



COACCH overview

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EU Conference on
modelling for policy
support

25 November 2021 On-Line



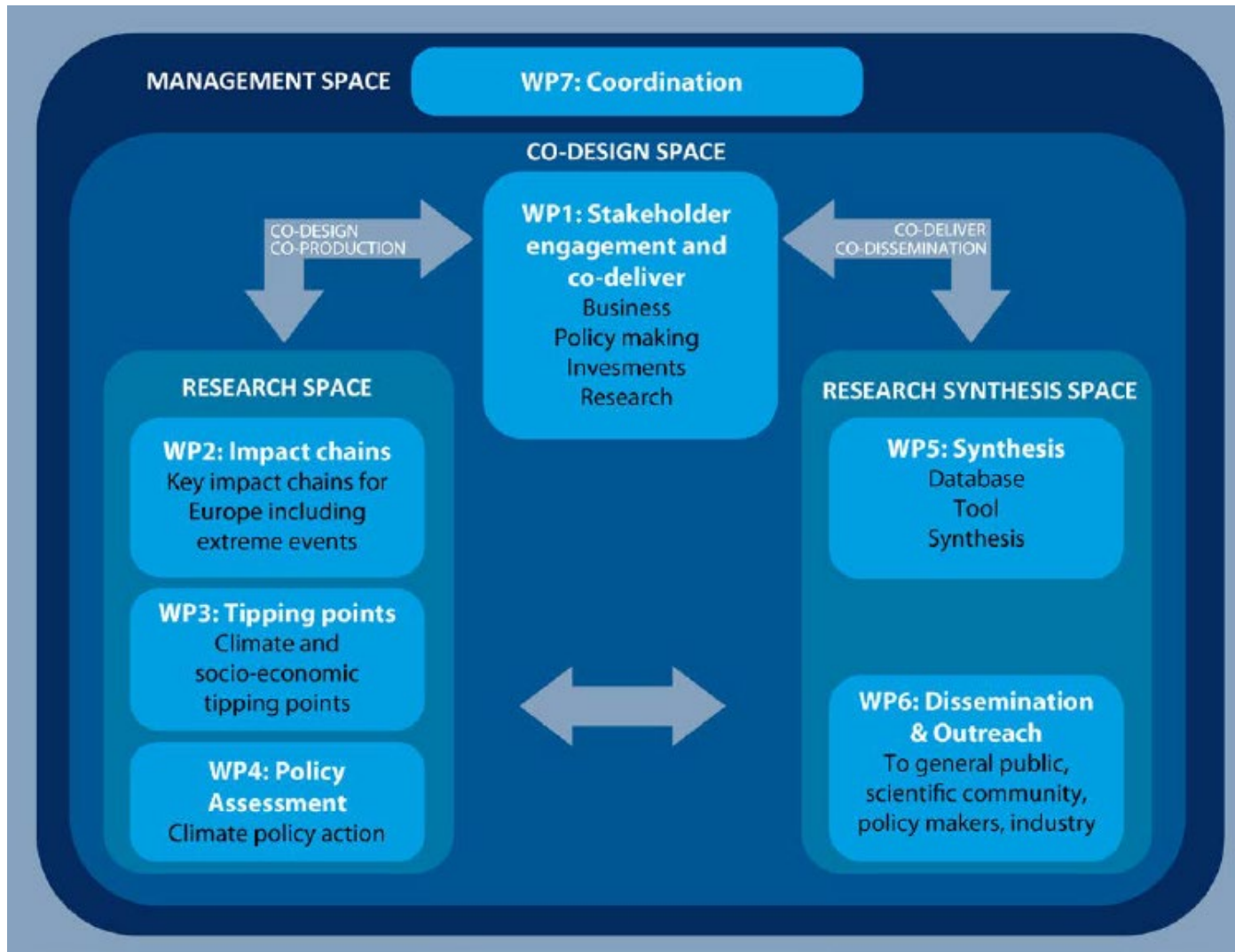
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 776479



