



# Key considerations in building resilience

Knowing is not enough; we must apply.  
Willing is not enough; we must do.

- Goethe

**Malinda Steenkamp**  
**PhD, M.Phil (Epidemiology)**  
**Torrens Resilience Institute**  
**Flinders University**  
25 October 2017

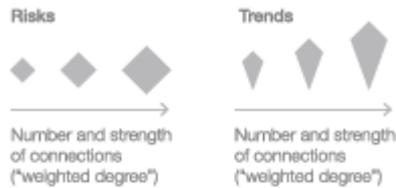


# Aims of workshop

- Putting risk and resilience in context
- Improving understanding of resilience
- Working with communities to build resilience

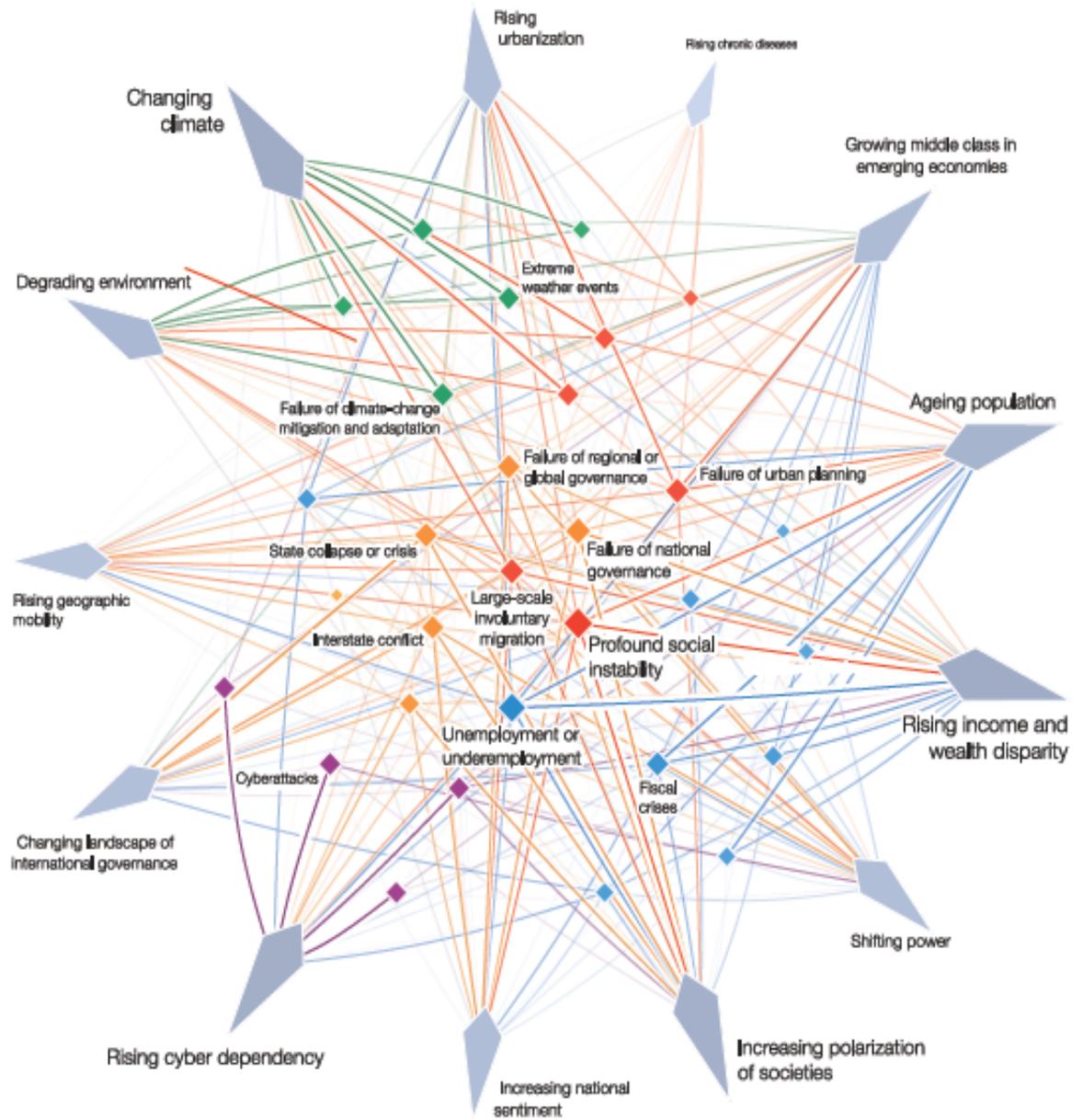


## The Risks-Trends Interconnections Map



Source: World Economic Forum Global Risks Perception Survey 2016

Note: Survey respondents were asked to select the three trends that are the most important in shaping global development in the next 10 years. For each of the three trends identified, respondents were asked to select the risks that are most strongly driven by those trends. The global risks with the most connections to trends are spelled out in the figure.



