different ways people view knowledge, evidence, uncertainty and ambiguity and provide guidance on approaches to foster collaboration and knowledge co-production.

**For more resources to further investigate system archetypes, we recommend:**

- The Systems Thinker website (<https://thesystemsthinker.com/topics/archetypes/>)

**For some guidance on designing interventions, we recommend:**

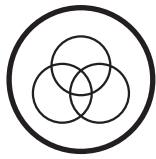
- The concept and approach of adaptation pathways, which is explained in an accessible way at the CoastAdapt website (<https://coastadapt.com.au/pathways-approach>), and a more transformational approach to pathways is provided by Wise and others<sup>17</sup>.
- The RAPT Approach which explains how to design interventions in the Options and Pathways module (see 1.8)

14 Proust, K. & Newell, B. 2012. Introduction to Collaborative Conceptual Modelling. ANU Research Publications

15 Brugnach, M. & Ingram, H. 2012. Ambiguity: The challenge of knowing and deciding together. *Environmental Science & Policy*, 15, 60-71. Available at: [https://www.researchgate.net/profile/Marcela\\_Brugnach/publication/251678324\\_Ambiguity\\_The\\_challenge\\_of\\_knowing\\_and\\_deciding\\_together/links/5c69533e92851c1c9de62f0d/Ambiguity-The-challenge-of-knowing-and-deciding-together.pdf?origin=publication\\_detail](https://www.researchgate.net/profile/Marcela_Brugnach/publication/251678324_Ambiguity_The_challenge_of_knowing_and_deciding_together/links/5c69533e92851c1c9de62f0d/Ambiguity-The-challenge-of-knowing-and-deciding-together.pdf?origin=publication_detail)

16 Stirling, A. and Scoones, I. 2009. “From risk assessment to knowledge mapping: science, precaution and participation in disease ecology.” *Ecology and Society* 14 (2):14. Available at: <http://www.ecologyandsociety.org/vol14/iss2/art14/>

17 Wise, R. M., Fazey, I., Stafford Smith, M., Park, S. E., Eakin, H. C., Archer Van Garderen, E. R. M. & Campbell, B. 2014. Reconceptualising adaptation to climate change as part of pathways of change and response. *Global Environmental Change*, 28, 325 - 336



# 5. Values, Rules and Knowledge

## 5.1 Introduction

**Making decisions that reduce vulnerability can require significant changes in everyday operations and policy. It is often assumed that providing more information will change people’s decisions, and lead to better outcomes. While knowledge is indeed necessary for good decisions to be made, it is not sufficient.**

Think about something like sea level rise, or living on a flood plain. There is probably enough knowledge to be clear about the risk of damage, loss and suffering that is possible (or likely) in certain areas. More information does not necessarily drive different decisions and actions.

Usually this is because values and rules also influence perception and decision making. We need to understand the constraints to making decisions that reduce vulnerability. We need to consider and diagnose how decisions are influenced by the context in which they are made (see Guidance on Governance).

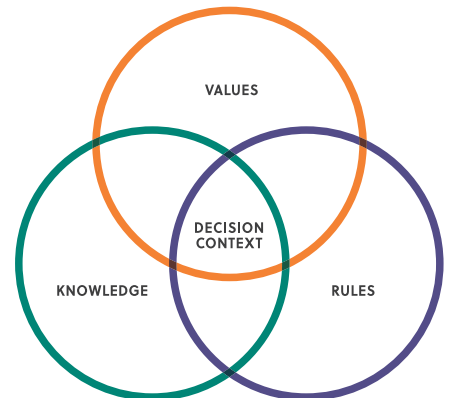
## 5.2 The ‘vrk’ approach

The ‘values, rules and knowledge’ or ‘vrk’<sup>20</sup> approach provides a simple and useful approach to help analyse how the social system shapes the decision context (Figure 12). Put simply, decisions require:

- knowledge about different options and their consequences;
- values to judge the desirability of different options and their consequences; and,
- rules that enable implementation of options.

In order to select a decision option these three factors need to intersect: you need to care about, or want the outcome; you need to have some knowledge about how to implement the option and what its likely outcomes might be; and you must be allowed to implement the option.

The **decision context** is how the prevailing values, rules and knowledge intersect. It defines which options are available to a decision maker and which ones are not.



**Figure 12:** Decision context: societal systems of values, rules and knowledge (vrk)



**V Values** are what we consider to be important in life. They can be expressed as moral principles, desirable goals and preferences.