COACCH: Facts and figures

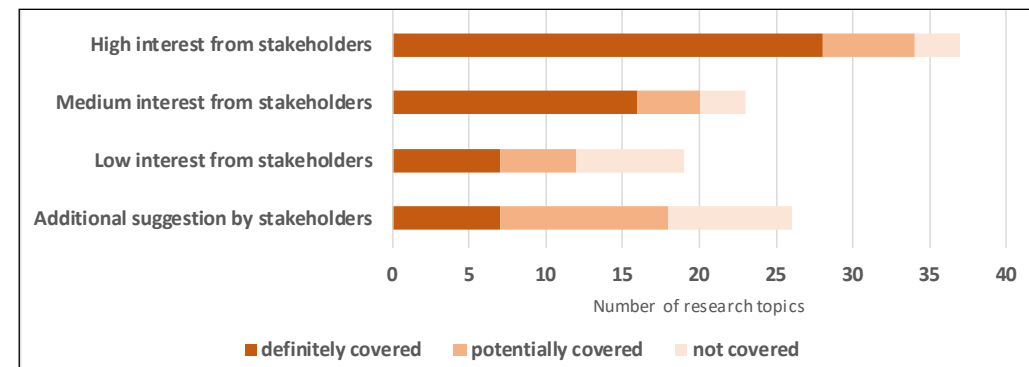
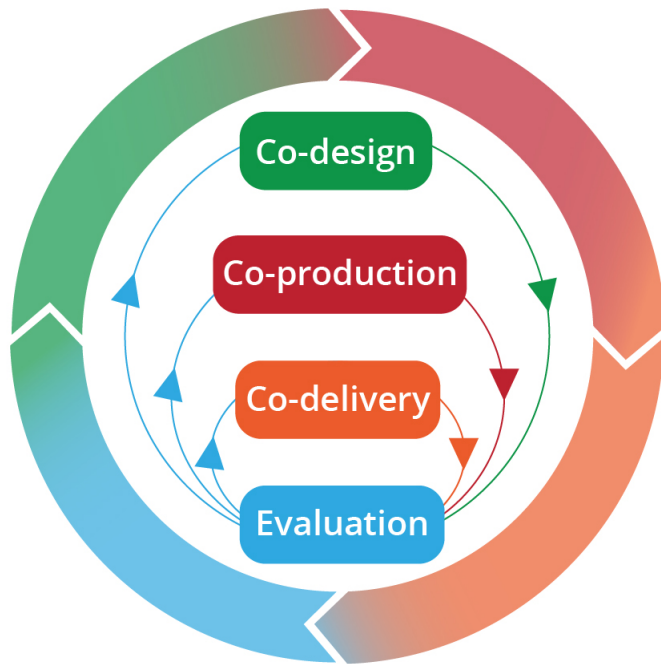
- ✓ **COACCH CO-designing the Assessment of Climate CHange costs**
- ✓ *Starting date: 01.12.2017*
- ✓ *Duration: 48 months*
- ✓ **13: Partners; 7 EU countries**
- ✓ **18: Models**
- ✓ **44: Deliverables; 18: Milestones**
- ✓ **> 40: Stakeholders**
- ✓ **2 open-source tools with > 10 datasets**







- ✓ *Co-design approach used to improve policy relevance*
- ✓ *Shape research programme and collaborate with end-users of research*
- ✓ *40 stakeholders – European, national, local – Policy, Business, Research*
- ✓ *Using a targeted co-creation process through the project*
- ✓ *Included deep engagement with smaller group*





Modelling framework

Emissions, Climate Model, SSP sampling

Table 1: Selected scenario combinations to be used in the COACCH project

	SSP1 (Green Growth)	SSP2 (Middle of the road)	SSP3 (Regional rivalry)	SSP4 (Inequality)	SSP5 (Fossil fuel development)
RCP8.5					●
RCP6.0		●			
RCP4.5	●	● ● ● ●	●		●
RCP2.6	●	● ● ● ●	●		

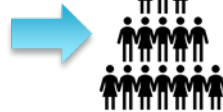
● = "low signal" climate model; ● = "average" climate model; ● = "high signal" climate model;
 ● = fixed adaptation, "average" climate model

* The "low signal" and "high signal" climate model refers to, respectively, choosing a model which leads to relatively low/high temperature change and/or to low/high precipitation changes.

