

# How to identify and structure your demand for climate services: **Sustainable & resilient infrastructure in vulnerable urban & rural areas**

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# Objectives

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

# What is PROTECT?

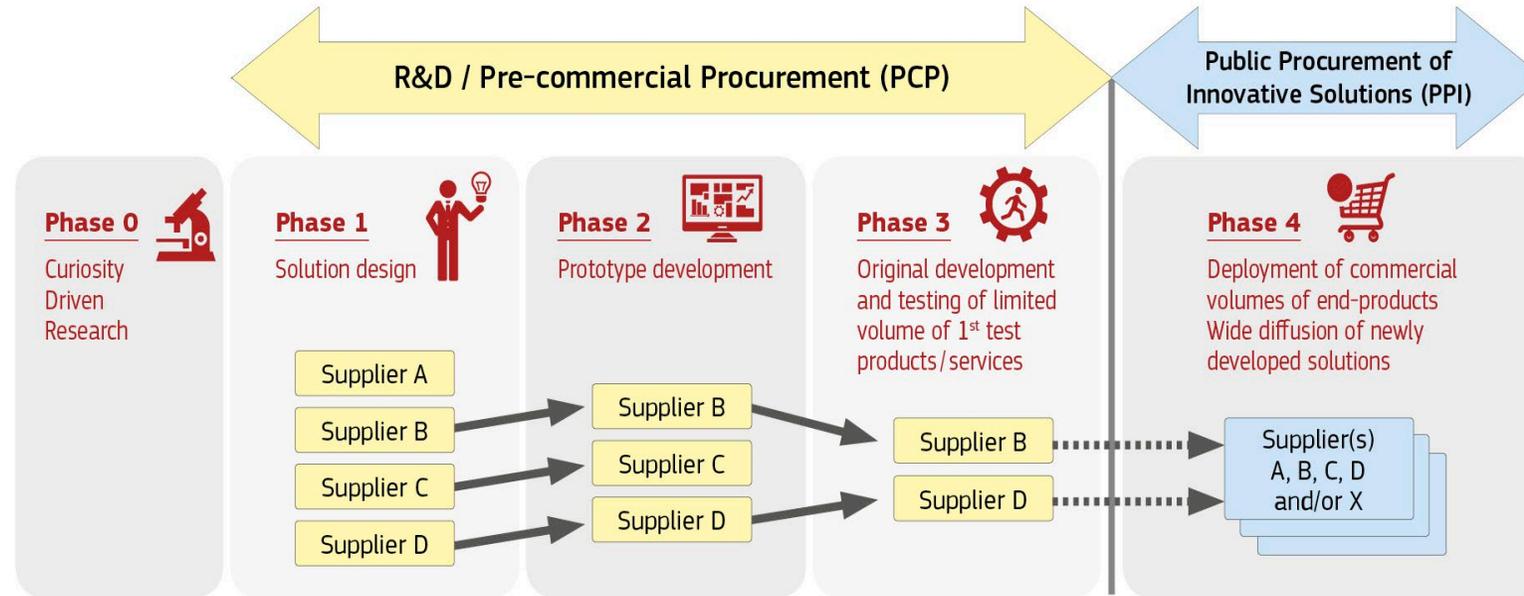
HEurope project aiming at **raising awareness** and **building capacity** for the use of pre-commercial procurement schemes in the co-development of climate services.

This is in preparation of a now open Pre-Commercial Procurement (PCP) fully funded by the European Commission to be launched in 2024 with a funding amount of up to EUR 19 million: **HORIZON-CL6-2024-GOVERNANCE-01-5: Customisation/pre-operationalisation of prototypes end-user services in the area Climate Change Adaptation and Mitigation**

We look for service developers and public procurers – public authorities (regions, cities, national and regional agencies, etc.) interested in exploring innovative procurement for tackling adaptation and mitigation issues in one of the 4 challenges below, in order to stimulate the market of (EO-based) climate services:

- **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)

# The main principles of a PCP: Competitive development in phases, risk-benefit sharing, separation from market entry



- **Competitive development in phases**
- **Risk-benefit sharing under market conditions**
- **Separation from the deployment of commercial volumes of end-products / services**

Source: EC

# Training Curriculum

Structure your demand for climate services (PCP & beyond)



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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.

