ISSUE6, 2005

Newsletter

MEDiate

Multi-hazard and Risk Informed system for Enhanced local and regional Disaster risk management

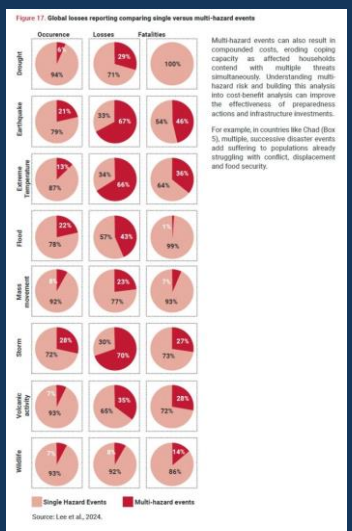
INSIDE

MEDiate towards enhancing societal resilience

The MEDiate project aims to improve the assessment of disaster risks and strengthen disaster risk governance to manage disaster risks. The project is developing a decision support system (DSS) for disaster risk management by considering multiple interacting natural hazards and cascading impacts, using a novel resilience-informed (strategic focus), people-centric (tactical focus) and service-oriented (operational focus) approach that accounts for forecasted modifications in the hazard. The project involves stakeholders and pilot sites from the City of Oslo (Norway), Essex County Council (United Kingdom), Nice Cote d'Azur Metropolis (France) and Seyðisfjörður in Múlaþing (Iceland).

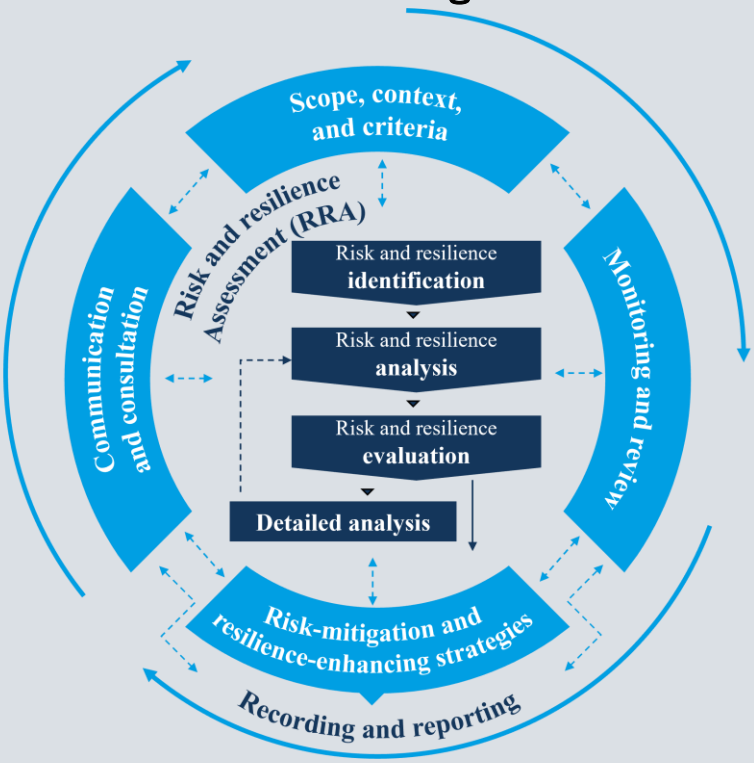
MEDiate in UNDRR GAR report

One of MEDiate outputs - reclassification of disaster considering the multi-hazard interaction was featured in 2025 United Nations Office for Disaster Risk Reduction (UNDRR) Global Assessment Report on Disaster Risk Reduction (GAR)!



