

# MEDiate- developing a decision-support system (DSS) for disaster risk management

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# MEDiate (2022 – 2025)

A Horizon Europe project funded research project

**Aim: develop a decision-support system (DSS) for disaster risk management by considering multiple interacting natural hazards and cascading impacts using a novel resilient-informed, service-oriented and people-centred approach that accounts for forecasted modifications in the hazard, vulnerability and exposure.**

**The DSS is a planning/preparedness tool.**

Coordinated by NORSAR, the Multi-disciplinary team of 18 partners from 6 European countries, including UK

**Four Testbeds: Essex County; City of Oslo; Metropolis of Nice Côte d'Azur; Múlaping Municipality**

## Testbeds

TB1: City of Oslo, NO

TB2: Metropole Nice-Côte D'Azur, FR

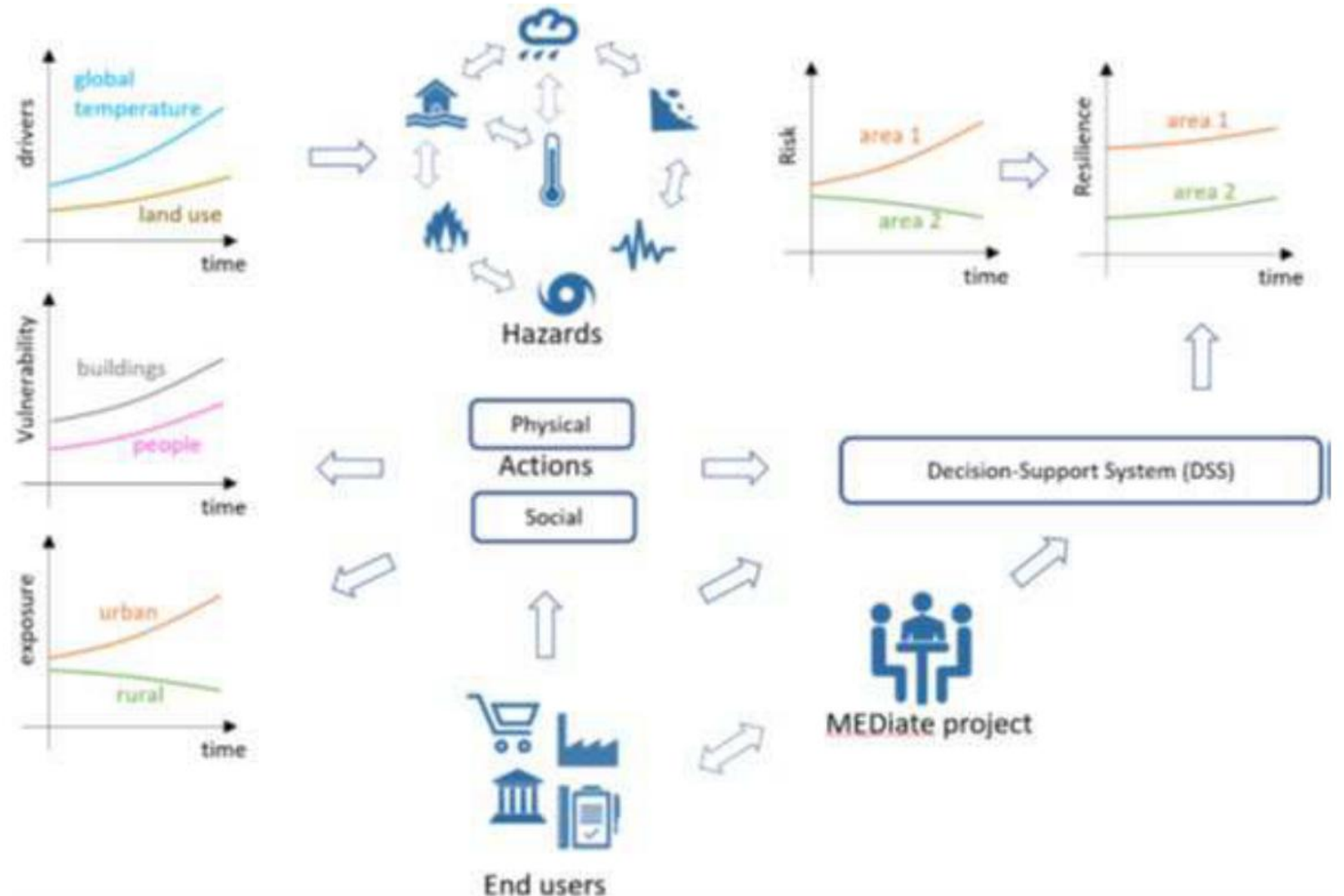
TB3: Essex County, UK

TB4: Múlaping Municipality, IS



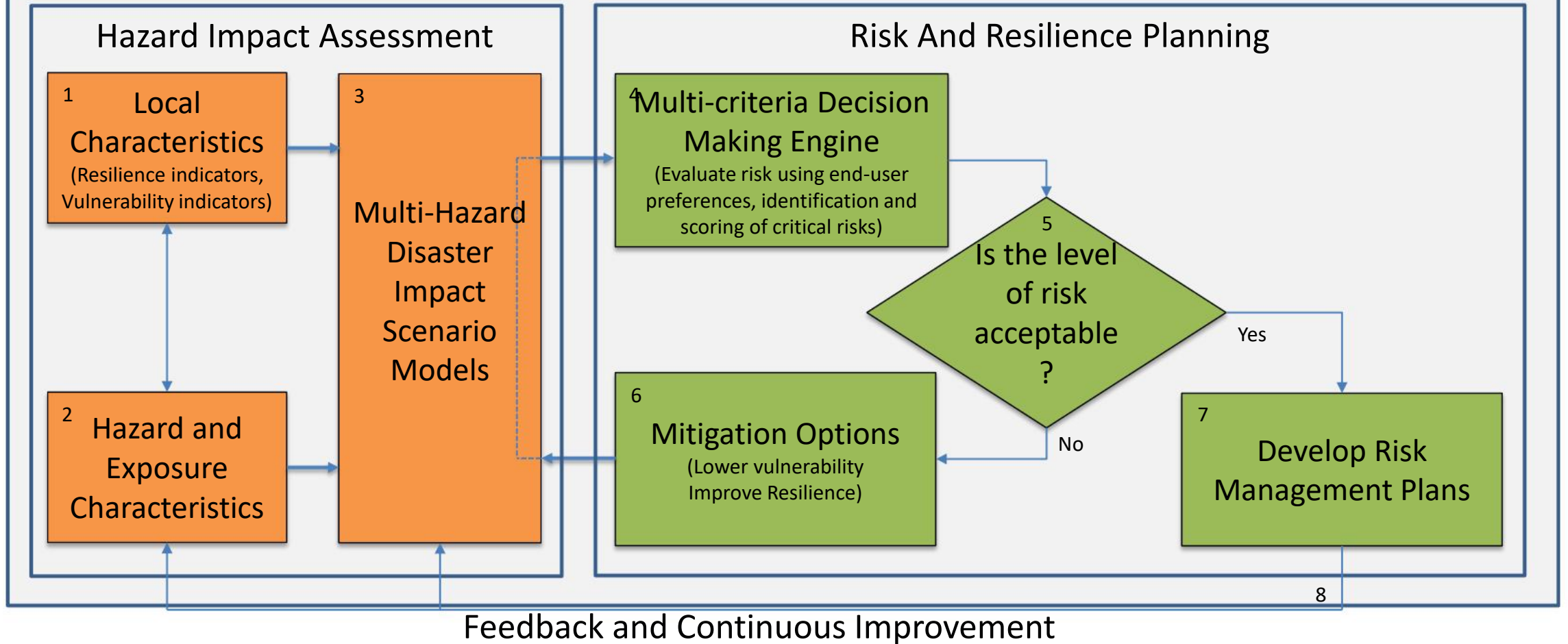
# MEDiate concept

- Participatory Action Research methodology (the tools and the platform are **co-developed with stakeholders/end-users** based in the testbed)
- **Measure residence and risk by assessing Socio-Economic Impacts**, whether there are damaged buildings and critical infrastructure or not.
- The **DSS is customised on the testbed**: hazards, assets, population, special needs of a testbed or request of policymakers.
- The DSS and risk and resilience matrices focus on **single and multiple hazards** (compound, cascading, etc)

