

# How to identify and structure your demand for climate services: **Flood mapping and prediction**

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# What is PROTECT?

Horizon Europe project aiming at **raising awareness** and **building capacity** for the use of pre-commercial procurement schemes in the co-development of climate services in view of a [coming call for tender for PCP](#).

We look for public procurers – public authorities (regions, cities, national and regional agencies, etc.) that may be interested in exploring innovative procurement for tackling adaptation and mitigation issues in one of the 4 challenges:

- **Flood mapping and prediction**
- **Climate resilient water solutions** (predicting, collecting data, planning)
- **Sustainable & resilient infrastructure in vulnerable urban & regional areas** (integrated sustainable re-development, restoring & adaptation of old and existing buildings)
- **Fires prediction & prevention** (tracing, identifying – e.g. illegal waste dump fires)

# Welcome to the PROTECT training curriculum workshops!



## Training Curriculum

Structure your demand for climate services (PCP & beyond)



# Questions

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- What is the role of flood mapping and prediction in addressing climate challenges?
- How do local authorities prioritize flood mapping and prediction?
- What are climate services and why does defining them matter?
- How do flood mapping and prediction relate to other climate hazards?
- What is the role of PCP in climate services?
- How is the vulnerability awareness around flood-related hazards distributed within the organization?
- How to improve the analyses of needs and structure the demand in view of a PCP?

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## Introduction to flood mapping and prediction as a challenge



# Why is flood mapping a challenge and what shall we do about it?

Currently, the mapping of flooded areas (marine, coastal areas and rivers) during severe events can take weeks, resulting in delays in response and prevention. Public organisations lack reliable tools for predicting, preventing and responding to such events in a timely manner.

Some foreseen steps are:

1. Implementing a unified repository for historical data along with a single Application Programming Interface (API)
2. Connecting rapid mapping and climate services to the repository
3. Transforming mapping processes into algorithms for more efficient and automated analysis
4. Utilising efficient tools and systems to support the mapping and analysis tasks
5. Ensuring proper utilisation of the tools by a skilled team with the necessary expertise

The desired outcome is to establish a system for rapid mapping that enables predictions and projections to identify risks and define benchmarks. This will involve the development and utilisation of software capable of higher resolution and timely acquisition of satellite information.

# Floods in regional adaptation

- **Flood risks figure prominently in major risk assessments and adaptation strategies in regions across Europe:**
  - a) **Marine & coastal:** Flooding risks in almost all coastal regions: sea level rise [Med FR,ES,northern IT,northern DE,PL], marine submersion [North and Baltic seas,ES-n,IT-n,FR-se], extreme rainfall, thunderstorms and gales [PL,ES-n], combinations of those factors [DE-n,ES-n,NL,LT,FR-w]
  - b) **Sustainable urban communities:** Risk of flooding in urban areas (heavy rainfall, river overflow, marine submersion, sea level rise), aggravated by soil degradation, itself amplified by droughts [BE,NL, IT,PL,FR]
  - c) **Energy & utilities:** multiplication of flooding (extreme rainfall, sea level rise) to disrupt energy production [DE,LT,PL]; risk of landfill flooding [LT]
  - d) **Agriculture, forestry and other land use:** Negative impact on land use from floodings combined with droughts, heavy rains, storms [IT-n,ES-n,LT,PL]; increasing flooding risk in agricultural areas [FI,DE-e,IT-w/n,FR]





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## Structuring and optimising the demand for climate services



# Climate Services

- **Climate services are customised solutions** that **transform climate-related data** together with other relevant information to help address a wide range of needs.
- They include for instance **projections, forecasts, economic analyses, assessments, counselling on best practices**, or any other solution or service in relation to climate that may be of use for the society at large.
- Because **CS allow all categories of end-users** to access and action relevant climate-related data, climate services are essential to support their needs related to climate mitigation and adaptation.
- The potential for new, innovative, connected climate services is untapped.



# Scope of flood-related climate services: Climate services feeding into flood mapping and prediction [INPUTS]

Sub-domain	Category of climate services
Environmental monitoring	Urban greening
Urban planning and monitoring	Surveying and mapping of urban areas
Urban planning and monitoring	Urban modelling, 3D modelling, Digital Twins
Urban planning and monitoring	Urban planning
Environmental monitoring	Environmental impact monitoring
Environmental monitoring	Deforestation/degradation monitoring
Environmental monitoring	Inland water monitoring
Natural resources monitoring	Crop yield forecasting
Natural resources monitoring	Soil condition monitoring
Operations management	Asset monitoring
Weather services for agriculture	Snow and ice
Weather services for agriculture	Climate services for agriculture
Weather services for agriculture	Weather forecasting for agriculture

Sub-domain	Category of climate services
Ocean services	Metocean
Aquaculture	Climate data and modelling for aquaculture
Fisheries	Fish stock detection
Early warning	Forecast
Early warning	Monitoring and warning services
Post-event analysis	Post-event analysis
Preparedness	Preparedness
Rapid mapping	Rapid mapping
Search and Rescue	Situational awareness supporting search and rescue
Infrastructure Planning	Vulnerability analysis
Insurance for natural disasters	Risk modelling
Critical infrastructure	Design of infrastructure
Critical infrastructure	Infrastructure monitoring
Critical infrastructure	Emergency assistance

# Scope of flood-related climate services: Climate services flood mapping and prediction feeds into [OUTPUTS]

Sub-domain	Category of climate services
Renewable energy	Site selection, planning and monitoring for renewable energy
Energy - other	Power plant design optimisation
Waste	Climate data and modelling for waste monitoring and management
Drinking water	Climate data and modelling for drinking water monitoring and management
Urban planning and monitoring	Cultural heritage monitoring
Urban planning and monitoring	Surveying and mapping of urban areas
Urban planning and monitoring	Urban modelling, 3D modelling, Digital Twins
Urban planning and monitoring	Urban planning
Environmental monitoring	Environmental impact monitoring
Environmental monitoring	Deforestation/degradation monitoring
Environmental monitoring	Inland water monitoring
Natural resources monitoring	Crop yield forecasting
Natural resources monitoring	Soil condition monitoring
Operations management	Asset monitoring
Operations management	Farm management systems

Sub-domain	Category of climate services
Environmental monitoring	Marine pollution monitoring
Ports	Climate data and modelling for ports
Aquaculture	Climate data and modelling for aquaculture
Early warning	Forecast
Early warning	Monitoring and warning services
Migration and settlement	Forecasting of climate drivers for migration
Post-event analysis	Post-event analysis
Rapid mapping	Rapid mapping
Search and Rescue	Situational awareness supporting search and rescue
Infrastructure Planning	Permitting
Infrastructure Planning	Vulnerability analysis
Insurance for natural disasters	Risk modelling
Critical infrastructure	Design of infrastructure
Critical infrastructure	Infrastructure monitoring
Critical infrastructure	Emergency assistance

# Interactive session 1: Exploring processes & identifying externalities

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# Interactive session 2: Internalizing externalities: takeouts for PCP (and beyond)

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# Thank you!