[http://www3.weforum.org/docs/GRR17\\_Report\\_web.pdf](http://www3.weforum.org/docs/GRR17_Report_web.pdf)



# The Evolving Risks Landscape, 2007-2017

Torrens Resilience Institute

Top 5 Global Risks in Terms of Likelihood

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1st	Breakdown of critical information infrastructure	Asset price collapse	Asset price collapse	Asset price collapse	Storms and cyclones	Severe income disparity	Severe income disparity	Income disparity	Interstate conflict with regional consequences	Large-scale involuntary migration	Extreme weather events
2nd	Chronic disease in developed countries	Middle East instability	Slowing Chinese economy (-6%)	Slowing Chinese economy (-6%)	Flooding	Chronic fiscal imbalances	Chronic fiscal imbalances	Extreme weather events	Extreme weather events	Extreme weather events	Large-scale involuntary migration
3rd	Oil price shock	Failed and falling states	Chronic disease	Chronic disease	Corruption	Rising greenhouse gas emissions	Rising greenhouse gas emissions	Unemployment and underemployment	Failure of national governance	Failure of climate-change mitigation and adaptation	Major natural disasters
4th	China economic hard landing	Oil and gas price spike	Global governance gaps	Fiscal crises	Biodiversity loss	Cyber attacks	Water supply crises	Climate change	State collapse or crisis	Interstate conflict with regional consequences	Large-scale terrorist attacks
5th	Asset price collapse	Chronic disease, developed world	Retrenchment from globalization (emerging)	Global governance gaps	Climate change	Water supply crises	Mismanagement of population aging	Cyber attacks	High structural unemployment or underemployment	Major natural catastrophes	Massive incident of data fraud/theft

Top 5 Global Risks in Terms of Impact

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1st	Asset price collapse	Asset price collapse	Asset price collapse	Asset price collapse	Fiscal crises	Major systemic financial failure	Major systemic financial failure	Fiscal crises	Water crises	Failure of climate-change mitigation and adaptation	Weapons of mass destruction
2nd	Retrenchment from globalization	Retrenchment from globalization (developed)	Retrenchment from globalization (developed)	Retrenchment from globalization (developed)	Climate change	Water supply crises	Water supply crises	Climate change	Rapid and massive spread of infectious diseases	Weapons of mass destruction	Extreme weather events
3rd	Interstate and civil wars	Slowing Chinese economy (-6%)	Oil and gas price spike	Oil price spikes	Geopolitical conflict	Food shortage crises	Chronic fiscal imbalances	Water crises	Weapons of mass destruction	Water crises	Water crises
4th	Pandemics	Oil and gas price spike	Chronic disease	Chronic disease	Asset price collapse	Chronic fiscal imbalances	Diffusion of weapons of mass destruction	Unemployment and underemployment	Interstate conflict with regional consequences	Large-scale involuntary migration	Major natural disasters
5th	Oil price shock	Pandemics	Fiscal crises	Fiscal crises	Extreme energy price volatility	Extreme volatility in energy and agriculture prices	Failure of climate-change mitigation and adaptation	Critical information infrastructure breakdown	Failure of climate-change mitigation and adaptation	Severe energy price shock	Failure of climate-change mitigation and adaptation

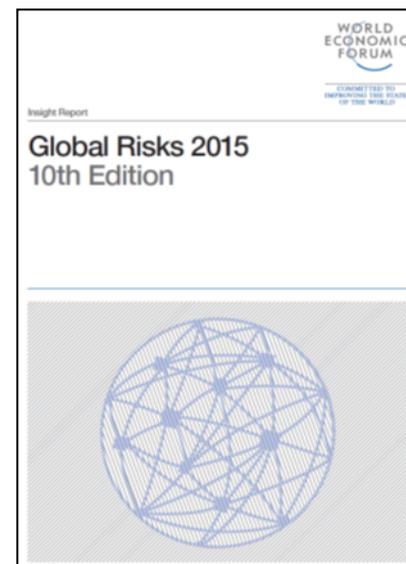
■ Economic 
 ■ Environmental 
 ■ Geopolitical 
 ■ Societal 
 ■ Technological



# Global Risks Report 2015

The world is ... insufficiently prepared for an increasingly complex risk environment.

Mitigating, preparing for and building resilience against global risks is long and complex, something often recognized in theory but difficult in practice.



