The Coalition of Finance Ministers for Climate Action

Showcasing CLIMADA

Munich Climate Insurance Initiative (MCII)

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Topic: Addressing the climate policy questions facing Ministries of Finance: the economic and fiscal impacts of adaptation and resilience

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Access the full Compendium at www.greenandresilienteconomics.org

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CLIMate ADAptation (CLIMADA) is an analytical tool designed to assess physical risks and formulate effective adaptation strategies in response to climate change. At the core of the stakeholder-inclusive Economics of Climate Adaptation (ECA) framework, CLIMADA provides science-based support for decision-making and investment in adaptation (Figure 1). As an open-source model, it integrates comprehensive data on hazards, exposure, and vulnerabilities to simulate the economic impacts of extreme weather events such as tropical cyclones, floods, and droughts. By evaluating the cost-effectiveness of various adaptation measures, CLIMADA helps policymakers identify strategies that can effectively mitigate the future impacts on infrastructure, agriculture, and other vital sectors. This empowers informed resource allocation for adaptation measures, thereby enhancing resilience against climate-related disasters.

At the Munich Climate Insurance Initiative (MCII e.V.), hosted at the United Nations University, Institute for Environment and Human Security (UNU-EHS), the ECA framework and CLIMADA are being implemented in various contexts worldwide and continuously developed for multiple use cases. Enhanced risk understanding is a cornerstone of MCII's goal to support sustainable development and foster resilient societies. The ECA framework and CLIMADA are applied to determine climate risks faced by the countries and populations most exposed to the increasing impacts of climate change, and to identify, quantify, and suggest measures to close the protection gap.

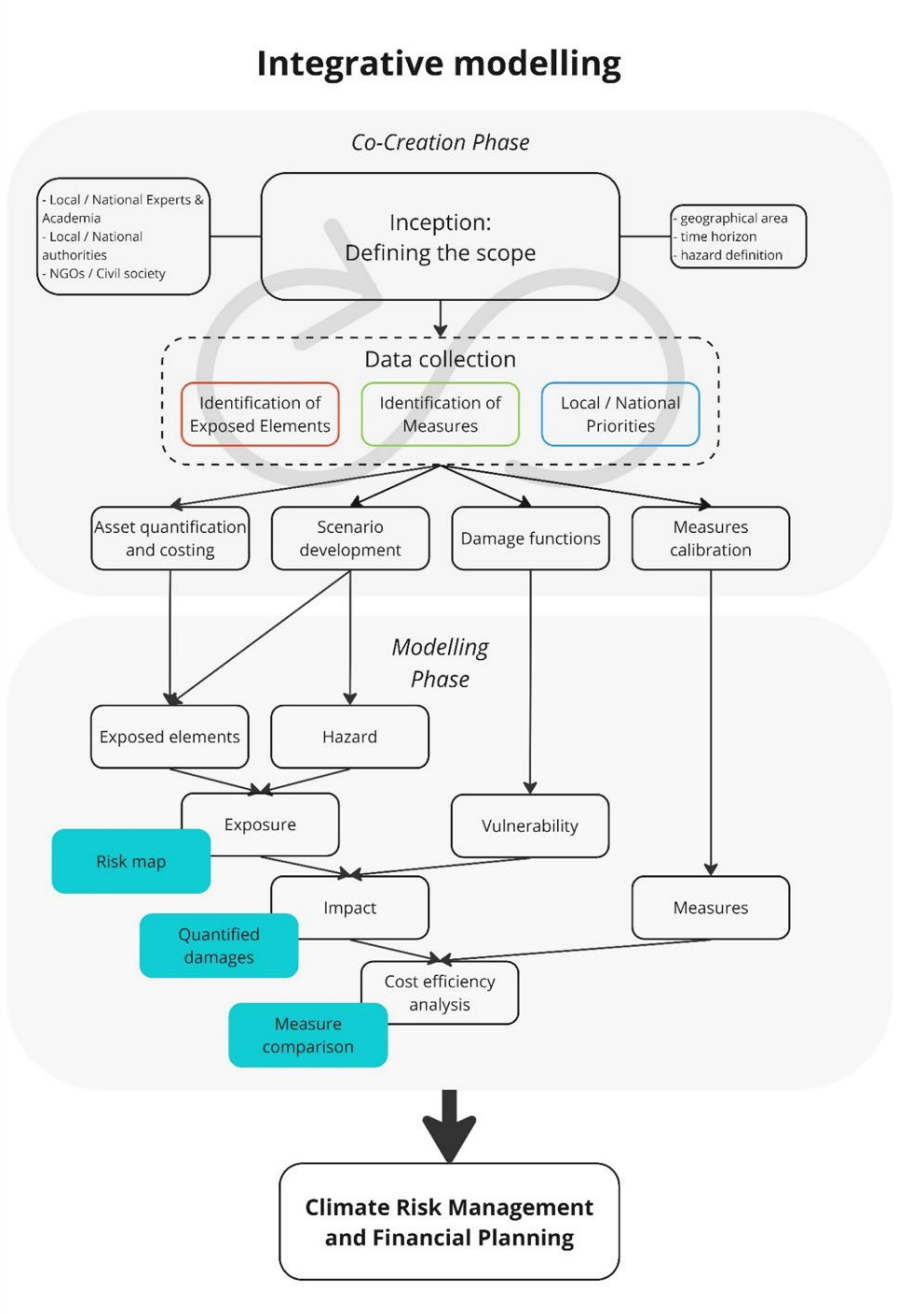
The application of CLIMADA in diverse case studies underscores its versatility and impact. A pertinent application of CLIMADA is demonstrated in Niger, where the tool was used to assess drought impacts over the next three decades on Niger's primarily agricultural economy. Unlike in more classic applications, the focus was on the potential financial requirements for humanitarian assistance rather than infrastructural impacts. The assessment revealed that drought risk is expected to more than double due to exacerbated drought conditions and socio-economic development under the RCP 8.5 scenario. The tool demonstrated that continuous and scaled-up investments in established ecosystem-based adaptation measures could save up to US$9.7 billion in humanitarian costs alone, highlighting that the benefits of proactive adaptation significantly outweigh expected future financial needs for humanitarian response.

This project, a collaboration with the World Food Programme, also emphasized significant stakeholder engagement and knowledge transfer. Nigerien experts were trained in the use of CLIMADA, enabling them to replicate the model independently and reevaluate the country's drought risk with updated data.

Furthermore, the training allowed ongoing assessments and the analysis to be extended to include additional climate hazards such as flooding. This capacity-building effort ensures that Niger has a robust understanding of future climate risks, their financial implications, and the most suitable, cost-efficient adaptation measures to mitigate them, thereby enabling decision-makers to focus on reducing the potential financial burdens relating to humanitarian assistance and infrastructure recovery in the coming decades.

For MoFs, CLIMADA offers a strategic use case in financial planning and risk management. By quantifying potential economic impacts and losses under various climate and socio-economic scenarios, the tool enables governments to develop and evaluate new financial instruments such as sovereign climate risk insurance or catastrophe bonds. Proactive financial planning not only protects national budgets but also promotes economic stability and sustainable growth in the face of escalating climate risks. Leveraging CLIMADA's insights ensures that investments are directed toward the most effective adaptation strategies.

Figure 1. Integrative modeling framework using CLIMADA within the Economics of Climate Adaptation (ECA) framework, supporting climate risk management and financial planning by assessing hazards, exposure, and vulnerability



Source: MCII/Analytics Team