From risk to action: Climate decision-making under deep uncertainty

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How can we make robust decisions about climate change adaptation?

Through an idealised example of heat-stress for outdoor workers in the UK, with three potential adaptations

Optimal decision
Which decision has the highest expected utility?

Selecting a decision

Which decision has the **highest expected utility** given what we know about climate risk?

- Decision-making framework called Bayesian Decision Analysis

Climate risk
How many days of work will be lost to heat stress?

Optimal decision
Which decision has the highest expected utility?

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Climate risk

How many days of work will be lost to heat stress?

How hot will it get? How many people will be exposed? How vulnerable are they to heat? …

Optimal decision

Which decision has the highest expected utility?

Selecting a decision

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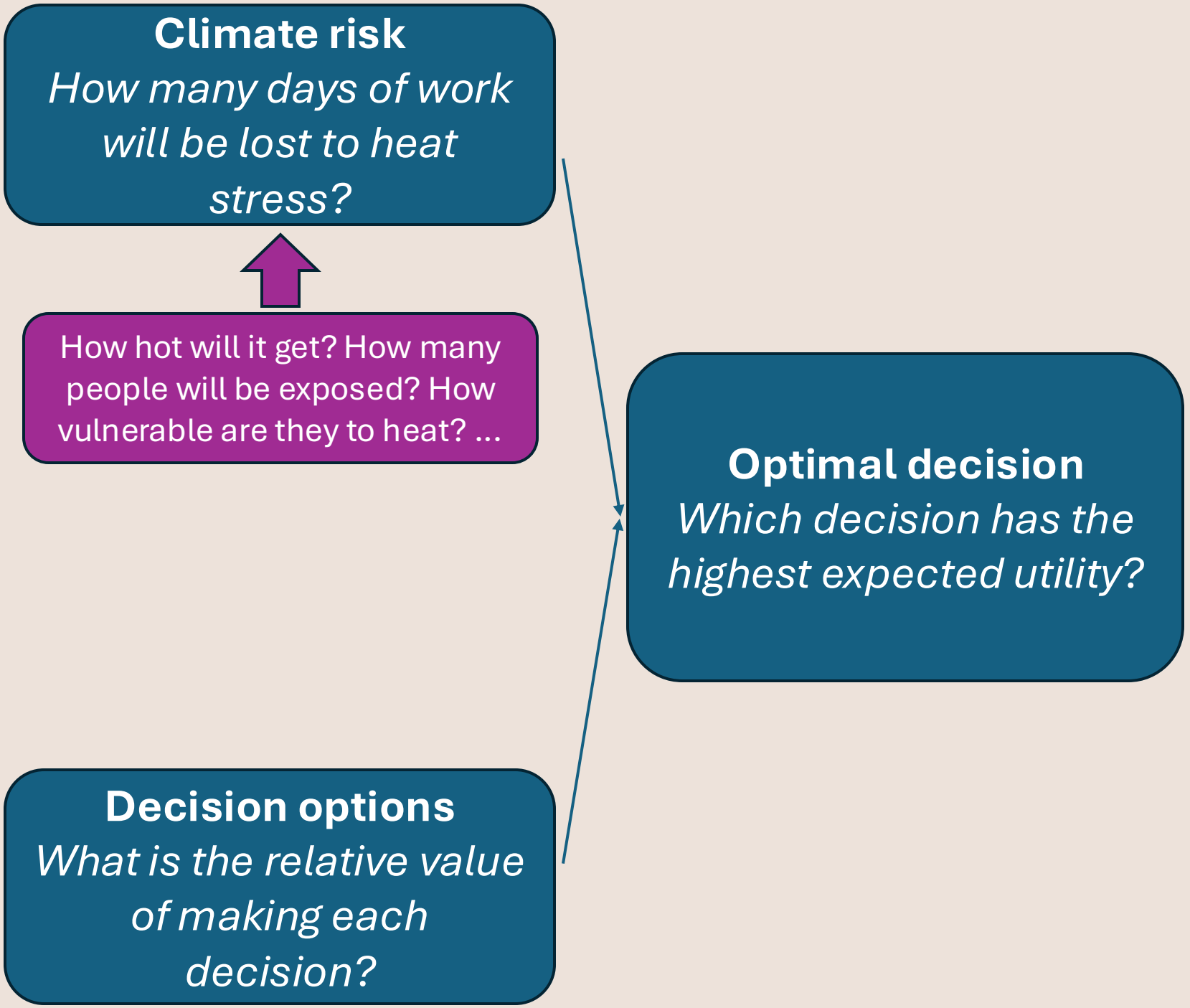