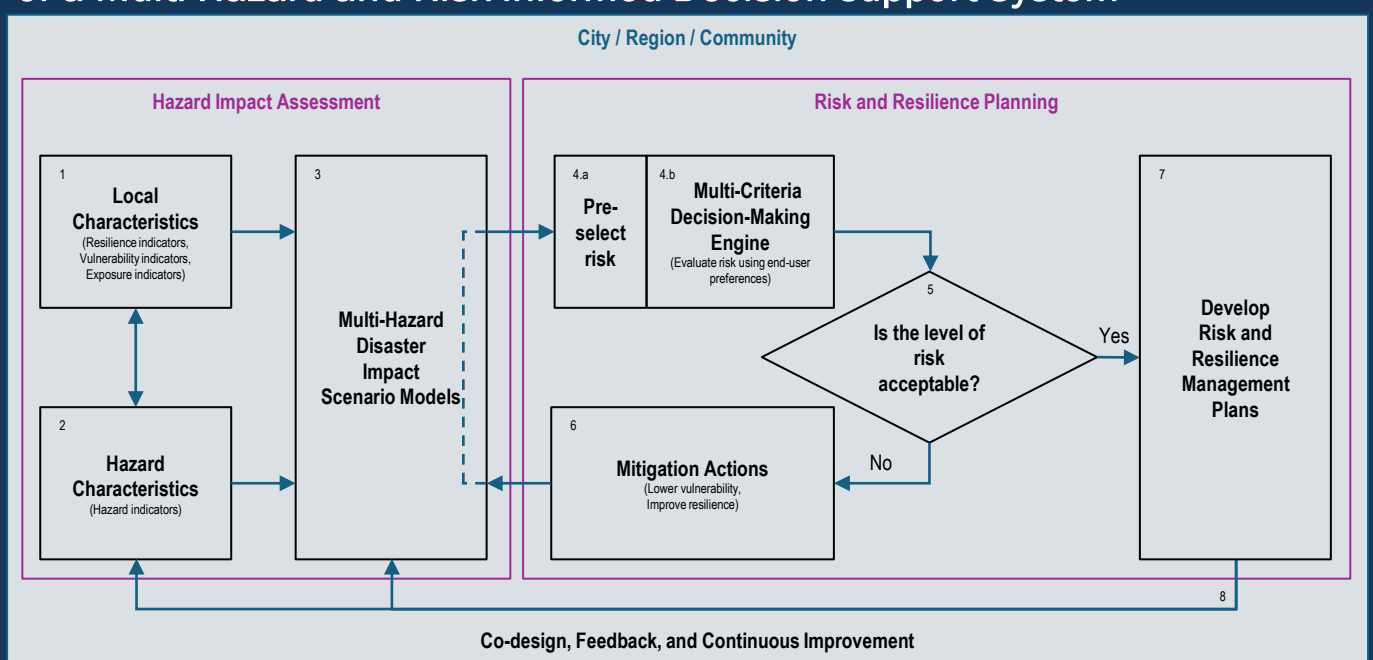
Funded by the European Union
UK Research and Innovation
MEDiate project
mediate-project.eu
info@mediate-project.eu

MEDiate disaster risk and resilience management framework



Meslem, A. and Huang, C.: A Novel Operational Risk and Resilience Management Process for Emergency Planning and Civil Contingency, EGU General Assembly 2024, Vienna, Austria, 14–19 Apr 2024, EGU24-9686, https://doi.org/10.5194/egusphere-egu24-9686, 2024.

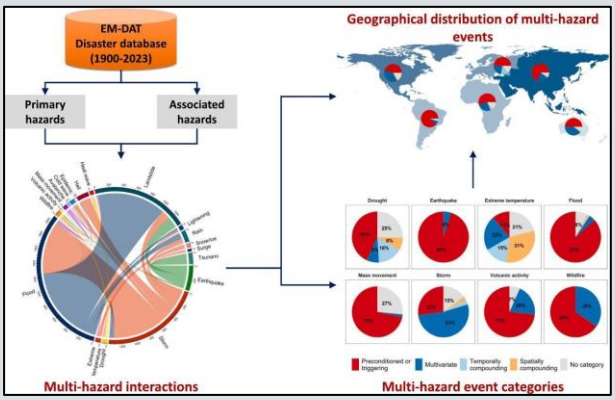
MEDiate Conceptual Model of a Multi-Hazard and Risk-Informed Decision-support System



Ibrahim, O. M., Revel, Y., Shepherd, L., Halldórsdóttir, T. K., Gjetrang, I. S., Thomin, C., Yousaf, Z., Palmer, C., Úlfarsson, A., Huang, C., Morga, M., Þorvaldsdóttir, S., and Meslem, A.: A conceptual multi-hazard and multi-risk decision-support system model: Stakeholders' perspectives, EGU General Assembly 2025, Vienna, Austria, 27 Apr–2 May 2025, EGU25-20660, https://doi.org/10.5194/egusphere-egu25-20660, 2025.

