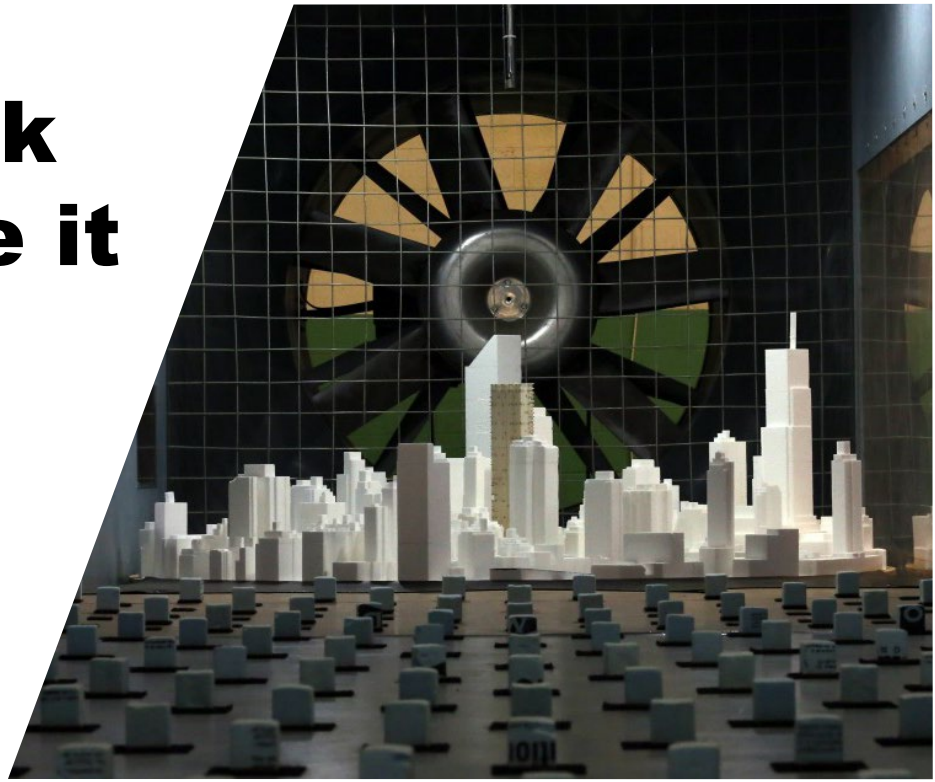
Future risk framework: Understanding tomorrow's risk and what we can do to reduce it

AFAC 2019

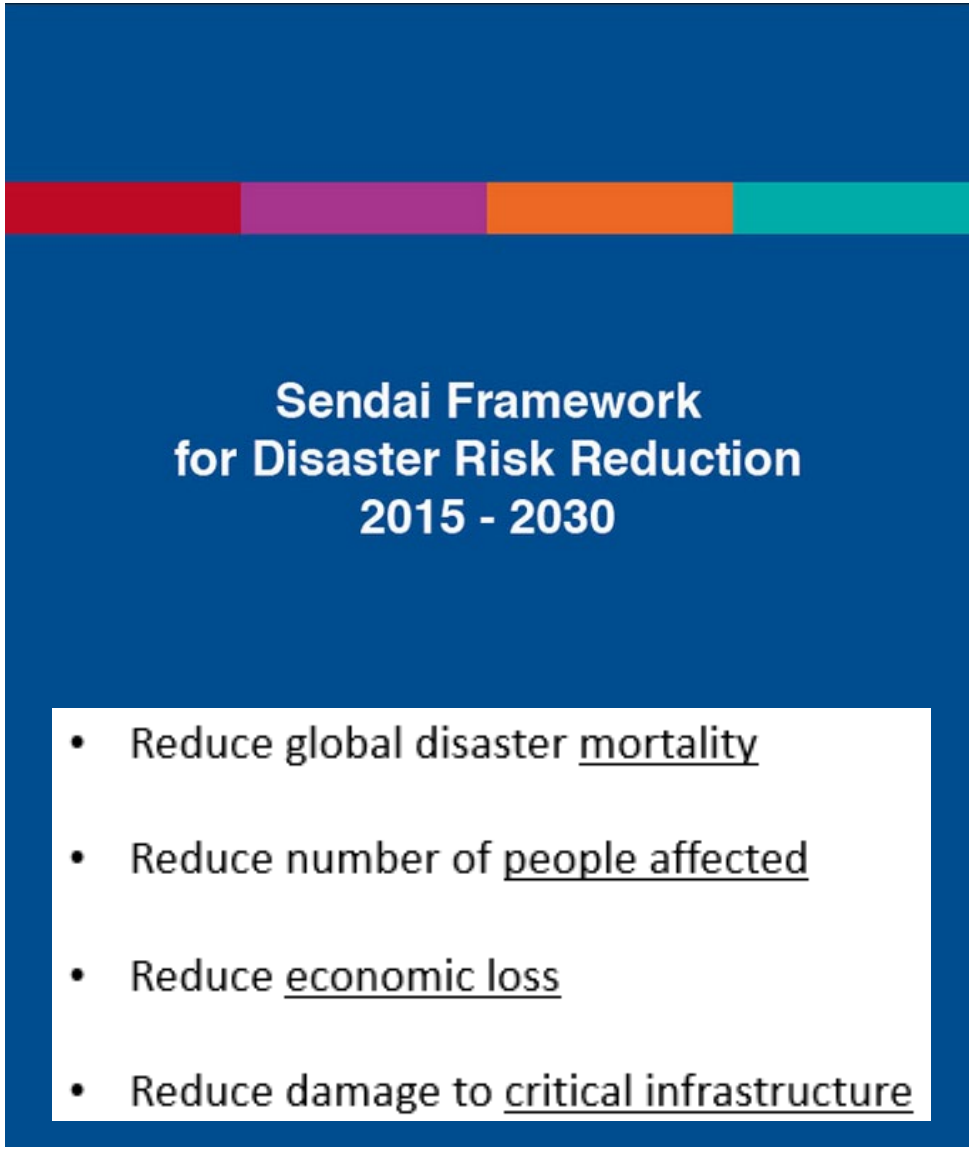
Holger R Maier/ The University of Adelaide

Graeme Riddell, Hedwig van Delden, Aaron Zecchin, Roel Vanhout, James Daniell, Sofanit Araya, Graeme Dandy, Jeff Newman



Why do we need to think about future risk?

- Risk is increasing into the future
- We have committed to decreasing risk in the future
- Now is the best time to reduce future risk
  - Prevention is better than cure
  - Tomorrow's risk is a function of decisions made today



What is future risk?

Likelihood

Impact

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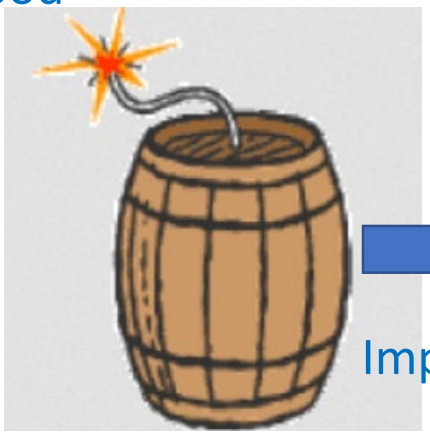
Likelihood

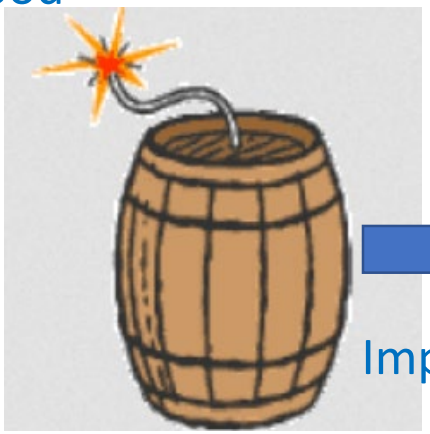


Impact

Hazard

What is future risk?

Likelihood



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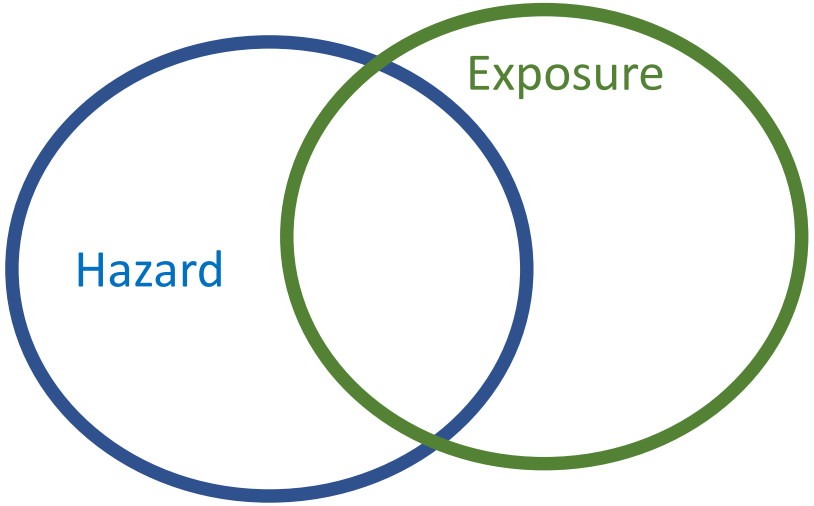

