

# Open Market Consultation

## WATER Challenge

PROTECT consortium

16 November 2023, 11:30 - 13:00



# WATER Challenge – 16 Nov. 11:30 - 13:00

Time	Topic	Notes
11:30 – 11:40	Introducing PROTECT & objectives of the OMC	Mélissa Campagno, GAC
11:40 – 12:00	Presentation of the State-Of-The-Art analysis for the WATER challenge, insights from providers, OMC report	Ana Lucia Jaramillo, Corvers
12:00 – 12:30	Presentation of the WATER challenge and use cases by the group of buyers	Hans van Leeuwen, STOWA Rafael Olmedo Soler, Municipality of Las Rozas
12:30 – 12:50	Open discussion with providers	All
12:50 – 13:00	Next steps and closure	Mélissa Campagno, GAC

# Introducing PROTECT & objectives of the OMC

GAC, project coordinator



# What is PROTECT about and who is it for?

An Horizon Europe (HE) CSA project aimed at **raising public and private buyers' awareness, building their capacity, and preparing them** for undertaking a joint cross-border Pre-Commercial Procurement (PCP) fully funded under another HE [PCP call](#).

Key actors:

- **Buyers** – public authorities (regions, cities, national and regional agencies, etc.) that may be interested in exploring innovative procurement for tackling adaptation and mitigation issues.
- **EO-based climate services providers** willing to collaborate with the public demand to overcome pressing challenges in the area of climate adaptation by co-designing a new solution 'climate service' based on EO data **NOT YET AVAILABLE** on the market.

An innovative and strategic public governance and procurement approach to climate change adaptation and mitigation

# What is the PCP call about?

The Pre-Commercial Procurement (PCP) call “*Customisation/pre-operationalisation of prototypes end-user services in the area Climate Change Adaptation and Mitigation*” is open and available on the Funding and Tenders Portal: [here](#).



**19M EUR FULLY funded** by Horizon Europe programme



Opened on **17 October 2023**

Close on **28 February 2024 at 17:00 CET**

**Estimate start of the PCP: Q4 2024**

The PCP should deliver successful innovative and fully tested product(s) and/or service(s) that meet the common needs of a buyers' group (consortium of procurers) to *procure research, develop innovative marketable solutions, speed up the time-to-market, and provide best value for money.*



PROTECT supports the preparation of future candidate applications to the PCP call by working both with the demand (**buyers**) and supply side (**providers**) of Earth Observation (EO)-based climate services.

# Key expected outcomes of the PCP

- Build on the **Copernicus Services** & respond to the common needs and **beyond state-of-the-art performance targets** of the buyers group;
- **Reduce the fragmentation** of demand for innovative solutions by enabling public procurers to collectively implement a Pre-Commercial Procurement (PCP) in the area of climate adaptation and mitigation, which, due to their nature, are **better addressed jointly**, or which they would not have been able to tackle independently;
- **Create new opportunities** for wide market uptake and economies of scale for the supply side through the use of joint specifications, wide publication of results and – where relevant – contribution to standardization, regulation or certification to remove barriers for introducing innovations into the market and create new products, processes and/or services ready for market uptake



# PCP call requirements & eligibility criteria

- The PCP must be executed by:
  - **One or more public buyer(s)** plus possibly one or more private and/or NGO procurer(s) that provide similar services of public interest
  - Entities with a **mandate** from one or more of these procurers to act on their behalf in the procurement (public utilities companies, central purchasing bodies, etc.)
- The **‘lead procurer’** is a public procurer and is the beneficiary appointed by the buyers’ group to coordinate and **lead the procurement activities**. They can be either one of the procurers in the buyers’ group or another beneficiary in the action who is established or designated by the procurers.
- The PCP must address **ONE (only) concrete procurement need identified as a common challenge**, which requires new R&D and is described in the common specifications of the joint PCP call for tender.
- Addressing the common challenge in different countries may require the development and testing of **additional local functionality or adaption of solutions** by each procurer due to differences in the **local context**.
- A PCP that addresses a challenge consisting of **several facets** (sub-challenges or building blocks) is considered one joint PCP, as long as all procurers in the buyers’ group share the need for it.
- Projects applications submitted should have a **maximum duration of 3 years**. Projects of a longer duration will not eligible!



Reach out to [info-protect@group-gac.com](mailto:info-protect@group-gac.com) for more info!