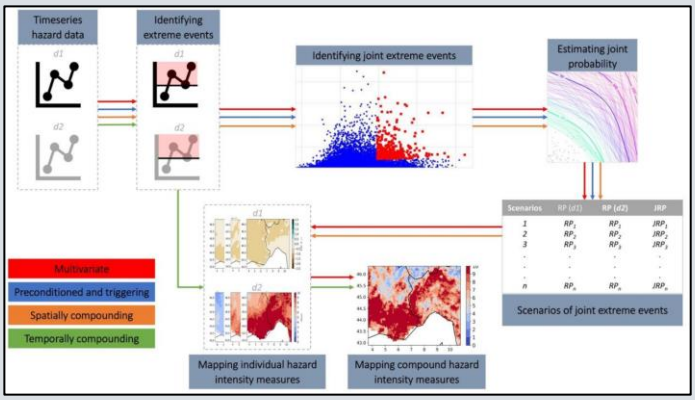
Multi-hazard and Cascading Impacts

Multi-hazard interaction types



Lee, R., White, C.J., Adnan, M.S.G., Douglas, J., Mahecha, M.D., O'Loughlin, F.E., Patelli, E., Ramos, A.M., Roberts, M.J., Martius, O. and Tubaldi, E., 2024. Reclassifying historical disasters: From single to multi-hazards. Science of the Total Environment, 912, p.169120. https://doi.org/10.1016/j.scitotenv.2023.169120

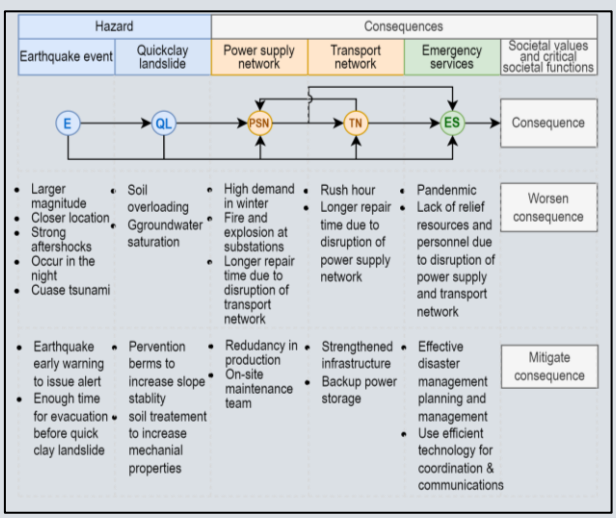
Multi-hazard joint return periods



Mohammed Sarfaraz Gani Adnan, Christopher White, Eleonora Perugini, et al. A comprehensive framework for quantifying diverse multi-hazard interactions. ESS Open Archive . May 08, 2025.

https://doi.org/10.22541/essoar.174526074.45009802/v2

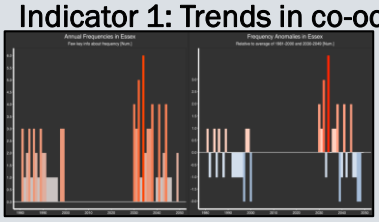
Multi-hazard cascading impacts



C. Huang, A. Meslem, O. Mohammad Ibrahim, I.S. Gjetrang, F. Victoria De Maio, F. Ghione: Assessing the cascading impacts of earthquake and the triggered quick-clay landslide in Alna, Norway, in 18th World Conference on Earthquake Engineering Proceedings. 2024 https://proceedings-wcee.org/view.html?id=24346&conference=18WCEE