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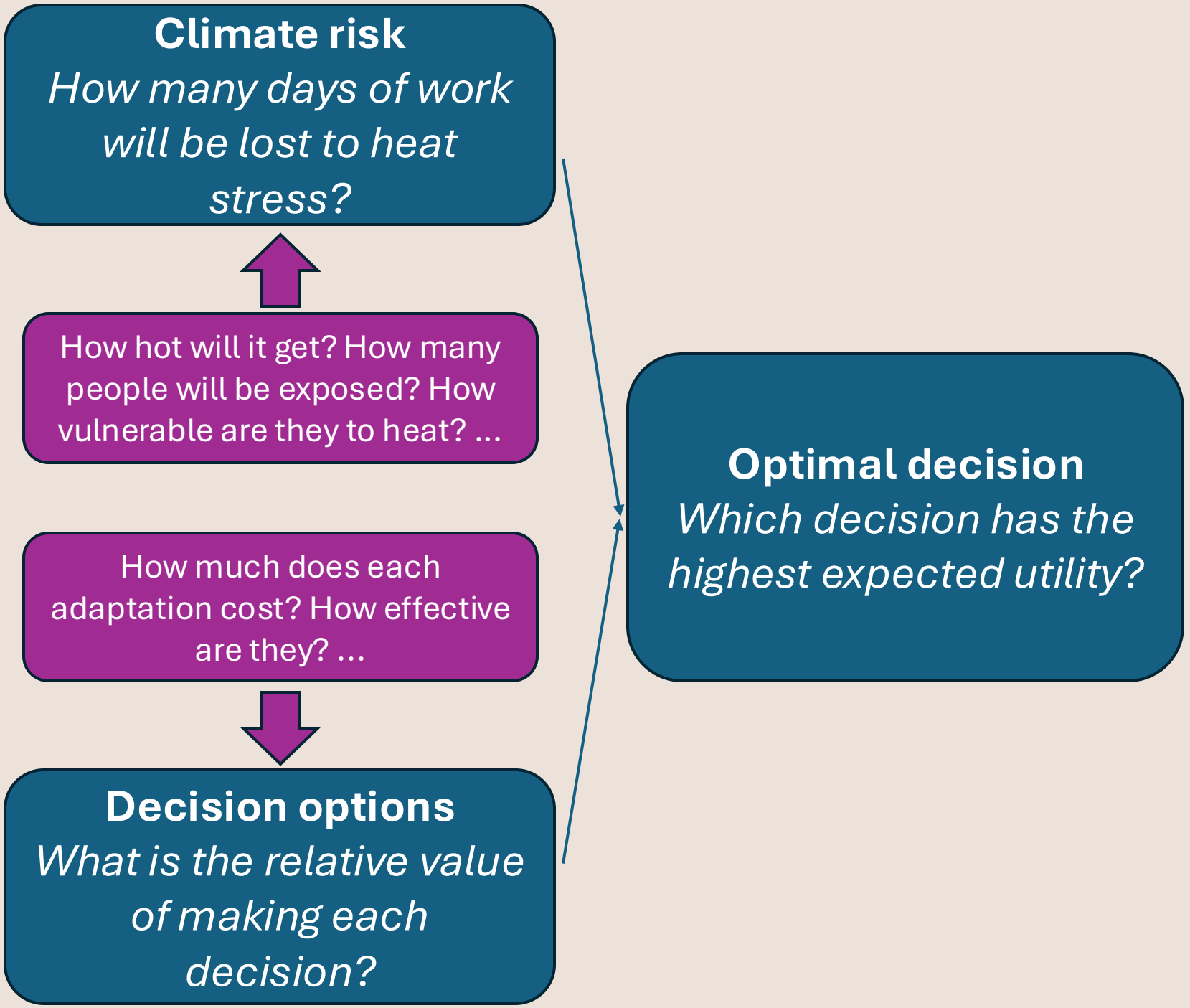

