



# Managing climate risks in the UK: the economics of decision-making

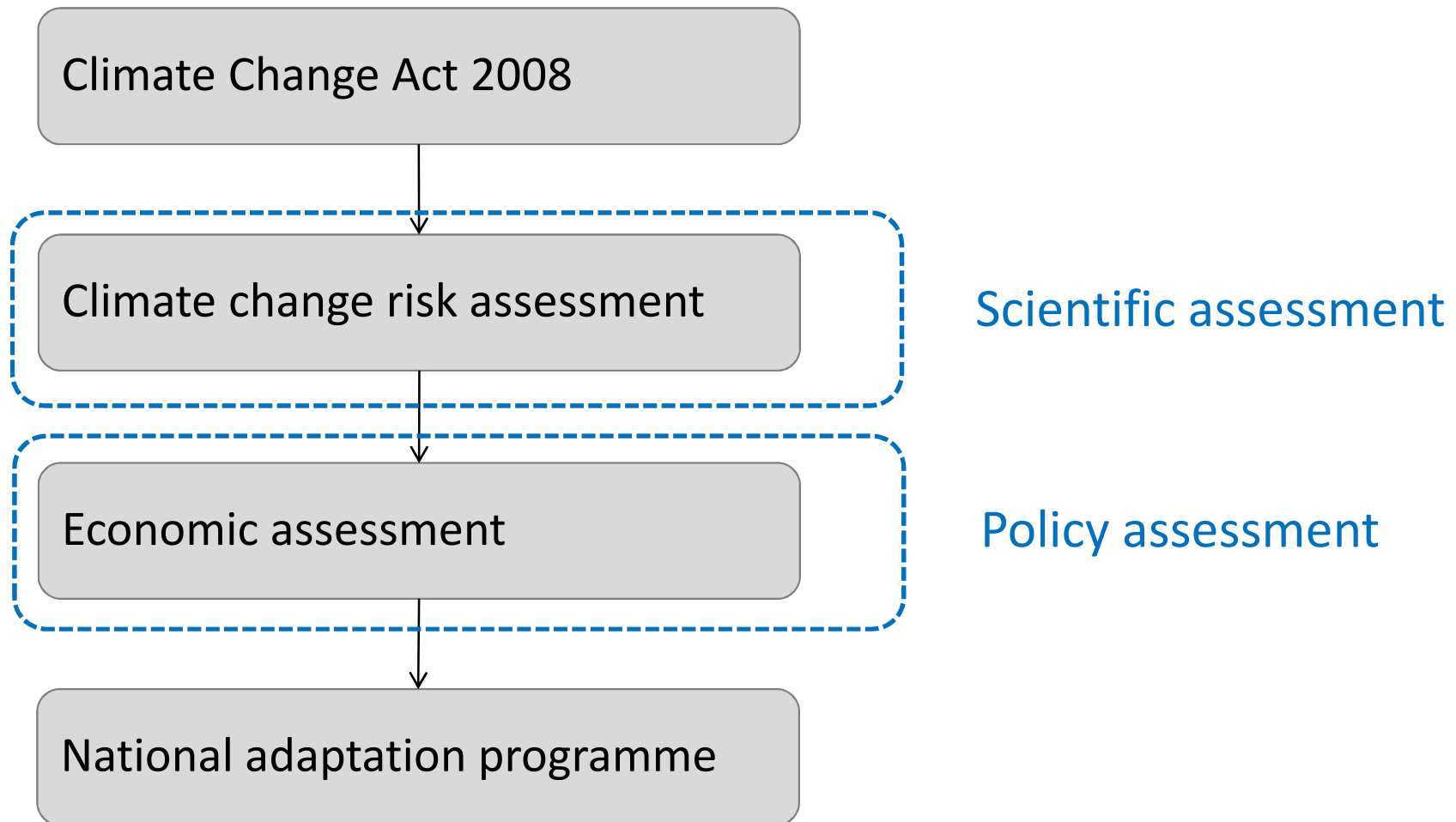
Kiran Sura

UK Committee on Climate Change (CCC)

