Reflections on international trends in flood risk management

Tuesday 4 September 2012

SAYERS AND PARTNERS

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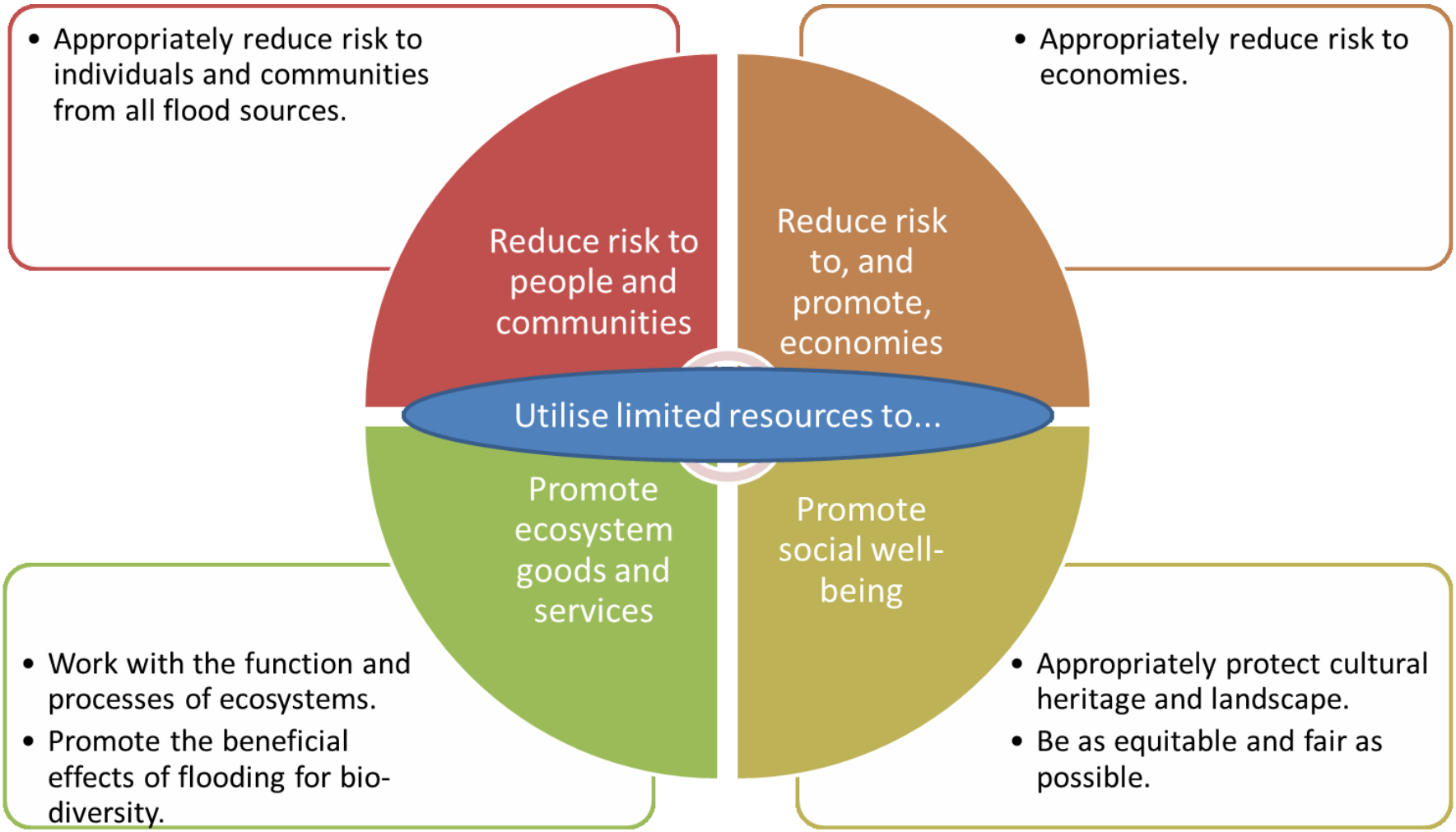
3rd September 2012