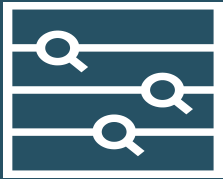


# Process towards the 4 OMCs and the PCP call

Mapping of climate challenges at EU regional level



Mapping of EO climate service providers at EU level



Consultations with buyers to identify 4 pressing challenges and finetune their needs



E-pitching sessions with EO climate service providers to complement the SOTA analysis



4 Open Market Consultations on key challenges to inform market providers



Identifying *lead buyer* to build 4 consortia of buyers willing to prepare a joint cross-border PCP application





# 4 pressing challenges identified



Lead buyer identified

1



Mapping and predicting **FLOODS** (marine, riverine and other sources)

2



Prediction and prevention of **FIRES** and tracing and tracking responsible sources (waste, forest/nature, other)

3



Climate resilient **WATER** solutions (prediction, connecting data, planning, supply-demand)

4



Sustainable & resilient **INFRASTRUCTURE** (sustainable re-development, buildings restoring & adaptation).



# Open Market Consultation Objectives



Validate the findings of the State-Of-The-Art (SOTA) analysis and discuss the viability of possible technical and financial provisions/ functionalities.



Raise awareness of the industry and relevant stakeholders (including other users) regarding the upcoming PCP.



Collect insights from the industry and relevant stakeholders (including users) to finetune the tender specifications.

# State-Of-The-Art analysis for the WATER challenge, insights from providers, and OMC report

**CORVERS**  
COMMERCIAL & LEGAL AFFAIRS

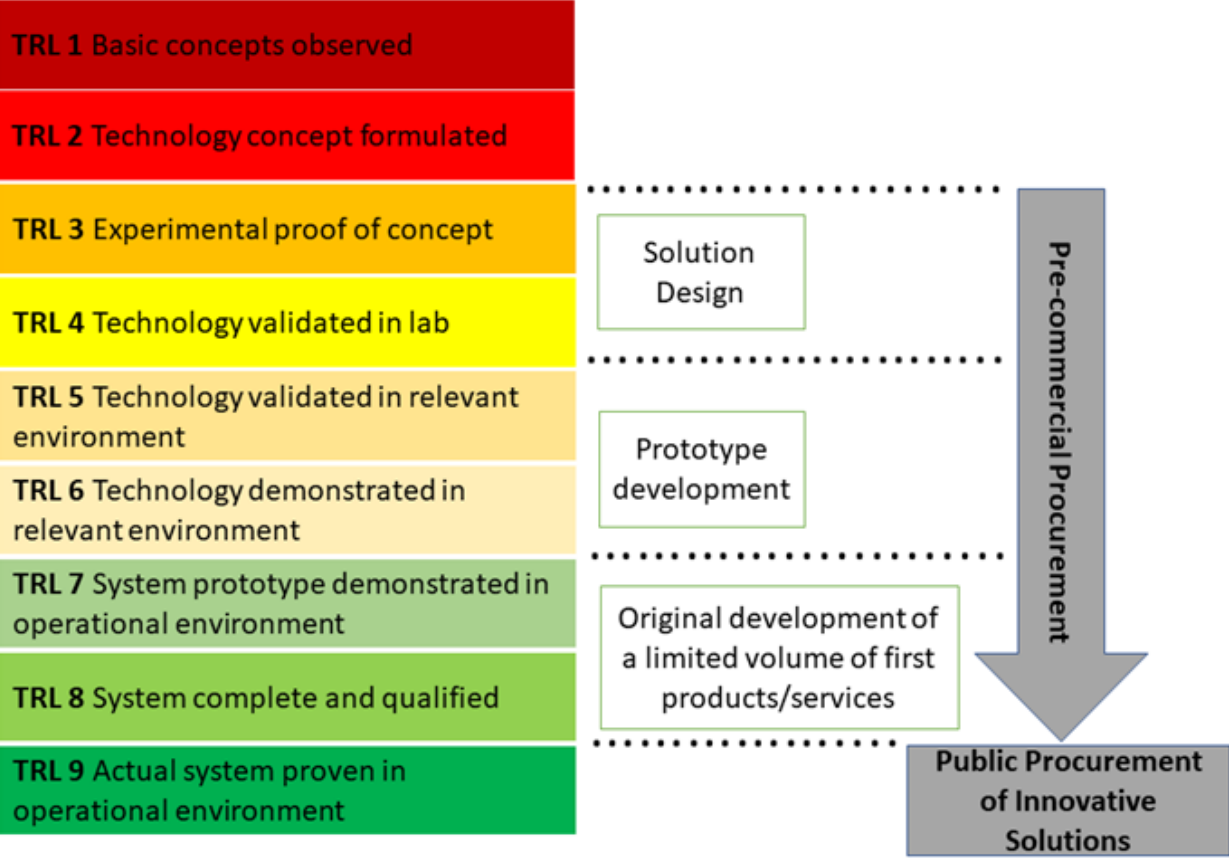
Corvers Procurement Services B.V.  
project partner