**R Rules** are both *rules-in-use* (norms, practices, habits) and *rules-in-form* (regulations, laws, directives) that provide agreed guidance on how to behave.



**K Knowledge** is both evidence-based (scientific and technical) knowledge and knowledge acquired through everyday experience.

20 Gorddard, R., Colloff, M. J., Wise, R.M., and Dunlop, M. 2017. *Keys to Transformation: Interactions of values, rules and knowledge.* <https://i2insights.org/2017/06/20/values-rules-knowledge-and-transformation/> accessed 8th April 2019.

Gorddard, R., Colloff, M. J., Wise, R.M., Ware, D. and Dunlop, M. 2016. Values, rules and knowledge: Adaptation as change in the decision context. *Environmental Science and Policy*, 57, 60–69. Online (DOI): 10.1016/j.envsci.2015.12.004

If there are options to reduce vulnerability that are not being chosen, it may be because the decision maker does not know enough about the option, that they actually don't want to choose it, or that are not allowed to do so for some reason.

This applies both to policy makers and disaster management professionals, and also to the decisions of consumers and businesses. For new options to become available there has to be a change in the decision context.

**Where do the values, rules and knowledge that influence a decision maker come from? Some of them are under the control of the decision maker, but many are socially constructed.**

Values may be held individually but they are often created and negotiated between people, for example through politics, ideology and religion. Rules include laws made by governments, but also formal industry codes and guidelines and the expectations and norms that evolve in different communities. Knowledge is developed by scientists and other specialised practitioners and communicated to and interpreted by the general community. Experiential knowledge is compiled by each individual and frequently interpreted as it is shared and discussed.

Values, rules and knowledge affect each other. For example, new knowledge about the risk of extreme events could change one's preferences about where to live, although that might not override other preferences that are relevant, such as land prices.

Values about protection of the environment or sustainable resource management might drive investigations and development of knowledge. New rules about zoning or liability might lead to new knowledge about the nature of risks. As developers or community members respond to the new rules their knowledge and awareness can shift.

**New circumstances, new challenges and new risks bring with them a need to evolve the decision context**

Generating new knowledge, changing rules or reassessing preferences can be thought of as societal learning. Where circumstances are changing rapidly, deliberate efforts to respond quickly and even to foresee and accommodate such changes proactively, might help reduce future vulnerability.

---

## 5.3 Applications of the values, rules, knowledge approach

The *vrk* approach can be used to help understand the root causes of constraints on decision making. It can be used to help analyse why options that could reduce vulnerability might not be available to decision makers. It can support discussion of the changes in society that might be needed to enable more effective decisions.

If current rules are preventing the implementation of an option to reduce vulnerability, then one approach might be to try to revise the rule. Alternatively, the focus might be to discover the values and knowledge that underpin the rule and if changing circumstances suggest that different values and knowledge might be more relevant. It would then be useful to share that knowledge or enable people to re-evaluate their preferences.

This approach can help analysis of factors creating disagreement, resistance and conflict regarding options to reduce vulnerability. Acknowledging the influence of rules, values and knowledge can bring greater clarity and understanding of different perspectives. This can increase the possibility of finding an innovative or integrated solution.

It can be useful to consider whose values, rules and knowledge have been considered in various decision-contexts. On the coast or in a bushfire prone area, decisions about zoning, building standards, location of a building, choice of building design and construction are made by a variety of different people with values, rules and knowledge that might be quite different from those of a householder. Consideration of the values, knowledge and rules relevant to the people ultimately exposed to vulnerability may lead to decision making more likely to reduce that vulnerability.

Finally, reducing vulnerability is an ongoing process as we discover more about risks and as environmental circumstances and society change. It can be helpful to think of this process needing a continual evaluation of the societal values, rules and knowledge that prevail upon decision makers, so they adequately consider vulnerability.

Indeed, this is likely to be even more effective if it is done with foresight about possible future changes, and deliberate efforts are made to reduce vulnerabilities to future changed conditions. This is sometimes referred to as an adaptation pathway approach<sup>21</sup>.

## 5.4 Key Learning Outcomes

The *vrk* approach can be applied to understand constraints to decision making about reducing vulnerability.

It shows that limitations can arise from values and rules as well as lack of knowledge. Decision makers and their teams can use the *vrk* approach in a variety of situations to diagnose barriers to change and explore ways to enable change.

