Tender Documents – Part 1

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Document abstract

The Tender Documents are based on the Horizon Europe Guidelines and templates to implement Pre-Commercial Procurement (PCP). The Deliverable includes in one compilation the draft of the different Tender Documents (TD), including The Request for Tenders (TD1) and the following TDs:

Tender Document 2 (TD 2): Framework Agreement

Tender Document 3 (TD 3): PCP Specific Contract for Phase 1

Tender Document 4 (TD 4): PCP Specific Contract for Phase 2

Tender Document 5 (TD 5): PCP Specific Contract for Phase 3

Tender Document 6 (TD 6): PCP End of Phase (1, 2, 3) report

Tender Document 7 (TD 7): Contractor details and Project abstracts

Tender Document 8 (TD 8): Technical form

Tender Document 9 (TD 9): Financial form

Tender Document 10 (TD 10): ESPD (European Single Procurement Document)

Tender Document 11 (TD 11): Consortia Statement

Tender Document 12 (TD12): Standard self-declaration form (for project references)

Tender Documents – Part 1 includes TD1 to TD5 and Annexes

Keywords

Pre-Commercial Procurement (PCP), Request For Tenders (RFT), Framework Agreement (FA), Specific Phase Contract, Exclusion, Selection, Award and Compliance Criteria, Evaluation, Intellectual Property Rights (IPR).

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Abbreviations and Acronyms

Abbreviation	Meaning
AI	Artificial Intelligence
APC	Administrative Procurement Committee
COTS	Commercial Off-The-Shelf
CP	Contract Performance
CS	Climate Services
CSA	Coordination Support Action
EAFIP	European Assistance For Innovation Procurement
EGNOS	European Geostationary Navigation Overlay Service
EO	Earth Observation
EOOS	European Global Ocean Observing System
ESA	European Space Agency
ESPD	European Single Procurement Document
EU	European Union
FAIR	Findable, Accessible, Interoperable and Reusable
FEC	Financial Evaluation Committee
FRI	Functional Requirement Information
FRO	Functional Requirement Output
FRU	Functional Requirement User friendliness
FRAND	Fair, Reasonable and Non-Discriminatory
GEO	Group on Earth Observation
GDPR	General Data Protection Regulation
GPA	Government Procurement Agreement from the World Trade Organisation (WTO)
H2020	Horizon Europe

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HAA	City of Haarlem
HE	Horizon Europe
IPR	Intellectual Property Rights
IoT	Internet of Things
KCEO	Knowledge Centre on Earth Observation
KGE	Kling-Gupta Efficiency
KPI	Key Performance Indicator
MEAT	Most Economically Advantageous Offer
MQTT	Message Queuing Telemetry Transport
NDA	Non-Disclosure Agreement
NSE	Nash-Sutcliffe Efficiency
OMC	Open Market Consultation
PBG	Public Buyers Group
PC	Project Coordinator
PCP	Pre-Commercial Procurement
PEB	Procurement Evaluation Board
PIN	Prior Information Notice
PPI	Public Procurement of Innovative solutions
RFT	Request For Tenders
R&D	Research and Development
SME	Small and Medium Enterprises
SOTA	State Of The Art
SOG	Stakeholders Observatory Group
SWV	Soil-Water-Vegetation
TCO	Total Cost of Ownership
TD	Tender Document

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TEC	Technical Evaluation Committee
TED	Tenders Electronic Daily
TIR	Thermal Infra Red
TRDH	Technical Requirement Data Handling
TRII	Technical Requirement Interfaces and Interoperability
TRGS	Technical Requirement Governance and Security
TROS	Technical Requirement Operational Support
TRL	Technology Readiness Level
TTX	Table Top Exercises
UN	United Nations
WTO	World Trade Organization

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PCP WISE

Pre-Commercial Procurement for the Customisation/pre-operationalisation of Water management Innovations from Space for European Climate Resilience

PCP TENDER DOCUMENT 1 (TD1) REQUEST FOR TENDERS

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This Request for Tenders (RFT), designated as Tender Document 1 (TD1), should be read in conjunction with other Tender Documents related to this PCP, listed hereunder:

Tender Document 2 (TD 2): Framework Agreement

Tender Document 3 (TD 3): PCP Specific Contract for Phase 1

Tender Document 4 (TD 4): PCP Specific Contract for Phase 2

Tender Document 5 (TD 5): PCP Specific Contract for Phase 3

Tender Document 6 (TD 6): PCP End of Phase (1, 2, 3) report

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Tender Document 9 (TD 9): Financial form

Tender Document 10 (TD 10): European Single Procurement Document (ESPD)

Tender Document 11 (TD 11): Consortia Statement

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PREFACE

This PCP WISE Request for Tenders (RFT) invites all interested parties to present their offers to customize/pre-operationalize water intelligence innovations from space for European climate resilience. The project, spanning phases from solution design to field validation targeting Technology Readiness Level (TRL) 8, aims to address water-related crises (floods, fires, infrastructure impacts) using space and Earth Observation (EO) data.

With climate change impacting water availability and distribution, PCP WISE seeks to enhance EO-based information for better regional water management, promoting resilience across EU borders. **In this sense, PCP WISE expects to obtain water intelligence / information solutions driven by a unified water taxonomy and EO-based modelling to: predict, prevent, mitigate and manage water-related crises.** Through comprehensive research and development solutions, PCP WISE wishes to boost adaptation across the EU, targeting stakeholders in water management, environment, first responders, cities, and agriculture.

PCP WISE is a Research & Development (R&D) services procurement which is conducted through a Pre-Commercial-Procurement (PCP).

The RFT in Tender Document 1 (TD1) contains the following sections:

1. Section 1. General Context and Background
   Provides the underlying rationale of PCP WISE and explains the PCP approach and how it differs from traditional procurement.
2. Section 2. Tender Profile
   Introduces the tender profile, including the description of the services to be procured: overall Water intelligence challenge which this PCP must address and the motivation behind it. It explains the different phases of the PCP and the expected outcome of each phase. In addition, a general introduction to the procurers involved (also referred to as 'Public Buyers Group" - PBG) is provided. This Section also provides an overview of the timeline, budget, and procurement approach. Finally, Intellectual Property Right (IPR) considerations are addressed.
3. Section 3. Evaluation of Tenders
   Explains the preconditions for submitting a Tender, and an overview of the criteria to be used in the evaluation of the Tenders. The process for the evaluation is also clarified in this section.
4. Section 4. Content and Format of Tenders
   Describes how the bids should be presented in the administrative, technical and financial sections. It also explains the conditions of the contracts between the winning Tenderers and the PBG, including the monitoring process, results´ evaluation, payment conditions and communication with the PBG.
5. Section 5. Miscellaneous: addresses issues such as language, bidding offer, communication, confidentiality, cancellation of the tender and the procedures for appeal.

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This PCP WISE procurement is part of a project that is funded by Horizon Europe Research and Innovation Programme, under Grant Agreement (GA) No 101182917.[1]

The contracts are therefore subject to additional rules based on the EU GA No 101182917

***Attention:** The EU (and/or any of its services) is not participating as a Contracting Authority in this procurement.*

[1] https://pcp-wise.eu/

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PCP REQUEST FOR TENDERS (TD1)

1. GENERAL CONTEXT AND BACKGROUND

This PCP is a cross-border joint procurement of R&D services to reinforce public demand driven innovation in end-user services in the area of Climate Change Adaptation. Solutions are expected to achieve TRL 7-8. The PCP should deliver successful innovative and fully tested product(s) and/or service(s) that meet the common needs of the PBG to procure research, develop innovative marketable solutions, speed up the time-to-market and provide best value for money.

More concretely, PCP WISE aims to customize/pre-operationalize water management innovations from space for European climate resilience through PCP. It addresses water-related crises (floods, droughts, fires, infrastructure impacts) using among others space and EO data. Objectives include common operational information products, interoperability mechanisms, and an active user network. With climate change impacting water occurrence and distribution, PCP WISE seeks to enhance EO-based information for better regional water management, promoting resilience across EU borders.

PCP WISE focuses on local dynamics in water availability and aims to anticipate extreme climate conditions through an integrated water intelligence product. Its significance lies in its potential to mitigate water-related crises, driven by a unified water taxonomy and EO-based modelling. Through comprehensive research and development solutions, PCP WISE aims to boost adaptation across the EU, targeting stakeholders in water management, environment, first responders, cities, and agriculture. The project's objectives are designed to address business, technical, economic, and policy goals. Key results include capacity-building efforts, climate-related inputs, stakeholder engagement, and the dissemination of innovative solutions to advance water resilience both locally and across Europe.

PCP WISE aims to contribute to the European Green Deal related domains and benefit from further deployment, uptake and exploitation of EO data and products. Furthermore, it will be contributing to fit-for-purpose Environmental Observation Systems. The project must use satellite-based EO, positioning, navigation and/or related timing data and services of Copernicus and/or Galileo/ European Geostationary Navigation Overlay Service (EGNOS) (although other data and services may additionally be used).

The joint PCP will include activities for awareness raising, networking, training, evaluation, validation and dissemination of results, to which providers are expected to cooperate.

The PCP builds on the outcomes coming from the PROTECT project funded under HORIZON-CL6-2021-GOVERNANCE-01-15: *Preparing for pre-commercial procurement (PCP) for end-user services based on environmental observation in the area of climate change adaptation and mitigation* (the PROTECT project).

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The jointly identified challenge fits into the mid-to-long-term innovation plans of the PBG. The Open Market Consultation (OMC) carried out in the context of PROTECT and the OMC carried out during the preparatory stage of PCP WISE confirmed that solutions currently available on the market or under development are not meeting their needs of the end-to-end solutions as expressed in the challenges above, to tackle concrete targets for the desired functionality/performance improvement in the quality and efficiency of their public services.

Moreover, the future solutions should take advantage of the use, uptake, and deployment of environmental observations as well as digital and data-based green solutions, assessed through the European Green Deal's 'do no harm' principle, to contribute to innovative governance models and for designing, implementing and monitoring science-based policy.

In this context, **the common challenge will be tackled through this PCP to develop innovative solutions in the area of Climate Change using EO data.**

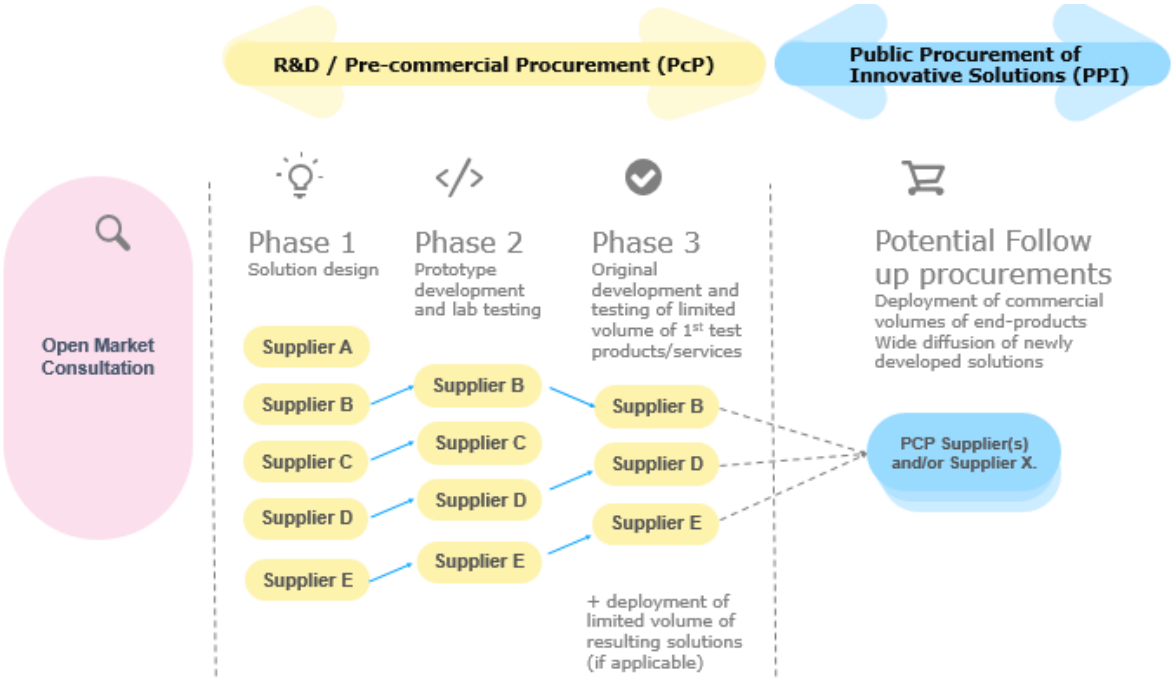

Figure 1. PCP phased process and a follow up PPI

PCP is characterized by the following five **features**:

1. Competitive development in phases to identify the solutions offering the best value for money

PCP targets situations that require radical innovation or R&D and for which there are typically no solutions on or close to the market yet. Different competing providers may have different ideas for solutions to the problem. As R&D is yet to take place, there is not yet any proof as to which of these potential alternative solutions would best meet customers' needs.

PCP therefore awards R&D contracts to a number of competing contractors at the same time, in order to compare different approaches to solving the problem. It thus offers innovators an

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opportunity to show how well their solution compares with others. It also allows a first customer test reference to be obtained from countries of the procurers that will test the solutions.

The R&D for this PCP is split into 3 phases (Phase 1: solution design, Phase 2: prototyping and lab testing, Phase 3: original development, installation, wider field testing and validation of a limited set of 'first' products or services).

Evaluations after each phase will progressively identify the solutions that offer the best value for money and meet the customers' needs. This phased approach allows successful contractors to improve their offers for the next phase, based on lessons learnt and feedback from procurers in the previous phase. Using the phased approach with gradually growing contract sizes per phase will also make it easier for smaller companies to participate in the PCP and enable SME to grow their business step-by-step with each phase.

Depending on the outcome of the PCP (whether it will result in innovative solutions that meet the tender requirements and offer best value for money), procurers may or may not decide to follow-up the PCP with a Public Procurement of Innovative solutions (PPI).

2. Public procurement of R&D services

PCP addresses mid- to long-term public procurement needs for which either no commercially stable solutions yet exist on the market, or existing solutions exhibit structural shortcomings which require further R&D to resolve. PCP is a way for procurers to trigger the market to develop new solutions that address these shortcomings. PCP focuses on specific identified needs and provides customer feedback to businesses from the early stages of R&D. This improves the likelihood of commercial exploitation of the newly developed solutions.

PCP is explained in the PCP communication COM/2007/799 and the associated staff working document SEC/2007/1668. The R&D services can cover R&D activities ranging from solution exploration and design, to prototyping, right through to the original development of a limited set of 'first' products or services in the form of a test series. Original development of a first product/service may include limited production/supply in order to incorporate the results of field-testing and demonstrate that the product/service is suitable for production/supply in quantity to acceptable quality standards. However, R&D does not include quantity production or supply to establish the commercial viability or to recover R&D costs.[2] It also excludes commercial development activities such as incremental adaptations or routine/periodic changes to existing products, services, production lines, processes or other operations in progress, even if such changes may constitute improvements.

3. Open, transparent, non-discriminatory approach — No large-scale deployments

Unless there are specific participation and/or control restrictions *(see section 3.1)*, PCP procurements are normally open at least to all operators in EU Member States or HE

[2] See also Article XV(1)(e) WTO GPA 1994 and the Article XIII(1)(f) of the revised WTO GPA 2014.

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associated countries, on equal terms, regardless of the size, geographical location or governance structure[3].

In all cases, there is, however, a place of performance requirement that a predefined minimum percentage of the contracted R&D services must be performed in EU Member States or HE associated countries (or a more restricted list of countries; *see section 3.1*).

All communication (before, during and after the procurement) will normally be carried out in English (and other languages, if mentioned in section 5).

Participation in the PCP is not a prerequisite for the provisioning of a solution on a commercial scale.

4. Sharing of IPR-related risks and benefits under market conditions

PCP procures R&D services at market price, thus providing contractors with a transparent, competitive and reliable source of financing for the early stages of their R&D.

Giving each contractor the ownership of the IPR attached to the results (foreground) they generate during the PCP means that they can widely commercially exploit the newly developed solutions. In return, the tendered price must contain a financial compensation for keeping the IPR ownership —compared to the case where the IPR would be transferred to the procurers (the tendered price must be the 'non-exclusive development price'). Moreover, the procurers must receive license-free rights to use the R&D results for internal use, and licensing rights subject to certain conditions.

The contractors also retain ownership of their background rights (albeit subject to certain rights of use by the procurers, see section 2.7)[4].

5. Exemption from EU Public Procurement Directives, World Trade Organization (WTO) Government Procurement Agreement (GPA) and EU state aid rules

PCP procurements are exempted from the EU Public Procurement Directives because the procurers do not retain all the benefits of the R&D (the IPR ownership stays with the contractors).[5]

They are also exempted from the WTO GPA because this Agreement does not cover R&D services[6] (the PCP being limited to such services and any subsequent procurement procedure relating to commercial-scale supply of such solutions not being part of the PCP).

[3] Horizon Europe associated countries

[4] For more information, see PCP on the Europa website

[5] See Article 16(f) of Directive 2004/18/EC (Article 14 of Directive 2014/24/EU), Article 24(e) of Directive 2004/17/EC (Article 32 of Directive 2014/25/EU) and Article 13(f)(j) of Directive 2009/81/EC.

[6] See the EU's Annex IV of Appendix I to the WTO GPA.

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PCP does not constitute state aid under the EU state aid rules[7] if they are implemented as defined in the PCP communication[8], namely by following an open, transparent, competitive procedure with risk- and benefit-sharing at market price. The division of all rights and obligations (including IPR) and the selection and award criteria for all phases must be published at the outset; the PCP must be limited to R&D services and clearly separated from any potential follow-up PPI; PCP contractors may not be given any preferential treatment in a subsequent procurement for provision of the final products or services on a commercial scale.

Other things to know

The start of this PCP procurement was proceeded by an Open Market Consultation (OMC). Please note that participation in this OMC is not a prerequisite to submit a bid to PCP Wise[9].

This procurement is part of a project that is funded by the European Union's Horizon Europe Research and Innovation Programme, under GA No No 101182917 — PCP WISE[10].

2. TENDER PROFILE

2.1 Description of services to be procured

PCP WISE seeks to develop smart, sustainable solutions to improve water management and climate resilience **by monitoring the Soil-Water-Vegetation System[11].** With the use of space technology and environmental data to monitor the SWV, PCP WISE focuses on tackling major challenges like floods, droughts, wildfires, heat stress and infrastructure risks in both urban and rural areas.

PCP WISE aims to bridge the gap between the existing European (Copernicus) portfolio and operational practices in managing local areas in sectors that depend on meteorology and hydrology. It does so by developing an integrated water intelligence information product/services that harmonizes data from diverse sources—such as EO data, in-situ measurements, and AI analytics—within the European Union, through innovation procurement.

This unified approach is essential for delivering comprehensive, historical, and real-time insights that support effective decision-making at regional, national, and transnational levels,

[7] See Point 33 of the Commission Communication on a framework for state aid for research and development and innovation (C(2014) 3282).

[8] Commission Communication: Pre-Commercial Procurement: driving innovation to ensure sustainable, high quality public services (COM(2007) 799) and PCP staff working document (SEC(2007)1668).

[9] See summary and Q&A on Open Market Consultation – PCP WISE

[10] See PCP WISE.

[11] The SWV system refers to the interconnected physical and biological components that govern the movement and exchange of water, energy, and nutrients within the Earth's surface environment. It is a complex, dynamic system where soil, water, vegetation, and the atmosphere interact continuously to regulate local and global climate, hydrological cycles, and ecosystem functioning.

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both in the short term (seasonal/multi-annual) and the long term (decadal). The standardization of data collection and analysis processes under PCP WISE will improve the ability of public authorities to manage water resources more efficiently. It will also help them respond proactively to climate-related crises, including floods, droughts, heat stress, fires, and infrastructure impacts, thereby increasing long-term climate resilience. The general objective is to enhance climate resilience by improving the availability and use of EO-based information and by aligning regional water management authorities, cities, communities, and crisis organisations across EU Member States and administrative boundaries, particularly within shared river basin systems.

The water intelligence challenge aligns with the long-term innovation goals of public organisations and supporting stakeholders. In this regard, PCP WISE addresses the development of new technologies to improve the functions of mapping, predicting, preventing, restoring and adapting.

In this context, the PCP aims to achieve the:

a) Customization/pre-operationalisation of prototypes of products/services in the area of Climate Change Adaptation contributing to the European Green Deal related domains validated by end-users.
b) Exploitation of Environmental Observation data and products.
c) Contribution to fit-for-purpose Environmental Observation Systems.
d) Potentialization of digital and data technologies, including AI, IoT, and augmented reality-based solutions to increase the sustainability and resilience of production and consumption systems, as well as industry and services.
e) Development, support and uptake of innovative digital and data-based solutions to support communities, economic sectors and society at large to achieve sustainability objectives.
f) Development of sustainable solutions tailored to the needs of end-users and/or the systems.
g) Development of solutions that contribute to economic circularity, adding value to existing knowledge and increasing cost-effectiveness, safety and trustworthiness of innovative environmentally friendly technologies.
h) Development of solutions that contribute to the human-centric twin green and digital transitions.

This PCP – i.e. a joint cross-border procurement of R&D services – is intended to reinforce public demand-driven innovation on the climate adaptation domain. PCP has the potential to be an effective demand-side innovation action and a useful tool to close the gap between supply and demand for innovative solutions. Solutions are expected to achieve TRL 7-8 at the end of Phase 3.

The PCP should deliver successful innovative and fully tested product(s) and/or service(s) that meet the common challenge of the PBG to procure R&D and innovative marketable solutions, speed up the time-to-market and provide best value for money.

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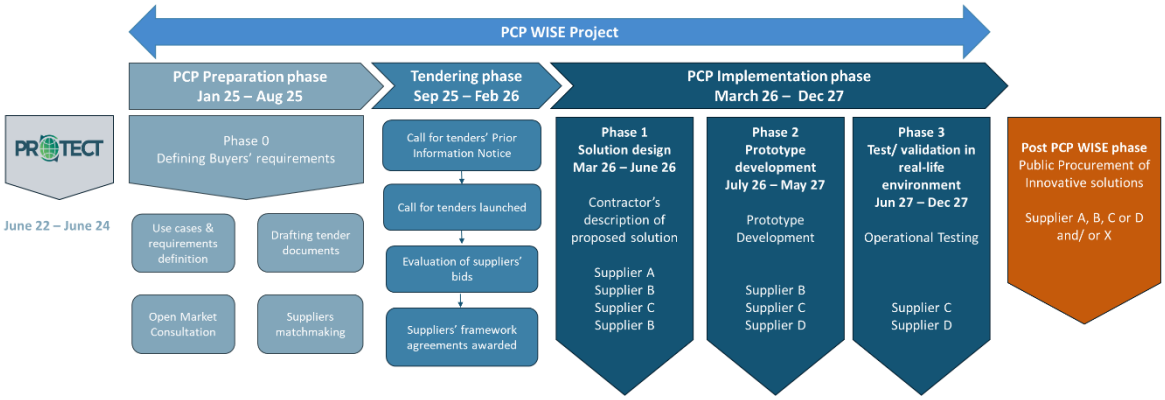

Figure 2. PCP WISE Timeline

The PBG aims to develop an innovative solution to tackle the needs of five use cases concerning climate adaptation (see Annex 1). These use cases within the PCP WISE project have been systematically categorized according to several key criteria, which include the geographic context (urban or rural), the availability of potential physical test sites, and their geographic distribution across Europe (north, south, west, and east). Additionally, the classification considers the primary focus of each use case — whether it addresses flood, drought, subsidence, fire, infrastructure or other concerns — and distinguishes between issues of a regular nature and those arising from crisis situations.

The use cases are:

Use Case 1: Urban Drought - focuses on **urban drought issues in North-Western Europe**, dealing with water distribution problems in city undergrounds due to various human and external factors. **This use case aims to mitigate water shortages impacting infrastructure and living conditions.**

Use Case 2: Urban Flooding - addresses **urban water excess in Eastern and Northern Europe**, where the abundance of water affects city infrastructure. **This use case focuses on managing issues exacerbated by regional factors like sea-level rise.**

Use Case 3: Rural Drought - tackles **rural drought in North-Eastern Europe,** where extreme climate variations impact agriculture and nature, leading to issues like wildfires and production losses.

Use Case 4: Rural Drought & Flooding - deals with **rural drought and flooding in Southern Europe,** where structural drought periods and intense rainfall affect agricultural processes and cause significant production challenges.

Use Case 5: Rural Drought & Flooding - focuses on **rural drought and flooding in North-Eastern Europe,** addressing problems caused by extreme groundwater conditions that impact land use and infrastructure. **This use case aims to manage soil moisture conditions to prevent issues like organic oxidation and underground peat fires**.

For each use case, the innovative solution is expected to cover the different needs as described in Annex 1. Use Cases & Test Sites.

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2.1.1. Scope of the R&D services to be procured

This procurement is for R&D services to develop water intelligence solutions (products/services) beyond the state-of-the-art. The specific functional and performance requirements are explained in the use cases and test sites of Annex 1.

For the envisaged development of integral water intelligence information products/services (using EO data) as a prerequisite to anticipating extreme climate conditions and their potential impacts on society, the organization and governance of PCP WISE foresees different groups of users, notably: (a) water management agencies; (b) environmental agencies; (c) first responders; (d) cities; (e) agricultural agencies.

In this context, PCP WISE aims to steer the European market to make synergies for the development of solutions based on the functional needs identified from the demand side. The functional specifications and technical requirements are aligned with the topics of innovative governance, environmental observations and digital solutions in support of the Green Deal, and deploying and adding value to environmental observations.

The (pyramid) base of **the 'WISE-information product/service' consists of regular monitoring of the soil-water-vegetation system (SWV) conditions using innovative techniques** like satellite remote sensing, (biophysical process) modeling, data science/AI, local knowledge. The extremes of the SWV conditions induced by climate dynamics can be confirmed (RS-based) by risk indicators for various sectors in urban and rural context, see figure 3.

The design and the development of the WISE information product/service should be focused on the regular monitoring/mapping of the soil-water-vegetation system conditions **representing as good as possible the European (geographical) variety in local and related climate/environmental conditions in urban and rural regions**. Therefore 5 regions represented and put forward by the PBG & users communities, have been selected spread all over Europe. These 5 regions have each two scales of areas of interest where on the detailed site specific testing (with local insitu data & knowledge) and validation will be performed, extended to the 2nd scale area of interest (surrounding sub-watershed), where also demonstrations will take place in the last phase of the project.

This should bring forward a generic TRL8 ready product/service at the end of the project which needs to be the basis to scale to pan-european application after the end of the project. It is therefore important that the bidders exhibit a long-term business (project afterlife) vision to pursue a competitive new operational soil-water-vegetation product/service in local management level, which could be applied to the various regions and stakeholder environments and is complementary to the existing (pan)European services. **It is envisaged that this will be the basis for an interoperable service between the various management areas and stakeholders working in the same watershed systems** and bridging administrative and transnational boundaries. It is therefore important to base the offered product/service on as much as possible standardized input data (models) if applicable in the meteo-hydrology related domain. In this context (of future scaling) the project will give room to the ambition to demonstrate the developed product/service also to other regions (mandatory to PCP WISE partner test sites outside the 5 lead test regions) and optional to additional regions which either can be brought up by the consortia or by buyer networks facilitated by the PCP-WISE project team.

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This **generic SWV-system conditions monitor (in analogy to the regular weather services!)** is focused on the **regular management processes for stakeholders in all relevant sectors** (involved in current PCP Wise project to start with!) in the pre-disaster (climate related) phase of the crisis cycle process.

This generic SWV system conditions monitor fuels:

- partly the **risk assessment process** resulting in specific risk indicators for different sectors (urban, agriculture, nature, etc.) when local extreme situations will occur (too dry and too wet). This provides prior information to the **situation awareness** during the crisis fighting process (floods, fires) in complement to existing crisis information procedures and available mechanisms (such as for example Copernicus Emergency services).
- the **formation of long term (decadal) climate trends (hind- and forecast)** based on climate scenarios (developed by the national (and ECMWF) meteorological institutions).

Besides the above mandatory WISE generic services, **additional site and problem specific remote sensing-based products/services** can be developed yielding additional added value and insights in the climate related ('visual') impacts such as subsidence, urban heat stress, etc. (see in the upper half of figure 3). However, this will not be part of the generic solution at this stage. It could, however, represent a strong potential **for integration within the overall WISE approach in the project's afterlife** phase, once it reaches TRL-8 and is ready for pan-European upscaling and becomes sufficiently generic. During the project these specific (risk/impact related) products/services will also provide an additional (internal) validation and confirmation of the SWV system condition monitor when extreme conditions lead to 'observational' impacts (such as agricultural/nature loss of productivity due to droughts, or subsidence in rural and urban areas related to long term structural droughts, etc.).

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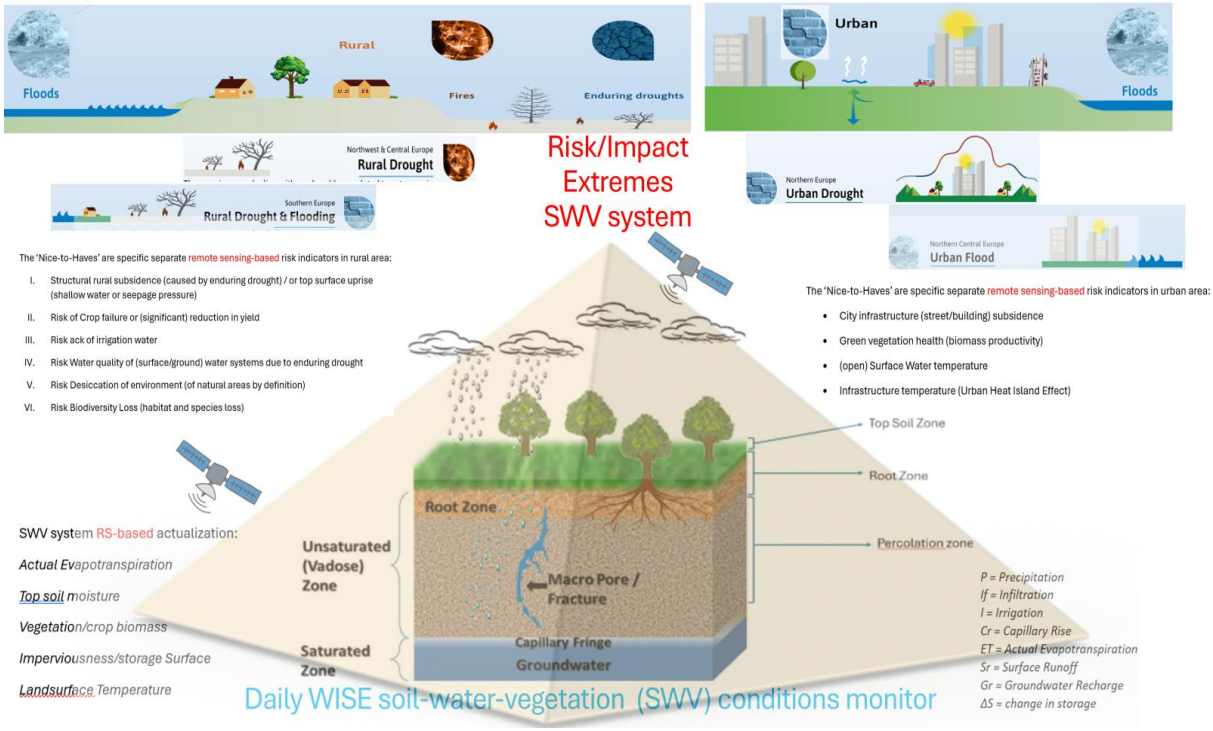

Figure 3. The (pyramid) base of the 'WISE-information service' consists of regular monitoring of the soil-water-vegetation system conditions using innovative techniques like satellite remote sensing, (biophysical process) modeling, datascience/AI, local knowledge. The extremes of the SWV conditions induced by climate dynamics can be confirmed (RS-based) by risk indicators for various sectors in urban and rural context.

2.1.2. The Core of the Assignment

The tender within the PCP WISE project focuses on the development of innovative information products/services to support improved water management in both urban and rural areas. The assignment has two closely linked main objectives:

1. SWV information - from information gap to integrated insight: the foundation for day-to-day water management

The core of PCP WISE aims to understand the local SWV conditions in our urban and rural environments and production systems in various **(5) representative European geophysical climate zones** by developing one generic applicable robust solution (product/service) with local validity.

The uniqueness (and with that the R&D component of the project) is that PCP WISE strives to gain continuously improving insight into these SWV conditions **by developing an innovative combination of technology** using remote sensing satellite observations, hydrological modelling biophysical process knowledge, local information and data-science techniques (e.g. modelling, artificial intelligence, etc), based on a sound (IT) “to-be-designed” solution architecture approach (TRL8), see just as example annex 14.

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This data is essential for understanding the local water balance and associated risks due to climate extremes but is currently largely lacking a standardized and validated format. Without this information, a reliable and integrated soil-water information cannot be realized.

The market is therefore challenged to develop this basic SWV information in collaboration with the public buyers. This requires **combining various types of data — such as remote sensing, field measurements and model outputs** — into a coherent SWV information insight that can be applied consistently across different European contexts.

Based on this integrated SWV information, **a continuous stream of actionable data** should be created to support different stakeholders - such as authorities, water managers, farmers, policymakers, or emergency response teams-(in their routine tasks and risk detection (see below.).

This task thus forms the first fundamental building block of the challenge.

2. Information products/services for anticipating (extreme) events

In addition to supporting day-to-day water management, this challenge calls for the development of innovative information products and services that offer **up-to-date insights into current and emerging risks**. These include extreme events such as floods, droughts, heat stress, and wildfires. Since such events are highly context-specific and differ greatly between urban and rural areas, the solutions must be tailored accordingly (see Annex 1).

The market is therefore asked to **deliver operational, user-friendly products — such as maps, graphs and viewers—** that incorporate **risk indicators** suited to the needs of diverse users, from water managers to emergency services. These products should support both preparatory actions (e.g. planning and prevention) and real-time operational response during incidents.

However, unlocking this information is not a goal in itself. Its value lies in its application by end users. Different users have different questions. One may want to know whether there is drought stress in the root zone, while another is concerned with the increasing risk of urban flooding. It is therefore essential to **transform raw SWV data into meaningful information products tailored** to specific user needs.

Basic Functionalities

This section first addresses the essential functional characteristics of the solutions to be developed, followed by an explanation of the additional, desirable functionalities.

The SWV conditions information (intelligence)[12], generated by the to-be-developed solutions under the WISE project, **must include 3 different time scales**. Applied to respectively, 1) regular, 2) crisis, and 3) climate (water) management workarounds.

[12] The SWV system intelligence refers to the integrated capability to observe, understand, model, and manage the interactions and feedbacks among soil, water, vegetation, and atmospheric processes using data, technology, and analytical tools. It combines scientific knowledge with advanced computational methods to support informed decision-making for environmental monitoring, sustainable land use, and climate adaptation.

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The daily SWV monitor must provide the foundation for developing actionable intelligence to support management processes within the (hydrological) season or year. It must also serve as a reference time series for detecting extremes (outliers), such as periods of excessive dryness or wetness during the season or year. Similar to the continuous daily weather monitoring we are familiar with, the SWV monitor must build, over time, a multi-decade trend that can be used for historical (retrospective) climate analysis and provide a basis for enhancing existing and/or developing new integrated future climate scenarios.

Extreme SWV conditions may cause various slow- and fast-onset disasters, each affecting different sectors in different ways. For example, the prolonged drought in the Po Valley in Italy in 2022 resulted in major agricultural production losses. The flash floods in the Valencia region in 2024, triggered by intense rainfall and local conditions in the Turia river basin, caused severe damage and human casualties. This illustrates the multidimensional complexity of SWV-related events.

It is the next logical core product of PCP WISE to **develop (sector related) risk assessments/indicators in the pre-disaster phase** based on the above mentioned SWV monitor service, which can serve as a tool for supporting disaster risk reduction measures. Additionally, this solution could serve as a priority tool, for instance with spatial hotspot mapping, during the process of fighting such disasters. The risk indicators and sector-related (traffic light) approach that the solution must include are presented in the five use cases and can be described at a high level as follows (these are based on the functional requirements set out in the PCP WISE Requirements (Annex 8):

- Urban Regular (daily and 5-30m detail)

  The urban regular monitoring component must provide insight into key elements of the local soil-water balance. This includes soil moisture conditions in the unsaturated zone — specifically the topsoil (0–5 cm), root zone, and percolation zone — as well as actual evapotranspiration, evapotranspiration deficits or ratios, phreatic groundwater levels, and indicators of seepage or deep infiltration[13].

- Urban Crisis Monitoring (daily and 5-30m detail)

  Urban crisis monitoring must provide daily risk indicators using a traffic light format, tailored to user groups in areas such as urban greenery, sewerage, infrastructure, groundwater management and emergency services. Indicators must be derived from regular SWV data combined with sector-specific knowledge.

- Urban Climate (daily, 100-250m detail)

  The solution must include two core datasets to support long-term evaluation and climate-informed water management in urban areas:

  ✓ Re-analysis Dataset (2000–2025)

  ✓ Climate Forecast Dataset (2026-2050/2070)

[13] Annex 12. SOTA analysis for unsaturated zone models.

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- Rural Regular Monitoring (daily, 100 m detail)

  The solution must provide daily monitoring of key soil-water balance components at 100-meter spatial resolution to support operational water, soil, nature, and agricultural management

- Rural Crisis Monitoring (daily, 100 m detail)

  Rural crisis monitoring must deliver daily sector-specific risk indicators using a traffic light approach, tailored to user groups in agriculture, nature conservation, water management and emergency services.

- Rural Climate (daily, 100–250 m detail)

  The solution must provide two datasets to support long-term climate evaluation and planning in rural areas:

  ✓ Re-analysis Dataset (2000–2025)

  ✓ Forecast Dataset (2026–2050/2070)

- General Crisis Management Intelligence

  The information products must deliver sector-specific outputs for crisis management in agriculture, nature, and urban areas. All outputs must be designed in a traffic light format and informed by input from end users and crisis response communities.

Valued Additions to Basic Functionality

In addition to the core products requested in PCP WISE, tenderers are also asked to provide optional remote sensing-based indicators for fast- and slow-onset disaster events. These products would (also) serve as supplementary tools to validate or confirm local extreme SWV conditions. All of these remote sensing observation-based products are directly or indirectly linked to (extreme) SWV conditions.

Urban additional remote sensing based information products:

- Subsidence (caused by enduring drought) measurements of city infrastructure;
- Green vegetation health (biomass productivity);
- (open) Surface Water temperature;
- Urban Heat (island) measurements (extreme conditions of (open water-, green, & infra-) city surface);
- Urban flooding/inundation (extreme wet conditions) of city infrastructure.

Rural additional remote sensing based information products:

- Structural rural subsidence (caused by enduring drought and groundwater overextraction) / or top surface uprise (shallow water or seepage pressure);
- Agriculture crop productivity loss (caused by drought);
- Risk of lack of irrigation water;

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- Water quality problems of (surface/ground) water systems due to enduring drought;
- Risk Desiccation of environment;
- Biodiversity system (habitat and species) production loss (caused by too wet or too dry conditions);
- Green vegetation health (biomass productivity).

The WISE Service logic recapitulated:

There are basically two main PCP-WISE project service components with subdivisions:

1. The generic base (must-have) twofold solution for the SWV system conditions and (in extreme situation additional sector related: partly must- and partly nice to haves) risk assessment monitor:

- For Rural systems
- For Urban systems

2. The specific (SWV system conditions related) remote sensing based (nice-to-have) indicators in rural and urban systems, which further can enhance service 1.

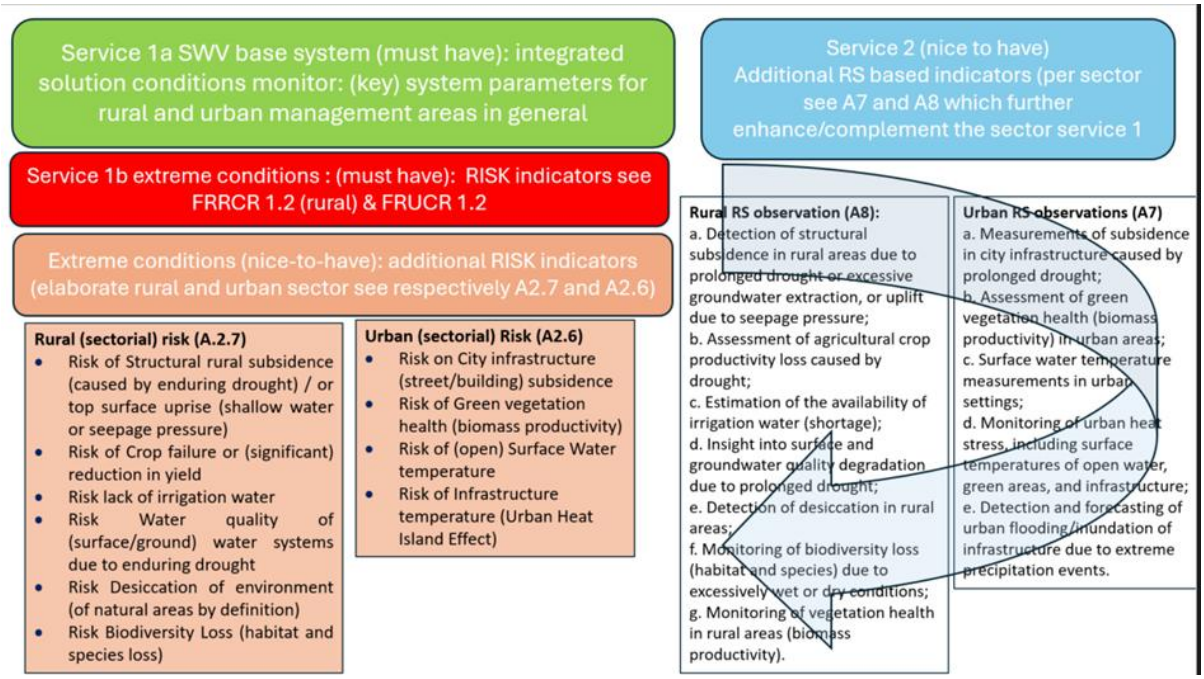

Figure 4. The core service (green and red: must haves) of PCP-WISE and the additional sectorial (pink: nice to have) risk insights in extreme SWV system conditions and specifically related direct Remote sensing based (blue/white: nice-to-have) applications and related Pass/Fail and weighted award criteria coding (see in detail also section 3.5)

Architecture diagram

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The aim is to develop modular, scalable, and user-focused information products/services that translate SWV (Soil–Water–Vegetation) data into (risk-based) indicators.

Each use case requires a specific form of input and output. This user context determines:

- What data is needed (input)
- What models or processing steps are required (processing)
- What rules or interpretations apply (interpretation)
- How the information is presented (output)

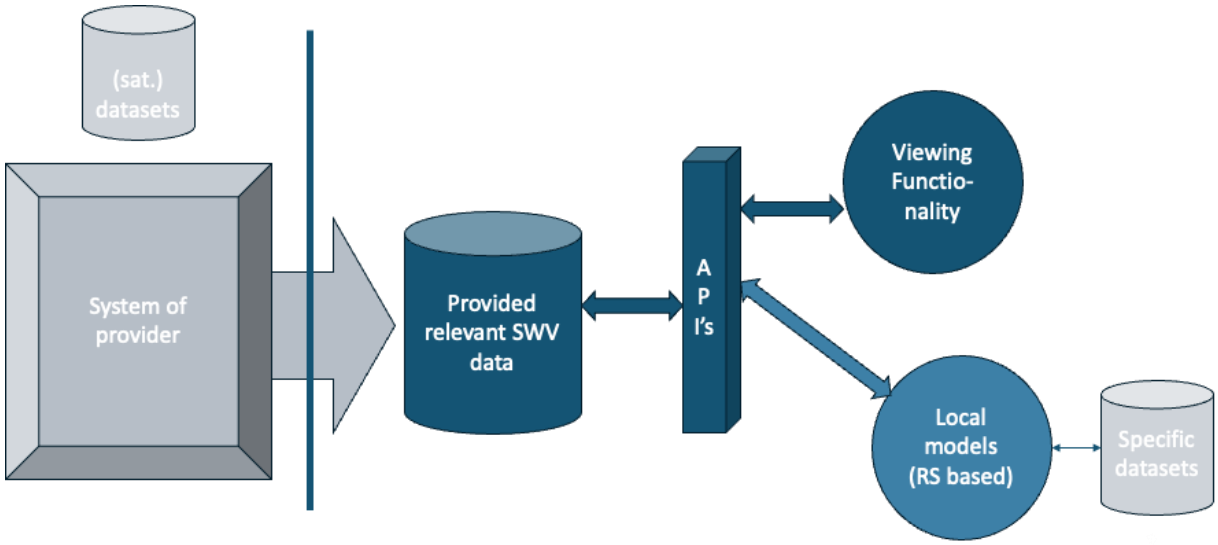

Figure 5. PCP WISE architecture diagram

2.1.3. The PCP phases

The R&D for PCP WISE will be split into 3 phases (Phase 1: solution design, Phase 2: prototyping and lab testing, Phase 3: original development, installation, wider field testing and validation of a limited set of 'first' products or services).