# State-of-the-art analysis

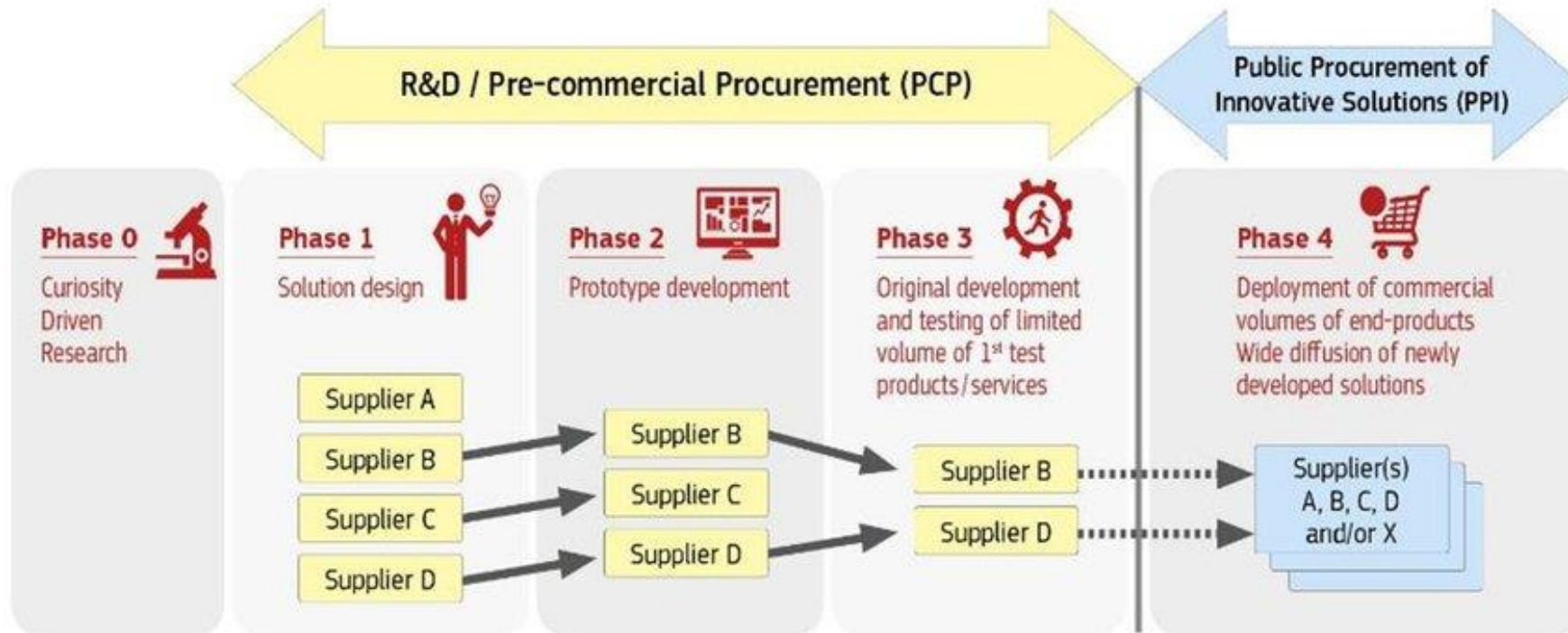
SOTA analysis

# Pre-Commercial Procurement (PCP): TRL 3 - 8

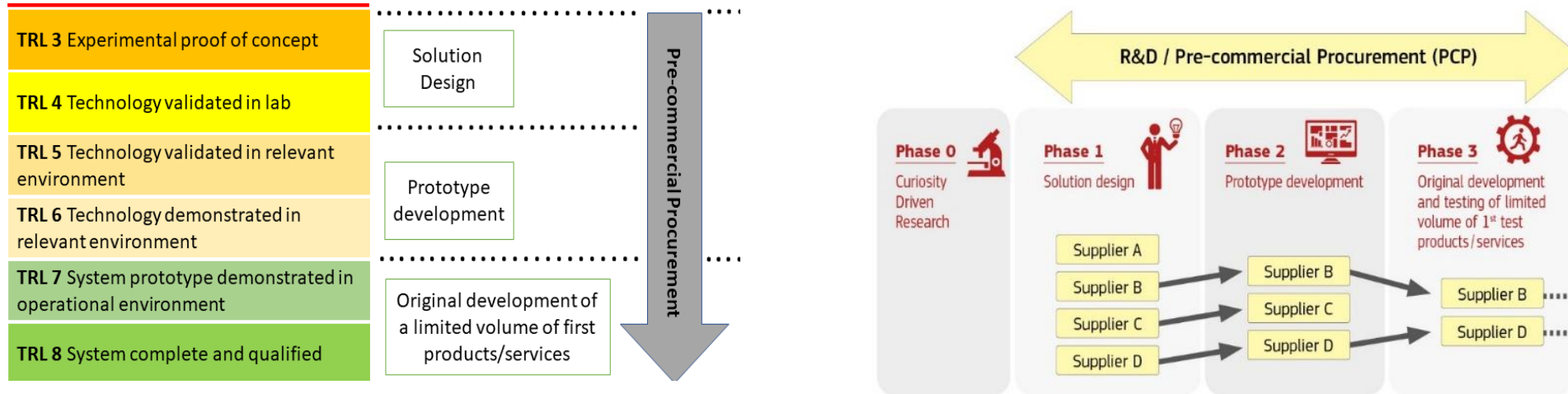


# Pre-Commercial Procurement (PCP)

*Innovation Procurement happens when **public buyers** acquire the **development or deployment of pioneering innovative solutions** to address specific mid-to-long term public sector needs.*



# PCP competitive approach



**PCP** is a public procurement of Research and Development (**R&D**) **services** characterized by:

- ✓ **competitive** development in **phases**
- ✓ **risk-benefit sharing** under market conditions → Public procurer does not pay the full cost of the R&D performed under the contract
- ✓ a clear **separation** between the procurement of the R&D from the deployment of **commercial volumes of end-products**

# PCP of R&D services

- R&D is needed to identify an **innovative solution** to satisfy public procurers' needs.
- **No solutions exist yet on the market** that meet public procurers' needs and based on a search conducted by the procurers, it does not seem that such a solution will be available on a short-term notice.



- (1) Improvements are needed but don't require new and significant R&D (only integration, incremental adaptations and improvement, customization...), so authority can act as early adopter of innovative commercial end-solutions newly arriving on the market
- (2) There isn't any solution or the problem is so technologically demanding that a radical and breakthrough new solution and significant R&D is needed.



# Challenge 3 Water – SOTA preliminary results

- The analysis revealed research on the
  - Methods for identifying the probability of occurrence of a drought
  - Systems and methods are provided for processing observation data
  - Methods for identifying risk level
  - Early warning- prediction
  - Water and drought management system (status, monitoring & forecast –estimated progression)
  - Maps & graphical representation of water information
- Technologies & tools: satellite imagery, multi sensor input (drones etc), computer vision, satellite images , vegetation information, and weather data, statistical analysis and mathematical analysis, water based network devices, ground measuring data, GUI, use of database management systems future data.