‘Good’ Flood Risk Management is more than risk reduction

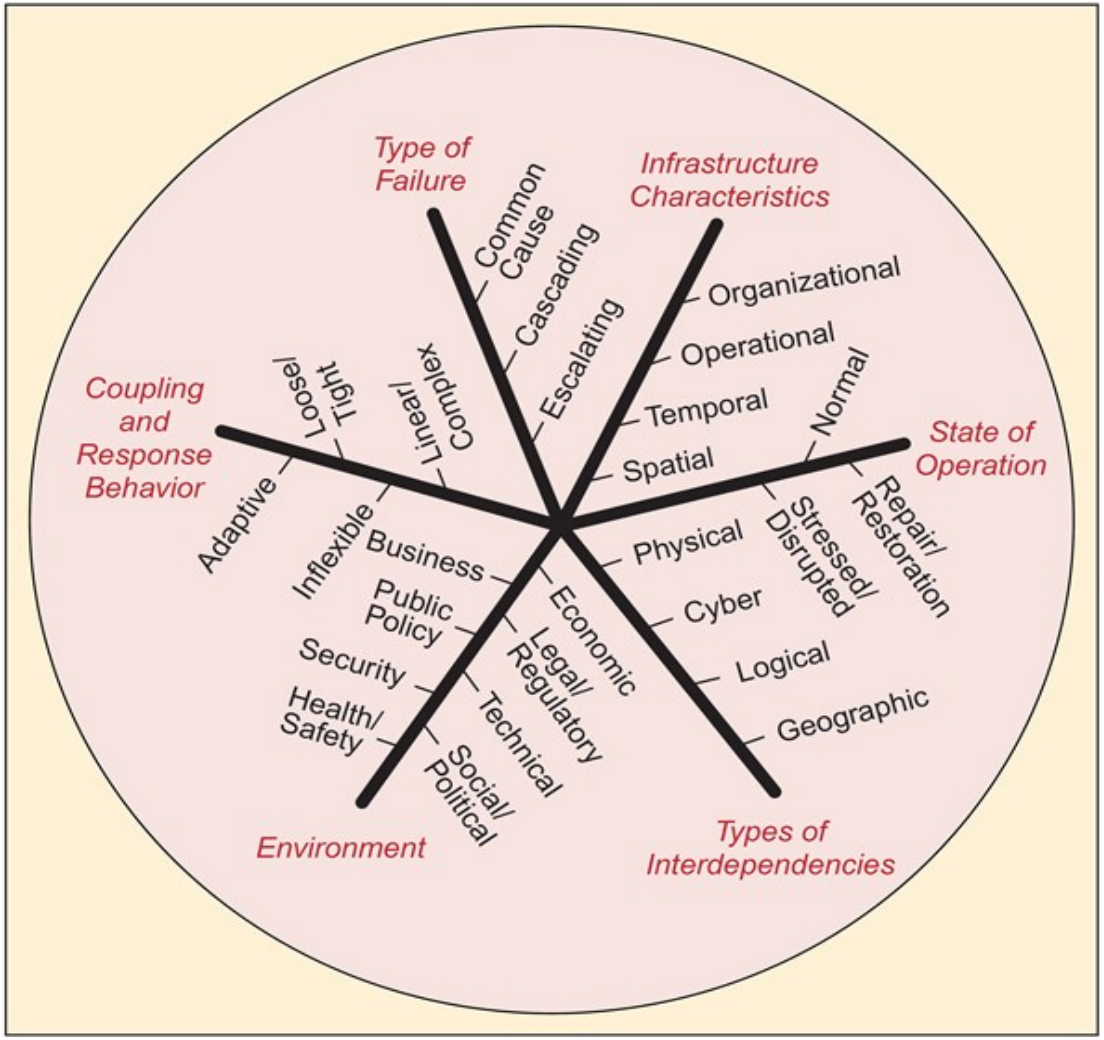
- **Use limited resources to ‘best effect’**