PCP PHASE 1 – SOLUTION DESIGN: During this phase, the contractors will be asked to describe the solution providing the complete architecture and design thereof and verifying the technical, economic and organisational feasibility of their solution to address the PCP challenge.

PCP PHASE 2 – PROTOTYPE DEVELOPMENT (and testing of technologies): This phase concerns the development of the first prototypes of the solutions, which will be tested. Contractors will develop a first prototype based on the design documents delivered in the previous phase and test their solutions in lab conditions. Prototypes will be tested and verified

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to provide a measure of the technical performance of each solution in a controlled environment. During and at the end of phase 2, the PBG will request from the contractors a series of deliverables in order to evaluate their progress and the performed activities and obtained results, as well as an end of phase report.

PCP PHASE 3 – VALIDATION AND DEMONSTRATION OF THE SOLUTIONS (end-users piloting services in operational environment): This phase will validate the final solutions in diverse conditions, using the detailed scenarios and processes developed in the verification and validation strategy. Specifically, the two final prototypes will be tested, validated and demonstrated for the five lead test sites, demonstrated for the partner test sites and tested in the table-top exercises.

Please refer to Annex 1, 7, 8 (CP1.1.-1.7) and Annex 10 for more information. During phase 3, a feedback mechanism will be established between the PBG and the selected contractors in order for the latter to receive requests for improvements directly from the end users. The PBG will request from the contractors an Integration Report. Finally, a Field Acceptance Report related to the accomplishment that the two final solutions which have been deployed and that the validation tests have been successfully performed in a real operational environment will be requested.

Evaluations by the relevant committee after each phase will progressively identify the solutions that offer the best value for money and meet the customers' needs. **This phased approach allows successful contractors to improve their offers for the next phase, based on lessons learnt and feedback from procurers in the previous phase.**

2.1.4. Expected outcomes (per phase)

The following tables describe the objectives, the associated output, results and the tasks to be carried out (milestones and deliverables) for each of the PCP phases (solution design, prototyping, original development and testing of a limited set of 'first' products or services):

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Phase 1: Solution design				
Objective:	Perform research to: 1. Elaborate the solution design and determine the approach to be taken to develop the new solutions and 2. Demonstrate the technical, financial and commercial feasibility of the proposed concepts and approach to meet the procurement need			
Output and results:	Solution design (Proof of Concept) Week 1 to Week 16 of Phase 1			
Milestones and deliverables		**By when?**	**How?**	**Output and results**
Milestones:	M1.1) Kick off meeting	Week 1 of phase 1	Online meeting with procurer	Initial plan and project abstracts (in the format required by the EU for publication)
	M1.2) Follow up meeting	Month 2 of phase 1	Online meeting with procurer	Follow up on work performed
	M1.3) End of phase	Month 4 - End of phase 1	Online meeting with procurer and report sent via email.	Solution design
Deliverables:	D1.1) Plan for phase 1	Week 1 of phase 1	Send planning via email to contact person of procurer	Phase 1 plan and project abstracts (in the format required by the EU for publication)
	D1.2) End of phase report and abstract	Month 4 - End of phase 1	Send end of phase report to procurer	End of phase report with the Solution Design and a section that explains the IPR measures taken by the contractors to protect the results and lists the names and location of personnel that carried out the R&D activities. The report shall present how the solution meets the needs of the five different test sites.
	D1.3) End of phase report and abstract in EU format	Month 4 - End of phase 1	Send summary in the EU format for publication	A summary of the main results achieved by each contractor and conclusions from phase 1 (in the format

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				required by the EU for publication)

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Phase 2: Prototyping				
Objective:	Develop, demonstrate and validate prototypes in lab conditions. For phase 2 the prototype validation is expected to be done at the premises of the contractors. The 5 different use cases should all be tackled by each contractor/consortium.			
Output and results:	Solutions tested in the contractors´ laboratory testing sites based on the use cases Week 1 to Week 44 of Phase 2			
Milestones and deliverables		**By when?**	**How?**	**Output and results**
Milestones	M2.1) Kick off meeting	Week 1 of phase 2	Online meeting with procurer	Phase 2 planning and project abstracts (in the format required by the EU for publication)
	M2.2) Start of testing	Month 4 of phase 2	Preparation of testing plan sent to contact person	Testing plan
	M2.3) Testing update	Week 18 of phase 2	Lab testing report	Test results
	M2.4) Testing update	Week 20 of phase 2	Lab testing report	Test results
	M2.5) Testing update	Week 22 of phase 2	Lab testing report	Test results
	M2.6) Testing update	Week 24 of phase 2	Lab testing report	Test results
	M2.7) Testing update	Week 26 of phase 2	Lab testing report	Test results
	M2.8) Testing update	Week 28 of phase 2	Lab testing report	Test results
	M2.9) Testing update	Week 30 of phase 2	Lab testing report	Test results
	M2.10) End of phase	Month 11 - End of phase 2	Online meeting with procurer and report sent via email.	Working prototype in lab environment
	M2.11) Prototype demonstration	Month 11 - End of phase 2	Prototype demonstration (also to the EU where relevant)	Demonstration (also to the EU Granting Authority of the PCP WISE Grant where relevant) of the prototypes developed during phase 2

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Deliverables	D2.1) Prototype and testing plan	Week 1 of phase 2	Online/site meeting on testing plan	Testing plan finetuned and project abstracts (in the format required by the EU for publication)
	D2.2) Prototype testing report	Month 4 of phase 2	Online/site meeting on prototype testing results	Progress on prototype testing results. Finetuning of the plan based on recommendations. Results of the lab testing based on use cases and KPIs
	D2.3) Prototype testing report	Month 5 of phase 2	Online/site meeting of testing	Progress on prototype testing results. Finetuning of the plan based on recommendations. Results of the lab testing based on use cases and KPIs
	D2.4) Prototype testing report	Month 7 of phase 2	Online/site meeting of testing	Progress on prototype testing results. Finetuning of the plan based on recommendations. Results of the lab testing based on use cases and KPIs
	D2.5) Prototype testing report	Month 9 of phase 2	Online/site meeting of testing	Progress on prototype testing results. Finetuning of the plan based on recommendations. Results of the lab testing based on use cases and KPIs
	D2.6) End of phase report	Month 11 – End of Phase 2	End of phase report sent to contact person	End of phase report with recommendation and a section that explains the IPR measures taken by the contractors to protect the results

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				and lists the names and location of personnel that carried out the R&D activities
	D2.7) End of phase report and abstract in EU format	Month 11 – End of Phase 2	Send summary in the EU format for publication	A summary of the main results achieved by each contractor and conclusions from phase 2 (in the format required by the EU for publication)
	D2.8) Demonstration	Month 11 – End of Phase 2	Prototype demonstration (also to the EU where relevant)	Demonstration (also to the EU Granting Authority of the PCP WISE Grant where relevant) of the prototypes developed during phase 2

Phase 3: Development & testing			
Objective:	Original development and field-testing of a limited set of first services in 5 testing sites located in 5 EU Member States. For phase 3, the testing of services in an operational environment will take place in the test sites according to the 5 use cases as described in Annex 1 and according to the finetuned plan from week 2 until week 20 of phase 3. Demonstrations are also to take place in the partner sites listed under Annex 1 and as part of two table-top-exercises as further detailed in annex 10. Each contractor/consortium is expected to set aside resources to carry out testing sequentially (or in parallel) at the different sites covering the different use cases and to develop 1 solution for the limited test series in each of the testing locations as indicated in Annex 1.		
Output and results:	Solutions tested and demonstrated in operational environments based on use cases in 5 sites and also demonstrated in the 4 partner sites (see annex 1 for more information on the test sites according to the 5 use cases) and solutions tested in Table-Top Exercises (TTX) (see annex 10 for more information about the TTX and how they will take place onsite during phase 3). *Please consider field testing in the five test site locations (budget at least 1 travel to each test site location) and testing the solutions in the two table-top-exercises (budget 2 trips to Bonn, Germany).* Week 1 to Week 24 of phase 3		
Milestones and deliverables	**By when?**	**How?**	**Output and results**

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Milestones:	M3.1) Kick off meeting	Week 1 of phase 3	Visit of phase 3 contractors to the testing sites	Phase 3 planning testing in operational environment and project abstracts (in the format required by the EU for publication)
	M3.2) Testing setup in operational site 1	Week 2 of phase 3	Online/site meeting with procurer	Finetuned plan for site 1 and training delivered.
	M3.3) Testing setup in operational site 2	Week 6 of phase 3	Online/site meeting with procurer	Finetuned plan for site 2 and training delivered.
	M3.4) Testing setup in operational site 3	Week 10 of phase 3	Online/site meeting with procurer	Finetuned plan for site 3 and training delivered.
	M3.5) Testing setup in operational site 4	Week 15 of phase 3	Online/site meeting with procurer	Finetuned plan for site 4 and training delivered.
	M3.6) Scalability and replicability workshops with public buyers	Weeks 16 - 18 of phase 3	Online	Participation in workshops to present solution to buyers.
	M3.7) Testing setup in operational site 5	Week 20 of phase 3	Online/site meeting with procurer	Finetuned plan for site 5 and training delivered.
	M3.8) Demonstration in 4 partner sites	Weeks 21 - 22 of phase 3	Online/site meeting with procurer	Finetuned plan for demonstration in partner sites.
	M3.9) Table Top (TTX) Exercises	Week 15 - 23 of phase 3	Online/site meeting with procurer	Finetuned plan and 2 TTX.
	M3.10) End of phase	Week 24 of phase 3	End of phase online/site meeting	End of phase report with recommendations

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	M3.11) Final report	Week 24 of phase 3 - End of phase 3	End of phase report sent to contact person	End of PCP report with recommendations
	M3.12) Summary of results	Week 24 of phase 3 - End of phase 3	End of phase report sent to contact person	A summary of the main results achieved by each contractor and conclusions from the PCP in the format required by the EU for publication.
Deliverables:	D3.1) Plan to test solutions in operational environments in 5 sites, to conduct demonstrations in 4 partners sites and 2 TTX	Week 1 of phase 3	Online/site meeting and testing plan sent to contact person	Testing plan finetuned and project abstracts (in the format required by the EU for publication)
	D3.2) Progress report of testing in site 1	Week 5 of phase 3	Progress report	Progress on prototype testing results in site 1. Results of services testing in operational environments in site 1. End-user evaluation of solutions based on use cases and KPIs.
	D3.3) Progress report of testing in site 1 and 2	Week 9 of phase 3	Online/site meeting on service testing results	Progress on prototype testing results in site 1 and 2. Results of services testing in operational environments in site 1 and 2. End-user evaluation of solutions based on use cases and KPIs.
	D3.4) Progress report of testing in	Week 14 of phase 3	Online/site meeting of testing	Progress on prototype testing results in site 1, 2 and 3. Results of services testing in

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	site 1, 2 and 3			operational environments in site 1, 2 and 3. End-user evaluation of solutions based on use cases and KPIs.
	D3.5) Progress report of testing in site 1, 2, 3 and 4	Week 19 of phase 3	Online/site meeting of testing and document sent to contact person	Progress on prototype testing results in site 1, 2, 3 and 4. Results of services testing in operational environments in site 1, 2, 3 and 4. End-user evaluation of solutions based on use cases and KPIs.
	D3.6) Progress report of testing in site 1, 2, 3, 4 and 5, demonstrations and TTX	Week 24 of phase 3	Online/site meeting of testing and document sent to contact person	Progress on prototype testing results in site 1, 2, 3, 4 and 5. Results of services testing in operational environments in 5 sites sites & TTX. End-user evaluation of solutions based on use cases and KPIs.
	D3.7) End of phase report	Week 24 of phase 3	End of phase report sent to contact person	End of phase report with recommendation and a section that explains the IPR measures taken by the contractors to protect the results and lists the names and location of personnel that carried out the R&D activities. Training materials finetuned and delivered.
	D3.8) Deadline for lessons learned	Week 24 of phase 3	Online meeting and deadline agreement	A deadline by which the contractors must agree on the text for the summary of overall lessons learnt and

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				results achieved from the PCP, for publication
	D3.9) Summary of results	Week 24 of phase 3 - End of phase 3	End of phase report sent to contact person	A summary of the main results achieved by each contractor and conclusions from the PCP in the format required by the EU for publication.
	D3.10) Demonstration of services	Week 24 of phase 3 - End of phase 3	Demonstration (also to the EU where relevant)	A final demonstration (also to the EU Granting Authority of the PCP WISE Grant where relevant) of the final products or services developed during the 3 phases.

**The timeline may be adjusted as needed for duly justified reasons in agreement with the parties.*

**Additional informal online meetings - where the contractor will have to submit the minutes - may be requested by the PBG to ensure the adequate completion of the project. These meetings will be requested with sufficient time and will take place in the least disruptive (to the work) manner possible.*

2.2 Tender closing time

Tender closing time will be: **7 January 2026, 17.00h**

2.3 Public buyers and other parties involved in the PCP

This procurement relates to a joint PCP that will be carried out by the following lead procurer: **HET WATERSCHAPSHUIS (hWh**), based in The Netherlands.

HWh is appointed to coordinate and lead the joint PCP, and to sign and award the framework agreement and the specific contracts for all phases of the PCP, in the name and on behalf of the following PBG:[14]

1. STICHTING TOEGEPAST ONDERZOEK WATERBEHEER (STOWA) (NL)

[14] See Annex 2.

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2. FORUM VIRIUM HELSINKI OY (FVH) (FI)
3. MINISTERSTVO VNUTRA SLOVENSKEJ REPUBLIKY (MINISTRY OF INTERIOR SLOVAKIA) (MoI) (SK)
4. GEMEENTE HAARLEM (CITY OF HAARLEM (NL)
5. BUNDESANSTALT TECHNISCHES HILFSWERK (THW) (DE)
6. REGION OF CENTRAL MACEDONIA (RCM) (EL)
7. FORENINGEN KLIMATORIUM (KLIMATORIUM) (DK)
8. BENEGO – GRENSPARK KALMTHOUTSE HEIDE (BE)
9. INSTITUT CARTOGRAFIC I GEOLOGIC DE CATALUNYA (ICGC) (ES)
10. CITY OF ROTTERDAM (NL)
11. SLOVENSKA AGENTURA ZIVOTNEHO PROSTREDIA (SLOVAK ENVIRONMENTAL AGENCY) (SEA) (SK)

Please note that members of the PBG reserve their right to decide on their roles and participation in PCP WISE.

The following entities are participating in PCP WISE as technical partners, but without being part of the PBG or giving in-kind contributions for carrying out the PCP, nor having rights to the results of the PCP or to the IPR:

- BAYERISCHES ROTES KREUZ (BRK) (DE)
- INSTITUT D'ESTUDIS ESPACIALS DE CATALUNYA FUNDACION (IEEC) (ES)
- FRAUNHOFER GESELLSCHAFT ZUR FORDERUNG DER ANGEWANDTEN FORSCHUNG EV (FRAUNHOFER) (DE)
- UNIVERSITEIT TWENTE (UT-ITC) (NL)
- ISEM-INSTITUT PRE MEDZINARODNU BEZPECNOST A KRIZOVE RIADENIE, NO (ISEMI) (SK)
- EVENFLOW (BE)
- FUNDACIO PRIVADA I2CAT, INTERNET I INNOVACIO DIGITAL A CATALUNYA (I2CAT) (ES)
- ENRICH GLOBAL (FR)
- GLOBAL APPROACH CONSULTING **(GAC)**, (FR).
- STICHTING CLIMATE KIC INTERNATIONAL FOUNDATION (CKIC) (NL)
- COVERS PROCUREMENT SERVICES (CPS) (NL)

PCP WISE also includes a Stakeholders Observatory Group (SOG) of entities that are neither Lead Procurer, nor members of the PBG, nor third parties providing in-kind contributions to

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the PCP, but that have a special interest in closely following the PCP Wise (i.e., Followers and Replicators)[15].

2.4 Contracting approach

The PCP will be implemented by means of a **Framework Agreement (TD2)** with call-offs for **Specific Contracts** (TD3, 4 and 5) for each of the PCP R&D phases (altogether 'contracts').

Following the tendering stage, a Framework Agreement and a Specific Contract for phase 1 will be awarded to at least 5 contractors. If less contractors than 5 will present a bid, the PBG shall motivate a decision to stop or continue the PCP.

A call-off will be organized for phase 2, with the aim of awarding 3 phase 2 contracts. Only offers from contractors that successfully completed phase 1 will be eligible for phase 2. The procurers will validate the phase 2 prototypes.

A second call-off will be organized for phase 3, with the aim of awarding a minimum of 2 phase 3 contracts. Only offers from contractors that successfully completed phase 2 will be eligible for phase 3.

Field-testing of the first products/services is expected to take place in the test sites indicated in Annex 1 during phase 3.

More information on the evaluation criteria of the test plan can be found under Annex 7.

The framework agreement will set all the framework conditions for the duration of the PCP (covering all three phases). There will be no renegotiation. The framework agreement will remain binding for the duration of all phases for which contractors remain in the PCP. Tenderers that are awarded a framework agreement will also be awarded a specific contract for phase 1 (evaluation of tenders for the framework agreement and phase 1 are combined). Tenderers are therefore asked not only to submit their detailed offer for phase 1, but also to state their goals, and to outline their plans (including price conditions) for phases 2 and 3 — thus giving specific details of the steps that would lead to commercial exploitation of the R&D. See subaward criteria under 3.5 for more information.

The offers for the next phase will be requested only *after* the end-of-phase deliverables (TD6) of the previous phase have been submitted and evaluated and only after the contractors have been informed of successful completion of the previous phase. I.e., only the contractors that successfully completed the previous phase will be invited to make offers for the next phase.

[15] See PCP Wise - SOG for more information.

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2.5 Total budget and budget distribution (per phase)

The total budget for the PCP (excluding VAT), the maximum budget per phase and the maximum budget per tender per phase, as well as the desired number of contractors and the duration of each is expressed in the table below.

PCP Phase	Contractors	Duration	Budget per contractor	Total Budget
Phase 1	5	4 months	300.000,00 €	1.500.000,00 €
Phase 2	3	11 months	2.400.000,00 €	7.200.000,00 €
Phase 3	2	6 months	1.532.669,40 €	3.065.338,80 €
			Total	11.765.338,80 €

Table 7: PCP phases, number of suppliers, budget and phase duration

The PBG has discretion to transfer leftover budget from one phase to the next phase in case offers with lower price than expected are received. For all phases, contracts will be financed until the remaining budget is insufficient to fund the next best tender. The exact number of contracts finally awarded will thus depend on the prices offered and the number of tenders passing the evaluation. As leftover budget from the previous phase could be transferred to the next phase, the total budget available for phase 2 (and 3) may eventually be higher than stated here (but the maximum budget per contractor for phase 2 (and 3) will remain the same).

It is possible that additional sites are included in Phase 3 (for demonstration purposes only and to be tackled on a voluntary basis only). The costs of these demonstrations could be covered by potential leftover budget from previous PCP WISE phases (i.e. it could be added to the tenderer´s estimated budget for phase 3 in TD9. Financial Form). The PBG has discretion to decide how to allocate leftover budget, if any. In any case, price variations will not exceed 10% of the originally estimated budget (by the contractor in TD9. Financial Form) for Phase 3.

The number of expected contractors may increase to allow more contracts than initially expected to be awarded if there are more high-quality tenders at lower prices than expected.

However, the total value of the contracts awarded can also be lower than initially expected if there are fewer tenders than expected that meet the minimum evaluation criteria. In any case, the contract implementation can start with a minimum of 3 contractors. In that case, the leftover budget from Phase 1 will be transferred to the next phases.

The reasoning for the PCP budget allocation with emphasis in Phase 2 is based on the complexity of the technology and the development required given use cases that will be clustered and tackled in Phase 2.

Since all Contractors will be paid by the Lead Procurer by way of centralised payments, and as hWh is based in the Netherlands, EU rules and the valid Dutch VAT legislation will be applied.

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2.6 Time schedule

The time schedule, which may be adjusted if needed in agreement with the parties, is the following.

Planned time schedule (table for 3 phases)	
Date	**Activity**
	First tender procedure (framework agreement and phase 1 contracts)
05/09/2025	Publication of contract notice in TED
06/09/2025	Tender documents available for download (in Amica platform and PCP WISE website)
15/09/2025	Info webinar
24/10/2025	Deadline for submitting questions about the tender documents
30/10/2025	Deadline for hWh to publish replies to questions (Q&A document)
11/11/2025	Info webinar on submission of bids
07/01/2026	Deadline for submission of bids
09/01/2025	Opening of tenders
11/02/2026	Tenderers are notified about the decision on awarding contracts
02/03/2026	Signature of framework agreements and phase 1 specific contracts
02/03/2026	Publication of the contract award notice in TED
	Implementation of phase 1
03/03/2026	Start of phase 1
05/03/2026	Names of winning phase 1 contractors and their project abstracts to be sent to EU (template*) and published on PCP WISE website
06/03/2026	Online meeting with hWh (and members of the PBG)
12/06/2026	Deadline for phase 1 final milestone(s)/final report/deliverable(s)
18/06/2026	Assessment of phase 1 final milestone(s)/final report/deliverable(s)

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22/06/2026	Phase 1 contractors notified as to whether they have completed this phase satisfactorily and successfully
24/06/2026	End of phase 1
26/06/2026	Summary of the results and conclusions achieved by each contractor during the phase sent to EU (template*)
	Payment of balance for phase 1 to contractors that completed this phase satisfactorily
	Second tender procedure (call-off for phase 2)
22/06/2026	Launch call-off for phase 2 (only offers from contractors that successfully completed phase 1 are eligible)
26/06/2026	Deadline for submitting questions on phase 2 call-off documents
29/06/2026	Deadline for hWh to circulate replies to questions to phase 2 tenderers
03/07/2026	Deadline for submitting phase 2 offers
06/07/2026	Opening of phase 2 offers
13/07/2026	Contractors are notified about the decision on awarding phase 2 contracts
17/07/2026	Signature of phase 2 specific contracts
	Implementation phase 2
20/07/2026	Start of phase 2
23/07/2026	Names of winning phase 2 contractors and their project abstracts to be sent to EU (template*) and published on PCP WISE website
24/07/2026	Online meeting with hWh (and members of the PBG) and prototype testing plan
17/11/2027	Deadline for phase 2 interim milestone(s)/deliverable(s)
15/02/2027	Deadline for submission of phase 2 final milestone(s)/final report /deliverable(s)

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16/04/2027	Demonstration of prototype for the EU technical review of phase 2; where applicable
25/05/2027	Assessment of phase 2 final milestone(s)/final report/deliverable(s)
26/05/2027	Phase 2 contractors notified as to whether they have completed this phase satisfactorily and successfully
26/05/2027	End of phase 2
26/05/2027	Summary of the results and conclusions achieved by each contractor during the phase sent to EU (template*)
	Payment of balance for phase 2 to contractors that completed this phase satisfactorily
	Third tender procedure (call-off for phase 3)
27/05/2027	Launch call-off for phase 3 (only offers from contractors that successfully completed phase 2 are eligible)
03/06/2027	Deadline for submitting questions about phase 3 call-off documents
09/06/2027	Deadline for hWh to circulate replies to questions to phase 3 tenderers
21/06/2027	Deadline for submitting phase 3 offers
22/06/2027	Opening of phase 3 offers
28/06/2027	Contractors are notified about decision to award phase 3 contracts
29/06/2027	Signature of phase 3 specific contracts
	Implementation phase 3
30/06/2027	Start of phase 3
02/07/2027	Names of winning phase 3 contractors and their project abstracts to be sent to EU (template*) and published on PCP WISE project website
14/07/2027	Start of visits of phase 3 contractors to the testing sites
15/12/2027	Deadline for submission of phase 3 final milestone(s)/final report/ deliverable(s)

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21/12/2027	Final demonstration of products/services developed during phase 3 (including to EU representatives)
29/12/2027	Assessment of phase 3 final milestone(s)/final report/deliverable(s)
30/12/2027	Phase 3 contractors notified as to whether they have completed this phase satisfactorily and successfully
30/12/2027	End of phase 3
30/12/2027	Summary of the results and conclusions achieved by each contractor during the PCP sent to EU for publication purposes (template*).
	Payment of balance for phase 3 to contractors that completed this phase satisfactorily

2.7 Intellectual Property Rights (IPR)

Ownership of results (foreground)

Each contractor will keep the ownership of the IPR attached to the results they generate during the PCP implementation. As the IPRs will not be transferred to the PBG, the price offered by the participants should take this into account, meaning the price should explicitly include a discount. Additionally, the ownership of the IPRs will be subject to the following conditions:

- The PBG has the right to:
  - receive an irrevocable, royalty free, non-exclusive license to use the developed technology up until TRL7 or 8 (or up to the point it was developed by Contractors of Phase 1 and 2) for indefinite time. This entails the access to the PCP Results, on a royalty-free basis, for their own use, non-commercially and at no additional cost. This includes all IPRs of what has been developed in the PCP and the pre-existing rights that are needed to perform the Project for the purpose of executing the Project as well as for non-commercial research purposes.
  - grant (or require the contractors to grant) non-exclusive licences to third parties to exploit the results under Fair, Reasonable and Non-Discriminatory (FRAND) conditions (without the right to sub-license).
- The PBG has the right to require the contractors to transfer ownership of the IPR if the contractors fail to comply with their obligations, notably concerning the protection or exploitation of the results or to protect public interests (including security interests) – this applies for Results under the three phases - or to commercialize the solution - this applies for Results under phase 3. In particular, the PBG will also have the unconditional right to require the contractor(s) to transfer ownership of the IPRs if the contractor(s) fail to

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comply with their obligation to commercially exploit the results of the R&D undertaken in the PCP (within a period of 4 years after the end of the Framework Agreement) or in case they use the results to the detriment of the public interest (including security interests).

The contractor(s) must ensure that the results are not subject to control or other restrictions by a country (or entity from a country) which is not one of the eligible countries set out in section 3.1 of this RFT — unless otherwise agreed with the granting authority.

Each contractor shall inform the PBG of the results of each phase that can be exploited, whether they can be protected or not. However, if the contractor does not seek protection for the Results that can be protected, the procurer will have the right to do so.

Commercial exploitation of results

The contractors are expected to commercialize their results before 4 years have elapsed after the end of the framework agreement.

Contractors are required to undertake specific activities beyond product development to commercially exploit the results, e.g. certification of solutions or contribution to standardization.

The PBG will undertake the actions help remove barriers to the introduction onto the market of the solutions to be developed during the PCP (e.g. promotion of R&D results among other public procurers, contribution made by the demand side to regulation, standardization and certification).

The feasibility of the business plan to commercially exploit the R&D results will be assessed as part of the award criteria.

The contractor(s) may transfer the ownership of the results to a third party only after successful conclusion of phase 3, giving at least a 90 days advance notice to the PBG. The new owner will be bound by the Framework Agreement. The PBG can object if its access rights will be affected. In this case, the transfer won't take place until an agreement is reached. The contractor(s) may not transfer ownership or the results or give exclusive licenses, if this would conflict with the right of first refusal for the PBG to buy the results.

The contractors may not transfer ownership of their results or grant licenses to third parties which are not established in EU Member States nor HE associated countries (or, if applicable, are controlled by such countries or entities from such countries) — unless they have requested and received prior approval by PBG who will request prior approval from the granting authority that is co-financing the PCP.

The contractor(s) must promote the dissemination of their results, in particular through publications and contribution to standardization. The contractor(s) must — up to 4 years after the end of the PCP — inform the contracting authority, who will inform in its turn the granting authority that is co-financing the PCP, if the results could reasonably be expected to contribute to European or international standards.

In case of a public emergency, the contractors must (if requested by the granting authority) grant for a limited period of time specified in the request, non-exclusive licences — under FRAND conditions —their results to legal entities that need them to address the public

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emergency and commit to rapidly and broadly exploit the resulting products and services at FRAND conditions.

For more information, see articles 8 and 12 of the Framework Agreement (TD2) that describe in more detail the IPR and the rights and obligations regarding exploitation of results.

Declaration of pre-existing rights (background and sideground)

The ownership of pre-existing rights will remain unchanged.

In order to be able to distinguish clearly between results and pre-existing rights (and to establish which pre-existing rights are held by whom):

- Tenderers are requested to elaborate the proposed list of pre-existing rights that they wish to use for their proposed solution in their offers.
- The PBG and contractor(s) will establish an agreed list of pre-existing rights to be used (under Annex 3), before the start of the Framework Agreement and this list will be updated at the start of each specific contract.

The contractors must ensure that background that is subject to control or other restrictions by a country (or entity from a country) which is not one of the eligible countries set out in section 3.1 and that impact the exploitation of the results (i.e. would make the exploitation of the results subject to control or restrictions) must not be used and must be explicitly excluded from the list of pre-existing rights agreed between the contractors and the contracting authority that will be used for the PCP — unless otherwise agreed with the contracting authority.

The contractors must ensure that if exploitation requires the agreement of a third entity owning the background IPR, this must be agreed with the PBG and it is the sole responsibility of the contractor that lists that background IPR.

The members of the PBG will receive rights to use the background IPR related to the developed solution for free during and for the purpose of the PCP. They are not buying developed prototypes or first products/services as part of this PCP. However, they will receive rights to use the background rights related to the developed solution after the PCP at FRAND conditions, the price for which will be established if and when the procurers conduct after the PCP a follow-up procurement to buy developed solutions or first prototypes.

Rights to use the background related to the developed solution must be granted under the same conditions as above also to entities that are under the direct or indirect control of procurers of the PBG, or under the same direct or indirect control as procurers of the PBG, or directly or indirectly controlling procurers of the PBG, subject to applicable control restrictions.

The Framework Agreement (TD2) regulates in more detail the rights and obligations of the different parties regarding the pre-existing rights and results in article 8.

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3. EVALUATION OF TENDERS

3.1 Eligible tenderers, joint tenders and subcontracting

Eligibility of tenderers

Participation in this call for tenders and the subsequent tendering procedure is open on equal terms to all types of operators that are established in and/or controlled from EU Member States or HE associated countries.[16]

> *'Control' is defined as the possibility to exercise decisive influence on the operator, directly or indirectly, through one or more intermediate entities, 'de jure' or 'de facto'.*

Each tenderer **must complete TD10. ESPD** to indicate its country of establishment and its country/ies of control and must present the supporting evidence normally acceptable under the law of that/those country/ies (enrolment in a trade register kept in the EU Member State or HE associated country of its establishment).

In addition, such a declaration (and supporting evidence) must be submitted for each subcontractor, expert and other entities on whose capacity the tender relies. Additional evidence may be requested by the contracting authority after the submission deadline.

I.e., a subsidiary from a third country **established in a Member State or HE Associated country** can be partner in a consortium to submit an offer. **A company established in a third country and not established in and/or controlled by an EU Member State or HE associated country can act as a subcontractor, but not as main contractors.**

Participation in the PCP contract is **not open to entities that are subject to EU restrictive measures** under Article 29 of the Treaty on the European Union (TEU) and Article 215 of the Treaty on the Functioning of the EU (TFEU)[17] — in any capacity (not as main contractor, member of a grouping/consortium, subcontractors, experts or any other type of entity on whose capacity the tender relies or other third parties that are cooperated with).

In addition, the contractors must ensure that none of the contracted services are performed in countries - neither by entities - that are subject to EU restrictive measures (sanctions). They must ensure that none of the services/goods procured or used for the procurement were developed, produced or supplied in countries or by entities that are subject to such EU restrictive measures. In order to ensure that the EU restrictive measures are respected throughout the supply chain that will be involved in delivering the contract results, the

[16] List of Horizon Europe participating countries.

[17] Please note that the EU Official Journal contains the official list and, in case of conflict, its content prevails over that of the EU Sanctions Map.

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contractors must ensure that these obligations also apply to their subcontractors, affiliated entities and other third parties (including suppliers of components used for the innovative solution) they cooperate with in the research, development, testing and subsequent commercialization of the results, as well as to any entities succeeding them in their ownership or development of the results.

- Please note that the contractors will have to ensure that the participation and/or control requirements are extended to their subcontractors (only what refers to entities that are subject to EU restrictive measures), affiliated entities and other third parties (including suppliers of components used for the innovative solution) and that any cooperation with nationals of third countries that are not eligible countries or that are controlled by such a country and/or by a national of such a country does not affect the strategic assets, interests, autonomy or security of the EU and its Member States and avoids potential negative effects over security of supply of inputs that are critical to the procurement.
  In this regard, subcontractors, affiliated entities and other third parties also need to complete a TD10. ESPD.

Tenders submitted in collaboration with others

Tenders may be submitted by a single entity or in collaboration with others. The latter can involve either submitting a joint tender or subcontracting, or a combination of the two approaches.

For joint tenders:

This refers to the situation in which one tenderer, consisting of a combination of companies (Consortium) participates in this RFT. Such a combination can in addition make use of third parties (Sub-contractors). Combinations of companies (consortia) may participate in this PCP tender procedure, provided that their participation is in accordance with the principles of the EU and applicable national competition law. The following requirements apply for joint tenders:

- The members of a Consortium must jointly appoint a lead contractor as a party authorized to act in the name and on their behalf, who will deal with all the matters regarding the PCP (including the signing of each phase contracts) and to whom all communications will be directed. The lead contractor will bear the overall responsibility for the contracts, irrespective of whether tasks are to be performed by a Subcontractor or by another Consortium member or not.
- All members of the Consortium shall complete, sign and submit TD10. ESPD.
- The members of the Consortium must jointly meet the Selection Criteria.
- All members of the Consortium are jointly and separately bound to fulfil the terms of the Framework Agreement and Phase Contracts. Each member of the Consortium must accept joint and several liability by completing and adding the TD11 Consortia Statement.
- Each member of the Consortium must be listed in the professional register or trade register or a foreign equivalent in accordance with the legislation in force in the country where it is established.
- Each tenderer may submit no more than one tender (alone, as main contractor, as part of a consortium, or as subcontractor). This means that the tenderer may only submit a bid

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on his own or in one (temporary) Consortium. It also means that an economic operator or affiliated entity can participate as a subcontractor in one tender. Failure to do so leads to the automatic exclusion of all bids in which they take part[18].

For subcontracting:

Subcontracting is any kind of contract between the tenderer and third parties, in which the latter agrees to provide part of the services that the tenderer has offered in his bid. Subcontracting is allowed in this PCP, as far as the subcontractors selected are not under exclusion grounds.

- Please note that in terms of eligibility, a company established in a third country and not established in and/or controlled by an EU Member State or HE associated country can act as a subcontractor, but not as a main contractor.

The subcontractors must comply with all the contractual conditions, rights and obligations that are in the Framework Agreement (TD2) and specific contracts (TD3, TD4 and TD5) (including, without limitation, complying with the definition of R&D services, confidentiality, results and IPRs, visibility of EU funding, conflicts of interest, language, obligation to provide information and keep records, audits and checks by the EU, processing of personal data, liability for damages as well as environmental, ethics and security requirements). Therefore, the tenderer must make sure that subcontractors are aware of the provisions set out in the tender documents.

- Please note that subcontractors, affiliated entities and other third parties also need to complete a TD10. ESPD.
- Please note that, in any case, the contractor(s) remain fully liable to the PBG for the performance of the contract.

No essential parts of the contracts may be subcontracted, nor the management of the PCP activities (these tasks will have to be performed by the contractor or at least by full-subsidiary companies owned by the contractor). Essential parts are linked to the mandatory requirements of PCP Wise. See Annex 8.

Nevertheless, the subcontractor on whose experience the contractor has relied on to satisfy the technical competence (reference criterion) is obliged to perform the relevant work. I.e., the execution of tasks assigned to a subcontractor as per the submitted tender may not be the subject of further subcontracting. To ensure this, the tender must clearly mention which parts of the contract will be subcontracted.

The tenderer must specify in TD10. ESPD which part of the R&D services they intend to subcontract. The tenderer will also identify who the subcontractor(s) is/are and which services they will deliver.

[18] Affiliated Entity means any legal entity directly or indirectly controlling, controlled by, or under common control with that economic operator or its subsidiary, for so long as such control lasts.

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In TD8 Technical form and TD9 Financial form the tenderer shall describe their approach (processes and procedures) in managing and monitoring their subcontractors. In any case, the contractor will be the ultimate responsible for the services provided.

A contractor that wishes to rely on the resources of a third party for the fulfilment of the requirements for participation in the PCP (and, where applicable, an awarded contract), should demonstrate that these resources will be available to them. In order to demonstrate this, a written commitment signed by such third party, showing that the resources required will be at the contractor's disposal for the entire duration of the contract should be submitted together with Tender Form (TD8) (i.e., a third party needs to complete, sign and submit TD10 ESPD).

Other

Prior participation in the open market consultation is not a pre-condition for submitting a tender.

However, for phase 2 and 3, participation is limited to contractors that successfully completed the preceding phase.

3.2 Exclusion criteria

The exclusion criteria are as follows:

Exclusion criteria	Evidence
Exclusion grounds as defined in article 57 of Directive 2014/24/EU: • **Grounds relating to criminal convictions** • **Grounds relating to the payment of taxes or social security contributions** • **Grounds of insolvency or professional misconduct** • **Conflict of interest**[19] • **Distortion of competition**	TD8 Technical form and TD10 ESPD

- Tenderers that do not comply with these criteria will be excluded, with the exception of self-cleaning measures. The exclusion criteria will remain unchanged for the entire duration of the PCP, thus applying also for the call-offs for phases 2 and 3.

[19] A conflict of interest covers both personal and professional conflicts. Personal conflicts are any situation where the impartial and objective evaluation of tenders and/or implementation of the contract is compromised for reasons relating to economic interests, personal life (e.g. family or emotional ties) or any other shared interest. Professional conflicts are any situation in which the contractor's (previous or ongoing) professional activities affect the impartial and objective evaluation of tenders and/or implementation of the contract. Tenderers that are subject to a conflict of interest will be excluded when it cannot be effectively remedied by other less intrusive measures. If there is a potential conflict of interest, tenderers must immediately notify the PBG in writing. **If an actual or potential conflict of interest arises at a later stage (i.e. during the implementation of the contract), the contractor(s) must notify the PBG and take steps to rectify the situation. The PGB may verify the measures taken and require additional information to be provided and/or further measures to be taken.**

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- Clarifications may be requested by the contracting authority after the submission deadline.

3.3 Selection criteria

The PBG reserves the right (but does not have the obligation) to check the documents and references. Should there be any doubt as to any of the below-specified criteria, tenderers may be requested to provide additional information. Tenderers have 5 working days to reply to this request.

The tenderer may rely on the capabilities of a third party (e.g., sub-contractor or consortium partners) for compliance with the selection (always in accordance with the eligibility aspects described under 3.1). In case of reliance on the capabilities of a subcontractor, the respective subcontractor shall be involved in delivering the activities in this PCP that require these capabilities.

The selection criteria will remain unchanged for the entire duration of the PCP, thus applying also for the call-offs for Phases 2 and 3.

Failure to comply with any of the selection criteria will lead to the automatic exclusion of the tenderer from the PCP.

- Selection criteria 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 14 and 15 are also linked to the execution of the contract and will be part of the Framework Agreement (TD2), as performance conditions for the implementation of the contract. **I.e., the personnel mentioned in criteria 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 15; and the testing location(s) proposed under criterion 16 will be required to execute the contract.** The tenderer will reflect this in his proposal (Financial Form (TD9)).
- Changes in the personnel executing the contract (who will need the same qualifications, knowledge and experience) will be duly notified to and authorized by hWH.
- **Please note that at least 4 CVs from different people shall be submitted to comply with the requirements.**

	Selection criteria	Evidence
1	**Suitability to pursue the professional activity**	Proof regarding enrolment in one of the professional or trade registers kept in their Member State or HE associated country of establishment.
2	**Project Management Role (Non-technical Oversight**	One CV of an expert who will be part of the project management team and will be responsible for overarching coordination tasks. The CV must clearly demonstrate at least 5 years of experience in managing multi-disciplinary innovation projects and/or multi-disciplinary integration projects with challenges on a European scale. The individual must have verifiable experience in monitoring tasks, managing

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		planning and budgets, coordinating stakeholders, and ensuring project governance. The role is not technical in nature: the primary focus is on a grid-based multi-disciplinary project delivery and strategic alignment across domains, rather than on content-level or technical development. They must be employed by the Contractor(s) at the time of executing the contract.
3	**R&D Integration and Technical Leadership Role – Rural Context**	One CV of an expert who has over 5 years' experience in the overarching R&D role focused on the development and integration of technical solutions addressing challenges on a European scale in rural areas. Suitable roles include Lead R&D Engineer, Technical Project Lead, or R&D Project Manager. The candidate must demonstrate experience in designing and integrating domain-spanning innovations for rural environments (e.g. agriculture, land use, water systems, natural ecosystems). They must be employed by the Contractor(s) at the time of executing the contract.
4	**R&D Integration and Technical Leadership Role – Urban Context**	One CV of an expert with over 5 years of experience in an overarching R&D role focused on the development and integration of technical solutions addressing challenges on a European scale in urban areas. Relevant roles may include Lead R&D Engineer, Technical Project Lead, or R&D Project Manager. The candidate must show experience in developing integrated solutions in urban environments (e.g. smart infrastructure, urban water management, mobility, energy, or public space systems). They must be employed by the Contractor(s) at the time of executing the contract.
5	**Ability to combine knowledge and experience of the personnel regarding R&D biophysical processes**	One CV of an expert who has over 5 years' experience and knowledge regarding R&D on biophysical processes, using combination/integration/datascience methodologies and observations. They must be employed by the Contractor(s) at the time of executing the contract.
6	**Ability (and experience) of the personnel regarding hydrology modelling – Rural context**	One CV of an expert related to hydrology modelling in rural areas with over 5 years of experience. The CV will specifically highlight experience in hydrology modelling in rural areas and climate (scenario) modelling. They must be employed by the Contractor(s) at the time of executing the contract.

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7	**Ability (and experience) of the personnel regarding hydrology modelling – Urban context**	One CV of an expert related to hydrology modelling in urban areas with over 5 years of experience. The CV will specifically highlight experience in hydrology modelling in urban areas and climate (scenario) modelling. They must be employed by the Contractor(s) at the time of executing the contract.
8	**Ability (and experience) of the personnel regarding crises prediction, preparedness, monitoring and impact assessment - Rural context**	One CV of an expert related to crises prediction, preparedness, monitoring and impact assessment in rural areas with over 5 years of experience. They must be employed by the Contractor(s) at the time of executing the contract.
9	**Ability (and experience) of the personnel regarding crises prediction, preparedness, monitoring and impact assessment - Urban context**	One CV of an expert related to crises prediction, preparedness, monitoring and impact assessment in urban areas with over 5 years of experience. They must be employed by the Contractor(s) at the time of executing the contract.
10	**Ability (and experience) of the personnel regarding remote-sensing – Rural context**	One CV of a remote sensing value-adder for updating the essential water balance components in rural areas with over 5 years of experience. They must be employed by the Contractor(s) at the time of executing the contract. Description of a reference case addressing rural water issues, specifically monitoring the spatial water distribution of the soil-water system and developing related risk indicators. TD12. Standard self-declaration form (for project references)
11	**Ability (and experience) of the personnel regarding remote-sensing – Urban context**	One CV of a remote sensing value-adder for updating the essential water balance components in urban areas with over 5 years of experience. They must be employed by the Contractor(s) at the time of executing the contract. Description of a reference case addressing urban water issues, specifically monitoring the spatial water distribution of the soil-water system and developing related risk indicators. TD12. Standard self-declaration form (for project references)
12	**Ability (and experience) of the personnel regarding AI, Data Science and ICT skills in operational information production (upscaling) in back and front processing**	Description of at least one project in the last 5 years referring to ICT capability to support the operationalisation and upscaling of information products — both in back-end processing (data management, automation, integration) and in front-end delivery (user access, interfaces, services).