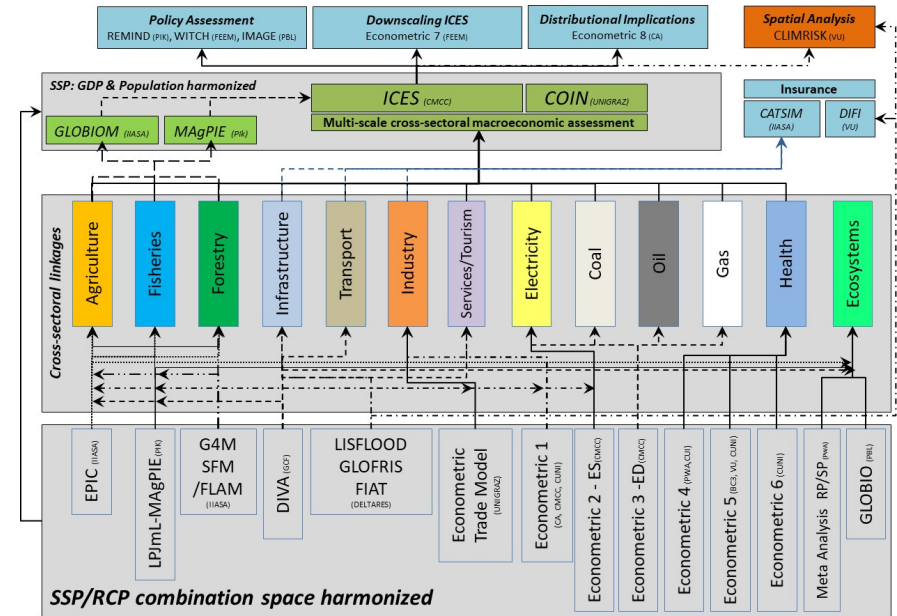
Impact areas



Economy and society



Vertical and horizontal modelling integration, including impact uncertainty



*Existing peer review modelling suite
 Used harmonised scenarios, planned
 integration of models and WPs*

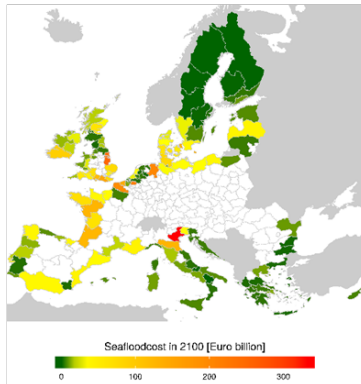




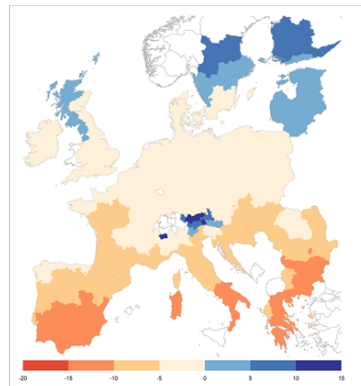
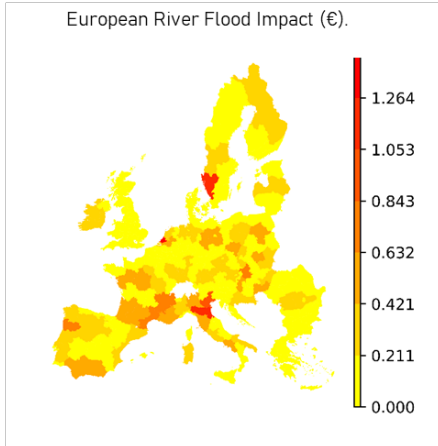
Europe and Sub-national level

Sectoral modelling

European Coastal Flood Impact (€).



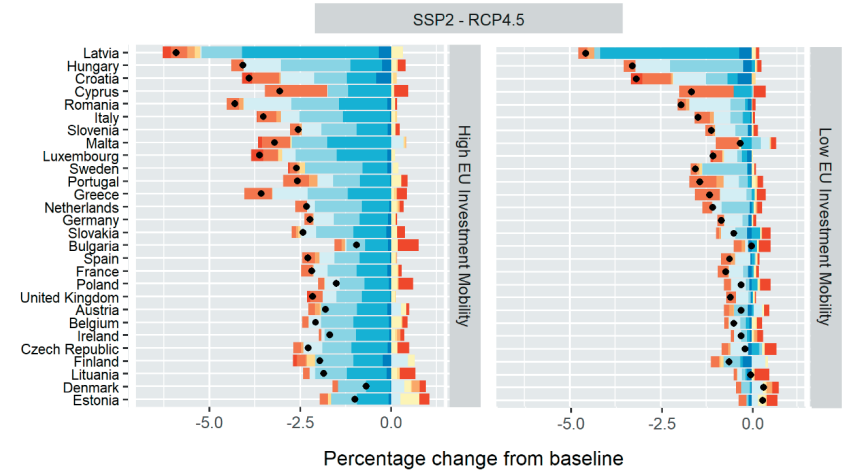
European River Flood Impact (€).



Impact on Industrial Labour Productivity



European Heat related mortality (No)