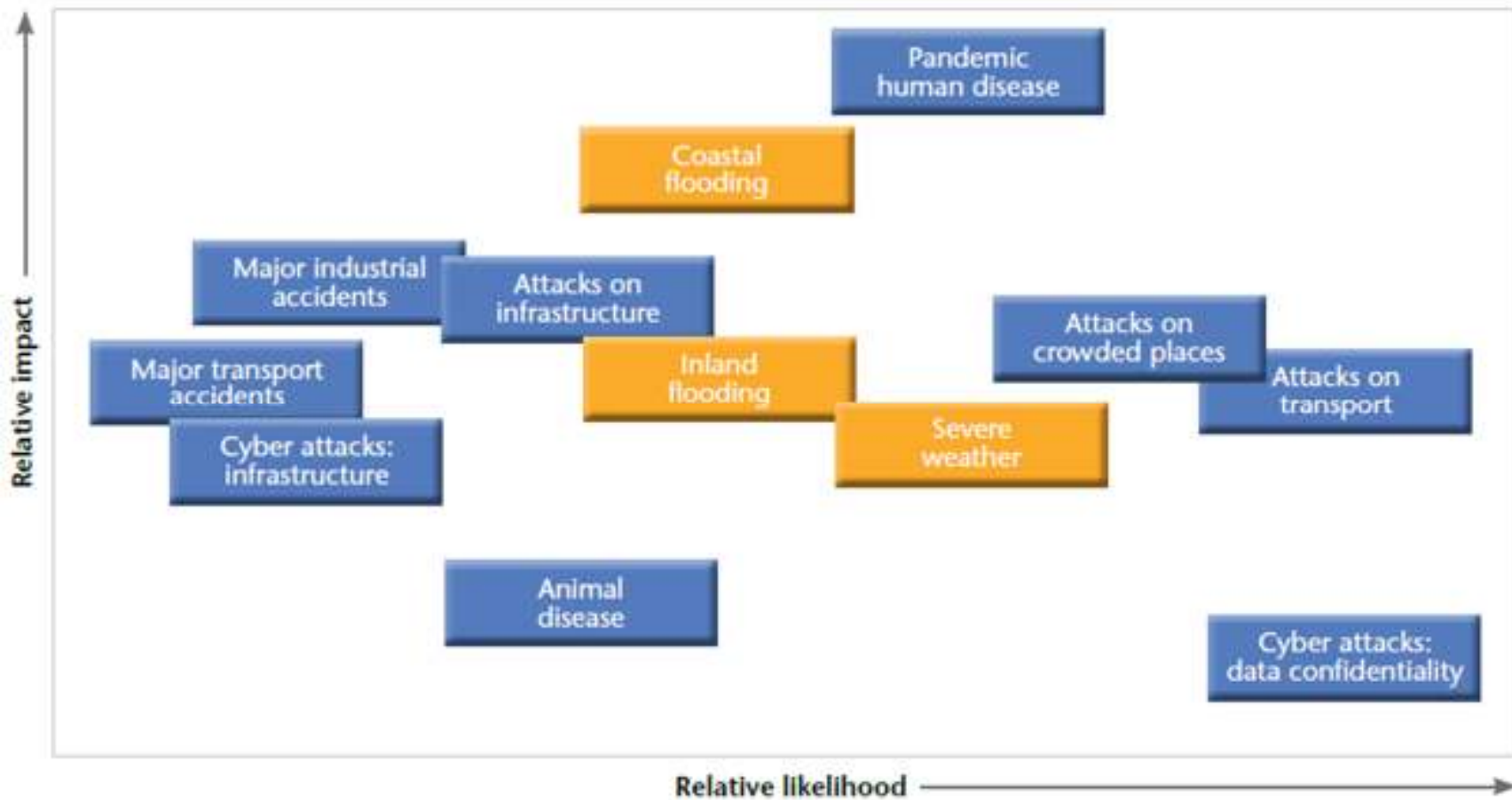
9<sup>th</sup> September 2011

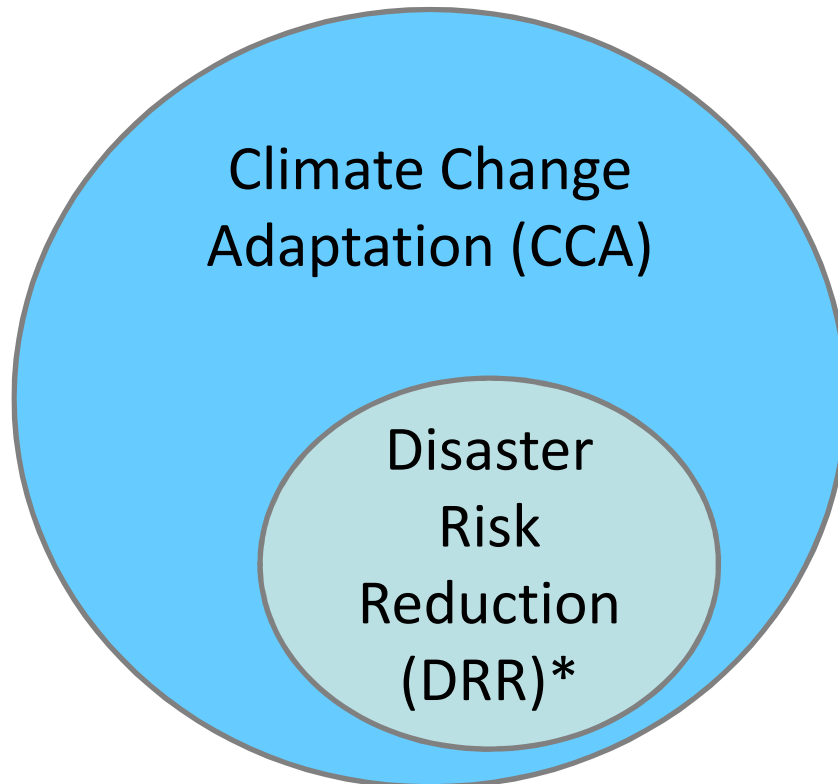


# UK process for managing climate risks



# UK National Risk Register





## **Climate change adaptation**

involves adjustments in natural or human systems in response to actual or expected climate change to moderate harm and exploit beneficial opportunities.