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		The project shall demonstrate the organisation's experience in the scalable development, deployment, and operation of information products or services within an ICT environment. The reference must describe how the organisation ensured continuity, performance, and accessibility of these solutions for end users. The reference project must have had a minimum contract value of minimum 500.000 € and/or at least a user community of 20 users. TD12. Standard self-declaration form (for project references)
13	**Ability (and experience) in GIS and spatial data analysis.**	Description of at least one project in the last 5 years referring to GIS and spatial data analysis. TD12. Standard self-declaration form (for project references)
14	**Ability (and experience) of the personnel regarding legal knowledge in the field of AI, IPR and European Interoperability Standards**	One CV of an expert with legal knowledge in the fields of AI, IPR and European Interoperability Standards. The CV will specifically indicate at least 2 projects in which these aspects were fundamental in the last 5 years. It is possible to submit various CVs who in combination have the knowledge and experience of over 5 years.
15	**Ability (and experience) of the personnel regarding climate adaptation and resilience at local to regional scales**	One CV of an expert related to climate adaptation and resilience at local to regional scales (e.g., design or implementation of local / regional adaptation roadmaps, coupling between water management and other adaptation levers). The CV will specifically indicate at least 1 project in which climate adaptation and resilience aspects were fundamental in the last 5 years. It is possible to submit various CVs who in combination have the knowledge and experience of over 5 years. They must be employed by the Contractor(s) at the time of executing the contract.
16	**Ability to perform up to original development of the first products or services in an EU Member State and/or a HE Associated country**	Proof of availability of testing facilities and necessary materials and/or equipment (e.g., the development and testing environment should be located in a EU Member State and/or HE Associated country). Description of the testing facilities, of the servers, etc., as well as property documents and/or renting invoices.

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3.4 Compliance criteria

Compliance criteria are intended to check whether the tender complies with the R&D services definition and the PCP principles.

	Compliance criteria	Explanation	Evidence
1	**Definition of R&D services as described in the most recent version of the Frascati Manual.**[20]	R&D covers fundamental research, industrial research and experimental development, as per the definition given in the EU R&D&I state aid framework. It may include exploration and design of solutions and prototyping up to the original development of a limited volume of first products or services in the form of a test series. R&D does not include quantity production or supply to establish commercial viability or to recover R&D costs. It also excludes commercial development activities. The purchase of commercial volumes of products or services is not permitted. The definition of R&D services means that the value of the total amount of products covered by the contract must be less than 50 % of the total value of the PCP framework agreement: • The offers for all 3 Phases may include only products needed to address the challenge in question and to deliver the R&D services described in this RFT. • The total value of products offered in Phase 1 and in Phase 2 must be less than 50% of the value of the Phase 1 and Phase 2 contracts' value. Tenders that go beyond the provision of R&D services will be excluded.	Technical form (TD8)
2	**Place of performance requirement**	At least 70% of the total value of activities covered by the framework agreement (i.e. the total value of the activities covered by all phases) must be performed in the EU Member States or HE associated countries. This means that at least 70% of the total value of activities covered by each specific contract for PCP phase 1 and 2 must be performed in the EU Member States or in HE associated countries. Both percentages for phase 1 and phase 2 must be set at the minimum percentage (i.e. 70%) to ensure that tenders that do not go through to phase 2 (or phase 3) still satisfy the place of performance requirement. The principal R&D staff working on the PCP (on each specific contract) must be located in the EU Member States or Horizon Europe associated countries[21]. All activities covered by the contract are included in the calculation (i.e. all R&D and operational activities that are needed to perform the R&D services, e.g. research, development, testing and certifying solutions). This includes all activities performed under	Technical form (TD8)

[20] OECD (2002). Frascati Manual 2002: [Version: 2002]. OECD Publishing [online].

[21] The principal R&D staff are the main researchers, developers and testers responsible for leading the R&D activities covered by the contract.

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		the contract by contractors and, if applicable, their subcontractors[22]. The contractors must in addition ensure that the implementation of the contract takes place in EU Member States or HE associated countries.	
3	**Laws and regulations regarding artificial intelligence, privacy, ethics, health and safety**	Tenders will be excluded if they do not comply with: • Ethical principles (including the highest standards of research integrity, notably as set out for example in the European Code of Conduct for Research Integrity [23], and, in particular, avoiding fabrication, falsification, plagiarism and other research misconduct). • Applicable international, EU and national law including GDPR provisions[24] and the EU AI Act. • Include plans to carry out activities in a country outside the EU, which do not comply with the requirements indicated in this RFT.	Technical form (TD8)
4	**Proposed solution already available on the market**	Tenders whose proposed solution is already available on the market will be excluded from the PCP	Technical form (TD8)
5	**Compatibility with other public financing**	Tenders that receive public funding from other sources will be excluded, if this leads to double public financing or an accumulation of different types of public financing that is not permitted by EU legislation, including EU state aid rules.	Technical form (TD8)

- Clarifications may be requested by the contracting authority after the submission deadline.
- Failure to comply with any of the compliance criteria will automatically lead to the exclusion of the tenderer and submitted bid from the PCP.
- The compliance criteria will remain unchanged for the entire duration of the PCP, thus applying also for the call-offs for phases 2 and 3.

[22] If applicable, 100% of the contracted R&D services on security components of the solution must be performed in EU Member States or HE associated countries.

23 https://allea.org/code-of-conduct/

[24] The Tenderers shall comply with the legislation and regulations applicable to the processing of personal data in Europe. In particular and if applicable, the Tenderer, members of a Consortium, subcontractors and Third Parties will have to ensure compliance with Article 28(7) of Regulation (EU) 2016/679 of the European Parliament and of the Council and Article 29(7) of Regulation (EU) 2018/1725 of the European Parliament and of the Council (on standard contractual clauses between controllers and processors).

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3.5 Award criteria

PASS/FAIL AWARD CRITERIA

The tenders will be evaluated on the pass/fail award criteria only if the tenderer is not subject to any of the exclusion criteria, compliance criteria and fulfils the selection criteria.

Tenderers are required to demonstrate their compliance with the pass/fail award criteria in **TD8 TECHNICAL FORM**. The tender must comply with all the **functional, technical and contract performance requirements** listed under **Annex 8. PCP WISE Requirements**. Failure to comply with any of the pass/fail award criteria will lead to the automatic exclusion of the tender from the PCP. Compliance with these requirements is mandatory and cannot be subject to any assumptions, limitations, conditions, or reservations on the part of a tenderer. Please use TD8. Tender Form to demonstrate compliance.

- **Section 2.1.2** indicates **which information product/service is required** and which are additional. **Figure 4** in section 2.1.2 shows in red an overview of the **Must Have / required** Risk indicators. **They are part of the pass/fail award criteria in Annex 8**.

WEIGHTED AWARD CRITERIA

These criteria and related sub award criteria will be used to evaluate the award of the Framework Agreement (TD2) and the Phase 1 Contract (TD3), according to a quality assessment.

Ideally 5 tenderers (and a minimum of 3) will be awarded a Framework Agreement and a Phase 1 Contract on the basis of the Most Economically Advantageous Offer (MEAT) according to the award criteria described below[25]. The tenders will be evaluated on the weighted award criteria (according to a quality assessment and a price assessment) only if the tenderer(s) is not subject to any of the exclusion criteria, compliance criteria and fulfils the selection criteria and the tender complies with the pass/fail award criteria.

The award criteria and related sub award criteria will also be used to evaluate the award of the Phase 2 Contract (TD4) and the Phase 3 Contract (TD5), according to a quality assessment. **Please note that the sub award criteria, its relative weighting (and consequently the maximum points) as well as the minimum thresholds may be finetuned depending on the outcomes of Phase 1 (and 2).**

The technical quality and price award criteria, weightings and thresholds are set so as to favour the MEAT. The weighted award criteria shall ensure that the PBG gets the best value for money. Therefore, the lowest price as the sole criterion is not used, without taking quality

[25] If there are not sufficient R&D providers, PCP WISE consortium has the right (but not the obligation) to select only 2 providers for phase 1. If only 1 provider can be selected, PCP WISE consortium reserves the right either to cancel the PCP or to start a negotiated procedure without prior publication with the tenderer as defined under article 32.2.a of Directive 2014/24/EU.

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into account, neither the highest quality is used as the sole criterion, without taking price into account.

- **Section 2.1.2** indicates which information product/service is required and **which are additional**. **Figure 4** in section 2.1.2 shows in orange the additional **Nice to Have risk indicators**. They are part of the **weighted award criteria (A2.6 and A2.7).** In white the Remote sensing based indicators per sector are mentioned as **Nice to Have** and part of the **weighted award criteria (A7 and A8).**

- **The TEC will decide unanimously on the scoring of each subaward criteria. E.g. if one evaluator gives one point and another 0, the result will not be 0,5. The evaluators will have to agree if the final scoring for that subaward criterion is 0 or 1 point. This is especially applicable to subaward criteria that allows for descriptions.**

- **Please bear in mind that if a tenderer has indicated compliance with one or more of the weighted award criteria, once they have been awarded the Framework Agreement and Phase 1 contract (Phase 2 and Phase 3 contract) these weighted award criteria become mandatory for the contractor. The satisfactory evaluation shall also be based on the compliance of these weighted award criteria.**

No.	Weighted award criteria	Max points	Threshold
A.	Impact on the challenge	49	0
B.	Validity of the technical approach	23	0
C.	Quality of the tender	18	0
	Total	90	0

Number		Weighted award criteria	Max. points	Threshold
A	**A. IMPACT ON THE CHALLENGE**		**49**	**0**
	A.1	**Level of match with data handling**	**3**	
		A.1.1. **Shared (interoperable) language and formats for data-sharing.** . Describe briefly what standards are applied and to what extent your solution uses machine readable formats and is able to comprise metadata **This shall be further developed in detail in the Solution Design of PCP Phase 1.** Points will be awarded if the solution clearly demonstrates the use of machine-readable formats *and* widely recognised ontologies or standards for data description. If not, zero points will be awarded.	1	0
		A.1.2. **Update frequency.** The solution supports hourly updates during crisis mode. Describe briefly whether and how your solution achieves this frequency. **This shall be further developed in detail in the Solution Design of PCP Phase 1**. Solutions that support hourly updates receive points. If not, zero points will be awarded.	1	0

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	A.1.3. **Temporal coverage of data.** Explain briefly how your solution supports the use of (1) historical, (2) real-time, and (3) forecasted data for time series analysis and risk forecasting. **This shall be further developed in detail in the Solution Design of PCP Phase 1**. Full temporal coverage — meaning all three types of data are supported and clearly described — will result in the maximum score. Partial or no coverage will result in zero points. coverage — meaning all three types of data are supported and clearly described — will result in the maximum score. .	1	0
A.2	**Level of match with analysis and intelligence**	**15**	**0**
	A.2.1. **System Indicators**. Provide an overview of the performance indicators in a liveliness metrics probe that gives information about the status of the service. This shall allow monitoring the operational status of the software. **This shall be further developed in detail in the Solution Design of PCP Phase 1.** Solutions that offer a liveliness probe providing information on the operational status of their service/solution will earn points. If unavailable, zero points are awarded.	1	0
	A.2.2. **Trend monitoring.** The solution enables continuous monitoring of trends using historical, real-time and forecasted data. **This shall be further developed in detail in the Solution Design of PCP Phase 1**. Points will only be awarded if the solution uses all data categories. If not, zero points will be awarded.	1	0
	A.2.3. **Event Detection and Automation**. The solution shall allow integrating real-time event detection. Based on these events the system shall be able to trigger automated workflows. This pluggable architecture shall enable the integration of custom system alerts, notifications, or the forwarding of messages to relevant authorities. Describe briefly how your solution will enable detecting critical events and which automated workflows it will integrate. **This shall be further developed in detail in the Solution Design of PCP Phase 1.** Maximum points will be awarded if the solution clearly demonstrates real-time event triggering and effective automation of relevant workflows. If this is not addressed or insufficiently demonstrated, zero points will be awarded.	1	0
	A.2.4. **Scenario Simulation**. The solution shall support simulations for various risk scenarios, including at least drought, flood and wildfire, ae. **This shall be further developed in detail in the Solution Design of PCP Phase 1** If it does, the tender will receive the points, if not, zero points.	1	0
	A.2.5. **Dynamic Risk Mapping**. The solution shall provide near real-time and regularly updated spatial risk maps (short term forecast). **This shall be further developed in detail in the Solution Design of PCP Phase 1** If it does, the tender will receive the points, if not, zero points.	1	0
	A.2.6. Additional risk indicators for urban crises use cases which are service 1b (extremes) based risk indicators (see section 2.1.2. figure 4): • City infrastructure (street/building) subsidence • Green vegetation health (biomass productivity, ground water levels) • (open) Surface Water temperature • Infrastructure temperature (Urban Heat Island Effect)	4	0

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		This shall be further developed in detail in the Solution Design of PCP Phase 1 For each additional risk indicator correctly addressed, one point will be scored.		
		A.2.7. Additional risk indicators for rural crises use cases which are service 1b (extremes) based risk indicators (see section 2.1.2. figure 4):: • Structural rural subsidence (caused by enduring drought) / or top surface uprise (shallow water or seepage pressure) • Risk of crop failure or (significant) reduction in yield • Risk of lack of irrigation water • Risk Water quality of (surface/ground) water systems due to enduring drought • Risk of desiccation of environment[26] (of natural areas by definition) • Risk of biodiversity Loss (habitat and species loss) **This shall be further developed in detail in the Solution Design of PCP Phase 1**. For each additional risk indicator correctly addressed, one point will be scored.	6	0
	A.3	**Level of match with interfaces and interoperability**	**6**	**0**
		A.3.1. Real-Time and Event-Based Communication: the solution should support real-time updates and event-driven communication using protocols such as MQTT or WebSockets. **This shall be further developed in detail in the Solution Design of PCP Phase 1.** If it does, the tender will receive the points, if not, zero points.	2	0
		A.3.2. GIS Platform Integration: the solution should provide options to seamlessly integrate with municipal, regional, and national GIS tools for spatial data management and decision-making (e.g. through implementation of OGC standards" . **This shall be further developed in detail in the Solution Design of PCP Phase 1.** If it does, the tender will receive the points, if not, zero points.	4	0
	A.4	**Level of match with Governance and Security**	**2**	0
		A.4.1. User Action Auditability: the solution shall log and audit all user interactions (e.g., data edits, configurations) to ensure traceability and accountability. **This shall be further developed in detail in the Solution Design of PCP Phase 1.** If it does, the tender will receive the points, if not, zero points.	1	0
		A.4.2. Legal & Regulatory Compliance: the solution shall support compliance with public sector regulations regarding the use case domain. Explain briefly in TD8 point 5 how you intend to comply with public sector regulations regarding the use case domain. A thorough and convincing explanation receives maximum points. Depending on shortcomings of the explanation, the score will be zero. **This shall be further developed in detail in the Solution Design of PCP Phase 1.**	1	0
	A.5	**Level of match with Operational Support**	**5**	0

[26] (Soil) Desiccation: Soil can dry out due to factors like evaporation, plant uptake of water, and lack of rainfall, leading to changes in soil properties and impacting plant growth.

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		A.5.1. Calibration and Validation: the solution shall include tools to calibrate and validate models and data layers for operational accuracy. Please describe briefly the calibration and validation method in TD8. **This shall be further developed in detail in the Solution Design of PCP Phase 1** If considered sufficient, points for this criterion will be awarded, if not, zero points.	2	0
		A.5.2. Notification System: Availability and effectiveness of an out-of-system notification system (email, SMS, etc.) that ensures timely, relevant, and user-friendly alerts to support operational decision-making. **This shall be further developed in detail in the Solution Design of PCP Phase 1.** If it does, the tender will receive the points, if not, zero points.	1	0
		A.5.3. Automated Reporting: the solution should enable automated generation of periodic or event-based reports (e.g., weekly summaries of drought, flood, or wildfire risks). This shall be further developed in detail in the Solution Design of PCP Phase 1 If it does, the tender will receive the points, if not, zero points.	1	0
		A.5.4. Announcement Mechanism: The solution shall integrate an announcement mechanism, that can inform either all or certain users about relevant news, such as maintenance or security relevant events in the interface. **This shall be further developed in detail in the Solution Design of PCP Phase 1** If it includes all the aspects and can inform all users or certain users, it will receive the points, if not, zero points.	1	0
	A.6.	**Contribution to standardization across EU**	**6**	0
		A.6.1. The extent to which your solution serves as a practical basis for spatial upscaling to the entire EU. Explain briefly in TD8 point 5 how you are planning to contribute to new standards (input for the hydrology modelling and pan-european application/interoperability) in particular regarding SWV system conditions at EU level. **This shall be further developed in detail in the Solution Design of PCP Phase 1.** A thorough and convincing explanation will receive the maximum points. Depending on the shortcomings of the explanation, the score will be reduced.	3	0
		A.6.2 Cooperation with EU-based organizations. I.e., level of use of existing European mechanisms (like EFAS, etc.) as boundary condition/initiation of the local WISE solution. Explain briefly in TD8 point 5 how your proposal addresses this topic. **This shall be further developed in detail in the Solution Design of PCP Phase 1**. A thorough explanation that contributes to cooperation will receive the maximum points. Depending on the shortcomings of the explanation, the score will be reduced.	3	0
	A.7.	**Urban additional remote sensing based information products**	**5**	**0**
		A.7.1. The extent to which the tender offers usable, validated, and scalable information products to support crisis management in urban environments, including: a. Measurements of subsidence in city infrastructure caused by prolonged drought; b. Assessment of green vegetation health (biomass productivity) in urban areas;	5	0

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		c. Surface water temperature measurements in urban settings; d. Monitoring of urban heat stress, including surface temperatures of open water, green areas, and infrastructure; e. Detection and forecasting of urban flooding/inundation of infrastructure due to extreme precipitation events. Explain briefly in TD8 point 5 how your proposal addresses these aspects. **This shall be further developed in detail in the Solution Design of PCP Phase 1**. Each of the five aspects (correctly) addressed receives one point.		
	A.8.	**Rural additional remote sensing based information products**	**7**	**0**
		A.8.1. The extent to which the tender offers usable, validated, and scalable information products to support crisis management in rural environments, including: a. Detection of structural subsidence in rural areas due to prolonged drought or excessive groundwater extraction, or uplift due to seepage pressure; b. Assessment of agricultural crop productivity loss caused by drought; c. Estimation of the risk of irrigation water shortage; d. Insight into surface and groundwater quality degradation due to prolonged drought; e. Detection of desiccation risk in rural areas; f. Monitoring of biodiversity loss (habitat and species) due to excessively wet or dry conditions; g. Monitoring of vegetation health in rural areas (biomass productivity). Explain briefly in TD8 point 5 how your proposal addresses these aspects. **This shall be further developed in detail in the Solution Design of PCP Phase 1**. Each of the seven aspects (correctly) addressed receives one point.	7	0
	VALIDITY OF THE TECHNICAL APPROACH		**23**	**0**
	B.1	**Quality of the methodology – Design, development and installation of the solution**	**7**	0
		B.1.1. Combination of proven (peer reviewed) methodologies**:** The extent to which different methodologies such as model, in-situ observations, remote sensing observations, and RS-derived information – are integrated into actionable information for end users. **This shall be further developed in detail in the Solution Design of PCP Phase 1**. If the tender addresses all methodologies, it will obtain 3 points. Depending on the shortcomings of the explanation, the score will be reduced.	3	0
		B.1.2. Use of Data Science based (sub)solutions (e.g. AI based solutions, Machine Learning based solutions). Reliability of the methods used to generate missing data. I.e., the extent to which the tender provides a clear, robust, and well-substantiated methodology (AI) for identifying, addressing, and responsibly completing gaps in observational or model data, in order to ensure the continuity, reliability, and interpretability of the information products. Explain briefly in TD8 point 5 how your proposal addresses these	2	0

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		aspects. **This shall be further developed in detail in the Solution Design of PCP Phase 1**. A thorough explanation with valuable methods will receive the maximum points. Depending on the shortcomings of the explanation, the score will be reduced.		
		B.1.3. Solution that provides a posteriori accuracy estimates. See Annex 7. Explain briefly in TD8 point 5 how your proposal addresses this point. A thorough explanation will receive the maximum points. **This shall be further developed in detail in the Solution Design of PCP Phase 1**. Depending on the shortcomings of the explanation, the score will be reduced.	2	0
	B.2	**Use of data. See Annex 9 for data sets identified by PCP WISE consortium that tenderers can use in their proposals/solutions.**	**6**	0
		B.2.1. Use of existing EO-based (value added) information. Points here will be given to information used in addition to Requirement TRDH 1.2 Open European Data. If the proposal includes additional information, the tender will receive the points; if not, zero points.	1	0
		B.2.2. The extent to which the proposal uses Copernicus Contributing Mission (CCM) Data as input for the models an improvement of model results assessed on relevance, quality, and convincing application. (see Annex 9) **This shall be further developed in detail in the Solution Design of PCP Phase 1**. A thorough explanation will receive the maximum points. Depending on the shortcomings of the explanation, the score will be reduced	3	0
		B.2.3. Use of freely available data (= open data) and user data as input—this includes model input data (e.g., land use, digital terrain models, soil types), satellite data (and derived products), and radar-based rainfall estimates. Explain which data is used, and how it is integrated in the proposed solution. **This shall be further developed in detail in the Solution Design of PCP Phase 1**. If the proposal includes these data, the tender will receive the points; if not, zero points.	1	0
		B.2.4. The extent to which satellite remote sensing data is used in the proposed solution, assessed on its added value and relevance. **This shall be further developed in detail in the Solution Design of PCP Phase 1**. If the proposal includes these data, the tender will receive the points; if not, zero points.	1	0
	B.3	**Technical validity and robustness of the solution proposed.**	**10**	0
		B.3.1. Methodology used to estimate prediction errors of the output (i.e., the information products). Explain briefly in TD8 point 5 how your proposal addresses this point. A thorough explanation will receive the maximum points. **This shall be further developed in detail in the Solution Design of PCP Phase 1**. Depending on the shortcomings of the explanation, the score will be reduced.	2	0
		B.3.2. The extent to which independent products or strategies (such as the information products listed in A7 and A8) are used in an innovative way to confirm or validate local SWV conditions, with a direct or indirect link to SWV processes. Explain briefly in TD8 point 5 how your proposal addresses this point.. **This shall be further developed in detail in the Solution Design of PCP Phase 1**. A thorough explanation will receive the maximum	2	0

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		points. Depending on the shortcomings of the explanation, the score will be reduced.		
		B.3.3. Simulation speed plan of the model solutions, for instance based on an ex-ante evaluation of the simulation speed. **This shall be further developed in detail in the Solution Design of PCP Phase 1**. The extent to which the proposal includes a convincing simulation speed plan, the tender will receive the maximum points; if not, zero points.	2	0
		B.3.4. Use of commonly accepted programming environment, such as Python or R for generating information products and risk indicators is preferred. **This shall be further developed in detail in the Solution Design of PCP Phase 1**. If the proposal uses a commonly accepted programming environment as the primary programming environment, the tender will receive the maximum points; if not, zero points.	2	0
		B.3.5. Methodology related to the efficiency of the pre-processing procedure, defined in terms of processing speed, maintenance and the consistency of outputs related to the parametrization of the unsaturated zone and associated models.[27] Explain briefly in TD8 point 5 how your proposal addresses this point. A thorough explanation – addressing all the above-mentioned aspects - will receive the maximum points. **This shall be further developed in detail in the Solution Design of PCP Phase 1**. Depending on the shortcomings of the explanation, the score will be reduced.	2	0
	QUALITY OF THE TENDER		**18**	**0**
	C.1	**Coherence/Integration of the overall proposal -** The extent to which the proposed solution design demonstrates coherence, feasibility, robustness, and effective alignment of its components to deliver the intended objectives. See as example Annex 14, A thorough designated design will receive the maximum points. Depending on the shortcomings of the design, the score will be reduced.	**6**	0
	C.2	**Commercial potential**	**6**	0
		C.2.1. The extent to which the proposal contributes to a sustainable market introduction and scaling of the solution, assessed on: **Marketing plan & end-user approach:** clarity of the plan regarding target group(s), marketing channels, and strategy. **IPR plan:** the extent to which arrangements on ownership, usage rights, and transparency foster trust and collaboration. Explain briefly in TD8 point 5 how your proposal addresses this point. **This shall be further developed in detail in the Solution Design of PCP Phase 1**. A thorough explanation – addressing all the above-	3	0

[27] See Annex 12. SOTA analysis for unsaturated zone models.

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		mentioned aspects - will receive the maximum points. Depending on the shortcomings of the explanation, the score will be reduced.		
		C.2.2. Ability to minimize the whole life-cycle cost / Total Cost of Ownership (TCO) Explain briefly in TD8 point 5 how your proposal minimizes/optimizes life cycle costs along the various phases of solution development and integrates cost control measure and cover the sustainability of the solutions after this PCP. **This shall be further developed in detail in the Solution Design of PCP Phase 1**. A thorough explanation will receive the maximum points. Depending on the shortcomings of the explanation, the score will be reduced	2	0
		C.2.3. Establish connections before the end of Phase 3 with venture capital firms (or other forms of national/EU funding) to support commercialization efforts following the PCP. This includes mandatory participation in up to six scalability and replicability workshops aimed at preparing the commercialisation of the solutions beyond PCP WISE on the one hand and ensuring their uptake and future procurements by additional buyers on the other hand. Explain in TD8 point 5 how your proposal addresses this point. A thorough explanation will receive the maximum points. Depending on the shortcomings of the explanation, the score will be reduced.	1	0
	C.3	**First draft plan of potential risks and mitigation measures.** Application Risk Management methodology aimed at ensuring schedule adherence, financial management, delivery of final outcomes, and maintaining effective relationships among clients, users, and contractors. Explain in TD8 point 5 how your proposal addresses this point. A thorough explanation – addressing all the above mentioned aspects - will receive the maximum points. Depending on the shortcomings of the explanation, the score will be reduced.	**3**	0
	C.4.	**Project management methodology for the contract implementation for the three phases of the PCP.** Explain in TD8 point 5 how your proposal addresses this point. A thorough explanation of the tenderer's approach will receive the maximum points. Depending on the shortcomings of the explanation, the score will be reduced. reduced.	**3**	0

The PBG reserves the right (but does not have the obligation) to ask for proof of eligibility and compliance with the exclusion/selection/award criteria at any moment throughout the procedure. The tenderer shall provide all the necessary evidence within 5 working days.

Call-offs for phases 2 and 3 may request that this information be updated in the offers submitted for these phases.

3.6 Evaluation procedure

Opening of tenders

See 2.6 Time schedule for the date on which the tenders for PCP phase 1 will be opened.

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The Administrative Procurement Committee (APC) composed by at least three members of hWh will open the tenders. The APC will check the tenders vis-à-vis the exclusion, selection and compliance criteria.

Tenders not complying with the formal requirements will be excluded from the tender evaluation.

Evaluation

For the purpose of the evaluation of the bids, the following different Committees are appointed. in addition, the four bodies will guarantee the soundness of the procedure during the implementation of the PCP tender:

The Administrative Procurement Committee (APC) will be composed of at least three members of hWh and will have a dedicated role with the view to support and speed up the tender procedures during the procurement execution. In this regard, the APC members will support hWh in the evaluation of the tenders (i.e. evaluating the tenders against the exclusion and selection criteria, contact excluded bidders).

The Financial Evaluation Committee (FEC) will be comprised of a group of experts, representatives from the PBG, specializing in economic and business aspects of the procurement process. Chaired by hWh's representative, the FEC receives supplementary assistance from economic advisors as necessary. The FEC conducts comprehensive reviews to assess the tenders´ financial and business viability.

Throughout all phases of the PCP process, the FEC supports the evaluation of the end-of-phase reports submitted by contractors. Its primary objective is to ensure alignment with economic and business-related requirements as drafted in the tender as well as to provide feedback on the submitted commercialization plans. Decisions within the FEC are reached by consensus[28] and are then presented to the Procurement Evaluation Board (PEB) for final decision-making. This collaborative approach ensures that financial considerations are carefully integrated into the broader project framework, ultimately enhancing the project's overall success.

The Technical Evaluation Committee (TEC) will be comprised of technical and domain-specific experts, a representative from the PBG, and chaired by hWh's representative. It will receive support (without voting rights) from expert advisors as needed. The primary responsibility of the TEC is to ensure PCP Wise progresses in a timely manner and the delivery of high-quality results.

Throughout all phases of the PCP process, the TEC will review the proposals submitted by the contractors as well as the end of phase reports, ensuring compliance with the technical requirements. The committee proposes acceptance or rejection of the proposals and deliverables to the PEB. The TEC processes complaints submitted by tenderers during the tendering process, providing recommendations to the PEB for final decision. Decisions within

[28] Consensus in decision making for all the committees means that the full team agrees on a particular scoring. E.g., in the weighted award criteria, for a particular subaward criterion that scores 1 point, the whole team will decide to give 0 or 1 points. Not 0,5.

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the TEC are reached through consensus[29], reflecting a collaborative approach to project oversight and decision-making.

The Procurement Evaluation Board (PEB), chaired by hWh's representative and comprised of at least one representative from each member of the PCP WISE PBG, will serve as the decision-making body overseeing the tendering process and subsequent contract execution.

Bids will be evaluated in a non-discriminatory and transparent manner.

At the end of the evaluation procedure, a ranking will be drawn up, in which the tenderers/consortia will be listed based on the overall score achieved, in descending order.

The provisional award will be made to 5 tenderers/consortia (depending on budget restrictions) (and a minimum of 3[30]) who submitted the MEAT, i.e., they will have obtained the highest overall scores following the sum of the overall scores awarded, resulting from the technical offer and the financial offer.

In the event that the bids of two or more tenderers obtain the same overall score, but obtain partial scores for the price and for all the other different evaluation elements, the tenderer who obtained the best score on the technical offer will be placed first in the ranking of the two or more tenderers.

In the event that the bids of two or more tenderers obtain the same overall score and the same partial scores for the technical offer and the financial offer, and the number of winning Tenderers still exceeds the maximum number of contracts that can be awarded (due to budget constraints), the bids that received a higher score in award criteria A) will be preferred. In case this score is the same, there will be a draw. To ensure transparency the tenderers in this situation will be invited to witness the draw.

At the end of the evaluation procedure, a ranking will be drawn up, in which the bids will be inserted based on the overall score achieved, in descending order; this ranking list will not include those that have not achieved the minimum technical score. The award of the contract will take place in the order of the ranking, starting from the first competitor to the last one. The ranking will be scrolled until the possible maximum number of successful bidders is reached.

The tenderers that are not selected after the whole evaluation procedure will receive information on why their tender was not selected.

The evaluation process and initial contract award will follow these steps:

- Step 1: Checking the exclusion criteria per tenderer/consortium. Performed by the APC.

[29] Consensus in decision making for all the committees means that the full team agrees on a particular scoring. E.g., in the weighted award criteria, for a particular subaward criterion that scores 1 point, the whole team will decide to give 0 or 1 points. Not 0,5.

[30] If there are not sufficient R&D providers, PCP WISE consortium has the right (but not the obligation) to select only 2 providers for phase 1. If only 1 provider can be selected, PCP WISE consortium reserves the right either to cancel the PCP or to start a negotiated procedure without prior publication with the tenderer as defined under article 32.2.a of Directive 2014/24/EU.

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- Step 2: For tenderers/consortia passing step 1, checking the selection criteria per tenderer/consortium. Performed by the APC.

Formal approval by the PEB of the outcome of the two prior steps:

- Step 3: For tenderers/consortia passing step 2, checking the compliance criteria per tender. Opening and evaluation of the technical offers (TD8. Technical form). Performed by the TEC.
- Step 4: For tenderers/consortia passing step 3, evaluating the bids based on the pass/fail award criteria. Performed by the TEC.
- Step 5: For tenderers/consortia passing step 4, evaluating the bids based on the weighted award criteria. Performed by the TEC.

Formal approval by the PEB of the outcome of the three prior steps:

- Step 6: For tenderers/consortia passing step 5, opening and evaluation of the financial offers (TD9. Financial form). Performed by the FEC. Formal Approval by the PEB of the outcome of the step.
- Step 7 Final ranking conducted by the PEB.
- Step 8: Provisional award decision by the PEB & communication thereof.
- Step 9: Final award decision after the standstill period (ten days) & signing of framework agreement and phase 1 contract. Done by hWh acting on behalf of the PBG.

If a bid scores the maximum number of points for every criterion, it will receive the total maximum technical score of 90 points. The maximum scoring obtained after the proposal evaluation shall be 100 points, where:

- 90 points correspond to the **technical offer, and**
- 10 points correspond to the **financial offer**

Following the Scoring Model:

Total points on the price for Phase 1

The maximum budget per contractor for PCP-phase 1 is € 300.000 (as described in section 2.5). Amounts over € 300.000 will lead to the exclusion of the bid. The score for the price criterion is assessed on the basis of the offered total price for phase 1 with shared IPR (Financial Form (TD9)) and the maximum score is 10 points.

The minimum for PCP-phase 1 with shared IPR is € 100.000. Between these limits, the score is calculated with the formula as described below:

$$PP\ \frac{P_r - P_b}{P_r - P_t} = 3\ \frac{300.000 - P_b}{300.000 - 100.000}$$

PP= maximum number of points available to bidders for price offers = 10

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Pr= Reserve Price, or the price at and above which bidders get zero point = € 300.000

Pt= the price threshold is a lower bound: the bidder cannot improve his score with further price reductions = € 100.000

Pb= Price bid by the supplier

The score will be rounded to 2 decimals.

- Please note that prices below € 100.000 will NOT receive additional points.
- Please note that "negative" or 0 price offers will be excluded.

Total points on the price for Phases 1, 2 and-3

A price for PCP phase 1, PCP phase 2 and PCP phase 3 is also required.

The maximum budget per contractor for PCP phases 1, 2 and 3 is € 300.000, € 2.400.000 and € 1.532.669,40 respectively (see section 2.5). Amounts over the maximum budget per PCP phase will lead to the exclusion of the tender. The score for the price criterion is assessed on the basis on the offered total price with shared IPR (See Financial Form (TD9)) and the maximum score is 10 points.

The minimum amount for PCP-phase 1 with shared IPR is € 100.000. The minimum amount for PCP-phase 2 with shared IPR is € 500.000. The minimum amount for PCP-phase 3 with shared IPR is € 400.000.

Between these limits, the score is calculated with the formula as described below:

$$PP\ \frac{P_{r\,1,2,3} - P_{b\,1,2,3}}{P_{r\,1,2,3} - P_{t\,1,2,3}}$$

$$= 7\left(\frac{300.000 - P_{b\,1}}{300.000 - 100.000} + \frac{2.400.000 - P_{b\,2}}{2.400.000 - 500.000} + \frac{1.532.669{,}40 - P_{b\,3}}{1.532.669{,}40 - 400.000}\right)$$

PP = maximum number of points available to bidders for price offers=30

Pr = Reserve Price, or the price at and above which bidders get zero point

Pr 1 = € 300.000

Pr 2 = € 2.400.000

Pr 3= € 1.532.669,40

Pt = the price threshold is a lower bound: the bidder cannot improve his score with further price reductions

Pt 1 = € 100.000

Pt 2 = € 500.000

Pt 3 = € 400.000

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Pb = Prices per PCP-phase bid by the supplier

The score will be rounded to 2 decimals.

- Please note that prices below € 100.000, € 500.000, € 400.000 will NOT receive additional points.
- Please note that "negative" or 0 price offers will be excluded.
- For phases 2 and 3, differences in the composition of the evaluation committees or in the procedure may be finetuned and communicated in due time.
- The evaluation of offers for phase 2 and 3 has only 1 step: evaluating the offers based on the pass/fail and the weighted award criteria.
- Please note that the maximum estimated budget indicated in the PCP WISE Phase 1 offer for Phases 2 and 3 will act as a cap during the Call-Offs for Phase 2 and 3 respectively.

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4. CONTENT AND FORMAT OF TENDERS

4.1 Format

The tenders must meet the formal requirements (including the address for submission of the tender and requirements relating to the presentation of the offer and its packaging).

The tenders must:

- Contain administrative, technical and financial sections.
- Be signed by an authorized representative.
- Please ensure to include the different documents in the correct ENVELOPE. Incorrectly placed documents (e.g. TD9 Financial in envelope B) could lead to exclusion.

ENVELOPE	Evaluation	Documentation
ENVELOPE A[31] - Administrative envelope	First to be assessed by the APC. It should include all the documents required to demonstrate selection and non-exclusion grounds	Documentation regarding enrolment in a trade register, CVs, Documentation regarding proof of availability of testing facilities and necessary materials and/or equipment, TD10. ESPD, TD11. CONSORTIA STATEMENT and TD12. Standard self-declaration form (for project references).
ENVELOPE B – Technical envelope	Second to be assessed by TEC. It includes aspects related to compliance criteria and award criteria, except for the price	TD8. Technical form
ENVELOPE C – Financial envelope	Third to be assessed by FEC.	TD9. Financial form

Tenders that do not comply with the formal requirements will be automatically rejected. The PBG reserves the right (but does not have the obligation) to check the documents and references. Tenderers have 5 working days to reply to this request and correct any clerical errors in ENVELOPE A – Administrative envelope.

Please note that for ENVELOPE B – Technical envelope - and ENVELOPE C – Financial envelope, the PBG reserves the right (but does not have the obligation) to check the information and ask for clarifications (as long as this does not imply a substantial modification of the Tender).

More detailed information about the final layout requirements for the phase 2 and 3 offers will be provided in the call-off.

Submission and communication via the TUTTOGARE PA e-Procurement platform

This is a fully digital tendering procedure that runs through the **TUTTOGARE PA e-Procurement platform** (https://pcp-wise.tuttogare.it/pcp/dettaglio.php?codice=1). This

[31] Please note that it will be an electronic submission.

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means that all communications including the Tenders are only possible via the **TUTTOGARE PA platform** and must be directed to the contact person of hWh as lead procurer. It is not permitted to have any other contact about this PCP tender with other employees of the contracting authority, unless explicit written permission from a contact person has been received. Failure to comply with this provision may lead to exclusion.

The use of this platform is done on a voluntary base, as this procurement is a PCP that falls outside the scope of the Gewijzigde Aanbestedingswet 2012.

A Tenderer must register on the **TUTTOGARE PA platform**, free of charge. If Tenderer already has a company registration on the **TUTTOGARE PA platform**, no new registration is needed. Registration is possible via https://pcp-wise.tuttogare.it/pcp/dettaglio.php?codice=1 by filling in a web form. Note: In order to learn how to sign up for the platform and to read the Terms of Use, please refer to the Quick User Guide that can be downloaded from the attachments section (link).

- Please note that subcontractors and members of consortia that will not be Lead Contractors (if awarded) can also register in the platform, but are not mandated to do so. **In any case, they must not submit any tender documentation. That responsibility remains within the Lead Contractor only**, as each tenderer may submit no more than one tender (alone, as main contractor, as part of a consortium, or as subcontractor). This means that the tenderer may only submit a bid on his own or in one (temporary) Consortium. It also means that an economic operator or affiliated entity can participate as a subcontractor in one tender. Failure to do so leads to the automatic exclusion of all bids in which they take part.

A Tenderer is expected to have all the required knowledge to be able to correctly complete a tender procedure in the **TUTTOGARE PA platform**. The functioning of the **TUTTOGARE PA platform** is explained in the Quick User Guide that can be downloaded from the attachments section (link).

On the basis of this Request for Tender, the Tenderer must fill-out the requested data on the **TUTTOGARE PA platform** and add the accompanying statements and information.

For technical questions about the **TUTTOGARE PA platform**, the Tenderer should contact the helpdesk, which can be reached on workdays via the e-mail address assistenza@tuttogare.it.

Tenderers must ensure that hWh has the correct e-mail address and telephone number of the Tenderer's contact person.

The tenderer is responsible for ensuring that these e-mail notifications are permitted by e-mail protection (firewall, spam filters). Neither hWh, nor **TUTTOGARE PA** is responsible in the event that these e-mail notifications are blocked by the e-mail security of the Tenderer. **Advice:** add the e-mail address to trusted addresses or contact your own system manager for this. If a Tenderer (for whatever reason) has not received an email notification, the consequences thereof will be for the account and risk of the Tenderer.

The date and time indications in this Request for Tender are leading. Only updated date and time indications written in notices of information of hWh will prevail over the indications in this Request for Tender.

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hWh reserves the right to switch to another electronic platform during the term of the Framework Agreement. hWh will inform the Tenderer of this change in a timely manner, at least one month in advance.

hWh cannot guarantee (and also provides no guarantee) that **TUTTOGARE PA platform** can be accessed or used at any time without any problems. If there are problems with gaining access to **TUTTOGARE PA platform** and / or the use thereof, the Tenderer must immediately report this to the **TUTTOGARE PA platform** support team, whereby the Tenderer also sends an e-mail to the e-mail communicated by hWh. If there is a disruption at **TUTTOGARE PA platform** just before the expiry of the term for submission of the Tender, hWh reserves the right to extend this term provided that it has not yet opened the already submitted Tenders.

If the Tenderer wishes to withdraw from participating in the tender at any time, he must announce this on the **TUTTOGARE PA platform** in accordance with the Quick User Guide.

Format requirements

The following requirements will apply regarding the format of tenders. Tenderers or Contractors that do not comply with the formal requirements will be excluded from further participation in the PCP:

- Where a signature is requested, the relevant document must be validly signed by a duly authorized person(s). The signature must be from a staff member or staff members who according to the extract from the professional register or trade register is authorized to represent the Tenderer. If a document is signed by a person not listed in the professional register or trade register, an adequate proxy must be attached. Such a proxy must be signed by a person or persons who according to the extract from the trade register or the professional register or according to the articles of association are authorized to represent and bind the Company. The proxy must clearly state that the proxy holder is authorized to represent the company in connection with this tender.
- The Tender must be submitted in English.
- All Tenders must be made using the Tender Forms (TD8, TD9, TD10, T11 and TD12).
- Tenders must not be qualified or accompanied by statements or a covering letter that might be construed as rendering the tender equivocal.
- The Tender has the character of an irrevocable offer with a validity period of 60 calendar days, counting from the closing date for submission of tenders. If the award decision is objected to in preliminary relief proceedings, the validity period will be extended. The validity period will then be extended by 30 calendar days, counting from the first day on which it ceased to be possible to appeal from the court judgment regarding the objection to the provisional award.
- Amounts must be stated in euros, excluding VAT, unless otherwise stated.
- All tenders must contain an administrative, technical, and financial section.
- More detailed information about the final layout requirements for the phase 2 and 3 offers will be provided in the call-off for that specific phase.

Tenders that do not comply with the formal requirements may be rejected.

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4.2 Technical section

The tender must include a detailed technical offer. The technical section of the tender should be drafted according to the template provided (TD8). The information provided in the technical section of the tender will be used to evaluate the tenders, on the basis of the award criteria. Please use the tender form to specify:

- A technical plan that outlines:
  1) the tenderer's idea for addressing all the requirements given in the PCP challenge description, relating both to functionality and performance; and
  2) technical details of how this would be implemented, including also the proposed approach for complying with the do no significant harm principle.

- A project plan and methodology, and a description of the resources that the tenderer will use during the PCP process, to increase the chance of reaching milestones and deadlines for deliverables during and after the PCP process.
- A draft business plan that explains the proposed approach to commercially exploit the results of the PCP and to bring a viable product or service onto the market.
- A list of the pre-existing rights (background) relevant to the tenderer's proposed solution, in order to allow IPR dependencies to be assessed.
- A risk assessment and risk mitigation strategy.

More detailed information for the PCP phase 2 and 3 offers (in particular on the technical implementation plan, updated business plan and list of IPRs) will be provided in the call-offs.

4.3 Financial section

The tender must include a detailed financial offer, as part of the Tender form (TD9). Please use the tender form to specify:

- Binding unit prices for all items needed for carrying out phase 1 and for items that are expected to be needed for phase 2 and phase 3 (given in euros, excluding VAT but including any other taxes and duties).
- A fixed total price for phase 1 and an estimated total price for phase 2 and 3, broken down to show unit prices and the number of each unit needed to carry out phase 1 (given in euros, excluding VAT but including any other taxes and duties).