[http://www3.weforum.org/docs/WEF\\_Global\\_Risks\\_2015\\_Report15.pdf](http://www3.weforum.org/docs/WEF_Global_Risks_2015_Report15.pdf)



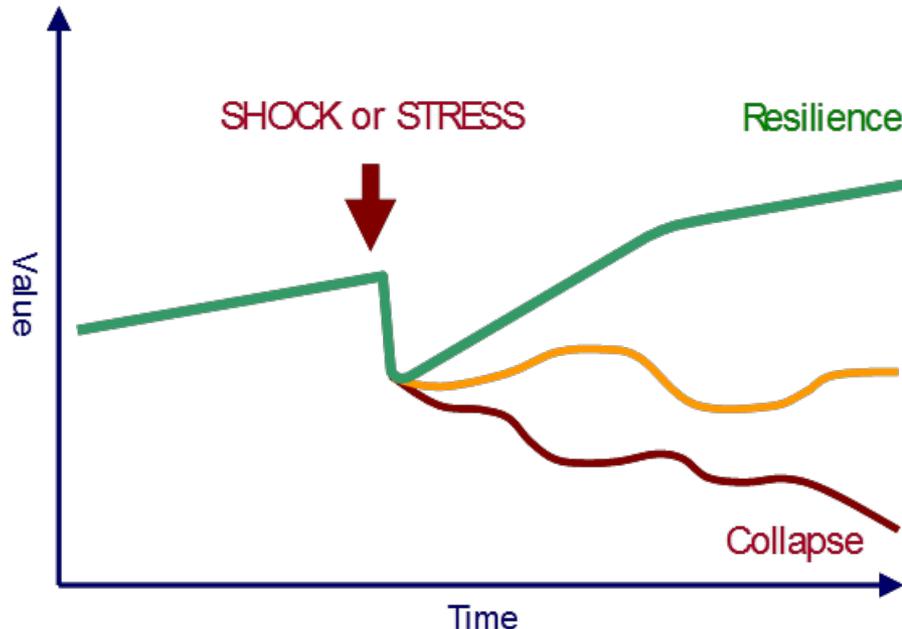
# Global shift to resilience

- International focus on the increased global impact of “disruptive” challenges including disasters
- Combined with population, societal and economic changes
- Need for new approaches to disaster, emergency and other challenging events
- Global consequences require international cooperation
- Resilience provides a “policy” concept to support collaboration and partnerships to secure nation states and protect communities, organisations and individuals



# Defining resilience

RESILIENCE. } n. s. [from  
RESILIENCY. } The act  
leaping back.  
If you strike a ball sidelong,  
be as much the contrary way;  
any such *resilience* in echoes, th  
man shall hear better if he stand  
percussing, than if he stand wh  
may be tried. Bacon  
RESILIENT. adj. [*resiliens*;  
ing or springing back.  
RESILI'TION. n. s. [*resilio*;  
act of springing back; re



“The ability of a system, community or society exposed to hazards to **resist, absorb, accommodate to and recover from** the effects of a hazard in a **timely and efficient manner**, including through the preservation and restoration of its essential basic structures and functions”

*United Nations Office for Disaster Risk Reduction (UNISDR),  
“2009 UNISDR Terminology on Disaster Risk Reduction”, Geneva,  
May 2009 (<http://www.unisdr.org/we/inform/terminology>)*



# Sendai Framework for Torrens \_\_\_\_\_ Resilience Institute Disaster Risk Reduction 2015-2030

- Adopted by 187 UN States at the Third World Conference on Disaster Risk Reduction, 18 March 2015, Sendai, Miyagi, Japan
- Supersedes Hyogo Framework for Action in 2005
- States reiterated:  
“**commitment to disaster risk reduction and the building of resilience**”
- Four priorities for action:
  1. Understanding disaster risk;
  2. Strengthening disaster risk governance to manage disaster risk;
  3. **Investing in disaster risk reduction for resilience;**
  4. Enhancing disaster preparedness for effective response, and to “**Build Back Better**” in recovery, rehabilitation and reconstruction.
  - Seven targets
    - Mortality, number of affected people, economic loss, damage to critical infrastructure, national disaster risk reduction strategies, international cooperation, multi-hazards early warning systems and disaster risk information
- **People-centred preventive approach** (women, children, ...)  
*[globalhttp://www.wcdrr.org/uploads/Sendai\\_Framework\\_for\\_Disaster\\_Risk\\_Reduction\\_2015-2030.pdf](http://www.wcdrr.org/uploads/Sendai_Framework_for_Disaster_Risk_Reduction_2015-2030.pdf)*



# Global forum DRR

Torrens \_\_\_\_\_  
Resilience Institute

## Cancun, Mexico, 22-26 May 2017

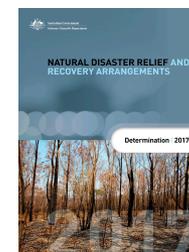
- Monitoring implementation of the Sendai Framework
- Substantially increase the number of countries with national **and local** disaster risk reduction strategies by 2020
- Coherence with the sustainable development and climate change agendas
- Gender-sensitive and inclusive disaster risk reduction
- International cooperation initiatives, such as private-private cooperation and building a coalition of countries for critical infrastructure