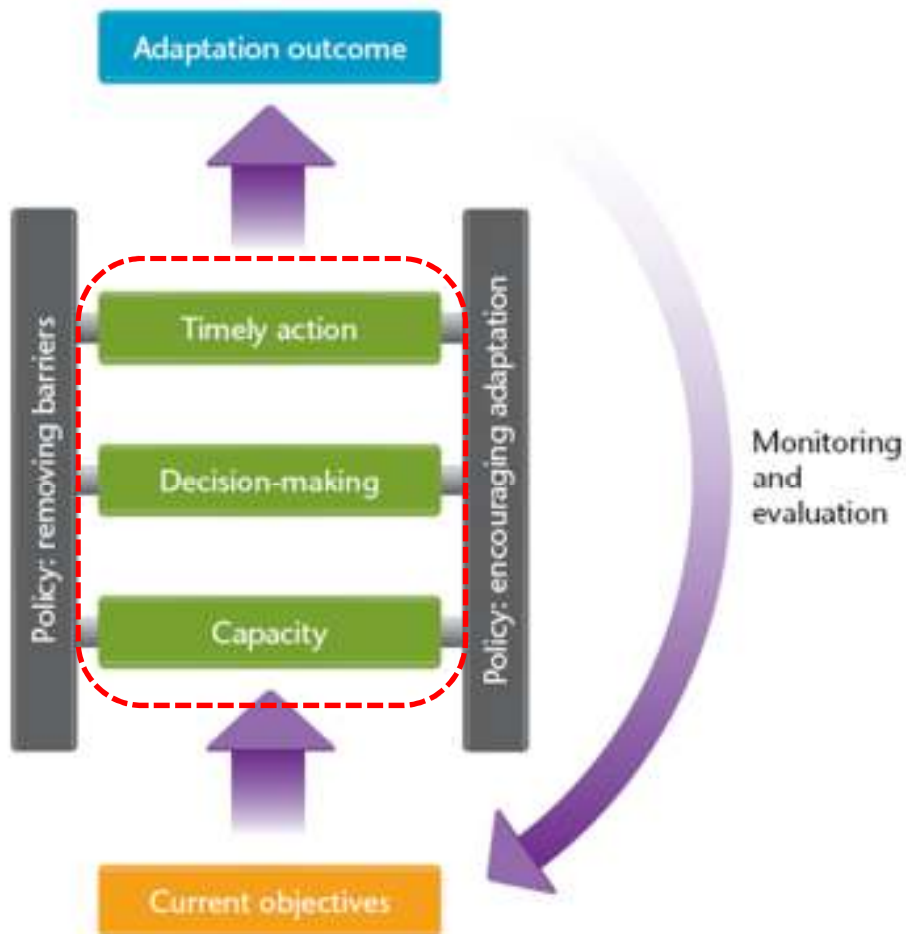
## **Disaster risk reduction**

is a systematic approach to identifying, assessing and reducing the risks of disaster, to avoid or limit the adverse impacts of the hazard.

\* Climate-related disasters

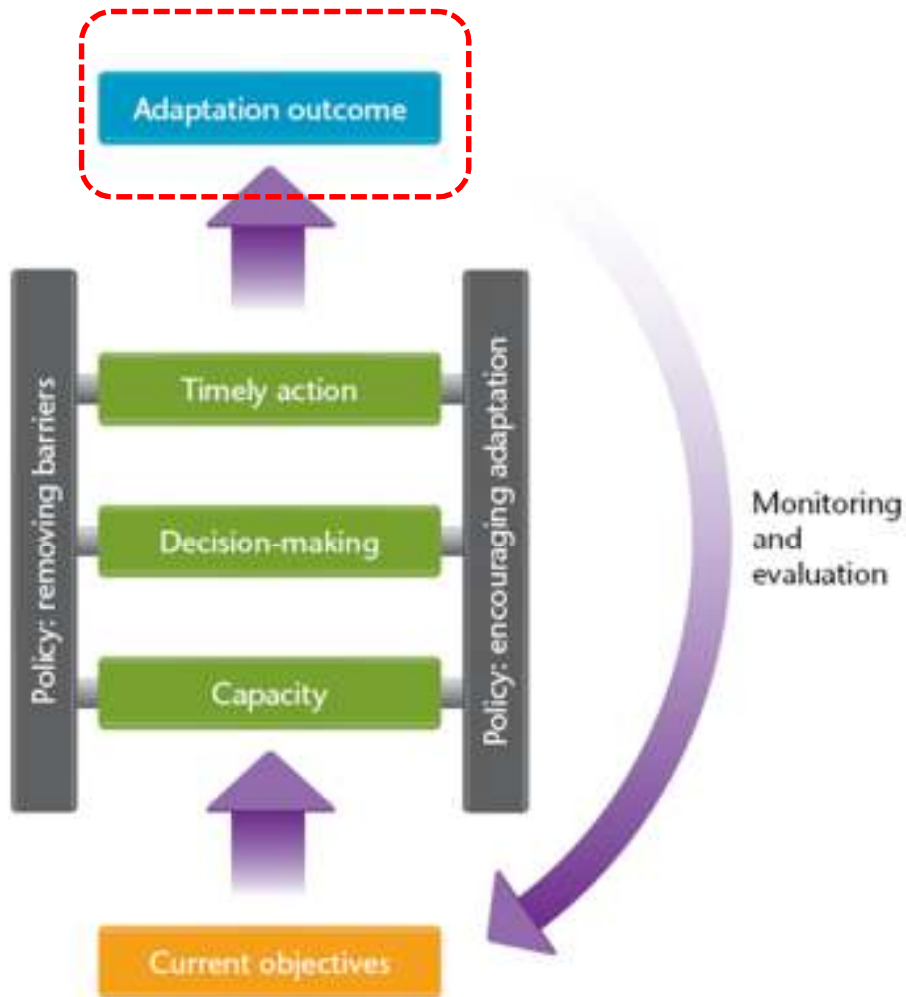


# CCC's adaptation framework



- UK has started to build capacity for adaptation, with a growing awareness of the risks from climate change and options for managing them.
- There is some evidence of climate risks being incorporated in decision-making across the water sector and in organisations responsible for managing flood risk.
- We found limited evidence of action actually taking place on the ground across our priority areas.