In addition, the financial section must include:

- A price breakdown that shows the price for R&D services and the price for supplies of products (to demonstrate compliance with the definition of R&D as described in 3.4 Compliance criteria).
- A price breakdown that shows the location or country in which the different categories of activities are to be carried out *(e.g. x hours of senior researchers in country L at y euro/hour; a hours of junior developers in country M at b euro/hour),* which personnel

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profile corresponds to principle R&D personnel. To demonstrate compliance with the requirement relating to place of performance as described in 3.4 Compliance criteria.

- The financial compensation valuing the benefits and risks of the allocation of ownership of the IPRs to the contractors (i.e. IPRs generated by the contractors during the PCP), by giving an absolute value for the price reduction between the price offered in the tender compared to the exclusive development price (i.e. the price that would have been quoted were IPR ownership to be transferred to the procurers) in order to ensure compliance with the EU R&D&I state aid framework.

The information provided in the financial section of the tender will be used to evaluate the tenders on the basis of the compliance criteria and the price award criteria. For compliance criteria 5, the financial section can contain a self-declaration asking the tenderer to declare compliance of his offer with other public financing sources.

- **The unit prices quoted for each category of items *(e.g. hourly rates for junior and senior researchers, developers and testers)* remain binding for all phases (i.e. for the duration of the framework agreement).**
- **The price for phase 2 and 3 offers must be based on the binding unit prices in the tender and the price conditions set out in the framework agreement. Where new units/unit prices (e.g. for new tasks or equipment) are subsequently added to the phase 2 or 3 offers, they will become binding for the remaining phases.**
- **The price paid to the contractor will cover all costs incurred by the contractor. The PBG is not going to pay any additional costs.**

Similar price breakdowns will be requested for the call-offs for phase 2 and 3. More detailed information for the phase 2 and 3 offers will be provided in the call-off.

Since all Contractors will be paid by the Lead Procurer by way of centralised payments, and as hWh is based in the Netherlands, EU rules and the valid Dutch VAT legislation will be applied. I.e., the VAT regime(s)will be the VAT regime of hWh.

4.4 Checklist of documents and proof

Hereby an overview of the documents and actions to be taken by a tenderer as part of the tender for PCP-phase 1.

Name	Action to be taken by tenderer
TD1. RFT (this document)	It provides the rules of the Tender, including the evaluation scheme. By the submission of a tender, all requirements mentioned in this document will be accepted by the tenderer. No action.
Tender Document 2 (TD 2): Framework Agreement	Contains the provisions that will regulate Phase 1, Phase 2 and Phase 3 of the PCP. TD2 should be signed by Contractors who have been awarded the Framework Agreement and Phase 1 Contract.

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Name	Action to be taken by tenderer
	To be signed by selected Contractors.
Tender Document 3 (TD 3): PCP Specific Contract for Phase 1	The Contract awarded for Phase 1 after the evaluation of Bids and final award. To be signed – together with the Framework Agreement - by selected Contractors.
Tender Document 4 (TD 4): PCP Specific Contract for Phase 2	The Contract awarded to Contractors for phase 2 after the Call-Off for Phase 2 of the PCP. To be signed by selected Contractors.
Tender Document 5 (TD 5): PCP Specific Contract for Phase 3	The Contract awarded to Contractors for Phase 3 after the Call-Off for Phase 2 of the PCP. To be signed by selected Contractors.
Tender Document 6 (TD 6): PCP End of Phase (1, 2, 3) report	Template to be used by selected Tenderers to report the outcomes of Phase 1, Phase 2 and Phase 3.
Tender Document 7 (TD 7): Contractor details and Project abstracts	Template to be filled in by selected Tenderers in Phase 1, Phase 2 and Phase 3 of the PCP.
Tender Document 8 (TD 8): Technical form	**Template to be completed by Tenderers with their technical proposal. ENVELOPE B.**
Tender Document 9 (TD 9): Financial form	**Template to be completed by Tenderers with their Financial Offer and Cost Breakdown. ENVELOPE C.**
Tender Document 10 (TD 10): ESPD	It is a self-declaration which includes a declaration of honor, and, if applicable, a Consortium Statement and a Subcontracting Statement **To be filled in, signed and submitted by Tenderer, by the Consortium of Tenderers (if applicable) and/or subcontractors (if applicable) as part of the tender for phase 1. ENVELOPE A.**
Tender Document 11 (TD 11): Consortia Statement	**Template to be filled in by Tenderers *only* in case of a consortium presenting a bid. ENVELOPE A.**
TD12. Standard self-declaration form (for project references).	**Template to be completed by Tenderers. ENVELOPE A. To indicate compliance with selection criteria listed under 3.4.**
Annex 1. Use cases and Test sites	No action. For information.
Annex 2. Information about the PBG	No action. For information.
Annex 3. Preexisting rights of the PBG	No action. For information.
Annex 4. List of environmental, social and labour law obligations established by EU law, national legislation, collective agreements or the international environmental, social and labour conventions which Bids must comply with.	No action. For information.
Annex 5. Market consultation report	No action. For information.
Annex 6. Contract Notice e-Form	No action. For information.
Annex 7. Evaluation Criteria of the Test Plan	No action. For information.
Annex 8. PCP WISE Requirements	No action. For information. Mandatory pass/fail award criteria.
Annex 9. Data sets	No action. For information.

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Name	Action to be taken by tenderer
Annex 10. Table Top Exercise	No action. For information.
Annex 11. General context background	No action. For information.
Annex 12. SOTA analysis for unsaturated zone models	No action. For information.
Annex 13. Kling-Gupta Efficiency (KGE)	No action. For information.
Annex 14. Example of Solution Architecture Model	No action. For information.
Annex 15. Quick User Guide for the e-Procurement Platform TUTTOGARE PA	No action. For information.

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5. MISCELLANEOUS

5.1 Language

All communication (relating to either the tender procedure or the implementation of the contract) must be carried out in English.

Tenders as well as offers for phase 2 and 3 call-offs must be submitted in English. Contractors are aware that the Framework Agreement (and subsequent contracts, if applicable) will be signed in its English version. With the submission of their tenders, contractors accept this fact.

Deliverables must be submitted in English.

Hence, the representative of the successful tenderer in the performance of the contract, as well as the representative of any subcontractor involved in the negotiation of the contract, shall be proficient, both orally and in writing, in English.

5.2 Tender constitutes binding offer

A signed tender will be considered to constitute a firm, irrevocable, unchangeable and binding offer from the tenderer/consortium that submitted the tender.

The signature of an authorised representative of the tenderer will be considered as the signature of the tender (and will be binding for the tenderer or, for joint tenders, the consortium).

5.3 Unauthorised communication — Questions

The OMC report in English can be found under Annex 5.

Questions can be submitted via the tender platform **TUTTOGARE PA platform**. The summary of all questions and answers will be presented in an anonymised Q&A document.[32] For phase 2 and 3, the answers will not be published, but distributed to all contractors that successfully completed the previous phase.

- **All other contacts (or attempted contacts) will be considered unauthorized and may lead to the exclusion of your tender.**

5.4 Confidentiality

Tenderers must keep confidential any information obtained in the context of the tender procedure.

[32] Which can be found in English under: https://pcp-wise.tuttogare.it/pcp/dettaglio.php?codice=1 and https://pcp-wise.eu/

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5.5 Contract implementation

Successful tenderers will be requested to sign both a framework agreement for the entire duration of the PCP and specific contracts for each phase (if successful) (see TD2 and TD3, 4 and 5).

Monitoring

During each phase, contract implementation will be monitored periodically and reviewed against the expected outcomes (milestones, deliverables and output or results) for the phase.

Each contractor will be assigned a main contact person (their supervisor) from the monitoring team appointed by the procurers.

The TEC might decide to hold regular monitoring meetings with the contractor(s). The meetings may take place at the contractors' venue. This will be detailed in the call-offs. The contractors could be asked to discuss the results achieved in the preceding period and present their updated work plan; the contractors could visit the testing sites (in particular at the start of a phase to get to know better the operational environment that solutions need to be designed for). The contractor must cover its own costs and thus foresee personnel and travel budgets in its offer.

The monitoring team will provide regular feedback to contractors after meetings or visits.

Payments based on satisfactory completion of milestones and deliverables of the phase

Payments corresponding to each PCP phase will be subject to the satisfactory completion of the deliverables and milestones for that phase.

Satisfactory completion will be assessed by the FEC, the TEC and the PEB, according to the following requirements:

- If the work corresponding to that milestone/deliverable has been carried out.
- If a reasonable minimum quality has been delivered.
- If the reports have been submitted on time.
- If the monies have been allocated to the planned objectives.
- If the monies have been allocated and the work has been carried out according to the compliance criteria (place of performance, public funding and R&D definition criteria).
- If the work has been carried out in compliance with the provisions of the contract (including in particular verification if the contractors have duly protected and managed IPRs generated in the respective phase).
- This will be evaluated against the weighted award criteria and subaward criteria (as finetuned for each phase).

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- It also includes compliance with the pilot strategy and test plan of the PCP WISE project as explained under Annex 7. Evaluation Criteria of the Test Plan.

'Reasonable minimum quality' of a report means that:

- The report can be read by somebody who is familiar with the topic, but not an expert.
- The report gives insight in the tasks performed in and the results.
- The report is made using the end of phase report form and the requirements of this form have been met.

'Reasonable minimum quality' of a demonstration for phase 2 and/or 3 means:

- The demonstration can be understood by somebody who is familiar with the topic, but not an expert (for instance, somebody with operational but not technical knowledge).
- The demonstration shows how the innovation works, how it can be used and (if applicable) how it is operated and maintained.
- The demonstration is accessible to parties appointed by the PBG, unless these are direct competitors of the contractors.

Satisfactory completion in each of the phases does not mean successful completion. The assessment will consider the efforts made by contractors to take into account the feedback from the supervisor or the monitoring team.

Where the PEB judges the completion of deliverables to be unsatisfactory, the pre-payments (if applicable) made to the benefit of the contractors at the beginning of a phase shall be reimbursed in full and the framework agreement (TD2) and respective phase contract shall be terminated.

Payments will be done in case of satisfactory or successful evaluation. The invoice must provide:

- a price breakdown showing the price for R&D services and the price for supplies of products (in order to demonstrate compliance with the definition of R&D).
- a price breakdown showing the location or country in which the different categories of activities were performed (e.g. x hours of senior researchers in country L at y euro/hour, a hours of junior developers in country M at b euro/hour) (to demonstrate compliance with the requirement demanding that at least 70% of the R&D services will be developed in the EU Member States or in HE associated countries).

Eligibility for the next phase based on successful completion of the phase

Eligibility for participation in the next phase will be subject to successful completion of the preceding phase. Successful completion of a phase will be assessed by the FEC, the TEC and the PEB against the following requirements:

- If all milestones have been successfully completed.

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- If the R&D results meet the minimum functionality/performance requirements of the challenge description *(i.e. the minimum quality/efficiency improvements which the procurers set forward for the innovative solutions to achieve).*
- If the results of the R&D are considered to be promising.

'Promising' means:

- For phase 1, that the feasibility is convincing.
- For phase 2, that the feasibility, the applicability in an operational setting and the potential impact of the product is convincing.

- **Please note that there is a difference between satisfactory completion and successful completion: a satisfactory completion is a requirement to receive the payment for that phase. Satisfactory completion includes completion of all the deliverables & milestones in the specific phase, and meeting minimum requirements set for that phase.**
- **A successful completion is a prerequisite for passing from one phase to the next and includes the same aspects as satisfactory completion but will also depend on the assessment of how promising the R&D is. Please note, that a successful completion and an invitation for the subsequent phase doesn't automatically mean that the Contractor will participate in this phase.**
- **Modifications in the consortia and/or subcontractors will be allowed where (alternatively):**
  - **exceptional and duly justified reasons that could not be foreseen apply; and/or**
  - **a new contractor replaces the one to which the contracting authority had initially awarded the contract as a consequence of an universal or partial succession into the position of the initial contractor, following corporate restructuring, including takeover, merger, acquisition or insolvency, of another economic operator that fulfils the criteria for qualitative selection initially established.**

Venture Capital involvement

Tenderers are strongly encouraged to engage with VC or other supporting organizations during the execution of the PCP in order to increase the chances of commercialization of the developed solutions. The following means of participation of VCs in the PCP are envisaged:

- As coaches for the companies that finalize Phase 3; and
- As platform for investment calls.

During the preparatory stage of PCP WISE, the Consortium implemented several steps to awake the interest of this organizations and to ensure that VC involvement would increase the chances of commercialisation of the developed solutions and if so, in which Phase of the PCP should the activities begin, in order to increase the effectivity of VC involvement.

For this reason, the PCP WISE Consortium will encourage and facilitate matchmaking activities from Phase 1 onwards.

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Attention: *The PCP WISE Consortium will play a facilitator role and not an integrator role.*

5.6 Cancellation of the tender procedure

hWh (on behalf of the PBG) may, at any moment, cease to proceed with the tender procedure and cancel it. In particular, hWh (on behalf of the PBG) reserves the right to suspend or terminate the procedure in whole or in part, to change the time schedule (with the exception of shortening the legally established minimum periods) and to revoke and/or revise the award decision stating the reasons without being obliged to pay any compensation until the moment of signing the Framework Agreement.

The PBG reserves the right not to award any contracts at the end of the tender procedure.

The PBG is not liable for any expense or loss the tenderers may have incurred in preparing their offer.

5.7 Procedures for appeal

Any legal claim, petition or application for judicial review, with regard to the present procurement procedure, shall be lodged solely within the 15 calendar days after the award decision before the District Court of The Hague, The Netherlands. Any other judicial review for phase 2 and phase 3 award decision is not possible.

5.8 Inaccuracies, inconsistencies, defects and errors

This RFT (TD1) including annexes has been compiled with great care. Should the Tenderer nevertheless come across imperfections, defects, inconsistencies, inaccuracies and uncertainties in the tender documents and/or otherwise object to the tendering procedure and/or the set of requirements and conditions, the Tenderer must inform the PBG thereof as soon as possible. Failure to submit a detailed complaint immediately after discovery, leads to losing the right to fill in a claim as the PBG will legitimately assume that the Tenderer agrees with the tendering procedure, the tender documents and/or the set requirements and conditions.

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Pre-Commercial Procurement for the Customisation/pre-operationalisation of Water management Innovations from Space for European Climate Resilience

PCP TENDER DOCUMENT 2 FRAMEWORK AGREEMENT (TD2)

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TD2. PCP FRAMEWORK AGREEMENT

This is a framework agreement ("Agreement" or "Framework Agreement") between the following parties:

on the one part, the "lead procurer" (contracting authority), **HET WATERSCHAPSHUIS (hWh**), based in The Netherlands, acting in the name and on behalf of the [other] members of the Public PBG (PBG) (together with hWh: "procurers"):

1. STICHTING TOEGEPAST ONDERZOEK WATERBEHEER (STOWA) (NL)
2. FORUM VIRIUM HELSINKI OY (FVH) (FI)
3. FMINISTERSTVO VNUTRA SLOVENSKEJ REPUBLIKY (MINISTRY OF INTERIOR SLOVAKIA) (MoI) (SK)
4. GEMEENTE HAARLEM (CITY OF HAARLEM (NL)
5. BUNDESANSTALT TECHNISCHES HILFSWERK (THW) (GE)
6. REGION OF CENTRAL MACEDONIA (RCM) (GR)
7. FORENINGEN KLIMATORIUM (KLIMATORIUM) (DE)
8. BENEGO – GRENSPARK KALMTHOUTSE HEIDE (BE)
9. INSTITUT CARTOGRAFIC I GEOLOGIC DE CATALUNYA (ICGC) (SP)
10. CITY OF ROTTERDAM (NL)
11. SLOVENSKA AGENTURA ZIVOTNEHO PROSTREDIA (SLOVAK ENVIRONMENTAL AGENCY) (SEA) (SK)

and on the other hand, [insert details of the contractor], hereinafter the "contractor", [

[for joint tenders: acting in the name and on behalf of the other members of group of tenderers:

1. [insert the details of the members of the group of tenderers]

2.

The members of the group of tenderers are hereafter collectively referred to as "the contractor" and will be jointly and severally liable vis-à-vis hWh for the performance of this Framework Agreement and the Specific Contracts.]

HWh, the PBG and the contractor(s) shall be referred to together as "parties", unless otherwise specified.

By signing this Agreement, the parties agree to implement the Pre-Commercial Procurement (PCP) in accordance with the Agreement and all the obligations it sets out.

The Agreement is composed of:

- Preamble
- Terms and Conditions

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- Annex 1 Request for tenders
- Annex 2 Contractor's tender

Now therefore, between the Parties, as above represented,

IT IS AGREED AS FOLLOWS:

TERMS AND CONDITIONS

Article 1 — Subject of the agreement

1.1. This Framework Agreement defines the general terms and conditions for the implementation of the PCP procurement of R&D services and for the Specific Contracts that will be awarded for each of the PCP phases.

1.2. The Contractor irrevocably undertakes towards hWh to carry out the activities referred to in the Request for Tenders (TD1), in the Technical Form (TD8) and the Financial Form (TD9) submitted by the Contractor and to comply with all obligations incumbent thereupon under this Framework Agreement (TD2) and any awarded Phase Contracts (TD3, TD4, TD5) in a professional and skillful manner, meeting best industry practice.

1.3. The Contractor confirms to be aware of and to agree with the fact that hWh may enter into similar agreements, relating to the same Project, with other Contractors of Phase 1, Phase 2 and/or 3.

Article 2 — Conditions for the execution of activities

2.1. The Contractor undertakes to fulfil the obligations under this Framework Agreement with its own means, by organizing and managing at its own risk.

2.2. The Contractor shall inform hWh in compliance with and, in any case, promptly upon hWh's first request, of the progress of the Project. Without prejudice to other provisions hereunder, especially in Article 5 Duties of the Parties, the Contractor shall notify hWh of any proposed deviation from the agreed scope of work or if significant developments occur as R&D work progresses as soon as possible after the Contractor becomes aware of the necessity or usefulness of such deviation.

2.3. The Contractor shall ensure the communication between the Parties of this Framework Agreement and any other third party as may be required and duly notified to the Contractor by hWh. Moreover, if needed, the Contractor shall provide advice to hWh as required on the Project.

2.4. The Contractor shall implement the Contract in compliance with all of the following obligations in line with the requirements of the Call for Tender (TD1):

a) The ‘Compliance with the definition of R&D Services’.

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b) The 'Place of performance obligation'.
c) The 'Place of establishment and control'.

In case of breach of any of the above contractual obligations, hWh is entitled to require that the Contractor transfers the ownership of the Results to hWh.

2.5. During the execution of the Framework Agreement and without any interference in the Contractor internal processes, hWh and the Public Buyer Group reserve the right to monitor periodically the progress of the contractual performance.

2.6. The Contractor undertakes not to subcontract essential parts of the contracts, nor the management of the PCP activities (these tasks will have to be performed by the Contractor or at least by full-subsidiary companies owned by the Contractor), unless deemed necessary by both Parties and agreed upon in writing between the Parties. HWh shall terminate this agreement forthwith in case of failure by the Contractor to comply with the provisions under this Article.

2.7. In providing the Services as required under this Framework Agreement and Phase Contract(s), the Contractor shall ensure full compliance with the requirements on R&D Services as defined in the most recent version of the Frascati Manual and, where applicable, its latest annexes.[33]

2.8. Subject to the confidentiality obligations set forth in Article 9, the Contractor grants to hWh (acting, as the case may be, through agents authorized for that purpose) and to any statutory or regulatory auditors of hWh, a right to access (and, if necessary, to copy) the relevant financial records during normal business hours.

2.9. Upon signing of this Agreement, the Contractor shall appoint a representative for this Framework Agreement, which will be the contact person with hWh. The Contractor's representative will then have the ability, unless otherwise decided, to represent for all purposes the same Contractor.

2.10. At the execution date of this agreement, the Contractor will have to communicate the name, phone number and e-mail address of the representative.

Article 3 — Duration

3.1. The Project is divided into the following Phases:

a) Phase 1: Solution design.
b) Phase 2: Prototype development (and testing of technologies)
c) Phase 3: Validation and demonstration of the solutions (end-users piloting services in operational environment)

[33] OECD (2002). Frascati Manual 2002: [Version: 2002]. OECD Publishing [online].

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3.2. Each Phase will have a duration in accordance with the planning provided in the Request for Tenders (TD1) and as agreed in each Phase Contract.

3.3. The Framework Agreement becomes effective upon signing by both Parties and shall remain in effect (unless terminated in accordance with Article 23) until the Completion Date (as defined in the Request for Tender) of Phase 1 or of a later Phase that has been awarded to the Contractor. However, confidentiality related obligations shall remain applicable for a period of four (4) years after the end of the Framework Agreement in accordance with Article 9.

3.4 The period of execution of the tasks may be extended only with the express written agreement of the Parties before the expiration of the period for execution of the tasks, in compliance with the provisions of Article 25.

Article 4 — R&D services to be provided

The contractor shall provide the R&D services (tasks, deliverables and milestones) to develop solutions to tackle the challenge set out in the tender and the Specific Contracts, in compliance with the rules of the state aid framework for R&D&I in its latest version.[34]

Article 5 — Duties of the Parties

5.1. The Contractor is entering into this Framework Agreement based on the information about the Project made available by hWh during the tender procedure, which is assumed to be materially accurate and complete to the best of hWh's knowledge at that time

5.2. The Contractor undertakes to perform all the activities subject of this Framework Agreement in accordance with its provisions, the applicable regulations and the terms and conditions contained in the Tender Documents and related annexes, as well as their submitted Technical Form (TD8) and the Financial Form (TD9). The Contractor undertakes to allocate sufficient resources to each Phase of the PCP that the Contractor is awarded, in order to comply with its obligations in each Phase. The Contractor also undertakes to ensure that each member of the Contractor's staff engaged on the Project observes the terms and conditions of this Framework Agreement and any amendment entered into between the Parties hereto. The Contractor's staff will be informed of any changes in the scope of the Framework Agreement or the PCP Project.

5.3. The Contractor undertakes to:

a) Co-operate with hWh in all matters relating to the Project.
b) Obtain and at all times maintain during the collaboration all necessary Licenses and consents required for the performance of this Framework Agreement.

[34] Framework for state aid for research and development and innovation https://ec.europa.eu/competition/state_aid/modernisation/rdi_framework_en.pdf

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c) Subject to the prior written approval of hWh, appoint or, at the written request of hWh, holding reasonable grounds for the request, replace without delay:
   i. The Contractor's representative; and/or
   ii. The key staff, who shall be suitably skilled, experienced and qualified to carry out the Project.

d) Ensure the availability of the Contractor's representative and (key) staff for the purposes of the Project. The Contractor undertakes to ensure that all required key staff will be available to deliver the required Services at agreed levels of quality and in a timely manner. Notwithstanding the provisions of Article 24, hWh may terminate this Framework Agreement with a Contractor if any of the Contractor's key staff are not available for the entire period needed to fulfil their duties in the Project, subject to prior discussion having first been held with the Contractor to attempt to identify and agree a mutually acceptable replacement and where the lack of availability of one or more of the key staff causes a material risk to the fulfilment of the delivery objective of the Project.

e) Promptly inform hWh of the absence of the Contractor's representative and/or key staff. If required by hWh, the Contractor shall provide a suitably qualified replacement.

f) Not make any changes to the Contractor´s representative, sub-contractors or the key staff without the prior written approval of hWh. Such approval is not to be unreasonably withheld or delayed.

g) Ensure that the Contractor's team uses reasonable skill and care during the Project.

h) Be responsible for the accuracy and completeness of all drawings, documentation and information supplied to hWh in connection with delivery of this Framework Agreement. The Contractor shall:
   i. Observe, comply and ensure that the Contractor's team observes and complies with all rules, regulations and technical requirements and all any other reasonable requirements and safety regulations as well as those that may subsequently be enacted or issued by hWh. For the avoidance of any doubt, the Contractor undertakes that any increased costs, resulting from the need to observe the rules and regulations referred to in the previous paragraph, even if entered into force after the signing of the Framework Agreement, will remain the exclusive responsibility of the Contractor, unless it would be unreasonable for Contractor to, in which case the Parties will consult with each other in all fairness how to deal with any of these increased costs. Therefore, the same Contractor cannot claim any payments against hWh, the members of the PBG and/or any other Third Parties, to the extent of its jurisdiction, and will assume all the risks related to any subsequent amendments to the law in force, which may impose additional charges subsequent to those provided at the time of the submission of Bids. The Contractor expressly agrees to indemnify and hold harmless hWh, the

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members of the PBG and/or any Third Party, for all the consequences arising from any breach by the Contractor of the rules and technical requirements, safety, and other related regulations.

ii. Acknowledge and adjust to any modification with respect to the specifications made by hWh.

iii. Notify hWh as soon as it becomes aware of any issues which arise in relation to the Project.

5.4. HWh shall:

a) Co-operate with the Contractor in all matters relating to the Project. The main contact point will be [email], to which all relevant legal, administrative and technical representatives will have access to.

b) Provide access to hWh's (and, if needed, the members of the PBG) premises and sensitive Data if it is in accordance with Data protection officials, office accommodation and other facilities as may reasonably be requested by the Contractor and in line with the rules and regulations agreed in writing in advance with the Contractor for the purposes of the Project.

c) Provide such information as the Contractor may reasonably request and the Contractor considers reasonably necessary, in order to carry out the Project, in a timely manner, and ensure that it is accurate in all material respects.

5.5. The Contractor acknowledges and unconditionally accepts that hWh and the PBG are and remain unconditionally entitled to analyze the Results of the PCP Phases and to re-use, integrate and to publish the advice (or parts thereof), in whatever form or manner hWh deems necessary.

5.6. The Contractor will allow the European Commission, the European Court of Auditors (ECA) and the European Anti-fraud Office (OLAF) to exercise their auditing rights. This obligation applies to all its subcontractors.

5.7. Due to the short duration of the PCP, no changes in the members of a Consortium and/or subcontractors will be allowed unless in case of exceptional reasons that could not be foreseen or a new contractor replaces the one to which the contracting authority had initially awarded the contract as a consequence of an universal or partial succession into the position of the initial contractor, following corporate restructuring, including takeover, merger, acquisition or insolvency, of another economic operator that fulfils the criteria for qualitative selection initially established.

If that is the case, the new member of the Consortium and/or subcontractor has to meet all exclusion, compliance and selection criteria, to comply with the pass/fail award criteria. The new member of the Consortium and/or subcontractor will have to sign the declarations of honor and any other required statements. The replacement cannot entail a substantial modification of the Contract conditions.

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Article 6 — Warranties and representations

6.1. The Contractor warrants and represents to have full capacity and authority to send all necessary usage Licenses, permits and consents with the related rights related to the PCP Project and continues to have this full capacity, authority, usage Licenses, permits and consents during the duration of the Framework Agreement.

6.2. The Contractor warrants that the information it will provide under the Framework Agreement will be correct, accurate and up to date.

6.3. The Contractor warrants that during the term of this Framework Agreement and up-to a period of four (4) years after termination of this Framework Agreement, it shall fully comply with, act in accordance with and respect the open hardware terms and conditions as well as the opensource licensing terms and conditions as detailed in the requirements.

Article 7 — Pricing, payment and accounting

7.1. HWh will be responsible for the payments on behalf of the Public PBG.

7.2. The total amount to be paid by hWh to the Contractor shall not exceed the relevant amounts detailed in the Request for Tender (TD1).

7.3. The price for the R&D services to be implemented for each PCP phase will be set out in the Specific Phase Contracts.

7.4. Prices indicated and submitted by the Contractor in the Financial Form (TD9) during the tender shall be considered a binding maximum for the duration of the Framework Agreement and include all the costs and expenses. If hWh decides to shift remaining budget to Phase 2 and/or Phase 3, the binding maximum may be adjusted for the call offs of Phase 2 and/or Phase 3, allowing the formulation of bids accordingly.

7.5. Payments for the Contractor's Services for each Phase will be made according to the following provisions:

PHASE 1

	Date of Deliverable	Deliverable	Total
Phase 1	Week 1 of phase 1	M1.1) Kick off meeting	20%
Phase 1	Month 4 of phase 1	D1.3) End of phase report and abstract	80%

PHASE 2

	Date of Deliverable	Deliverable	%	Total
Phase 2	Week 1 of phase 2	M2.1) Kick off meeting	15%	100%
Phase 2	Month 4 of phase 2	D2.2) Prototype testing report	35%	

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Phase 2	Month 7 of phase 2	D2.4) Prototype testing report	20%	
Phase 2	Month 11 of phase 2	D2.6) End of phase report	30%	

PHASE 3:

	Date of Deliverable	Deliverable	%	Total
Phase 3	Week 1 of phase 3	M3.1) Kick off meeting	15%	100%
Phase 3	Week 9 of phase 3	D3.2) Progress report of testing in site 1 and D3.3) Progress report of testing in site 1 and 2 and D3.3) Progress report of testing in site 1, 2 and 3	35%	
Phase 3	Week 24 of phase 3	D3.4) Progress report of testing in site 1, 2, 3 and 4 and D3.5) Progress report of testing in site 1, 2, 3, 4 and 5 and D3.6) Progress report of testing in site 1, 2, 3, 4 and 5, demonstrations at partner sites and TTX	20%	
Phase 3	Week 24 of phase 3	D3.7) End of phase report	30%	

7.6. Payments will be made by hWh following the award of the Phase Contract and according to the payment schedule as defined in the PCP Request for Tender (TD1).

7.7. Payments for the Contractor's Services for each Phase will be made according to the following provisions: Payments corresponding to each PCP Phase will be subject to the satisfactory completion of the deliverables for that Phase.

7.8. Payments will be made by hWh following the submission of the relevant invoices. The Contractor will send the invoice once the deliverable has been accepted. Invoices are to be submitted in Euros. The Contractor shall state the Price with and without VAT. Any other taxes, levies, tariffs and duties (including sales, service, use, lease, personal property, consumption, excise, withholding, or property) associated with the Contractor's performance of the Framework Agreement or which may be levied on the Price shall be the Contractor's responsibility.

7.9. HWh will liquidate the mentioned invoices in the dedicated current account detailed by the Contractor. HWh may suspend the payment at any time if, in the view of hWh or the PEB, acting reasonably, satisfactory progress on the Project has not been maintained, or reports have not been submitted as required.

7.10. All activities necessary to a full and regular compliance with the contractual terms and conditions shall be the sole responsibility of the Contractor and are included in the

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consideration specified in the Financial Form (TD9), even if not specified in this Framework Agreement.

7.11. Prices shall be based on the maximum binding unit prices for all foreseeable items which have been stated in the economic offer and are binding (as a maximum) for the duration of the whole Framework Agreement. If unit prices are added to Phase 2 or 3 offers, they shall become binding for the remaining Phases.

7.12. The Contractor accepts, upon request from hWh, to provide hWh with complete, relevant and clear information as well as documentary evidence about the allocation of amounts paid by hWh. The Contractor shall maintain proper financial records relating to the Project at all times during the Project period and for a period of four (4) years after the end of the Project period.

7.13. Payments to Third Parties employed or hired by the Contractor, if any, shall remain the sole responsibility of the Contractor, who shall ensure that such payments are made promptly and hold hWh (and the PBG) harmless against any claim by such Third Parties.

7.14. Where the Contractor enters into a subcontract with a supplier or Contractor for the purpose of performing the Agreement, it shall include a clause requiring the payment of undisputed sums by the Contractor to the subcontractor within a specified period not exceeding thirty (30) calendar days from the receipt of a valid invoice.

7.15. Wherever, under the Agreement, any sum of money is recoverable from or payable by the Contractor (including any sum that the Contractor is liable to pay to hWh in respect of any breach of the Contract), hWh may unilaterally deduct that sum from any sum then due, or which at any later time may become due to the Contractor under the Agreement or under any other agreement with hWh.

7.16. If at any time an overpayment has been made to the Contractor for any reason whatsoever, the amount of such overpayment shall be considered when assessing any further payments or shall be recovered from the Contractor at hWh's discretion.

7.17. The Contractor shall make any payments due to hWh without any deduction whether by way of set-off, counterclaim, discount, abatement or otherwise, unless the Contractor has a final and enforceable court order requiring an amount equal to such deduction to be paid by hWh to the Contractor.

Article 8 — Rights and obligations regarding results (foreground), pre-existing rights (background and sideground) and the related rights (including intellectual and industrial property rights)

GENERAL DISPOSITIONS

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8.1. The Contractor is responsible for the management of its IPRs, including protection, and bears the costs associated with them. The Contractor shall take all appropriate and necessary measures to ensure the proper management of the Intellectual Property Rights generated by the PCP WISE project. This includes:

a) Measures to ensure full compliance with the open co-creation goal, open source software Licenses where applicable.
b) The obligation of the Contractor to clearly describe, detail, distinguish, manage and update the parts of the Results that are being qualified as Foreground and Sideground IPR.

8.2. The Contractor shall ensure that its Results are identified, recorded and carefully distinguished from outputs of other R&D activities which are not covered by the PCP WISE project. The Contractor shall ensure that prior to any dissemination of the Results, the protection of any protectable Results is duly considered and in case filed at the relevant Member State or European Patent Office. In such a case, the Contractor shall ensure that all applications for the protection of Results are diligently executed and prosecuted having regard to all relevant circumstances.

Leaving unimpeded PBG other rights under this Framework Agreement, in case the Contractor fails to comply with what is stated in 8.1 and 8.2, the Contractor grants the PBG the unconditional and irrevocable right to fulfil these obligations in name and on behalf of the Contractor.

8.3. If the Contractor becomes aware of any product or activity of any Third Party that involves or may involve infringement or other violation of the Project's IPR, the Contractor shall promptly notify hWh about the infringement or violation.

8.4. HWh has the right to monitor the management of the IPRs.

8.5. The Contractor must inform the PBG (via hWh) of Results that can be exploited, regardless of whether they can be protected or not, within thirty (30) days from when they are generated and before any dissemination or protection action. The notification sent to hWh must include information about the contents of the Results, any intention by the Contractor to protect them, the type of protection that will be pursued and the planned timing and geographical scope of the protection, such as the jurisdictions where the Contractor will seek to obtain protection.

8.6. Article 8.1 up-and-to article 8.5 will apply for prototypes and first products resulting from the R&D, design, prototype and first product/service specifications, simulations, Data models, drawings, and source code.

8.7. During the execution of the three Phases of the PCP, the PBG will have the right to use the Project's IPRs, the relevant Background IP and the Results related to the design specifications developed by the contractor non-commercially. Non-commercial means that the members of the PBG cannot commercialize the PCP results, without impeding the use for other purpose (such as trials).

8.8. At the end of PCP Phase 3, all the prototypes will be returned to the Contractors who produced them.

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8.9. At the end of PCP Phase 3, upon first request of the PBG, the Contractor who has successfully completed Phase 3 warrants to upload and make publicly available the output data resulting from the testing and demonstrating in Phase 3 via https://zenodo.org/communities/eu/.

FOREGROUND IPRs

8.11. The Contractor retains the ownership of all the Results that it generates. This includes newly created material generated by the Contractor and Background/Sideground material provided/generated by the Contractor that may be included in the Results or that is essential for the functioning of the use of the Results.

8.12. If the Contractor decides not to protect the Results that it generated during the Project or does not seek timely or sufficient protection to enable the PBG to use the Results as defined in this Framework Agreement, for example in terms of jurisdictions for registered IPRs, hWh retains the right to seek itself protection of these Results and to obtain ownership of the rights on these Results. In the event that hWh decides to exercise this right, it will inform the Contractor in writing of its decision to exercise this right.

8.13. The Contractor is required to deposit copies of the Results (e.g. source codes of software and all related documentation, design specifications of prototypes, documentation about the foreground IP etc) to guarantee the PBG continued access to the Results:

a) Under an ESCROW agreement with a reputable escrow agent. If requested by the contracting authority, a tri-party agreement shall be signed between the escrow agent, the contractor and the contracting authority (on behalf of the members of the PBG), duly protecting the interests of the contracting authority and the PBG in case of bankruptcy or liquidation of the contractor and ensuring that in such cases the members of the PBG shall obtain a copy of the results.
b) By providing to the PBG a copy of designs, drawings, reports and specifications.

PRE-EXISTING MATERIALS AND PRE-EXISTING RIGHTS (BACKGROUND AND SIDEGROUND)

8.14. All pre-existing rights remain the property of the Party introducing them (hWh, members of the PBG, Contractor or any Third Party supplier that owns it) and nothing contained in this Framework Agreement or any License contract pertaining or pursuant to the Project shall affect the ownership rights of either Party in its pre-existing IPR.

8.15. The Contractor acknowledges and agrees that:

a) Data and/or Data sets (or any parts thereof) provided for by the PBG are being qualified as pre-existing rights of the PBG; and
b) The Data and/or Data sets (or any parts thereof) provided by the PBG shall be used for the sole purpose of executing the Project, including trials and/or pilots set up to test the validity of the Results. Any other use is forbidden.

8.16. The Contractor must provide in its Bid for this Framework Agreement (TD8. Technical Form) a list of the relevant (for the Project) pre-existing Results and preexisting IPRs it holds and/or has access to (e.g. via its subcontractors). The Contractor must also provide an updated version of it to the PBG (via hWh) within the Bid for each Phase Contract in

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order to have the updated list approved by the PBG at the latest thirty (30) days after the start of each Phase Contract. If there are no preexisting materials nor pre-existing IP, the Contractor must provide a declaration to that effect.

8.17. The Contractor shall inform the PBG about any evolutions in any of its preexisting Results and pre-existing IPRs that affect the performance of this Framework Agreement. This includes any changes to the Background IPRs and the generation of new Sideground IPRs within thirty (30) days from the change or generation and at the latest by the end of the corresponding Phase and with each Bid for the next Phase.

8.18. Upon request by the PBG, the Contractor must provide evidence that it has the ownership or the right to use all the listed pre-existing Results and IPR. The PBG (via hWh) may request this evidence even after the end of this Framework Agreement. This evidence must include, as appropriate:

a) The name and version number of a software product.
b) The full identification of the original work and authors with their affiliation and all following modifications addressing developer, creator, translator, Data entry person.
c) A copy of the Licence to use the Background IPR or of the agreement granting the relevant rights to the Contractor or a reference to this Licence.
d) A copy of the agreement or extract from the employment contract granting the relevant rights to the Contractor where parts of the Results were created by its personnel.
e) The text of the disclaimer notice, if any.

Provision of evidence does not release the Contractor from its responsibilities if it is found that it does not hold the necessary rights, regardless of when and by whom this fact is revealed.

8.19. The Parties must grant each other an indefinite royalty-free, non-exclusive, irrevocable and non-sublicensable License to use its Background and Sideground IPR for the performance of the tasks assigned to them in the PCP.

The contractor grants to the members of the PBG, to entities that are under the direct or indirect control of members of the PBG, or under the same direct or indirect control as members of the PBG, or directly or indirectly controlling members of the PBG and also to (sub)contractors that practice the results for the PBG's own non-commercial use — a free license to use its Background and Sideground to the extent needed to use the results for the PBG's own non-commercial purposes, beyond the execution of the Framework Agreement and Specific Contracts.

These Licenses are in addition to rights provided for by law, such as the unwaivable rights of, and exceptions for the benefit of lawful users of software or of databases, as foreseen by applicable law.

LIST OF PRE-EXISTING MATERIALS AND PRE-EXISTING RIGHTS

8.20. In order to be able to distinguish clearly between rights on newly created materials, and newly created rights on the one hand and pre-existing materials and pre-existing rights on the other hand, and to establish which pre-existing materials and rights are held by

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whom, the parties must establish an agreed list of all their pre-existing materials and pre-existing rights (Background and Sideground) that may be used for the performance of this Framework Agreement and Specific Contracts, including identification of the rights' owners (TD8 for the Contractor and Annex 3 for the PBG).

8.21. The list of pre-existing material and pre-existing rights shall identify, for each pre-existing material and right, the tasks, deliverables or other aspects related to the performance of the Framework Agreement and Specific Contracts contract that may be affected by pre-existing material/right, the pre-existing material/right concerned, the rights to the pre-existing material, the rights holder and any prior obligations on the pre-existing rights that may apply to the results. Such list will include, but is not limited to, a list of the software necessary for the performance of the Framework Agreement and Specific Contracts (including but not limited to software necessary for the operation of the prototypes and products or services that will be developed during the Framework Agreement or Specific Contract), specifying which software is closed source software.

IPR DEFINITIONS

8.22. The follow definitions apply to this Framework Agreement:

a) 'Results (i.e. foreground)' means any tangible or intangible output that is generated in the PCP, whatever its form or nature, whether or not it can be protected. This includes any material, document, technology, solution, data, knowledge or information (foreground material) as well as any rights attached to it, including IPR ('rights on results' or 'IPR attached to the results').

b) 'Rights on results': any rights, including industrial or intellectual property rights on the results. They may consist of rights on newly created materials and rights on pre-existing materials (Background rights and Sideground rights) that are included in the results. They may consist in a right of ownership, a licence right and/or right of use belonging to the contractor, the creator, the contracting authority, the PBG or to any other third parties, including subcontractors.

c) 'Background' means any material, document, technology, solution, data, know-how or information (background material) — whatever its form or nature (tangible or intangible), regardless of whether or not it can be protected, including any attached rights such as IPR ('background IPR') — that (1) is held prior to the signing of the Framework Agreement or a Specific Contract, (2) identified by the parties involved in the PCP as background and (3) needed to implement the PCP or exploit the results of the PCP.

d) 'Background rights': any rights, including industrial and intellectual property rights on background. They may consist in a right of ownership, a licence right and/or right of use belonging to the contractor, the creator, the contracting authority, the PBG or to any other third parties, including subcontractors.

e) 'Sideground' means any material, document, technology, solution, data, know-how or information (sideground material) — whatever its form or nature (tangible or intangible), regardless of whether or not it can be protected, including any attached rights such as IPR ('sideground IPR') — that is (1) generated during the timespan of the

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PCP but not in the PCP and (2) needed to implement the PCP or to exploit the results of the PCP.

f) 'Sideground rights': any rights, including industrial and intellectual property rights on sideground material. They may consist in a right of ownership, a licence right and/or right of use belonging to the contractor, the creator, the contracting authority, the PBG or to any other third parties, including subcontractors.

g) 'Pre-existing material': any material, document, technology, solution, information, data or know-how, whatever its form or nature, tangible or intangible, regardless of whether or not it can be protected, which exists prior to the contractor using it for the production of a result in the implementation of the Framework Agreement or a Specific Contract. It includes both the background material and the sideground material.

h) 'Pre-existing rights': any rights, including industrial and intellectual property rights on pre-existing material. It may consist in a right of ownership, a licence right and/or right of use belonging to the contractor, the creator, the contracting authority as well as to any other third parties, including subcontractors. It includes both background rights and sideground rights.

i) 'Fair, Reasonable, and Non-Discriminatory (FRAND) conditions' means appropriate conditions, including financial terms or royalty-free conditions, taking into account the specific circumstances of the request for access *(for example, the actual or potential value of the Results, Background or Sideground to which access is requested and/or the scope, duration or other characteristics of the exploitation envisaged)*.

j) 'Generated in the PCP' means in the implementation of activities described in the PCP Framework Agreement or Specific Contracts.

k) 'Not generated in the PCP' means not generated in the implementation of activities described in the PCP Framework Agreement or Specific Contracts.

OBLIGATIONS OF CONTRACTOR

8.23. The contractor is responsible for ensuring that all third parties that it collaborates with during and after the Framework Agreement and the Specific Contracts respect all intellectual and industrial property-related obligations towards the contracting authority and the PBG and must pass on its obligations to those entities.

8.24. The contractor must ensure that the rights of the contracting authority and the PBG under the Framework Agreement and the Specific Contracts are upheld under all circumstances, including in case of merger, split, takeover or other corporate restructuring.

OWNERSHIP OF THE RESULTS

8.25. Subject to the conditions set out in this Framework Agreement, the contractor retains the ownership of all the rights on the results that it generates. This includes the rights on newly created material generated by it and the rights on Background and Sideground material that may be included in the results or that is essential for the functioning of the use of the results.

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PBG OWNERSHIP IN CASE OF BREACH OF CONTRACT TO PRESERVE PUBLIC INTERESTS OR TO PROTECT OR COMMERCIALISE THE RESULTS

8.26. The members of the PBG may exceptionally require transfer of the ownership of results generated under the PCP procurement to them, if the contractor:

a) Does not (or no longer) comply with one of the following obligations (as defined in section 3.3 of the Request for Tenders):
   i. 'Compliance with definition of R&D services'
   ii. 'Place of performance obligation'
   iii. 'Place of establishment and control'

b) Decides not to protect the results that it generated or does not seek timely or sufficient protection to enable the PBG to use the results as provided for in the Framework Agreement or a Specific Contract.

c) Fails to commercially exploit the results within the four (4) years' time period and the circumstances of the case show that it has not used its best efforts to do so. This applies to Results of Contractors participating in Phase 3.

d) Uses the results to the detriment of the public interest.

e) Is subject to a merger or acquisition and the impact analysis concludes that the merger or acquisition negatively impacts the access to or the commercial exploitation of the results, including the EU security interests and EU strategic autonomy objectives.