*<http://www.unisdr.org/conferences/2017/globalplatform/en>*



# The Australian Context

- National Strategy for Disaster Resilience (2009)
  - Whole-of-nation resilience-based approach to disaster management
  - SHARED responsibility for resilience
- Productivity Commission Inquiry Report (2014): Natural Disaster Funding Arrangements
  - Underinvested in mitigation – need to increase \$
  - Performance and process-based accountability mechanisms
- Natural Disaster Relief and Recovery Arrangements
  - Need to demonstrate appropriate disaster mitigation strategies





# Queensland Context

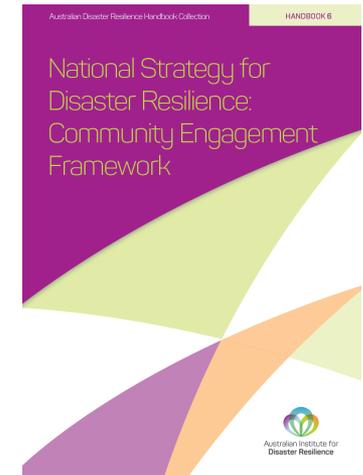
- State impacted by >50 natural events with loss of life and >\$14 Billion damage to public infrastructure
- Queensland Strategy for Disaster Resilience, 2017
  - Making Queensland the most disaster resilient state in Australia
  - In line with Sendai, NSDR, NDRRA
  - Queensland's People with vulnerabilities in disasters – a framework for an effective local response
  - Guiding principles (shared responsibility)
  - Key objectives, Commitment, Responsibilities, Partners, Delivery, **Implementation**, Review
    - Shared responsibility
    - Measuring success





# How to?

- How to go from theoretical to practical?
- Shared responsibility
  - Changing approach to emergency management
  - Working with communities
  - Engagement as core business
- Principles of effective community engagement
  - Understand the community: its capacity, strengths and priorities
  - Recognise complexity
  - Partner with community to support existing networks and resources



<https://knowledge.aidr.org.au/media/1761/handbook-6-national-strategy-for-disaster-resilience-kh-final.pdf>



# Principles for community engagement



<https://knowledge.aidr.org.au/media/1761/handbook-6-national-strategy-for-disaster-resilience-kh-final.pdf>

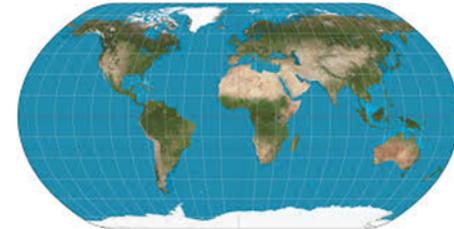


# Examples

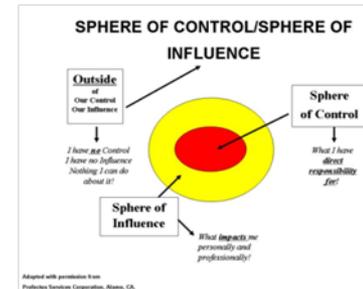
- From your backyard ...
  - Exercise Bright Spark, Atherton Tablelands (<http://www.trc.qld.gov.au/disaster-management/training-exercises/>)
  - Riding through the storm, Tully ([http://www.frrr.org.au/cb\\_pages/news/Riding\\_through\\_the\\_storm.php](http://www.frrr.org.au/cb_pages/news/Riding_through_the_storm.php))
  - Quadriders to the rescue, Tully ([http://www.frrr.org.au/cb\\_pages/news/FNQuadriders\\_chainsaw\\_training.php](http://www.frrr.org.au/cb_pages/news/FNQuadriders_chainsaw_training.php))
  - Together we can do it ([http://www.frrr.org.au/cb\\_pages/news/A\\_Community\\_Rebuilds\\_Bundaberg\\_Combined\\_Churches.php](http://www.frrr.org.au/cb_pages/news/A_Community_Rebuilds_Bundaberg_Combined_Churches.php))
  - Disaster Resilience Leadership Project (<http://www.emergencyvolunteering.com.au/qld/projects/disaster-resilience-leadership-project>)
- The Monash University Disaster Resilience Initiative/EMV Compendium
  - Victorian Community-Based Resilience Building Case Studies ([https://www.monash.edu/\\_data/assets/pdf\\_file/0004/514462/Compendium\\_201703.pdf](https://www.monash.edu/_data/assets/pdf_file/0004/514462/Compendium_201703.pdf))
- The Resilient Australia Awards
  - National program that recognises and promotes initiatives that strengthen community disaster resilience (<https://www.ag.gov.au/EmergencyManagement/Resilient-Australia-Awards/Pages/default.aspx>)
- Foundation for Rural & Regional Renewal
  - NFP organisation harnessing power of collective investment between government, business and philanthropy (<http://www.frrr.org.au/>)
- Global 100 Resilient Cities initiative (<http://www.100resilientcities.org/>)
- United Nations Office for Disaster Risk Reduction (<http://www.unisdr.org/>)