Practitioners will be able to use the *vrk* approach, combined with the set of guidance documents on climate and disaster risk to design *vrk* based interventions.



### Drinking recycled water – intervention through a VRK lens

Due to declining freshwater availability and growing populations, cities and regions across the world are increasingly looking at treating wastewater to augment their drinking water supplies.

While this has yet to officially occur in Australia due to public concerns about safety [V], places such as Singapore and Belgium have been recycling water for decades.

The knowledge of how to recycle wastewater safely is well established, and regions where this has been implemented have altered their policies and processes [R], together with a public education campaign [K] facilitating community acceptance [V] to enact this change. In Belgium, acceptance was facilitated by a public perception that recycled water is environmentally friendly, aligning with environmental values [V].

In Singapore, it was facilitated by a belief in the ability of technology to address water scarcity. The key message conveyed through the public campaign was that using reclaimed water was not new and had been used successfully in other countries such as the US for over twenty years. Journalists were invited on field trips to visit existing plants.

A demonstration plant ran trials in Singapore for two years and continues to be open to the public. The water quality results were publicly shared and were endorsed by a panel of local and international experts.

Local silicon wafer fabricators also trialed the water as a source for the ultra-pure water needed in their manufacturing process. It required less treatment than the tap water they had been using previously. This information further enhanced public perception of the safety of the water.

**Source:** Fielding, K. Dolnicar, S. and Schultz, T. 2019 Public acceptance of recycled water, *International Journal of Water Resources Development*, 35:4, 551-586, DOI: 10.1080/07900627.2017.1419125

Lee, H. and Tan, P. 2016 Singapore's experience with reclaimed water: NWater, *International Journal of Water Resources Development*, 32:4, 611-621, DOI: 10.1080/07900627.2015.1120188



## 6. Learning into the Future

### 6.1 Introduction

Learning allows us as individuals, groups and societies to reach towards the futures we desire and move away from those we do not. Learning is a process of building understanding, of thinking and doing things differently and creating change. Where hazards, vulnerabilities and risks are changing all the time, and the ways forward are not well-tested and obvious, learning is critical.

The ability to learn from experience, events and disasters requires making individual and institutional adjustments. These can enable us to take appropriate actions and avoid past mistakes. They can also enable us to:

- act intentionally with an understanding of what outcomes we expect,
- check assumptions, if our actions have unexpected outcomes, and
- make adjustments to act differently.

This is called 'anticipatory learning' and is particularly critical in the context of having to make decisions in an uncertain and rapidly changing environment.

This kind of learning is not easy, nor is it linear. Sometimes you may think you are going backwards. But you do not have to learn on your own or all at once. There are tools and processes to help.