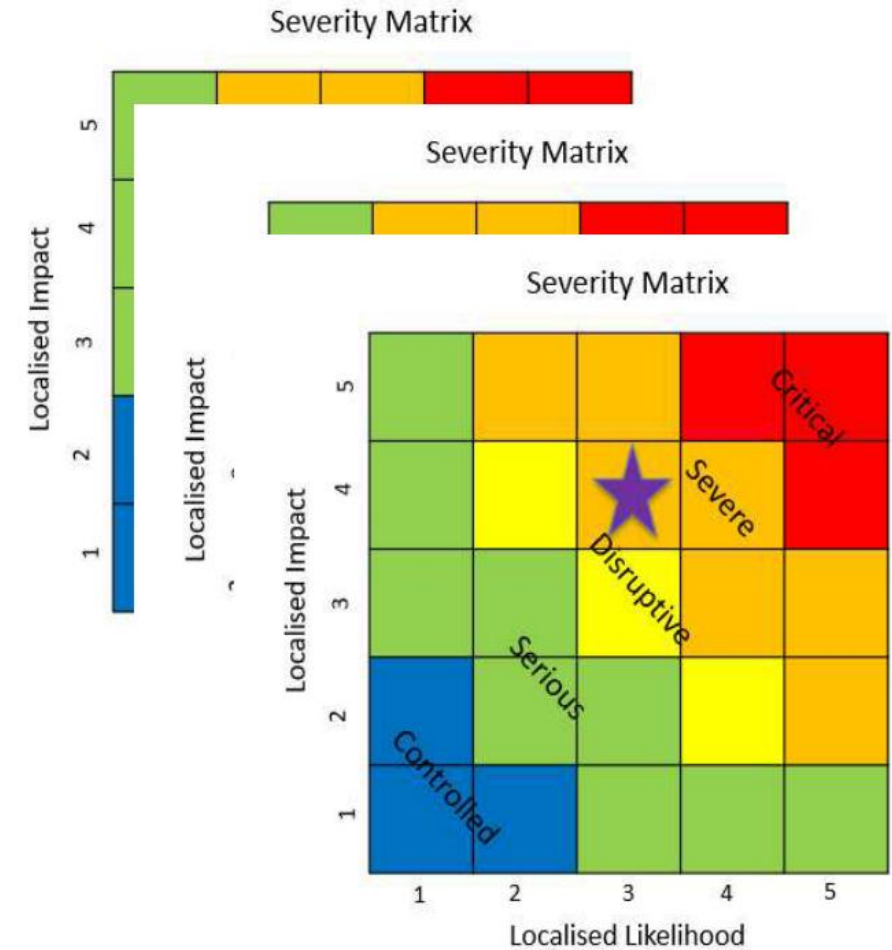
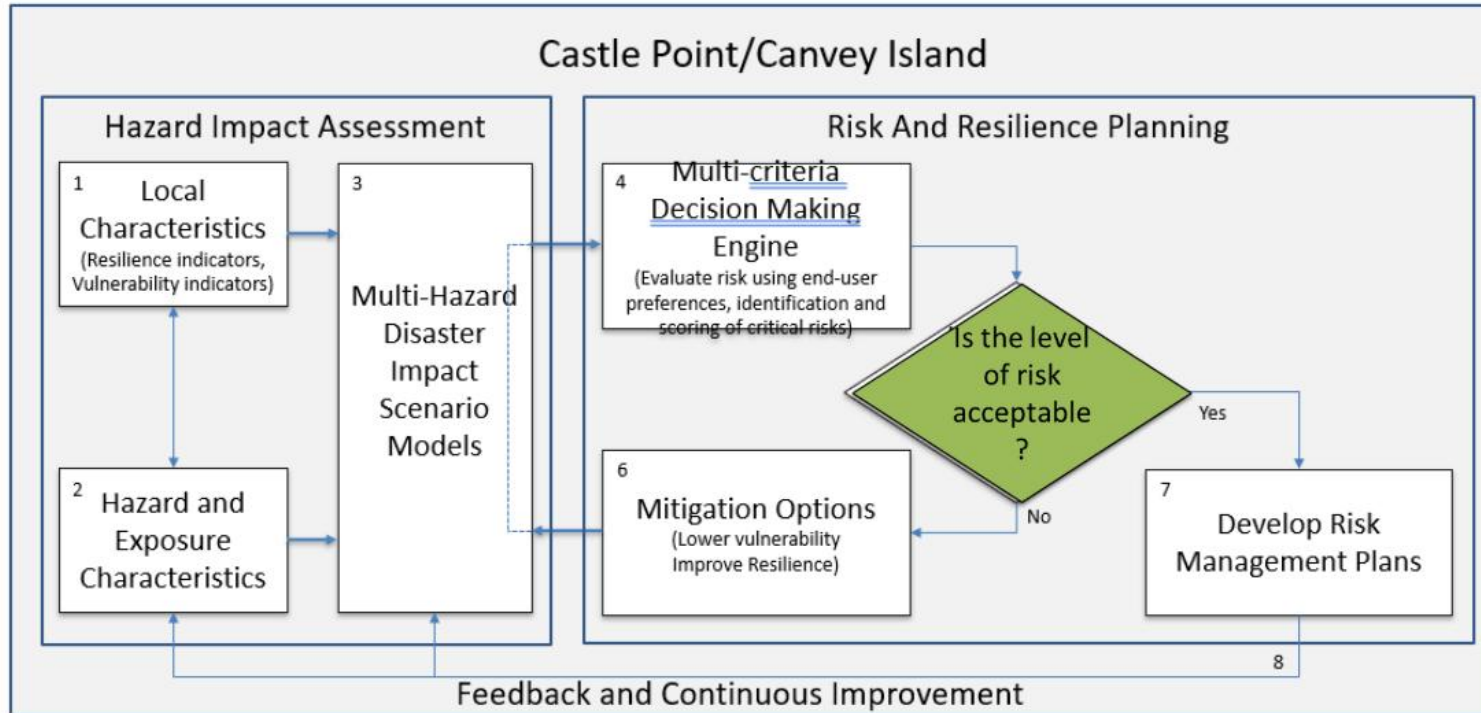