8.27. The members of the PBG will notify the contractor of their intention to require the transfer of ownership of results through the contracting authority.

8.28. Before exercising their rights, the contracting authority will first contact the contractor to verify any measures that the contractor has taken to achieve successful commercial exploitation of the results, to safeguard EU strategic autonomy and security interests and rules, to prevent use of the results to the detriment of the public interest and to comply with its contractual obligations.

8.29. Following the transfer of the ownership of the results to the members of the PBG, the members of the PBG may grant licenses to third parties to ensure further protection, usage and exploitation of the results.

8.30. The contractor shall ensure that the commercial exploitation of the results by the members of the PBG will not infringe any of its other obligations under this Framework Agreement or a Specific Contract, such as its obligations regarding security, confidentiality and the protection of intellectual property or its obligations under data protection legislation.

PROTECTION OF THE RESULTS

8.31. The rights and obligations in relation to protection of results are explained below:

a) The contractor shall be responsible for the management of all the rights on the results that it holds and shall bear the associated costs, including for the protection,

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examination, grant, maintenance, defence and litigation of the rights on the results. Procurers have the right to monitor the management of the IPRs.

b) The contractor must inform the PBG (via hWh) of results that can be exploited, regardless of whether they can be protected or not, within 30 days from when they are generated. The information submitted to hWh must include information about the contents of the results, the confirmation by the contractor to protect them and the planned timing for protection. The notification shall include information about the contents of the results, the confirmation by the contractor of its decision to protect said results, the type of protection that will be pursued and, for registered IPR such as patents and design rights, the planned timing and geographical scope of such protection/ jurisdictions for which the contractor will seek to obtain protection.

c) If the contractor decides not to protect the results that it generated or does not seek timely or sufficient protection to enable the PBG to use the results as provided for in the Framework Agreement or a Specific Contract, for example in terms of jurisdictions for registered IPRs, the members of the PBG retain the right to require that the contractor transfers the ownership of the result to them so that the PBG has the right to itself protect the results

d) If the contractor decides to protect its results, it shall ensure that an application for protection is filed to the relevant authority (national, European Patent Office (for patents) or European Union Intellectual Property Office (for trademarks and designs)) within 1 year after notifying the contracting authority, and in any case prior to any publication on them. Where possible, the applications for protection shall include the following statement: 'These results were achieved with EU support. The European Union has certain rights in these results'.

e) The contractor shall respond at any time to requests for information from the contracting authority and the PBG about the handling of the rights on the results.

f) In case of any decision not to continue an application for protection, not to pay maintenance fees, or not to defend in a re-examination or opposition proceeding, the contractor shall notify the contracting authority not less than 60 before the deadline for responding to the procedure for protection, maintenance or litigation.

8.32. The contracting authority and members of the PBG shall be entitled to monitor the management of all rights on the results held by the contractor. The contractor shall submit periodical reports, when requested by the contracting authority and the PBG, no more frequently than annually on the exploitation of the results, including the rights on the results, by the contractor, its licensees or assignees.

8.33. If the contractor becomes aware of any product or activity of any third party that involves or may involve infringement or other violation of the rights on the results, the contractor shall promptly notify the contracting authority of the infringement or violation.

The contractor must ensure that the results are not subject to control or other restrictions by a country (or entity from a country) which is not from EU Member States or HE associated countries— unless otherwise agreed with the contracting authority.

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ACCESS RIGHTS TO THE RESULTS FOR THE CONTRACTING AUTHORITY AND THE PBG

8.34. The contractor must ensure that it complies with its obligations under the framework agreement and specific contracts if it uses subcontractors; that it must obtain all necessary rights (transfer, licences or other) from the subcontractors, as if they were generated by itself; that it should refrain from using subcontractors if obtaining those rights is impossible).

The contractor must ensure that background/rights that is subject to control or other restrictions by a country (or entity from a country) which is not one of the eligible countries set out in section 3.1 of the Request for Tenders (TD1) and that impact the exploitation of the results (i.e. would make the exploitation of the results subject to control or restrictions) must not be used and must be explicitly excluded from the list of pre-existing rights agreed between the contractor and the contracting authority that will be used for the PCP — unless otherwise agreed with the contracting authority.

8.35. The contractor grants the members of the PBG, including their affiliated entities (entities that are under the direct or indirect control of members of the PBG, or under the same direct or indirect control as members of the PBG, or directly or indirectly controlling members of the PBG) a royalty-free, non-exclusive, worldwide, irrevocable, non-sub-licensable (except as explicitly authorised under this Framework Agreement) license to use non-commercially the Results (and the PCP Wise documentation) for their own purposes, during and after the Framework Agreement and Specific Contracts. The contractor also grants a royalty-free, non-exclusive, worldwide, irrevocable and non-sub-licensable license to contractors and subcontractors of the PBG to use the results for their own purposes, non-commercially, during and after the Framework Agreement and Specific Contracts.

After the end of PCP Phase 3, the PBG and any Third Party will be entitled to use and exploit the designed specifications in accordance with the *open source software Licenses and Creative Common Licences* to be agreed upon.

8.36.The contractor retains the right to commercial exploitation of the results for any purposes of using the Results beyond the scope of the current PCP.

8.37. In case of commercial exploitation of products, services or processes arising or developed from the Results by the contractor (or by entities affiliated to it or succeeding it in the ownership or development of the results), the contractor shall ensure that the members of the PBG (or any contracting authority appointed by the PBG to implement a procurement in their name and/or on their behalf) are offered the commercial products or services at the best price offered by the contractor (or the entities affiliated or succeeding it) in similar situations to any other third party (in particular without charging for licenses or other rights which the PBG already have under other provisions of this Framework Agreement or a Specific Contract).

ACCESS RIGHTS TO THE RESULTS FOR THE EU

8.38. The EU has the right to use non-sensitive information relating to the PCP and materials and documents received from the contracting authority and the PBG for policy, information, communication, dissemination and publicity purposes — during the EU

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grant or afterwards. This concerns notably summaries for publication, as well as any other material, such as pictures or audio-visual material, and other deliverables submitted by the contracting authority and the PBG to the EU, in paper or electronic form.

8.39. The right for the EU to use these materials, documents and information is granted in the form of a royalty-free, non-exclusive and irrevocable licence, which includes the following rights:

a) Use for its own purposes (in particular, making them available to persons working for the EU granting authority or any other EU service (including institutions, bodies, offices, agencies, etc.) or EU Member State institution or body; copying or reproducing them in whole or in part, in unlimited numbers; and communication through press information services).

b) Distribution to the public (in particular, publication as hard copies and in electronic or digital format, publication on the internet, as a downloadable or non-downloadable file, broadcasting by any channel, public display or presentation, communicating through press information services, or inclusion in widely accessible databases or indexes).

c) Editing or redrafting (including shortening, summarising, inserting other elements (e.g. meta-data, legends, other graphic, visual, audio or text elements), extracting parts (e.g. audio or video files), dividing into parts, use in a compilation).

d) Translation.

e) Storage in paper, electronic or other form.

f) Archiving, in line with applicable document-management rules.

g) The right to authorise third parties to act on its behalf or sub-license to third parties the modes of use set out in points (b), (c), (d) and (f), if needed for the information, communication and publicity activity of the granting authority.

h) Processing, analysing, aggregating the materials, documents and information received and producing derivative works.

The rights of use are granted for the whole duration of the industrial or intellectual property rights concerned.

8.40. If materials or documents are subject to moral rights or third party rights (including IPR or rights of natural persons on their image and voice), the contractor must ensure that they comply with their obligations under this Framework Agreement and Specific Contracts in particular, by obtaining the necessary licences and authorisations from the rights holders concerned.

8.41. Where applicable, the EU granting authority will insert the following information: "© – [year] – [name of the copyright owner]. All rights reserved. Licensed to the EU under conditions."

ACCESS RIGHTS TO THE RESULTS FOR THIRD PARTIES

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8.42. If requested by the hWh or the PBG, the contractor shall, within 30 working days, grant to the third parties specified in the request a non-exclusive and non-sub-licensable license to use and to commercially or non-commercially exploit the results, and any background or sideground which may be necessary for the use or exploitation of the results, under FRAND conditions.

8.43. If the contractor fails or refuses to grant the requested licenses, the contracting authority and members of the PBG retain the right to grant themselves a non-exclusive and non-sub-licensable license to the third parties to use and to commercially or non-commercially exploit the results (or to appoint an independent third party to do so).

ADDITIONAL OBLIGATIONS/LIMITATIONS FOR THE EXPLOITATION OF RESULTS DUE TO PUBLIC INTERESTS

Security or strategic autonomy

8.44. The contractor shall ensure to safeguard EU strategic autonomy in the commercial exploitation of the results. For this purpose, the contractor shall ensure that a significant amount of the commercial exploitation of the results takes place in the EU Member States and/or countries associated to Horizon Europe. In particular, the contractor must produce minimum 70% of the products, services or processes that incorporate results or that are produced through the use of results in EU Member States or HE associated countries .

8.45. The contractor must ensure that, in the commercial exploitation of results, any cooperation with entities established in other countries, or controlled by such countries or entities from such countries, does not affect the EU security or strategic autonomy interests and avoids potential negative effects over security of supply of inputs critical to the functioning of the PBG's infrastructure.

8.46. The contractors must promote the dissemination of their results, in particular through publications and contribution to standardisation. The contractors and hWh will establish at the start of the Framework Agreement a list of planned publications about the results and appropriate standards to contribute to, and will keep this list updated throughout the Framework Agreement and for each Specific Contract. The contractors must — up to 4 years after the end of the Framework Contract and Specific Contracts — inform hWh, who will inform in its turn the granting authority that is co-financing the PCP, if the results could reasonably be expected to contribute to European or international standards.

8.47. In case of a public emergency the contractor must, if requested by hWh on behalf of the PBG or the EU, commit to rapidly and broadly exploit the products and/or services resulting from the PCP at FRAND conditions to address the public emergency. This provision applies up to 4 years after the end of the PCP.

8.48. These obligations also apply to the contractor´s subcontractors, affiliated entities and other third parties it cooperates with in the commercialization of the results, as well as to any entities succeeding them in their ownership or development of the results.

NON-EXCLUSIVE LICENSING OF RESULTS

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8.49. The contractor may on its own initiative without prior authorisation from hWh, give non-exclusive licenses to third parties to exploit the results that it owns to the extent that:

a) such licenses do not affect the rights — including the access rights — of hWh, the PBG or the EU related to the results, and

b) such licenses do not affect the obligations — including the security and ethical obligations — of hWh and the PBG related to the results, and

c) such licenses are not granted to entities which are subject to EU restrictive measures under Article 29 of the Treaty on the European Union (TEU) and Article 215 of the Treaty on the Functioning of the EU (TFEU)[35] (sanctions).

Otherwise, the contractor needs to ask for hWh permissions who (on behalf of the PBG will authorise such license

8.50. The contractor must ensure in the licensing agreement that all its obligations under the Framework Agreement and Specific Contracts are passed on to the third party and that the third party has the obligation to pass on these obligations in any potential subsequent licensing.

EXCLUSIVE LICENSING AND TRANSFER OF OWNERSHIP OF RESULTS

8.51. Due to EU strategic autonomy and security reasons, exclusive licensing and transfers of ownership of the Results are restricted as follows:

a) The Contractor may not transfer ownership of its Results or give exclusive Licences if the Results would become subject to controls or other restrictions by a country (or entity from a country) which is not an EU Member State or country associated to Horizon Europe.

b) The contractor may not transfer or give exclusive licenses to entities that are subject to EU restrictive measures under Article 29 of the Treaty on the European Union (TEU) and Article 215 of the Treaty on the Functioning of the EU (TFEU) (sanctions)

c) The contractor may not transfer or give exclusive licenses if this would affect the rights — including the access rights — of hWh, the PBG or the EU related to the Results.

d) The contractor may not transfer or give exclusive licenses if this would affect the obligations — including the security and ethical obligations — of hWh and the PBG related to the results.

e) The contractor may not transfer ownership or the results or give exclusive licenses, if this would conflict with the right of first refusal for the PBG to buy the results. [explain further what is the exact procedure for the PBG to invoke the right of first refusal].]

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[35] Please note that the EU Official Journal contains the official list and, in case of conflict, its content prevails over that of the EU Sanctions Map.

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f) The Contractor must ensure that its obligations under the Framework Agreement are passed on to the new owner and licensee and that this new owner/licensee has the obligation to pass them on in any subsequent transfer/licensing.
g) Contractors that intend exclusive licensing or transfers of ownership of the Results to an entity from a country (or controlled by a country) that is not an EU Member State or country associated by Horizon Europe, must request prior authorisation from hWh.

8.52. The intention of such exclusively licensing or transfer must first be notified to hWh at least three (3) months in advance and:

a) Identify the specific Results concerned.
b) Describe in detail the intended new owner and the planned or potential exploitation of the Results.
c) Include a reasoned assessment of the likely impact of the intended transfer or exclusive License on the access rights to the Results and on the Background and Sideground that is essential for accessing the Results as foreseen by the Framework Agreement for the members of the PBG and for Third Parties, as well as on the commercialization exploitation of the Results, including the EU security interests and EU strategic autonomy objectives.

8.53. HWh may request the Contractor for additional information to verify the potential impact, upon which the Contractor must promptly provide the requested information. Before granting the authorisation, hWh will verify the potential impact of the intended transfer or exclusive licensing. HWh may condition its authorisation to measures ensuring that the transfer or exclusive licensing will not have unintended or undesirable consequences. Before hWh gives its written authorization, the transfer may not take place and any transfer or exclusive licensing agreement concluded before or without a written authorization will be null and void.

8.54. Before granting the authorisation, the EU granting authority will verify the potential impact of the intended transfer or exclusive licensing. The EU granting authority may object to the transfer or exclusive licensing or may condition its authorisation to measures ensuring that the transfer or exclusive licensing will not have unintended or undesirable consequences. Before the EU granting authority gives its written authorisation, the transfer may not take place and any transfer or exclusive licensing agreement concluded before or without a written authorisation will be null and void.

Article 9 — Confidentiality

9.1. The parties shall keep confidential any data, documents or other material (in any form) that is identified as confidential at the time it is disclosed. This applies during the implementation of the Framework Agreement and Specific Contracts and up 4 years after their end.

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9.2. If information has been identified as confidential only orally, it shall be considered to be confidential only if this is confirmed in writing within 15 days of the oral disclosure.

9.3. Unless otherwise agreed between the parties, they may use confidential information only to implement the Framework Agreement and Specific Contracts.

9.4. The parties may disclose confidential information to their staff or to third parties involved in the PCP implementation only if:

(a) They need to be aware of this information in order to implement the PCP activities under the Framework Agreement and Specific Contracts, and

(b) They are bound by an obligation of confidentiality.

9.5 hWh and members of the PBG may disclose confidential information to the EU granting authority if required under their Horizon Europe grant agreement.

9.6. The confidentiality obligations cease to apply if:

(a) The disclosing party agrees to release the other party from the obligation,

(b) The information becomes generally and publicly available, without breaching any confidentiality obligation, or

(c) The disclosure of the information is required by EU or national law.

Article 10 — Staff appointment provisions

10.1. All staff providing Services in connection with this Framework Agreement shall be bound by the same terms and conditions of service which are normally applicable to the Contractor's staff.

10.2. HWh has a commitment to equal opportunities which the Contractor must adhere to. The Contractor must not discriminate on the grounds of gender, race, disability, sexuality, age, religion or otherwise or otherwise allow any applicable employment law to be breached.

Article 11 — Promotion, publicity and communication

DISSEMINATION OBLIGATIONS

11.1. The contractor shall undertake communication activities to create publicity about its participation to the procurement, and to promote the objectives and the results of the R&D carried out under the PCP (in particular, to other potential customers with the objective to achieve commercial exploitation of the results; see Article 12 on commercial exploitation of results).

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11.2. When undertaking these activities, the contractor shall ensure that they do not infringe any of its other obligations under this Framework Agreement or a Specific Contract, such as its obligations regarding protection of intellectual property, confidentiality, security restrictions or its obligations under data protection legislation.

11.3. All communication activities shall comply with the applicable confidentiality and security restrictions.

11.4. During the implementation of the Framework Agreement and for a period of 3 years after the end thereof, the Contractor shall inform hWh 60 days in advance of any (written or oral) publication or any other type of communication (in any media or form) relating to the services or results. Information on communication activities expected to have a major media impact shall be provided sufficiently in advance to allow hWh to inform the EU.

The contractor must, in particular, submit a draft copy of any publications:

a) For written publications — at the same time as the submission to the editor for publication or at least one month before the date intended for publication, whichever is earlier.

b) For oral communications or other types of disclosure — twenty calendar days before the forecasted date of submission to the organiser of a scientific meeting or of said other type of disclosure.

If requested by the contracting authority, the contractor shall remove any confidential or security sensitive information before the disclosure.

11.6. Both parties agree that they will balance any of their requests to remove confidentiality, security or intellectual property-sensitive aspects from a publication proposed by the other party against the other party's objective to maintain sufficient information related to the performance of the Framework Agreement and Specific Contracts or the results that is necessary for the appropriate presentation or understanding of the publication.

RECOGNITION OF EU FUNDING

11.7. All communication activities about the PCP and/or its results (including in electronic form and via social media), as well as infrastructure, equipment and major results financed by the PCP shall display the EU emblem and include the following text:

a) For communication activities: 'This [publication][communication] is part of the PCP WISE project that has received funding from the European Union's Horizon Europe Research and Innovation Programme'.

b) For infrastructure, equipment and major results: 'This [infrastructure][equipment][insert type of result] is part of the PCP WISE project that has received funding from the European Union's Horizon Europe Research and Innovation Programme'.

11.8. If results are incorporated in a standard, the contractor must — unless the contracting authority requests or agrees otherwise in writing or unless it is impossible — ask the

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standardisation body to include the following statement in (information related to) the standard: 'Funded by the European Union'.

11.9. When displayed together with another logo, the EU emblem shall have appropriate prominence. The contractor may use the EU emblem without first obtaining approval from the EU. This does not, however, give the contractor the right to exclusive use. Moreover, the contractor may not appropriate the EU emblem or any similar trademark or logo, either by registration or by any other means.

11.10. All communication activities shall indicate that the opinions expressed reflect only the author's views and do not represent hWh´s or the EU's official position. hWh, in agreement with the EU granting authority, may waive this obligation in writing or provide the text of the disclaimer.

COMMUNICATION/PUBLICATION RIGHTS FOR THE CONTRACTING AUTHORITY AND THE PBG

11.11. hWh and members of the PBG may use, for the purposes of communication and publicity, all information relating to the PCP, documents (notably summaries) and deliverables, and any other material (such as pictures or audio-visual material) from the contractor (including in electronic form).

11.12. hWh and members of the PBG may, in particular, publish the name of the contractor and its project abstracts, the summaries of the main results from the R&D and the lessons learnt during the PCP *(e.g. relating to the feasibility of the different approaches to meeting the procurers' requirements that were explored, and the lessons learnt for potential future use of the solutions proposed)*. This does not change the confidentiality obligations under Article 9.

Moreover, before publishing this information, hWh shall consult the contractor, in order to avoid harm to legitimate business interests *(e.g. regarding aspects of the solutions that could be IPR-protected)* or distortion of competition.

COMMUNICATION/PUBLICATION RIGHTS FOR THE EU

11.13. The EU may use, for the purposes of communication and publicity, information relating to the PCP, documents (notably summaries) and deliverables, and any other material (such as pictures or audiovisual material) from the contractor (including in electronic form).

11.14. If the EU's use of these materials, documents or information would risk compromising legitimate interests, the contractor may, however, ask hWh to request the EU granting authority not to use it.

11.15. The right to use the contractor's materials, documents and information includes:

a) Use for its own purposes (in particular, making them available to persons working for the EU granting authority or any other EU service (including institutions, bodies, offices, agencies, etc.) or EU Member State institution or body; copying or reproducing them in whole or in part, in unlimited numbers; and communication through press information services).

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b) Distribution to the public (in particular, publication as hard copies and in electronic or digital format, publication on the internet, as a downloadable or non-downloadable file, broadcasting by any channel, public display or presentation, communicating through press information services, or inclusion in widely accessible databases or indexes).
c) Editing or redrafting (including shortening, summarising, inserting other elements (e.g. meta-data, legends, other graphic, visual, audio or text elements), extracting parts (e.g. audio or video files), dividing into parts, use in a compilation).
d) Translation.
e) Storage in paper, electronic or other form.
f) Archiving, in line with applicable document-management rules.
g) The right to authorise third parties to act on its behalf or sub-license to third parties the modes of use set out in Points (b), (c), (d) and (f), if needed for the information, communication and publicity activity of the granting authority.
h) Processing, analysing, aggregating the materials, documents and information received and producing derivative works.

11.16. If the right of use is subject to rights of a third party (including the contractor's staff), the contractor shall ensure that it obtains the necessary approval from the third parties concerned.

Article 12 — Commercial exploitation of the results

12.1. The contractor shall take prompt action to ensure that its results are exploited commercially (directly or indirectly through another entity, through transfer or licensing), to clients other than the PBG, in order to ensure swift availability of the developed solutions on the wider market and to generate revenue by marketing commercial applications of the results.

In particular, the contractor must use its best efforts to exploit its results up to 4 years after the end of the Framework Agreement and Specific Contracts, including where they are capable of commercial exploitation, to exploit them commercially (i.e. marketing a commercial application of the results, directly or indirectly, through a subcontractor or licensee).

12.2. The Contractor is and remains entitled for four (4) years after the end of the Framework Agreement to request on a case-by-case basis a non-exclusive and not-transferrable licence for definite time to use PBG pre-existing rights, Foreground and Sideground, insofar duly justified by the Contractor for the commercial exploitation of the Results of the PCP, under FRAND terms and conditions to be agreed upon. The Contractor acknowledges and accepts that the PBG remains unconditionally entitled to conclude similar agreements with other third parties.

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12.3. The Contractor shall ensure that the commercial exploitation of the Results will not infringe any of its other obligations under this Framework Agreement, such as its obligations regarding security, confidentiality and the protection of Intellectual Property or its obligations under the Data protection legislation.

12.4. HWh has the right to monitor the exploitation of the Results by the Contractor during and after the Framework Agreement. The Contractor shall submit reports, when requested by hWh, no more frequently than annually, on the exploitation of the Results, including the rights on the Results, by the Contractor, its Licensees or assignees. The Contractor shall respond at any time to requests for information from hWh about the exploitation of the Results.

12.5. If the Contractor fails to commercially exploit the Results within this period and the circumstances of the case show that it has not used its best efforts to do so (or uses the Results to the detriment of the public interest, including EU strategic autonomy or security interests), hWh has the right to require that ownership of the Results be transferred to him and the members of the Public PBG at no cost so that the PBG can ensure that the results are commercially exploited. Failure to commercially exploit the Results means not marketing a commercial application of the Results (directly or indirectly, through a subcontractor or licensee).

12.6. Before exercising the right to require the transfer of the ownership of the Results, hWh will first contact the Contractor to verify any measures that the Contractor has taken to achieve successful commercial exploitation of the Results, to safeguard EU strategic autonomy and security interests and rules, to prevent use of the Results to the detriment of the public interest and to comply with its contractual obligations.

12.7. In this case, the Contractor shall be requested to give the source code to the PBG with all its documentation at no cost. Equally, the PBG will own, including - but not limited to - any patents, trademarks, trade names, domain names, design rights, rights in databases, know-how, in each case whether registered or unregistered and including applications for the grant of any such rights, and all rights having equivalent or similar effect anywhere in the world. The PBG may transfer these rights to Third Parties to assure further product development and market deployment.

12.9. In order to safeguard the cross-border delivery of Services against potential physical and cyber threats and to protect the exchange of security sensitive information, the Contractor shall ensure the safeguard of EU security interests in the commercial exploitation of the Results. For this reason, if the Contractor wishes to commercialize its solution outside the EU, it will have to comply with the Regulation (EU) 2021/821 of 20 May 2021 setting up a Union regime for the control of exports, brokering, technical assistance, transit and transfer of dual-use items (if applicable).

12.10. The Contractor must ensure that, in the commercial exploitation of the Results, any cooperation with entities established in other countries, or controlled by such countries or entities from such countries, does not affect the EU security or strategic autonomy interests. The Contractor must ensure that these obligations also apply to its subcontractors, affiliated entities and other Third Parties it cooperates with in the

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commercialisation of the Results, as well as to any entities succeeding them in their ownership or development of the Results.

Article 13 — Conflicts of interest

13.1. The contractor shall take all measures necessary to prevent a situation arising where the impartial and objective implementation of the Framework Agreement or a Specific Contract is compromised for reasons involving economic interests, political or national affinity, family, personal life or any other shared interest.

The contractor shall also take all measures necessary to prevent a situation in which its (previous or ongoing) professional activities affect the impartial and objective implementation of the Framework Agreement or a Specific Contract.

13.2. The contractor shall notify hWh without delay of any situation constituting or likely to lead to a conflict of interest (including changes of ownership) and shall immediately take all steps necessary to rectify this situation.

hWh may instruct the contractor to take specific measures to remedy the situation.

Article 14 — Cession of contractual position

14.1. In principle and due to the short duration of the PCP no changes on consortia or in subcontractors will be allowed unless exceptional reasons that couldn't be foreseen apply or a new contractor replaces the one to which the contracting authority had initially awarded the contract as a consequence of an universal or partial succession into the position of the initial contractor, following corporate restructuring, including takeover, merger, acquisition or insolvency, of another economic operator that fulfils the criteria for qualitative selection initially established, as indicated in the Request for Tender (TD1) and article 5.7 of this Framework Agreement.

If that is the case, the new member of the Consortium and/or subcontractor has to meet all exclusion, compliance and selection criteria, to comply with the pass/fail award criteria. The new member of the Consortium and/or subcontractor will have to sign the declarations of honor and any other required statements. The replacement cannot entail a substantial modification of the Contract conditions.

14.2. Contractors that are in a procedure to consider a possible merger with or a takeover by an entity from a country (or controlled by a country) that is not an EU Member State or country associated by Horizon Europe, must notify hWh at least three (3) months in advance of the decision to implement the possible merger or takeover and:

a) Describe in detail the identity, ownership and control structure of the potential new merged entity or the potential new owner(s).
b) Include a reasoned assessment of the likely impact of the possible merger/takeover on the access to the Results and to the Background and

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Sideground that is essential for accessing the Results for the members of the Public PBG and for Third Parties and the commercialisation exploitation of the Results, including the EU security interests and EU strategic autonomy.

14.3. hWh may request the Contractor for additional information to verify the potential impact, upon which the Contractor must promptly provide the requested information. In case the impact analysis concludes that the merger or takeover negatively impacts the access to or the commercial exploitation of the Results, including the EU security interests and EU strategic autonomy objectives, hWh is entitled to require that the Contractor (both the Contractor before or after the merger or takeover) transfers the ownership of the Results to the members of the PBG.

Article 15 — Ethics and research integrity

15.1. The contractor shall carry out the tasks assigned to it in the Framework Agreement and Specific Contracts in compliance with:

a) Ethical principles (including the highest standards of research integrity).
b) Applicable international, EU and national law.

15.2. The contractor must commit to and ensure the respect of basic EU values (such as respect for human dignity, freedom, democracy, equality, the rule of law and human rights, including the rights of minorities). The contractor must pay particular attention to the principle of proportionality, the right to privacy, the right to the protection of personal data, the right to the physical and mental integrity of persons, the right to non-discrimination, the need to ensure protection of the environment and high levels of human health protection.

15.3. In case the development, deployment and/or use of the PCP solution involves artificial intelligence (AI), the contractor must ensure that the artificial intelligence is trustworthy, i.e. lawful, ethical and technically robust. The artificial intelligence system must preserve and protect the following six general ethical principles based on fundamental rights as enshrined in the Charter of Fundamental Rights of the European Union (EU Charter), and in relevant international human rights law[36]:

a) Respect for human agency: human beings must be respected to make their own decisions and carry out their own actions. Respect for human agency encapsulates three more specific principles, which define fundamental human rights: autonomy, dignity and freedom.
b) Privacy and data governance: people have the right to privacy and data protection and these should be respected at all times.
c) Fairness: people should be given equal rights and opportunities and should not be advantaged or disadvantaged undeservedly.

[36] For more information, *see Horizon Europe guidance on ethics by design and ethics of use approaches for AI*.

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d) Individual, social and environmental well-being: artificial intelligence systems should contribute to, and not harm, individual, social and environmental wellbeing.
e) Transparency: the purpose, inputs and operations of artificial intelligence programs should be knowable and understandable to its stakeholders.
f) Accountability and oversight: humans should be able to understand, supervise and control the design and operation of artificial intelligence-based systems, and the actors involved in their development or operation should take responsibility for the way that these applications function and for the resulting consequences.

15.4. The contractor may not:

a) Carry out activities in a Member State for an activity which is forbidden in that Member State.
b) Carry out activities in a country inside or outside the EU, if they are prohibited in all EU Member States.

15.5. The contractor may not carry out activities that do not focus exclusively on civil applications in the context of PCP WISE.

15.6. The contractor shall respect the fundamental principle of research integrity — as set out in the European Code of Conduct for Research Integrity[37]. This implies compliance with the following essential principles:

a) Reliability in ensuring the quality of research reflected in the design, the methodology, the analysis and the use of resources.
b) Honesty in developing, undertaking, reviewing, reporting and communicating research in a transparent, fair and unbiased way.
c) Respect for colleagues, research participants, society, ecosystems, cultural heritage and the environment.
d) Accountability for the research from idea to publication, for its management and organisation, for training, supervision and mentoring, and for its wider impacts.
e) and means that the contractor must ensure that persons carrying out research tasks follow the good research practices and refrain from the research integrity violations described in this Code.

15.8. Before starting any activity that raises an ethical issue, the contractor shall submit to hWh a copy of:

a) Any ethics committee opinion required under national law.
b) Any notification or authorisation for activities raising ethical issues required under national law.

[37] European Code of Conduct for Research Integrity of ALLEA (All European Academies).

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Article 16 — Processing of personal data

16.1. The contractor shall process personal data in compliance with the applicable EU and national law on data protection, in particular Regulation 2016/679[38] (including as relates to authorisations and notification requirements).

16.2. Contractors must ensure that personal data is:

a) Processed lawfully, fairly and in a transparent manner in relation to the data subjects.
b) Collected for specified, explicit and legitimate purposes and not further processed in a manner that is incompatible with those purposes.
c) Adequate, relevant and limited to what is necessary in relation to the purposes for which they are processed.
d) Accurate and, where necessary, kept up to date.
e) Kept in a form which permits identification of data subjects for no longer than is necessary for the purposes for which the data is processed.
f) Processed in a manner that ensures appropriate security of the data.

16.3. The localisation of and access to the personal data processed by the contractor shall comply with the following:

a) The personal data shall only be processed within the territory of the European Union and the Horizon Europe associated countries[39] and will not leave that territory.
b) The data shall only be held in data centres located with the territory of European Union and the Horizon Europe associated countries.
c) The contractor may not change the location of data processing without the prior written authorisation of the contracting authority.
d) Any transfer of personal data under the Framework Agreement or a Specific Contract to third countries or international organisations shall fully comply with the requirements laid down in Chapter V of Regulation (EU) 2016/679.

16.4. The contractor may grant its staff access to data only in so far as is strictly necessary for implementing, managing and monitoring the Framework Agreement and Specific Contracts.

16.5. The contractor must inform the staff whose personal data are collected and processed by the procurers and/or the EU. For this purpose, the contractor must provide them with the privacy statements of the procurers and the EU, before transmitting their data. If

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[38] Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC ('GDPR') (OJ L 119, 4.5.2016, p. 1).

[39] List of Horizon Europe participating countries.

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explicit prior consent from the data subjects is needed, the contractor must obtain such consent.

Article 17 — Obligation to provide information and keep records

17.1. The contractor must, at any time during the implementation of the Framework Agreement and Specific Contracts or afterwards, provide any information requested by the procurers in relation to the Agreement or Contracts.

17.2. The contractor must keep, for a period of up to 5 years after the end of the Framework Agreement and Specific Contracts, records and other supporting documentation relating to their implementation.

This obligation includes records and other supporting documentation on scientific and technical implementation (in line with the accepted standards in the field) and on the price charged and the costs incurred by the contractor.

17.3. The contractor must keep the original documents. Digital and digitalised documents are considered originals if they are authorized under national law.

17.4. Should there be ongoing checks, reviews, audits, investigations, litigation or other pursuits of claims (including claims by a third party against the procurers), the contractor must keep all records and other supporting documentation until the end of these procedures.

Article 18 — EU checks, reviews, audits and investigations

18.1. Should the EU (including the European Court of Auditors (ECA), the European Public Prosecutor's Office (EPPO) or the European Anti-Fraud Office (OLAF)) decide to carry out a check, review, audit or investigation, the contractor must make available all information, records and other supporting documents relating to the implementation of the Framework Agreement and Specific Contracts.

18.2. Should there be an on-the-spot visit, the contractor must allow access to its premises and must ensure that the information requested is readily available.

Article 19 — EU impact evaluation

Should the EU carry out an impact evaluation (of its grant to the procurers), the contractor must make available all information, records and other supporting documents relating to the implementation of the Framework Agreement and Specific Contracts.

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Article 20 — Monitoring and reporting

20.1. During each PCP Phase, the implementation by the Contractor of the R&D Services will be monitored periodically and reviewed against the expected outcomes (deliverables and output or Results) for that Phase. To this end, the Contractor will be assigned a main contact person (their supervisor) from the Technical Evaluation Committee (TEC) appointed by hWh. There will be regular monitoring meetings between the Contractor and the TEC.

20.2. For the purpose of such monitoring activities, hWh is entitled to carry out physical visits to the Contractor's premises at any time during the implementation of the PCP. The meetings will take place after formal communication. The Contractor could be asked to discuss the Results achieved in the preceding period and present their updated work plan.

20.3. HWh may request to witness (or request that a designated party witnesses) any tests or measurements to be performed by the Contractor or his subcontractor(s). The Contractor shall give hWh a prior notice - with sufficient time and, in any case, no less than ten (10) days - in writing of the date(s) and place(s) of such tests and measurements. Failure to notify with sufficient time will allow hWh to demand that such tests and measurements be repeated at the expense of the Contractor, who shall be liable for any delay resulting thereof.

20.4. The Procurement Evaluation Board (PEB) will provide regular feedback in writing to Contractors after meetings or visits.

END OF PHASE REPORTING

20.5. The Contractor shall submit to hWh an End of Phase (1, 2, 3) report (TD6) at the end of each relevant Phase, on the Completion Date.

20.6. The Contractor shall draft the End of Phase (1, 2, 3) report using TD6 and shall take into account any and all recommendations provided by hWh. The End of Phase (1, 2, 3) report shall include the Data, methods, Results and final conclusions together with the information management and any other information relating to the Project Phase it concerns up to the Completion Date thereof. The ownership of necessary reports of all Phases will be transferred to hWh.

20.7. The Evaluation of each End of Phase (1, 2, 3) Report shall be carried out at hWh premises or at any other place indicated thereby by the PEB.

20.8. The evaluation of the End of Phase (1, 2, 3) report (TD6) will be made within the timeline as provided in the Request for Tender (TD1). The evaluation will assess whether the Contractor has achieved the objectives mentioned in the Financial Form (TD9) and the Technical Form (TD8), in accordance with the Request for Tender (TD1) and each Phase objectives.

20.9. The evaluation will be documented in a specific report, indicating the date and the Results of the same and will be signed by all the members of the PEB.

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SUCCESSION OF PHASE 1, PHASE 2 AND PHASE 3 OF THE PROJECT

20.10. By signing the Framework Agreement, hWh and the Contractor accept the general conditions set by this Framework Agreement and the Phase Contract for Phase 1.

20.11. In case the Contractor gets awarded contracts for Phase 2 and Phase 3, these have to be signed by hWh and the Contractor. The Contractor has the obligation of performing the Services within the scope of the respective Phases of the Project.

ASSESSMENT OF PHASE 1 AND AWARD OF PHASE 2

20.12. On the Completion Date of Phase 1, the Contractor shall submit to hWh the End of Phase 1 report (TD6) together with the deliverables belonging to Phase 1, which shall be reviewed and assessed by the TEC.

20.13. The outcome of the evaluation shall result in the decision of the PEB regarding the unsatisfactory, satisfactory or successful completion of Phase 1 (as defined in the Request for Tenders – TD1). This decision will be issued according to the timeline of the Request for Tenders. In case a longer evaluation process is needed, the Contractor will be duly informed of the new timeline for the evaluation outcome.

20.14. The following rules shall apply:

a) In case the Contractor has not satisfactorily completed Phase 1:
   i. The Contractor shall reimburse the received pre-payment to hWh.
   ii. The Contractor will not receive further payment for the work carried out in Phase 1.
   iii. The Contractor will not be invited to submit a Bid for Phase 2.
   iv. This Framework Agreement and Phase 1 Contract shall terminate.

b) In case the Contractor has satisfactorily, but not successfully completed Phase 1:
   i. The Contractor shall not reimburse the received pre-payment to hWh.
   ii. The Contractor will be entitled to the payment for the work carried out in Phase 1.
   iii. The Contractor will not be invited to submit a Bid for Phase 2.
   iv. This Framework Agreement and Phase 1 Contract shall terminate.

c) In case the Contractor has successfully completed Phase 1:
   i. The Contractor shall not reimburse the received pre-payment to hWh.
   ii. The Contractor will be entitled to the payment for the work carried out in Phase 1.
   iii. The Contractor will be invited to submit a Bid for Phase 2

20.15. The Contractor that has successfully completed Phase 1 will be invited to submit a Bid for Phase 2. HWh will communicate the award decision after the deadline for submitting the Bids. This will take place according to the planning provided in the Request for Tender (TD1). Any changes in the timeline above will be duly communicated to the Contractors.

20.16. If the Contractor is selected for Phase 2, this Framework Agreement shall continue in force for the duration of the following Phases. The Contractor shall thereupon sign a

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Contract for that Phase. Alternatively, if the Contractor is not selected for Phase 2, this Framework Agreement shall, without prejudice to any surviving clauses, cease to have any effect upon the date announced by hWh for final award of Phase 2.

ASSESSMENT OF PHASE 2 AND AWARD OF PHASE 3

20.17. On the Completion Date of Phase 2, the Contractor shall submit to hWh the End of Phase 2 report (TD12) together with the deliverables belonging to Phase 2, which shall be reviewed and assessed by the TEC. This assessment shall be performed according to the planning provided in the Request for Tenders (TD1).

20.18. The outcome of the evaluation shall result in the decision of the PEB regarding the unsatisfactory, satisfactory or successful completion of Phase 2 (as defined in the Request for Tenders – TD1). This decision will be issued according to the planning provided in the Request for Tenders. In case a longer evaluation process, the Contractor will be duly informed of the new timeline for the evaluation outcome.

20.19. The following rules shall apply:

a) In case the Contractor has not satisfactorily completed Phase 2:
   i. The Contractor shall reimburse the received pre-payment to hWh.
   ii. The Contractor will not receive further payment for the work carried out in Phase 2.
   iii. The Contractor will not be invited to submit a Bid for Phase 3.
   iv. This Framework Agreement and Phase 2 Contract shall terminate.

b) In case the Contractor has satisfactorily, but not successfully completed Phase 2:
   i. The Contractor shall not reimburse the received pre-payment to the Lead Procurer.
   ii. The Contractor will be entitled to the payment for the work carried out in Phase 2.
   iii. The Contractor will not be invited to submit a Bid for Phase 3.
   iv. This Framework Agreement and Phase 2 Contract shall terminate.

c) In case the Contractor has successfully completed Phase 2:
   i. The Contractor shall not reimburse the received pre-payment to hWh.
   ii. The Contractor will be entitled to the payment for the work carried out in Phase 2.
   iii. The Contractor will be invited to submit a Bid for Phase 3.

20.20. The Contractor that has successfully completed Phase 2 will be invited to submit a Bid for Phase 3. HWh will communicate the award decision after the deadline for submitting the Bids. This will take place according to the planning provided in the Request for Tender (TD1). Any changes in the timeline above will be duly communicated to the Contractors.

20.21. If the Contractor is selected for Phase 3, this Framework Agreement shall continue in force for the duration of the following Phases. The Contractor shall thereupon sign a Contract for that Phase. Alternatively, if the Contractor is not selected for Phase 3, this

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Framework Agreement shall, without prejudice to any surviving clauses, cease to have any effect upon the date announced by hWh for final award of Phase 3.

ASSESSMENT OF PHASE 3

20.22. On the Completion Date of Phase 3, the Contractor shall submit to hWh the End of Phase 2 report (TD6) together with the deliverables belonging to Phase 3, which shall be reviewed and assessed by the TEC. This assessment shall be performed according to the planning provided in the Request for Tenders (TD1).

20.23. The outcome of the evaluation shall result in the decision of the PEB regarding the unsatisfactory, satisfactory or successful completion of Phase 3 (as defined in the Request for Tenders – TD1). This decision will be issued according to the planning provided in the Request for Tender. In case a longer evaluation process, the Contractor will be duly informed of the new timeline for the evaluation outcome.

20.24. The following rules shall apply:

a) In case the Contractor has not satisfactorily completed Phase 3:
   i. The Contractor shall reimburse the received pre-payment to hWh,
   ii. The Contractor will not receive further payment for the work carried out in Phase 3.
   iii. This Framework Agreement and Phase 3 Contract shall terminate.

b) In case the Contractor has satisfactorily, but not successfully completed Phase 3:
   i. The Contractor shall not reimburse the received pre-payment to hWh.
   ii. The Contractor will be entitled to the payment for the work carried out in Phase 3.

c) In case the Contractor has successfully completed Phase 3:
   i. The Contractor shall not reimburse the received pre-payment to hWh.
   ii. The Contractor will be entitled to the payment for the work carried out in Phase 3.

20.25. Successful completion of Phase 1 is a prerequisite to receiving an invitation for Phase 2. Successful completion of Phase 2 is a prerequisite to receiving an invitation for Phase 3.

20.26. Any award for Phases 2 and 3 will be communicated in writing by hWh to the Contractor.

20.27. Any reference in this Framework Agreement to the Project refers also to any of the Phases awarded to the Contractor.

20.28. The members of the PBG cannot make use of any of the deliverables of the Contractor in the event the Contractor needs to reimburse the payment for the work carried out under a PCP Phase.

20.29. HWh reserves the right not to award contracts for Phases for which it has not received any suitable or acceptable offer in relation to the Project, as well as to stop, cancel, revoke, re-issue the PCP or not to award any Phase Contract for objective reasons. HWh assumes no obligation whatsoever to compensate or indemnify the Contractors for any expense or loss that may occur in the preparation of their Bids.

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Article 21 — Breach of contract

21.1. The following provisions constitute a non-exhaustive list of clauses that lead to breach of Contract.

21.2. The Contractor shall ensure timely submission of deliverables. If the Contractor fails to deliver the Results or other deliverables as described in the Request for Tenders (TD1) - including, but not limited to, End of Phase (1, 2, 3) Reports - and to comply with this Framework Agreement and the Phase Contracts (TD3, 4 and 5), hWh shall give the Contractor the opportunity to remedy it within an appropriate period (no longer than ten (10) days), unless the delay is not attributable to the Contractor. If hWh is still not satisfied after that period, it may (at its discretion):

a) Withhold payments until satisfactory delivery.

b) Cancel payments.

c) Have all sums previously paid by hWh to the Contractor for and under the Phase which is then running (not being previous Phases), refunded by the Contractor.

d) Hold the Contractor accountable for additional costs, which the members of the PBG reasonably incurred.

e) Refuse to accept any subsequent performance of the Project which the Contractor attempts to make.

f) Exclude the Contractor from any subsequent Phases on the basis that the Contractor has not successfully completed the present Phase.

g) Terminate the Framework Agreement, in whole or in part, and/or any Phase Contract without liability to the Contractor.

21.3. Acceptance by hWh of any deliverable or Result shall not limit the Contractor's liability, if those deliverables or Results are later discovered to be non-compliant with the requirements of the Framework Agreement, nor for any loss or damage which may arise as a Result.

