Draft Version

HORIZON-CL5-2022-D1-01-02-two-stage: Socio-economic risks of climate change in Europe

Specific conditions	
Expected EU contribution per project	The EU estimates that an EU contribution of around EUR 5.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 10.00 million.
Type of Action	Research and Innovation Actions
Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G. The following exceptions apply: Beneficiaries will be subject to the following additional obligations regarding open science practices: • Beneficiaries will be subject to the following additional obligations regarding open science practices. Open access to any new modules, models or tools, which are developed from scratch or substantially improved with the use of EU funding under the action must be ensured through documentation, availability of model code and input data developed under the action. • On request, full royalty free access (under confidentiality clause) for European Union Institutions, bodies, offices or agencies for developing, implementing and monitoring EU policies or programmes, to all the tools and instruments necessary to reproduce and validate research results generated by the action (this means access to data and model code).

Expected Outcome: Project results are expected to contribute to some of the following expected outcomes:

- A comprehensive socio-economic evaluation of future climate change impacts across sectors, countries/regions, timescales and climate building on socio-economic scenarios with improved sectoral, cross-sectoral and spatial resolution of impact projections.
- Improved climate change related decision support based on better understanding (and quantification) of the socio-economic risks (and opportunities), associated with climate change impact, for both sudden onset extreme events and slow onset processes.

- Better evidence for ambitious climate policy response, both in terms of mitigation and adaptation measures, based on a better understanding of socio-economic risks in the absence of adequate mitigation and adaptation efforts (or when limits to adaptation are reached), leading to a more secure and more certain socio-economic future.

- Actionable insights based on data at the appropriate level of geographical scale and spatial resolution for decision-makers in public and private sectors, including national and regional level estimations, leading to enhanced adaptation efforts and to a more resilient Europe.

- Better integration of climate change risks in public and private sectors' investment decisions - from property, through infrastructure up to regional and national supply chains - leading to increased long-term resilience.

- Enhanced coordination with European Commission's Joint Research Center on research concerning climate impacts and adaptation modelling.

- Provision of authoritative knowledge to inform the activities of the Horizon Europe Mission on Adaptation to climate change including societal transformation.

Scope: Actions should improve the understanding of the nature and extent of physical risks from a changing climate and their integrated socio-economic implications in Europe in 2030, 2050 and 2100 timeframes. The analysis should evaluate the costs of inaction / "business as usual" by extrapolating current policies with different social and climatological scenarios. It should seek to capture the range of possible socio-economic climate-related risks including both those most likely to occur as well as those associated with low-probability high-impact climate events with potentially catastrophic outcomes. Indirect impacts should be part of the analysis as well as the impacts in the rest of the world with relevant spill over effects in the EU should also be considered.

A comparison with scenarios with lower degrees of warming (with ambitious mitigation measures) should be included as well as the analysis of the costs and benefits of ambitious adaptation measures. Research should also improve the understanding of climate-related risks that are unlikely to be avoided through mitigation and/or adaptation and require urgent/specific response. The work could encompass improvements in adaptation modelling, in particular in impact areas with the highest potential damages. Actions should also take into account the impact of radical transformations envisaged in the context of the post-COVID recovery.

The impacts of climate risks should be assessed and monetised across various economic sectors aiming at an expansion of the existing impact categories and combining them into a coherent framework. Cross-sectorial impacts taking into account the interactions between various sectors should also be addressed. This research should equally encompass impact categories that cannot be directly monetised, but with either economy-wide implications or of critical importance for future human well-being, such as health (including the spread of infectious diseases), social justice, and biodiversity/ecosystems. The development of appropriate tools and methodologies that are able to address these kinds of non-market based impacts is part of the scope. In addition, actions should aim at accounting for the various sources of uncertainty in a systematic way.

A national and as much as possible regional resolution should be aimed at in order to account for heterogeneity in terms of hazards, exposure, vulnerability (including adaptive capacities) and ability to manage risks across countries and regions. Distributional and further equity considerations, including gender, associated with climate change impacts should also be investigated in order to inform the formulation of just mitigation and adaptation strategies. Development and testing of rapid analysis and assessment techniques using open data, tools and methodologies as well as work on an economy-wide damage function relating GDP losses or other metrics of public welfare and human wellbeing with temperature increase, could be part of the research, too.

Actions should identify and formulate recommendations for measures that should be implemented by various stakeholders groups to minimise the climate risks across Europe as well as the needs for future research. They should explore effective ways for bridging the gap between science, policy and practice. The needs of the private sector in order to prepare for and adapt to climate change impacts should be an integral part of the work and could include development of approaches for better integration of climate risks into financing principles of the investment community.

This topic calls for a truly interdisciplinary approach combining a wide range of disciplines including economics, climate science, bio-geophysical modelling, data engineering, risk analysis, political and behavioural science etc. as well as for an active involvement of and co-creation with people and communities at risk. As much as possible, it should integrate the results of the existing studies and evidence-base, including from previously funded projects such as COACCH and other projects from call SC5-06-2016-2017[1].

When dealing with models, actions should promote the highest standards of transparency and openness, as much as possible going well beyond documentation and extending to aspects such as assumptions, code and data that is managed in compliance with the FAIR principles[2]. In particular, beneficiaries are strongly encouraged to publish results data in open access databases and/or as annexes to publications. In addition, full openness of any new modules, models or tools developed from scratch or substantially improved with the use of EU funding is expected.

Synergies with topic HORIZON-CL5-2021-D1-01-05: Better understanding of the interactions between climate change impacts, mitigation and adaptation options, as well as with relevant topics in Cluster 3: Civil security for Society – Destination Area DRS02 on Support to improved disaster risk management and governance, should be explored and established. In addition, coordination with existing relevant initiatives on climate impacts and adaptation modelling should also be sought, in particular in the context of the PESETA assessment[3].

The Joint Research Centre (JRC) may participate as member of the consortium but is not eligible for funding.

This topic requires the effective contribution of SSH disciplines and the involvement of SSH experts, institutions as well as the inclusion of relevant SSH expertise, in order to produce

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1 A list of other relevant projects can be found here: https://cordis.europa.eu/project/id/776479

2 FAIR (Findable, Accessible, Interoperable, Reusable).

3 https://ec.europa.eu/jrc/en/peseta-iv

meaningful and significant effects enhancing the societal impact of the related research activities.