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Unravelling the complexity of multi-risk systems and adaptation pathways

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Disaster Risk Management (DRM) is increasingly complex due to interacting climate risks from concurrent hazards. The Dynamic Adaptive Policy Pathways for Multi-Risk (DAPP-MR) framework has been introduced to assess DRM policies' effectiveness under deep uncertainties - such as future climate change - and to develop integrated adaptive strategies considering interactions across hazards, sectors, and time. So far, no use cases were available that provide evidence regarding the utility of DAPP-MR.

In this presentation we examine DAPP-MR through a synthetic multi-risk modelling case study, focusing on DRM pathways for managing flood and drought risks across different sectors for a period of 100 years. The case study, inspired by a Dutch river delta, accounts for multi-hazard interaction effects such as including co-occurring or preceding droughts amplifying flood risk, and consecutive flood events as well as multi-sector dynamics. While providing insights into the model development process, the result analysis and conclusions, we also discuss the challenges and benefits of combining multi-risk thinking and climate change adaptation decision-making approaches and the implications of multi-risk dynamics on trade-offs and synergies of different risk management strategies.