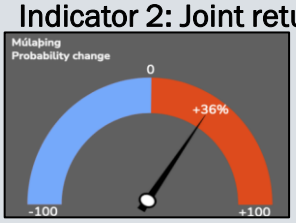
Multi-hazard indicators

Indicator 1: Trends in co-occurrence frequency



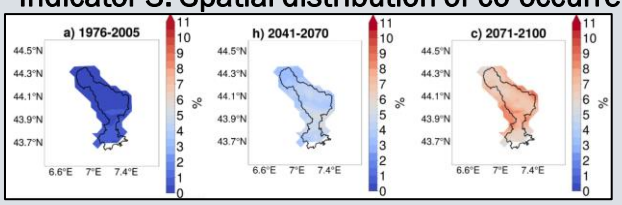
The annual frequency of compound events of extreme wind and rainfall for two periods (1981-2000 and 2030-2049) in Essex

Indicator 2: Joint return period (JRP)



The probability of JRP for heavy rain (1:50 years) and landslide (sNAPI – 1:2 years) events increases by 36% in the future (2020–2100) compared to the baseline (1979–2017) in Múlaþing.

Indicator 3: Spatial distribution of co-occurrence

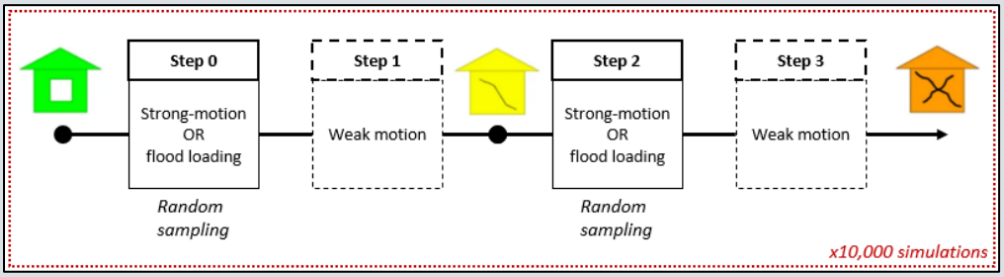


At least one co-occurrence event of drought and heatwave each year from 1970 to 2100 across Nice.

Cha, Y., Arosio, M., & White, C. (2024). Multi-hazard Indicators. Poster session presented at 4th UK National Climate Impacts Meeting, Newcastle, United Kingdom. https://pureportal.strath.ac.uk/en/publications/multi-hazard-indicators

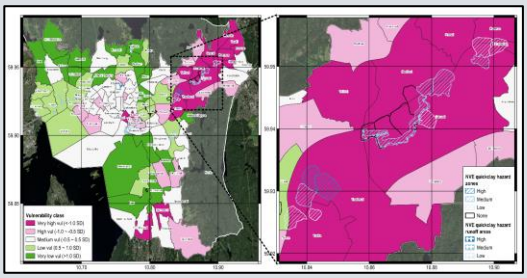
Dynamic Vulnerability and Resilience

Physical vulnerabilities



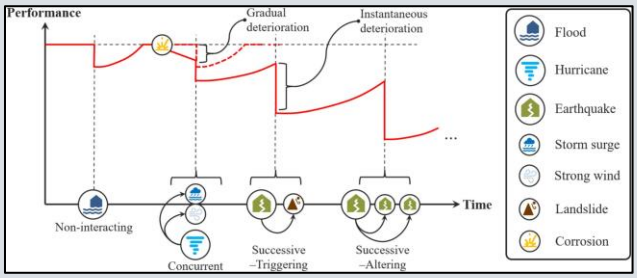
P. Gehl, K. Trevlopoulos, C. Negulescu. Damage state-dependent fragility models for RC buildings exposed to flood and seismic hazards, in 18th World Conference on Earthquake Engineering Proceedings. https://proceedings-wcee.org/view.html?id=22826&conference=18WCEE