# MEDiate framework

## Castle Point/Canvey Island



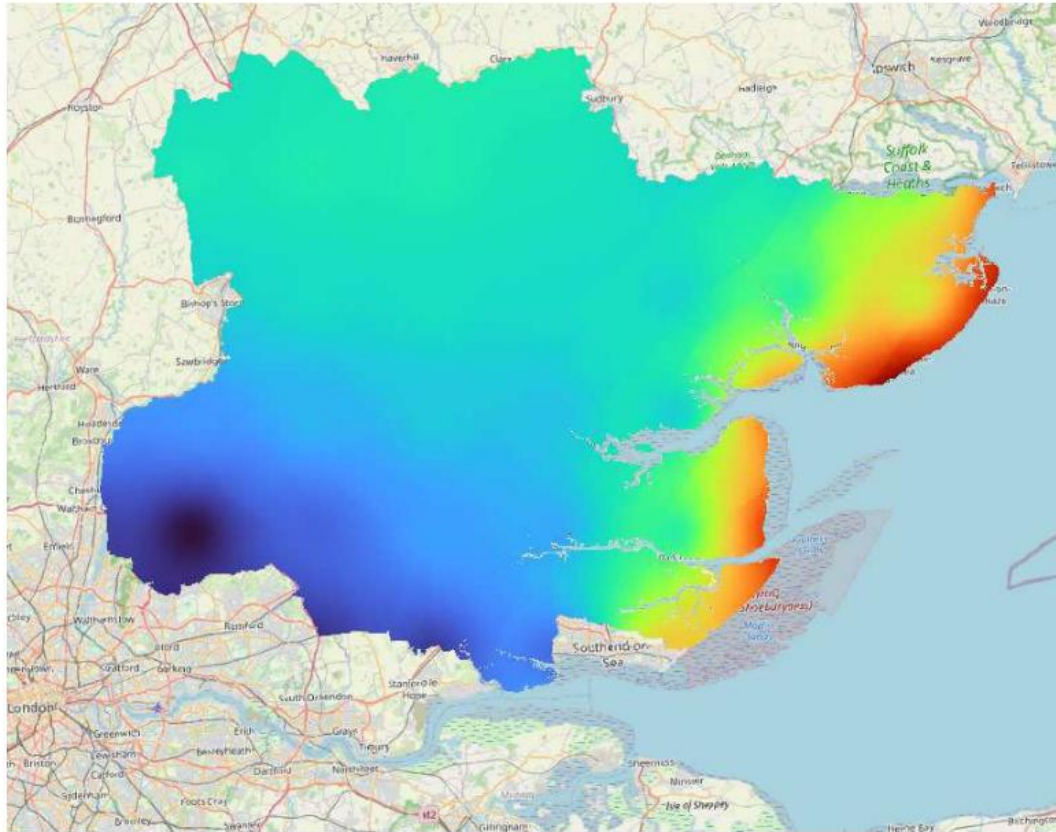
# MEDiate framework



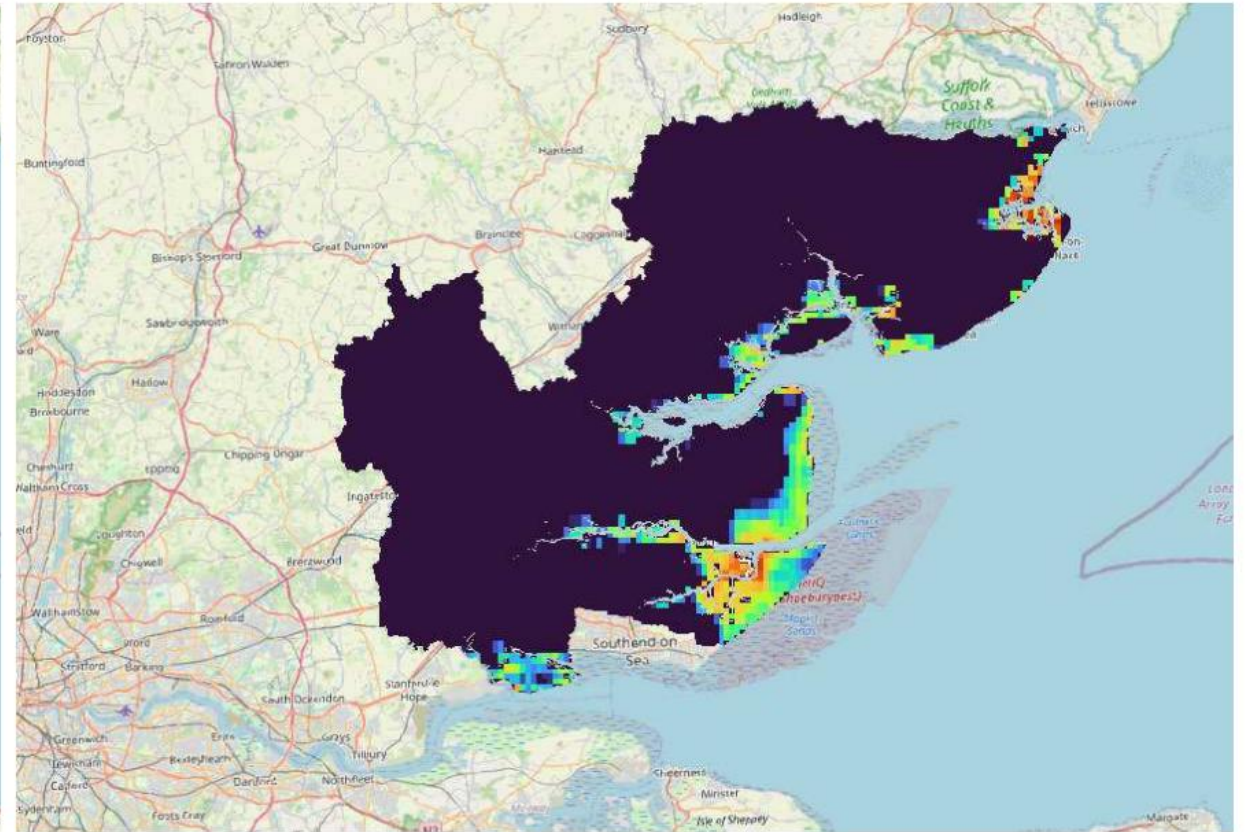
The output of the framework in terms of Risk Management Plans are risk matrices which can be for a region or individual asset.