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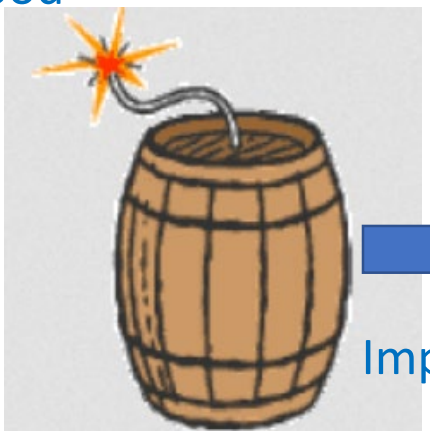

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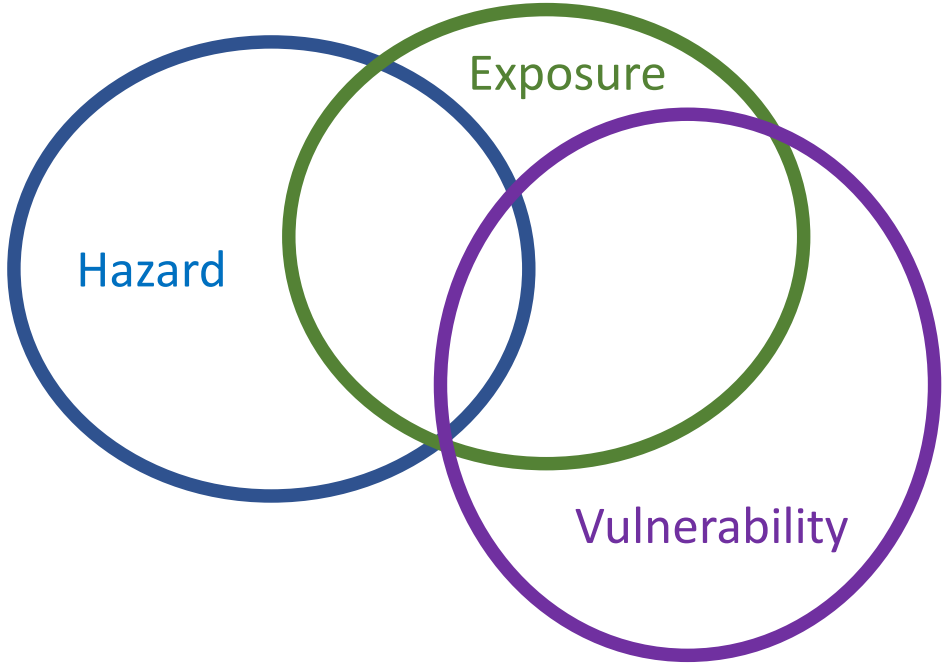

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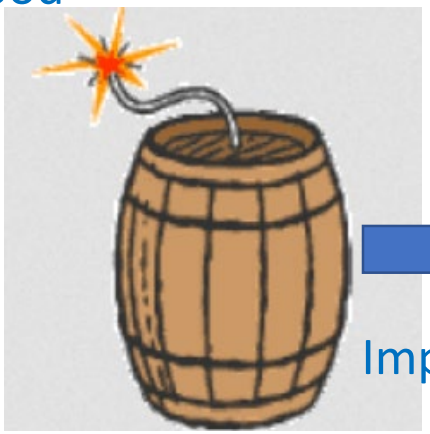

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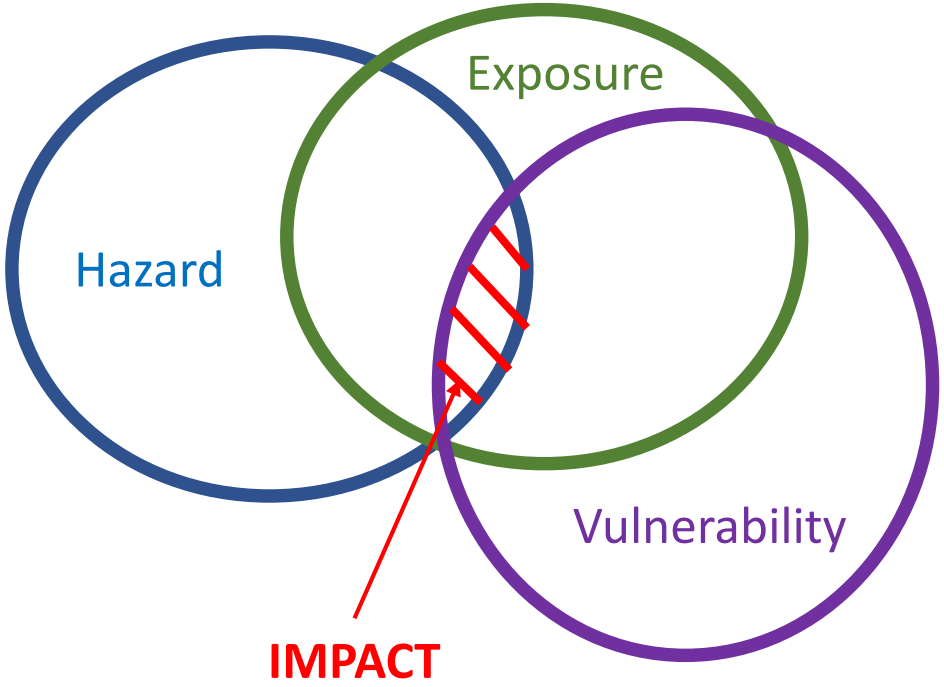

