COACCH

CO-DESIGNING THE ASSESSMENT OF CLIMATE CHANGE COSTS

The Economic Cost of Climate Change in Europe

Synthesis on Knowledge and Key Research Gaps

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Co-Design Workshop

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The COACCH project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 776479

Outline

- Objective of this session to co-design project research priorities – based on joint identification of research interests
- To help provide context, COACCH has reviewed evidence on the economic costs of climate change in Europe
    - Sector synthesis – methods and current estimates
        - Presentation of evidence base
    - Identification of research gaps
        - Interactive session to elicit interests

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Summary – what do we know?

	Costs / Evidence
Coastal zones & coastal storms	✓✓✓
Floods including infrastructure	✓✓✓
Agriculture	✓✓
Energy	✓✓
Health	✓✓
Tourism	✓✓
Transport	✓✓
Business, services and industry	✓
Water management (& deficits)	✓
Forestry and fisheries	✓
Macro-economic analysis	✓
Tipping points	✓/ x
Social-economic tipping points	x
Biodiversity / ecosystem services	x

- Knowledge is partial and depth varies by sector

Key

✓✓✓ = Good coverage.

✓✓ = Some coverage.

✓ = Low coverage.

× = Evidence gap.

Coastal impacts and river floods

- Comprehensive pan-European and national coverage and models
- Indicate high economic costs (€/yr) for both coastal and river floods, rising significantly in late century for high emission scenarios
- But large differences in the distribution of costs across Europe
  - Coastal impacts primarily North Sea (because of tide/storm surge)
  - River primarily large river systems of Europe and UK/North Europe
- Mitigation effective in reducing impacts.
- Adaptation very effecctive but more work needed on uncertainty

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Agriculture, Forestry and Fisheries

- Lots agriculture productivity (yield) studies – less economic analysis
  - Models estimate losses in South of Europe, gains in the North, so net change is modest in the medium term.
  - Can feed results into partial or general equilibrium models
- Focus has been on slow onset risks. Risks of extremes less studied ,but likely to be more negative.
- Low coverage forestry. Some analysis of climatic shift. Some forest fire studies. Major gap is pest and disease & ecosystem services.
- Low coverage fisheries. Species shifts, though other pressures dominate, especially overfishing.

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Energy, Tourism

- Energy demand – overall change is modest (EU) - high increase in cooling in South, but high benefit from reduced heating in N-NW
- Energy supply – impacts on hydro (0 to -10%) – other renewables low, some impacts on thermal including cooling water (existing plant)
- Biomass important and trade-off land-agriculture-food-energy
- Tourism - summer beach tourism involves redistribution away from South (peak transfers) thus net impacts modest at EU level
- Winter sport tourism – likely to be costs from increased snow machines and for lower resorts, economic viability

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Business, Transport

- Transport – damage from extremes to road and rail infrastructure, also lead to travel time disruption, changes in accident, etc.
- Climate change may double current weather related costs but some benefits from reduced winter maintenance and events

- Business –reduced labour productivity (heat & humidity) – these are largest in South EU, but modest compared to other world regions
- Business affected by extremes (site and operations)
- Likely that supply chain impacts (especially non-EU) could be large.

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Health and biodiversity

- Two main non-market sectors, valuation more challenging
- Coverage of health is reasonable
  - Dominated by heat related mortality – potentially very large
  - Other health impacts more modest but some potentially unknowns (allergens, vector, biophyical limits)
- Large knowledge gap on biodiversity and ecosystem services – missing even for impacts, and valuation step very challenging
- Likely to be very large economic costs and long-term tipping points – including potential non marginal biodiversity change