# List of keywords used

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- drinking water
- Earth observation
- drinking water management
- water quality
- Drought
- satellites
- fresh water
- water detection
- AI
- water demand
- machine learning

# Insights from providers

From the e-pitching & EU Survey questionnaire

# Insights from providers – e-pitching

- No one solution tackles all the functionalities.
- Possible combination of technologies.
- Potential solutions would be in TRL 5-6
- Potential synergies between providers for the PCP.



# Insights from providers - questions

- Are there requirements on “financial stability” or “minimum revenue of the company to participate?”
  - → **Low thresholds of PCP to allow a start-up or SME to participate.**
- What are the associated countries able to participate?
  - → [list-3rd-country-participation\\_horizon-euratom\\_en.pdf \(europa.eu\)](#)
- Can you make a list of the PCP requirements to make it easier to recognize them and address them?
  - → **The tender documents will include further specifications for a specific challenge**
- What kind of data do you use? Do you use raster data?
  - → **Differences between Public buyers**

# Insights from providers - questions

- Are there any restrictions for each budget?
  - → **more than 50% should be allocated to R&D activities as defined by Frascati.**  
[Concepts and definitions for identifying R&D | Frascati Manual 2015 : Guidelines for Collecting and Reporting Data on Research and Experimental Development | OECD iLibrary \(oecd-ilibrary.org\)](#)
- Is there any payment plan already envisioned?
  - → **initial % to start and payment based on milestones and at the end of each phase of the PCP, based on satisfactory completion. The tender documents will detail the payment scheme.**
- Is Critical Infrastructure considered?
  - → **It is relevant to all challenges. More details will be described in the tender documents.**
- What are preferred data sources, target users (non-expert, casual, expert), etc?.
  - → **Public buyers will provide more information.**

# Insights from providers - questions

- Are you interested in offering INSPIRE-compliant raster data if this is possible straightforward?
- Are you interested in timeseries visualization and analysis services?
- Would you be interested in vendor presentations on the state of the art?