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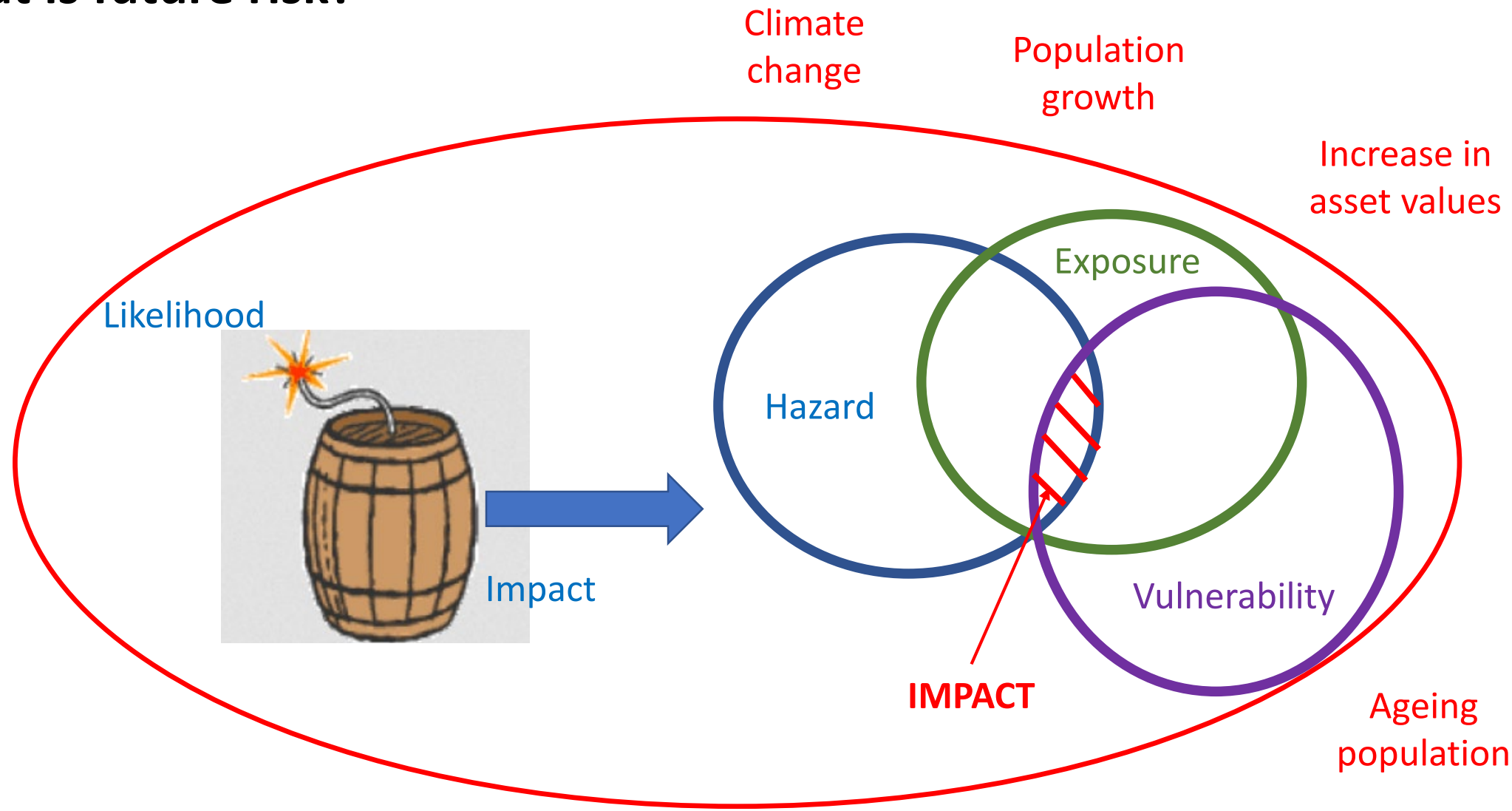
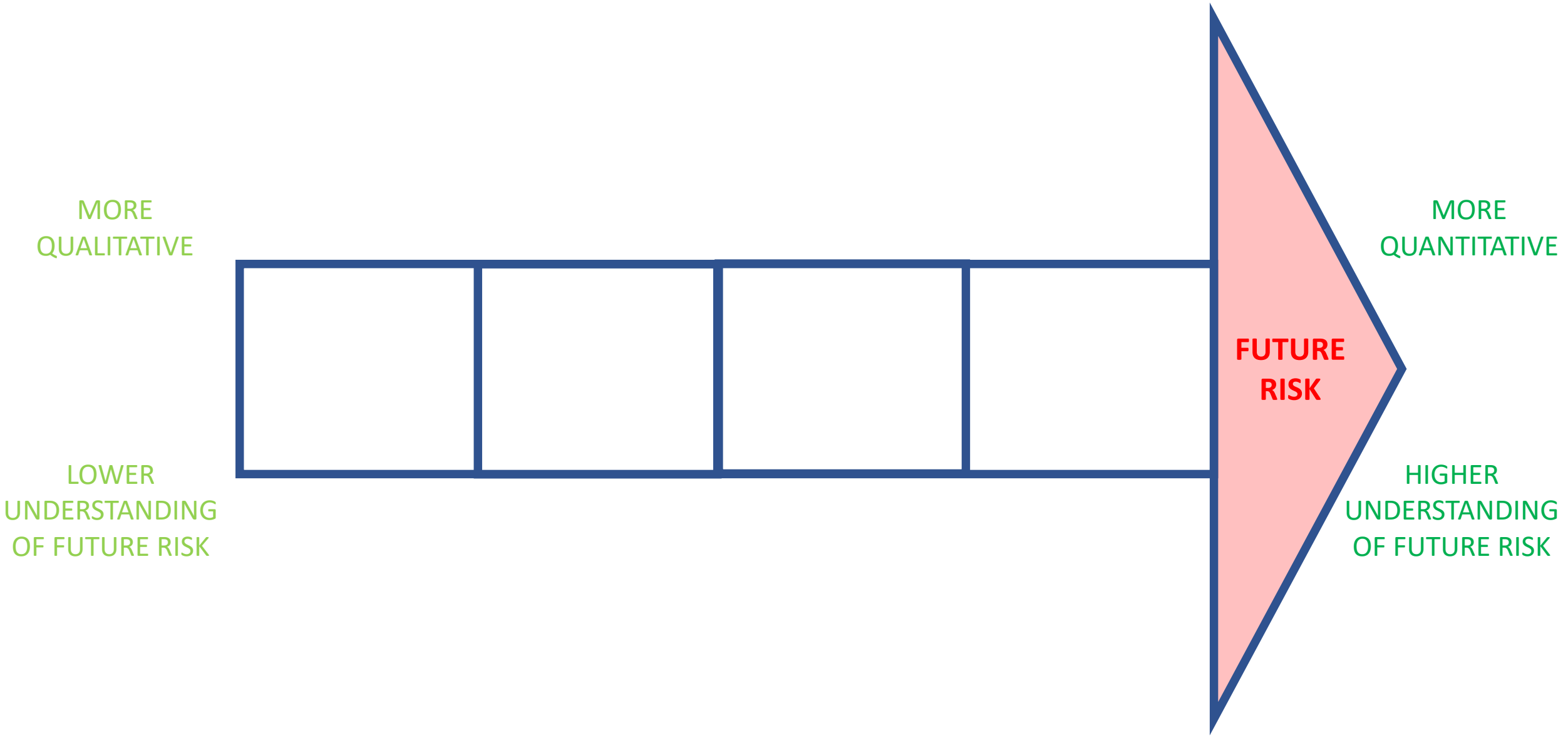
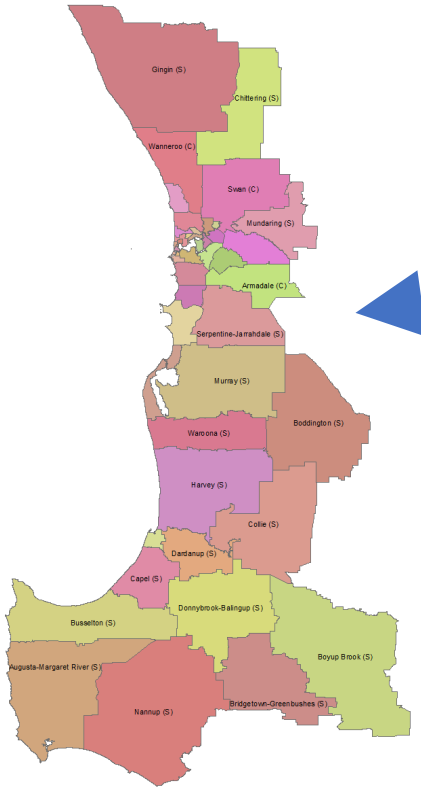


Future Risk Framework



How do we think about future risk?