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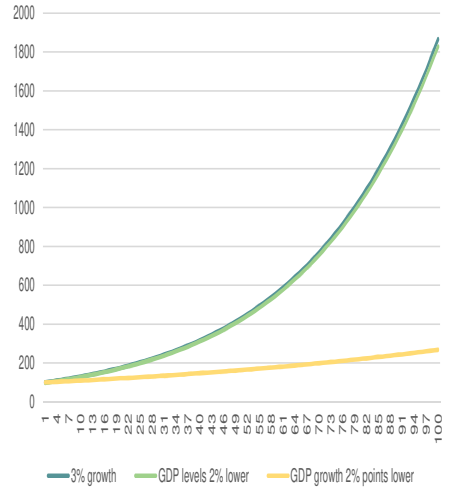
Macro-economic

- Wider economic costs, as well as metrics GDP, competitiveness, growth
  - Methods CGE modelling, econometrics, and IAMs (aggregate)
- Overall global and EU wide effects modest, but partial coverage and 'mask' large impacts between regions (distributional)
- As yet, little quantified analysis on competitiveness and employment
- Some evidence climate change affect growth
- Would make radical difference due to compound effect



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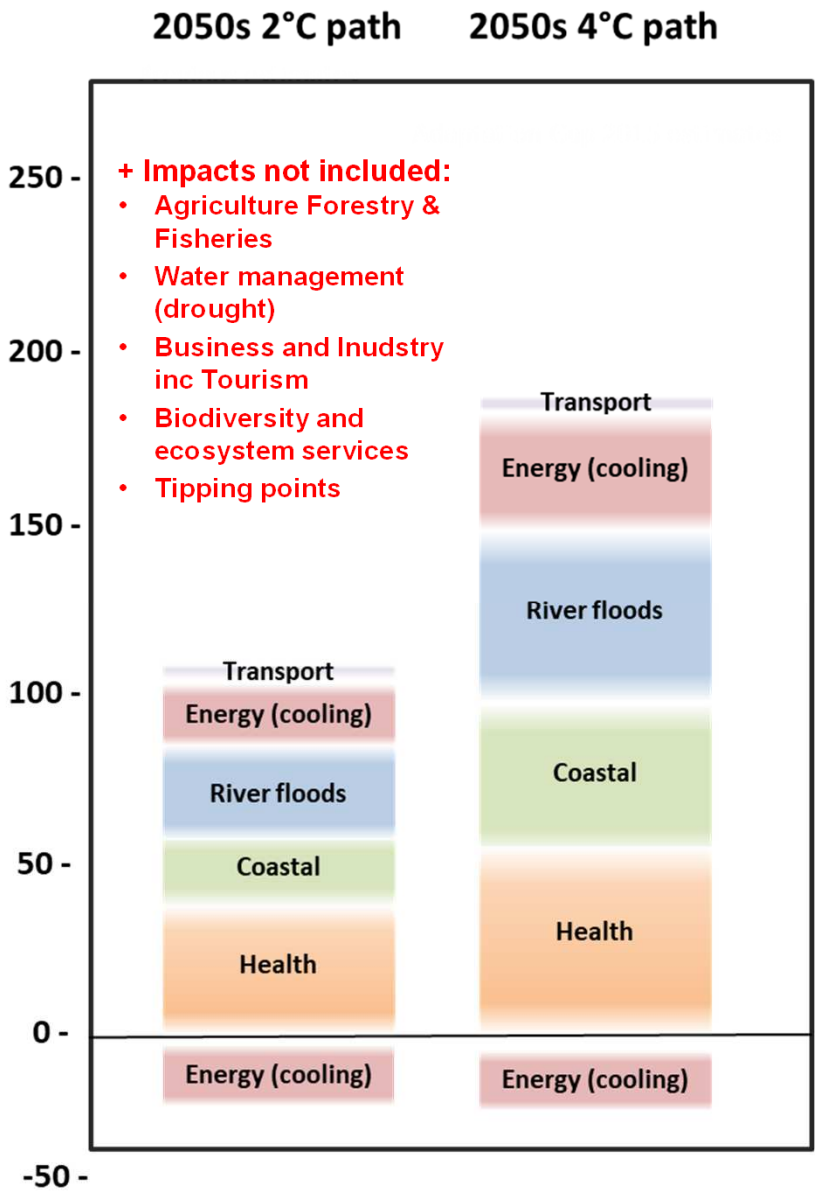
Policy insights & COACCH research