Sayers et al, 2012

Impacts don't just occur at the flood site

- Cascading impacts
- Escalating impacts
- Coincident impacts



Little et al, 2002

Flood mapping

	Description	
1	**What to map?**	To be clear on what is to be mapped and why? **Historical events** **Predicted hazards (**Depth, Velocity, Rate of rise, Duration, Contamination / debris) **Or** **Predicted Risks (**Expected property damages, Expected loss of life, specific event losses etc) **Uncertainty and confidence**
	of	Fluvial, sea, pluvial and groundwater are all sources of flooding.
	e	**Historical maps** - Are they based on geological evidence or topography/hydrological & hydraulic analysis? **Present day maps** - Are the defences (levees, pumps, barriers etc) assumed to work to rule, ignored or has the probability of failure (of one or more defences) being included. **Future maps –** How has climate change been represented? What assumptions have been made about management practice or demographic change?
5	**What confidence can be given to the mapped output?**	**What is the expected accuracy of the mapping –** in terms of both extent, depth and velocity – taking account of data, model and model structure uncertainties.
6	**How should they be used?**	This will aid the decision as to what scale (national, regional or local) and the method of dissemination
Lesson from Practice: Maps are a vital part of flood risk management BUT no one map is fit for all purposes!		

2D Benchmarking – Environment Agency - http://publications.environment-agency.gov.uk/PDF/SCHO0510BSNO-E-E.pdf

Sayers et al, 2012

Insurance

- **What type of insurance do you want?**
- **State or Private?**
  - Flood insurance in the UK: national 'carrot and stick'
  - Flood insurance in the USA: community 'carrot and stick'
  - Flood insurance in France: separate or 'bundled' - requires all risks
- **Insurers private sector or state losses**
  - Insuring those responding to flood events (and incurring costs)

- **Some conditions of a viable insurance**
  - *Clarity of what is and is not insurance*
  - *Losses must not be predictable with certainty*
  - *Adequate information on which to base premiums must be available*
  - *Having adequate financial reserves to meet all legimate claims*

Choose ‘good’ options

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Principle I Promote resilient design

- Able to **withstand a range of threats**, including ones that were not necessarily foreseen during the design process