CGE modelling



Percentage change from baseline -16 -14 -12 -10 -8 -6 -4 -2 0

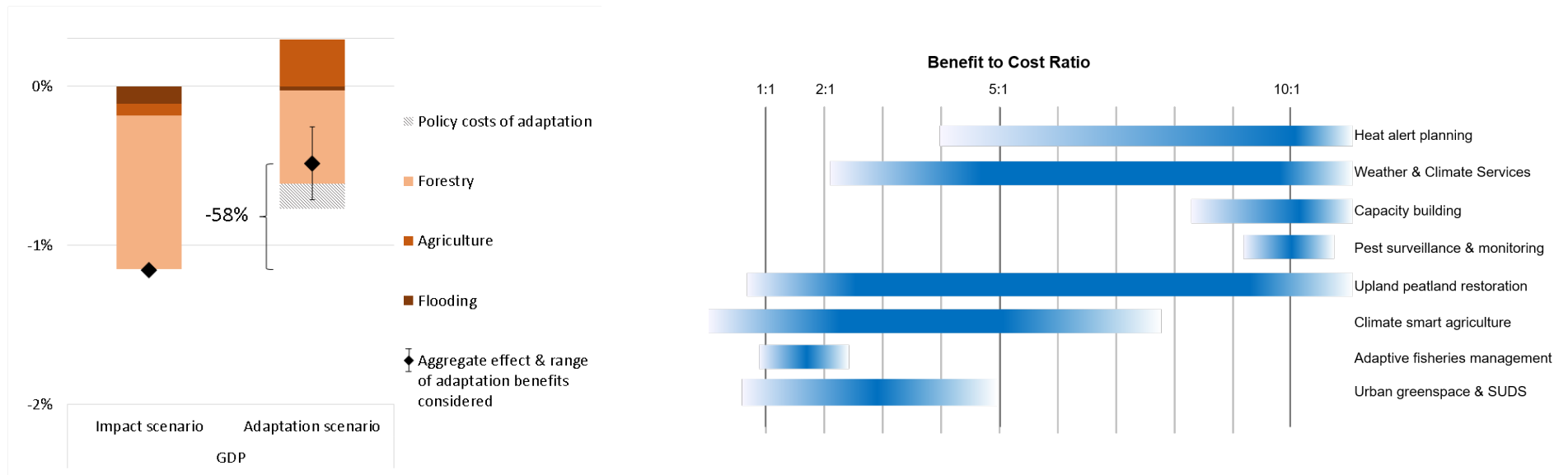
Coverage improving – still some gaps (ecosystem services) – difficult to mix quant and qual. when focus on economics





Adaptation

- ✓ Sectoral modelling of 'technical' adaptation, costs and benefits
- ✓ Analysis of adaptation benefits for public finances
- ✓ Analysis of 'early' low and no regret options



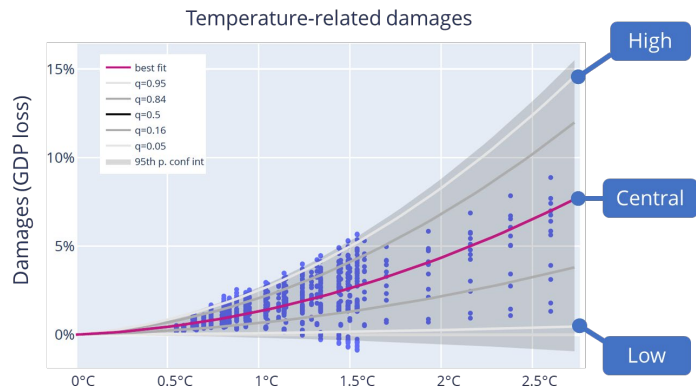
Modelling of real world adaptation still challenging – complementary top down and bottom up is useful