# CCC's assessment of vulnerability



- UK is generally well adapted to current climate
- Vulnerability is potentially increasing as a result of our actions, such a development in flood plains
- Some factors increasing vulnerability are outside of our control, such as ageing population

# Adaptation in context

- Preparing for climate change is becoming more challenging:
  - past is no longer a guide to the future
  - **high levels of uncertainty**
- Consequences of not preparing are potentially great.
- Some actions will be reactionary, but the greatest benefits will come from anticipatory adaptation (acting before the event occurs).





# Uncertainty is a key challenge

For illustration only...

*“Improper consideration of residual uncertainties of probabilistic climate information (which is always incomplete and conditional) in optimisation exercises could lead to mal-adaptation and be far from optimal”*

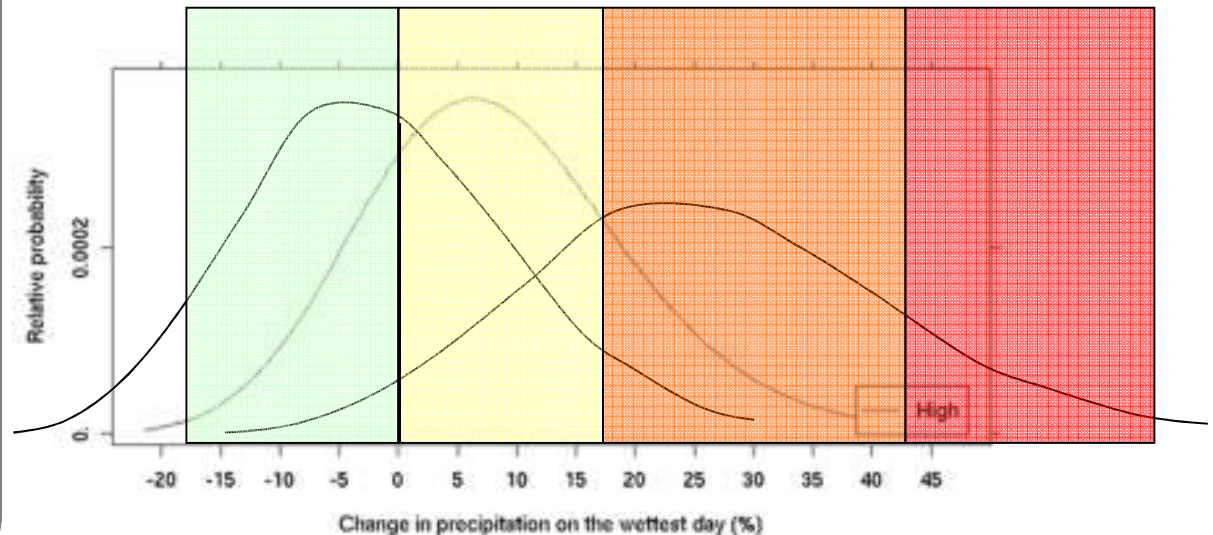
Dessai et al. 2009  
based on Hall 2007

Option 1:  
Repair  
Existing  
Infrastructure

Option 2:  
Upgrade by  
x% Existing  
Infrastructure

Option 3: Major  
Reengineering  
of Infrastructure  
& Home  
Resilience

Option 4: Major  
Reengineering of  
Infrastructure & Home  
Resilience & Retreat  
from some areas



