Games and knowledge broking to change decision behaviour

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Te Pūtahi Hurihanga Taiao

TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI VICTORIA UNIVERSITY OF WELLINGTON

Outline

- Why change decision behaviours?
- A decision making challenge
- Tools that can help imagine the future
- The power of Games
- What it takes to change behaviours and sustain the change

Why do we need change in decision behaviour?

For example

Sea level rise is happening now
It will accelerate
It will continue for centuries
It is foreseeable

Source: PCE 2015

1in 100 yr event becomes an annual affair with modest sea level rise (by around 2050-60s): low uncertainty

2.9m spring-tide range

SLR	Auckland
0cm	Every 100 years
10cm	Every 35 years
20cm	Every 12 years
30cm	Every 4 years
40cm	Every 2 years
50cm	Every 6 months
60cm	Every 2 months
70cm	Every month
80cm	Every week
90cm	Twice a week
100cm	Every day

1.4m spring-tide range

SLR	Wellington
0cm	Every 100 years
10cm	Every 20 years
20cm	Every 4 years
30cm	Once a year
40cm	Every 2 months
50cm	Twice a month
60cm	3 times a week
70cm	Every tide
80cm	Every tide
90cm	Every tide
100cm	Every tide

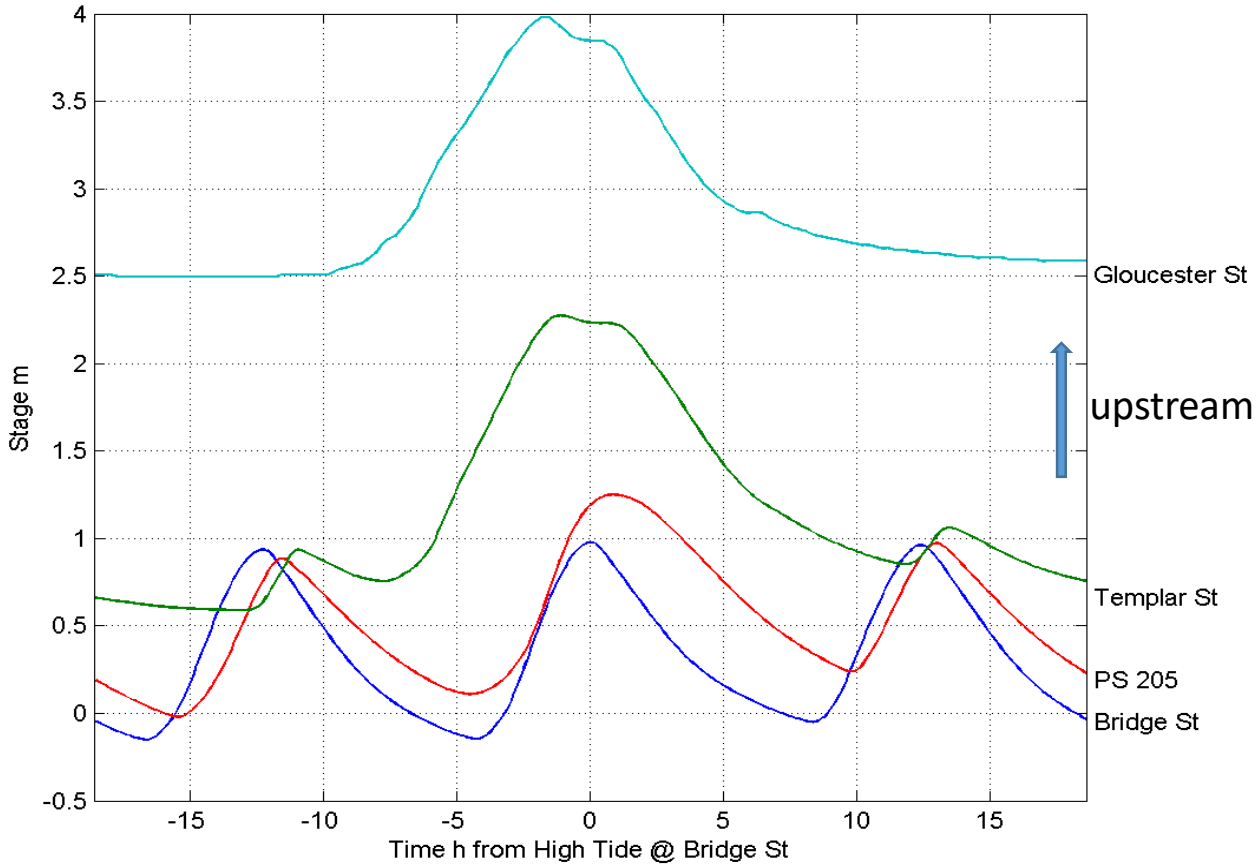
PCE 2015

Complex combination of hazards and compounding hazards

Compounding hazard risk

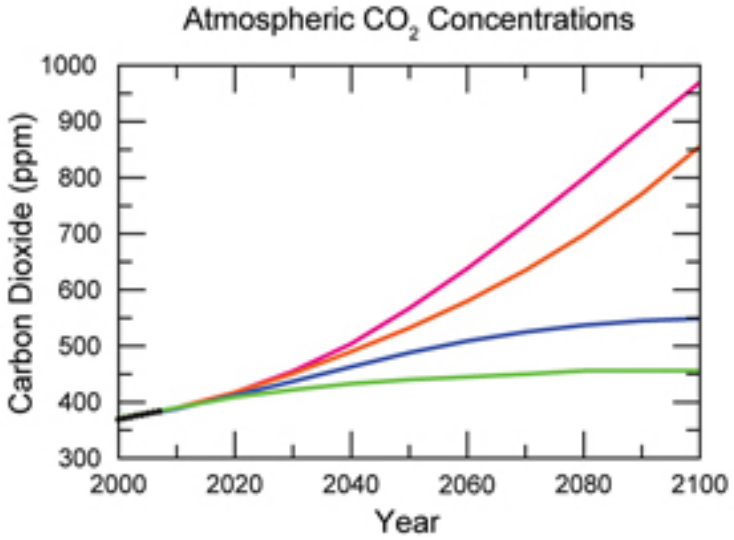
- Floods, landslips, houses, water supply, waste water, access of people and goods and services
- Across sectors
- Across supply chains
- Internationally

Storm-tide and river flood – timing critical in some systems!



Uncertainty

- People can't imagine 2117 and beyond…but climate science asks us to
- Difficult for people to accept incurring costs for a future they can't even imagine
- Communities prefer small, incremental change that doesn't threaten our way of life and sense and value of place
