



# Equity and economic analysis in the determination of climate change adaptation

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# Structure of presentation

- Overview of research → motivation
- Definitions of equity adopted
- Country studies
  - Ethiopia: Agriculture
  - UK: Flooding
- Conclusions

# Research: Overview

## Objective:

- To review experiences in representation of equity in adaptation assessment
- Focus on national level initiatives

## Motivation:

- To consider whether – and to what extent – equity is included as a criterion in adaptation assessments

# Definitions

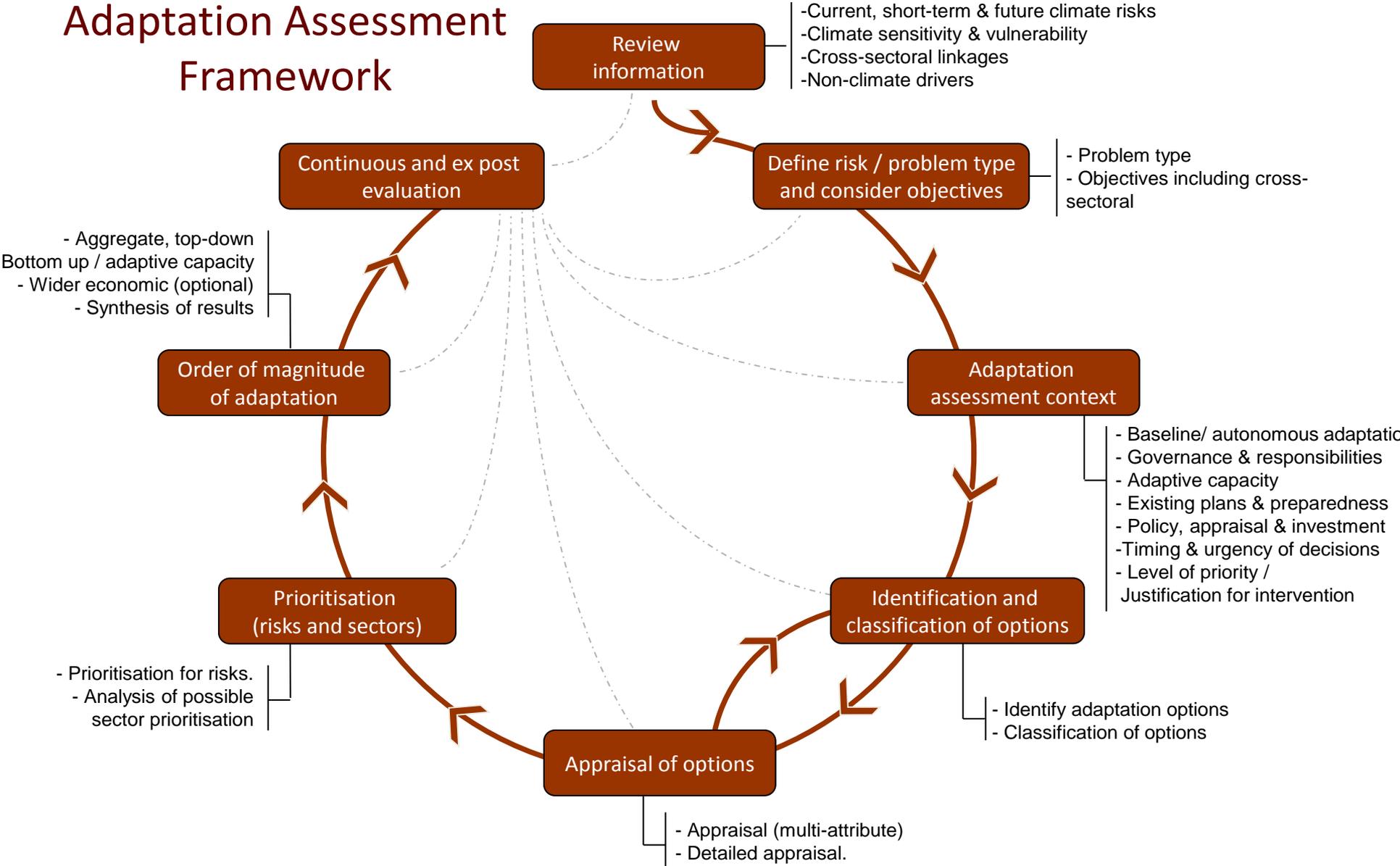
- **Equity:** refers to the concept of fairness in the distribution of capital, goods or access to services, and the welfare associated with these.
  - Closely related to notions of justice and legitimacy

	Description	Example: Sea defence system
Horizontal Equity	Those benefitting to a similar extent should pay the same amount.	May be paid for by the local community whose members all benefit to a similar extent and who therefore each contribute a similar amount.
Vertical Equity	Those with higher wealth/income levels who benefit should pay more than those with lower wealth/ income levels, reflecting a greater ability to pay.	Those with higher wealth/income should bear a higher burden of payment in absolute terms.