Current indicative economic costs of CC in Europe are large even by mid century

€100 bn /yr (2C) -

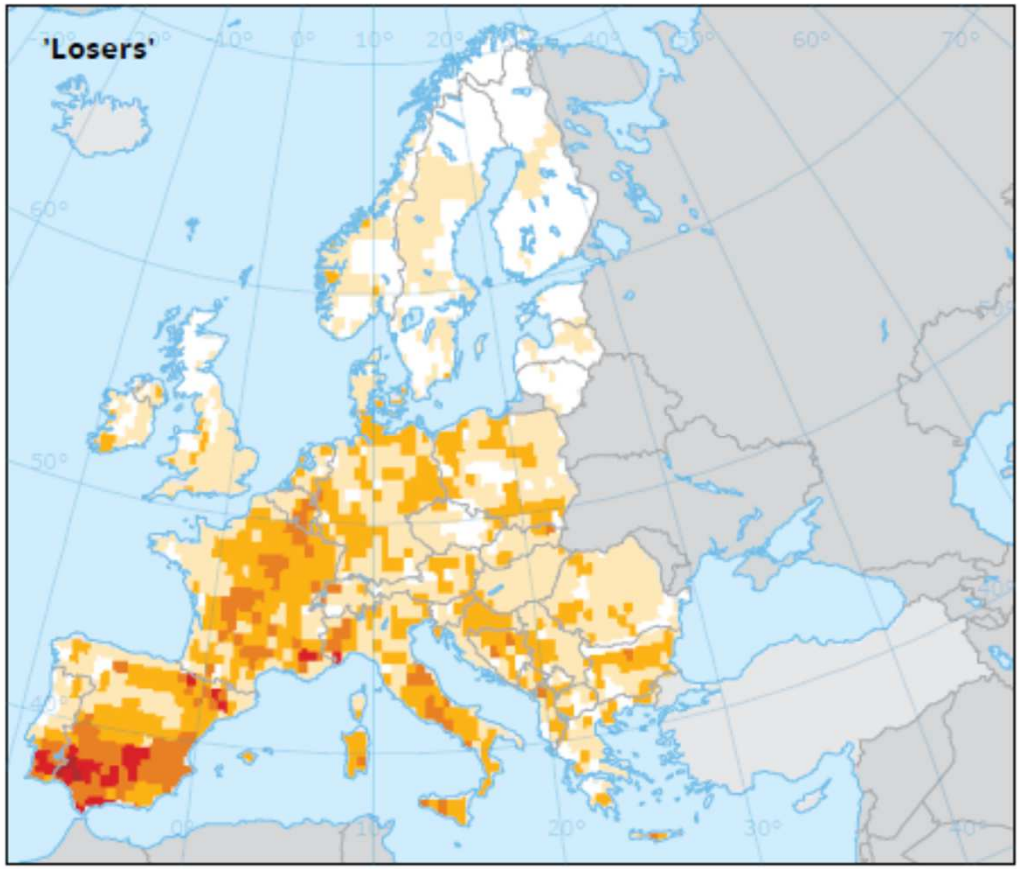
€200 bn/yr (4C)

Rising strongly ~€1 trillion (4C, 2100)

But these are centra estimates for impacts we can quantify !

COACCH aims to improve current estimates and fill gaps

Policy insights & COACCH research



Losers of climate change (multi-sectoral hazards), Source EEA, 2016

Costs are not equally distributed across Europe

Providing disaggregated information is critical – includes, sectors, groups, public finances - solidarity