- Not all change is uncertain



Decision-making challenge

Managing **uncertainty and change** with communities over long timeframes… across organisations and actors… interdependent scales of governance

Requires processes and practices that **fit the problem space** (uncertainty and changing dynamics)

AND

Requires mediation of different values and preferences **today and for the future**

Capacity to address uncertainty and dynamic change

- Some climate changes similar to existing variability—existing institutional frameworks and practice suffice and there is an ability to cope

- Consequences of climate change are greater than the current climate range experienced

- Climate changes outside current and living experience, that challenge politics, institutions and ability to cope

(Dovers and Hezri 2010)

What is adaptive pathways planning

- **Adaptive planning** supports decision making under uncertain change **"**invest **not too little nor too much, and not too early nor too late"**

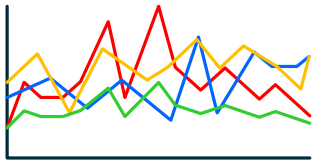
- **Adaptation** PATHWAYS provide insights into options (about lock-in potential and path dependency) enabling **short-term actions** while **keeping options open** to adaptations later

- **Adaptation** TIPPING POINTS **(policy use-by date)** help in identifying if and **when** to take actions at earliest or at latest time

- MONITORING plan and CONTINGENCY actions help **to be flexibility and stay on track with objectives**

What's included in generating pathways

Ensemble transient scenarios



Set of actions

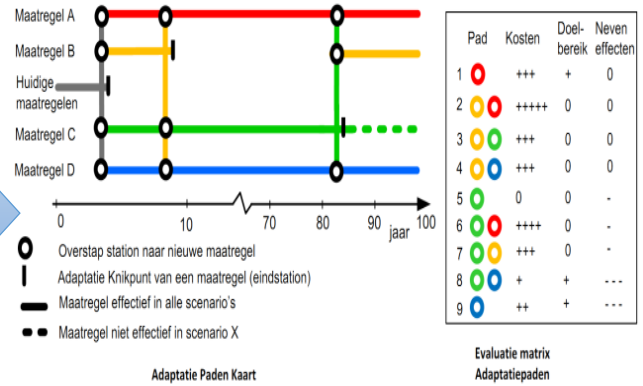
Action A Action C

Action B Action D

Model-based development

Participatory/qualitative
Workshop & storylines

Adaptation pathways



	Pad	Kosten	Doel-bereik	Neven effecten
1		+++	+	0
2		+++++	0	0
3		+++	0	0
4		+++	0	0
5		0	0	-
6		++++	0	-
7		+++	0	-
8		+	+	---
9		++	+	---

