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C2risk: Co-creating climate management tools for mobility infrastructures

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Climate variability and change are societal challenges, necessitating urgent and comprehensive responses across many sectors. To confront these challenges effectively, these sectors must devise and execute adaptation and mitigation strategies. Such strategies should focus on minimising contributing factors to climate change and bolstering resilience against its repercussions. The urgency of these measures stems from the recognition that climate change permeates virtually every facet of our environment and daily life, calling for a concerted and enduring effort to safeguard our planet for future generations. A critical component of this endeavour is understanding the influence of meteorological and climatic conditions on specific sectors.

We have embraced a co-creation methodology that actively includes stakeholders to tackle the complexities of climate variability and change, as Font et al. (2021) suggested. This methodology is particularly pertinent to critical infrastructures at various levels. Our inclusive approach gathers many participants, from high-ranking executive managers to hydrogeology specialists. This diversity in perspectives and expertise guarantees that the solutions devised are comprehensive and precisely tailored to meet the distinct needs and contexts of the mobility infrastructures affected by climate change. Such a collaborative process cultivates innovation while fostering a sense of ownership and commitment among all stakeholders, thereby enhancing the effectiveness and durability of the solutions.

Our case study, executed in the Italian regions of Campania and Lazio, demonstrates the varied risks present in these areas and how they change over time and space. For this study, we utilized ERA5 land data, specifically downscaled to reconstruct historical climate scenario, and Cordex data for future climate projections. This presentation aims to transcend the mere explanation of climate data and show the whole process and journey to transform data into a climate service to assist decision-making in the mobility infrastructure sector. It is conveyed through an intuitive and reactive visual medium via a Shiny application crafted for accessibility to a diverse audience. This application proficiently exhibits the various calculated co-created indices over multiple intervals, rendering tailored information and making it more user-friendly and engaging for non-academic

and non-climate-related users. Such a presentation style is instrumental in enhancing comprehension of climate change impacts and aiding in informed decision-making