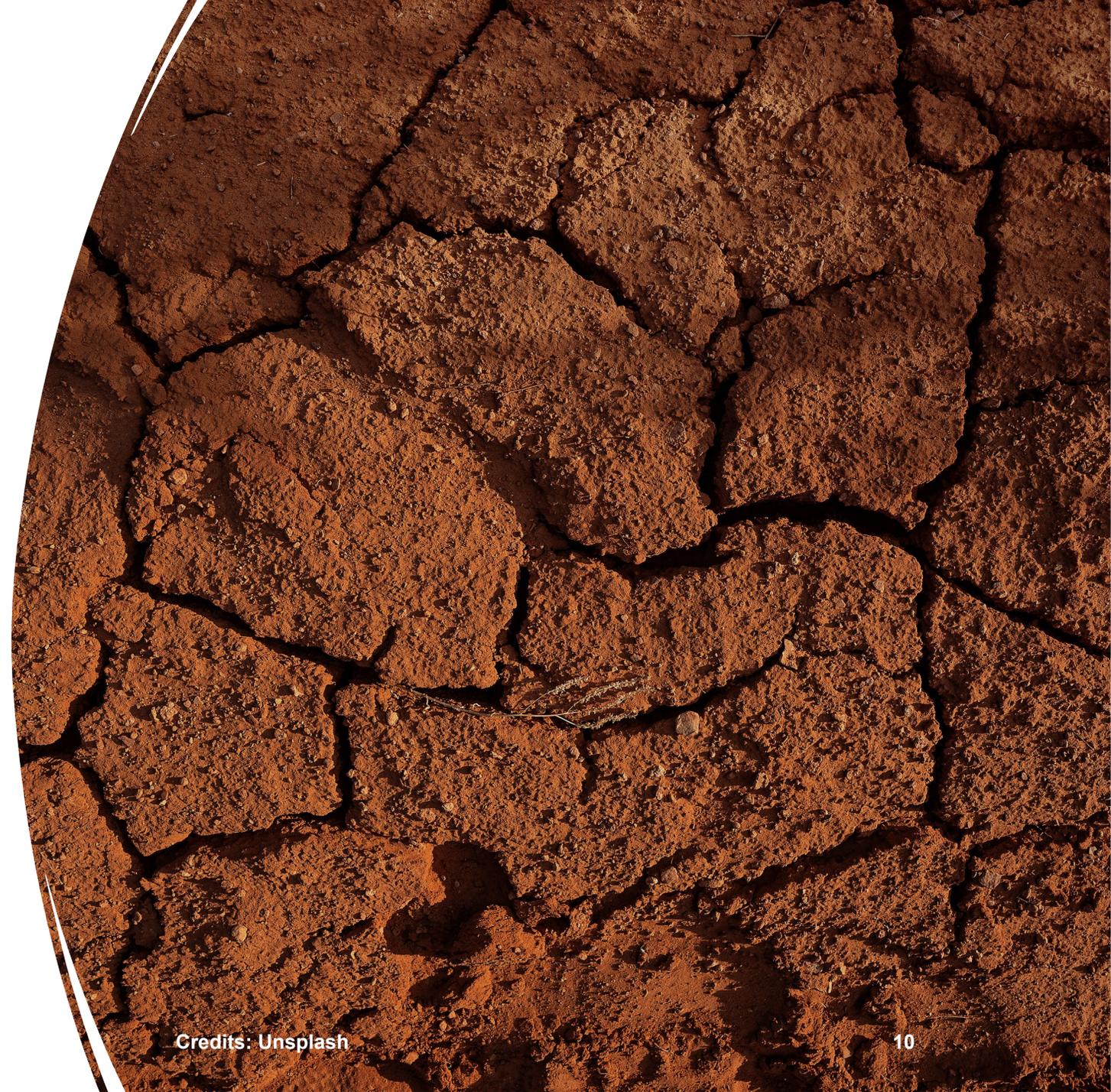


# Why is it important to know about types of climate services and what is important to know about their taxonomies?

- **It helps to know the structure of the market** → knowing where to search for a service provider or for someone with similar needs as your own (e.g. for a PCP)
- **If the taxonomy categories do not match your needs, it probably means that there is a market gap** → and probably the service you are looking for does not exist off-the shelf (i.e. you may need a PCP)  
→ Either way, you may need/benefit from PCP
- **And even if you are not doing a PCP, knowing the market can help formulate your demand, or assess if the climate services you are currently using correspond to your needs**

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## Introduction to climate-resilient infrastructure as a “challenge”



