

Evaluating adaptation investment: assessment of approaches

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Outline

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- ➔ Rationale for evaluation of adaptation decisions
- ➔ Different approaches to evaluation of adaptation investments
- ➔ Which approach is best?
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Rationale for public sector involvement in adaptation decisions

- Adaptation: “initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects” (IPCC 2007)
- Individuals/firms will make autonomous adaptations to climate change - but may not have the incentive, resources, knowledge or skills to adjust appropriately
- Focus on anticipatory (ex-ante) adaptation

Rationale for evaluation of adaptation decisions

- Adaptation invariably incurs costs (capital and opportunity)
- Resources available to governments are finite
- Policy makers must be confident in choosing adaptation actions that make the best use of these resources
- Uncertainty over the future impacts of climate change undermines this confidence
 - Uncertainty vs. risk
 - Can lead to over- or under-investment

Different approaches to evaluation of adaptation investments

➤ Cost-benefit analysis

➤ Bayesian decision theory

➤ e.g. Garnaut 2008

➤ Real Options analysis

➤ e.g. Dobes 2008, 2010; UK Treasury 2009

➤ Multi-criteria analysis

Which approach is best?

- Rule out multi-criteria analysis

 - Inherently subjective - less rigor

- Cost-benefit analysis

 - Bayesian decision theory - good, but requires subjective assignment of a probability distribution to possible outcomes

 - Real Options analysis - appears to be a promising approach

Examples: adaptation and Real Options analysis

- Coastal inundation: staged construction of sea walls
- Public transport: 'fitting for but not with'
- United Kingdom: Thames Estuary 2100 project

Sources for examples:

HM Treasury 2009, Accounting for the Effects of Climate Change, Supplementary Green Book Guidance, HM Treasury: London.

Dobes, L. 2010, *Notes on applying 'real options' to climate change adaptation measures, with examples from Vietnam*, Centre for Climate Economics and Policy Working Paper 7.10, The Australian National University, Canberra.

Conclusion: the need for standardisation

- Australia has in place a standardised approach to cost-benefit analysis for most policy decisions
- Recommend that for adaptation decisions, the standardised approach be expanded to better account for uncertainty over future climate impacts