Social vulnerabilities



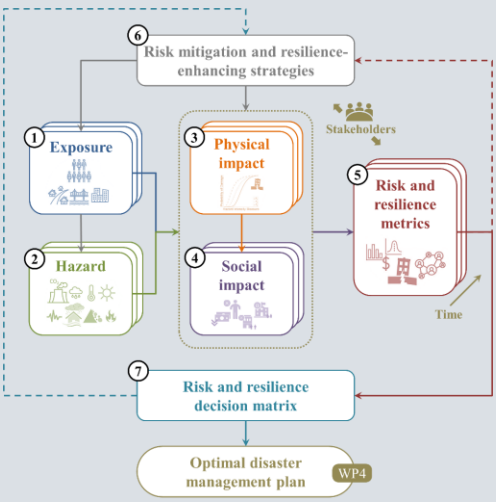
Huang C., Meslem, A., Wanigarathna, N, Ibrahim, O. M., and Gjetrang, I. S.: Socio-economic vulnerability to Natural Hazards: A case study of Oslo, Norway. Natural Hazards Review (Manuscript number NHENG-2562). Under review, 2025

Multi-hazard life-cycle consequence analysis



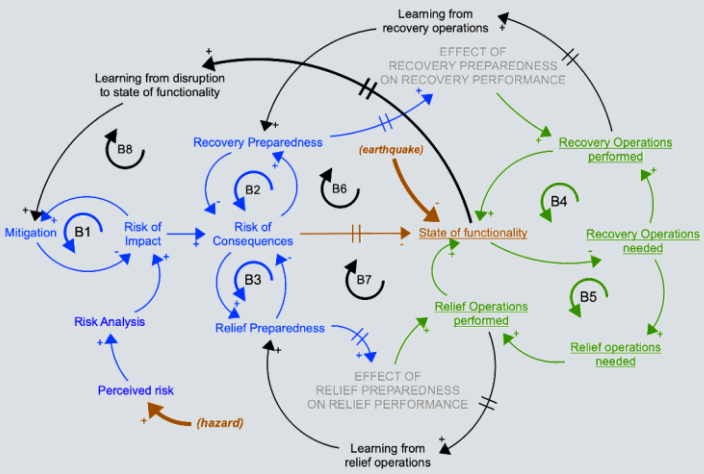
Otárola, K., Iannacone, L., Gentile, R. And Galasso, C., 2024. Multi-hazard life-cycle consequence analysis of deteriorating engineering systems. Structural Safety, 111, p.102515. https://doi.org/10.1016/j.strusafe.2024.102515

Simulation-based framework for multi-hazard risk and resilience assessment amidst climate change



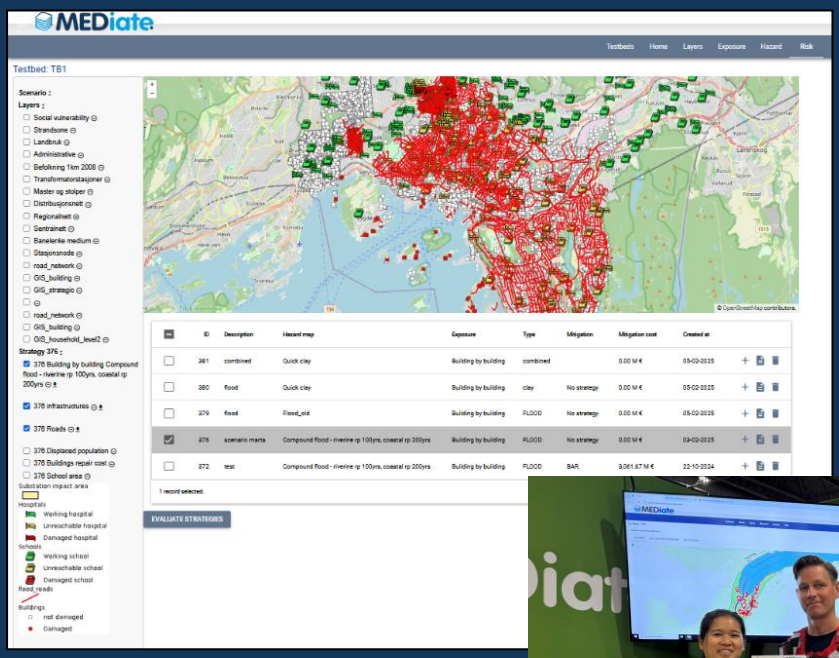
Gonzalez Duenas, Catalina; Cremen, Gemma; Galasso, Carmine; (2023) A novel framework for assessing multi-hazard risk and resilience in a changing world. In: Proceedings of Conference Earthquake risk and engineering towards a resilient world (SECED 2023). Society for Earthquake and Civil Engineering Dynamics (SECED). https://discovery.ucl.ac.uk/id/eprint/10183181