# OMC Report

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Follow up steps



# OMC Report

- Summary of OMC activities conducted.
- Anonymized OMC report based on the feedback from providers and users.
- Information on the next steps.
- To be published on the website of PROTECT and in EU Survey.

<https://ec.europa.eu/eusurvey/runner/PROTECT-PCP-2023>



# PROTECT OMC timetable

Date	Event
20 September 2023	Publication of the Prior Information Notice (PIN) on TED
25 September 2023	Publication of the OMC documents in the project's website and EU Survey: <a href="https://ec.europa.eu/eusurvey/runner/PROTECT-PCP-2023">https://ec.europa.eu/eusurvey/runner/PROTECT-PCP-2023</a> Open registration for the events and submission of questions
10 November 2023	Deadline to submit questions (17:00 CET)
14 November 2023	Deadline to register for the webinars (17:00 CET)
15-16 November 2023	4 OMC webinars
17 November 2023	Publication of the Q&A document in the project's website
20 November 2023	Deadline to fill in the EU Survey (17:00 CET)
25 November 2023	Publication of the OMC report
30 November 2023	Closure of the OMC

[Services - 574857-2023 - TED Tenders Electronic Daily \(europa.eu\)](#)

[PROTECT-OMC-document-2023-FINAL-updated.pdf \(protect-pcp.eu\)](#)

<https://ec.europa.eu/eusurvey/runner/PROTECT-PCP-2023>

# Questions?

Ana Lucia Jaramillo

Corvers Procurement Services B.V.



# Presentation of the WATER challenge and use cases by the group of buyers

Hans van Leeuwen, HWH/STOWA, NL

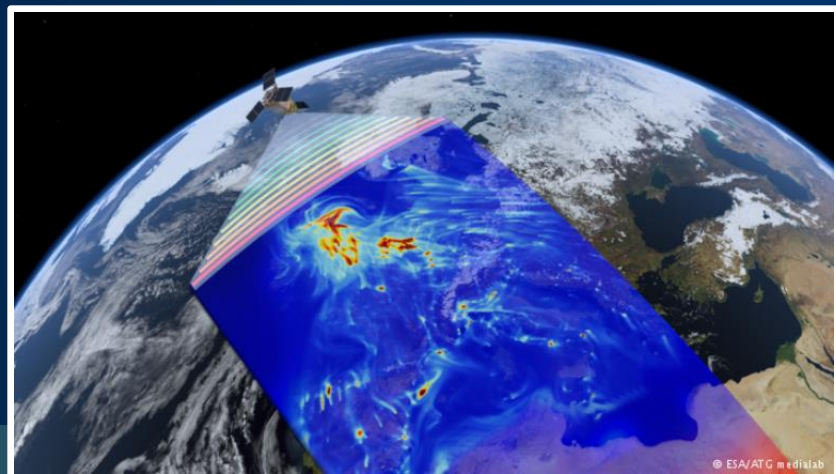


stowa



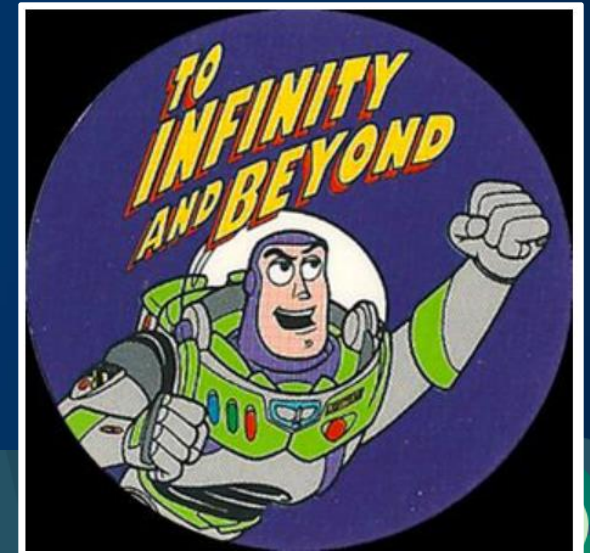
# Water Management from space in NL

The SAT-WATER program  
Open Market Consultation  
WATER CHALLENGE  
16 November 2023