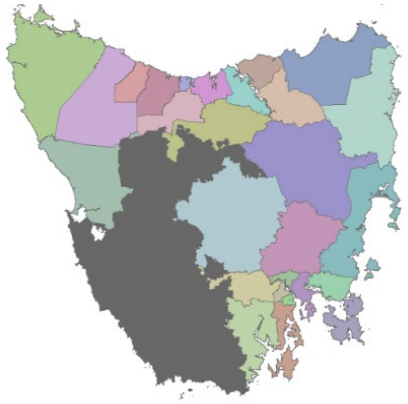
Perth



Melbourne

Adelaide

Tasmania



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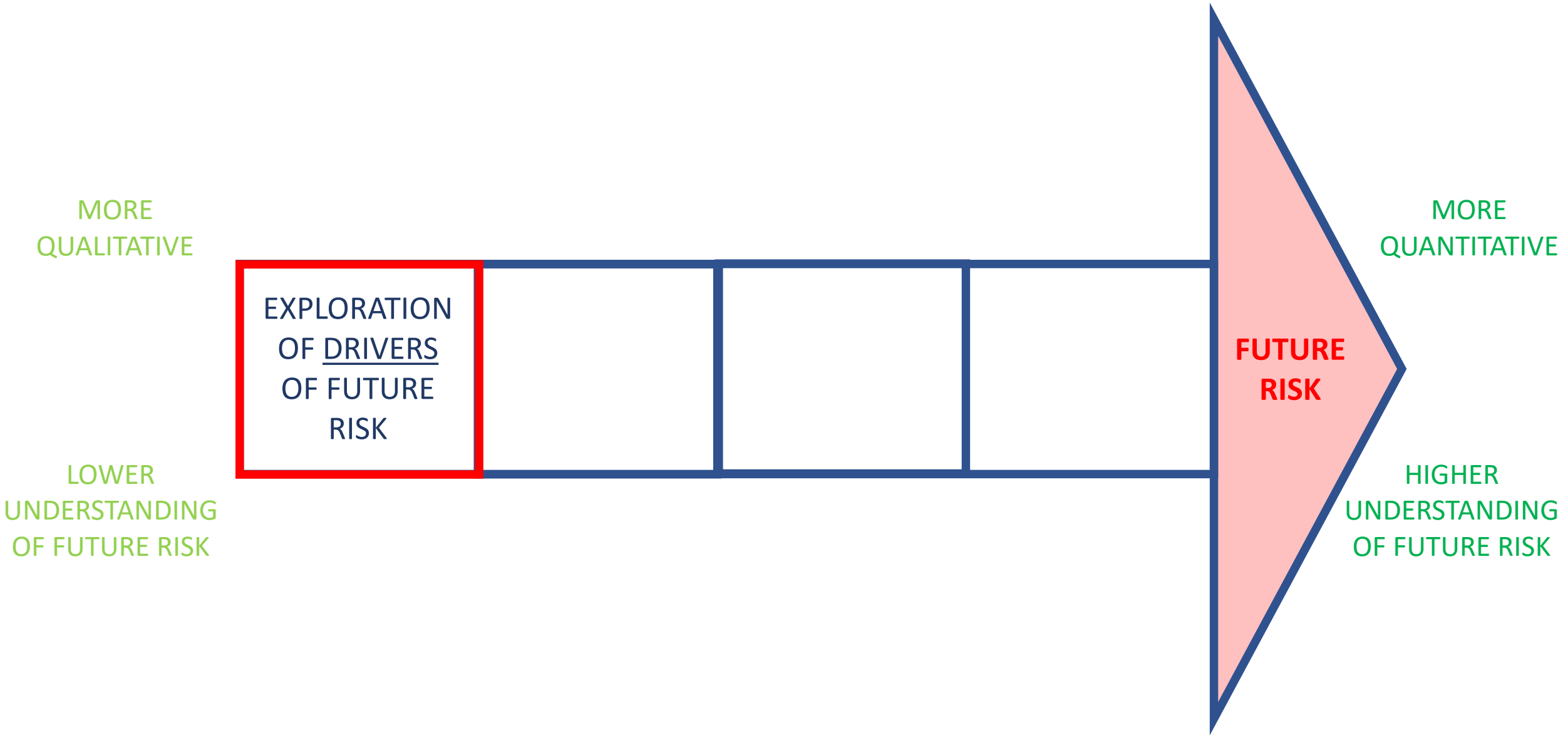
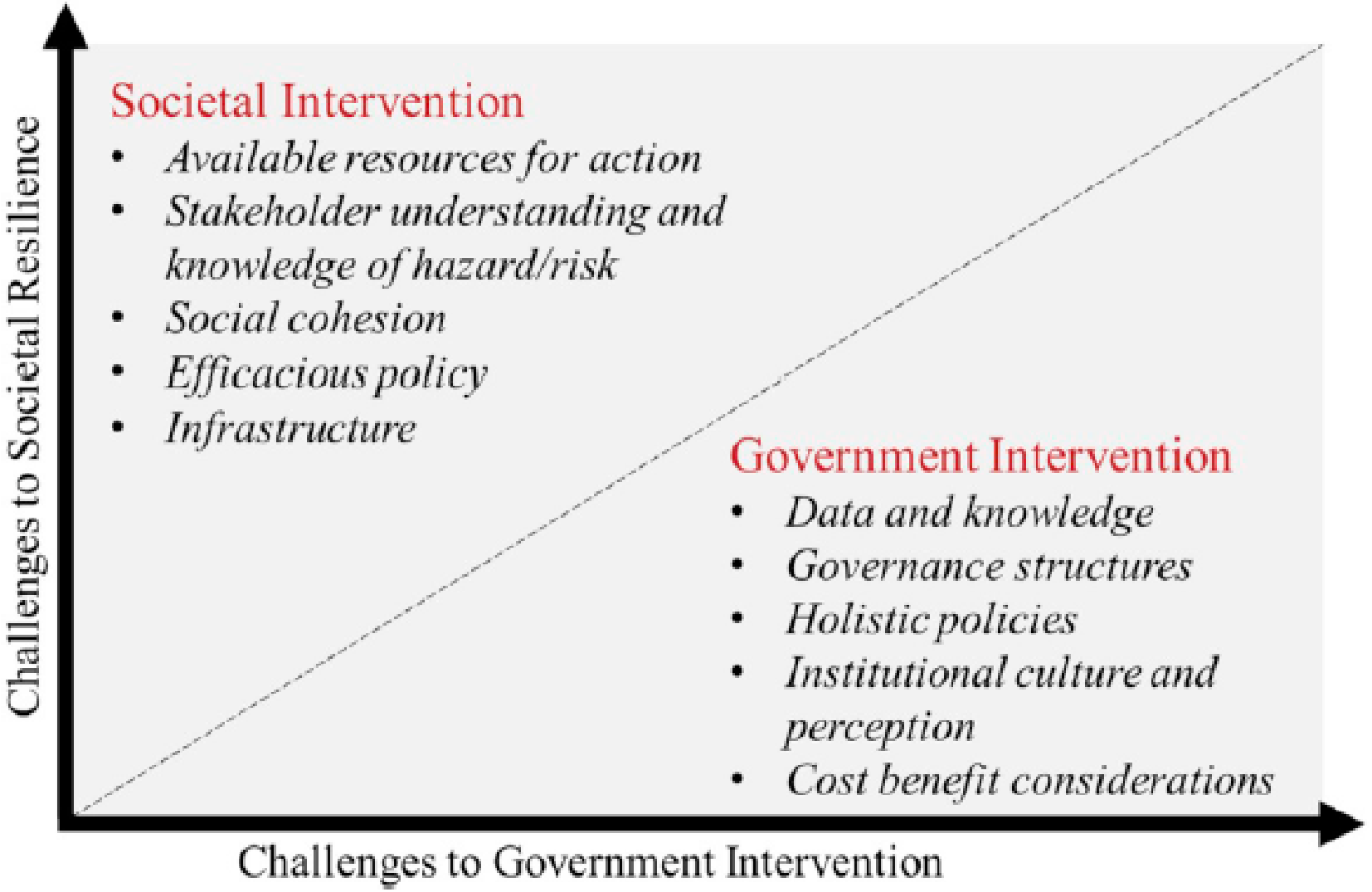