Evaluatie matrix
Adaptatiepaden

The essentials of dynamic adaptive pathways planning

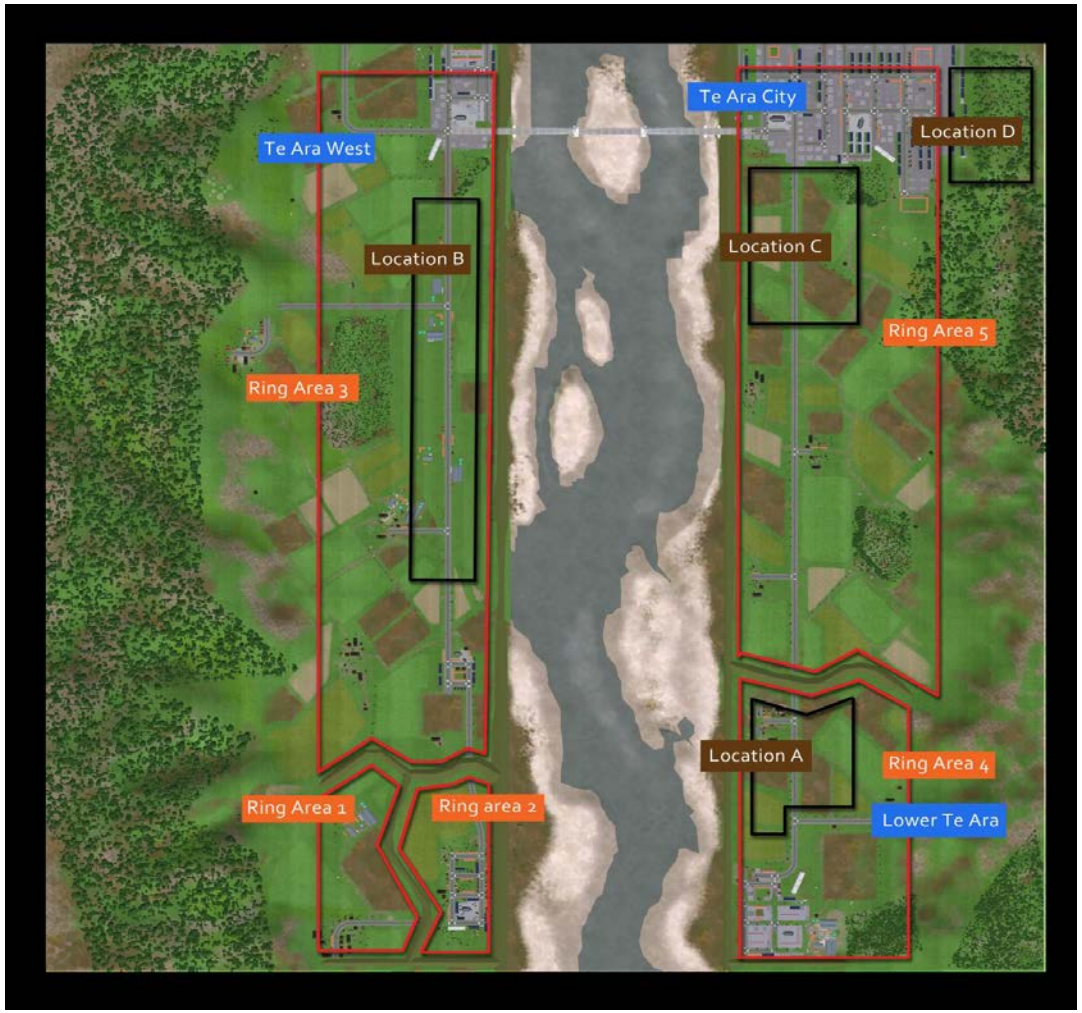
- Preparation
- Exploration of what could happen
- Familiarity with different scenarios
- Can switch between options depending on what evolves
- Not prediction; it is knowing what to expect
- Knowing what the next step could be gives decision makers confidence under conditions of uncertainty and change
- Leads to flexible and adaptable implementation that can be monitored

Games and knowledge broking that change decision behaviours

Objectives of the ‘game’