COACCH will provide improved disaggregated estimates and distributional story

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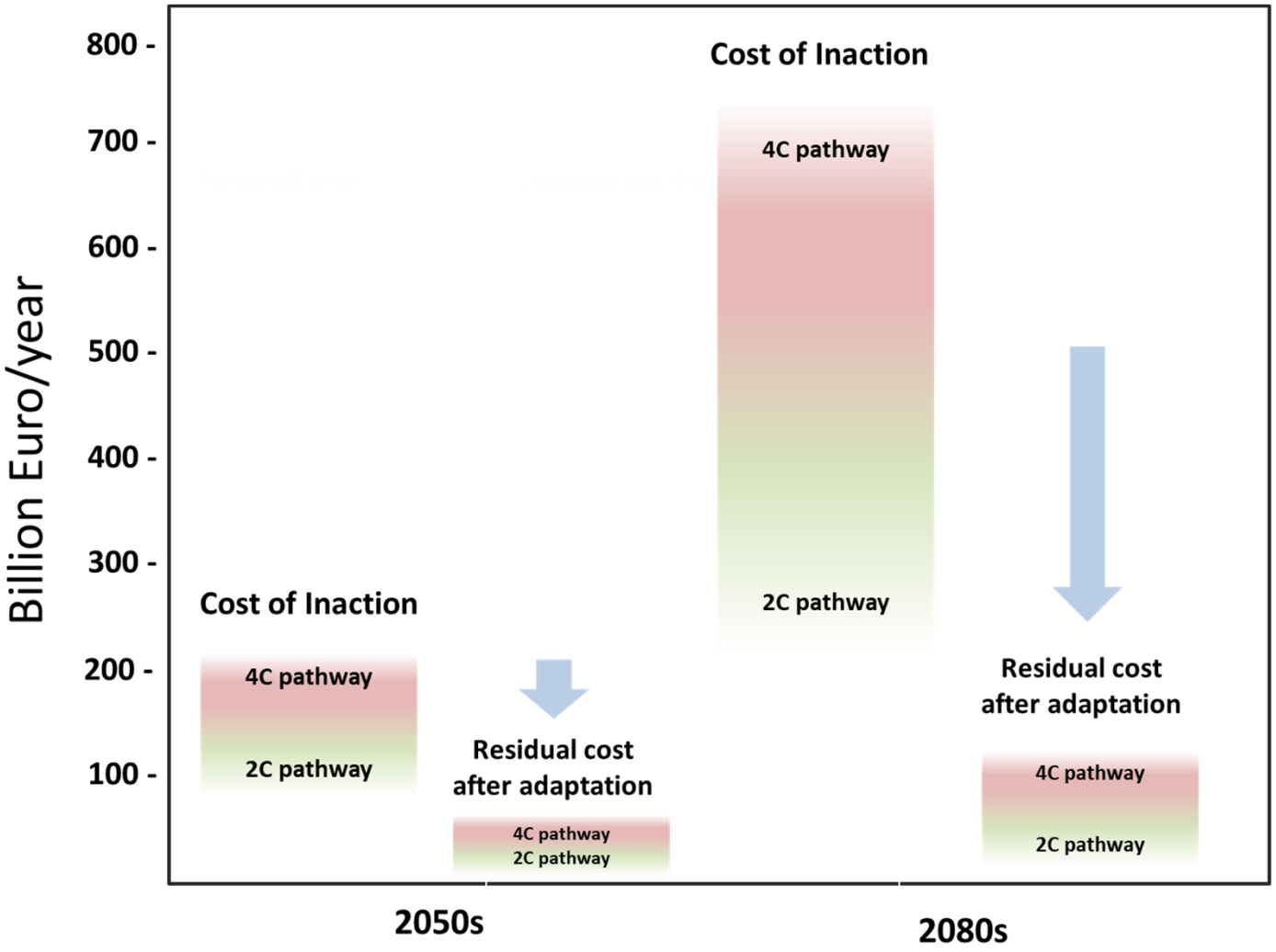

Reducing costs requires both mitigation AND adaptation

COACCH assess policy including sector based

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Before lunch

- Jointly identify areas of research interest

  What areas of research are you interested in?

  Is there anything missing? OR any key priorities?

  Where would disaggregation be useful and what form?

- Discussion in 5 themes (rotate – probably 3 discussion per group)
- Voting with dots (but not a referendum!)
- While interested in collective scores, want to log individual organisational interests and what interested in (post it)

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