

ACCREU
Assessing Climate Change Risk in EUrope

Funded by the European Union

Policy Brief

Key Findings: Case Studies of the Economics of Adaptation in Europe

ACCREU (Assessing Climate Change Risk in Europe) is a Horizon Europe research project that aims to advance the knowledge on the economics of climate change and adaptation, working with stakeholders using a co-creation approach.

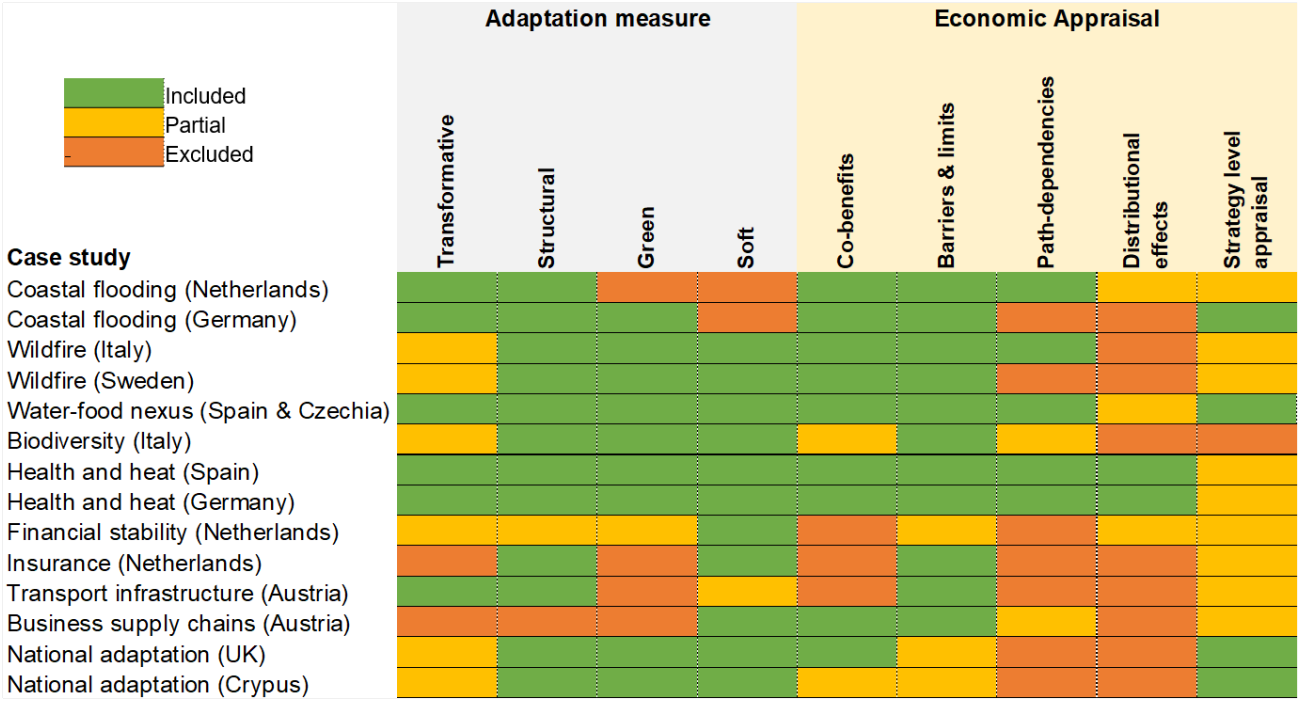
The project is undertaking top-down modelling of the costs of inaction from climate change in Europe, and the costs and benefits of adaptation, complemented by a series of bottom-up adaptation case studies. The policy findings and lessons from these case studies are summarized in this brief. A longer technical policy brief is also available.

There are a large number of different adaptation decisions in Europe. To address this, ACCREU has developed Adaptation Decision Types (ADTs), which cover the five cross-cutting themes of the European Mission on Adaptation.

These themes are: i) critical infrastructure; ii) water management; iii) land-use and food systems; iv) health and wellbeing; v) ecosystems and nature-based solutions. Fifteen individual case studies were undertaken, involving a mix of incremental and transformational adaptation, soft, hard, and green measures, and different aggregation scales from local to national (see Figure 1 over the page).

The case studies were all undertaken in collaboration with 'deep engagement' stakeholders, as part of the ACCREU co-production approach. This involves an iterative process in which the project team worked on joint case studies to produce policy relevant research. These stakeholder partners included national and regional government, businesses, as well as civil society organizations. The interim results were discussed at a series of seven ADT workshops.