# The bottom line



- Resilience building requires
  - a “process” approach
  - the establishment of reasonably reliable benchmark measurements
    - *“You can’t manage what you can’t measure”*
  - Measurement can help with understanding your community
- The perfect is the enemy of the good ...
  - Focus on where you can have an impact
  - No-one has THE answer
  - No one size fit all
  - Find a way forward





## Remember ...

It is not the strongest of  
the species that survive,  
nor the most intelligent,  
but the one **most**

**responsive to change**

**“We do not sit around and wait, we get on with it ...”**

*- Community Resilience Project Officer*

- Charles Darwin



# Discussion

What is my day-to-day reality and how can what I heard here help me with it?

- Discussion (15 minutes)
- Feedback (15 minutes)

# Goals



- The role of assessment in building resilience
- Ways to measure resilience at community level
- The TRI Scorecard approach



# Global shift to resilience



“The ability of a system, community or society exposed to hazards to **resist, absorb, accommodate to and recover from** the effects of a hazard in **a timely and efficient manner**, including through the preservation and restoration of its essential basic structures and functions”

*United Nations Office for Disaster Risk Reduction (UNISDR),  
“2009 UNISDR Terminology on Disaster Risk Reduction”, Geneva, May 2009 (<http://www.unisdr.org/we/inform/terminology>)*



# Opportunity

“In a turbulent age, the only dependable advantage is a superior capacity for reinventing your business model\* before circumstances force you to.”

*Hamel G & Välikangas L, The Quest for Resilience,  
Harvard Business Review, September 2003*

\*For ‘business model’ substitute ‘community function’, ‘organizational model’, or ‘personal behaviour’—the challenge is the same