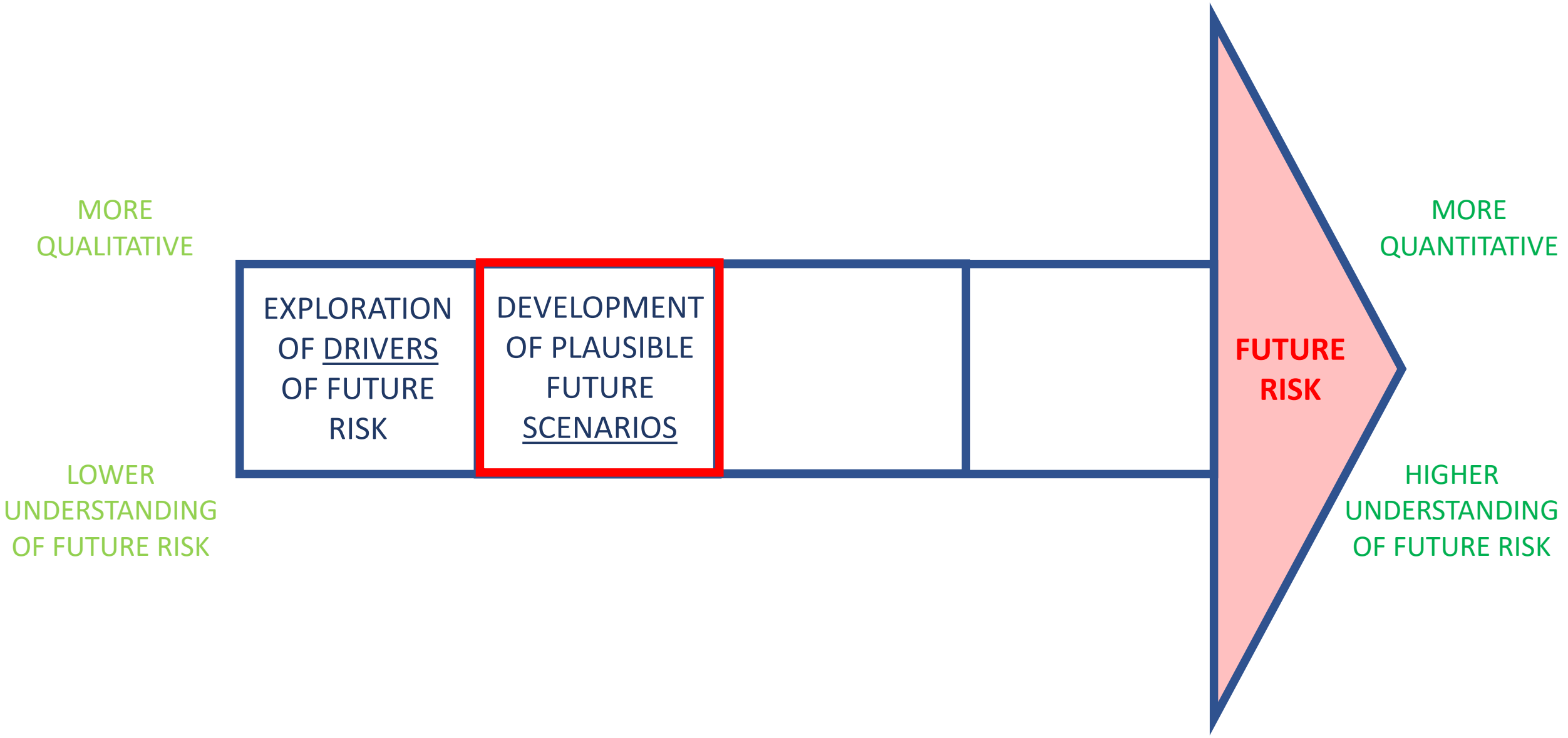
Exploration of drivers of future risk



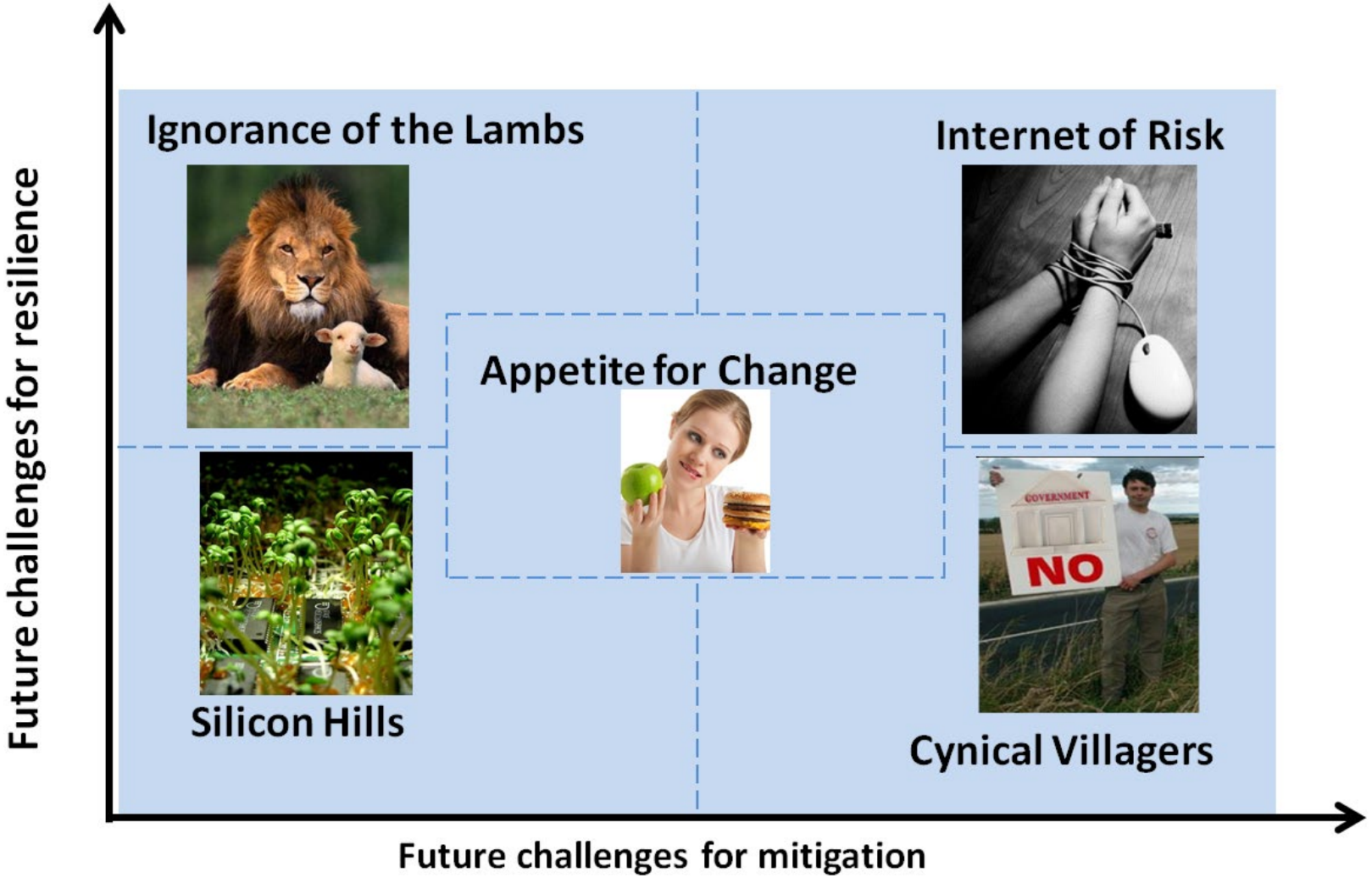
Riddell G.A., van Delden H., Maier H.R, Zecchin A.C. (2019) Exploratory scenario analysis for disaster risk reduction: Considering alternative pathways in disaster risk assessment , *International Journal of Disaster Risk Reduction*, **39,** 101230.

Exploration of drivers of future risk

Future Risk Framework



Development of plausible future scenarios



An exploration of disaster risk and the future

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Research Institute for Knowledge Systems, Maastricht, the Netherlands

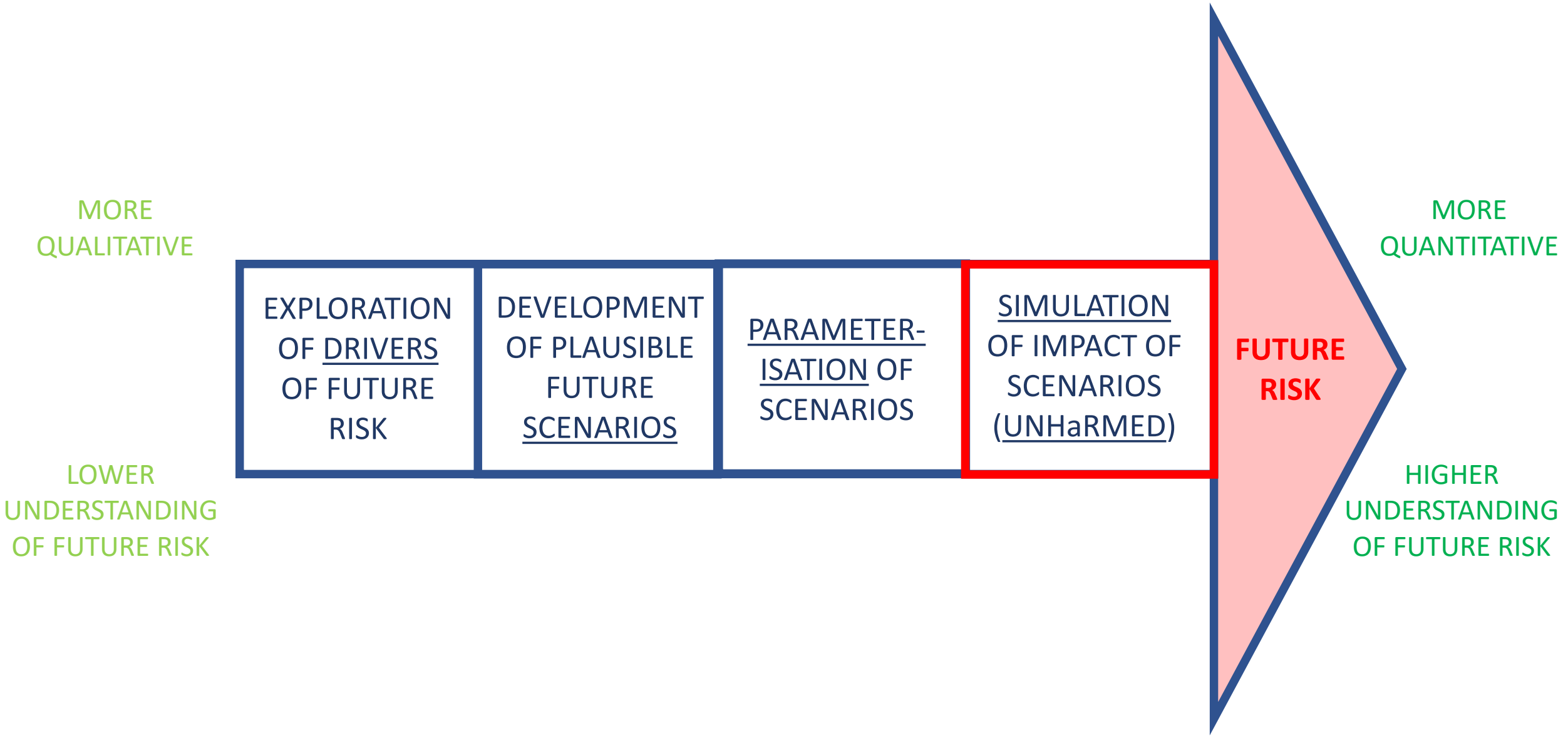
Riddell G.A., van Delden H., Dandy G.C., Zecchin A.C. and Maier H.R. (2018) Enhancing the policy relevance of exploratory scenarios: Generic approach and application to disaster risk reduction , *Futures*, **99**, 1-15.

Future Risk Framework

Parameterisation of scenarios

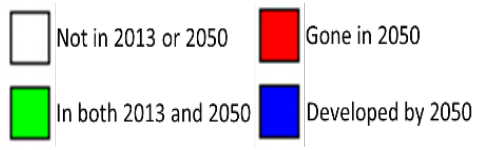
	Silicon Hills	Cynical Villagers	Ignorance of the Lambs	Appetite for Change	Internet of Risk
Population in 2050	1.9 M	1.5 M	2.5 M	1.8 M	1.5 M
Economy					
Community resilience					
Building stock resilience					
Residential land use developments	*Gradual growth urban and rural areas*	*Large increase in rural residential, mixed with other land uses*	*Residential commuter communities in the hills*	*Infill, some sprawl on the fringe and rural residential development*	*Large increase in rural residential*
Land use planning					
Education & awareness					
Structural mitigation					