Causal relationships in disaster function management systems



Sólveig Þorvaldsdóttir, 2025. Webinar: Fostering stakeholder collaboration towards disaster resilience. UCL UNESCO Chair Webinar Series Video link

MEDiate Decision-Support System (DSS) Platform

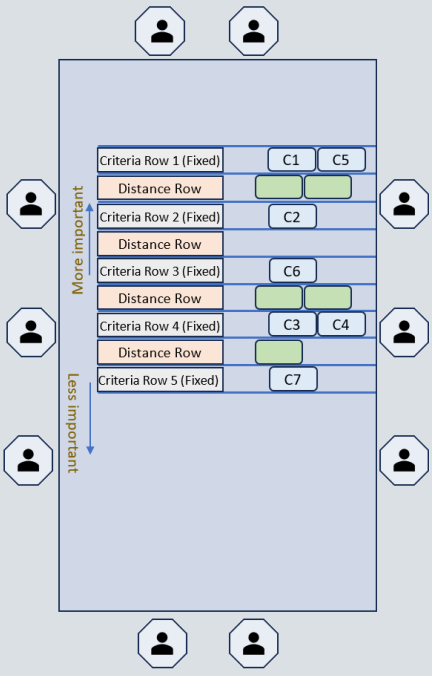


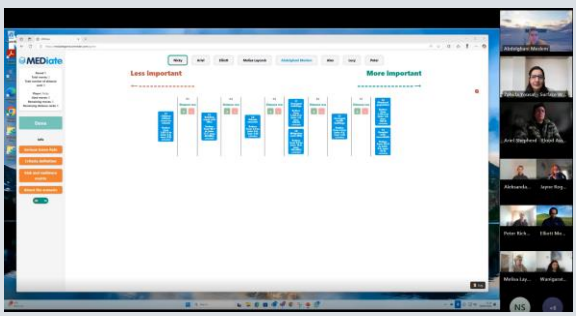
MEDiate DSS Platform is demonstrated and featured in the Security Research Event 2025 (SRE2025), held in Warsaw, Poland, from 24 to 25 June 2025.

https://mediate.dlab.eucentre.it

Please get in touch with us to get a demo account!

Serious Game : a Simos-based silent negotiation process





Concept | In-person serious game in testbeds | General Assembly | Online serious game in testbeds

Yeganegi, M. R., Komendantova, N., and Danielson, M.: Engaging and Conflict-Resolution preference elicitation in Multi-Criteria Decision Analysis for Localized Mitigation Actions in Disaster Risk Management, EGU General Assembly 2025, Vienna, Austria, 27 Apr–2 May 2025, EGU25-18473, https://doi.org/10.5194/egusphere-egu25-18473, 2025.

Testimonials

Osman Ibrahim
Head of Strategy in Agency for Emergency planning, City of Oslo, Norway

A project-based tool is useful, but the permanent capability is what we are after. So we need to embed mediate DSS system platform into our existing risk governance framework and carefully assess changes needed in our processes to benefit most from it. And I think we still need to approach Oslo as living test bed, something we learn from and iterate on to strengthen resilience in our city.

Tinna Kristbjörg Halldórsdóttir
Deputy Managing Director and Senior Project Manager, Austurbrú, Iceland

It was a really good meeting that we had with the stakeholders where they got to test the MEDiate DSS platform and actually try the tool.

But unfortunately we didn't have the time to make all the calculations and use the correct numbers in every way. So that was the biggest criticism that we faced from the stakeholders because they are actually people that are working on making decisions in real time and they just need useful data.

But obviously if the platform is going to be accessible and updatable and they can, they actually saw the possibility and opportunity to use it further on other problems, other hazards, other areas.