LIABILITY

21.4. The Contractor undertakes to fulfil all the obligations arising out of this Framework Agreement, with the best possible diligence required by the nature of the Services.

21.5. The Contractor assumes liability for any and all damages caused – not covered by its professional insurance/liability policy – to anyone who is caused, in relation to the performance of the Contractual Services, relieving hWh of any liability.

21.6. The Contractor shall be responsible and liable for any damage caused by it, or its employees, agents and/or sub-contractors, directly to the members of the Public PBG or any Third Parties (including cost of restoration, penalties, loss of profits, costs and expenses, also legal expenses) which hWh is required to compensate, because of the Contractor's delay or failure to comply with its obligations.

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21.7. The Contractor shall also be responsible and liable for any damages or injuries suffered by his/her property or by people who cooperate with him/her or are employed by him/her and agrees to indemnify the members of the PBG, even in court.

21.8. The Contractor hereby agrees to provide, within ten (10) days as of the signing of this Framework Agreement, evidence of the conclusion of a professional insurance/liability policy concluded with a primary insurance company and undertakes to keep such policy insurance in force for the entire duration of this Framework Agreement and the Phase Contracts (TD 3, 4 and 5) to cover all direct or indirect material damage to persons or property. For the avoidance of any doubt, the limit for each event, corresponding at least to what the law provides for at least in the field of liability and insurance, cannot be considered, under any circumstances, as a limit to compensation for damage.

21.9. To further clarify, the Contractor shall indemnify and hold harmless hWh and the members of the Public PBG, their employees, officers, directors and agents fully against any and all liabilities, claims, actions, suits or proceedings whatsoever in respect of:

a) Any damage to property, including any infringement of Third Parties' IPRs.
b) Any injury to persons, including injury resulting in death.
c) Resulting from or in the course of, or in connection with the performance of the Services, except in so far as such damages or injury shall be due to any act or negligence of hWh or any member of the Public PBG.

21.10. The Contractor shall promptly notify hWh in writing of any such liabilities, claims, actions, suits or proceedings, and in particular of any action brought against the Contractor for infringement or alleged infringement of IPRs which might affect the Project, within thirty (30) days after receipt of notice of any complaint, claim or injury opening an indemnification right.

21.11. In no event shall hWh (and the members of the Public PBG) be liable to the Contractor for punitive damages, indirect or consequential loss or damage suffered by Contractor.

DAMAGES

21.12. The contractor must compensate the contracting authority and members of the PBG if they are held liable by the EU for damage sustained as a result of the implementation of the Framework Agreement or a Specific Contract (or because it was not implemented properly).

21.13. The EU cannot be held liable for any damage caused to the contractor or caused by the contractor in connection with the implementation of the Framework Agreement or a Specific Contract.

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Article 22 — Causes and consequences of termination

22.1. HWh may terminate this Framework Agreement without liability for any damage, loss or expenses arising as a Result of or in connection with such termination (except otherwise provided in specific clauses hereunder) in the following cases:

a) Any approvals or Licenses required under this Framework Agreement or to enable the Services to be carried out lawfully are not given unconditionally within one (1) month of the commencement of the Project; or lapse, terminate or otherwise cease to have effect during the term of this Agreement and the Contractor does not seek to have the necessary permits within two (2) weeks.

b) An appeal under the bankruptcy law or any other law applicable to insolvency proceedings has been filed against the Contractor, proposing the dissolution, liquidation, amicable composition, the debt restructuring or a settlement with creditors, or if a liquidator, a trustee, a guardian or a person having similar functions, which come into possession of the goods or is responsible for managing the business the Contractor is appointed.

c) Any of the members of the governing body or the managing director or the general manager or the technical manager of the Contractor are subject to a judgment which has the force of res judicata for crimes against the public administration, public policy, public faith or public property.

d) The Contractor has informed hWh that they are not willing or not able for whatever reason to continue the Project.

e) The Contractor is in breach of an obligation under this Framework Agreement, if:
   i. the breach can be remedied and the Contractor has failed to remedy the breach within thirty (30) days of written notice being sent to the Contractor specifying the breach and requiring its remedy;or
   ii. the breach cannot be remedied (but does not constitute a serious or repeated breach or grave professional misconduct by the Contractor).

f) The Contractor, or any sub-contractor on whose resources he has relied in the PCP, becomes subject to any exclusion criteria listed in the Request for Tenders (TD1).

g) Failure by the Contractor to comply with the contractual obligations (including those related to the Phase Contracts – TD3, 4 and 5) in accordance with the law in force and the conditions, procedures, terms and requirements contained in this Framework Agreement, its Annexes and in the Phase Contracts, including, but not limited to:
   i. Breach of any of its confidentiality obligations.
   ii. A situation of Conflict of Interest according to Article 9 arises during the implementation of the Contract, including subcontractors.
   iii. Breach of any of its Data protection obligations.
   iv. Failure to submit a deliverable or to meet any expected outcome/result within ten (10) days of the date by which it was meant to be achieved, or repeatedly fails over a period of three (3) consecutive months to submit a

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deliverable or to meet any expected outcome/Result by the date(s) on which they were meant to be achieved.

h) The Services are not in compliance with the requirements on R&D Services as defined in the most recent version of the Frascati Manual and, where applicable, its latest annexes[40] or in case of non-compliancy with any other requirement mentioned in the Call for Tender (TD1) and declared in the signed declaration that is part of the tender.

i) The necessary must and safety requirements are not complied with. Lack of the necessary must and safety requirements may also lead to partial termination of the Framework Agreement and the Phase Contract.

j) Any provision of this Framework Agreement which expressly entitles hWh to terminate this Framework Agreement.

22.2. In the event of serious or repeated breach of the agreement or grave professional misconduct by the Contractor, leading hWh to conclude that the Contractor is unsuitable to comply with its obligations hereunder, hWh reserves the right to terminate this Framework Agreement at the Contractor's expense, subject only to a notice of termination by certified e-mail or registered letter with acknowledgement of receipt, without prejudice to the right to claim further damages.

22.3. In the event of termination of the Framework Agreement for serious or repeated breach or grave professional misconduct by the Contractor, hWh shall be entitled to apply a penalty in the amount of maximum ten percent (10%) of the Price for the PCP set out in the Phase Contract concerning the ongoing Phase, and/or claim for compensation of damages.

22.4. Termination of this Framework Agreement by hWh shall (at the option of hWh) take place with immediate effect as from the date of service of the notice of that termination or from the expiry of a period specified in that notice. If this occurs, hWh shall not be obliged to make any further financial payment to the Contractor.

22.5. HWh is and remains unconditionally entitled to terminate this Framework Agreement and any Phase Contract hereunder without cause, by giving a three (3) month notice in writing. HWh shall in that case only be obliged to pay to the Contractor for the reasonable costs for the remaining obligations of the Contractor for that Phase that can objectively not be undone.

22.6. HWh may, by giving due notice in writing, terminate this Framework Agreement without liability for any damage, loss or expenses arising as a result of or in connection with such termination if there is a change of control in the Contractor which hWh can reasonably demonstrate is prejudicial. HWh shall only be permitted to exercise its rights pursuant to this clause for six (6) months after any such change of control and shall not be permitted to exercise such rights where hWh has agreed in advance in writing to the particular change of control and such change of control takes place as proposed. The Contractor shall notify hWh within two (2) weeks of any change of control taking place,

[40] OECD (2002). Frascati Manual 2002: [Version: 2002]. OECD Publishing [online].

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unless the new controlling entity originates from a country (or is controlled by a country) that is not EEA and HE associated, in which case the provisions of Article 14 will apply. HWh shall not unreasonably withhold its approval and provide Contractor with a decision within two (2) weeks after receiving such a notification.

22.7. The assignments and/or Licenses granted under the Framework Agreement by the Contractor to hWh, any member of the Public PBG or any other Third Party shall continue notwithstanding any expiry or termination of this agreement.

22.8. Termination or expiry of this agreement shall be without prejudice to any rights, remedies or obligations of either Party accrued under this Framework Agreement before termination or expiry.

22.9. Within thirty (30) days of the date of termination or expiry of this Framework Agreement, the Contractor shall return or destroy at the request of hWh any personal Data received from or on behalf of hWh and/or the members of the PBG, or Confidential Information belonging to hWh and/or the members of the PBG, either in its current format or in a format nominated by hWh.

22.10. Unless expressly stated to the contrary, the service of a notice to terminate this Framework Agreement shall operate as a notice to terminate any Phase Contract in force.

Article 23 — Force Majeure

23.1. In accordance with this Framework Agreement, neither Party may be held responsible by the other Party for circumstances beyond the Party's control and which the Party, on signing the Framework Agreement or the Phase Contract, could not have taken into consideration or avoided or overcome. Circumstances that a diligent Contractor could have prevented by taking the customary and reasonable precautions are not considered force majeure, including those relating to internal strikes and illness, and/or any default of a Service, defect in equipment or material or delays, unless they stem directly from a relevant case of force majeure.

23.2. Force majeure may only be asserted for the number of working days that the force majeure situation persists.

23.3. Insofar as a deadline for the Contractor is deferred because of force majeure, the payments relating to this deadline will be deferred correspondingly.

23.4. Any situation constituting force majeure must be formally notified to the other party without delay, stating the nature, likely duration and foreseeable effects. Force majeure may only be cited if the affected Party has given written notification thereof to the other Party no later than ten (10) working days after the commencement of the force majeure.

23.5. The Parties must immediately take all the necessary steps to limit any damage due to force majeure and do their best to resume implementation of the action as soon as possible. The party prevented by force majeure from fulfilling its obligations under the Framework Agreement cannot be considered in breach of them.

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23.6. The Party not affected by force majeure is entitled to cancel orders if the agreed delivery time is exceeded by thirty (30) working days as a consequence of force majeure.

23.7. The Parties may terminate this Framework Agreement in writing without notice if the impediment or delay as a consequence of the force majeure situation will last or lasts longer than six (6) months.

Article 24 — Amendments

24.1. If at any time any provision of this Framework Agreement needs to be amended, the Contractor shall immediately inform hWh in writing requesting an amendment, giving full details of the justification for the request and giving proposals for the amendment to this Framework Agreement at no additional cost to hWh. Upon receipt of such a request, hWh may:

a) Agree to modify the Framework Agreement provided such variation is non-discriminatory and does not lead to a substantial change of the Framework Agreement, the scope of Services or the scope of the Results as allowed following the case law of the European Court of Justice;
b) Amend the Project in a manner which the Contractor agrees can be carried out within the duration of the Project and the Price allocated to the relevant Phases; or
c) Refuse the request and require the continuation of the Project in accordance with the Framework Agreement; or
d) Give notice of termination in accordance with Article 23.

24.2. Any amendment to this Framework Agreement shall be made after agreement between the Parties.

24.3. Any amendment to this Framework Agreement shall be set out in writing, in an addendum to it and signed by both Parties.

24.4. No amendment shall have the purpose or the effect of making material changes to the Framework Agreement and Phase Contracts (TD11, 14 and 15), which might call into question the decision awarding the Contract or result in unequal treatment of technology providers. If it is not possible to continue with the Project in accordance with the Framework Agreement, the agreement and Phase Contracts shall be terminated.

24.5. It is possible that additional sites are included in Phase 3 (for demonstration purposes only and to be tackled on a voluntary basis only). The costs of these demonstrations could be covered by potential leftover budget from previous PCP Wise phases (i.e. it could be added to the tenderer´s estimated budget for phase 3 in TD9. Financial Form). The PBG has discretion to decide how to allocate leftover budget, if any. In any case, price variations will not exceed 10% of the originally estimated budget (by the contractor in TD9. Financial Form) for Phase 3.

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24.6 may request an amendment to the Agreement at any time, provided such Amendment does not amount to a material change to this Framework Agreement, and provided that parties agree that the change is not unreasonable.

Article 25 — Interpretation

25.1. The Framework Agreement constitutes the entire Agreement between the Parties relating to its subject matter. Each Party acknowledges that it has not entered into this Framework Agreement on the basis of any warranty, representation, statement, agreement or undertaking except those expressly set out in this Framework Agreement. Each party waives any claim for breach of this Framework Agreement, or any right to rescind this Framework Agreement in respect of, any representation, which is not an express provision of this Framework Agreement. However, this Article does not exclude any liability which either party may have to the other (or any right which either party may have to rescind this Framework Agreement) in respect of any fraudulent misrepresentation or fraudulent concealment prior to the execution of this Framework Agreement.

25.2. In case of discrepancy between the Framework Agreement and the PCP Request for Tenders document, the documents shall prevail in the following descending order:

a) Phase Contract

b) Framework Agreement

c) Request for Tenders

d) Other Tender Documents

25.3. The terms and conditions set out in the Request for Tenders (TD1) have precedence over the Contractor's Bid.

25.4. A reference to any act, law, statute, enactment, order, regulation or other similar instrument shall be construed as a reference to the act, law, statute, enactment, order, regulation or instrument as subsequently amended or re-enacted (regardless of whether or not expressly so stipulated).

25.5. The headings in this Framework Agreement are for ease of reference only and shall not affect its interpretation or construction.

Article 26 — Applicable law and dispute settlement

26.1. The applicable law is the Dutch law.

26.2. Any disputes between the parties, arising with reference to the interpretation, performance, validity, effectiveness and termination of this Agreement and the Phase Contracts, shall be first topic of amicable settlement by Parties and if that is not possible, shall be the exclusive competence of the District Court of The Hague, the Netherlands.

This project has received funding from the Horizon Europe Framework Programme (HORIZON) under grant agreement N° 101182917

Article 27 — Entry into force

This Framework Agreement shall enter into force on the date it is signed by the parties hereto.

SIGNATURES

HWh signs for the PBG and — in case of joint tenders — the lead contractor for the group of contractors.

PCP WISE Funded by the European Union

This project has received funding from the Horizon Europe Framework Programme (HORIZON) under grant agreement N° 101182917

Pre-Commercial Procurement for the Customisation/pre-operationalisation of Water management Innovations from Space for European Climate Resilience

PCP TENDER DOCUMENT 3

SPECIFIC PHASE CONTRACT (TD3)

Funded by the European Union

This project has received funding from the Horizon Europe Framework Programme (HORIZON) under grant agreement N° 101182917

PCP SPECIFIC CONTRACT FOR PHASE 1 (TD3)

PREAMBLE

This procurement relates to a joint PCP that will be carried out by the following lead procurer: **HET WATERSCHAPSHUIS (hWh**), based in The Netherlands.

acting in the name and on behalf of the [other] members of the Public PBG (PBG) (together with hWh: "procurers"):

1. STICHTING TOEGEPAST ONDERZOEK WATERBEHEER (STOWA) (NL)
2. FORUM VIRIUM HELSINKI OY (FVH) (FI)
3. MINISTERSTVO VNUTRA SLOVENSKEJ REPUBLIKY (MINISTRY OF INTERIOR SLOVAKIA) (MoI) (SK)
4. GEMEENTE HAARLEM (CITY OF HAARLEM (NL)
5. BUNDESANSTALT TECHNISCHES HILFSWERK (THW) (GE)
6. REGION OF CENTRAL MACEDONIA (RCM) (GR)
7. FORENINGEN KLIMATORIUM (KLIMATORIUM) (DE)
8. BENEGO – GRENSPARK KALMTHOUTSE HEIDE (BE)
9. INSTITUT CARTOGRAFIC I GEOLOGIC DE CATALUNYA (ICGC) (SP)
10. CITY OF ROTTERDAM (NL)
11. SLOVENSKA AGENTURA ZIVOTNEHO PROSTREDIA (SLOVAK ENVIRONMENTAL AGENCY) (SEA) (SK)

and on the other hand, [insert details of the contractor], hereinafter the "contractor", [

[for joint tenders: acting in the name and on behalf of the other members of group of tenderers:

1. [insert the details of the members of the group of tenderers]

2.

The members of the group of tenderers are hereafter collectively referred to as "the contractor" and will be jointly and severally liable vis-à-vis hWh for the performance of this Framework Agreement and the Specific Contracts.]

HWh, the PBG and the contractor(s) shall be referred to together as "parties", unless otherwise specified.

WHEREAS:

- Based on the communication by the PBG of [*insert date*], the above mentioned Contractor has been declared as one of the successful tenderers in the PCP Project;

- On [*insert date*], the PBG and the Contractor signed the Framework Agreement, which provides that the Contractor shall proceed with the performance of the activities in

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accordance with the Phase Contracts, which constitutes integral and substantial part of the Agreement.

The conditions for the execution of the assignment subject of this Phase Contract, in accordance with article 4 and 5 of the Framework Agreement, are expressed as follows:

TERMS AND CONDITIONS

Article 1 — Subject of the contract

This Specific Contract defines the specific terms and conditions for the implementation of the PCP procurement of R&D services set out in Article 1 of the Framework Agreement (TD2) — for the PCP phase 1.

Article 2 — Duration

The duration of the specific contract is [ ] and starting date is [ ] and end date for the implementation of the tasks is [ ]. The PBG reserves its right to execute the assessment/evaluation of the performed activities.

The period of execution of the tasks may be extended only with the express written agreement of the parties before the expiration of the period for execution of the tasks.

Article 3 — R&D services to be provided

3.1 The contractor shall provide the R&D services (tasks, deliverables and milestones) set out in the offer for this phase in accordance with section 2.4 of the Request for Tenders (TD1) .

3.2. The following members of the Contractor's staff shall be in charge of carrying out the R&D activities for the specific contract: [insert name].

3.3. The activities provided for under this article 3 shall be carried out in [TO BE ADDED]

Article 4 — Price and payment arrangements

4.1. The price to be paid by the Procurer for the R&D services set out in Article 3 above shall be: **Phase 1**: Solution design: [...] €.

4.2. Payment schedule:

	Date of Deliverable	**Deliverable**	**Total**
Phase 1	Week 1 of phase 1	M1.1) Kick off meeting	100%

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4.3. The invoice must provide a price breakdown showing the price (excl. VAT) for R&D services and the price for supplies of products (in order to demonstrate compliance with the definition of R&D).

4.4. The invoice should contain at least the following administrative details:

- A unique invoice number;
- The name and address of the Contractor;
- The Contractor's VAT number;
- The Contractor's bank account number;
- The invoice date;
- The payment due date;
- The Purchase Order number: [XXXX] (to be provided separately);
- The billing address of Het Waterschapshuis: Het Waterschapshuis Stationsplein n893818 LE Amersfoort. The Netherlands-

4.5. The invoice must be sent by e-mail to: financien@hetwaterschapshuis.nl.

4.6. Payments are based on satisfactory/successful completion the deliverables of the phase. The PEB shall issue its decision regarding the satisfactory or successful completion of Phase 1, within 1 week after the Completion Date of the Phase.

4.7. Payments will be made 30 days from the decision of the Technical Evaluation Committee, by bank transfer.

Article 5 – Termination

The cases and terms of termination are provided by article 23 of the Framework Agreement (TD2).

Article 6 - Individuals in charge

In relation to the activities provided by this Phase Contract, the individuals in charge of the activities are:

- Mr. /Mrs. [insert name], on behalf of the Contractor.
- Mr. /Mrs. [insert name], on behalf of the PBG.

Article 7 – Penalties and liabilities

Provisions contained in the Framework Agreement (TD2) will ensure the correct and prompt execution of obligation provided in this Phase Contract.

Article 8 — Applicable law and dispute settlement

The applicable law is Dutch law.

This project has received funding from the Horizon Europe Framework Programme (HORIZON) under grant agreement N° 101182917

Any disputes between the Parties, arising with reference to the interpretation, performance, validity, effectiveness and termination of this Agreement and the Phase Contracts, shall be the exclusive competence of the District Court of The Hague, the Netherlands.

Article 9 — Entry into force

This Phase Contract shall enter into force on the date it is signed by the Parties hereto.

SIGNATURES

Same as for framework agreement: HWh signs for the PBG and — in case of joint tenders — the lead contractor for the group of contractors.

PCP WISE Funded by the European Union

This project has received funding from the Horizon Europe Framework Programme (HORIZON) under grant agreement N° 101182917

PCP WISE

Pre-Commercial Procurement for the Customisation/pre-operationalisation of Water management Innovations from Space for European Climate Resilience

PCP TENDER DOCUMENT 4

SPECIFIC CONTRACT FOR PCP PHASE 2 (TD4)

PCP WISE Funded by the European Union

This project has received funding from the Horizon Europe Framework Programme (HORIZON) under grant agreement N° 101182917

PCP SPECIFIC CONTRACT FOR PHASE 2 (TD4)

PREAMBLE

This procurement relates to a joint PCP that will be carried out by the following lead procurer: **HET WATERSCHAPSHUIS (hWh**), based in The Netherlands.

acting in the name and on behalf of the [other] members of the Public PBG (PBG) (together with hWh: "procurers"):

1. STICHTING TOEGEPAST ONDERZOEK WATERBEHEER (STOWA) (NL)
2. FORUM VIRIUM HELSINKI OY (FVH) (FI)
3. MINISTERSTVO VNUTRA SLOVENSKEJ REPUBLIKY (MINISTRY OF INTERIOR SLOVAKIA) (MoI) (SK)
4. GEMEENTE HAARLEM (CITY OF HAARLEM (NL)
5. BUNDESANSTALT TECHNISCHES HILFSWERK (THW) (GE)
6. REGION OF CENTRAL MACEDONIA (RCM) (GR)
7. FORENINGEN KLIMATORIUM (KLIMATORIUM) (DE)
8. BENEGO – GRENSPARK KALMTHOUTSE HEIDE (BE)
9. INSTITUT CARTOGRAFIC I GEOLOGIC DE CATALUNYA (ICGC) (SP)
10. CITY OF ROTTERDAM (NL)
11. SLOVENSKA AGENTURA ZIVOTNEHO PROSTREDIA (SLOVAK ENVIRONMENTAL AGENCY) (SEA) (SK)

and on the other hand, [insert details of the contractor], hereinafter the "contractor",

[for joint tenders: acting in the name and on behalf of the other members of group of tenderers:

1. [insert the details of the members of the group of tenderers]

2.

The members of the group of tenderers are hereafter collectively referred to as "the contractor" and will be jointly and severally liable vis-à-vis hWh for the performance of this Framework Agreement and the Specific Contracts.]

HWh, the PBG and the contractor(s) shall be referred to together as "parties", unless otherwise specified.

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WHEREAS:

- Based on the communication by the PBG of [*insert date*], the above mentioned Contractor has been declared as one of the successful tenderers in the PCP Project;

- On [*insert date*], the PBG and the Contractor signed the Framework Agreement, which provides that the Contractor shall proceed with the performance of the activities in accordance with the Phase Contracts, which constitutes integral and substantial part of the Agreement.

The conditions for the execution of the assignment subject of this Phase Contract, in accordance with article 4 and 5 of the Framework Agreement, are expressed as follows:

TERMS AND CONDITIONS

Article 1 — Subject of the contract

This Specific Contract defines the specific terms and conditions for the implementation of the PCP procurement of R&D services set out in Article 1 of the Framework Agreement (TD2) — for the PCP phase 2.

Article 2 — Duration

The duration of the specific contract is [ ] and starting date is [ ] and end date for the implementation of the tasks is [ ]. The PBG reserves its right to execute the assessment/evaluation of the performed activities.

The period of execution of the tasks may be extended only with the express written agreement of the parties before the expiration of the period for execution of the tasks.

Article 3 — R&D services to be provided

3.1 The contractor shall provide the R&D services (tasks, deliverables and milestones) set out in the offer for this phase in accordance with section 2.4 of the Call for Tenders (TD1).

3.2. The following members of the Contractor's staff shall be in charge of carrying out the R&D activities for the specific contract: [insert name].

3.3. The activities provided for under this article 3 shall be carried out in [TO BE ADDED]

Article 4 — Price and payment arrangements

4.1. The price to be paid by the Procurer for the R&D services set out in Article 3 above shall be: **Phase 2**: prototype development (and testing of technologies)[…]€.

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4.2. Payment schedule:

	Date of Deliverable	Deliverable	%	Total
Phase 2	Week 1 of phase 2	M2.1) Kick off meeting	15%	100%
Phase 2	Month 4	D2.2) Prototype testing report	35%	
Phase 2	Month 7	D2.4) Prototype testing report	20%	
Phase 2	Month 11	D2.6) End of phase report	30%	

4.3. The invoice must provide a price breakdown showing the price (excl. VAT) for R&D services and the price for supplies of products (in order to demonstrate compliance with the definition of R&D).

4.4. The invoice should contain at least the following administrative details:

- A unique invoice number;
- The name and address of the Contractor;
- The Contractor's VAT number;
- The Contractor's bank account number;
- The invoice date;
- The payment due date;
- The Purchase Order number: [XXXX] (to be provided separately);
- The billing address of Het Waterschapshuis: Het Waterschapshuis Stationsplein n893818 LE Amersfoort. The Netherlands-

4.5. The invoice must be sent by e-mail to: financien@hetwaterschapshuis.nl.

4.6. Payments are based on satisfactory/successful completion the deliverables of the phase. The PEB shall issue its decision regarding the satisfactory or successful completion of Phase 1, within 1 week after the Completion Date of the Phase.

4.7. Payments will be made 30 days from the decision of the Technical Evaluation Committee, by bank transfer.

Article 5 – Termination

The cases and terms of termination are provided by article 23 of the Framework Agreement (TD2).

This project has received funding from the Horizon Europe Framework Programme (HORIZON) under grant agreement N° 101182917

Article 6 - Individuals in charge

In relation to the activities provided by this Phase Contract, the individuals in charge of the activities are:

- Mr. /Mrs. [insert name], on behalf of the Contractor.
- Mr. /Mrs. [insert name], on behalf of the PBG.

Article 7 – Penalties and liabilities

Provisions contained in the Framework Agreement (TD2) will ensure the correct and prompt execution of obligation provided in this Phase Contract.

Article 8 — Applicable law and dispute settlement

The applicable law is Dutch law.

Any disputes between the Parties, arising with reference to the interpretation, performance, validity, effectiveness and termination of this Agreement and the Phase Contracts, shall be the exclusive competence of the District Court of The Hague, the Netherlands.

Article 9 — Entry into force

This Phase Contract shall enter into force on the date it is signed by the Parties hereto.

SIGNATURES

Same as for framework agreement: HWh signs for the PBG and — in case of joint tenders — the lead contractor for the group of contractors.

PCP WISE Funded by the European Union

This project has received funding from the Horizon Europe Framework Programme (HORIZON) under grant agreement N° 101182917

Pre-Commercial Procurement for the Customisation/pre-operationalisation of Water management Innovations from Space for European Climate Resilience

PCP TENDER DOCUMENT 5

SPECIFIC CONTRACT FOR PCP PHASE 3 (TD5)

Funded by the European Union

This project has received funding from the Horizon Europe Framework Programme (HORIZON) under grant agreement N° 101182917

PCP SPECIFIC CONTRACT FOR PHASE 3 (TD5)

PREAMBLE

This procurement relates to a joint PCP that will be carried out by the following lead procurer: **HET WATERSCHAPSHUIS (hWh**), based in The Netherlands

acting in the name and on behalf of the [other] members of the Public PBG (PBG) (together with hWh: "procurers"):

1. STICHTING TOEGEPAST ONDERZOEK WATERBEHEER (STOWA) (NL)
2. FORUM VIRIUM HELSINKI OY (FVH) (FI)
3. MINISTERSTVO VNUTRA SLOVENSKEJ REPUBLIKY (MINISTRY OF INTERIOR SLOVAKIA) (MoI) (SK)
4. GEMEENTE HAARLEM (CITY OF HAARLEM) (NL)
5. BUNDESANSTALT TECHNISCHES HILFSWERK (THW) (GE)
6. REGION OF CENTRAL MACEDONIA (RCM) (GR)
7. FORENINGEN KLIMATORIUM (KLIMATORIUM) (DE)
8. BENEGO – GRENSPARK KALMTHOUTSE HEIDE (BE)
9. INSTITUT CARTOGRAFIC I GEOLOGIC DE CATALUNYA (ICGC) (SP)
10. CITY OF ROTTERDAM (NL)
11. SLOVENSKA AGENTURA ZIVOTNEHO PROSTREDIA (SLOVAK ENVIRONMENTAL AGENCY) (SEA) (SK)

and on the other hand, the "contractor", [insert details of the contractor],

[OPTION for joint tenders: acting in the name and on behalf of the other members of group of tenderers:

1. [insert the details of the members of the group of tenderers]

2.

The members of the group of tenderers are hereafter collectively referred to as "the contractor" and will be jointly and severally liable vis-à-vis hWh for the performance of this Framework Agreement and the Specific Contracts.]

HWh, the PBG and the contractor(s) shall be referred to together as "parties", unless otherwise specified.

This project has received funding from the Horizon Europe Framework Programme (HORIZON) under grant agreement N° 101182917

TERMS AND CONDITIONS

Article 1 — Subject of the contract

This Specific Contract defines the specific terms and conditions for the implementation of the PCP procurement of R&D services set out in Article 1 of the Framework Agreement (TD2) — for the PCP phase 3.

Article 2 — Duration

The duration of the specific contract is [ ] and starting date is [ ] and end date for the implementation of the tasks is [ ]. The PBG reserves its right to execute the assessment/evaluation of the performed activities.

The period of execution of the tasks may be extended only with the express written agreement of the parties before the expiration of the period for execution of the tasks.

Article 3 — R&D services to be provided

3.1 The contractor shall provide the R&D services (tasks, deliverables and milestones) set out in the offer for this phase in accordance with section 2.4 of the Call for Tenders (TD1) .

3.2. The following members of the Contractor's staff shall be in charge of carrying out the R&D activities for the specific contract: [insert name].

3.3.The activities provided for under this article 3 shall be carried out in the testing sites defined under Annex 1

Article 4 — Price and payment arrangements

4.1. The price to be paid by the Procurer for the R&D services set out in article 3 above shall be: **phase 3: validation AND DEMONSTRATION OF THE SOLUTIONS (** […]€.

4.2. Payment schedule:

	Date of Deliverable	Deliverable	%	Total
Phase 3	Week 1 of phase 3	M3.1) Kick off meeting	15%	100%
Phase 3	Week 9 of phase 3	D3.2) Progress report of testing in site 1 and D3.3) Progress report of testing in site 1 and 2 and D3.3) Progress report of testing	35%	

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		in site 1, 2 and 3		
Phase 3	Week 24 of phase 3	D3.4) Progress report of testing in site 1, 2, 3 and 4 and D3.5) Progress report of testing in site 1, 2, 3, 4 and 5 and D3.6) Progress report of testing in site 1, 2, 3, 4 and 5, demonstrations at partner sites and TTX	20%	
Phase 3	Week 24 of phase 3	D3.7) End of phase report	30%	

4.3. The invoice must provide a price breakdown showing the price (excl. VAT) for R&D services and the price for supplies of products (in order to demonstrate compliance with the definition of R&D).

4.4. The invoice should contain at least the following administrative details:

- A unique invoice number;
- The name and address of the Contractor;
- The Contractor's VAT number;
- The Contractor's bank account number;
- The invoice date;
- The payment due date;
- The Purchase Order number: [XXXX] (to be provided separately);
- The billing address of Het Waterschapshuis: Het Waterschapshuis Stationsplein n893818 LE Amersfoort. The Netherlands-

4.5. The invoice must be sent by e-mail to: financien@hetwaterschapshuis.nl.

4.6. Payments are based on satisfactory/successful completion the deliverables of the phase. The PEB shall issue its decision regarding the satisfactory or successful completion of Phase 1, within 1 week after the Completion Date of the Phase.

4.7. Payments will be made 30 days from the decision of the Technical Evaluation Committee, by bank transfer.

Article 5 – Termination

The cases and terms of termination are provided by article 23 of the Framework Agreement (TD2).

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Article 6 - Individuals in charge

In relation to the activities provided by this Phase Contract, the individuals in charge of the activities are:

- Mr. /Mrs. [insert name], on behalf of the Contractor.
- Mr. /Mrs. [insert name], on behalf of the PBG.

Article 7 – Penalties and liabilities

Provisions contained in the Framework Agreement (TD2) will ensure the correct and prompt execution of obligation provided in this Phase Contract.

Article 8 — Applicable law and dispute settlement

The applicable law is Dutch law.

Any disputes between the Parties, arising with reference to the interpretation, performance, validity, effectiveness and termination of this Agreement and the Phase Contracts, shall be the exclusive competence of the District Court of The Hague, the Netherlands.

Article 9 — Entry into force

This Phase Contract shall enter into force on the date it is signed by the Parties hereto.

SIGNATURES

Same as for framework agreement: HWh signs for the PBG and — in case of joint tenders — the lead contractor for the group of contractors

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ANNEXES

Annex 1. Challenge brief : Use Cases & Test Sites

- Please note that the demonstration site polygons may be subject to change throughout phases 1 and 2, but they will still be limited to approximately 100x100 km in size.
- Please note also that the view map of sites can be updated.

Use Case 1: Urban Drought (North Europe)

Partners: Forum Virium Helsinki (Finland), City of Rotterdam (NL), City of Haarlem (NL) , STOWA (NL)

Stakeholders/sector: Urban management & development boards, asset managers, utility sector, national and local waterboards, national meteorological institute, national environmental institute

Description: Use Case 1 is focused on addressing urban water issues in the local city context, specifically in relation to the spatial water distribution of the soil-water system. This involves understanding how various human and external factors (like regional influences and climate conditions) affect water flow in the city. The main focus is on tackling water shortages caused by issues such as local water storage, drought due to lack of natural infiltration, obstruction/changes of groundwater level, quality, and infiltration (caused by eg. construction), groundwater over-extraction, and evapotranspiration, which lead to low groundwater levels. This in turn impacts infrastructure through subsidence (such as damage to streets, homes, and critical systems like utilities), exposure of acidic clay soils (sulphite rich clay), as well as environmental conditions, like heat islands and the health of green spaces and open water areas. The urban heat island effect in the Helsinki context is further exacerbated because the infrastructure is not equipped to deal with heat.

On the other hand, excess water from soil saturation in urban areas often results in flooding and instability in underground foundations, which can threaten infrastructure and other urban assets.

The primary goal is to improve urban water management and strengthen resilience against climate change by using smart technologies like satellites and data science. This includes

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continuously monitoring various aspects of the urban water cycle—such as soil moisture, groundwater levels, and surface water—to reduce risks like drought and damage to green spaces up to individual tree level, heat stress, subsidence, over-extraction of groundwater and flooding. Management of urban infrastructure requires spatially detailed data of the water **cycle because it is not natural uninterrupted water cycle any longer. In addition to daily** monitoring, the project aims to gather insights from long-term historical trends, refine and assess water-related measures, and develop spatial risk indicators for both water shortages and excess. The overall aim is to create more sustainable, resilient cities that are better equipped to face the challenges of a changing climate.

Main Service: Regular (and historical) monitoring and future prediction of groundwater, surface water and soil moisture, along with the development of risk indicators for water-related issues that cause instability in city infrastructure and green spaces, based on historical trends and future climate scenarios.

Specific Services: Monitoring infrastructure subsidence, heat islands, and the condition of green spaces/parks.

Lead partner FVH (FI):

View map of the specific test site in Helsinki: https://gaiavision.nl/PCP-WISE/location-specification/FvH/FvH.html

download data: https://gaiavision.nl/PCP-WISE/location-specification/FvH/Archive.zip

Supporting partner Rotterdam (NL):

view map: https://gaiavision.nl/PCP-WISE/location-specification/Rotterdam/Rotterdam.html

download data: https://gaiavision.nl/PCP-WISE/location-specification/Rotterdam/Archive.zip

Use Case 2: Urban Flood (North-Central Europe)

Partners: Slovak environment agency (Slovakia), Ministry of Interior of the Slovak Republic (MoI), Forum Virium Helsinki (Finland), Klimatorium (Denmark), THW (Germany)

Stakeholders: City of Bratislava, Urban management & development boards, Spišská Nová Ves District Office, Crisis organisations/civil protection, asset **managers**, utility sector, national and local waterboards, environmental managers, Slovak Hydrometeorological Institute (SHMI), City of Helsinki, Helsinki Region Environmental Services HSY, Finnish Environment Institute (Syke)

Description: Use Case 2 focuses on urban water challenges in the local city context, specifically in relation to water distribution affected by various human and external factors, such as seepage and rising sea levels. The main issue is dealing with water abundance caused by problems with local water storage, infiltration, and similar factors, which impact infrastructure like streets, homes, and critical systems such as utilities. The Bratislava location within a river basin adds additional direct and indirect influences on its water conditions.

Sudden high-water events—such as flooding from rivers, the sea, or heavy local rainfall—require proactive measures to reduce risks to city infrastructure, assets, and public housing.

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On the other hand, water shortages can also pose problems, including infrastructure damage and increased risk of wildfires in Central Europe. **A common goal** is to build better information and understanding about soil moisture and groundwater conditions before extreme events occur.

The primary goal is to improve urban water management and boost resilience against climate change by leveraging smart technologies like satellites and data science. This includes regular monitoring of various aspects of the urban water cycle, such as soil moisture, groundwater levels, and surface water, with a focus on mitigating risks, particularly those related to flooding, wildfires, and water quality issues. In addition to daily monitoring, the project aims to analyze historical trends over several decades, improve and evaluate measures, and develop evolving spatial risk assessment indicators for both water scarcity and abundance. The overarching objective is to create more sustainable and resilient cities that are better equipped to tackle the challenges posed by climate change.

In Bratislava, stakeholder report a lack of data on flash floods, and that drinking and irrigation water data exists, but is not publicly available. Similar to Use Case 1, concerns regarding the security of open-data sharing were raised. Furthermore, stakeholders raised issues concerning the lack of clear roles and responsibilities and ownership of data, as well as a general issue with a lack of good visualization and interpretation support.

Main Service: Regular (and historical) monitoring of soil moisture, groundwater, and surface water, along with the development of risk indicators for water-related and flood-related crises that may damage city infrastructure and the surrounding rural area.

Additionally, long-term monitoring of water shortages and excess—based on past (spatio-temporal) trends and future climate scenarios for both the local and surrounding regions—is essential to develop sector-specific risk indicators.

Specific Service: Crisis management intelligence, including daily spatial risk indicators and local information, presented in a user-friendly viewer that is linked to existing crisis response procedures**.**

Test Site Location:

Lead Partner SEA (Slovakia)

view map: The lower left and middle site are test sites and the upper right is demonstration) https://gaiavision.nl/PCP-WISE/location-specification/SEA/SEA.html -

download data: https://gaiavision.nl/PCP-WISE/location-specification/SEA/Archive.zip

Supporting partner THW (Germany)

Oldenburg view map: https://gaiavision.nl/PCP-WISE/location-specification/Oldenburg/Oldenburg.html

download data: https://gaiavision.nl/PCP-WISE/location-specification/Oldenburg/Archive.zip

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Use Case 3: Rural Drought (Northwest-Central Europe)

Partners: BENEGO (Belgium, Netherlands), Ministry of Environment SEA (Slovakia) , Ministry of Interior of **the** Slovak Republic (MoI), STOWA (NL)

Stakeholders: crisis management organizations/civil protection, national and local water authorities, municipalities and provinces, drinking water companies, agricultural sector representatives, land management organizations, private landowners, forest managers, fire brigade, volunteers, tourists

Description: Use Case 3 addresses rural challenges related to extreme local climate variability, including periods of intense rainfall and prolonged drought in Northwest and Central Europe. These climate extremes affect seasonal natural and agricultural processes, leading to incidents such as wildfires and reduced or failed crop yields. Unlike Southern Europe, where water scarcity is often structural, the challenges in this region are primarily related to uneven water distribution, which varies from year to year. There is a shared interest in building knowledge about soil and groundwater conditions in advance of extreme events.

The primary objective is to support water management and enhance resilience to climate change through smart technologies, such as satellite data and data science. This involves continuous monitoring of various elements of the rural water cycle, including soil moisture, groundwater levels, surface water, and evapotranspiration (through soil and vegetation/biomass analysis). The goal is to anticipate and mitigate risks associated with rural drought, including wildfires and losses in agricultural production and ecosystem biodiversity.

In addition to day-to-day monitoring, it is crucial to leverage long-term historical data to improve and assess interventions using evolving spatial risk indicators that highlight both water shortages and surpluses. The overarching aim is to foster more resilient rural ecosystems and stable agricultural outputs, thereby increasing preparedness for the impacts of climate change.

Main Service: Continuous (and historical) monitoring of soil moisture and groundwater, alongside the development of risk indicators for drought-related issues that may trigger rapid-onset crises affecting ecosystems and agriculture.

In addition to this long-term climate-based monitoring—grounded in historical spatio-temporal trends and applied to future local and regional river basin climate scenarios—it is essential to develop sector-specific risk indicators for nature conservation and agriculture.

Specific Service: Crisis intelligence on wildfires through daily and spatially explicit risk indicators, supported by both local and regional data and integrated cross border datasets. This service will be integrated into an intuitive viewer for end-users and aligned with existing crisis response protocols. Additional components include assessments of water availability and biomass (as fire fuel) for both natural and agricultural vegetation.

Test Site Location:

Lead Partner Grenspark Kalmthoutse Heide

view map: https://gaiavision.nl/PCP-WISE/location-specification/KHH/KHH.html

download data: https://gaiavision.nl/PCP-WISE/location-specification/KHH/Archive.zip

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Use Case 4: Rural Drought & Flooding (Southern Europe)

Partners: IEEC/ICGC (Spain), Region of Central Macedonia (Greece)

Stakeholders: Crisis organisations/civil protection, national and local waterboards, agriculture and environmental managers, regional meteorological service, local hydrologists and agronomists

Description: Use Case 4 focuses on rural challenges caused by extreme local climate variations, including intense rainfall and prolonged droughts in Southern European regions. These climate extremes significantly impact seasonal ecosystem processes, particularly in agriculture and forestry, affecting production, biodiversity, and wildfire risks due to changes in biomass, fuel loads, and soil moisture.

The ongoing decline in water availability is creating increasing conflicts over groundwater and surface water use among agriculture, natural ecosystems, industries, and public consumption. Reduced soil moisture and forest degradation further accelerate wildfire spread and make ecosystem recovery—such as addressing soil degradation and erosion—more difficult. At the same time, extreme rainfall events are becoming more unpredictable, heightening flood risks in densely populated coastal areas and river basins with limited water management capacity. These dual challenges highlight the urgent need for improved water management strategies and climate resilience planning.

A key objective is to identify, monitor, and map soil moisture (both surface and subsurface), root zone conditions, and groundwater levels (including aquifer resources). These indicators are essential for detecting environmental changes, assessing their impact, and evaluating soil capacity and forest stress levels. This approach supports real-time (daily) monitoring and enables the development of effective mitigation and adaptation policies based on weather patterns and climate variability. Additionally, since the rural water balance is primarily driven by evapotranspiration, regular monitoring of soil conditions and vegetation biomass is crucial.

Stakeholders from Catalunya reported a lack of data on the actual consumption of groundwater from urban areas and agriculture, evapotranspiration and a precise knowledge about the impact of groundwater status on coastal environments.

Effective risk management requires assessing and mitigating climate hazards through proactive strategies. This includes reducing vulnerabilities, limiting exposure, and addressing potential threats before they escalate—key elements in disaster prevention.

Beyond real-time monitoring, analysing long-term trends over past decades and continuously improving spatial risk assessment indicators for both water scarcity and excess is vital. The overarching goal is to develop more climate-resilient rural ecosystems and ensure stable agricultural production in the face of changing climate conditions.

Main Services:

- Continuous monitoring of soil moisture (surface, subsurface, and root zone), groundwater, and evapotranspiration levels.

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- Integration of smart meteorological data and Earth observation datasets (spectral analysis) to develop risk indicators for drought-related crises affecting agriculture and ecosystems.
- Long-term climate monitoring based on past spatio-temporal trends to forecast future climate scenarios and assess risks in different sectors (agriculture, forestry, and natural ecosystems).

Specific Services:

- Water availability and biomass/production monitoring for both natural and agricultural vegetation.
- Daily wildfire and flood risk intelligence, using spatial risk indicators combined with local and regional data, presented in a user-friendly viewer that integrates existing crisis management procedures.
- High-resolution heat balance monitoring, particularly for wildfire prediction and post-fire forest health assessments (e.g., detecting reduced resilience against diseases).
- Monitoring of river basin streambed changes to track long-term hydrological shifts.
- Assessment of drought impacts on agricultural production.
- Well-structured and organized datasets.