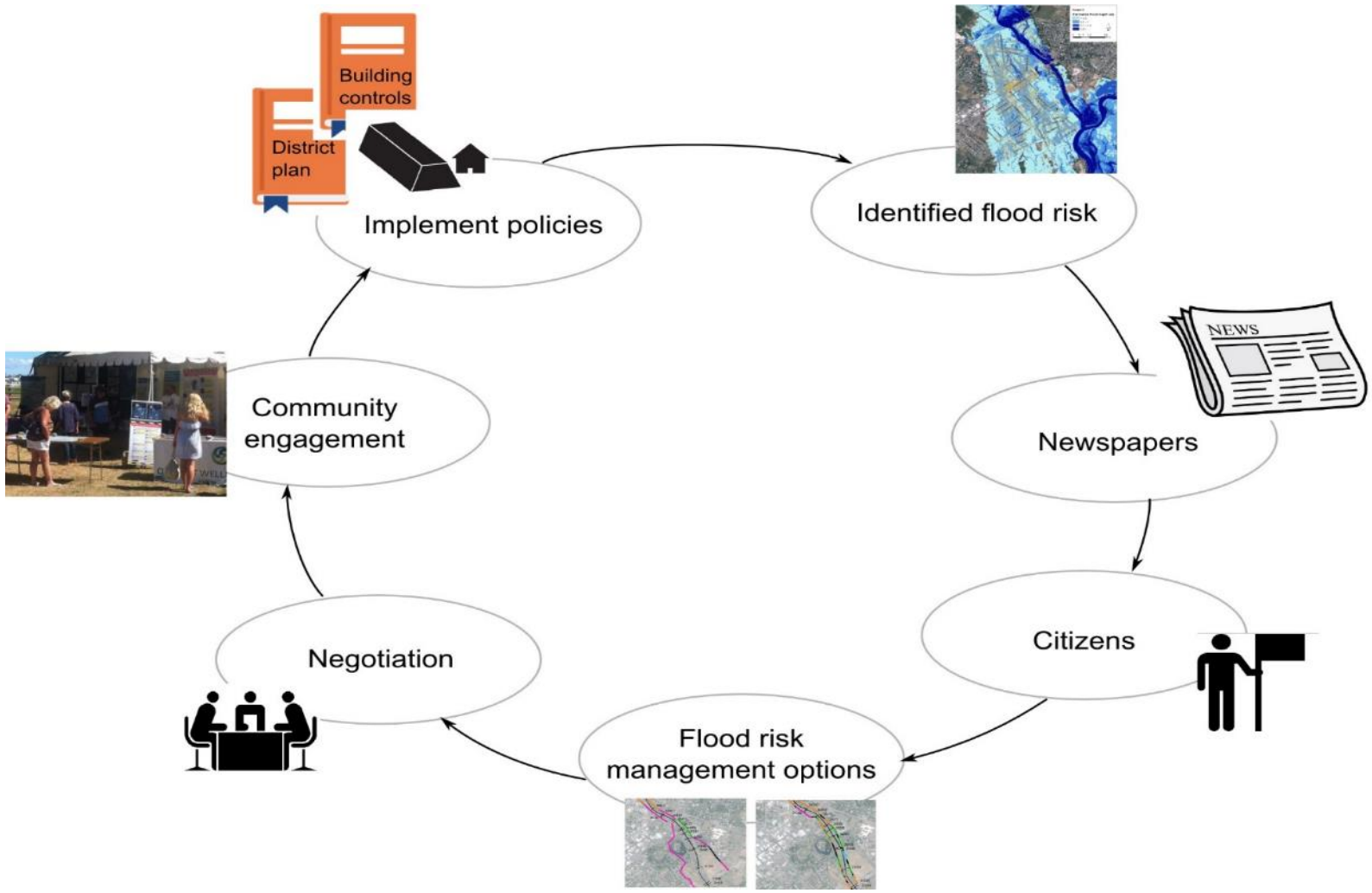
- Experience the future and its uncertainties
- Raise awareness about adaptive management
- Learn negotiation and collaboration skills
- Reflect on policy decisions before making decisions
- Discussion on robust and flexible policy actions