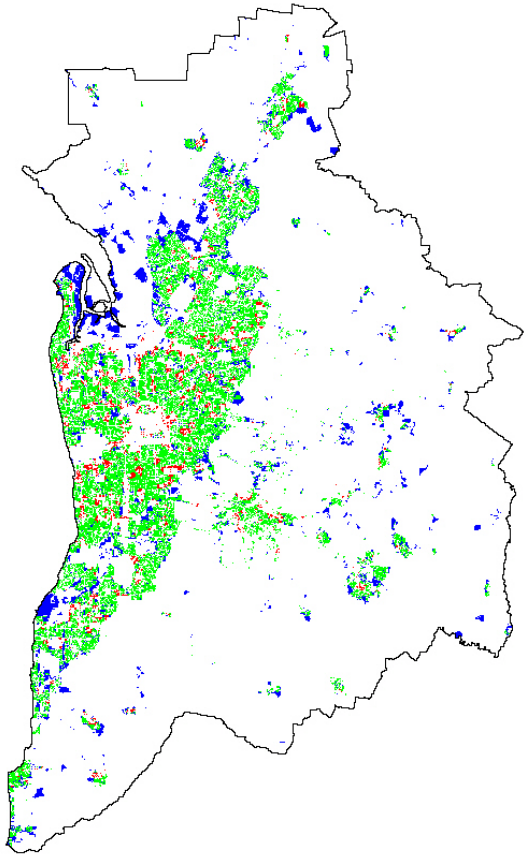
Future Risk Framework



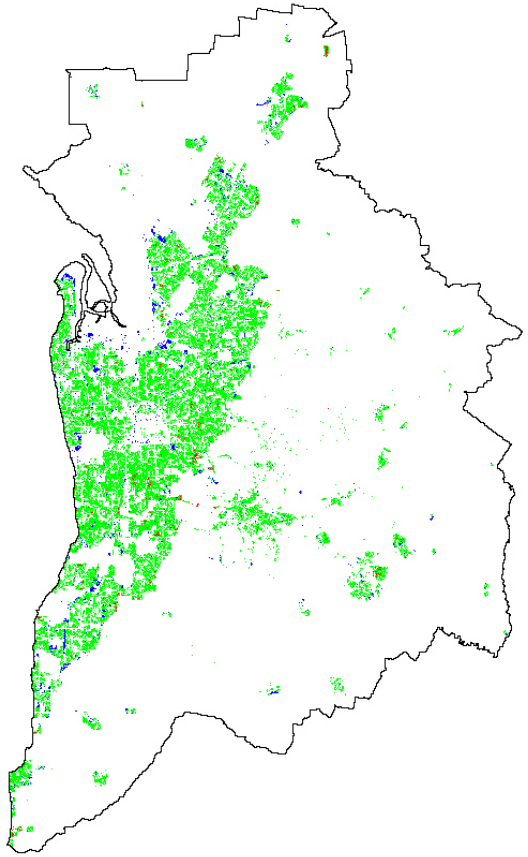
Scenarios

RESIDENTIAL LAND USE CHANGES 2013 - 2050

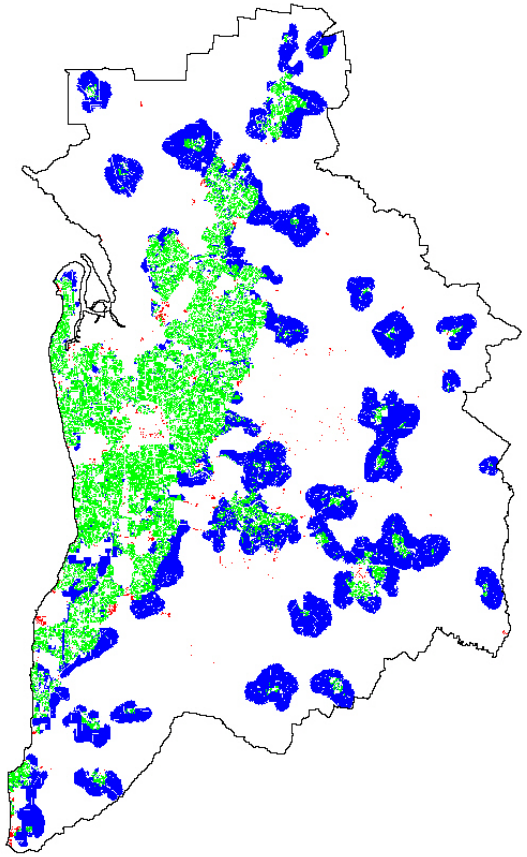




Low challenges

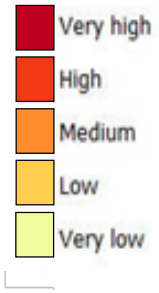


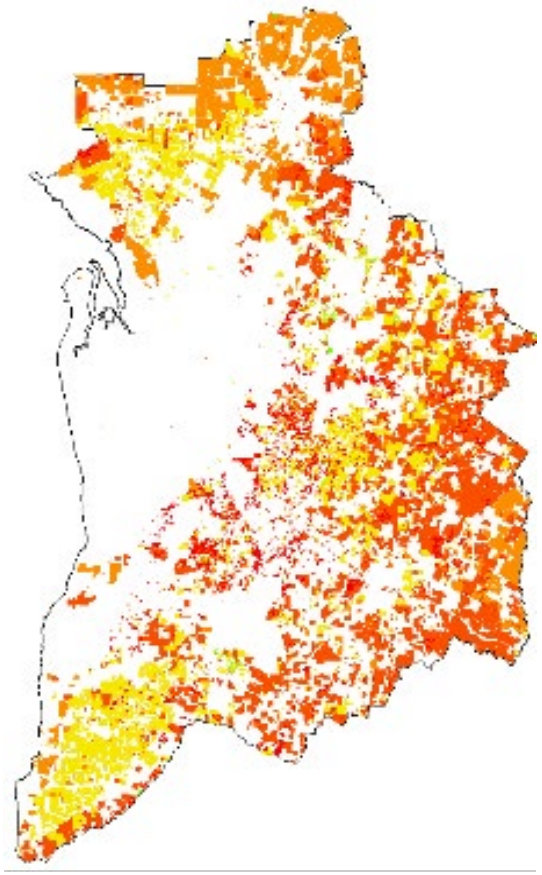
High challenges to Government action



High challenges to resilience

ANNUAL AVERAGE DAMAGE BUSHFIRE 2050





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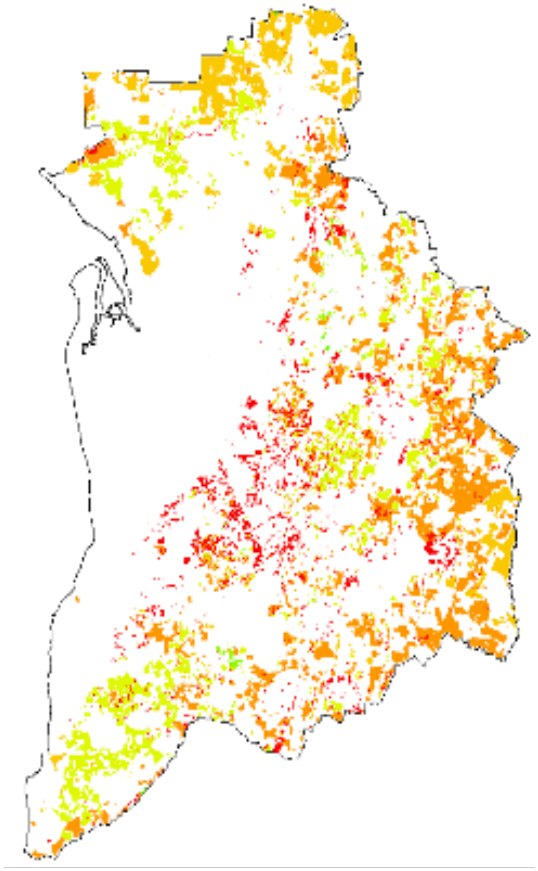

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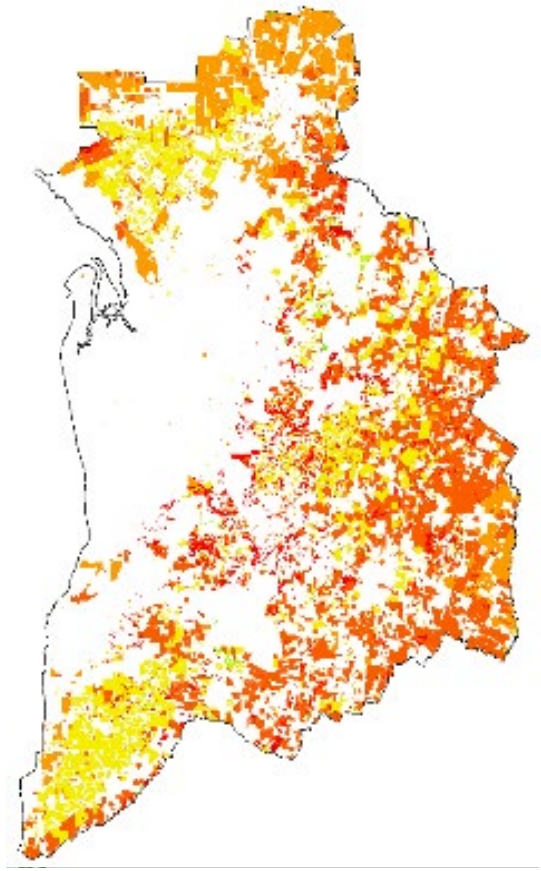
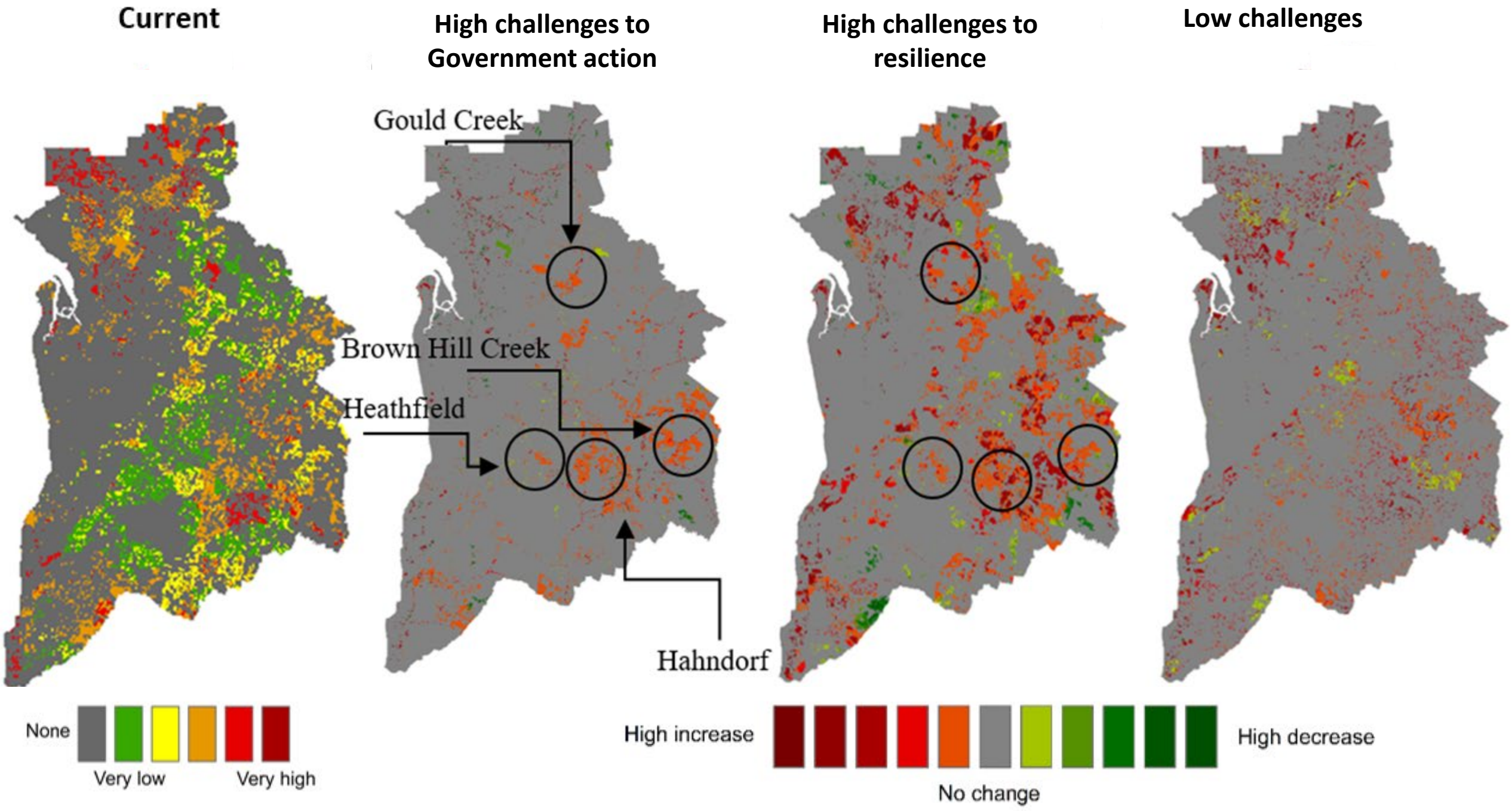