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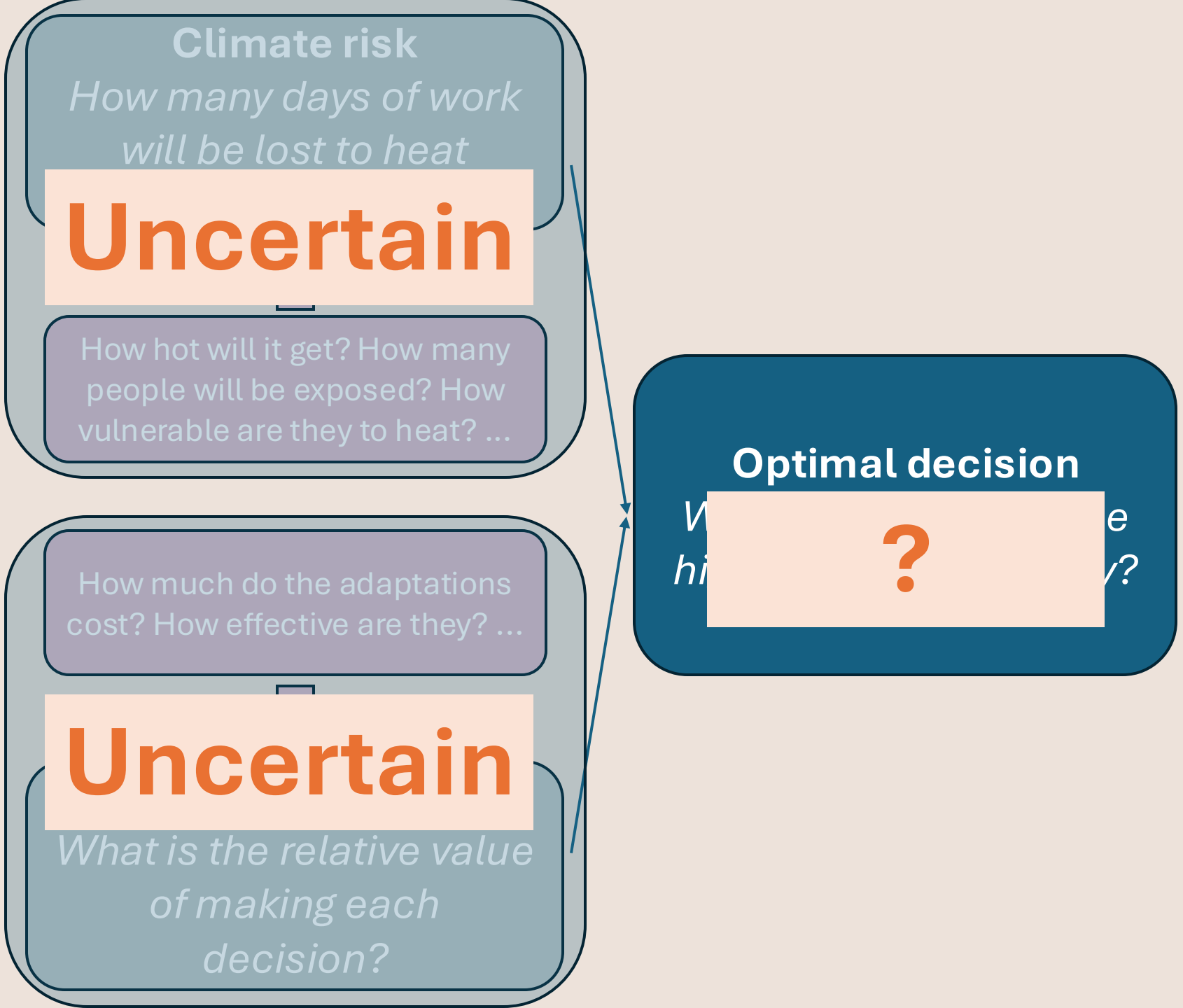