*For example, Anglia Ruskin University facility and risk managers are interested in the output.*

# Example of Hazard maps (single hazard)calculated for Essex



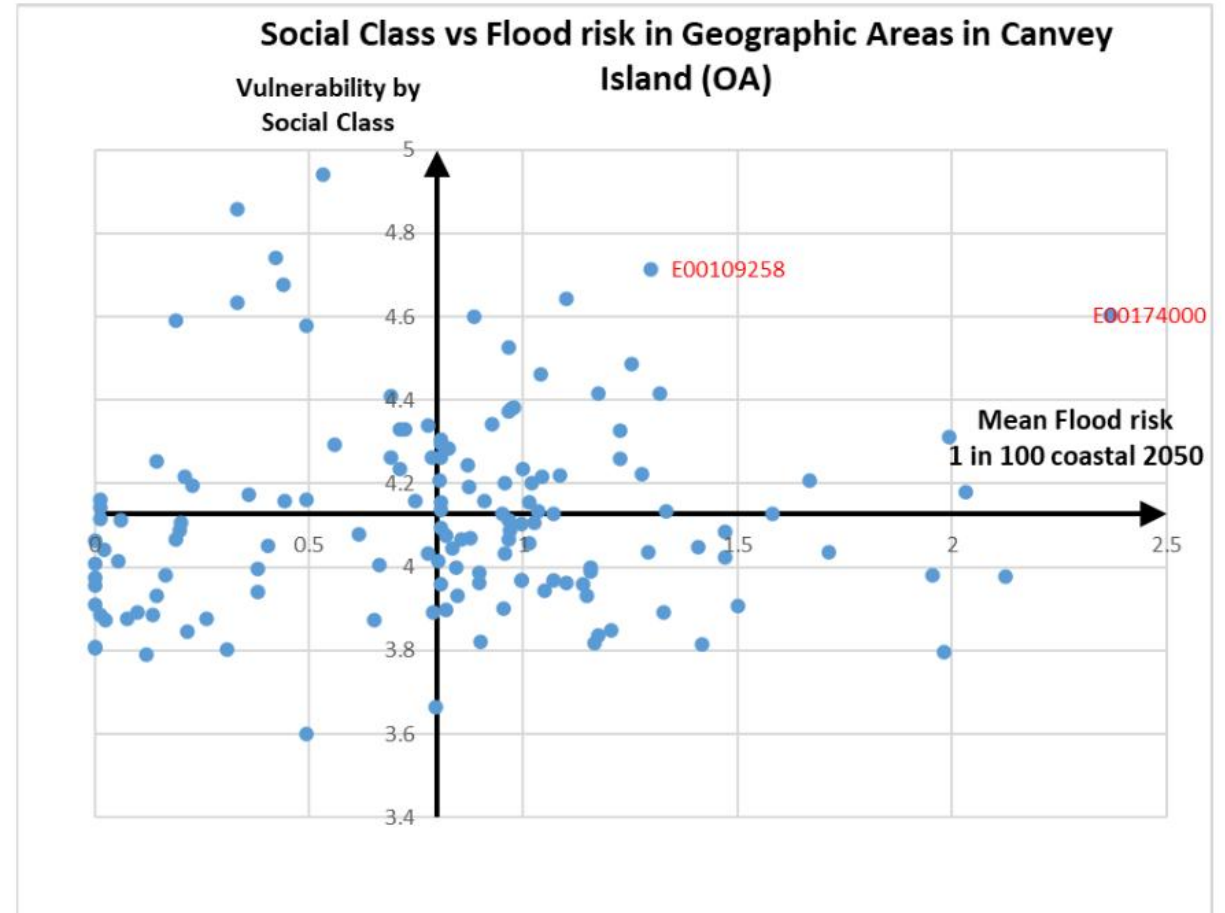
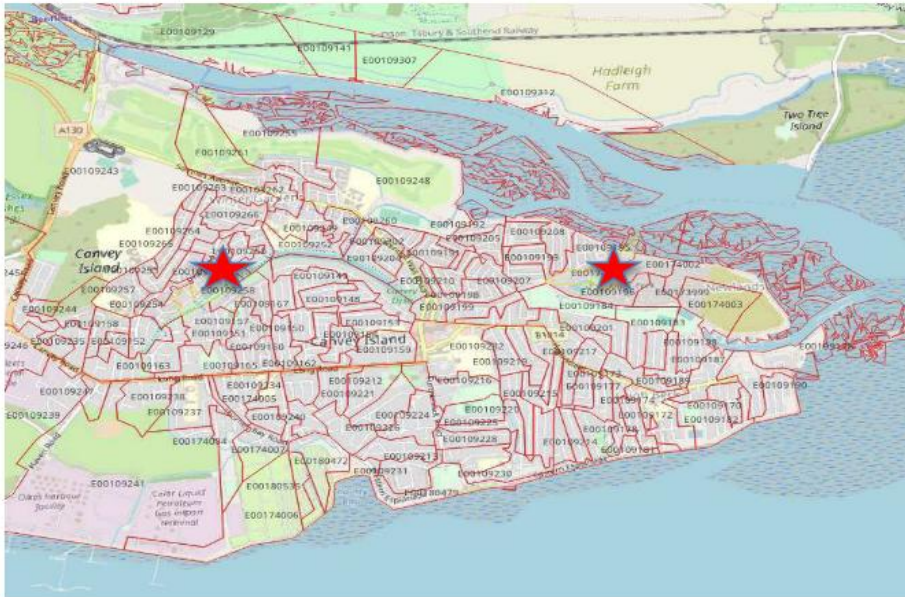
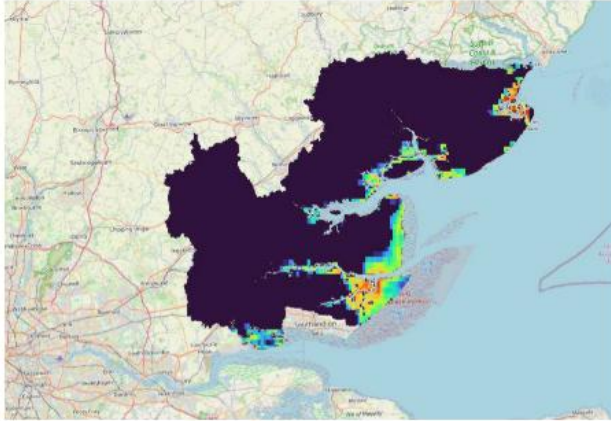
Essex Extreme Wind 2050