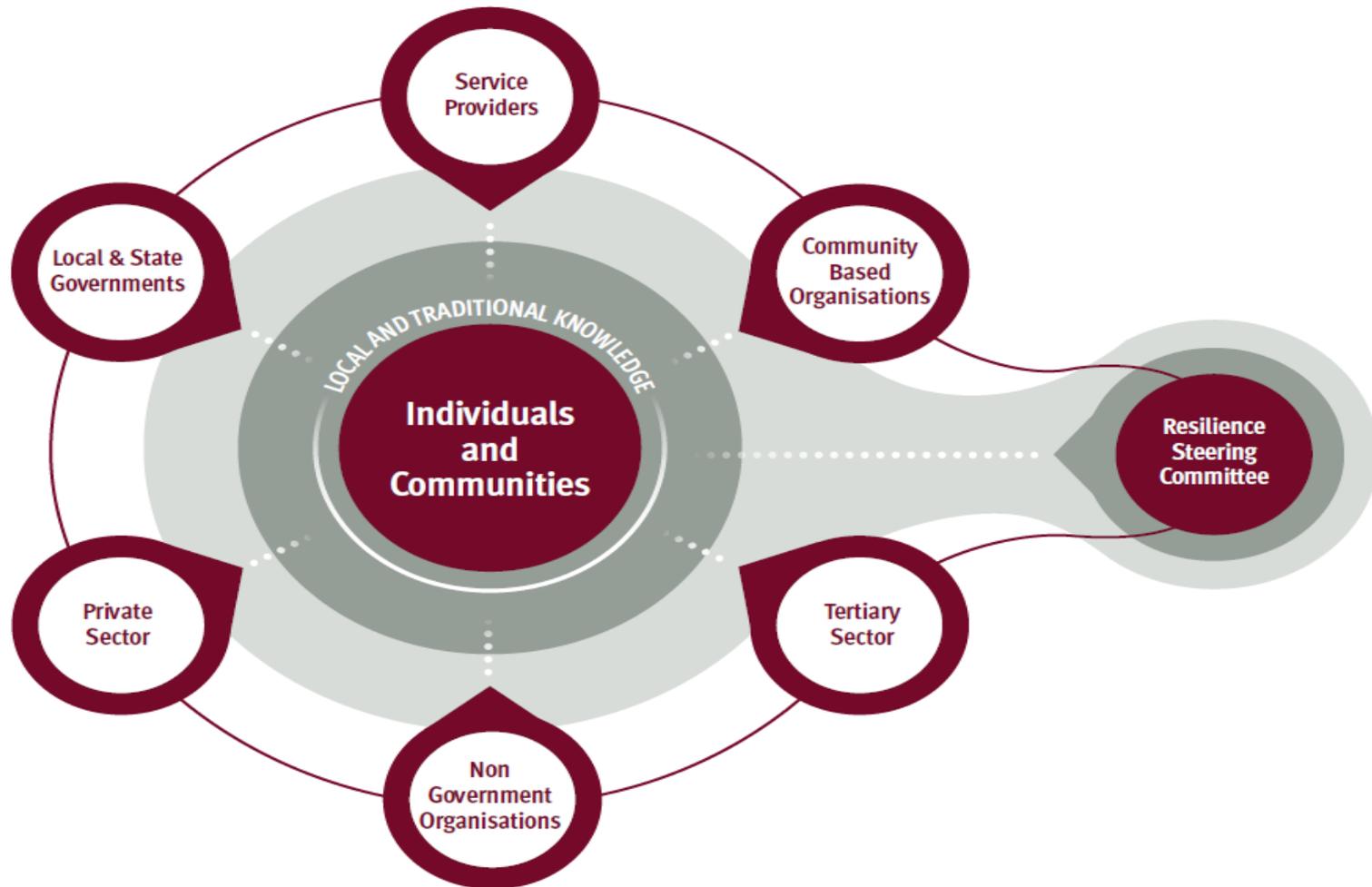


# The Queensland context

- **Guiding principles**
  - Shared responsibility
  - Integrated risk-based approach
  - Evidence-based decision making
  - Continual learning
- **Key objectives**
  - Queenslanders understand their disaster risk
  - Strengthened disaster risk management
  - Queenslanders invested in risk reduction
  - Continuous improvement in disaster preparedness, response and discovery



# The Queensland Context





# Why assessment?

*“You can’t manage what you can’t  
(don’t, won’t) measure”*

“building resilience ...  
long and complex, ...  
often recognized in theory  
but **difficult in practice**”

– *Global Risk Report 2015*



# Measuring Disaster Resilience

- What aspects and how to measure?
  - Ability to "measure" resilience – the Holy Grail
  - Resilience measurement is not the "silver bullet"
  - Provides a benchmark for improvement and evaluation of investment in resilience building
- Done *by* someone or done *with* the community?
- To what extent do selected measures trade off validity and accuracy against practical usefulness, stakeholder engagement and likelihood of change?



# What can be measured?\*

- Elements that may be included
  - Well-being before and after a disaster
  - Vulnerability
  - Resilience capacities to cope, adapt and transform
  - Disaster-related shocks, losses and stress
  - Reaction to and recovery from disasters
  - Program results

\*adapted from UNDP *Disaster Resilience Measurements*, 2014



# What and how?

- Possible dimensions
  - Physical -- Economical
  - Food/nutrition -- Human
  - Poverty -- Social
  - Environmental -- Political
  - Ecological -- Institutional
  - Technical
- Possible units of analysis
  - Global
  - National
  - Sub-national (political unit or organisation)
  - Household/individual



# To what purpose?

- Measuring resilience - a way to build resilience which is
  - A complex and multi-faceted feature
  - A system of systems, at any level
- Measurement provides a benchmark for improvement and evaluation of investment in resilience building
- Merely asking a questions draws attention to content or expectations



# Ways to measure at community level

- Inductive
  - Context-specific
  - May be circular
  - May depend on availability of secondary data
- Independent
  - Logical linkages may be clear
  - Not context specific



# Examples\*

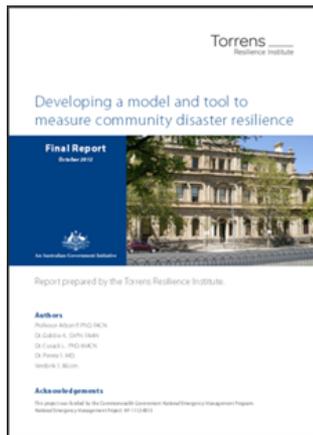
- ResilUS—a prototype simulation model
- Indonesia Disaster Recovery Index—based on household surveys
- Livelihoods Change Over Time—2x a year in Northern Ethiopia
- Nepal Risk Reduction Consortium—9 minimum characteristics to be used to track
- Resilience Cost Approach

\*[http://www.preventionweb.net/files/37916\\_disasterresiliencemeasurementsundpt.pdf](http://www.preventionweb.net/files/37916_disasterresiliencemeasurementsundpt.pdf)



# Measuring resilience TRI style

- 2011-2012 National Emergency Management Project NP1112-015
  - Developed a pragmatic model and method to measure disaster resilience for communities, by communities based on literature and some testing
- 2013-2014 National Emergency Management Project NP1314-018
  - Scorecard evaluation