Test Site Location:

General : Catalunya Region (https://maps.app.goo.gl/M6znxAHGY3KKzu496)

Lead Partner IEEC and ICGC

view map: https://gaiavision.nl/PCP-WISE/location-specification/IEEC/IEEC.html

download data: https://gaiavision.nl/PCP-WISE/location-specification/IEEC/Archive.zip

Supporting partner RCM

view map: https://gaiavision.nl/PCP-WISE/location-specification/RCM/RCM.html

download data: https://gaiavision.nl/PCP-WISE/location-specification/RCM/Archive.zip

Use Case 5: Rural Drought & Flooding (Northern Europe)

Partners: Klimatorium (Denmark), THW (Germany), STOWA (supported by HDSR) (NL)

Stakeholders: HDSR Water authority (The Netherlands), National and local waterboards, Utility sector, agriculture/nature managers, Crisis organisations/civil protection, small rural city managers, agricultural union, national climate data agency, climate NGOs, agricultural knowledge centre

Description: Use Case 5 focuses on rural challenges caused by extreme fluctuations in groundwater levels—both excessively high and low (also known as shallow groundwater conditions). These extremes create various land-use problems and impact city infrastructure, utilities, and crisis response efforts**.**

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A major concern is that fluctuating soil moisture levels cause seasonal and long-term shifts in the ground surface, leading to both subsidence and uplift. These height variations—occurring over seasons (hysteresis) and over decades (gradual land subsidence)—can result in structural damage to rural and urban infrastructure. Subsidence in Denmark reaches 6-7mm per year, in the harbour of Lemvig (test site) up to 20mm per year are observed. In particular, extreme moisture conditions in peat-rich soils (often mixed with clay or sand) can trigger irreversible organic oxidation, increasing the risk of underground peat fires. Additionally, high groundwater levels can cause seepage into wastewater systems, overloading sewers and leading to significant operational challenges. Rising shallow groundwater has increased by over a meter since the 1980s, causing infrastructural damage with high financial burdens, as a third of the Danish public assets lies in pipe infrastructure - these investments need to be secured and monitored in a smart way.

Key Objectives:

- Identifying, monitoring, and mapping soil moisture (both surface and subsurface), root zone conditions, and groundwater levels to understand the seasonal and long-term effects of extreme soil moisture fluctuations and surface water dynamics.
- Supporting real-time (daily) monitoring and developing adaptive and reactive mitigation strategies based on weather patterns and climate variability.
- Assessing land use and biomass changes in relation to evapotranspiration, which plays a critical role in the rural water balance.

Risk Management & Climate Resilience:

In extreme scenarios—such as underground peat fires or severe flooding—effective risk management requires proactive measures, including reducing vulnerabilities, limiting exposure, and addressing potential threats before they escalate. This contributes to better preparedness and crisis response capabilities.

Beyond real-time monitoring, analysing historical trends over multiple decades is essential for improving risk assessment and evaluating long-term mitigation strategies. Developing spatial risk indicators for both water scarcity and excess is crucial to ensuring resilient rural ecosystems and stable agricultural production in the face of climate change.

Main Services:

- Continuous monitoring of root zone soil moisture, vegetation health, groundwater levels (including evapotranspiration), precipitation, and surface water conditions using smart meteorological (spatio-temporal) inputs.
- Development of risk indicators for drought and flood-related crises affecting agriculture, ecosystems, and rural infrastructure.
- Long-term climate monitoring to analyse historical trends and forecast future water availability in local and regional river basin areas, helping to create sector-specific risk indicators (agriculture, nature conservation, and rural infrastructure).

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Specific Services:

- Long-term rural subsidence monitoring (over decades) to track land stability. Better integration of Copernicus EGMS height change data for this purpose. There is an EGMS measurement station in Lemvig harbour.
- Sector-based risk indicator monitoring for both slow-onset (long-term) and fast-onset (emergency) events such as fires and floods.
- Crisis intelligence information products that provide real-time, spatial risk indicators and local insights, integrated into a user-friendly viewer that supports existing crisis response procedures.

Test Site Location:

Lead Partner : Klimatorium (Denmark)

Klimatariom view map: https://gaiavision.nl/PCP-WISE/location-specification/Klimatariom/Klimatariom.html

download data: https://gaiavision.nl/PCP-WISE/location-specification/Klimatariom/Archive.zip

Supporting Partner HDSR (NL)

Central Nederlands HDSR/Zegveld (https://maps.app.goo.gl/Fs4DBEsFziJHM2Cr6)

HDSR view map: https://gaiavision.nl/PCP-WISE/location-specification/HDSR/HDSR.html

download data: https://gaiavision.nl/PCP-WISE/location-specification/HDSR/Archive.zip

The testing in these sites is subject to benchmark, verification and validation by PCP Wise consortia members.

Partner sites for demonstrations

Additionally, there are four partner sites which are not lead test sites (and therefore no validation sites) but are partners in the five use cases. These sites are:

- Region of Central Macedonia (GR)
- Rotterdam (NL)
- HDSR (NL)
- Oldenburg (DE)

Additional information on the available data sets for the demonstration sites will be made available in the upcoming PCP Wise phases.

1. The contractor must demonstrate during Phase 3, the solutions developed in phase 2, in these four partner sites to showcase the scalability of the solution.
   The contractors must demonstrate that the PCP WISE prototypes/products can be applied to the partner sites but without any cross-validation via in-situ/on-site data (e.g. from devices that measure actual soil humidity levels). The latter will only be done for the five lead test sites as part of the testing and validation process. The final output could be a

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presentation of the product, but applied to the polygons of Oldenburg, Rotterdam, HDSR and Region of Central Macedonia and based on their respective precipitation / evapotranspiration / etc data.
These demonstrations in these partner sites could be subject to benchmark & (limited) verification and (limited) validation by PCP WISE consortia members and it will it be part of the satisfactory/successful evaluation of Phase 3. See section 5.5. of the RF (TD1).

2. The contractor can – voluntarily - develop in phase 2 and demonstrate in phase 3 the offered additional (nice- to have) functionalities (see section 2.1.2 figure 4) applied for either of the relevant 5 test sites in these four partner sites. These demonstrations in these sites are not subject to benchmark, verification and validation by PCP WISE consortia members. Neither will it be part of the satisfactory/successful evaluation of Phase 3. See section 5.5. of the RF (TD1).

The demonstrations in partner sites are interesting for the tenderers of PCP Wise, because it will allow Contractors to showcase to potential customers that their solution works in different countries/environments and is scalable.

**It is possible that additional sites are included in Phase 3 (for demonstration purposes only and to be tackled on a voluntary basis only). The costs of these demonstrations could be covered by potential leftover budget from previous PCP Wise phases (i.e. it could be added to the tenderer´s estimated budget for phase 3 in TD9. Financial Form). The PBG has discretion to decide how to allocate leftover budget, if any. In any case, price variations will not exceed 10% of the originally estimated budget (by the contractor in TD9. Financial Form) for Phase 3.*

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Annex 2. Information about the PBG

HET WATERSCHAPSHUIS (hwh) is a connecting management organization available for all 21 water boards in the Netherlands that have jointly established the Joint Regulations for the Water Board House to collaborate on programs and projects. The Water Board House promotes water boards working together on the data-driven water board of the future to achieve joint benefits. hwh ensures the purchase and contract management of joint information facilities and data. hwh also supports water boards with digital changes and their consequences within the work of water boards.

Home | Het Waterschapshuis

STOWA (Acronym for Foundation for Applied Water Research) is the centre of expertise of the regional water managers (the Dutch Water Authorities). Its mission is to develop, collect, distribute and implement applied knowledge, essential for an effective and efficient water management. Topics of expertise range from applied technical, scientific to administrative-legal, health and social science.

English - Foundation for Applied Water Research STOWA | STOWA

MINISTERSTVO VNUTRA SLOVENSKEJ REPUBLIKY (MoI) is the Ministry of Interior of the Slovak Republic. It is a central body of state administration for protecting the constitutional system, public order, security of persons and property, protection and administration of the state's borders, the safety and fluency of road traffic, for issues related weapons and ammunition, private security services, the entry to the territory of the Slovak Republic and the stay of foreigners in its territory, identity cards, travel documents and driving licences, refugees and transmigrants, for the registration of population, for the Police Force and the Fire Fighting and Rescuing Corps.

Ministerstvo vnútra Slovenskej republiky (minv.sk)

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Forum Virium Helsinki?

GEMEENTE HAARLEM (CITY OF HAARLEM) is a city and municipality in the Netherlands. It is the capital of the province of North Holland. Haarle m is situated at the northern edge of the Randstad, one of the more populated metropolitan areas in Europe; it is also part of the Amsterdam metropolitan area. Haarlem had a population of 162,543 in 2021.

Home | Gemeente Haarlem

BUNDESANSTALT TECHNISCHES HILFSWERK (THW) is the German Federal Agency for Technical Relief. THW is the federal government's emergency organization run by volunteers and is part of the Federal Ministry of the Interior. The THW follows the legal mandate laid down in the THW Act. Its tasks include technical assistance in civil protection, local hazard prevention and the implementation of foreign missions on behalf of the federal government.

THW - Startseite

REGION OF CENTRAL MACEDONIA (RCM) is the largest and second most populous region in Greece. It is administratively a secondary governmental organization and covers the central part of Macedonia, with the exception of the Mount Athos peninsula.

Region of Central Macedonia (enpe.gr)

FORENINGEN KLIMATORIUM (KLIMATORIUM) is an innovative climate center located on the west coast of Denmark. It is the meeting point that brings together civil society, authorities, businesses and educational institutions to discuss lifestyle, prevention and adaptation to the climate challenges we face. Climatorium's mission is, through collaboration between private and public companies, knowledge institutions and civil society, to develop new solutions to current and future challenges in the areas: Coastal Climate Challenges, Green Energy, Circular

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Economy, Water and the Environment. Solutions that can be used and disseminated locally, regionally, nationally and internationally.

Om Klimatorium - KLIMATORIUM

BENEGO – GRENSPARK KALMTHOUTSE HEIDE promotes cross-border cooperation where it counts most: at local level, close to the citizen. 21 border municipalities in the provinces of Antwerp and North Brabant are doing something about it. Climate change, water management, migration flows, organized crime, technological innovation, are particularly important in the region. The Kalmthoutse Heide has developed from wasteland into a nature reserve on both sides of the border. Its management was very dispersed and fragmented. Around 2000 it became clear that a joint approach was necessary. Benego acted as a cross-border legal entity to make this possible. This is how Grenspark Kalmthoutse Heide was created in 2001.

Grenspark Kalmthoutse Heide - BENEGO

INSTITUT CARTOGRAFIC I GEOLOGIC DE CATALUNYA (ICGC) (SP) is a public entity of the Generalitat de Catalunya whose purpose is to carry out the technical tasks of developing cartographic, geodetical and geological information within the scope of the powers of the Generalitat.

Inici. Institut Cartogràfic i Geològic de Catalunya (icgc.cat)

CITY OF ROTTERDAM (NL) is a metropolitan municipality in the Dutch province of South Holland and has 671,125 inhabitants (January 1, 2024) according to the Central Bureau of Statistics (CBS) on an area of 319.35 km² (of which more than a third is water). This makes the municipality the second largest municipality in the Netherlands in terms of inhabitants. The municipality is part of the Rotterdam The Hague Metropolitan Region.

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Homepage | Rotterdam.nl

SLOVENSKA AGENTURA ZIVOTNEHO PROSTREDIA (SLOVAK ENVIRONMENTAL AGENCY) (SEA) (SK) is a professional organization of the Ministry of the Environment of the Slovak Republic (MoE SR) with a national scope, focused on caring for the environment and creating the landscape in accordance with the principles of sustainable development. The Slovak Environment Agency was awarded quality management system and environmental management system certificates according to ISO 9001 and 14001 standards in 2005.

Slovenská agentúra životného prostredia | SAŽP (sazp.sk)

Please note that members of the PBG reserve their right to decide on their roles and participation in PCP WISE.

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Annex 3. Pre-existing rights of the PBG

The PBG does not have relevant pre-existing rights other than the data sets mentioned under Annex 9. Additional pre-existing rights might be included during Phase 2 and 3.

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Annex 4. List of environmental, social and labour law obligations established by EU Law, national legislation, collective agreements which bids must comply with

ILO Convention 87 on Freedom of Association and the Protection of the Right to Organise
ILO Convention 98 on the Right to Organise and Collective Bargaining
ILO Convention 105 on the Abolition of Forced Labour
ILO Convention 138 on Minimum Age
ILO Convention 111 on Discrimination (Employment and Occupation)
ILO Convention 100 on Equal Remuneration
ILO Convention 182 on Worst Forms of Child Labour
Vienna Convention for the protection of the Ozone Layer and its Montreal Protocol on substances that deplete the Ozone Layer
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel Convention)
Stockholm Convention on Persistent Organic Pollutants (Stockholm POPs Convention)
Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (UNEP/FAO) (The PIC Convention) Rotterdam, 10 September 1998, and its 3 regional Protocols

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Annex 5. OMC report

Please see here the full report including annexes.

https://pcp-wise.eu/wp-content/uploads/2025/07/PCP-WISE-Report-on-the-result-of-the-OMC.pdf

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Annex 6. Contract Notice e-form

[Link to Contract Notice on the TED]

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Annex 7. Evaluation Criteria of the Test Plan

1. General Framework of Evaluation

In evaluating the EO-based hydrological services proposed under the PCP WISE initiative, a structured, multi-phase validation framework is applied. This framework is built upon three core validation dimensions: benchmarking, verification, and validation as shown in (Figure 11). Each dimension addresses the service quality from a distinct but complementary perspective:

- Step I – Benchmarking: Comparison with a physically-based model, STEMMUS-SCOPE, at well-instrumented reference sites using harmonized historical and forecast forcing data.
- Step II – Verification: Cross-comparison with validated satellite products and local or regional hydrological models to assess consistency and reproducibility.
- Step III – Validation: Direct comparison with in-situ hydrological observations from established local networks obtained from the use cases of PCP WISE.

While each dimension is aligned with a specific phase of the PCP WISE procurement process, overlap between phases is intentional and essential. This phased layering enhances continuity, facilitates early detection of performance gaps, and increases confidence in service robustness. For example, a service must first demonstrate reliable performance in the controlled Benchmarking stage (Step I) before being advanced to full-scale field-level Validation (Step III). The intermediate Verification stage (Step II) serves as a refinement bridge, strengthening the evidence base across multiple spatial scales and helping to identify the most promising solutions for further development and deployment.

To ensure that the services are not only accurate but also usable and relevant, their performance is evaluated using a dual set of Goodness-of-Fit Indicators (GoFIs):

- Accuracy GoFIs: Quantitative statistical metrics (e.g., RMSE, bias, correlation) comparing service outputs against reference datasets.
- Adequacy GoFIs: Qualitative and semi-quantitative measures assessing input data completeness, temporal coverage, latency, update frequency, and alignment with user needs.

These two GoFIs provide a comprehensive and balanced perspective on service performance, capturing both scientific fidelity and operational utility. To unify these complementary indicators, PCP WISE adopts a universal evaluation methodology, the WISE-FIT indicator, developed by Salama (2024)[24]. This approach harmonizes both quantitative and qualitative GoFIs into a single, interpretable metric expressed as a percentage, offering a clear and holistic measure of overall service quality.

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Together, these GoFIs underpin a robust, multidimensional evaluation process that supports transparent decision-making and facilitates the identification of EO-based services that are technically sound, operationally viable, and ready for deployment.

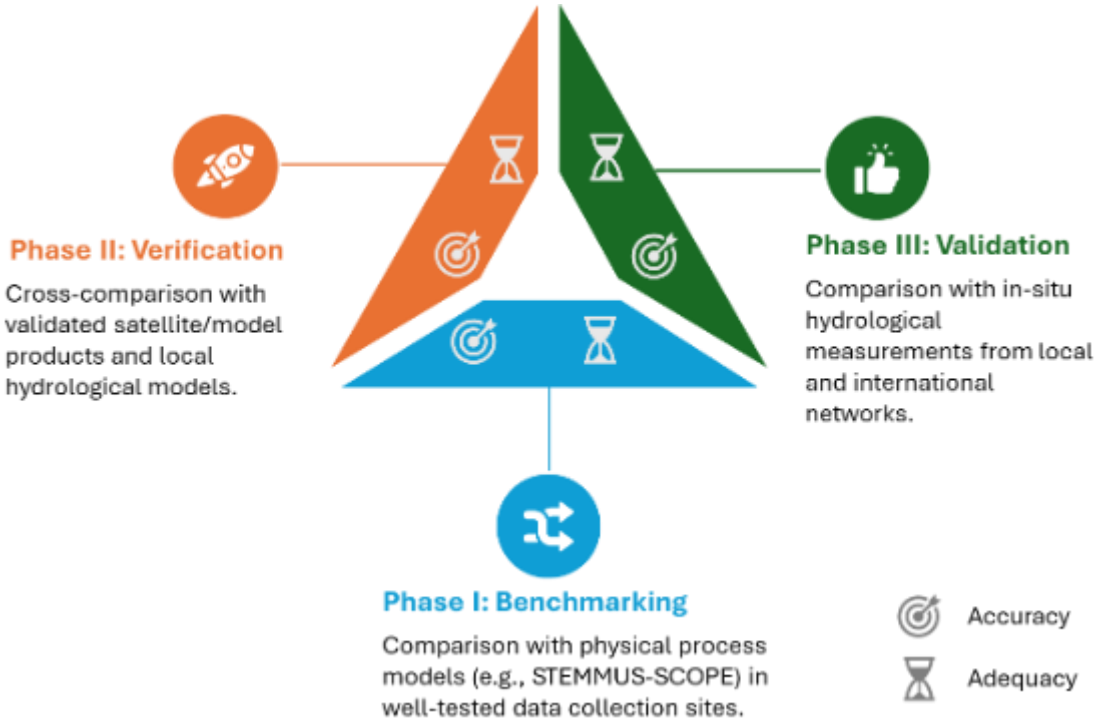

Figure 11: Evaluation framework of PCP WISE: The three core validation dimensions—Benchmarking, Verification, and Validation. Each assesses both the accuracy and adequacy of the service, which are then integrated into the unified WISE-FIT metric.

2. Phase I: Benchmarking Requirements and Shared Criteria for Subsequent Phases

This section outlines the specific technical and operational requirements that contractors must meet at the end of Phase I of the evaluation process. The focus of Phase I is to benchmark the proposed EO-based hydrological service against the STEMMUS-SCOPE model using standardized hindcasting and forecasting protocols. The benchmarking process is designed to assess how well the service reproduces key hydrological and biophysical processes across diverse European reference sites under both retrospective and predictive scenarios.

Contractors are expected to demonstrate the scientific credibility, technical maturity, usability, and operational readiness of their service across 14 key requirement categories. These include input data quality, physical soundness of outputs, reliability and transparency of the modelling workflow, performance under operational constraints, and compliance with interoperability and privacy standards.

A critical element of Phase I is the provision and use of input and forcing datasets, output reproducibility, and alignment with established validation protocols. Services using machine

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learning must provide clear documentation of training, calibration, and validation steps. All outputs must be directly comparable to STEMMUS-SCOPE simulations and formatted to allow for cross-site performance evaluation.

Importantly, contractors must also articulate their current TRL and present a realistic development roadmap toward achieving TRL 7-8 by the end of Phase III, as the PCP WISE process is designed to guide promising solutions from early validation through to near-commercial deployment.

Successful completion of Step I will serve as a prerequisite for participation in subsequent phases. Accordingly, clear, evidence-based responses to each requirement are essential for evaluation and progression. It should be noted that the criteria outlined in items 3 through 14 will also be applied in Phases II and III.

1. **General description of the proposed service**
    - Provide a concise overview of the EO-based hydrological service.
    - Clearly state the core functionalities, targeted end-users, and intended use cases.
    - Describe how the service aligns with the PCP WISE context and objectives.
2. **Technical capacity & benchmarking readiness**
    - Demonstrate the ability to perform hindcasting simulations using the European subset of the provided reference dataset (see Figure 10 and Wang et al., 2025: https://www.nature.com/articles/s41597-025-05386-x).
    - If your approach uses machine learning techniques, you must clearly describe the training and validation strategy, including details on how the model was calibrated using independent data. The goal is to reproduce soil–plant–atmosphere interactions across historical reference sites without site-specific tuning.
    - Service providers must deliver the full set of simulation outputs for comparison against STEMMUS-SCOPE benchmarks. These include, at a minimum:
        - Soil moisture (kg/m^2)
        - Soil temperature (°C)
        - Evapotranspiration (mm/day)
        - Gross Primary Productivity (GPP) ($\mu mol\ CO_2/m^2/s$)
        - Latent, sensible and ground heat fluxes (W/m^2)
    - You must demonstrate the capability to conduct forecasting simulations using your own supplied meteorological and biophysical forcing datasets. You are required to provide these same input datasets, clearly specifying their sources, formats, spatial and temporal resolutions—as part of your proposal submission.
3. **Input data quality and management**
    - Describe the input datasets used by the service:
    - Temporal and spatial resolution and coverage

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- Completeness and percentage of valid observations
- Bias correction and gap-filling procedures
- Clarify if input datasets are openly accessible or available to stakeholders upon request.
- Confirm ability to accept standardized external forcing datasets (as listed in the protocol: meteorological, vegetation, soil, etc.).

4. **Output products and performance metrics**
   - List all output variables (e.g., soil moisture, evapotranspiration, Gross Primary production (GPP), heat fluxes).
   - Explain how outputs are validated (e.g., against in-situ data, other models).
   - Provide baseline accuracy estimates and confidence intervals where applicable.
   - Detail how outputs are evaluated against Goodness-of-Fit Indicators (GoFIs).
5. **Transparency and modelling workflow**
   - Describe the model architecture and workflow.
   - Confirm if the modelling chain is open-source or provide justification if proprietary.
   - Submit documentation explaining model assumptions, calibration, and error handling.
6. **Service reliability and operational fitness**
   - Specify service latency (response time from data ingestion to output delivery).
   - State data update frequency (e.g., hourly, daily).
   - Indicate system uptime statistics (e.g., availability % over the past 6–12 months).
   - Explain how the system handles extreme weather conditions or unusual input values.
7. **Usability and user interaction**
   - Demonstrate how the service interface supports:
   - Different user types (technical and non-technical)
   - Multilingual support
   - Accessibility standards (e.g., for users with disabilities)
   - Describe visualization capabilities (e.g., dashboards, interactive maps).
   - Provide a sample user manual or user interface walkthrough.
8. **Interoperability and standards compliance**
   - Confirm data formats (e.g., GeoTIFF, NetCDF, GeoJSON, GeoPackage/Shapefile for vectors).

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- Confirm use of OGC standards (e.g., WMS, WFS, WCS).
- Provide metadata in ISO 19115 or INSPIRE-compliant formats.

9. **Privacy, security, and ethics**
   - Demonstrate GDPR compliance, especially in handling sensitive data.
   - Describe data anonymization and aggregation strategies.
   - Confirm secure access protocols (e.g., HTTPS, role-based access).
   - If AI is used, explain model interpretability and measures to mitigate bias.
10. **Integration, scalability, and API support**
   - Confirm availability of APIs (e.g., RESTful) for integration into third-party platforms.
   - Demonstrate scalability across spatial (plot to regional) and temporal scales.
   - Show previous examples of integration into operational systems, if any
11. **Decision support and stakeholder engagement**
   - Explain how outputs support decision-making (e.g., alerts, reports, scenario analysis).
   - Describe the mechanisms for stakeholder feedback collection and service adaptation.
   - Include scenario modelling capabilities (e.g., climate or land use changes).
12. **Deliverables and timeline**
   - Provide a detailed work plan, including:
   - Timeline for hindcasting and forecasting tasks
   - Milestones for integration with benchmarking datasets
   - Delivery schedule of outputs for each phase
13. **Evaluation criteria compliance matrix**
   - Include a compliance matrix summarizing how each requirement is addressed in the proposal, referencing the corresponding section in the technical document.
14. **Technology readiness and roadmap to TRL 9**
   - Clearly state the current Technology Readiness Level (TRL) of the proposed service at the start of Phase I.
   - Provide a development roadmap describing how the service will mature through Phases II and III, culminating in a near-commercial or commercial-ready solution (TRL 8–9).
   - Explain the incremental improvements planned for each phase (e.g., integration of user feedback, automated workflows, scalability testing, UI/UX enhancements, EO data assimilation).

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- Describe any planned operational deployments or pilot tests with end-users during Phases II and III.
- Specify the key performance, reliability, and usability milestones that will be achieved to justify TRL progression at each phase.
- Highlight any barriers to achieving TRL 9 and how they will be addressed (e.g., technical limitations, market validation, certification needs).

3. Acceptance Procedure

To ensure transparent and progressive evaluation of EO-hydrological services, the PCP-WISE framework applies the three validation dimensions defined in the sections above—benchmarking, verification, and validation—in a phase-adaptive manner. While each phase emphasises specific dimensions, benchmarking, verification, and validation are not strictly phase-bound and may overlap (e.g. early validation in Phase 2 or verification activities continuing in Phase 3). The criteria enumerated as items 3 through 14 in the aforementioned section will likewise be applied to evaluate the accuracy and adequacy of the proposed service for advancement to Phases II and III, as outlined below. The approach is differentiated for rural and urban contexts, reflecting their distinct hydrological processes and reference models.

Regarding Phase 1 → 2 (Design to Prototype)

At the design stage, services are assessed primarily on adequacy and scientific plausibility. Accuracy is considered at the conceptual level, as no prototype outputs are yet available.

Rural evaluation mode: Benchmarking of design concepts against state-of-the-art biophysical models and datasets (e.g., STEMMUS-SCOPE for coupled soil–plant–atmosphere processes; ERA5-Land; EFAS; ESA CCI soil moisture; GPM precipitation).

Urban evaluation mode: Benchmarking of design concepts against urban hydrological and land–surface models (e.g., Urban Flood Model, WRF-Hydro with urban modules, Town Energy Balance), supported by EO datasets such as Sentinel-1 (surface water), Sentinel-2 (impervious cover), and Copernicus Urban Atlas.

Scoring weights: Accuracy (30 points) and Adequacy (70 points).

Decision rule: ≥20/30 in Accuracy and ≥50/70 in Adequacy, i.e. WISEFIT ≥70/100 overall.

Phase 2 → 3 (Prototype to Validation)

In Phase 2, prototypes are quantitatively tested against retrospective datasets. Both accuracy and adequacy are measured using Goodness-of-Fit (GoF) indicators.

Rural evaluation mode: Verification of prototypes against hindcasting simulations from STEMMUS-SCOPE and reference datasets (e.g., ERA5-Land, ESA CCI).

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Urban evaluation mode: Verification of prototypes against observed urban runoff and flood events, using EO-derived flood extent (Sentinel-1 SAR), EFAS/ECMWF flood warnings, and in situ municipal flood gauges.

Verification metrics:

Rural: NSE, RMSE, bias, R^2 for soil moisture and evapotranspiration time series.

Urban: Hit Rate, False Alarm Ratio (FAR), Critical Success Index (CSI) for flood detection; NSE and RMSE for runoff volumes.

Scoring weights: Accuracy (45 points) and Adequacy (55 points).

Decision rule: ≥27/45 in Accuracy and ≥44/55 in Adequacy, i.e. WISEFIT≥71/100 overall.

Outcome: Two consortia selected for Phase 3.

Phase 3 (Validation & Pre-operationalisation)

In Phase 3, services are validated in near-operational environments, focusing on robustness, scalability, and end-user integration.

Rural evaluation mode: Validation under operational-like conditions using real-time forecasting with STEMMUS-SCOPE as scientific benchmark and cross-comparison against independent in situ datasets.

Urban evaluation mode: Validation under operational-like conditions using real-time flood forecasting and drainage system integration, benchmarked against Copernicus Emergency Management Service (EMS), EFAS, and historical extreme events.

Operational adequacy focus: Interoperability, scalability, transparency, ethics, end-user decision support, and roadmap towards TRL 9.

Scoring weights: Accuracy (50 points) and Adequacy (50 points).

Decision rule: ≥50% in each dimension and ≥75/100 overall.

Outcome: Final validation of pre-operational EO-hydrological services.

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Annex 8. PCP WISE Requirements

Each requirement will identify by a unique ID and name. The requirements are categorized as follows:

1. **Functional Requirements:** These describe the core actions the solution must perform, aligned with the project's primary challenges and expected system behaviour.
2. **Technical Requirements:** Technical requirements define the specific implementation to fulfil functional or non-functional requirements. They outline the technologies, protocols, standards, system architecture etc. that must be followed to ensure the overall quality of the developed solutions. In layman's terms: they describe not what to implement, but how to implement it.
3. **Contract Performance Requirements:** These requirements cover operational and management considerations, including prototype deployment and feedback mechanisms from pilot activities.

1. Functional Requirements

General

ID	Name	Short Description
FRGE 1.1.	Prediction Error Estimate	All information products should be accompanied with a prediction error estimate, preferably design based and if not possible model based
FRGE 1.2	Storage	All information products and Risk Indicators shall be stored at the contractor's premises or designated sites. The contractor shall ensure that end users receive the relevant data at the start of each day.
FRGE 1.3	Viewer (GUI)	A viewer (GUI) and related to that the API should be provided to present/disclose all WISE products to the 5 groups. An option could be to combine it with the opensource (hydrological) presentation suite of iMOD (related to MODFLOW-6). Alternatives can be used/proposed. Please refer for more information on the Data Viewer requirements (FRDV1.1.-FRDV1.31)
FRGE 1.4	Access to information	All generated information products and risk indicators should be distributed, without any restriction, to other partners of the involved users & buyers of the Consortium.
FRGE 1.5.	3 day Hind- & forecast of WISE products	All urban regular (FRUR1.1.-FRUR1.6) and rural regular (FRRR1.2 -FRRR 1.6) and All urban crisis (FRUCR 1.2) and rural crisis (FRRCR 1.2) shall 3day hind- & forecast of WISE products based on 3day hind & forecast of ECMWF meteorological forecast
FRGE 1.6	Delivery through webservice/API	All information products & risk Indicators should be delivered using a webservice/API on a daily basis

Data Viewer

ID	Name	Short Description
	Management Component	**The viewer shall be used by technical and non technical people per sector ranging from water authorities, nature/forest-, city-, crisis-, climate-, etc. entities**

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FRDV 1.1	Data set management.	The application shall provide functions to manage datasets based on their technical characteristics, including: - Access interface - License - Provider - Data quality - Data type
FRDV 1.2	API Management	The application shall support management of remote APIs, such as REST APIs, in accordance with INSPIRE and OGC standards.
FRDV 1.3	Technical Functions	The application shall support full CRUD operations (create, read, update, delete) for datasets and their metadata.
FRDV 1.4	Data set search	The application shall provide search functionalities for all managed datasets using filters such as category, name, and description.
FRDV 1.6.	Data set filtering	The application shall support filtering of datasets based on their technical properties.
FRDV 1.7.	Data set filtering view	The results of filtered datasets shall be displayed in a list view.
FRDV 1.8	Dataset meta data filtering.	The filtering functionality shall allow viewing of detailed metadata for each API.
FRDV 1.9	Visualization	Selected datasets shall be transferable to and visualized in the viewer component.
	Workspace Component	**The workspace component comprises both map and table component.**
FRDV 1.10	Workspaces	The application should support creation and management of custom workspaces.
FRDV 1.11	Colour configuration	Users shall be able to assign colours and display styles to individual datasets to illustrate risk scenarios or use-case-specific visualizations.
FRDV 1.12	Risk classification	The application shall allow users to define rules that determine when a dataset is visualized how, based on rules (e.g., water level > 3m = high risk).
FRDV 1.13	Workspaces	The application shall support creation of multiple workspaces.
FRDV 1.14	Workspace import and export	Workspaces shall be exportable and importable.
	Map Component	**The base representation of the data viewer shall be a map.**
FRDV 1.15	Map data	All added datasets shall be displayed on the map according to their geospatial location.
FRDV 1.16	Map based visualization	The basic representation of data should be map-based.
FRDV 1.17	Time Slider Component	The application shall include a temporal visualization feature allowing users to view the geotemporal development of datasets via time-parameter manipulation (time-slider component).
FRDV 1.18	Point-based POIs	Points of interest (POIs) from datasets shall be represented on the map by their geospatial location.
FRDV 1.19	Geometry of POIs	POIs with spatial extent shall be visualized with their geometry on the map.
FRDV 1.20	POI popup	Clicking on a POI shall display a popup containing detailed information about the POI's properties.
FRDV 1.21	Table integration	The map shall integrate with a tabular component listing all POIs currently displayed.
FRDV 1.22	Legend	The map shall include a legend describing all visual elements currently displayed.

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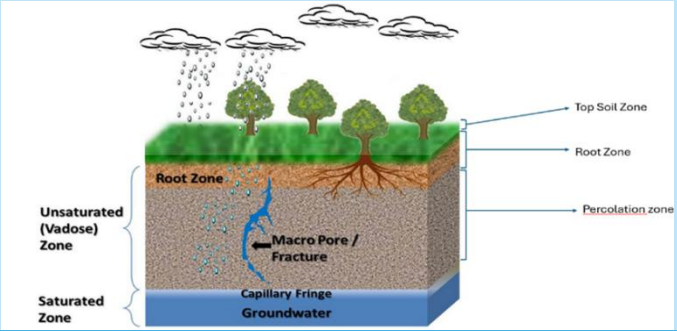
FRDV 1.23	Timeseries data	POIs with linked timeseries data shall have a dedicated graph, that shows the timeseries.
FRDV 1.24	Timeseries combination	Several graphs shall be combined over one another.
	Table Component	
FRDV 1.25	Supplementing table visualization	The table can be added and removed from the workspace.
FRDV 1.26	Table and map integration	The table shall list all POIs currently shown on the map.
FRDV 1.27	Table filtering	The table shall provide filtering and sorting functionalities.
FRDV 1.28	Cognitive table and map support	Clicking a row in the table shall highlight or focus the corresponding POI on the map.
FRDV 1.29	Table export	Tabular content shall be exportable.
	Detail View	
FRDV 1.30	Detail Page	Each dataset shall have a dedicated detail page listing its properties.
FRDV 1.31	Data set preview	The detail page shall provide a data preview appropriate to the dataset's type and content.

Urban Regular: Management/measures: water, infra, green, heat, etc

ID	Name	Short Description
FRUR 1.1.	Spatial and Temporal Resolution	Data shall be provided at a spatial resolution of 5–30 meters and updated on a daily basis to ensure sufficient detail for urban-scale assessments.
FRUR 1.2.	Soil water balance components	The solutions shall monitor and report all the soil water balance components: *P = Precipitation* *If = Infiltration* *I = Irrigation* *Cr = Capillary Rise* *ET = Actual Evapotranspiration* *Sr = Surface Runoff* *Gr = Groundwater Recharge* *ΔS = change in storage*
FRUR 1.3.	Soil moisture conditions	Soil moisture conditions in the unsaturated zone (0-5cm; root zone; percolation zone) should be provided as in the figure (on a daily basis): 

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FRUR 1.4	Actual Evapotranspiration & Evapotranspiration Deficit	The solution shall calculate and report the Actual Evapotranspiration & Evapotranspiration Deficit =(ETpot-ETact)/Ratio (ETact/ETpot)
FRIUR 1.5	Phreatic Groundwater Levels	The solution shall provide the Phreatic Groundwater Levels
FRUR 1.6	Seepage/Deep infiltration	The solution shall provide the Seepage and Deep infiltration

Urban Crisis: Risk reduction/measures, Risk priorities/crisis handling

ID	Name	Short Description
FRUCR 1.1	Risk Indicators representation	The risk indicators shall be represented in a traffic light grid-based approach; sector related[41] user specified per Group)
FRUCR 1.2	Must Have Risk Indicators	The below mentioned ('Must Have' or MH) risk indicators (input SWV extremes per user sector) shall be derived from 1 or more of the Urban Regular Information Products in combination with user/sector knowledge. • Soil Drying & Wetting (in terms of severity, magnitude, duration, and spatial extent; Risk maps: where does it become drier, where does it become wetter in the unsaturated zone) • Saturated top soil moisture conditions (prior to heavy rainfall) Risk of Urban flooding/inundation (extreme wet conditions) of city infrastructure Urban Heat Island Effect

Urban Climate: Evaluation/measures (LT), Re-analysis, scenario/forecast

ID	Name	Short Description
FRUCL 1.1	Re-analysis dataset	A re-analysis dataset (2000-2025) of[42]: • The soil water balance components • Soil moisture conditions (0-5cm; root zone; percolation zone) • Soil Drying & Wetting (in terms of severity, magnitude, duration, and spatial extent; […] In other words: We want grid-based maps that gives us information about where it becomes drier and where it becomes wetter in the unsaturated zone)

[41] https://euc-word-edit.officeapps.live.com/we/wordeditorframe.aspx?ui=el&rs=nl-NL&wopisrc=https://corversprocurementservices.sharepoint.com/sites/CorversInternational/_vti_bin/wopi.ashx/files/3a289e79789344c58ec67f8e8b800df6&wdorigin=AuthPrompt.TEAMS-MAGLEV.p2p_ns.rwc.Sharing.DirectLink.Copy&wdenableroaming=1&mscc=1&hid=FC5457D1-5808-47BD-B251-1208023F2606.0&uih=sharepointcom&wdlcid=el&jsapi=1&jsapiver=v2&corrid=a09abccb-ae61-b930-e7f8-568f31b2c43c&usid=a09abccb-ae61-b930-e7f8-568f31b2c43c&newsession=1&sftc=1&uihit=docaspx&muv=1&ats=PairwiseBroker&cac=1&sams=1&mtf=1&sfp=1&sdp=1&hch=1&hwfh=1&dchat=1&sc={"pmo":"https://corversprocurementservices.sharepoint.com","pmshare":true}&wdexp=TEAMS-TREATMENT&wdhostclicktime=1753372130356&ctp=LeastProtected&rct=Normal&afdflight=78&csiro=1&instantedit=1&wopicomplete=1&wdredirectionreason=Unified_SingleFlush; Definition sector: e.g. city Green Park division, City Hydrology Division, City Infrastructure (street/assets) maintenance division, City Living Health/Climate social division, etc.

[42] A historical reconstruction of the past hydrology using a combination of model data & satellite data.

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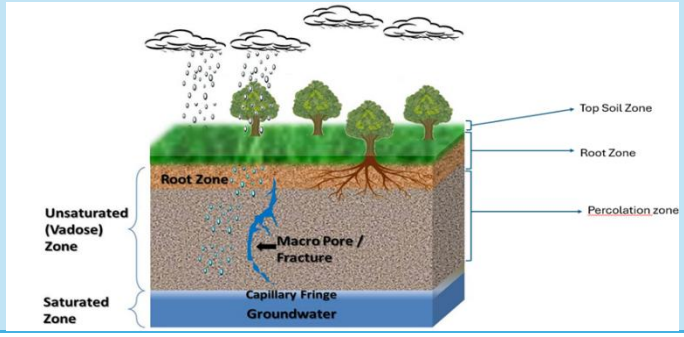
FRUCL 1.2	Climate forecasted dataset	A climate forecasted (based on the national climate scenarios and if not present, use the ECMWF scenarios) dataset (2026-2050/2070) of: • The soil water balance components • Soil moisture conditions (0-5cm; root zone; percolation zone) • Soil Drying & Wetting (in terms of severity, magnitude, duration, and spatial extent; In other words: We want grid-based bhmaps that gives us information about where it becomes drier and where it becomes wetter in the unsaturated zone)
FRUCL 1.3	Spatial and Temporal Resolution	Data shall be provided at a spatial resolution of 100-250 meters and updated on a daily basis to enable accurate assessment of urban-scale climate dynamics.

Rural Regular: Management/measures: water-soil, nature, agriculture, etc

ID	Name	Short Description
FRRR1.1	Spatial and Temporal Resolution	Data shall be provided at a spatial resolution of 100 meters and updated on a daily basis to enable accurate assessment of rural regular dynamics.
FRRR1.2	Soil water balance components	The soil water balance components: *P = Precipitation* *If = Infiltration* *I = Irrigation* *Cr = Capillary Rise* *ET = Actual Evapotranspiration* *Sr = Surface Runoff* *Gr = Groundwater Recharge* *ΔS = change in storage*
FRRR 1.3	Soil moisture conditions	Soil moisture conditions in the unsaturated zone (0-5cm; root zone; percolation zone) as in the figure (on a daily basis):: 
FRRR 1.4	Actual Evapotranspiration & Evapotranspiration Deficit	Actual Evapotranspiration & Evapotranspiration Deficit (ETpot-ETact)/Ratio (ETact/ETpot)
FRRR 1.5	Phreatic Groundwater Levels	The solution shall provide the Phreatic Groundwater Levels
FRRR 1.6	Seepage/Deep infiltration	The solution shall provide the Seepage and Deep infiltration

Rural Crisis: Risk reduction/measures, Risk priorities/crisis handling, etc.

ID	Name	Short Description

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FRRCR 1.1	Spatial and Temporal Resolution	Data shall be provided at a spatial resolution of 100 meters and updated on a daily basis to enable accurate assessment of rural regular dynamics.
FRRCR 1.2	Risk Indicators	The below mentioned ('Must Have' or MH) risk indicators (input SWV extremes per user sector) shall be derived from 1 or more of the Rural Regular Information Products in combination with user/sector knowledge. • MH: Soil Drying & Wetting (in terms of severity, magnitude, duration, and spatial extent) • MH: Saturated soil moisture conditions (prior to heavy rainfall) • MH: Risk Wildfires • MH: Floodrisk in rural areas

Rural Climate: Evaluation/measures (LT), Re-analysis, scenario/forecast

ID	Name	Short Description
FRRCL 1.1	Spatial and Temporal Resolution	Data shall be provided at a spatial resolution of 100-250 meters and updated on a daily basis to enable accurate assessment of rural climate dynamics.
FRRCL 1.2	Re-analysis dataset	A re-analysis dataset (2000-2025) of: • The soil water balance components • Soil moisture conditions (0-5cm; root zone; percolation zone) • Soil Drying & Wetting (in terms of severity, magnitude, duration, and spatial extent; In other words: We want grid-based maps that gives us information about where it becomes drier and where it becomes wetter in the unsaturated zone)
FRRCL 1.3	Forecasted dataset	A forecasted dataset (2026-2050/2070) of: • The soil water balance components • Soil moisture conditions (0-5cm; root zone; percolation zone) • Soil Drying & Wetting (in terms of severity, magnitude, duration, and spatial extent; In other words: We want grid-based maps that gives us information about where it becomes drier and where it becomes wetter in the unsaturated zone)

General Crisis Management Intelligence Output requirements

ID	Name	Short Description
FRGCM 1.1.	Early Warnings	The solution shall provide Early Warnings (saturated conditions; too dry conditions; a heavy rain forecast; a no rain forecast; for instance, communicated through WhatsApp, Signal, Telegram and/or SMS)
FRGCM 1.2.	Awareness & preparedness	The solution shall provide information that creates awareness & preparedness (among citizens & water authorities)
FRGCM 1.3.	Data Output Requirements	• Filetype output: NETCDF[43]

[43] NETCDF (a European dataformat-standard) can be used in all GIS-systems, Python, R et cetera. NETCDF cannot be read in to Excel directly. However, with a rather simple Python or R script NETCDF can be converted into CSV which can be read in to Excel.

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		• Data-type information products & Risk Indicators: Grid-based maps
FRGCM 1.4.	Output Scale Requirements (on top of the above products)	I. Spatial Rural: 100x100m [relevant for future European scaling in future] II. Spatial Urban: 5x5m-30x30m [depending on the spatial situation of the test sites embedded in the surrounding (sub)watershed envelope (per group to be delivered, see in general the scoping documents on section test site); relevant for future European scaling in future] III. Temporal Rural: day IV. Temporal Urban: day
FRGCM 1.5.	Simulation requirements	The solution shall provide the following: I. Nowcast (= estimation of the actual situation (= "today") using an extrapolation of the states & fluxes "yesterday", preferably based on satellite-based information (but model data can also be used), extrapolated with a model to "today") II. Forecast (3-10) days ahead hydrological forecasts using ECMWF meteorological (ensemble) forecasts and/of an AI based) III. Re-analysis (= the weather & hydrological past; (for instance) 2000-2025) IV. Climate prognostics (2026-2050/2070; based on IPCC scenario's & standard (= much used in EU countries) European derivative(s). need to get input from involved MS climate/meteorological institute
FRGCM 1.6.	Software requirements for the creation of the information products & risk indicators	The solution shall: I. Use a groundwater model code (for instance MODFLOW-6, but an AI-based model is also possible) for the estimation of the lower boundary condition for the unsaturated zone flux & state estimates. II. The unsaturated zone flux & state estimates must be based using both remote sensing data (satellite and radar[44]/grid-based rainfall) and a hydrological model (or combination of models; an AI based model is also possible) that is broadly used within the hydrological community of Europe/EU countries. Based on the analysis relevant models are HYDRUS, SWAP, HYDROGEOSPHERE, OpenGeoSys, PanFlow, Richards FOAL, VS2DT / VS2DI (USGS)) III. The unsaturated zone modelcode should be open source, well documented with a broad user community, compatible with for instance MODFLOW-6 IV. The to be used software for the creation of risk indicator maps should be well documented and open source.
FRGCM 1.7.	Requirements regarding the use of parameterization data, boundary conditions & other prior data &	The contractor shall to use European standard datasets regarding land use, pedotransfer functions, DTM, soil types, meteorology, hydrogeology, open water bodies, catchment boundaries and test site specific data)

[44] If available. Otherwise you should upscale ground-based measurements using a peer reviewed geostatistical method.