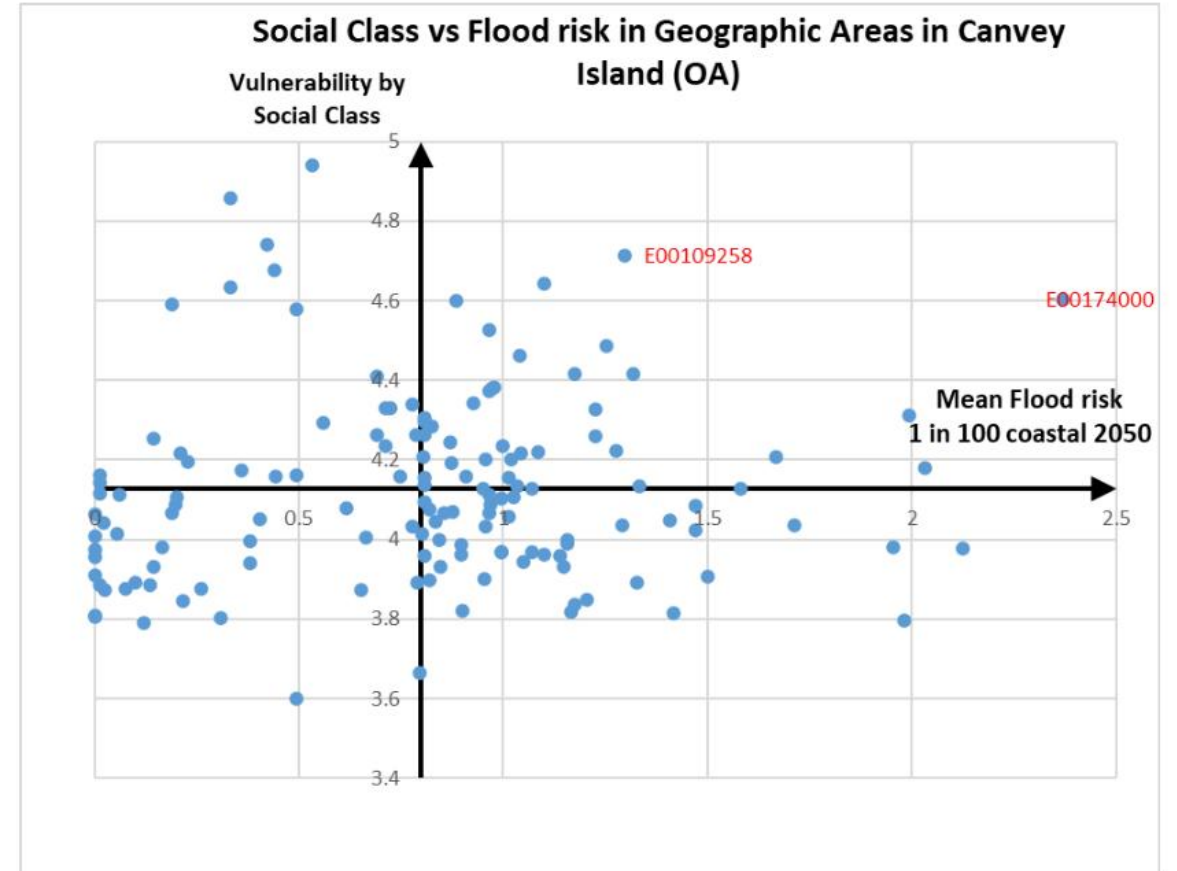
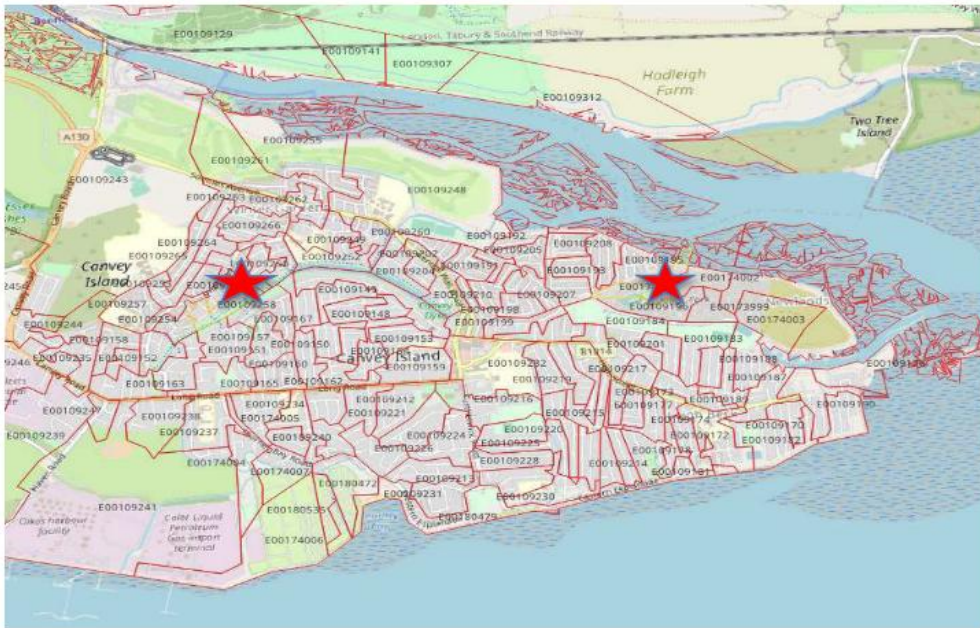
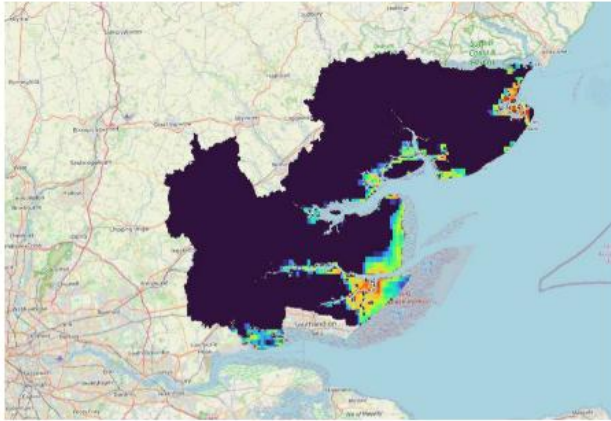
Coastal Flooding 2050