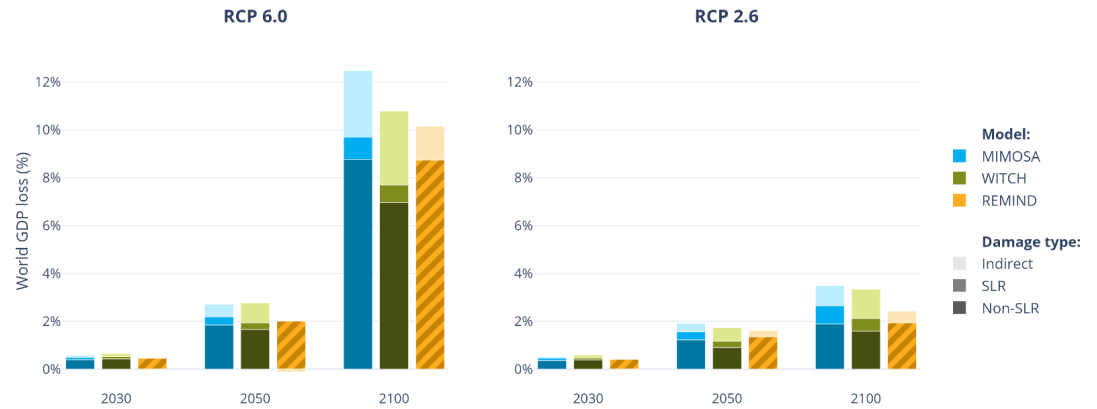


Global level

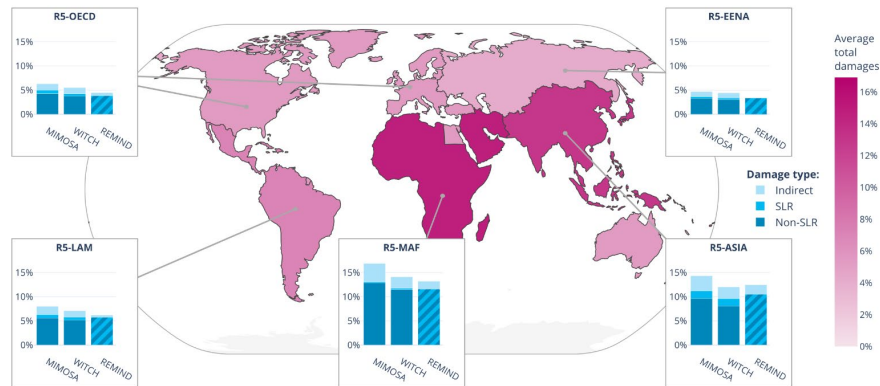
- ✓ *New reduced-form climate change damage impact functions - 3 global IAMs*
- ✓ *Applied to provide insights – economic costs of climate change - mitigation*



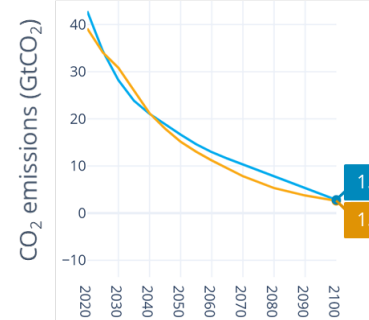
Global damages, with SLR adaptation



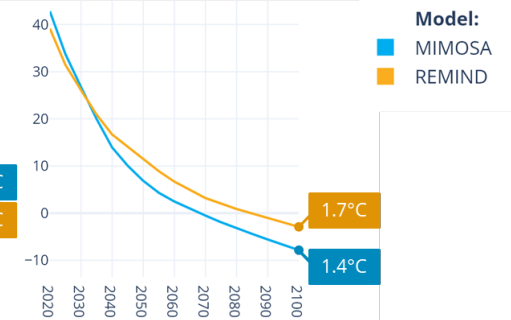
b. Damages in 2100 (RCP 6.0, with SLR adaptation)



Medium damages



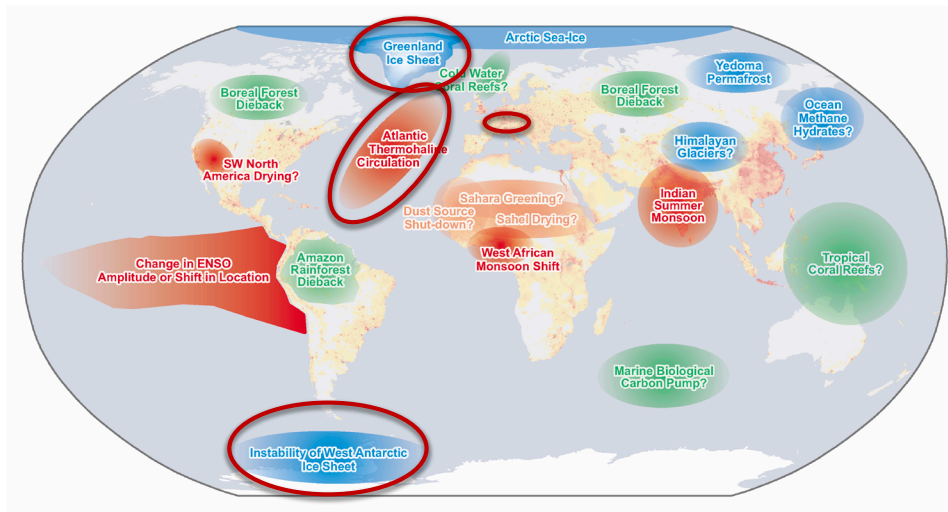
High damages





COACCH: Aims, scope, outcomes

- ✓ Analysis of selected climate & socio-economic tipping points associated to «high damages»



- Melting
- Circulation Change
- Biome Loss

Population Density [persons per km²]

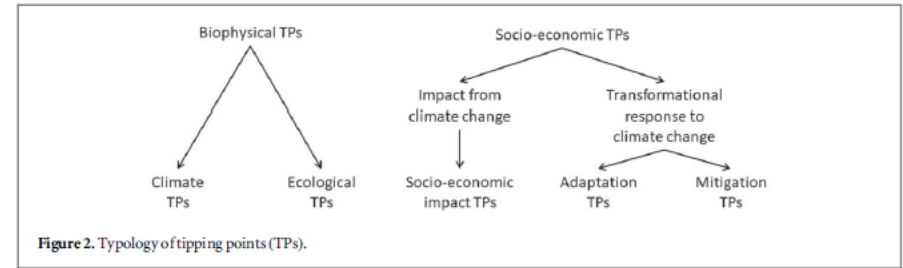
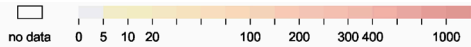


Figure 2. Typology of tipping points (TPs).