# Definitions

	Description	Example
<b>Retributive Equity</b>	Damages should be repaired by those who caused them.	In the climate change context, relevant to the determination of emissions mitigation responsibilities.
<b>Redistributive Equity</b>	Concerned with the equalization of resources and benefits according to needs and capacities within society.	Equalisation of resources and benefits in the context of climate change needs to be conceived both geographically and temporally.
<b>Procedural Equity</b>	How, and by whom, decisions about responses are made.	The degree to which parties likely to be affected by climate risks and adaptation are recognised and participate in formulating an adaptation response.

# Adaptation Assessment Framework



# Assessment context: Ethiopia

- Nat. Government vision: to build a Climate-Resilient Green Economy by 2025.
- Supporting strategy:
  - the green economy, focussed on GHG emission reductions
  - the resilient economy that emphasises the need to adapt to climate risks
    - Focused solely on Agriculture
      - 41% of GDP; low p.c. incomes.
      - Increased climate risks from e.g. heat stress, droughts, etc.

# Ethiopia: Adaptation Option Identification

- Options identified & sifted through an expert elicitation process: MoAg officials & reps from farming groups (pastoralists, agro-pastoralists and smallholder cropping)
- Process incorporated filtering based on criteria expressed in a series of questions, e.g:
  - Does the option help to alleviate poverty, address distributional and equity issues (women, children, and people with disabilities) and ensure food security?
- 41 distinct adaptation options identified

# Ethiopia: Adaptation Option Appraisal

- Multi-attribute Analysis (MAA) undertaken:
  - stakeholder workshop attended by farming representatives from across the country.
- Attribute groups included: institutional feasibility, effectiveness in climate risk reduction, synergies and co-benefits, economic costs and benefits and urgency.
- ‘Synergies and co-benefits’ → ‘poverty and equity’ and ‘gender’.
- Was not possible to agree weightings to attributes.
- MAA also did not attempt to further rank the adaptation options. Weightings given to equity criteria are left to be made by the decision maker within the Ethiopian Government → loss of transparency in the process at this point.

# Assessment context: UK

- Climate Change Act 2008: legally binding commitment to build the country's ability to adapt → National Adaptation Programme (NAP)
- Evidence base included research on understanding the equity effects of climate risks and adaptation options in UK
  - analysis of differential impacts for 4 risks – flooding, heat-waves, drought and extreme cold – where expectation that these risks would result in the most significant inequalities

# UK Assessment Context: Flood Vulnerabilities

	Measurement of differential risk	Scaling		
		Current high risk	Current enhanced risk	Future risk
<b>Flooding and Economic Deprivation</b>	<ul style="list-style-type: none"> <li>- Low income status</li> <li>- Number of households in deprived areas according to Index of Deprivation</li> </ul>	<ul style="list-style-type: none"> <li>- 66,000 (Very low income in high flood risk areas)</li> <li>- 55,000 (Properties in deprived areas at significant risk of flooding)</li> </ul>	<ul style="list-style-type: none"> <li>- 720,000 (Very low income in areas with some flood risk)</li> <li>- 410,000 (Properties in deprived areas at medium or low risk of flooding)</li> </ul>	<p>Increase in properties at risk in the most deprived areas of 1.5 to 2.8 times for the 2020s; and 1.7 to 3.7 times for the 2050s.</p>

# UK Flooding: Adaptation Option Appraisal

- Differential cost impacts on households in high-risk areas with varying ability to afford investment in flooding resilience and resistance measures, and restoration.
  1. Ex-post restoration measures undertaken following flooding,
  2. Investment: flood-resistance: finance - loan finance
  3. Investment: flood-resistance: finance - savings
  4. Investment: flood-resilience: finance - loan finance
  5. Investment: flood-resilience: finance - savings

# Option Appraisal: Equity Analysis Results

	Indicative cost		Indicative cost of restoration per flood		Total financial cost	
	Low	High	Low	High	Low	High
<b>Adaptation option finance: Terrace house or flat</b>						
<b>No adaptation</b>	0	0	10,000	20,000	10,000	20,000
<b>Resistance with loan</b>	8,800	12,600	0	0	8,800	12,600
<b>Resistance without loan</b>	3,900	9,200	0	0	3,900	9,200
<b>Resilience with loan</b>	3,700	40,000	2,000	10,000	5,700	50,000
<b>Resilience without loan</b>	2,300	28,400	2,000	10,000	4,300	38,400

Total costs greater:

- a) for households that do not introduce resistance/resilience measures → likely unable to obtain finance
- b) for households that finance with loan than households that finance with own savings

# Conclusions

- Equity appears to matter in acceptability of adaptation-related decisions
- Alternative types of equity are considered in country contexts:
  - Ethiopia: procedural; distributive
  - UK: distributive
- Weightings in resource allocation decisions not yet clear. Lack of transparency remains.