Figure 1. ACCREU adaptation case studies and decision types



The case studies were then analysed to identify actionable insights on the economic appraisal of adaptation options, as well as broader themes of barriers and enablers.

Adaptation options

The adaptation options considered included a mix of **incremental** and **transformational** adaptation.

The incremental options were more focused on specific sites and centred on discrete adaptation options such as flood protection or wildfire management. They included both soft and hard interventions. There were also a set of case studies that involved more integrated analysis, such as the assessments of options for the water-food-environment nexus.

There were also a set of more transformational options that were more systemic and at greater scale (e.g., large-scale managed coastal realignment, national road network analysis). These were complemented with case studies that included climate justice (for heat and health), which is often considered a key element of more transformational action.

The analysis found that it was possible to undertake an economic analysis of both incremental and transformational options, but the latter required greater scale of analysis, and there was a trade-off with the level of detail.

A range of methods is needed

A range of modelling approaches (for impacts and adaptation) were used in the case studies. These included local scale analysis, with impact models that were linked to adaptation, e.g., using flood, crop or water models, as well as ecological species distribution models. It also included partial and general equilibrium models, which allow economy wide analysis, as well as financial risk models.

A variety of methods were also adopted in the case studies. These included standard cost-benefit analysis (CBA) but also extended CBA analysis which included decision making under uncertainty. This included long-term and intergenerational considerations. There was also the use of social justice frameworks to bring in equity dimensions for heat adaptation case studies, which assess recognition, participation, distributional and restorative justice.

In some case studies, qualitative approaches were used, such as semi-structured interviews to understand private sector adaptation.

A key conclusion is that the economic appraisal of adaptation requires an approach that is more diverse and comprehensive than standard CBA. As well as different types of models, it requires extended frameworks, especially for transformational adaptation, and these may need to be complemented with qualitative elements to capture issues such as distributional effects.

Methods influence results

A further finding of the case studies is that adaptation often involves co-benefits, in addition to reduced climate change damages. When more comprehensive economic appraisal was undertaken, which included these co-benefits, the economic case for adaptation was generally positive. Many of these were environmental or social benefits (non-market). While the case studies endeavoured to quantify and value all of these, this was sometimes challenging.

Importantly, when these non-market benefits were included, the relative attractiveness of various adaptation options shifted, leading to different priorities. This highlights that capturing all benefits (and including in benefit to cost ratios) is critical for the economic appraisal of adaptation. In turn, this means the choice of methods and level of comprehensiveness, influences economic appraisal results

Similarly, the assumptions included in the analysis can have a strong impact on the results and relative attractiveness of different options. An example of this was the choice of discount rate scheme. This highlights the need for sensitivity analysis and transparent methodological choices rather than fixed methods and assumptions.

A further issue relates to the distributional effects of adaptation. The case study on national transport networks highlighted that different adaptation objectives (decision paradigms) influences who benefits from adaptation. This case study found that if economic efficiency and total benefits are maximised, this shifts adaptation towards specific, more affluent regions.

In contrast, if different decision criteria are used, then adaptation will shift towards the most vulnerable and can deliver more equitable outcomes (though total benefits may be lower).

Interestingly, discussions with ACCREU stakeholder consistently identified that even recognition of co-benefits is crucial for building political support, overcoming scepticism, and justifying investment. This suggests that the value of comprehensive appraisal is not only technical but also procedural and can help influence decision-makers.

Barriers to adaptation

There is an emerging literature on the barriers and constraints to adaptation. These can be due to market failures (such as information failures or positive externalities) but also policy and coordination failures. There are also a set of wider challenges, including more practical issues around site specificity, acceptability, etc.

An analysis was undertaken of the main barriers facing the ACCREU adaptation case studies. The key implementation barriers are shown in the figure below. Institutional and financial barriers were the two most prevalent constraints identified and were present in all case studies. These barriers also led to incremental measures being favoured. In contrast, more integrated and transformational adaptation generally faced more barriers due to governance challenges, short-planning horizons, and existing financing structures.