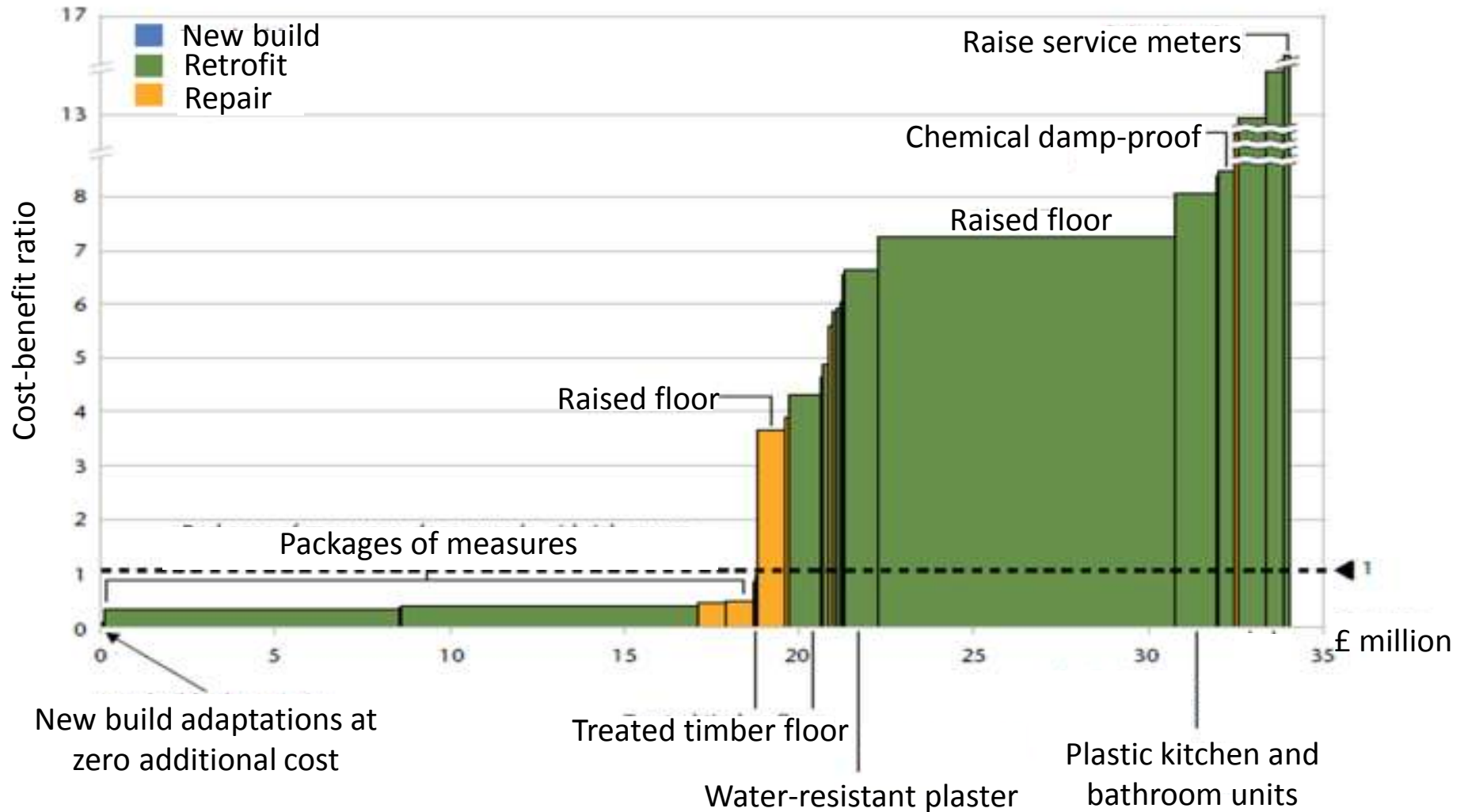
# Low-regret options

Range of '**low-regret**' options available and will have immediate benefits for both DRR and CCA:

- Measures to cope with current climate variability
- Measures to manage non-climate drivers of risk
- Short-lived adaptations
- Measures to reduce systematic vulnerability or resilience to shocks
- Measures with strong co-benefits