# PROTECT taxonomy of (infrastructure-related) climate services

PROTECT domain	Sub-domain	Category of climate services
Energy and utilities	Renewable energy	Site selection, planning and monitoring for renewable energy
Energy and utilities	Renewable energy	Renewable energy assessment potential and forecast
Energy and utilities	Energy - other	Energy network conditions monitoring
Energy and utilities	Energy - other	Power plant design optimisation
Energy and utilities	Energy - other	Environmental impact assessment of energy and mineral resources plants
Energy and utilities	Waste	Climate data and modelling for waste monitoring and management
Energy and utilities	Drinking water	Climate data and modelling for drinking water monitoring and management
Sustainable urban communities	Environmental monitoring	Air quality monitoring in urban environments
Sustainable urban communities	Environmental monitoring	Thermal auditing
Sustainable urban communities	Environmental monitoring	Urban greening
Sustainable urban communities	Environmental monitoring	Urban heat islands
Sustainable urban communities	Smart cities operations	Smart waste management
Sustainable urban communities	Urban planning and monitoring	Surveying and mapping of urban areas
Sustainable urban communities	Urban planning and monitoring	Urban modelling, 3D modelling, Digital Twins
Sustainable urban communities	Urban planning and monitoring	Urban planning
Sustainable urban communities	Urban mobility	Climate data and modelling for urban mobility monitoring and forecasting
Civil security and protection	Infrastructure Planning	Permitting
Civil security and protection	Infrastructure Planning	Vulnerability analysis
Civil security and protection	Critical infrastructure	Design of infrastructure
Civil security and protection	Critical infrastructure	Construction operations
Civil security and protection	Critical infrastructure	Monitoring of impact of human activities on infrastructure
Civil security and protection	Critical infrastructure	Infrastructure monitoring
Civil security and protection	Critical infrastructure	Predictive maintenance

# Elements from EU's Climate Adaptation Strategy relevant to the Sustainable Infrastructure challenge

- Forging a climate-resilient Europe (by 2050) - the new EU Strategy on Adaptation to Climate Change (publ. 24 February, 2021)
- **Systemic approach** to support the further development and implementation of adaptation strategies and plans at all levels of governance; cross-cutting priorities: integrating adaptation into macro-fiscal policy, nature-based solutions for adaptation, and local adaptation action
- Support implementing **nature-based solutions (NBS)** on a larger scale, notably blue-green infrastructures, and the development of financial approaches and products that also cover nature-based adaptation
- Support the development of **rapid response decision support tools** to enrich the toolbox for adaptation practitioners
- Support the **integration of climate resilience considerations** into the criteria applicable to construction and renovation of buildings and critical infrastructure