NZ River

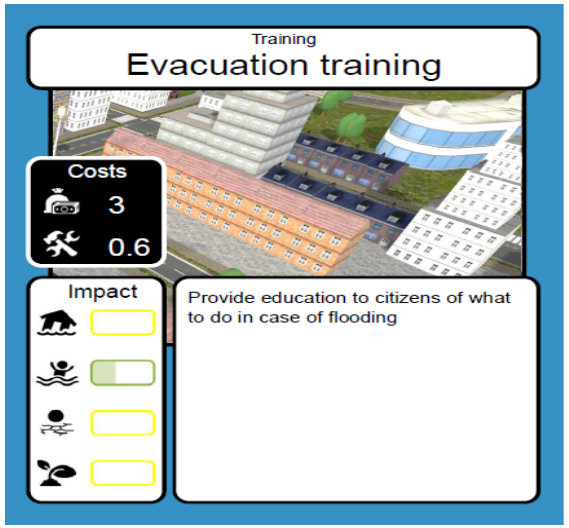


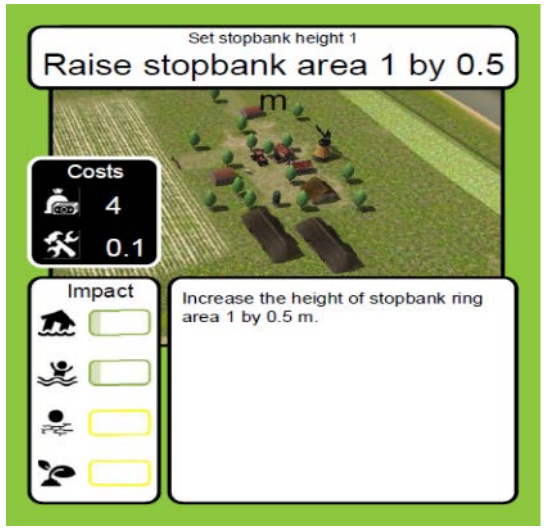
NZ Coast

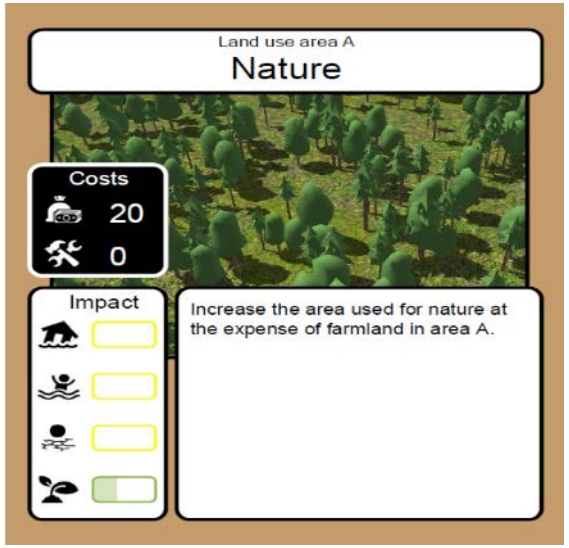
Game process

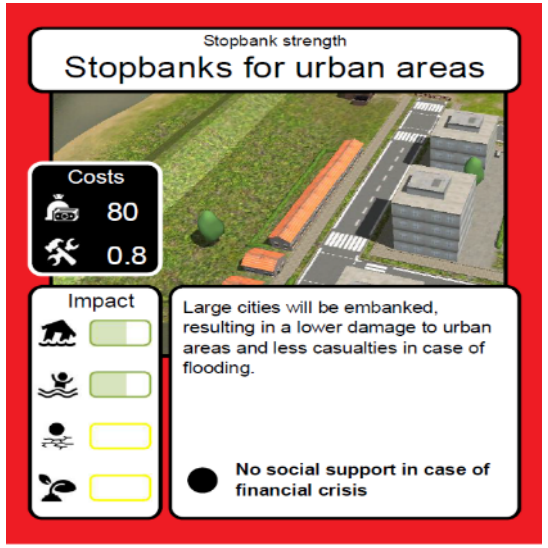


Policy option cards with Q-tags

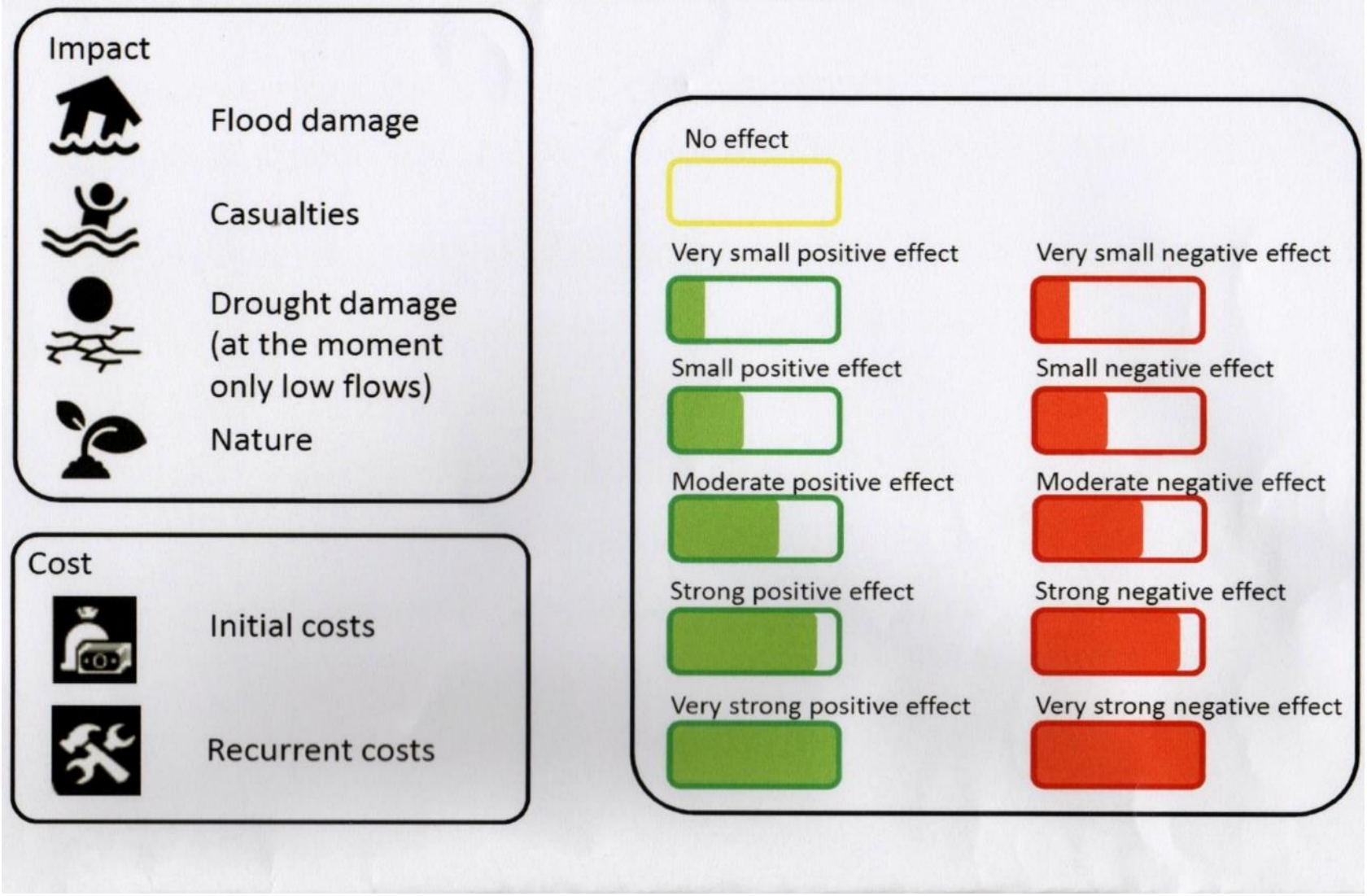






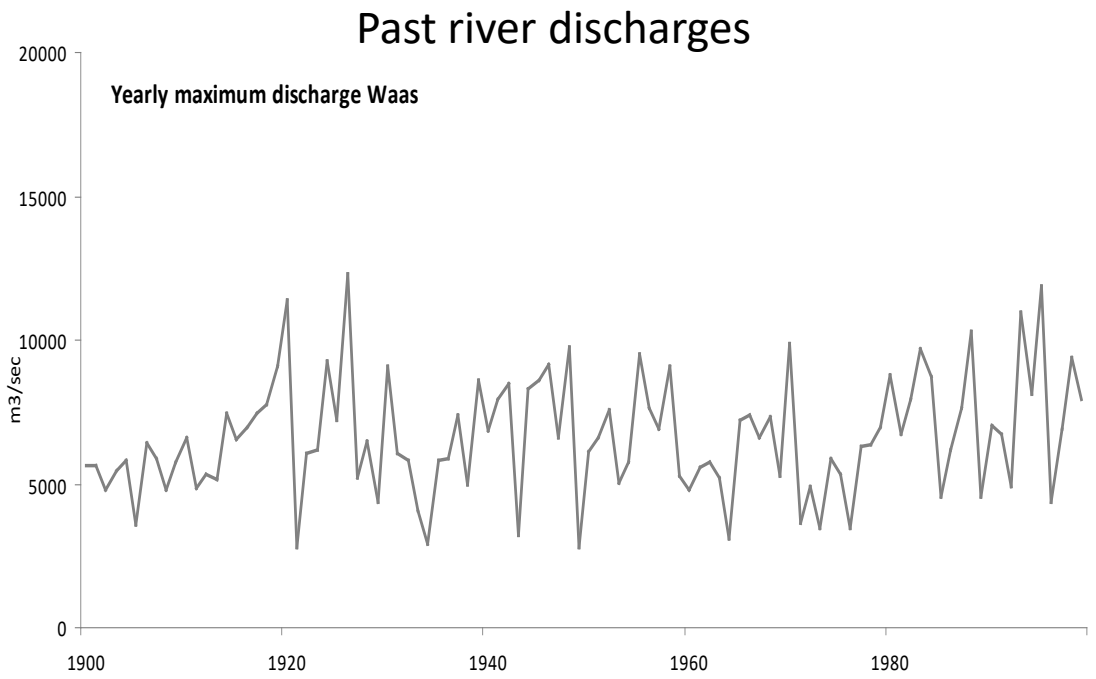


Card legend


Impact
Flood damage
Casualties
Drought damage (at the moment only low flows)
Nature
Cost
Initial costs
Recurrent costs
No effect
Very small positive effect
Very small negative effect
Small positive effect
Small negative effect
Moderate positive effect
Moderate negative effect
Strong positive effect
Strong negative effect
Very strong positive effect
Very strong negative effect

Develop a sustainable plan for the next 100 years

- Address flood risk
- Pay attention to water uses
- Consider environmental issues
- Consider socio-economic changes
- Acknowledge uncertainties



Game in four rounds

- Determine team's point of view and strategy= objectives
- Choose maximum two actions (the policy cards)
- Take into account society's point of view (local communities and NGO's)
- Negotiate between groups and decide two actions to simulate
- SIMULATE on a laptop and get feedback on the choices ability to meet objectives

Debrief: after simulating 100 years

- How did you behave (reactive or proactive)?
- (When) did you experience change in strategy or vision?
- What arguments did you use to change decision behaviour?
- What was the role of negotiation?
- In hindsight, would you have played the game differently?