PROTECT

Dr. Hans J.C. van Leeuwen,  
STOWA/Het Waterschapshuis  
Programleader SAT-WATER  
(Erik Nobbe & Jeroen Leusink) on  
behalf of  
Dutch Water authorities &  
executing bodies Climate & Water  
Ministries





## ***Agenda:***

- ***Introduction: The Objective of the Water Challenge***
- ***Use cases of the local watermanager & policy maker (drought/waterexcess)***
- ***Central alignment with partners on 'EO-based' basic- and water-information***
- ***BUYER needs and PROVIDER requirements***
- ***R&D for additional water-information (TRL5 to TRL8) on top of central aligned water info***
- ***The Dutch SAT-WATER Program: blue print for operational Information for regional use***



# Objective PROTECT Water challenge

## Goal:

to be more climate resilient through a better EO-based information position and alignment between regional water management organisations across EU memberstate borders and in common riverbasin systems

## Requirements:

- Production of common operational information products of the local/regional water/soil/meteo systems
- Interoperability between member states organisations through common procurement mechanisms
- An active user (CoP) network for exchange, validation, improvement, update, experience



# Focus on (sweet) water distribution

For several sectors (urban, rural (agri/nature), drinkingwater (ao industries, food/cooling), recreation, etc.) in society a well balanced (sweet) water demand & supply in city and rural area is of utmost importance and is more and more challenged by extreme climate conditions (drought/waterexcess).

It is therefore we focus on the EO based information potential on water quantity and quality.

Of course to mitigate these extreme climate/water situations watermanagers have to anticipate with day-to-day operational information in their management area (dashboards)