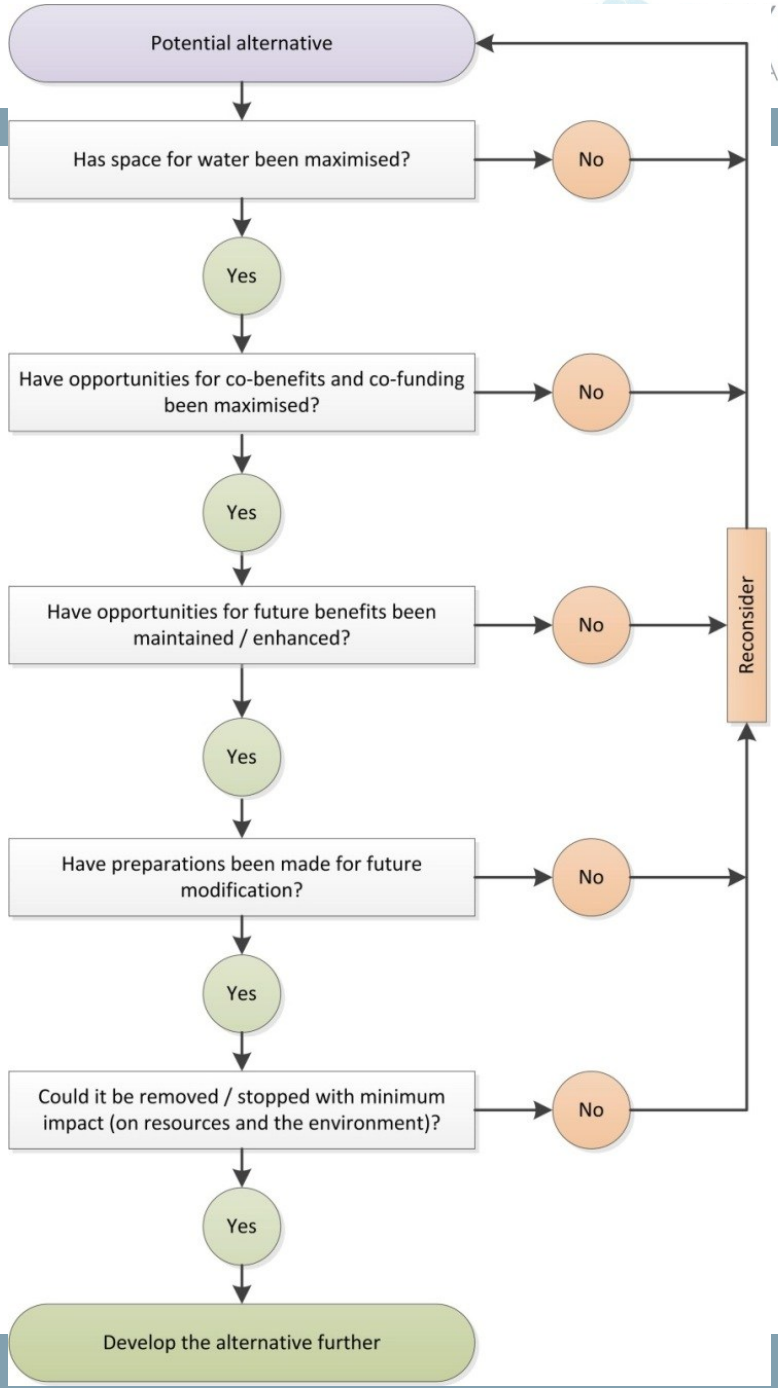
  Does **not decay catastrophically** when exposed to events more severe than design levels
- Able to **recover rapidly** from a disruptive event

Principle II Promote adaptive capacity

- Use responses that do not foreclose future options or unnecessarily constrain future choice
- Use responses that are effective under the widest set of all plausible future scenarios
- Observes change through targeted monitoring and continues to reassess scenarios of the futures
- Appropriately modifies policies, strategies and structure plans.