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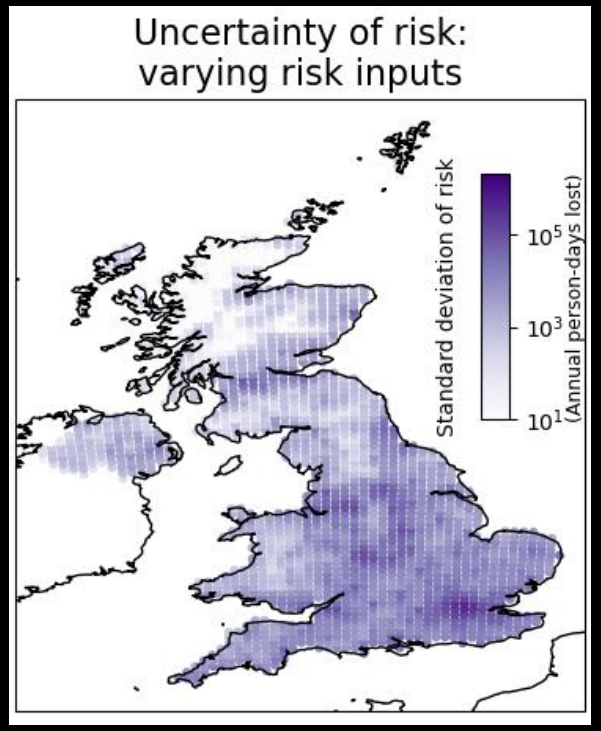
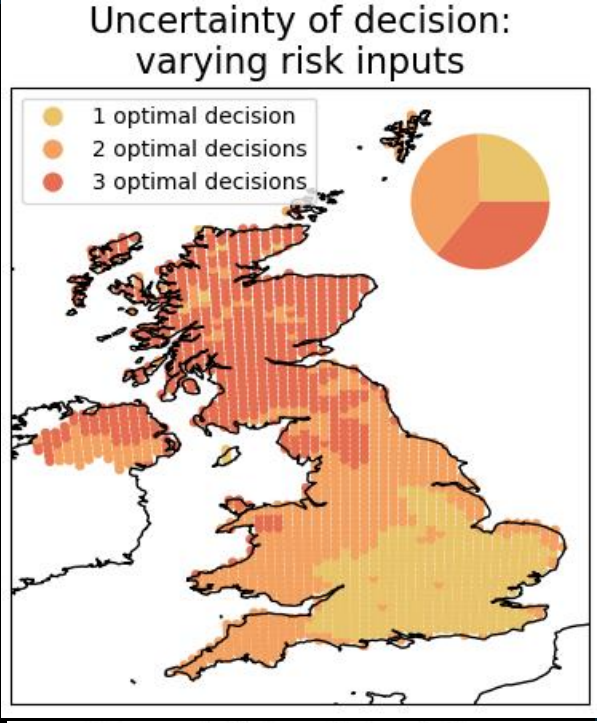
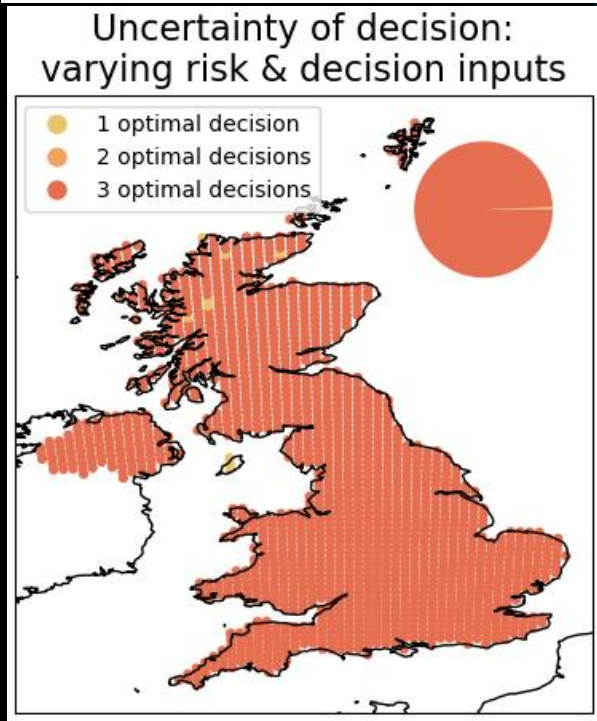
How robust can our decision be, given our uncertainty about both risk and decision attributes?

How does uncertainty in climate risk compare to uncertainty in our decision?