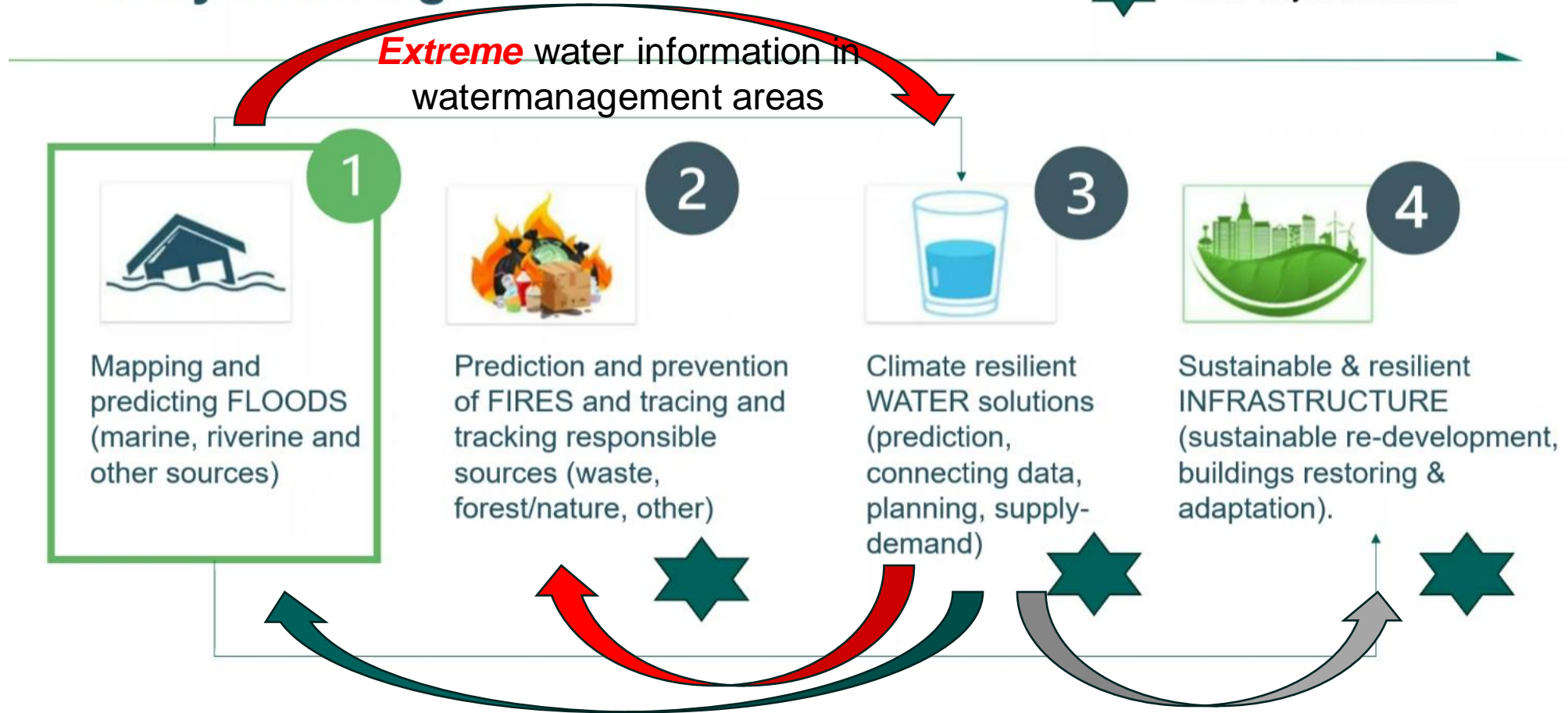




# Water challenge is complementary and essential to other challenges

## 4 key challenges identified

★ Lead buyer identified

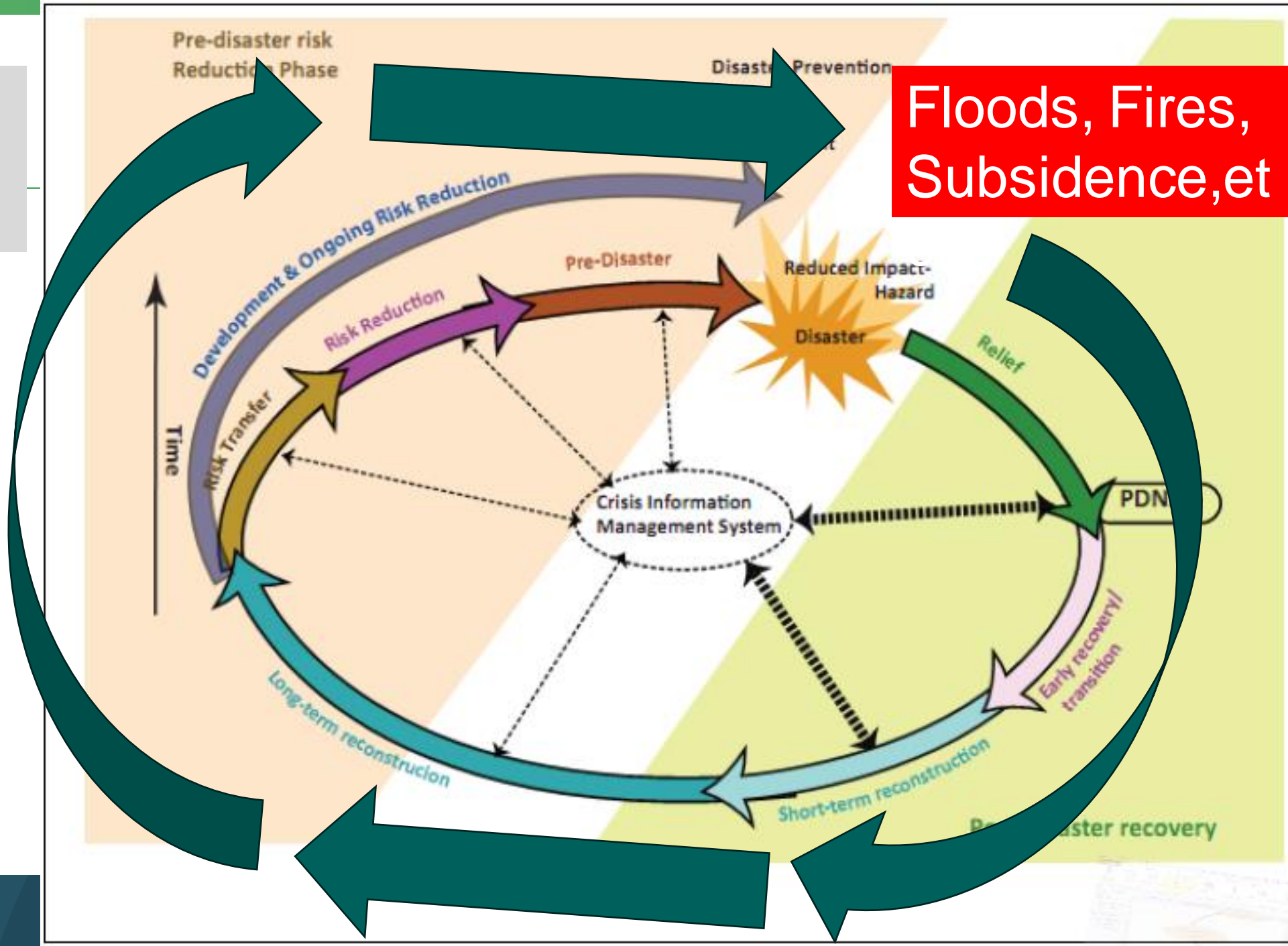


Basic and *regular* water information in watermanagement areas to anticipate on climate risks: Flood, Fire, Subsidence, etc