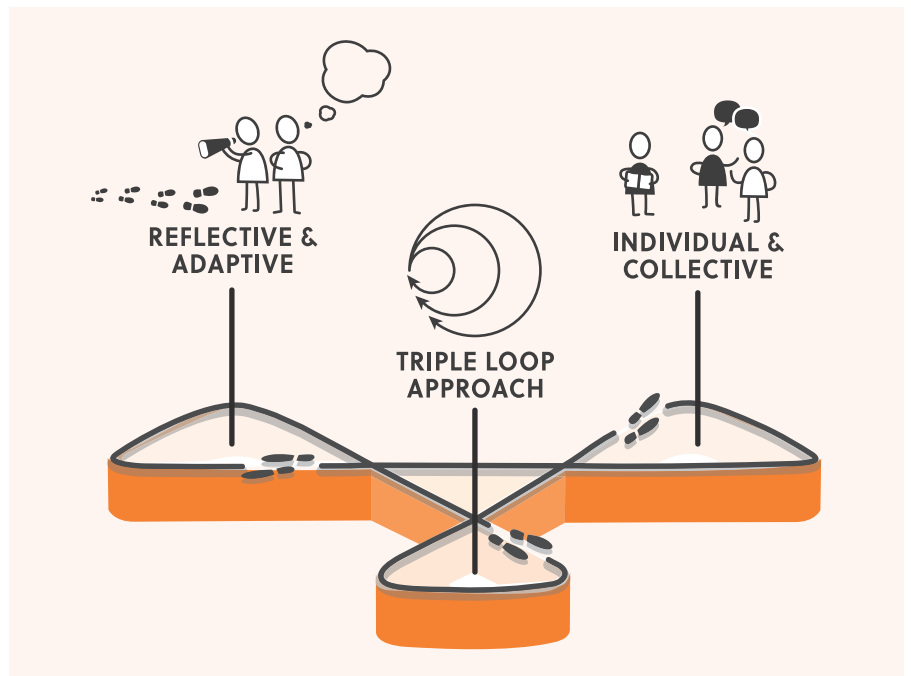


Figure 13: Key characteristics or attributes of learning

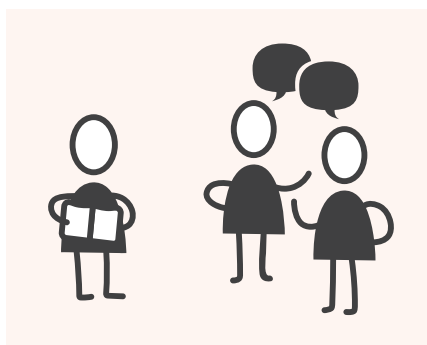
## 6.2 Learning Approaches

### Individual and Collective Learning

There are many ways to learn. Common methods include learning by doing and learning through education. Learning by doing involves observing and then modelling what others are doing, seeing what works and what does not for others and adapting it to our situation and context. Learning through education involves reading, training and then trying something, and learning what worked and what did not.

Both of these methods are valuable, but one of the most powerful ways we can learn is through social learning. This process is one of sharing and integrating insights and knowledge by interacting and learning collectively. This builds mutual motivation, obligation and networks, promotes action and agency, and catalyses innovation.

The learning we need to reduce climate and disaster risk will include both individual and collective (social) learning (Figure 13). Learning is for everyone – individuals, groups and society.



Individuals can learn about their personal vulnerability, their capacity, and the possible actions they can take to reduce that vulnerability. Communities can learn about their capacity and vulnerability in different conditions, and how they can or cannot collectively change and live differently to reduce vulnerability.

Agencies and organisations can learn about their collective capacity and vulnerability as well, and their actual and perceived responsibility. They can learn how to incentivise their risk reduction and how to cooperate with other entities and communities. They can also learn about whether their actions may inadvertently transfer long-term disaster risk to others.

Analysts, researchers and government officers can learn to identify, create and communicate vulnerability narratives with different stakeholders<sup>22, 23</sup>.

### Contexts

People, communities and agencies all learn in different ways, so those engaging them in learning processes must consider their specific contexts. These contexts may include differing knowledge types, cultural preferences and power imbalances.

Times of challenge and change impact people's capacity to learn. The stresses of poverty, trauma and loss can affect language and communication skills, problem-solving skills, the ability to regulate emotion and understand cause-and-effect relationships<sup>24</sup>.

22 Bandura, A. 2018. *Toward a psychology of human agency: Pathways and reflections*. *Perspectives on Psychological Science*, 13(2), 130-136

23 Ensor, J., & Harvey, B. 2015. *Social learning and climate change adaptation: evidence for international development practice*. Wiley *Interdisciplinary Reviews: Climate Change*, 6(5), 509-522

24 The Citizen Commission on Academic Success for Boston Children. 2006. *The Impact of Trauma on Learning and Behaviour*. [https://traumaticstressinstitute.org/wp-content/files\\_mf/1281448939Zenti\\_\\_The\\_Impact\\_of\\_Trauma\\_on\\_Learning\\_909\\_311457\\_7.pdf](https://traumaticstressinstitute.org/wp-content/files_mf/1281448939Zenti__The_Impact_of_Trauma_on_Learning_909_311457_7.pdf)

Meanwhile, those in positions with decision-making power may be most challenged by time, urgency or not recognising their own need to learn. Where these imbalances and differences appear, those facilitating learning must seek to equalise imbalances and integrate differences.

**Learning is best done in stable times, so that when the window of opportunity arises, informed and considered decisions can be made quickly.**

### **Experiential, Iterative and Anticipatory Learning**

**Experiential learning** is a process of learning through experience. It often relies on our past experiences to guide our future decisions. But as our climate changes, so do the natural hazards we face. To best prepare us for the future, our learning also needs to be iterative and adaptive and to extend into the future, to anticipate a range of ways it could unfold based on decisions made today (see Guidance on Scenarios).

**Iterative learning** is a flexible process of repetition and adjustments with an eye to the future. This learning can be characterised by different levels, or 'loops'<sup>25</sup>: from single- to double- to triple-loop learning (Figure 14). Thinking about how we are learning encourages progress from simple, descriptive queries about what vulnerability looks like now, to questioning underlying assumptions and values about what causes vulnerability.