- Areas with the **highest uncertainty in climate risk** can have the **least uncertainty in optimal decision**, and vice versa
  - Uncertainty in risk doesn't tell the whole story
- When we consider uncertainty in both the risk and decision inputs, the decision becomes **far more uncertain**
  - Need to include all sources of uncertainty



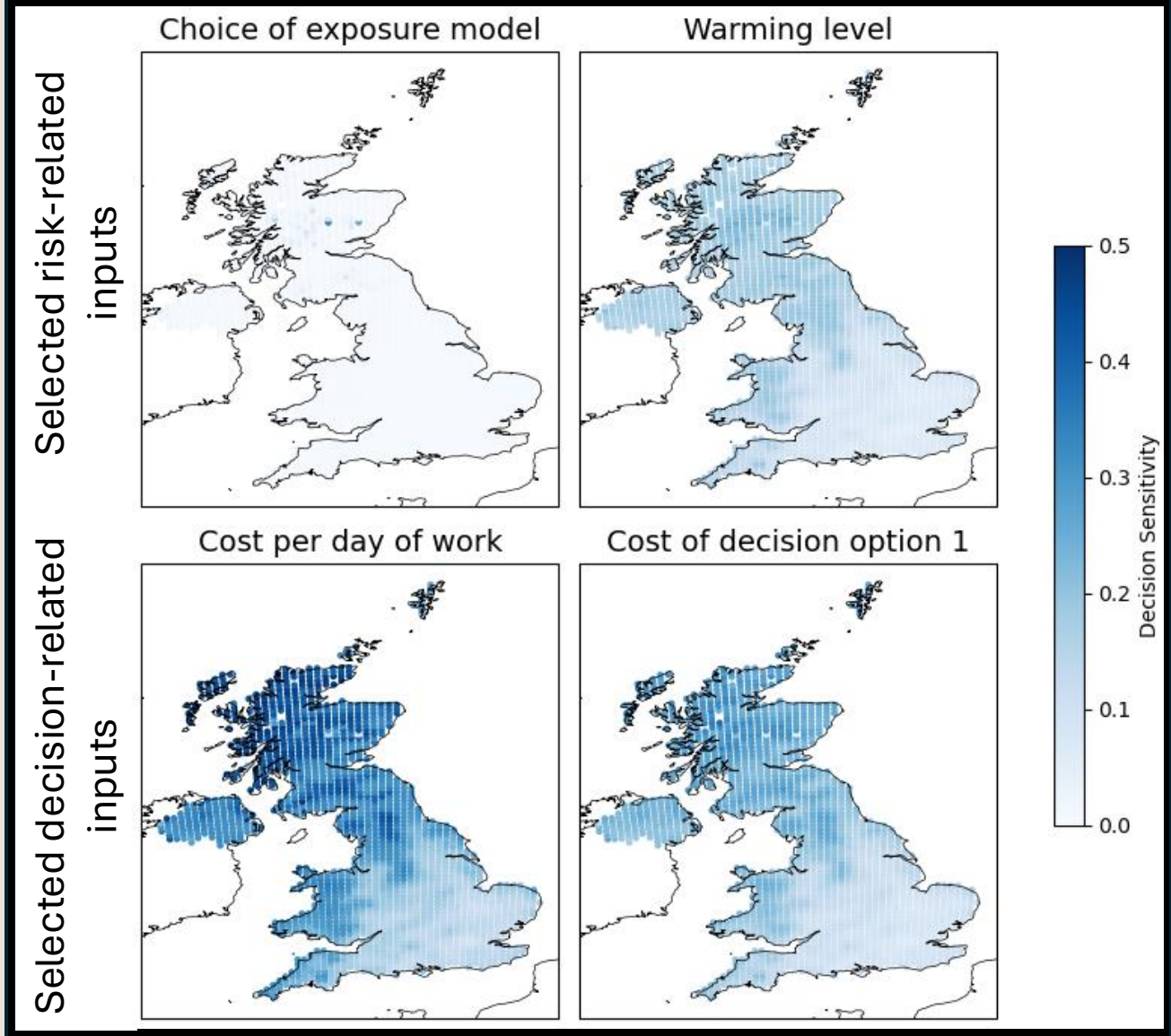




Which inputs are the decision most sensitive to?

What most influences the output decision?

- Decision is often **less sensitive to the risk-related inputs**
  - This information helps prioritise how to further reduce decision uncertainty
- Sensitivity to many of the inputs **varies regionally**
  - Need to consider what influences the optimal decision on a local basis



Analysing the uncertainty and sensitivity of decisions allows us to be as confident as possible, despite great uncertainty.