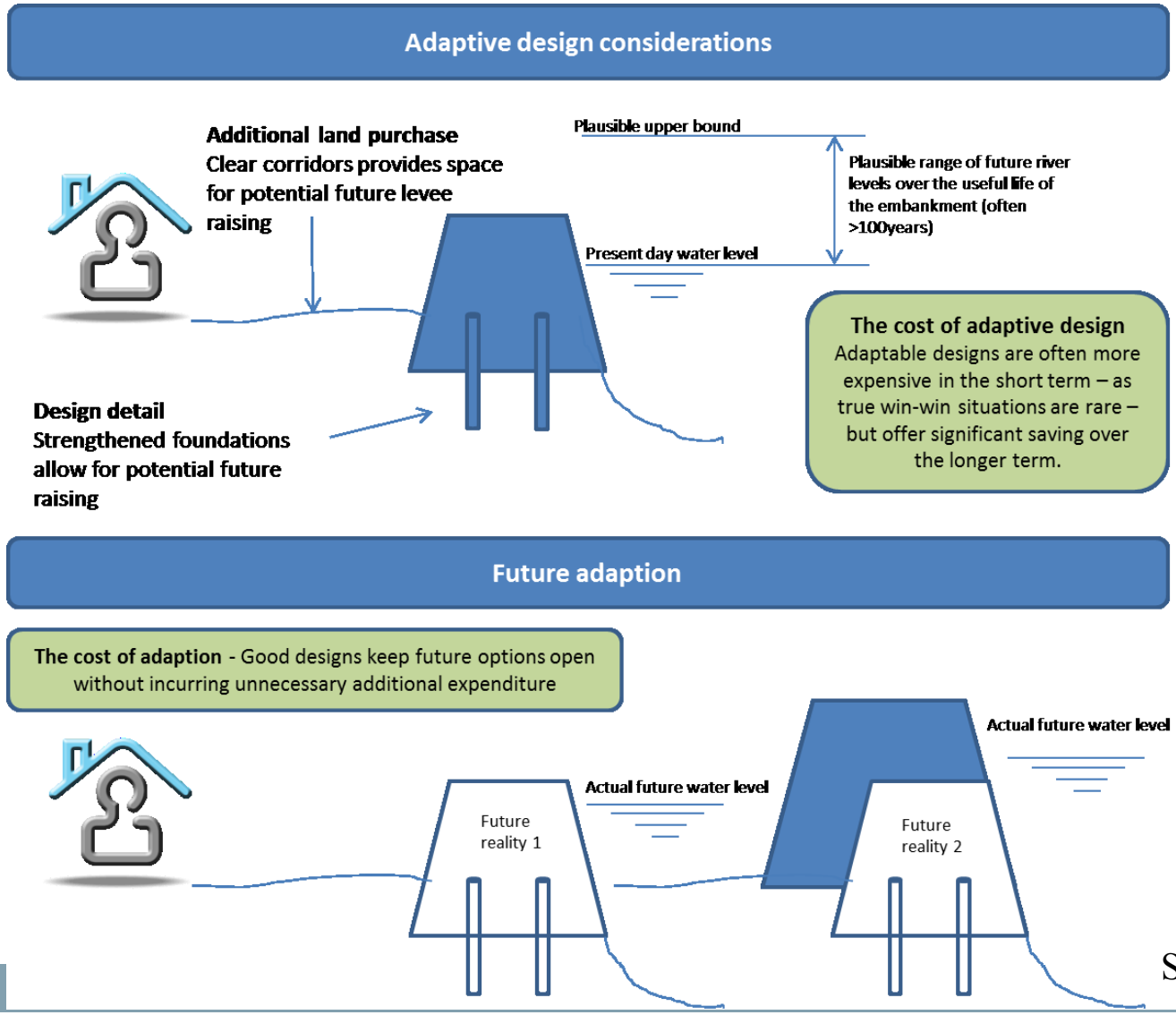
Choose ‘good’ options

A simple check list (adaptive capacity)