High challenges to resilience

BUSHFIRE HAZARD RISK



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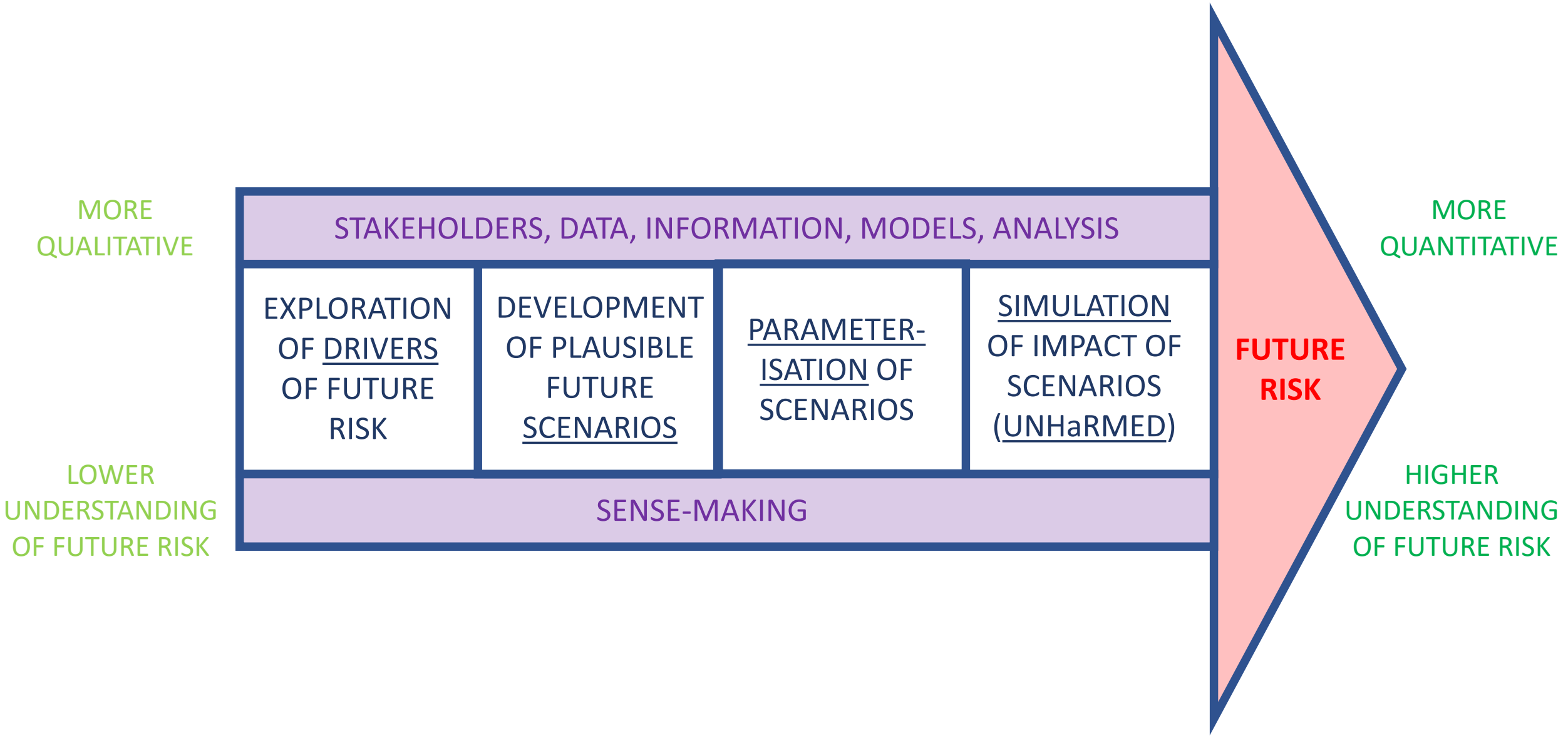
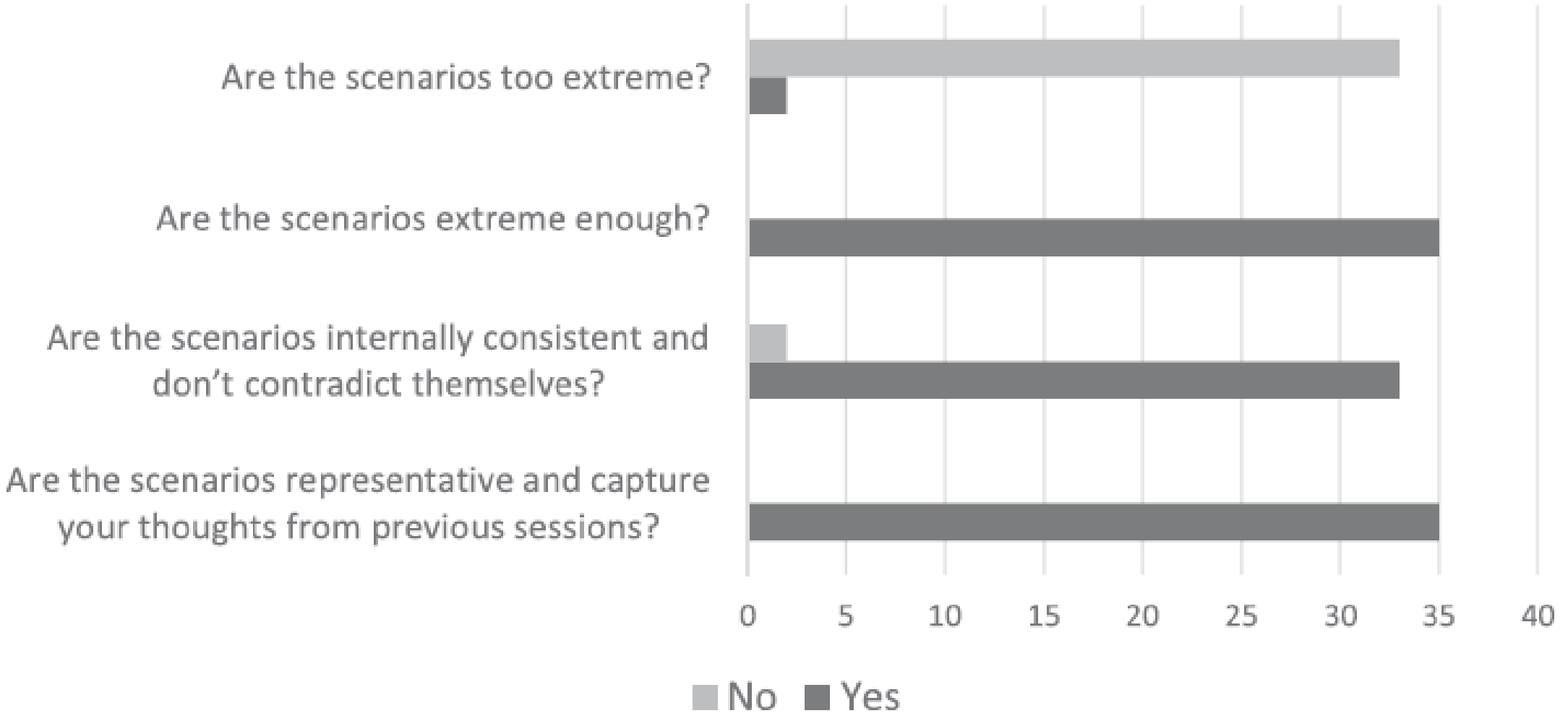