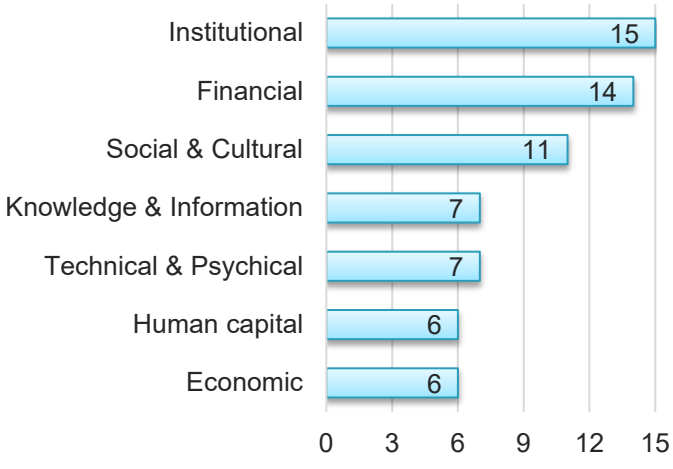


Figure 2. Key barriers identified in the 15 case studies

Enabling factors for adaptation

A final set of insights emerged from an analysis of the main enabling conditions for adaptation, i.e., the actions that can help overcome barriers. These are shown below in Figure 3.

Mirroring the barriers, the most important were governance and institutional (for example, with inter-agency and multi-level cooperation) and financial (for example, with long-term financial resources). However, social and cultural enablers were also identified as being important.

Enabler Type	Frequency
Governance and institutional (58%)	
Policy supporting integrated measures	
Collaboration and robust governance frameworks	
Inter-agency cooperation	
Multi-level governance and coordination	
Balancing different policy goals	
Clear responsibilities and accountability	
Mandatory distributional impact checks and equity criteria	
Financing (42%)	
Compensation schemes for surrendered land/real estate	
Availability of financial resources	
Financial resources to enable implementation conditions	
Establishing long-term investment	
Cross-subsidization of premiums across risk levels	
Social and Cultural (33%)	
Communicating costs and benefits clearly	
Stakeholder engagement and participation	
Knowledge sharing	
Advance cultural transformation	
Communicate new technical and agronomic knowledge	
Temporal scale (33%)	
Long-term planning	
Consider different climate scenarios	
Monitoring (17%)	
Monitoring, evaluation, reporting, and learning	
Equity-focused monitoring	
Publishing disaggregated, post-season evaluations	
Continuous monitoring systems	
Opportunity Tipping points (17%)	
Making use of existing policies or developments (housing)	
Linkage to infrastructure programmes for climate proofing	

Figure 3. Key enablers in the case studies

Review of economic returns

Finally, the project undertook a literature review to build up a wider inventory of material on the economics of adaptation. A summary of findings are shown below. This confirmed that adaptation can lead to positive economic returns but highlights the large variation across studies, sites and contexts (even for similar options). It also found important differences between science-first and policy-first studies, and ex ante and ex post analysis. An additional finding was that the economic (societal) returns are higher than the financial returns (private), often significantly so. This means that even though there is usually a positive economic case for adaptation, there will still be challenges in scaling up investment.

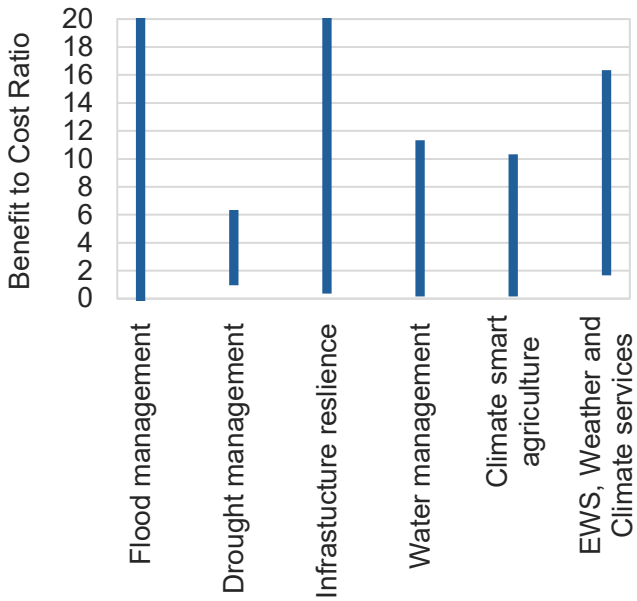


Figure 4. Examples of the Benefit to Cost Ratios for Adaptation from the Literature (ranges shown)

ACCREU, 2026. Cover photograph: I-Stock.
The ACCREU project is co-ordinated by Fondazione Centro Euro-Mediterraneo sui Cambiamenti Climatici (CMCC). To find out more about the project, please visit https://www.accreu.eu/

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Funded by the European Union

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