So it's critical that it's possible to adjust and update all kinds of layers and numbers and that is actually what it's supposed to do.

Testimonials

Yannick Revel
Coordinator at the Environmental Health Safety and Risk Management Agency (MNCA), Nice Côte d'Azur Metropolis, France

The MEDiate DSS platform will allow decision-makers to better understand the decisions they need to make. It's a true decision-making tool that will allow them to make much more informed decisions, which will improve crisis management. The second benefit of the MEDiate platform is that it provides very interesting data, particularly on population vulnerability. And finally, the last major added value of the MEDiate tool is that it allows us to analyze the cascading impacts and multiple risks that we are experiencing much more frequently in our region, particularly due to climate change.

Charlotte Palmer
Lead Local Flood Authority Manager, Essex County Council, United Kingdom

It's been really exciting to be able to physically see the MEDiate platform and to be able to play with it. And there are still a lot of changes that we would like to make to it to make it usable within Essex. And we definitely need to test it with more data sets to ensure that it's fully suitable for our for our needs and that we can justify using it within our current system. And yeah, that's our next steps really is to get some more data sets run through it and compare it to real life scenarios that have happened historically.

MEDiate

3 YEAR AT-A-GLANCE

2022.10

MEDiate consortirum
Kickoff meeting, Oslo, Norway

2023.11

Technical group meeting, Pavia, Italy

2024.09

Consortium annual meeting, Essex, United Kingdom

3 YEAR AT-A-GLANCE

2024.10

Consortium annual meeting, Delft, Netherlands

European Forum for Disaster Risk Reduction (EFDRR)