What we learned

"We make short-term decisions. This game showed we can make long-term decisions by anticipating and adjusting "

"Started like real life. Perceived as too expensive and uncertain"

"We took the low cost options to see what happened."

"It took feedback to hone the choices from reactive the proactive"

"Upstream cooperation had minimal cost but good results."

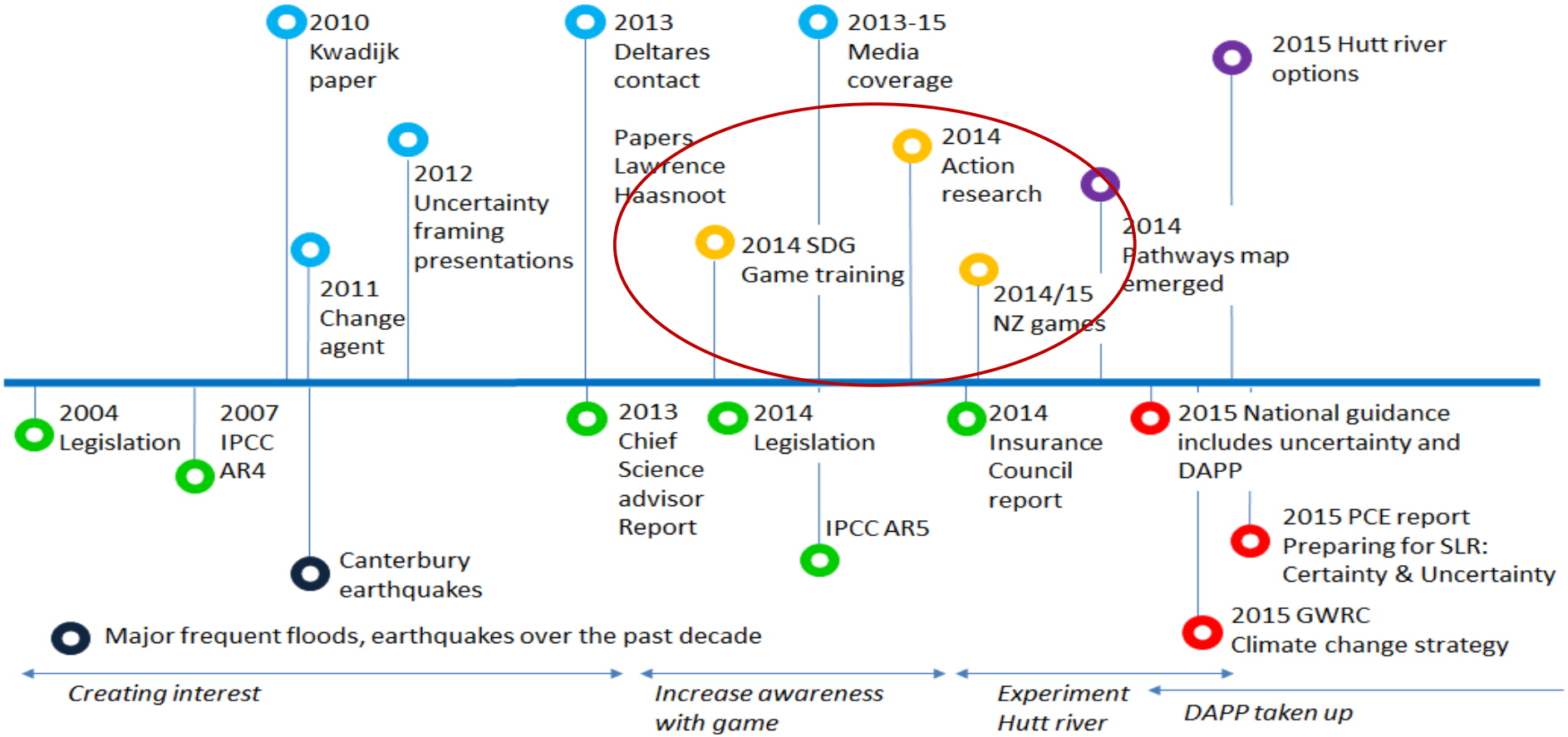
" We got better results through negotiation with the other groups"

" We experienced uncertainty and could chart a pathway "

Learnings from using the ‘Game’

