MAPS Co-benefits Lab
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Making decisions: the theoretical underpinning
The challenge

• There are complex trade-off between human wellbeing being and CC mitigation, & between CC mitigation and other economic, political & social agendas across multiple scales

• We have pre-existing assumptions about the “right” approach to mitigation BUT stakeholder perceptions differ and many impacts are uncertain.

• How to determine the best mitigation action?
The challenge
Optimal decisions

1. Normative/ prescriptive
   • Assess decisions relative to **Optimal (best action)**
   • Assumptions:
     • Perfect information
     • Fully rational agents

2. Positive / descriptive
   • Assess when people don’t behave optimally
   • Attempt to describe what people actually do

**Choice under uncertainty**
- Maximising expected value
- Max expected utility
- Trade-off analysis

**Theory**
- Utility Theory (quantifying individual preferences)
- Probability theory
- Theory on risk (measurement)
- Pareto efficiency / optimality
- Game theory
- Prospect theory (Kahneman & Tversky)

* BUT still focused on understanding people’s behaviour (decisions) wrt “Optimal” actions

Understanding the deviation
What do we do when we don’t know what the optimal action is?
Complex decisions

Multiple objectives

- Trade-offs exist – **there is no optimal action**
- Determine **Preferred actions**
- Cannot only consider “known unknowns” especially in the CC context – must consider potential “unknown unknowns”

Issues to consider

- Risk & uncertainty
- Intertemporal choice (time preference of money & impacts occurring at different times)
- Competing decision makers (differences in power and understanding)
- Bias (e.g. loss aversion, framing effect, impact bias, status quo effect, etc.)
- Unquestioning reliance on models
- Minimising cognitive effort (simplicity vs accuracy)
- Intuitive (System 1) versus Analytic (System 2) thinking
Complex decisions

Decision making needs to be:

- Structured
- Explicit
- Transparent
- Inclusive
- Objective

Ranking
Sorting
Prioritizing
Choosing

“Need to be explicit about losses, costs & hard choices so they can be openly discussed & honestly negotiated” (McShane et al 2011)
Techniques (that consider multiple objectives)

- Cost Benefit Analysis
- Pareto Analysis (80 / 20 rule of thumb)
- Stakeholder driven approaches (including Gold Standard)
- Multi-Criteria Decision Analysis (MCDA)
  - Multi-Attribute utility theory (MAUT)
  - Simple multi-attribute rating technique (SMART)
  - Multi-Attribute Value Theory
  - Analytic Hierarchy Process (AHP)
  - French methods (outranking)
  - Russian methods (ordinal)
  - Action Impact Matrix
Benefits

• Help identify trade-offs
• Decisions are clearer & more transparent & include more stakeholders
• Build agreement & help manage potential conflicts / competing interests
• Focuses the debate on finding the preferred solutions