2024.10

Final consortium annual meeting, Nice, France

2025.06

3 YEAR AT-A-GLANCE

2023.12

Stakeholder Engagement Testbed 1 – City of Oslo
PAR Cycle 1

2024.06

PAR Cycle 2

2025.02

PAR Cycle 3 – Serious game

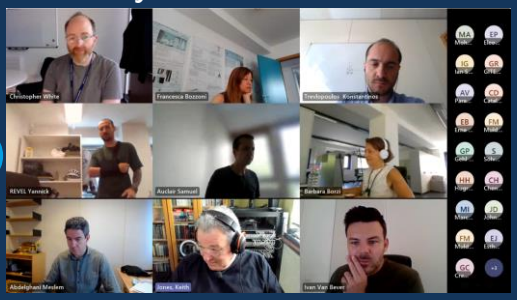
2025.06

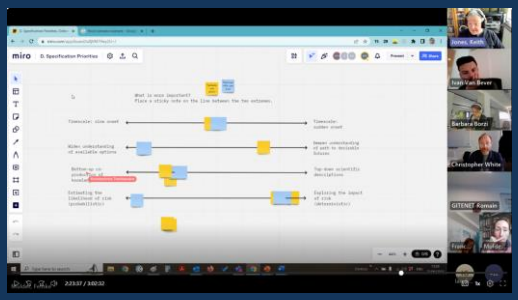
PAR Cycle 3 – Stakeholder exercises

3 YEAR AT-A-GLANCE

Stakeholder Engagement Testbed-2 Nice Cote D'Azur

2023.06 PAR Cycle 1





2024.06 PAR Cycle 2

2025.05 PAR Cycle 3 – Serious game

2025.06 PAR Cycle 3 – Stakeholder exercises

MEDiate

3 YEAR AT-A-GLANCE

Stakeholder Engagement Testbed-3 Essex County

2023.09

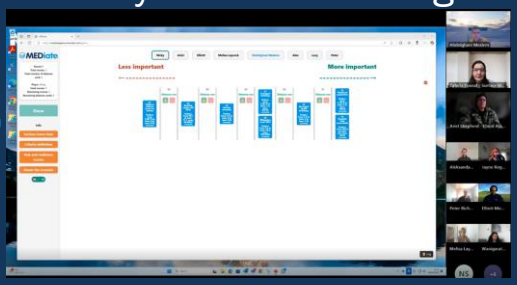
PAR Cycle 1

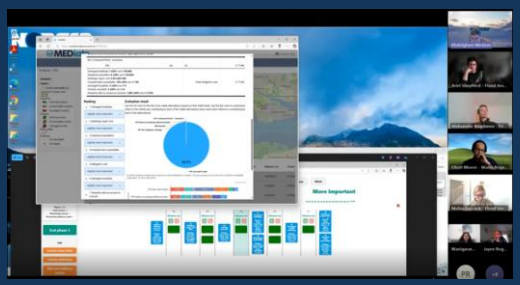
2024.06

PAR Cycle 2

2025.05

PAR Cycle 3 – Serious game





2025.06

PAR Cycle 3 – Stakeholder exercises

3 YEAR AT-A-GLANCE

2023.09

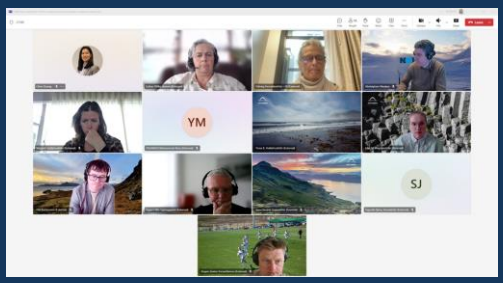
Stakeholder Engagement Testbed-4 Múlaþing Municipality PAR Cycle 1

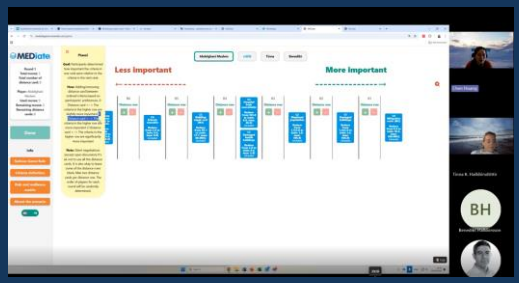
2024.06

PAR Cycle 2

2025.05

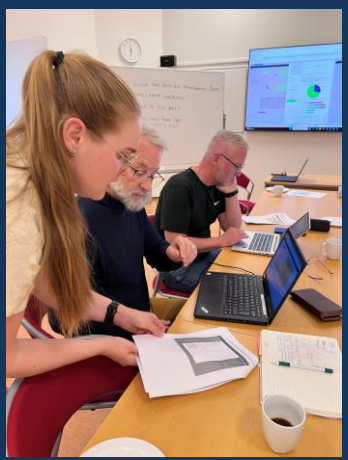
PAR Cycle 3 – Serious game





2025.06

PAR Cycle 3 – Stakeholder exercises



Closing remarks

Dr. Abdelghani Meslem
MEDiate coordinator

Principal Research Engineer, NORSAR
Associate Professor at Norwegian University of Life Sciences (NMBU).

The MEDiate project has been a resounding success, advancing disaster risk reduction research while supporting local and regional authorities through knowledge transfer and capacity building. The consortium produced 26 journal papers, over 28 conference contributions, and engaged in 15+ stakeholder events, including a strong presence at the EFDRR 2024 with a project booth and webinar. MEDiate's results reached a broad audience—from researchers and policy-makers to practitioners—and were featured in the 2025 UNDRR Global Assessment Report.

As we close, we extend our sincere thanks to the consortium partners for their dedication, the testbed stakeholders—the true soul behind MEDiate's outputs—and the followers and supporters whose engagement strengthened the project.

MEDiate leaves a lasting legacy of scientific excellence, stakeholder engagement, and real-world impact, paving the way for more resilient societies in the future.

GET IN CONTACT

Coordinator

NORSAR

Local and Regional Authorities

Essex County Council

MÉTROPOLE NICE CÔTE D'AZUR

AUSTURBRÚ

STEM & SSH
Research Centers, Industries, Universities

UCL

brgm

EUCENTRE FOR YOUR SAFETY.

RINA

Icelandic Met Office

IMT Mines Albi-Carmaux

R2M SOLUTION

IIASA

IUSS Scuola Universitaria Superiore Pavia

a.r.u. Anglia Ruskin University

Deltares Enabling Delta Life

University of Strathclyde Glasgow

Funded by the European Union

UK Research and Innovation