Hazard maps for Essex 2050 (1 in 100)

# Socio-Economic Impact: flood



# Socio-Economic Impact: flood – Social Class



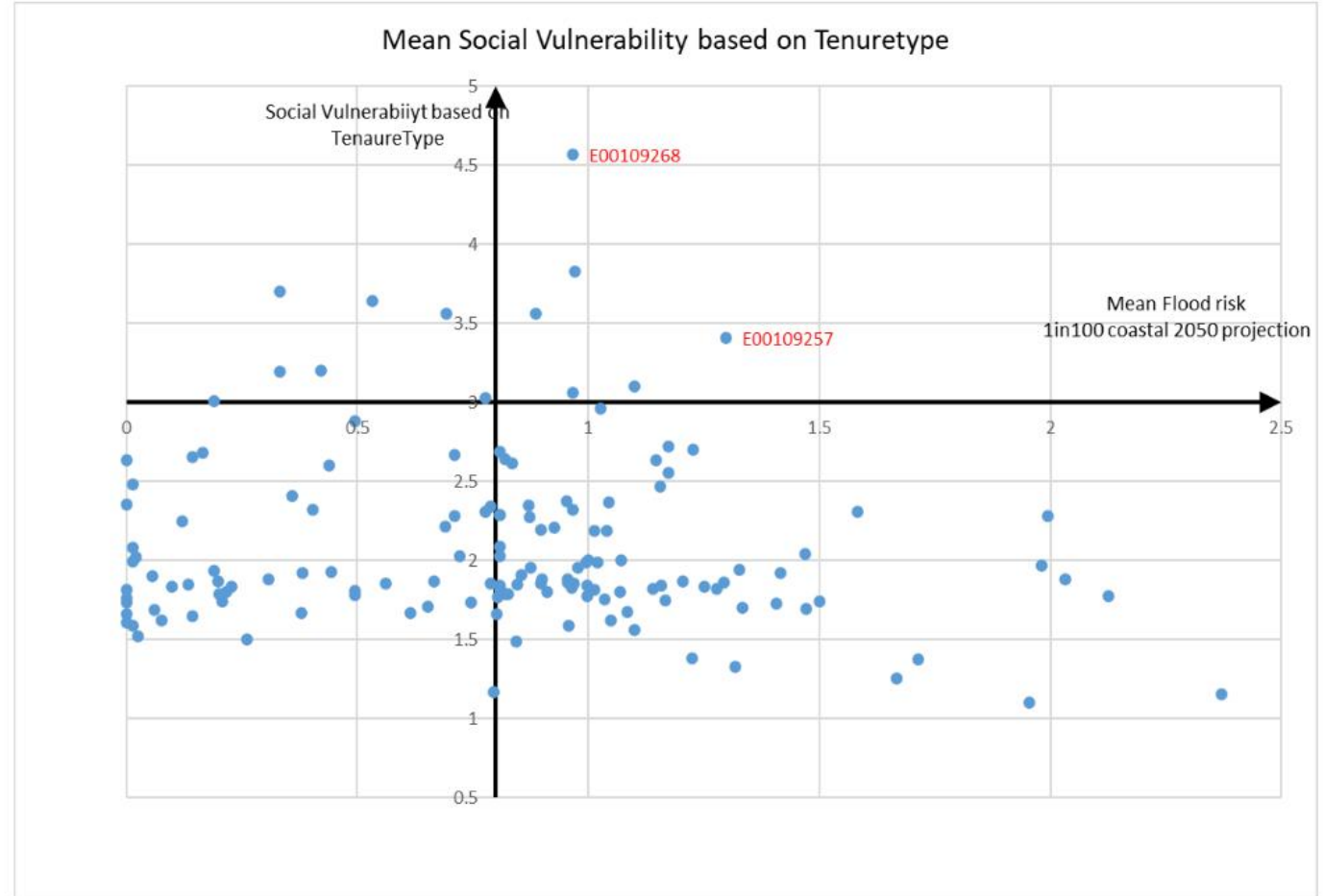
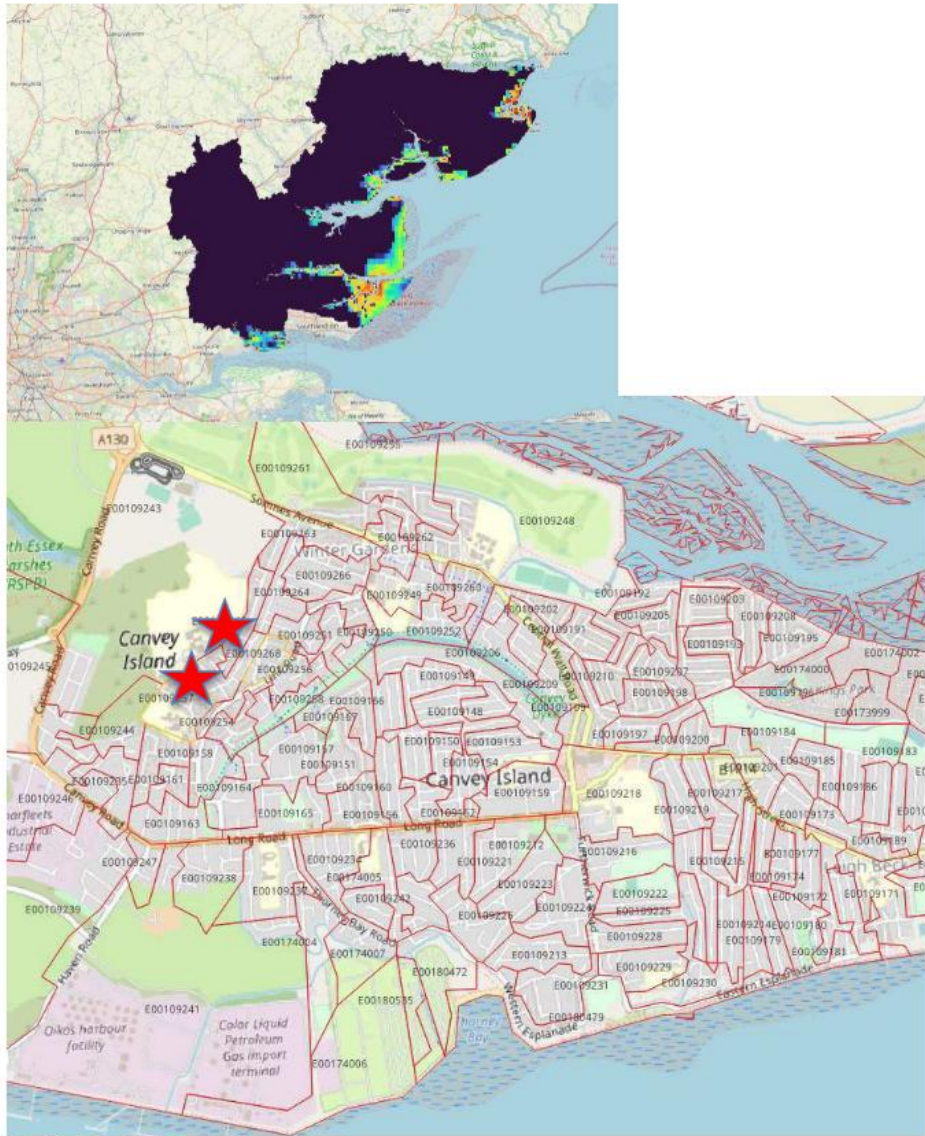
**Vulnerable social classes in high flood risk areas**

Other possible assessments of the social vulnerability are:

- Vulnerable tenure types in high flood risk areas
- Vulnerable Household compositions in high flood-risk areas



# Socio-Economic Impact: flood – Tenure Type



# MEDiate DSS strengths and weaknesses

## Strengths

- The DSS and platform can be customized (hazard, assets, indicator of socio-economic impact)
- The DSS look at multi-hazard impact
- DSS and platform are for planning purposes. They focus on preparedness.
- Past event data inform the DSS (both in terms of hazard, vulnerability, impact and mitigation)
- Co-developed with stakeholders and end-users
- The demo of the platform will be publicly available because it is funded by UKRI and European Commission

## Weaknesses

- The demo of the platform is limited to some regions, but the tools can be used to expand the testbed areas to new regions

# We still need...

- Social vulnerability data...
- Critical infrastructure data (roads, schools, port)



**Thank you. Any Questions?**