Building in adaptive capacity and resilience

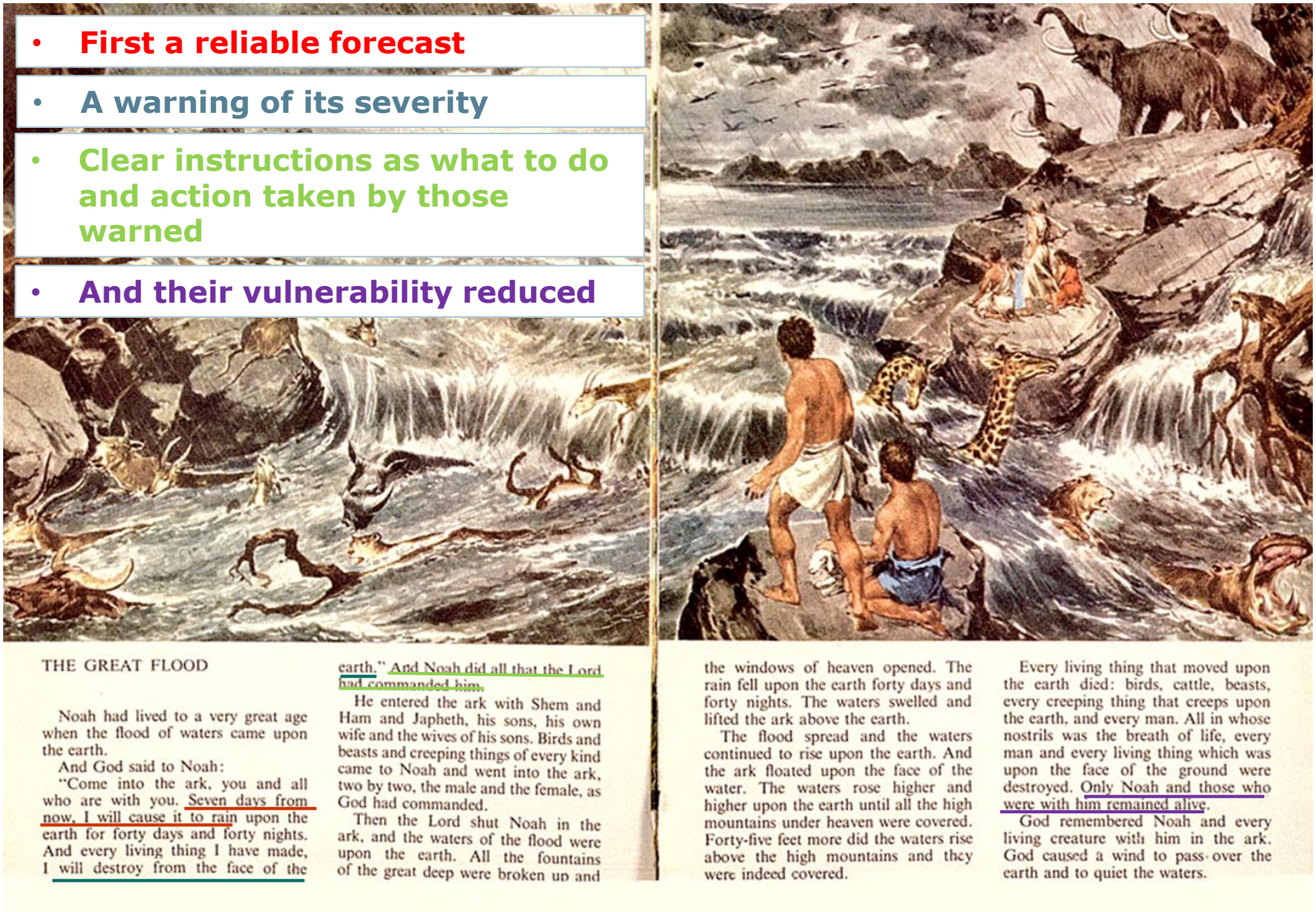
- Creating the 'capacity' for change as reality of the future becomes known



Sayers et al, 2012

…joined up thinking…a lesson from history..

- First a reliable forecast
- A warning of its severity
- Clear instructions as what to do and action taken by those warned
- And their vulnerability reduced



THE GREAT FLOOD

Noah had lived to a very great age when the flood of waters came upon the earth.

And God said to Noah:

"Come into the ark, you and all who are with you. Seven days from now, I will cause it to rain upon the earth for forty days and forty nights. And every living thing I have made, I will destroy from the face of the earth." And Noah did all that the Lord had commanded him.

He entered the ark with Shem and Ham and Japheth, his sons, his own wife and the wives of his sons. Birds and beasts and creeping things of every kind came to Noah and went into the ark, two by two, the male and the female, as God had commanded.

Then the Lord shut Noah in the ark, and the waters of the flood were upon the earth. All the fountains of the great deep were broken up and the windows of heaven opened. The rain fell upon the earth forty days and forty nights. The waters swelled and lifted the ark above the earth.

The flood spread and the waters continued to rise upon the earth. And the ark floated upon the face of the water. The waters rose higher and higher upon the earth until all the high mountains under heaven were covered. Forty-five feet more did the waters rise above the high mountains and they were indeed covered.

Every living thing that moved upon the earth died: birds, cattle, beasts, every creeping thing that creeps upon the earth, and every man. All in whose nostrils was the breath of life, every man and every living thing which was upon the face of the ground were destroyed. Only Noah and those who were with him remained alive.

God remembered Noah and every living creature with him in the ark. God caused a wind to pass over the earth and to quiet the waters.