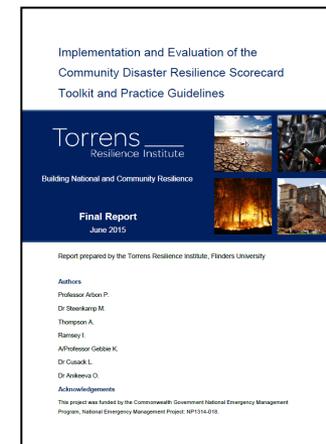


**2. What is the level of risk and vulnerability in your community?**

Question	Score	Information Resource
2.1 What are the known (and/or anticipated) hazards in your community?	1 No known or anticipated hazards 2 Low level of anticipated hazards 3 Medium level of anticipated hazards 4 High level of anticipated hazards 5 Very high level of anticipated hazards	Emergency services resources and community information resources
2.2 What are the trends in relative size of the permanent resident population and the daily population?	1 Relative increase in size of the permanent population 2 Relative decrease in size of the permanent population 3 Relative increase in size of the daily population 4 Relative decrease in size of the daily population 5 Relative increase in size of the daily population	Census or ABS
2.3 What is the size of the resident population change in the last census?	1 Increase 2 Stable 3 Decrease 4 Increase 5 Decrease	Census
2.4 What proportion of the population has the capacity to independently move to safety? (e.g. non-institutionalised, mobile with own vehicle, etc.)	1 0% 2 1-20% 3 21-40% 4 41-60% 5 61-100%	ABS, local planning documents
2.5 What proportion of the resident population speaks communication in a language other than English?	1 0% 2 1-20% 3 21-40% 4 41-60% 5 61-100%	Census
2.6 How the transient population (e.g. tourists, transient workers) have included in planning for response and recovery?	1 No transient population 2 Minimal transient population 3 Moderate transient population 4 High transient population 5 Very high transient population	Local planning documents or local survey
2.7 What is the risk that your community could be isolated during an emergency event?	1 Not isolated 2 Minimal isolation 3 Moderate isolation 4 High isolation 5 Very high isolation	Self-Assessment based on information accessible within community

Reliability Score: 20% (1-10) 30-70% (11-20) 70-100% (21-30)

18. Model and Tool for Community Disaster Resilience



<http://www.flinders.edu.au/torrens-resilience-institute/projects/community-resilience-toolkit.cfm>



# Aim of the TRI Scorecard

- To have a point-in-time snapshot but repeated over time
- Four components important to resilience
- To provide guidance on areas that should receive attention
- To strengthen resilience over time



# Foundational assumptions

- A resilient community ... members are connected ... and work together, so that the community:
  - functions (sustain its critical systems), even under stress
  - adapts to changes in the physical, social or economic environment
  - Is self-reliant if external resources are limited or cut off
  - learns from experience to improve itself over time
- A resilient community is a strong community



# Key understanding

- Resilience is a process
  - Components interact
  - It is never static, so single measurement is not sufficient to understand
  - The knowledge gained from measurement can become the basis for action



# And more..

- Tool needs to be pragmatic
  - Many communities lack resources for staff
  - Measuring too much is overwhelming
    - The precise may become the enemy of the useful
- It must be owned by and done by the community
  - Not by a single assigned staff member
  - Not ‘hired out’ to experts



# Community

Torrens \_\_\_\_\_  
Resilience Institute

# Disaster Resilience Scorecard



- Community Connectedness
- Risk/Vulnerability
- Processes supporting Planning, Response, Recovery
- PRR Resources



# Components

- Four areas of measurement - **Total Score (22-110)**
  - Connectedness in community
    - 5 Items (5-25)
  - Risk/Vulnerability in community
    - 7 Items (7-35)
  - Processes supporting Planning, Response, Recovery (PRR)
    - 4 Items (4-20)
  - PRR Resources available
    - 6 Items (6-30)