**When designing and implementing learning processes, it is also important to recognise and account for the psychology of learning, including the importance of engaging both the mind and the heart.**

**Anticipatory learning** (or learning into the future) requires us to consider why we are learning, what decisions we need to make, and who and what we need to include to work out next steps. It often requires people and organisations to understand systems differently, and to act upon the new understandings.

Anticipatory learning asks us to draw on competencies we may not have before, including:

- anticipatory competencies (foresighting and scenarios);
- strategic competencies (planning, governance);
- normative competencies (values, ethics, justice);
- interpersonal competencies (relationships, collaboration etc);
- systems thinking; and
- creativity and emotional competencies (especially when tackling the overwhelming challenges of the future).

Anticipatory learning can result in a shift in cognition and/or behaviour based on the expectation of a future outcome<sup>26</sup>.

**With no two disasters the same, it is not possible to anticipate what learning is necessary or what learning opportunities will eventuate. But it is possible to learn to see the similarities and differences between situations. This creates transferable lessons to reduce vulnerability and gain context-dependent insights.**

25 Pahl-Wostl, C. 2009. *A conceptual framework for analysing adaptive capacity and multi-level learning processes in resource governance regimes*. *Global Environmental Change*, 19(3), 354-365

26 Bingham, C., & Kahl, S. 2013. Anticipatory Learning. *Strategic Entrepreneurship Journal*, 8(2), 101-127.

### Triple-loop learning

The following eight questions guide you through a triple-loop learning cycle (Figure 14). These questions are also threaded through the Deconstructing Disaster workshop and the Guidance on Scenarios. Taking an adaptive or iterative approach will give a better understanding of yourself, the system and the changes you are seeking. Then, you can review the questions to see if you are still heading in the right direction or need to make adjustments.

#### The questions are:

- 1 ? Why is this problem even mine or ours to consider?
- 2 ? Where are we now?
- 3 ? Where do we want to be?
- 4 ? Where are we heading if we do nothing differently?
- 5 ? What needs to change to move in a different direction?
- 6 ? How do we navigate to where we want to be?
- 7 ? How do we tell the story, and inspire others to join the journey?
- 8 ? What have I learnt and how do I start?

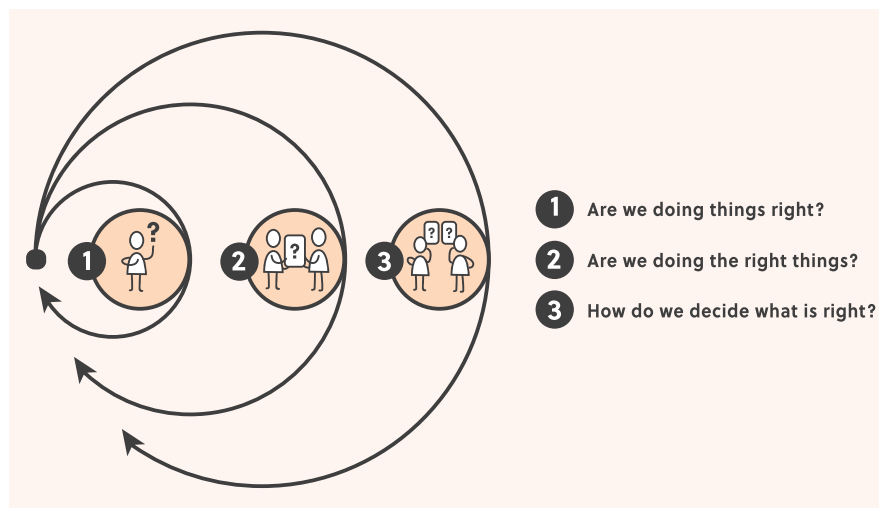


Figure 14: Triple-loop learning

---

## 6.3 Learning frameworks

All learning can be more effective by having an evaluation process or framework built from the beginning. When learning is intentional, we improve our ability to learn. A well-designed learning framework helps us test assumptions, monitor learnings and understand if we achieved our desired outcomes and impacts.

There are many existing tools and processes that can help create a learning framework, including Theory of Change (ToC) and Monitoring, Evaluation and Learning (MEL). These tools help to plan, activate, capture, evaluate and share learning. Facilitating the learning of others is a significant responsibility. Therefore, they should be used with care when creating a learning culture.