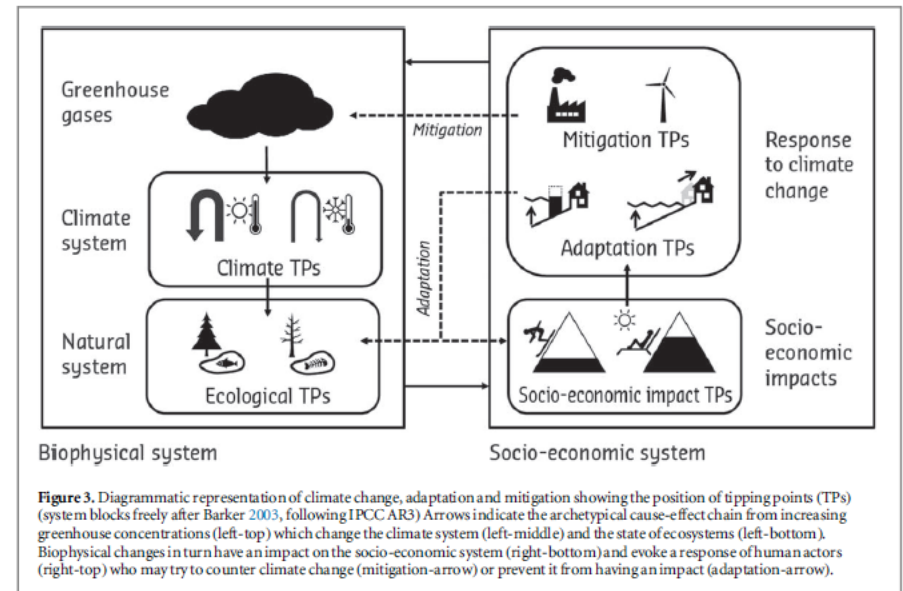


Figure 3. Diagrammatic representation of climate change, adaptation and mitigation showing the position of tipping points (TPs) (system blocks freely after Barker 2003, following IPCC AR3). Arrows indicate the archetypal cause-effect chain from increasing greenhouse concentrations (left-top) which change the climate system (left-middle) and the state of ecosystems (left-bottom). Biophysical changes in turn have an impact on the socio-economic system (right-bottom) and evoke a response of human actors (right-top) who may try to counter climate change (mitigation-arrow) or prevent it from having an impact (adaptation-arrow).