Sense-making



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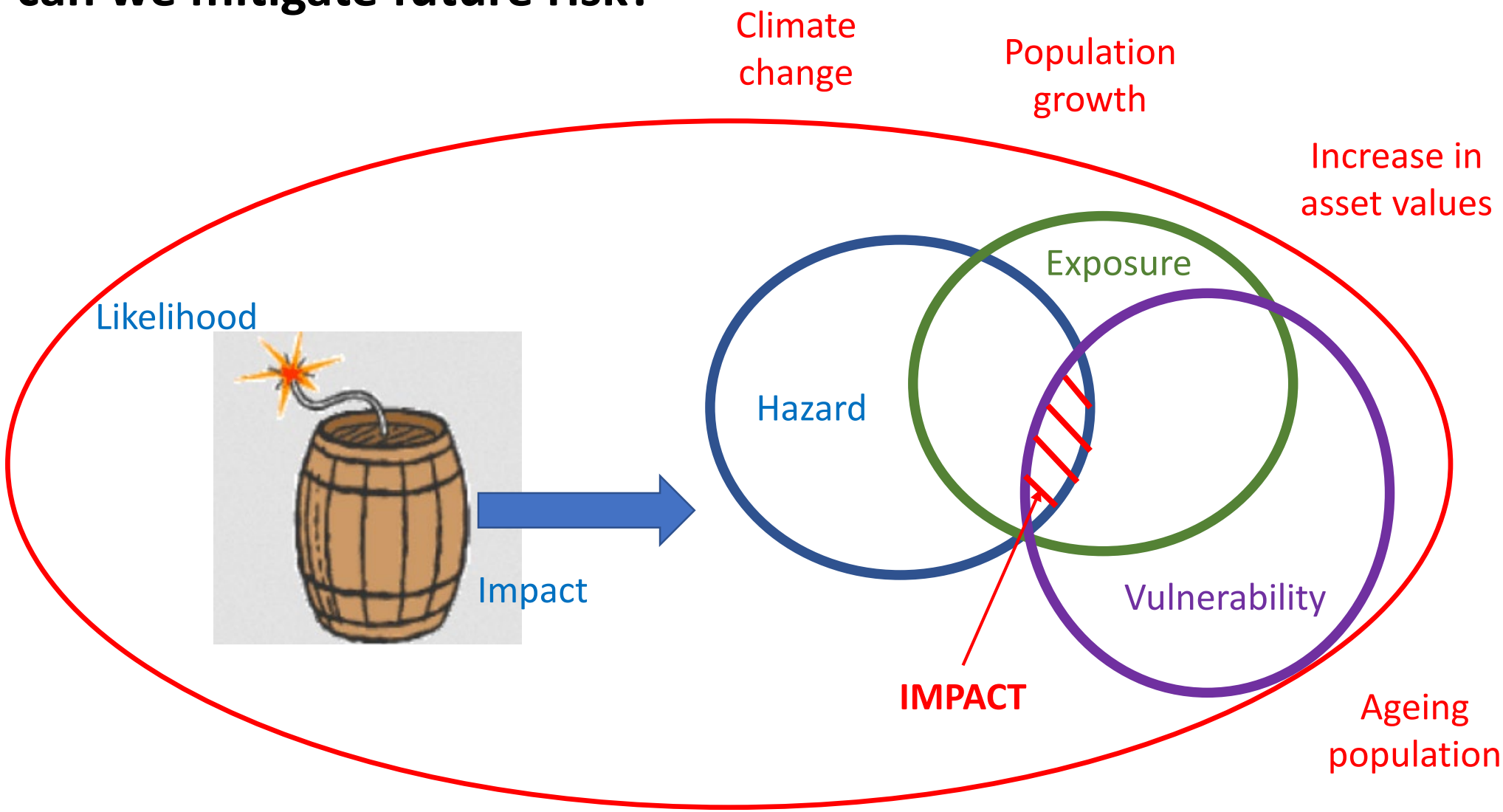
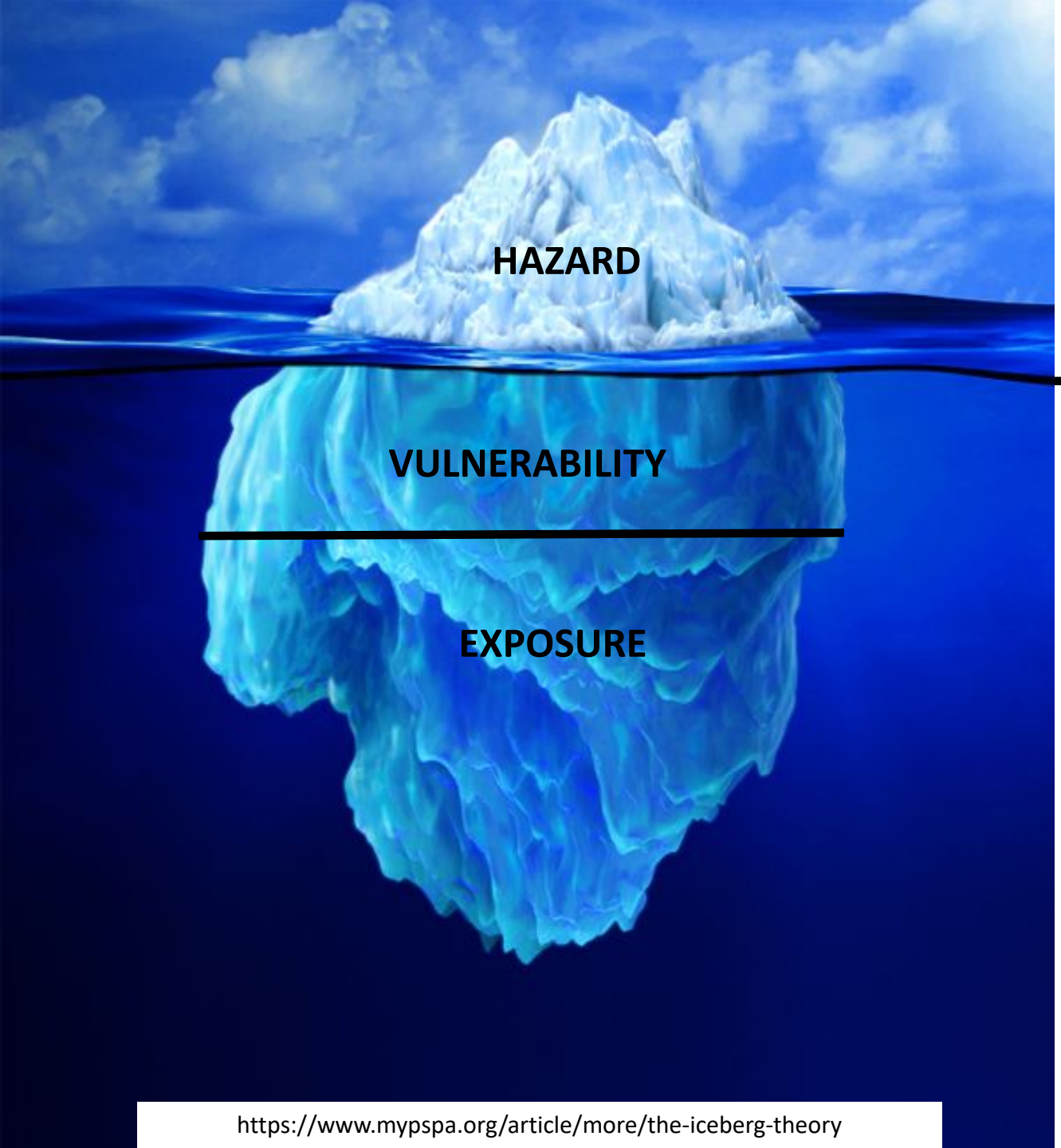
Sense-making

How can we mitigate future risk?





HIGH AWARENESS

LOW AWARENESS

https://www.mypspa.org/article/more/the-iceberg-theory

HIGH AWARENESS

LOW AWARENESS

HIGH AWARENESS

LOWER MITIGATION EFFECTIVENESS

LOW AWARENESS

HIGHER MITIGATION EFFECTIVNESS

HIGH AWARENESS	LOWER MITIGATION EFFECTIVENESS	HIGHER LEVEL OF CONTROL
LOW AWARENESS	HIGHER MITIGATION EFFECTIVNESS	LOWER LEVEL OF CONTROL

HIGH AWARENESS	LOWER MITIGATION EFFECTIVENESS	HIGHER LEVEL OF CONTROL
LOW AWARENESS	HIGHER MITIGATION EFFECTIVNESS	LOWER LEVEL OF CONTROL

COLLABORATIVE, MULTI-DISCIPLINARY, MULTI-STAKEHOLDER APPROACH

How can we reduce future risk?

CONCLUSIONS

- Future risk is a function of decisions made today, so we need to understand future risk now

- Our Future Risk framework provides a series of steps to achieve this, each increasing the level of insight into future risk
  - Exploration of drivers of future risk
  - Development of plausible future scenarios
  - Parameterisation of scenarios
  - Simulation of impact of scenarios (UNHaRMED)

- A collaborative, multi-disciplinary, multi-agency approach is needed to mitigate future risk

Future risk framework: Understanding tomorrow's risk and what we can do to reduce it

Thank you

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