## 2. What is the level of risk and vulnerability in your community?

Question	Score					Information Resource
	1	2	3	4	5	
2.1 What are the known risks of all identified hazards in your community?	1 No local focus or mapping on risk	2 Local focus on single risk (e.g. fire) but no mapping	3 Mapping of single local risk	4 Widely available mapping of multiple potential sources of risk	5 Widely available mapping Includes low probability/high impact events	<b>Emergency Services resources and community information resources</b>
2.2 What are the trends in relative size of the permanent resident population and the daily population?	1 Resident population is <20% of the daytime (worker) population	2 Resident population is 21-40% of the daytime (worker) population	3 Resident population is 41-60% of the daytime (worker) population	4 Resident population is 61-80% of the daytime (worker) population	5 Resident population forms >80% of the daytime (worker) population	<b>Census or ABS</b>
2.3 What is the rate of the resident population change in the last 5 years?	1 >30%	2 20-29%	3 15-19%	4 6-12%	5 <5%	<b>Census</b>
2.4 What proportion of the population has the capacity to independently move to safety? (e.g., non-institutionalised, mobile with own vehicle, adult)	1 <20%	2 21-40%	3 41-60%	4 61-80%	5 >80%	<b>ABS, local planning documents</b>
2.5 What proportion of the resident population prefers communication in a language other than English?	1 >30%	2 25-34%	3 15-24%	4 5-14%	5 <5%	<b>Census</b>
2.6 Has the transient population (e.g., tourists, transient workers) been included in planning for response and recovery?	1 No transient populations included	2 Transient populations identified	3 <50% of plans include transient populations	4 51-75% of organisation plans include	5 All plans include transient populations	<b>Local planning documents or local survey</b>
2.7 What is the risk that your community could be isolated during an emergency event?	1 Not considered in planning	2 Map of all access routes/means available to the population	3 Map distributed with request to have personal plan if access is severely limited	4 Percentage of population needing transport help identified	5 Transport plan includes those without personal transport & support for incoming supplies	<b>Self-Assessment based on information accessible within community</b>

Risk/Vulnerability Score:

25% (7-13)

26-75% (14-28)

76-100% (29-35)

18 Model and Tool for Community Disaster Resilience



# Risk and vulnerability

- 2.1 What are the known risks of all identified hazards in your community?
- 2.2 What are the trends in relative size of the permanent resident population and the daily population?
- 2.3 What is the rate of the resident population change in the last 5 years?
- 2.4 What proportion of the population has the capacity to independently move to safety? (e.g., non- institutionalised, mobile with own vehicle, adult)
- 2.5 What proportion of the resident population prefers communication in a language other than English?
- 2.6 Has the transient population (e.g., tourists, transient workers) been included in planning for response and recovery?
- 2.7 What is the risk that your community could be isolated during an emergency event?



# Overall score

			Red Zone	Caution Zone	Going Well
<b>Combined score</b>			25 %	26-75%	76-100%
Connectedness	7		5-10	11-19	20-25
Risk/Vulnerability	20		7-13	14-28	29-35
Procedures	16		4-8	9-16	17-20
Resources	25		6-11	12-24	25-30
<b>Total Score:</b>	<b>43</b>		<b>22-33</b>	<b>34-98</b>	<b>99-110</b>



# Key points about scoring

- SCORE is noteworthy, but. .
  - What is really important is the process and identifying strengths and gaps
- Scores for a community can be compared over time, but . .
  - Scores are not comparable across communities!



# Making the process work

- Who
  - Working group of 10-15 people
  - Representative of whole community
  - Community leaders but not only ‘the usual suspects’
- How
  - Three meetings over 4-6 weeks, with homework
  - Chair is important
  - Convenient location and times (+ refreshments!)



# Example 1

- Rural LGA in Tasmania
  - 6,000+ population with ‘tree-changers’
  - Major town with 8 small communities
  - Pro-active Council – development focus
- Implemented the Scorecard
  - Invited interested people via local paper
  - Two meetings with volunteers from different communities
  - Practical outcomes
    - Emergency information for new residents
    - Letter drop
  - Improved network – taking it back to community



# Example 2

- Rural Shire in Victoria
  - 8,000+ population, high % visitors
  - 10 small communities with <500
  - Pro-active Council
    - Empowered and resilient communities
  - State and regional support - funding
- Scorecard used in leadership program
  - 24 self-identified leaders from 8/10 communities
  - 10-month program
  - Completed Scorecard individually
  - Equipped leaders in a community network



# Example 3

- LGA in Tasmania
  - 33,000+ population, 5 small communities – rural
  - Council leadership focus on resilience
  - Community-based EM Committee - part of assessment of community capacity and capability
- Trying to implement
  - Initial meetings to implement Scorecard
  - Community leaders not on board
  - Distrust of “government” – “government taking away”
  - “Council should fix things”
  - Outcomes?



# What we have learned

- Paradigm shift to resilience focus needs
  - Both top down and bottom up
  - Tangible support – funding AND visibility
- Awareness of risk/vulnerability
  - Previous experience
  - Expectations
- Committed individuals who take action
  - Working group powerful conduit for engagement
- Pragmatic tool in an on-going process
  - Willing to start somewhere
  - Pragmatic, low cost tool



# Questions or Comments?

Knowing is not enough; we must apply.  
Willing is not enough; we must do.

*- Goethe*



# Discussion

What is your goal?

How can you move towards it?

- Will measuring resilience be useful for you?
- If yes, how do you see this happening?
  
- Discussion (60 minutes)
- Feedback (30 minutes)



# The end (for now...)

What is the one thing you are going to do as a result of this workshop?