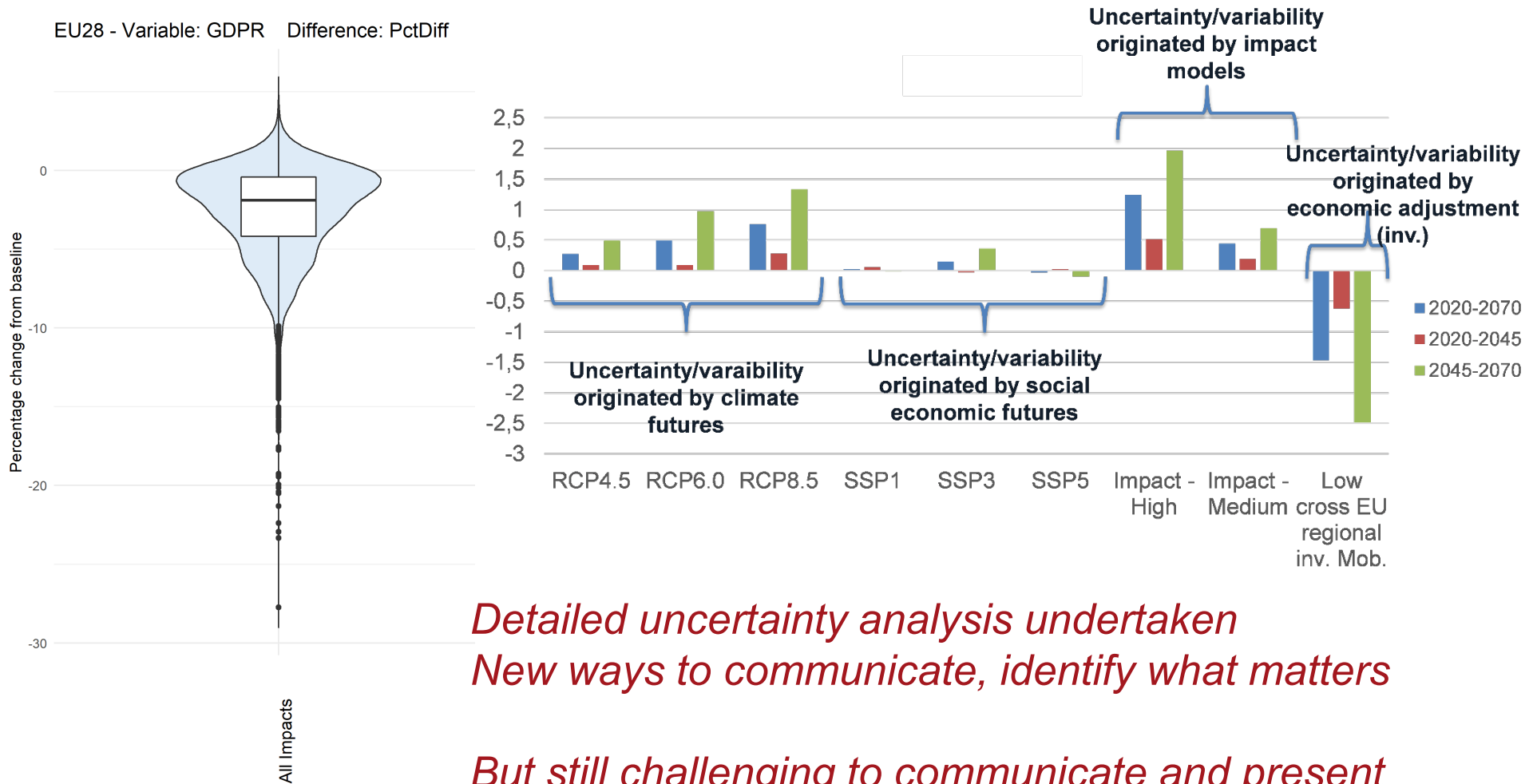


Key Messages - Results

- ✓ *High economic costs of climate change in Europe, even for central scenarios*
- ✓ *Strong distributional pattern of economic costs across Europe (and across World)*
- ✓ *Ambitious global mitigation policy reduces these costs. New estimates show Paris passes a cost-benefit test*
- ✓ *Climate and socio-economic tipping points would have major economic consequences for Europe, and add weight to need for mitigation*
- ✓ *But even if Paris Goals are achieved, high economic costs in the next two decades are locked-in, and can only be reduced with adaptation*
- ✓ *Adaptation can dramatically reduce the economic costs of climate change. However, does not negate the need for ambitious mitigation*
- ✓ *Many early adaptation investments deliver high benefit to cost ratios, i.e. are no or low-regret in nature, and a priority for early plans*
- ✓ *Adaptation reduces the negative impacts of climate change with net positive outcomes for public budgets, due to the benefits on government revenues.*



Uncertainty



*Detailed uncertainty analysis undertaken
New ways to communicate, identify what matters*

*But still challenging to communicate and present
(policy makers like single, central numbers !)*



Enhancing Policy uptake and Impact



✓ Series of policy briefs as project progressed



✓ Case studies linked to policy outputs with key stakeholders

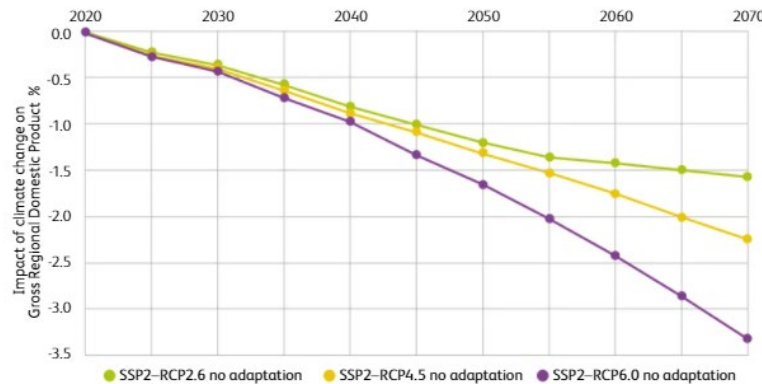
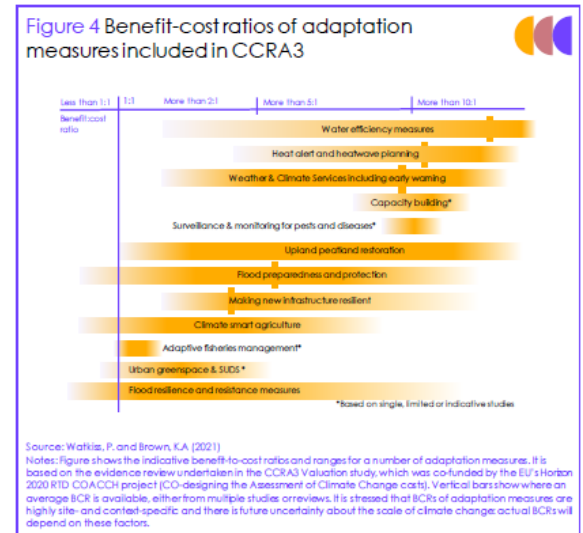