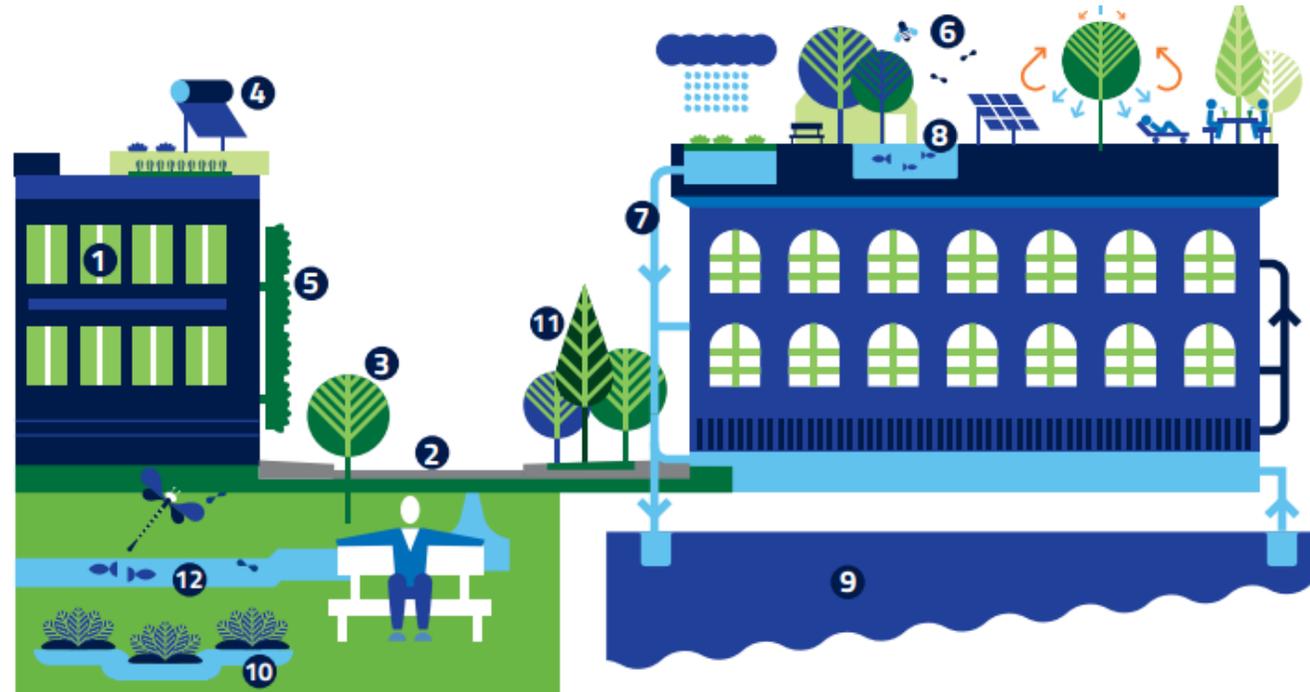


# Sustainable infrastructure in regional adaptation



- **Risks to sustainable infrastructure 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:** Swelling and shrinking soils resulting from hydrogeological instability [IT,FR-s], creating vulnerability for building foundations in urban areas, landslide risks
  - c) **Energy & utilities:** Increased frequency of droughts and of heatwaves [LT,PL,BE,DE,ES,FR,IT] with indirect impacts of water scarcity or hotter waters on e.g. energy production; consequences of ocean acidification on infrastructures [FR-w]; extreme events and longer term processes threatening railways and roads [FR]; coupled issues on water availability / quality and energy production [large cities]

# Sustainable infrastructure – a space for multiple systemic interactions



- 1 Building
- 2 Street
- 3 Trees
- 4 Solar water heating
- 5 "Multi-functional" green wall
- 6 "Multi-functional" roof garden
- 7 Storm water harvesting and recycling
- 8 Food production
- 9 Ground water aquifer
- 10 Constructed wetland
- 11 Pocket park
- 12 Urban streams and ponds

Credits: Blue Green Solutions / Imperial College London, EIT Climate-KIC

# Resilient infrastructure solutions: objectives and path

Developing an integrated solution (using EO data) with regard to the re-development, restoration and climate adaptation of existing neighborhoods to address/prevent: heat island effects, flooding, droughts, water scarcity. The solutions should, for example:

- Measure the effectiveness of implemented climate adaptation measures
- Exploring most common limitations, barriers and impossibilities that stand in the way of implementing climate adaptation of the existing infrastructure. Using the outcomes to find an innovative solution given these limitations. ;
- Develop a system that combines possible adaptation measures such as heat island and water scarcity prevention, measures that address flooding and droughts in neighborhoods & regional areas for modelling purposes and possible scenarios with existing limitations (e.g. narrow streets, protected historical monumental buildings, bridges etc.).

**The desired outcome is a tool for integrated sustainable re-development, restoring & climate adaptation of existing neighbourhoods**

# Interactive session 1: Exploring processes & identifying externalities

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# Exploring processes & identifying externalities: guiding questions for discussion

- 1. Do you have enough data to identify the high-risk infrastructure areas in your city/area?
- 2. How are you made aware of the infrastructure risk: from where/whom (source) and which format (data)?
- 3. How are these concerns addressed internally within your department and across different departments or organizations? Name your department and a few others that are involved.
- 4. How do different departments collaborate with each other to understand and address climate service needs in the field of sustainable and resilient infrastructure (e.g. in order to write the terms for a procurement process)?
- 5. Which other domains/regulations influence the response (the definition of climate services that you need)?

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

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# Internalizing externalities - takeouts for PCP (and beyond): **guiding questions for discussion**

- 1. Could you improve the analysis and structuration of the needs for sustainable and resilient infrastructure across your organisation, and how best to describe them in view of a PCP? If so, how?
- 2. From what you have heard today from other participants, are there needs expressed by others that you would want to explore for your own organisation and ecosystem? If so, which ones?
- 3. How will you prioritise the needs for sustainable and resilient infrastructure that you want to bring to a PCP process?
- 4. What do you see as the potential barriers or challenges in implementing PCP for sustainable and resilient infrastructure co-development?

# Training Curriculum

Structure your demand for climate services (PCP & beyond)