# Low-regret actions for improving the flood resilience and resistance of homes

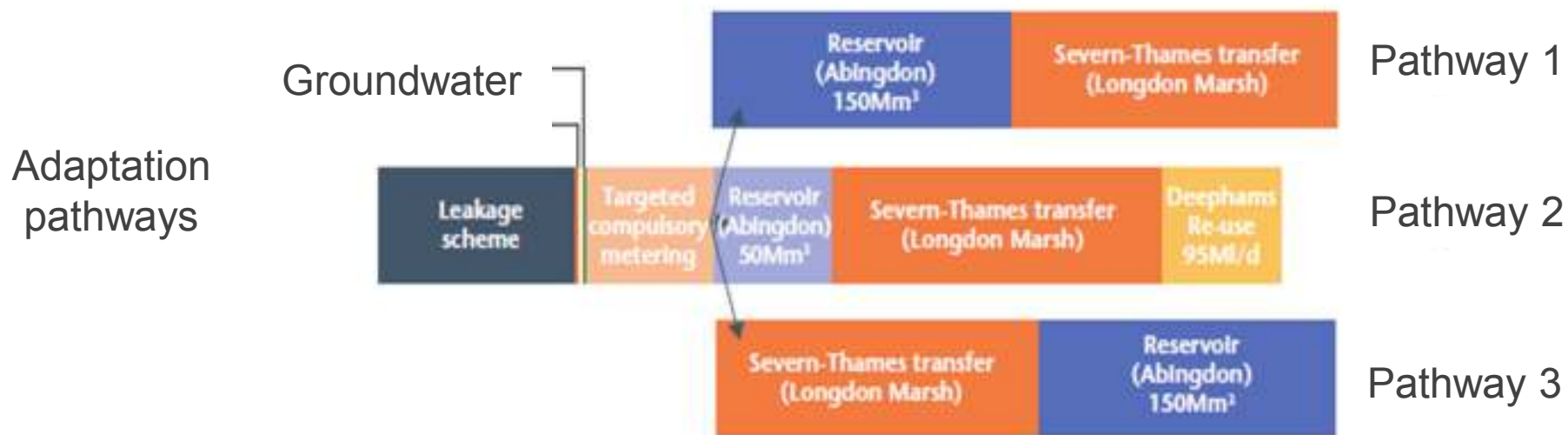
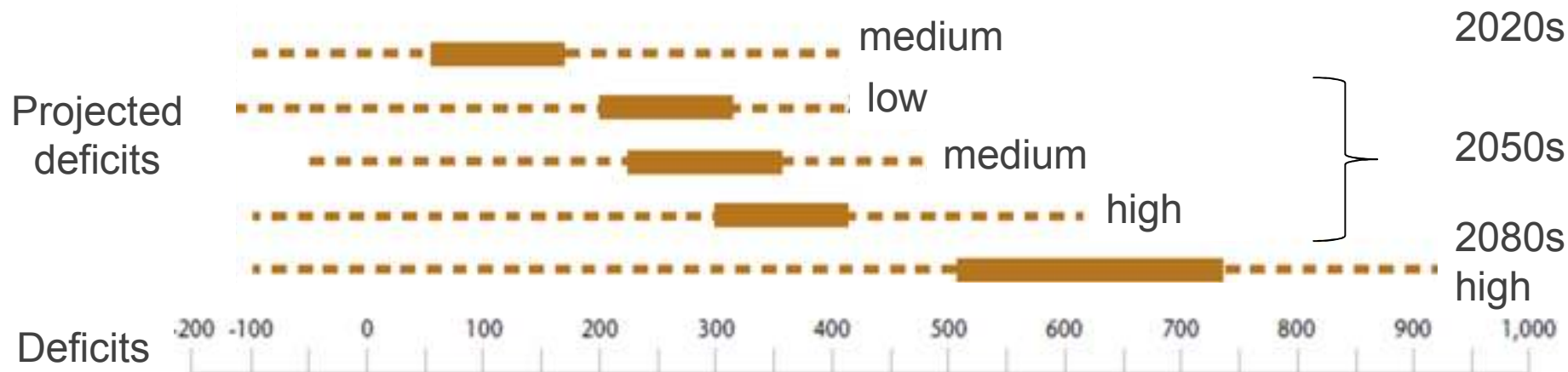


# Flexibility versus Optimality

- For potential **‘high-regrets’** projects, one approach to reducing the chance of maladaptation is to make a decision more robust to climate change uncertainties; through:
  - Use measures that are suitable over a range of climates
  - Build in flexibility so that a measure can be adjusted if required
  - Build flexibility into the decision process
- Optimising returns may be preferable where the decision is urgent (i.e. no time to monitor and learn) and building in flexibility is too costly



# Using real-options approach for water resource planning



Source: Atkins (2011) commissioned by the ASC and Thames Water



# Emergency planning



Emergency preparedness, response and recovery to natural hazards and climate impacts – part of UK's adaptation strategy



## Future research



- UK CCRA will be published in January 2012 and will be followed by an economic assessment of adaptation options.
- UK National Adaptation Programme will be published early 2013
- UK Committee on Climate Change is developing indicators to monitor how well the UK is adapting and managing its vulnerability to climate risks.

# Committee on Climate Change

<http://www.theccc.org.uk>