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	information for the modelbuilding process	
FRGCM 1.8.	Requirements regarding the use of remote sensing data	The data to be used (both satellite data (information) and radar-based rainfall estimates) should be freely available based on data and information generated by 1 or more EU organizations.
FRGCM 1.9.	Requirements regarding the integration of remote sensing end model (output) data	• The integration (through pre- or postprocessing methods) of the remote sensing data en unsaturated zone model (output) data should be merged in a statistically sound way which is published in a peer reviewed paper and/or well documented. • The result of this integration should also create an estimate of the trend: will it become wetter of drier (including a bandwidth).

2. Technical requirements

Data Handling

ID	Name	Short Description
TRDH 1.1.	OGC Standards Compliance	When working with time series data, the solution shall support OGC standards (SensorThings API). When working with geo-registered map images, the OGC standards WMS, WFS, WMTS shall be supported.
TRDH 1.2.	Open European Data	It is mandatory that the solution uses use European basic data for input for the integrated solution, like Copernicus data, the European Soil Grid, EuroDEM, meteorological ECMWF (like ERA5 etc. or e.g. International (Radar) Rain composite data, etc. Potsdam Soil moisture data (SOMMET), ESDAC European soil database, etc.
TRDH 1.3	Data Formats	The solution shall offer a generic and loss less data export. Providing at least NETCDF or comparable format/standard. The solution shall provide a generic, configurable and pluggable data import, allowing the import of arbitrary data.
TRDH 1.4	Multi-Source Integration	The solution shall allow real-time ingestion of heterogeneous data sources via both push and pull mechanisms.
TRDH 1.5	Spatial Resolution	Map data within the solution shall support satellite imagery with spatial resolution ≤30×30 m.
TRDH 1.6	Data Quality	The solution shall include administrative metadata on data quality, including validation flags and provenance information, licenses.
TRDH 1.7	FAIR Data	All managed data shall be findable, accessible, interoperable and reusable according to the FAIR principle.
TRDH 1.8	Unique Identifiers	Data sets managed in the system must have unique identifiers.
TRDH 1.9	Stable URL Access	Datasets must have stable URLs for (meta)-data access.
TRDH 1.10	Rich Meta Data	Data sets shall have rich metadata including descriptive, structural and administrative metadata.
TRDH 1.11	Meta data availability	Preserve metadata independently from the data set itself.
TRDH 1.12	Licensing	Licenses shall be assignable to data sets.
TRDH 1.13	Data Fusion / Normalization	The solution shall harmonize and fuse data from multiple diverse sources (e.g., evapotranspiration, evaporation, transpiration, groundwater, land use). Data sources are integrated in your solution.

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Analysis and Intelligence

ID	Name	Short Description
TRAI 1.1.	Custom Algorithm Integration	The solution shall offer a plug-in architecture and standardized interfaces for integrating user-defined algorithms and models.

Interfaces and Interoperability

ID	Name	Short Description
TRII 1.1 (FRI 1.3)	Web based User-Friendly Viewer (GUI)	The solution shall provide a web-based, configurable human-readable viewer (GUI).
TRII 1.2	Technical Configurability	The solution must provide information for technical personnel to configure and enhance all functions of the system.
TRII 1.3	Offline/Low-Bandwidth Use	When provided as mobile application, the solution should support offline access and data queuing for field users with no connectivity.
TRII 1.4	Multilingual and Accessible Design	The solution shall offer an internationalisation-based, multilingual and accessible interface. All functions must be accessible through short-cuts; texts and layouts must be accessible for screen readers.
TRII 1.5	Responsive Design	When provided as multi-platform application, the solution shall natively offer reactive support for various screen sizes, from smartphones to large displays.
TRII 1.6	Role-Based API Access	The solution shall expose machine-readable APIs (e.g., REST, Sensor Things) with secure, role-based access for integration with third-party tools (e.g., SCADA, GIS, control systems).
TRII 1.7	Interactive GIS Interface	The solution shall provide an interactive map-based interface supporting multiple geospatial layers (e.g., risk maps, satellite, field data). The timely development of a parameter must be made approachable through a time-based parameter.

Governance and Security

ID	Name	Short Description
TRGS 1.1	Role-Based Access Control (RBAC)	The solution shall support role-based access, enabling configuration of user rights by group.
TRGS 1.2	Fine-Grained Permissions	The solution shall allow permissions to be configured at multiple levels (e.g., data layers, tools, functions) to reflect institutional needs.
TRGS 1.3	Secure Access, Data Protection, GDPR	The solution shall implement secure access protocols and protect sensitive data. The demands by the General Data Protection Regulation (GDPR) shall be respected.
TRGS 1.4	Availability & Resilience	The solution shall ensure operational continuity and data integrity during emergencies.

Operational Support

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ID	Name	Short Description
TROS 1.1	Training and Test Mode	The solution shall provide safe practice environments for user training and testing with dummy data.
TROS 1.2	User Guidance & Help Tools	The solution shall include built-in user guidance, contextual help, and interface-based support tools.
TROS 1.3	User Support Communication	The solution shall integrate a communication mechanism for reporting bugs or feature requests, e.g. a ticket system.
TROS 1.4	Installation Routine	As part of the deliverable software artifact, an installation routine shall be provided that performs the complete setup of the application on the target system. This routine must be delivered as an executable installation package (e.g., .exe, .msi, .sh, .deb, depending on the target platform) and must guide the user through the necessary configuration steps required for proper operation.

3. Contract Performance Requirements

ID	Name	Short Description
CP1.1.	Testing and demonstration activities	The 5 main sites and their respective countries are as follows: Kalmthoutse Heide in Belgium and the Netherlands, Helsinki in Finland, Bratislava in Slovakia, Lemvig in Denmark, and Catalunya in Spain. These locations will be used for both validation and verification activities. The contractor should introduce the solution at the premises of each of the procurers in close collaboration with procurer representatives and their end users (potentially including end users without a technical background). System introduction includes installation of the solution and preparation of all necessary equipment and processes that are necessary for the solution to work. Pre-testing will be done to reveal and resolve any issues that prevent the system from working properly at the premise (e.g. during pilots). In addition, other partner sites will be involved, including locations in Greece (Region of Central Macedonia), Rotterdam and HDSR (the Dutch regional water authority) (the Netherlands), and Oldenburg (Germany). These sites will not be used for validation and verification but solely for demonstration purposes. Please refer to Annex 7 for more details. As part of PCP WISE, THW will also organize two Table-Top-Exercises (TTX) in order to test, demonstrate and validate the PCP WISE prototypes of the two suppliers/consortia in phase 3 in an operational emergency response (crisis) environment. Please refer to ANNEX 10 for more details on the TTX. Other users (internal or external to the Consortium) may be included in the testing activities. [A map and X-Y coordinates is included in Annex 1]
CP1.2	Test site locations of 5 lead partners for validation, testing & demonstration	Use the Area of Interest (AOI) per group (lead group partner), 2 scales of action: test site (detailed, measurement point locations) & surrounding (sub) Watershed (100x100m) for Phase 2 and 3 I, see links for location in 5 group descriptions mentioned earlier
CP1.3	Test site from partners in the 5 groups for demonstration only	Use the Area of Interest (AOI) per group (lead group partner), 1 scales of action: surrounding (sub) Watershed (100x100m) for Phase 3, see links for location in 5 group descriptions mentioned earlier
CP1.4.	Testing compliance	The contractors should demonstrate in Phase 3 compliance with the requirements listed in the current Annex 8 as well as the metrics defined in Annex 7.

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CP1.5.	Pilot (Phase 3) Feedback	The contractor will make sure to receive answers on evaluation questionnaires to be filled out by end users during the pilot testing.
CP1.6.	Bug reporting	The contractor should set up a helpdesk and maintenance support as well as create a simple, easy to use error/bug reporting and general feedback mechanism / module that allows end users to submit feedback on the solution. This feedback should be reported on how it has been taken into account in the end of Phase 3 deliverable.
CP1.7.	Pilot Maintenance	The contractors will make sure to maintain the operation of all systems at each site at full quality for the duration of the pilot. A team will be available to physically or remotely resolve any issues and problems that prevent the system from working as desired.

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Annex 9. Data sets

This annex includes data sets identified by PCP Wise consortium that might be relevant for PCP Wise tenderers ´solutions. **Tenderers can propose to use other datasets**.

Please note that it is up to each tenderer/consortium to make sure that they have the sufficient rights to use the data sets for the development and testing of the solutions in the different testing locations (see annex 1) and for the further commercialization of the solution once the PCP Wise project is over.

1. Copernicus Contributing Mission (CCM) Data

Copernicus, the Earth Observation component of the EU Space programme provides free and open data from the Sentinel missions and the Copernicus Services45. The Copernicus Data Space Ecosystem allows to discover, view and download single or multiple products which are part of predefined extensive coverages built since 2010.

To complement the Copernicus Sentinel missions, the Copernicus Contributing Missions (CCM) provide additional data, such as Optical HR and VHR European coverages, Urban Atlas, etc. In 2026 and 2027, this will be complemented with additional TIR satellite datasets, which are particularly interesting for the PCP WISE objectives, and PCP WISE tenderers can consider to use these. See the second table below on the specific specifications available from 4 TIR smallsat data deliverers.

The technical specifications in the table below are representing four (small)satellite constellations (in each of the rows) specialized on Thermal Infrared data (Long wave Infrared and Mid wave Infrared) made available by the CCM/ESA program and European companies to the PCP Wise project for specific applications in urban and rural problems areas. Various applications can be foreseen to be demonstrated in the PCP Wise context (such as Land Surface Temperature monitoring of vegetation, crops, etc but also hotspot monitoring (heat stress) in urban or rural areas (wildfires), etc.

Satellite Constellation	Resolution range	Spectral range	Revisit time	Swath (km)	Launched
Satellite constellation 1	VNIR: 5 m, TIR: 30 m	PAN + VNIR 10 bands (aligned to S2), TIR 4 bands between 8.45 µm–12.00 µm	From 3 days (2025) to sub-daily (2026)	VNIR 21 km, TIR 17.5 km	Q1 2025, Q2 2025*
Satellite constellation 2	200 m	MWIR 1 band at 3.80 µm, LWIR 2 bands at 8.70 µm and 11.45 µm	12h (2024) to 30min (2027)	410 km	Q2 2023, Q1 2025

[45] For more information see https://www.copernicus.eu/en

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Satellite constellation 3	VIS 20m, NIR 25m, LWIR 100m	4 VNIR and LWIR 2 bands (10.3–11 µm) and (11.5–12.5 µm)	36 h	7 km	Q4 2025*, Q2 2026
Satellite constellation 4	3.5 m	MWIR (Night mode 3.7–5 µm; day mode 4.5–5 µm)	1 day at 40 lat deg and 45ONA, 2 days with ONA at 30	4.5 km	Q4 2025*

In particular this data set can be useful regarding Thermal Infra Red (TIR) data delivery for use cases 1 and 3. Please note that this data is available for these use cases only and it cannot be tested for the rest of the sites in phase 2. Please find here information about the particular data delivery potential for 2026 and 2027:

Constellation (see table above)	**Use case 3 (Grenspark Kalmthoutse Heide)**	**Use case 1 (Rotterdam)**
COnstellation 1	- Period: March to October (2026 and 2027) - LST Precise (radiometric corrected and orthorectified) for heat & temperature monitoring - Detail: 30 m (17.5x17.5 km2) - Frequency: weekly (which means 31 systematic datatakes during requested periods in each of the 2 years) - Time of day: Day mode (and if possible night)	- Period: March to October (2026 and 2027) - LST Precise (radiometric corrected and orthorectified) for heat & temperature monitoring (option TBC for LST zoom, impacts on frequency) - Detail: LST Precise 30 m. - Frequency: weekly (which means 31 systematic datatakes during requested periods in each of the 2 years) - Time of day: Day mode (and if possible night)
COnstellation 2	- Period: March to October (2026 and 2027) - L1C BT (TOA) (MWIR and LWIR) & L2 LST (LWIR) information for heat & temperature (Evapotranspiration not to be delivered) monitoring - Detail: 200m regular monitor larger envelope of whole park and if possible - Frequency: weekly (which means 31 systematic datatakes during requested periods in each of the 2 years) - Time of day: Day mode	-

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	later in afternoon (and if possible night)	
Constellation 3	- Period: March to October (2026 and 2027) - LST (radiometric corrected and orthorectified) for heat & temperature monitoring - Detail: 100 m (7 x 5 km2) - Frequency: weekly (which means 31 systematic datatakes during requested periods in each of the 2 years) - Time of day: Day mode (and if possible night)	
Constellation 4	-	- Period: March to October (2026 and 2027) - Level 2 BT (radiometric corrected and orthorectified) MWIR for heat monitoring - Detail: 3.5 m for dedicated testsite (1x1km central station Black body underground Parking) - Frequency: weekly (which means 31 systematic datatakes during requested periods in each of the 2 years) Time of day: Day mode (and if possible night)

Please find below relevant information about the data sets explained above:

Data set	**Description**	**Relevant information**
CCM Data	This data is freely available for the PCP Wise selected contractor(s) under the project scope and phases (developing and testing)[46]. Bear in mind that after PCP Wise is over (or the contractor(s)´ Phase contract is terminated) the	It is necessary to comply and to agree to the terms and conditions of the "licence between ESA and Copernicus user for the use of data subject to restrictive licensing terms" The PCP Wise selected contractors who decide to use CCM Data have to register to the Copernicus Data Space

[46] Particularly interesting for PCP Wise is the TIR data.

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	use of CCM data (primary or altered products) will end but the user has a right to provide access services to their Value Added Products (developed services/solutions during PCP Wise) on condition that these Value Added Products do not allow the retrieval of the Primary Product (CCM Data). The data provision via the CCM mechanism is not foreseen for the mandatory commercialization after the end of PCP Wise; this means that for the commercialization of the end solution, which is mandatory for phase 3 contractor(s) after the end of PCP Wise project, the contractor(s) is expected to find a(n own) solution. I.e., they can reach agreements with the CCSM data providers (or other data providers) themselves to access the data they deem necessary.	Ecosystem as *"Research & education organisation"* and indicate *"PCP Wise"* as the purpose of use[47]. You can find here the instructions to register: https://dataspace.copernicus.eu/explore-data/data-collections/copernicus-contributing-missions/ccm-how-to-register ; when registering, the PCP Wise contractor(s) (each contractor/member of a consortia) will electronically have to accept the CCM user license (: ESA_User_Licence.pdf). Each user will have to use the correct credits/copyright references[48]. It is mandatory that during the execution of PCP Wise, the contractor indicates a single point of contact (from the consortia if applicable) that will access the data pick up point on behalf of the contractor/members of the consortia. *In particular this data set can be useful regarding Thermal Infra Red (TIR) data delivery for use cases 1 and 3.* *It could be used for updating the waterbalance components of soil evaporation and vegetation transpiration for the regular monitoring approach (FRUR 1.2. FRUR 1.4, FRRR 1.2 and FRRR 1.4).* *It could also be used to tackle weighted award criteria A.2.5, A.5.3, A.7 and A.8.*

[47] It is possible to register before the award of the contract, but then, as a "*Business/commercial/professional",* with no link to PCP Wise project.

[48] E.g., *"produced using products © CCME (year of acquisition), provided under COPERNICUS by the European Union and ESA, all rights reserved"*

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2. Available data sets from the PBG

These are datasets provided by the PBG on the testing sites, to be freely used and integrated in the solutions:

	Data resource name	*Link to resource metadata/description*	*Data resource type*	*Partner*	*Data Sharing Conditions*
1	Land cover Slovakia	https://rpi.gov.sk/en/metadata?full_text=Land%20cover	dataset	SEA	Open
2	SK Flood hazard datasets	https://zenodo.org/records/15105467	dataset	SEA	Open
3	SK Flood risk datasets	https://zenodo.org/records/15105467	dataset	SEA	Open
4	SK Fire hazard datasets	https://zenodo.org/records/15105467	dataset	SEA	Open
5	SK Fire risk datasets	https://zenodo.org/records/15105467	dataset	SEA	Open
6	Climate Risk and Vulnerability Assessment Slovakia	https://www.klima-adapt.sk/scenare-buducej-klimy	dataset	SEA	Open
7	SK Digital surface model	https://rpi.gov.sk/metadata?full_text=DMP	dataset	SEA	Open
8	SK Digital terrain model	https://rpi.gov.sk/en/metadata?full_text=DMR	dataset	SEA	Open
9	SK Central register of social service providers	https://rpi.gov.sk/en/metadata/6bc18781-2878-46a2-b2bf-fef3a65f95c0	dataset	SEA	Open
10	Protected areas	https://rpi.gov.sk/en/metadata?full_text=Chr%C3%A1nen%C3%A9%20%C3%BAzemia	dataset	SEA	Open
11	Ecological state of waters	https://rpi.gov.sk/en/metadata?do=Water	dataset	SEA	Open
12	Sewage systems	https://rpi.gov.sk/en/metadata?do=Waste	dataset	SEA	Open
13	Schools	https://rpi.gov.sk/en/metadata?full_text=%C5%A0koly	dataset	SEA	Open
14	Social and health facilities	https://rpi.gov.sk/en/metadata?th=hh	dataset	SEA	Open
15	Population density and settlement distribution	https://rpi.gov.sk/en/metadata?th=pd	dataset	SEA	Open

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16	Soil Moisture	https://www.shmu.sk/en/?page=360	dataset	SEA	Open
17	Soil Moisture	https://www.shmu.sk/en/?page=360	dataset	SEA	Open
18	Snow Cover	https://rpi.gov.sk/en/metadata?full_text=sneh	dataset	SEA	Open
19	Copernicus datasets	https://copernicus.geocloud.sk/	dataset	SEA	Open
20	ECMWF	https://www.ecmwf.int/en/forecasts/datasets	dataset	SEA	Open
21	DRMKC	https://drmkc.jrc.ec.europa.eu/risk-data-hub#/	dataset	SEA	Open
22	Ground water measure points	https://kartta.hel.fi/?link=bZ5Nkf	Dataset	FV-Helsinki	Open
23	City of Helsinki riverbeds, streams and ditches	https://hri.fi/data/en_GB/dataset/helsingin-avouomat	Dataset	FV-Helsinki	Open
24	Land cover Helsinki Region	https://www.hsy.fi/en/environmental-information/open-data/avoin-data---sivut/helsinki-region-land-cover-dataset/	Dataset	FV-Helsinki	Open
25	national geoportal presenting spatial data and related services from different data producers.	(National Geodata portal) https://kartta.paikkatietoikkuna.fi/?lang=en	Other	FV-Helsinki	Open
26	Sewage system areas	https://kartta.hsy.fi/	Dataset	FV-Helsinki	Open
27	Weather observations	https://en.ilmatieteenlaitos.fi/download-observations	Dataset	FV-Helsinki	Open
28	Helsinki's nature information system	https://hri.fi/data/fi/dataset/helsingin-luontotietojarjestelma	Dataset	FV-Helsinki	Open
29	Flood risks	https://ckan.ymparisto.fi/en/dataset?tags=Areas+of+Potential+significant+flood+risk+%28Floods+&tags=surface+water&_res_format_limit=0&organization=syke-geoinformatics&_tags_limit=0	Dataset	FV-Helsinki	Open
30	Elevation model 2 m Finland	https://www.maanmittauslaitos.fi/en/maps-and-spatial-data/datasets-and-interfaces/product-descriptions/elevation-model-2-m	Dataset	FV-Helsinki	Open
31	Elevation model of the	https://hri.fi/data/en_GB/dataset/helsingin-korkeusmalli	Dataset	FV-Helsinki	Open

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	City of Helsinki				
32	Netherlands DSM and DTM 0.5m + 5 cm Ortho	https://basisdata.nl/hwh-portal/download/index.html	Dataset	Grenspark (Benego)	Open
33	Flanders DTM 1M	https://www.vlaanderen.be/datavindplaats/catalogus/digitaal-hoogtemodel-vlaanderen-ii-dtm-raster-1-m	Dataset	Grenspark (Benego)	Open
34	Flanders DSM 1m	https://www.vlaanderen.be/datavindplaats/catalogus/digitaal-hoogtemodel-vlaanderen-ii-dtm-raster-1-m	Dataset	Grenspark (Benego)	Open
35	Flanders Ortho	https://www.vlaanderen.be/datavindplaats/catalogus/orthofotomozaiek-middenschalig-winteropnamen-kleur-meest-recent-vlaanderen	Dataset	Grenspark (Benego)	Open
36	Pluvial flood risk	https://www.vlaanderen.be/datavindplaats/catalogus/overstromingsgevoelige-gebieden-pluviaal	Dataset	Grenspark (Benego)	Open
37	Fluvial flood riskk	https://www.vlaanderen.be/datavindplaats/catalogus/overstromingsgevoelige-gebieden-fluviaal	Dataset	Grenspark (Benego)	Open
38	Soil moisture	https://land.copernicus.eu/en/products/soil-moisture?tab=surface_soil_moisture		FV-Helsinki	Open
39	Flanders Database Underground (DOV) - Soil type, soil core data, in situ soil moisture, deep and shallow groundwater, groundwater extraction, groundwater level measurement points	https://www.dov.vlaanderen.be/	Dataset	Grenspark (Benego)	Open
40	Flanders WATer In NAture (WATINA) - In situ time series and transects of ground water and surface water in	https://watina.inbo.be/dashboard?continue	Dataset	Grenspark (Benego)	Open

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	unbuilt environment				
41	TerraScope - Copernicus S1 GRD, Coherence - S2 RGB, CIR, FAPAR, NDVI, LAI, FCOVER - S3 RGB, CIR, NDVI, LST - 10 m WorldCover, WorldCereal	https://viewer.terrascope.be/	Dataset	Grenspark (Benego)	Open
42	Geo.Informed - 10 m biotope groups (yearly), dominant tree species (yearly), surface water extent (monthly)	https://viewer.geo-informed.be/	Dataset	Grenspark (Benego)	Restricted
43	Netherlands + 50 km cross border - 1 km in situ + radar precipitation, 100 m satellite soil moisture, 100 m evapotranspiration and deficit	https://meteobase.nl/	Dataset	Grenspark (Benego)	Open
44	Copernicus EFFIS - Long term fire weather forecast, wildfire risk maps	https://forest-fire.emergency.copernicus.eu/	Dataset	Grenspark (Benego)	Open
45	EcoDataCube - dynamic soil properties, vegetation height, soil carbon	https://ecodatacube.eu/	Dataset	Grenspark (Benego)	Open

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46	Boskaarten Nederland: spilhoutvolume, dominante boomhoogte, grondvlak, boompunten, boomvlakken	https://experience.arcgis.com/experience/262383287ddb496c8e75572dc455b37d?org=bba	Dataset	Grenspark (Benego)	Restricted
50	Physical Parameters of soils in Catalonia (XMS-Cat)	https://www.icgc.cat/en/Sustainable-territory/Soils/Network-physical-parameters-soils-Catalonia-XMS-Cat	Dataset	ICGC	Open
51	Digital soil mapping	https://www.icgc.cat/en/Thematic-areas/Sustainable-territory/Soils/Digital-soil-mapping	Image	ICGC	Open
52	Land cover maps of Catalonia	https://www.icgc.cat/en/Sustainable-territory/Land-cover	Image	ICGC	Open
53	Meteorological data from the automatic weather station network of the Meteorological Service of Catalonia	https://www.meteo.cat/observacions/xema	Dataset	IEEC	Open
54	Continuous mosaic of monthly images captured by the Sentinel-2 satellite	https://www.icgc.cat/ca/Geoinformacio-i-mapes/Dades-i-productes/Imatge/Ortoimatges-Sentinel-2-mensuals	Image	ICGC	Open
55	Satellite VNIR images from Menut over Catalonia	https://visors.icgc.cat/menut/	Image	ICGC	Open
56	BGT (land surface typology)	Introductie - PDOK	Dataset	City of Rotterdam	Open
57	BAG (building registration)	Introductie - PDOK	Dataset	City of Rotterdam	Open
58	Groundwaterlevels		Dataset	City of Rotterdam	Restricted

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59	DSM/DTM		Dataset	City of Rotterdam	Restricted
60	Meteorlogical data KNMI 344 Rotterdam Airport	KNMI - Daggegevens van het weer in Nederland	Dataset	City of Rotterdam	Open
61	Rainfall TU Delft station	Weather Station Plots	Dataset	City of Rotterdam	Open
62	Rainfall City of Rotterdam		Dataset	City of Rotterdam	Restricted
63	Vegetation LiDAR		Dataset	City of Rotterdam	Restricted
64	Soil profile		Dataset	City of Rotterdam	Restricted
65	CPT		Dataset	City of Rotterdam	Restricted
66	Water quality	Waterboards HHSK, WSHD and HHD	Dataset	City of Rotterdam	Restricted
67	Surface waterlevel	Waterboards HHSK, WSHD and HHD	Dataset	City of Rotterdam	Open
68	Soil subsidence	Skygeo	Dataset	City of Rotterdam	Restricted
69	3D Building information		Dataset	City of Rotterdam	Restricted
70	Rainfall City of Thyborøn	https://opendatadocs.dmi.govcloud.dk/en/Data/Climate_Data	Dataset	KLIMATORIUM	Open
71	Temperature City of Thyborøn	https://opendatadocs.dmi.govcloud.dk/en/Data/Climate_Data	Dataset	KLIMATORIUM	Open
72	Wind City of Thyborøn	https://opendatadocs.dmi.govcloud.dk/en/Data/Climate_Data	Dataset	KLIMATORIUM	Open
73	Groundwaterlevels Thyborøn	Klimatorium	Dataset	KLIMATORIUM	Open
74	Subsidence City of Thyborøn	Klimatorium	Dataset	KLIMATORIUM	Open
75	DTM Denmark/Lemvig 0,4 m		Dataset	KLIMATORIUM	Open
76	Landcover Lemvig municipality	Scalgo Live	Dataset	KLIMATORIUM	Open
77	Geological strata model and logs Lemvig Municipality	GeoAtlas Live	Dataset	KLIMATORIUM	Open
78	Sea level Lemvig	Lemvig Vand	Dataset	KLIMATORIUM	Open
79	Sea Level Thyborøn	Port of Thyborøn	Dataset	KLIMATORIUM	Open

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80	Rainfall SVK Bæksmarksbro	Lemvig Vand	Dataset	KLIMATORIUM	Open

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Annex 10. Table Top Exercise

3. Background

A **Table Top Exercise (TTX)** constitutes a scenario play designed to simulate a real-life emergency. As part of PCP WISE, THW will organize two TTX in order to test, demonstrate and validate the PCP WISE prototypes of the two remaining suppliers/consortia in phase 3 in an operational emergency response (crisis) environment.

Within the context of PCP WISE, the water-related umbrella scenarios of relevance are **flooding** and **fire** respectively.

4. Implementation in PCP WISE

4.1. Objectives

The TTX aim to assess the effectiveness and added value of the PCP WISE prototypes in an operational emergency response environment. Specifically, they seek to test whether the PCP WISE prototypes/data products enable emergency response organizations and relevant stakeholders to improve their crisis-related decision making (i.e. being able to take better decisions due to more timely (real-time), granular and accurate information about the soil water vegetation condition of the locations that the scenarios deal with).

In addition, the outcomes of the first TTX is expected to serve as important feedback to the PCP WISE suppliers/consortia and should enable them to further refine their prototypes for the testing and validation in the second TTX.

4.2. Scope and timeline

The preparation of the TTX (stage 1) will already commence in phase 2 of the PCP implementation in order to narrow down the actual scenarios that the TTX will focus on under each of the two umbrella scenarios. This will be intensified at the onset of phase 3 (M30, i.e. June 2027) in order to finalize their design by August 2027 (M32).

The first TTX is expected to take place at the end of August/beginning of September 2027 (M32/M33) and will focus on the flooding umbrella scenario. The second TTX will be conducted at the end of October/beginning of November 2027 (M34/M35) and will focus on the fire umbrella scenario.

Both TTX will take place at the THW headquarters in Bonn, Germany.

Each TTX will span three calendar days and will be structured as follows :

- Day 1 : Final preparation of the TTX (half day)
- Day 2 : Implementation of the TTX (full day)
- Day 3 : Review of the TTX implementation and feedback to PCP WISE suppliers (half day)

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1.1 Important information for tenderers

The PCP WISE suppliers/consortia should already factor in travel budget to attend the TTX in Bonn, Germany and to be available for weekly or bi-weekly online meetings with THW and relevant partners throughout phase 3.

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Annex 11. General context and background

Innovative governance

The project to be carried out under the HE-funded PCP should contribute to innovative governance supporting the European Green Deal objectives recognizing, coping with and promoting resilience and inclusiveness in the face of on-going shocks and disruptions across Europe and the world, whether these be climatic, ecological, economic, social, geopolitical or related to agricultural inputs and resources, food, health, bio-based sectors or the wider bioeconomy. The creation of networks with the public (citizen engagement) and researchers, including also through digital technologies, can step up transformation and enhance resilience in different areas.

Critical risk assessment and reduction strategies need to be incorporated, including the diversification of infrastructures, resources and knowledge through more self-sufficiency and autonomy.

Environmental observation

The results of the PCP should be deployed and add value to environmental observations. Data and information obtained through environmental observation is of great value when assessing the state of the planet and is crucial to supporting the European Green Deal and the climate and ecological transitions.

It is foreseen the integration of information from different sources (space-based, airborne including drones, in-situ and citizens observations) with other relevant data and knowledge while ensuring (better) accessible, interoperable or deployable information for shaping the direction of policy development with a link to Copernicus, the European Earth observation and monitoring part of the EU Space programme and the European Space Agency's (ESA) Earth observation programme, as well as support to the Group on Earth Observation (GEO), its European regional initiative (EuroGEO) and the European Commission initiative Destination Earth.

Digital and data-based innovation

Digital and data-based innovation, in complementarity with the Digital Europe Programme, should bring benefits for citizens, businesses, researchers, the environment, society at large and policymakers. The potential of the ongoing digital transformation, and its wider impacts – both positive and negative – need to be better understood and monitored in view of future policy design and implementation, governance, and solution development.

The potential for digital and data technologies, including Artificial Intelligence (AI), Internet of Things (IoT), and augmented reality-based solutions, should be applied to increase the

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sustainability and resilience of production and consumption systems, as well as industry and services.

Solutions should contribute to the development, support and take up of innovative digital and data-based solutions to support communities, economic sectors and society at large to achieve sustainability objectives. The focus is on overall sustainable solutions tailored to the needs of end-users and/or the systems. More specifically, R&D activities will contribute to economic circularity by promoting reuse of materials and waste reduction, adding value to existing knowledge and increasing cost-effectiveness, safety and trustworthiness of innovative environmentally friendly technologies in and across primary production sectors, food systems, bio-based sectors, bioeconomy, and sectors related to the oceans and biodiversity.

Particular attention should be given to precision and collaborative technologies and contribute to the human-centric twin green and digital transitions. This is a key policy objective that is also supported by the cross-cutting objective of the EU digital strategy, the European industrial strategy, the circular economy action plan, the SME strategy and the European data strategy.

Strengthening Knowledge and Innovation Systems

Knowledge and advice to all relevant actors are key to improving sustainability. For instance, primary producers in the agrisector have a particular need for impartial and tailored advice on sustainable management choices. For example the Agricultural knowledge and innovation Systems mechanisms (AKIS) go beyond agriculture, farming and rural activities and cover environment, climate, biodiversity, landscape, bioeconomy, consumers and citizens, i.e. all food and bio-based systems including value chains up to the consumer. Effective AKIS is a key driver to bridge the gap between science and practice and to enhance co-creation. This will speed up innovation and the take-up of results needed to achieve the European Green Deal objectives and targets. In analogy to AKIS also for other sectors similar European initiatives could be linked.

Where appropriate, proposals are encouraged to cooperate with the European Commission Knowledge Centre on Earth Observation (KCEO)).

Social innovation

Social innovation is also relevant when the solution is at the socio-technical interface and requires social change, new social practices, social ownership or market uptake. It is envisaged the coordination with European Space Agency (ESA) actions so that ESA space data and science can be proactively integrated into the relevant research actions.

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Annex 12. SOTA analysis for unsaturated zone models

Here is a State-of-the-Art (SOTA) Analysis of open-source, widely used, well-documented unsaturated zone models as of 2025. These models simulate water flow and solute transport through the vadose zone (unsaturated zone), which is critical in hydrology, agriculture, and environmental science.

Evaluation Criteria of these models:

Criteria	Description
Open Source	Freely available under an open license
Widely Used	Demonstrated adoption in academia and/or industry
Well-Documented	Clear manuals, tutorials, publications
Core Functionality	Focused on variably saturated flow
Modularity	Adaptability, extensibility
Community Support	Active user/developer community

1. HYDRUS (1D) (Open Source)

I. Developer: PC Progress / USDA-ARS
II. Core: Richard's Equation for variably saturated flow
III. Language: Fortran, C++; GUI (commercial)
IV. Open Status: HYDRUS-1D is partially open;
V. Use: Groundwater recharge, root water uptake
VI. Documentation: Extensive manuals, examples, peer-reviewed literature
VII. Strengths:
   a) Highly validated
   b) GUI facilitates wide adoption
   c) the 1D version which is a MODFLOW package
VIII. Limitations:
   d) GUI-centric limits script-based automation

2. SWAP (Soil-Water-Atmosphere-Plant)

I. Developer: Wageningen University & Research
II. Core: 1D variably saturated flow + crop growth modules
III. Language: Fortran
IV. Open Source: Yes (GitHub Repo)

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V. Use: Agricultural water management, drainage, irrigation
VI. Documentation: Very good manuals, tutorials, and academic papers
VII. Strengths:
a) Integrates crop models (WOFOST)
b) Long-term simulation capability
c) Calibrated for various soils and climates
VIII. Limitations:
d) 1D only
e) Less modular than some newer Python-based tools

3. HYDROGEOSPHERE

I. Developer: University of Waterloo, HydroGeoSphere Group
II. Core: Fully coupled surface–subsurface flow (Richards + overland)
III. Language: C++
IV. Open Source: Yes (GitHub)
V. Use: Integrated hydrologic modeling
VI. Documentation: Extensive with research articles and technical guides
VII. Strengths:
a) Coupled 3D flow
b) Robust FEM solver
c) Surface/groundwater interaction
VIII. Limitations:
d) High computational demand
e) Steep learning curve

4. OpenGeoSys (OGS)

I. Developer: Helmholtz Centre for Environmental Research (UFZ)
II. Core: Multi-physics modeling including variably saturated flow
III. Language: C++
IV. Open Source: Yes (GitHub)
V. Use: Geothermal, groundwater, environmental engineering
VI. Documentation: Excellent wiki, user guides, and examples
VII. Strengths:
a) Modular architecture (process-based)
b) Python scripting interface
c) Parallelized (MPI)
VIII. Limitations:
a) Complex setup
b) Focused more on geoengineering than agricultural uses

5. ParFlow

I. Developer: Lawrence Livermore / Colorado School of Mines

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II. Core: Fully coupled 3D variably saturated subsurface flow
III. Language: C, Fortran, Python interface
IV. Open Source: Yes (GitHub)
V. Use: Watershed modeling, climate-hydrology studies
VI. Documentation: Strong; user guides, videos, examples
VII. Strengths:
a) Fully parallel, HPC-ready
b) Coupled with CLM (land model)
c) Large-scale, 3D, basin-level simulation

VIII. Limitations:

a) Complex configuration
b) Steep learning curve

6. RichardsFOAM (based on OpenFOAM)

I. Developer: INRIA & others
II. Core: Richards equation in OpenFOAM framework
III. Language: C++
IV. Open Source: Yes
V. Use: Customizable unsaturated flow modeling
VI. Documentation: Technical reports, some tutorials
VII. Strengths:
a) Uses OpenFOAM's parallel CFD engine
b) Adaptable to new geometries and processes

VIII. Limitations:

a) Less community support than others
b) Geared toward users comfortable with CFD modeling

7. VS2DT / VS2DI (USGS)

I. Developer: U.S. Geological Survey
II. Core: 1D/2D Richards-based flow and transport
III. Language: Fortran (with GUI)
IV. Open Source: Yes (public domain)
V. Use: Contaminant transport, vadose zone studies
VI. Documentation: USGS reports and manuals
VII. Strengths:
a) Simple, well-tested
b) GUI available

VIII. Limitations:

a) Outdated interface
b) Less flexible/extensible than modern models

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Summary Table:

Model	Dim.	Coupled Transport	Open Source	Docs	Community	Best For
HYDRUS	1D	Yes	✅	⭐⭐⭐⭐⭐	⭐⭐⭐⭐	Soil-root interaction
SWAP	1D	Yes (crop models)	✅	⭐⭐⭐⭐	⭐⭐⭐	Agro-hydrology
HydroGeoSphere	3D	Yes	✅	⭐⭐⭐⭐	⭐⭐⭐	Integrated hydro
OpenGeoSys	3D	Yes	✅	⭐⭐⭐⭐⭐	⭐⭐⭐⭐	Multiphysics, geothermal
ParFlow	3D	Yes	✅	⭐⭐⭐⭐	⭐⭐⭐⭐	Basin-scale, HPC
RichardsFOAM	3D	No	✅	⭐⭐	⭐⭐	CFD-savvy users
VS2DT	1D/2D	Yes	✅	⭐⭐⭐	⭐⭐	Simpler vadose zone

Conclusion

Top Picks by Purpose:

- For agricultural and soil water studies: HYDRUS-1D or SWAP
- For integrated hydrogeological studies: HydroGeoSphere or ParFlow
- For multiphysics/extensibility: OpenGeoSys
- For educational/legacy projects: VS2DT

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Annex 13. Kling-Gupta Efficiency (KGE)

The KGE is a widely used performance metric in hydrology. However, calling it the best metric depends on what aspect of model performance is being prioritized. Here is a more nuanced view:

Strengths of KGE

KGE was proposed to address limitations of the Nash-Sutcliffe Efficiency (NSE) and provides a more balanced assessment of hydrological models. It decomposes model performance into three components:

1. Correlation (r) – how well the model captures the timing and shape of the hydrograph.
2. Bias (β) – the ratio of mean simulated to mean observed flow.
3. Variability (γ) – the ratio of standard deviation of simulated to observed flows.

This allows you to:

- Identify why a model might be performing poorly.
- Avoid overfitting to just high flows (a common NSE issue).
- Evaluate the trade-off between correlation, bias, and variability.

Limitations of KGE

- It is not ideal for low flows in all cases. If your application is sensitive to low-flow or drought conditions, specialized indices might be better (e.g., log-transformed NSE, bias ratio, or flow-duration curve metrics).
- Like any aggregate metric, it hides temporal detail – a high KGE doesn't always mean the hydrograph matches visually or operationally.

Should You Use KGE?

- For general model calibration across full hydrographs: ☑ Yes, KGE is very appropriate.
- For process-based diagnostics (e.g., snowmelt timing, peak flow capture): ⚠ Use in conjunction with other metrics.
- For low-flow modeling, floods, or multi-objective calibration: Consider additional or alternative metrics like:
    - Log-NSE
    - Peak flow bias
    - Percent bias (PBIAS)
    - Volume error
    - Flow duration curve errors

Summary

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KGE is one of the best general-purpose hydrologic model performance metrics, especially because of its decomposability. But like any tool, it is most powerful when used as part of a suite of diagnostics tailored to the specific objectives of your modelling.

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Annex 14. Example of Solution Architecture Model

This example is provided just in order to give an idea of a coherent integral solution structure for PCP-WISE (providers are requested to propose innovative approaches):

Creating an **IT Solution Architecture** for a **Soil-Water-Vegetation System Conditions Monitor** using actual (observational) local information involves designing a system that integrates data collection, processing, storage, and visualization to support monitoring and decision-making:

Essential Components of an example IT Solution Architecture (components are of course freely to be applied/assembled according the tenderers vision!)

1. Data Sources Layer (Observation/Local Data Collection)
This is the input layer—gathers real-world data from various sensors and sources.
a. In-situ Sensors

Soil sensors: moisture, temperature, pH, EC (electrical conductivity)
Water sensors: surface water level, groundwater level, quality sensors (e.g., turbidity, salinity)
Weather stations: rainfall, temperature, humidity, wind speed

b. Remote Sensing (Optional/Complementary)

Drones or UAVs for vegetation index (e.g., NDVI)
Satellite imagery for large-area vegetation or water body monitoring

c. Manual Observations / Field Surveys

Mobile apps/tablets with GPS and custom forms
Farmer reports or community-based observations

2. Edge/IoT Layer (Field Devices & Communication)
Handles initial data collection, formatting, and transmission.
Components:

IoT Devices / Microcontrollers (e.g., Arduino, Raspberry Pi, ESP32)
Data Loggers (store sensor data locally)
Gateways for:
Wireless communication (LoRa, Zigbee, BLE)
Internet connectivity (3G/4G/LTE, WiFi, Satellite)

3. Data Transmission Layer
Transfers data from field devices to the cloud or data center.

Protocols: MQTT, HTTP, CoAP, FTP

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Security: TLS encryption, authentication tokens
Connectivity options: GSM, LTE, Satellite, Wi-Fi, Mesh networks

4. Data Management & Storage Layer
Stores raw and processed data securely and efficiently.
Technologies:
Databases:
Time-series databases (e.g., InfluxDB, TimescaleDB) for sensor data
Relational DBs (e.g., PostgreSQL + PostGIS) for spatial/attribute data
File Storage: Cloud object storage (e.g., AWS S3, Azure Blob)
Data Lake: For storing raw unstructured/semi-structured data

5. Data Processing & Analytics Layer
Converts raw data into actionable insights.
Capabilities:
Data Cleaning & Transformation
Spatial Analysis (e.g., GIS tools, QGIS, GDAL)
Statistical Analysis: Soil moisture trends, water balance, vegetation health
Machine Learning Models:
Anomaly detection
Forecasting (e.g., drought risk)
Classification (e.g., land cover, crop health)
Tools:
Apache Spark / Hadoop
Python/R (NumPy, Pandas, SciPy, Scikit-learn, TensorFlow)
GIS engines (GeoServer, ArcGIS Server)

6. Application & Visualization Layer
User-facing tools for interacting with the data and insights.
Components:
Web-based Dashboards (e.g., using Grafana, Power BI, or custom frontend)
Mobile Apps for field users
GIS Platforms (e.g., MapServer, Leaflet, OpenLayers)
Reporting Tools: Auto-generated reports, alerts, summaries

7. Integration & Interoperability Layer
Allows integration with external systems or platforms.
APIs (RESTful APIs for access/control)
Standard Data Formats (GeoJSON, NetCDF, CSV, SensorML)
Interoperability Protocols: OGC standards (e.g., WMS, WFS, SOS)

8. Security & Governance Layer
Ensures data privacy, integrity, and compliance.
User Authentication & Authorization

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Access Control Policies
Data Encryption (at rest and in transit)
Audit Logs
Data Ownership & Licensing

9. Monitoring & Maintenance Layer
Ensures uptime, performance, and reliability of the system.

System Health Monitoring: Device status, data flow checks
Error Alerts: Sensor failure, data gaps
Remote Device Management: Firmware updates, restarts
Logging & Auditing: For traceability and debugging

10. Cloud/On-premise Infrastructure
Where the system is hosted.

Cloud Providers (e.g., AWS, Azure, GCP)
Hybrid Models (local server + cloud sync)
Edge Computing: Where internet is unreliable

Optional Components

AI Decision Support Systems: For irrigation recommendations, crop management
Early Warning Systems: For floods, droughts

Community Feedback Modules: Local user validation and feedback integration

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Annex 15. Quick User Guide for the e-Procurement Platform TUTTOGARE PA

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