RISKADAPT
Modeling of Risks and Adaptation

PRESS RELEASE

RISKADAPT project concludes: Advancing climate resilience for Critical Infrastructures (CIs)

22/12/2025

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Press release

The RISKADAPT project, funded by the **European Union** under the **Horizon Europe** programme, is concluding after three years of intensive research, innovation and international collaboration across Europe and Hong Kong. RISKADAPT has delivered PRISKADAPT, a novel, open, modular and user-friendly platform to support systemic, risk-informed adaptation decisions at the asset level. The platform explicitly models dependencies between infrastructures, predicts climate-induced loads and integrates technical, economic, environmental and social risks, providing decision-makers with actionable insights to enhance resilience against extreme weather events.

Key Achievements:

- **Environmental and sustainable solutions:** The project identified low-carbon construction and adaptation solutions, integrating environmental performance into climate resilience strategies for critical buildings and infrastructures.
- **Comprehensive Total Risk Assessment (TRA)**: PRISKADAPT integrates advanced climate modelling, structural analyses, life cycle assessment and costing (LCA/LCC), probabilistic risk assessment, and social impact analysis to evaluate climate-induced impacts on infrastructure. Economic, environmental, and social consequences of infrastructure damage and disruption are explicitly linked to the probability of damage and failure, enabling the calculation of a Total Risk Assessment (TRA). This produces integrated probabilistic risk indicators, such as Expected Annual Loss, that reflect not only how likely climate-induced failures are, but also how severe their economic, environmental, and social consequences are.
  The results are organised in a Model Information System (MIS) that provides harmonised indicators for each asset and enables transparent, side-by-side comparison of baseline ("as-is") conditions and alternative adaptation ("what-if") scenarios across technical performance, costs, environmental footprint, and social well-being.
- **Social impact analysis:** RISKADAPT quantified the social consequences of infrastructure disruptions. Using spatial microsimulation models, the University of Groningen assessed how events such as bridge closures, power outages, or hospital disruptions affect well-being, happiness, and quality of life, particularly for vulnerable populations.
  By integrating these social impacts directly into the Total Risk Assessment and MIS comparison framework, RISKADAPT bridges a critical gap between technical risk assessment and social vulnerability analysis, allowing policymakers to identify who is affected, where, and to what extent.
- **Pilot implementations:** Case studies in Greece, Finland, Italy and Hong Kong tested the platform under real-world conditions, covering bridges, electricity grids and buildings. The platform demonstrated adaptability across multiple hazards and asset types.
- **Third party use:** PRISKADAPT was opened to external engineers, researchers and public authorities through targeted demonstrations and training activities, enabling third-party testing and feedback and validating the platform's usability beyond the project consortium.
- **Knowledge exchange and capacity building:** RISKADAPT organized workshops, training sessions, webinars and clustering events, engaging hundreds of participants, including infrastructure managers, engineers, academics and policymakers.
- **Dissemination activities:** Peer-reviewed journal articles and conference contributions were produced, alongside accessible summaries of technical reports and interactive visualizations. All outputs are publicly available via the project website and Zenodo, ensuring broad and long-term access.

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- **Exploitation, policy and standardization:** RISKADAPT contributed to exploitation planning, policy dialogue, and standardisation activities, supporting the uptake of its results beyond the project lifetime and informing climate adaptation strategies at multiple governance levels.
- **Data gaps identification:** The project systematically identified critical data gaps affecting climate adaptation analyses and proposed methodologies to address them, providing guidance for future applications to similar assets.
- **Stakeholder engagement:** The RISKADAPT Community was created to involve decision-makers, asset owners, technical experts and citizens in co-designing tools, providing feedback, and supporting climate adaptation strategies.
- **Ethics & legal obligations:** All project activities complied fully with ethical, legal, GDPR, and gender equality requirements, including informed consent, secure data handling, and responsible data governance.

Impact and legacy:
RISKADAPT provides scalable, evidence-based solutions for Europe's critical infrastructure, informing policy, engineering practice and disaster preparedness strategies. By combining technical risk modelling with economic, environmental and social impact assessment, the project ensures that climate adaptation decisions protect both assets and communities. Through the integration of Total Risk Assessment and structured comparison via the Model Information System, RISKADAPT supports transparent, accountable and socially responsible adaptation planning, strengthening resilience and supporting sustainable development across Europe and beyond.

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PROJECT SUMMARY

RISKADAPT will provide, in close cooperation with the end-users/other stakeholders, a novel, integrated, modular, interoperable, public and free, customizable user-friendly platform (PRISKADAPT), to support systemic, risk-informed decisions regarding adaptation to Climate Change induced compound events at the asset level, focusing on the structural system. PRISKADAPT will explicitly model dependencies between infrastructures, which, inter alia, will provide a better understanding of the nexus between climate hazards and social vulnerabilities and resilience. Moreover, this project will identify gaps in data and propose ways to overcome them and advance the state of the art of asset level modelling through advanced climate science to predict Climate Change forcing on the structure of interest, structural analyses, customized to the specific structure of interest, that consider all major Climate Change induced load effects in tandem with deterioration, novel probabilistic environmental life cycle assessment (LCA) and life cycle costing (LCC) of structural adaptation measures and a new model to assess climate risk that will combine technical risk assessment with assessment of social risks. PRISKADAPT will provide values to a set of indicators for each asset of interest, quantifying primary parameters and impacts, in the form of a Model Information System (MIS) that will provide all required information for adaptation decisions. PRISKADAPT will be implemented in the case studies in the pilots that involve specific assets, however, it will permit customization with local values of parameters and data, so it can be applicable throughout Europe for Climate Change adaptation decisions involving assets of similar function, exposed to multiple climate hazards.

Fast Facts:
Project number: 101093939
Starting date → 01.01.2023
Project information → 36 months | 17 partners | EU contribution 2.533.536,00 €
Coordinator → RISA Sicherheitsanalysen GmbH
Website→ www.riskadapt.eu LinkedIn→ RISKADAPT

Consortium Partners:
RISA Sicherheitsanalysen GmbH (RISA) | Ilmatieteen laitos (FMI) | Utrecht University (UU) | University of Groningen (RUG) | Federation of the European Precast Concrete Industry (BIBM) | Alma Mater Studiorum – Università di Bologna (UNIBO) | University of Stuttgart – Department of Lifecycle Engineering (USTUTT) | Univerza v Ljubljani (ULFGG) | RINA Consulting S.p.A. (RINA) | Tecnic Consulting Engineers (Tecnic) | Environmental Reliability & Risk Analysis (ERRA) | Region of Western Macedonia (RWM) | Municipality of Trieste (MTr) | Sustainable City Network (SCN) | Fingrid Oyj (Fingrid) | University of Hong Kong (UHK) | University of Birmingham (UOB)

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