Fig.8. The potential economic costs of climate change in the region for multiple climate futures. Source: COACCH.⁵



Source: Watkins, P. and Brown, K.A. (2021)
Notes: Figure shows the indicative benefit-to-cost ratios and ranges for a number of adaptation measures. It is based on the evidence review undertaken in the CCRA3 Valuation study, which was co-funded by the EU's Horizon 2020 RTD COACCH project (CO-designing the Assessment of Climate Change costs). Vertical bars show where an average BCR is available, either from multiple studies or reviews. It is stressed that BCRs of adaptation measures are highly site- and context-specific, and there is future uncertainty about the scale of climate change actual BCRs will depend on these factors.

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Other COACCH outputs

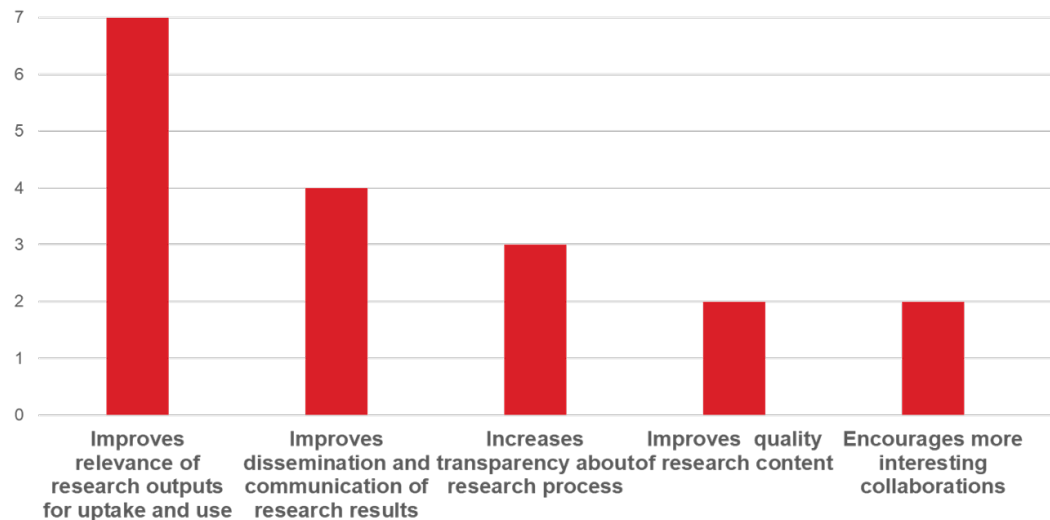
- ✓ Policy briefs – communicating results to wider audience
- ✓ Scenario explorer – tested with stakeholders
- ✓ On-line «user friendly» explorer of project results where also a «non- expert» can navigate through project outcomes
<https://www.coacch.eu/news/coacchs-climate-change-impact-scenario-explorer-is-here-d-5-2/>
- ✓ COACCH database
- ✓ Open access database of all project results
- ✓ Co-design guidance



Co-design lessons - bounded (focused on use of results)



- ✓ *High benefits, improves relevance, and improves uptake and use of results*
- ✓ *But also involves higher costs (In COACCH, 10% of the project budget)*
- ✓ *Enhanced by knowledge brokers, to drive process, clear objectives & roles*
- ✓ *Helped by joint products, deeper engagement & case study*
- ✓ *But more difficult in fixed Horizon Projects, especially modelling projects – some opportunities to include more flexibility, potential to do co-design earlier (RTD)*





Modelling insights

- ✓ *Major advance in integrated and harmonised analysis – linkage between teams and models*
- ✓ *Multi-model testing and impact and economic uncertainty (not just scenarios) – provides insights – but also needs new ways to communicate and explain*
- ✓ *Greater spatial disaggregation achieved*
- ✓ *Quant. and qualitative assessment still largely separate (combining well is elusive)*
- ✓ *Greater focus on open source results and rapid assessment tools – less so underlying models*
- ✓ *Focus on key policy questions – and co-design process – improves impact (understand needs, help understand how want information presented)*





COACCH who we are





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COACCH Project - [@COACCH_EU](https://twitter.com/COACCH_EU)



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