Digital solutions for attributing climate change impacts on child nutrition and health (CLIMAKID)

Children in low- and middle-income countries are among those most at risk to the health impacts of climate change, not least through undernutrition, which has serious long-lasting consequences for individuals and society and may undermine decades of global health gains. Attribution science can drive urgent societal action. However, it is currently limited in scope, focusing mostly on heat and adult populations in high-income settings, largely because of the lack of accessible tools, methods, data, and interdisciplinary expertise. To fill this research gap, this project will derive multiple climate attribution datasets, advance process-based crop models, and apply econometric, epidemiological and health impact assessment methods on underused data sources in order to quantify the already occurring impacts of climate change on child health. These will be integrated into an interactive digital open source tool, co-designed in a series of workshops with the interdisciplinary project team and scientists and stakeholders from West Africa, Central/Eastern Africa, and South Asia. The attribution results will be set into the context of mitigation and adaptation options and complemented with an intergenerational justice perspective. The involvement of policy makers will be ensured throughout the project to advance the policy integration of the generated evidence.

The DKRZ project e-CLIMAKID provides the data storage and computing for this research. Specifically, it facilitates integrated data and computing for climate-agriculture-health event attribution, making use of existing DKRZ held data and tools. Key aspects are bias correction and downscaling of large-ensemble climate model data to be stored and provided to a wide user group, and development of a tool called MILK (Model Investigating Links between climate change and Kids' nutrition and health). MILK will allow this data to be used in agricultural and health models via DKRZ user access. Climate data processing will be conducted continuously throughout the project, increasingly populating the storage, while the scientific and computing methods will in parallel be developed and applied in a series of workshops.

Data generated in e-CLIMAKID will benefit existing DKRZ users as well as the wider climate attribution and impact modelling communities beyond agriculture and health scientists. The provision of large ensembles of climate model data in processed form suitable for impact modelling enables a capacity step change not only for climate impact attribution, but also for any impact modelling exercise that informs crucial climate risk assessments: By enabling to distinguish between the influence of climate model vs. internal climate variability uncertainty, to account for high-impact, low-likelihood events in the projected future insofar as included in ScenarioMIP, and to study the impacts of climate extremes – all of which support more comprehensive climate risk assessments. Moreover, MILK will allow a wide range of scientists to conduct attribution studies of high policy relevance. Results from MILK will further be visualised and provided in a user-friendly interface for health practitioner, planners and additional stakeholders.