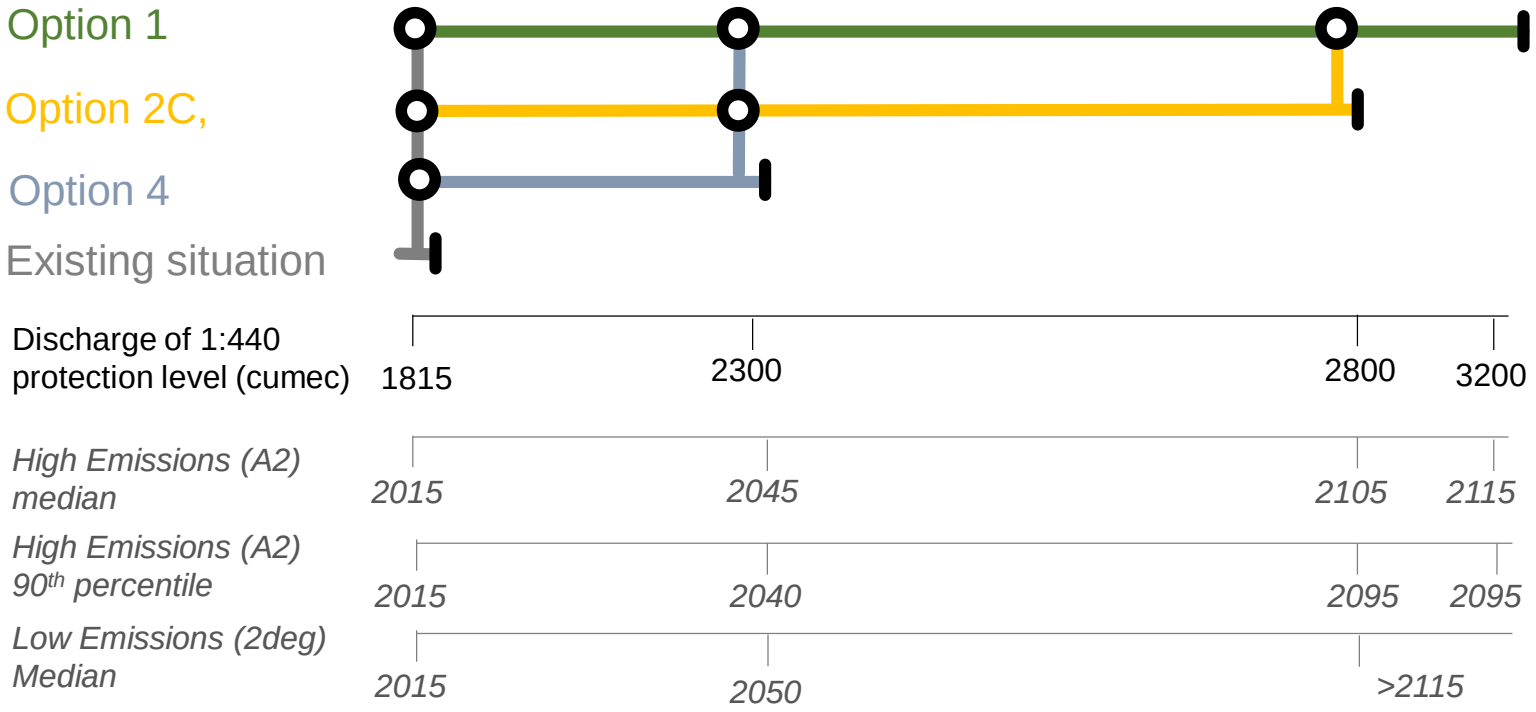
- A wider range of options was considered
- Negotiations built trust and better options that met objectives
- Adjusting options over time gave multiple benefits and flexibility for further adjustments
- Changed perception of decision making from short term to a 100 year timeframe BUT short term decisions could be made knowing they could be adjusted further
- ‘Experienced’ damage costs and path-dependency
- Understanding that lead-time for decision-making is a necessary component of planning
- Different actors across different interest domains ‘opened eyes’ to values that improved the quality of decision making and decision behaviour

Shifting behaviours moderated by knowledge broker



Application of the Game and adaptive pathways

A current 500 year ARI event can change to 300 yr - 30 yr ARI over the next 100 years



Transfer station to new policy action

Adaptation Tipping Point of a policy action

Policy action effective

Pathway	Main effects: Relative Costs	Main effects: Target effects	Side effects: Social Impacts	Side effects: Transport impacts	Side effects: Environ-mental impacts
1	$$$$	++	----	+++	++++
2	$$	+	---	++++	+++
3	$$$$	++	----	++++	++++
4	$	-	0	++	+
5	$$$	+	--	++++	+++
6	$$$$	++	---	+++	++++
7	$$$$$	++	----	++++	++++

Source: Pathways Generator based on **GWRC 2015** Flood protection: Option flexibility and its value Hutt River City Centre Upgrade River Corridor Options Report. Prepared for GWRC by Infometrics & PSConsulting (http://pathways.deltares.nl/)

What changed?

- Raised awareness of the benefits of adaptability
- Moved decision making from reactive to proactive and anticipatory actions
- New knowledge acquired about the future course and the ability to adjust with fewer consequences and lower cost
- More confidence to manage uncertainty using pathways and making a start
- Led to use of the DAPP **for decision making and adoption in guidance**
- Stimulated multi-levels of government collaboration in different decision domains