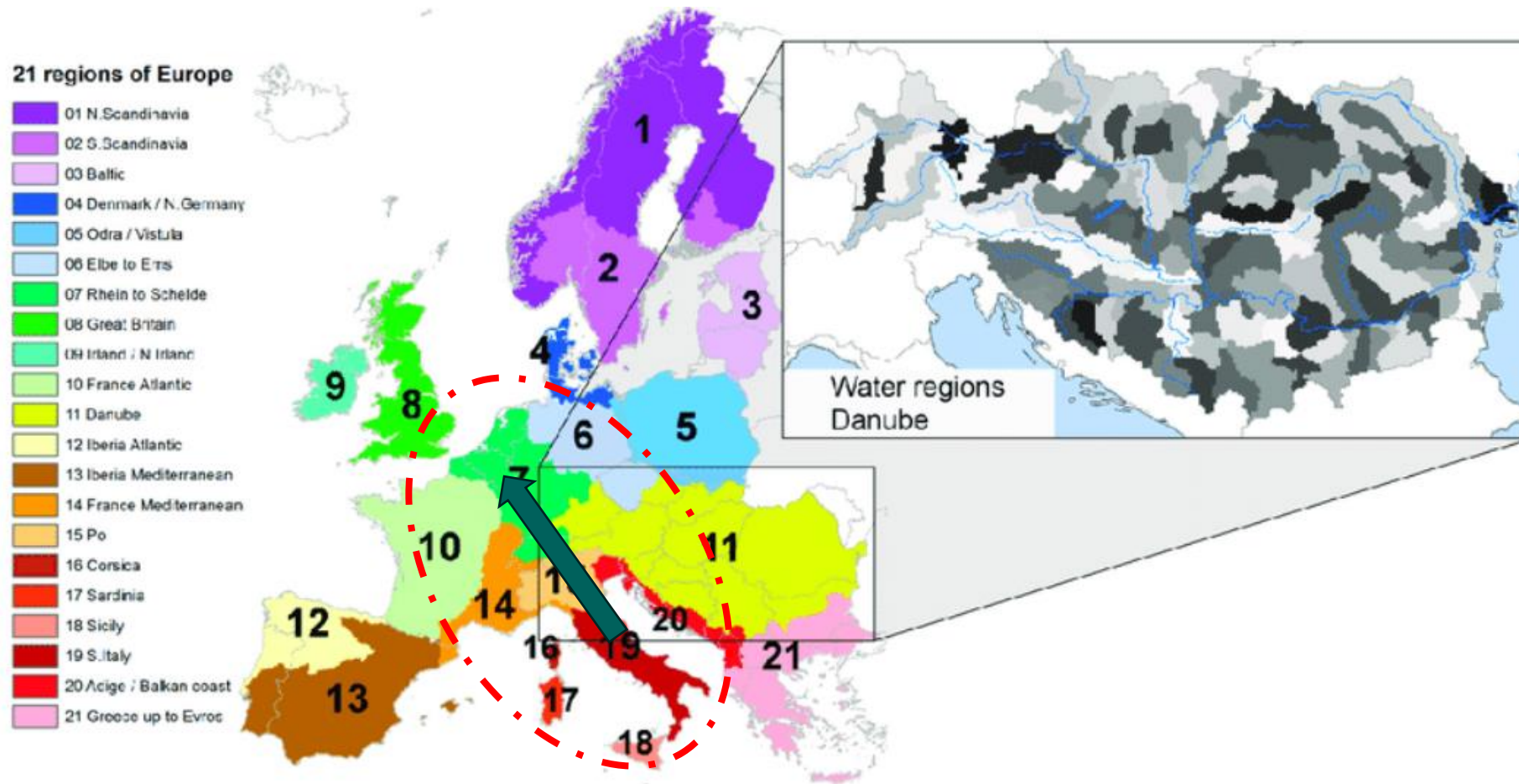


# The crisis cycle & information supporting system

- Regular water management in times of 'peace'
- **Disaster & crisis** management in times of 'war'



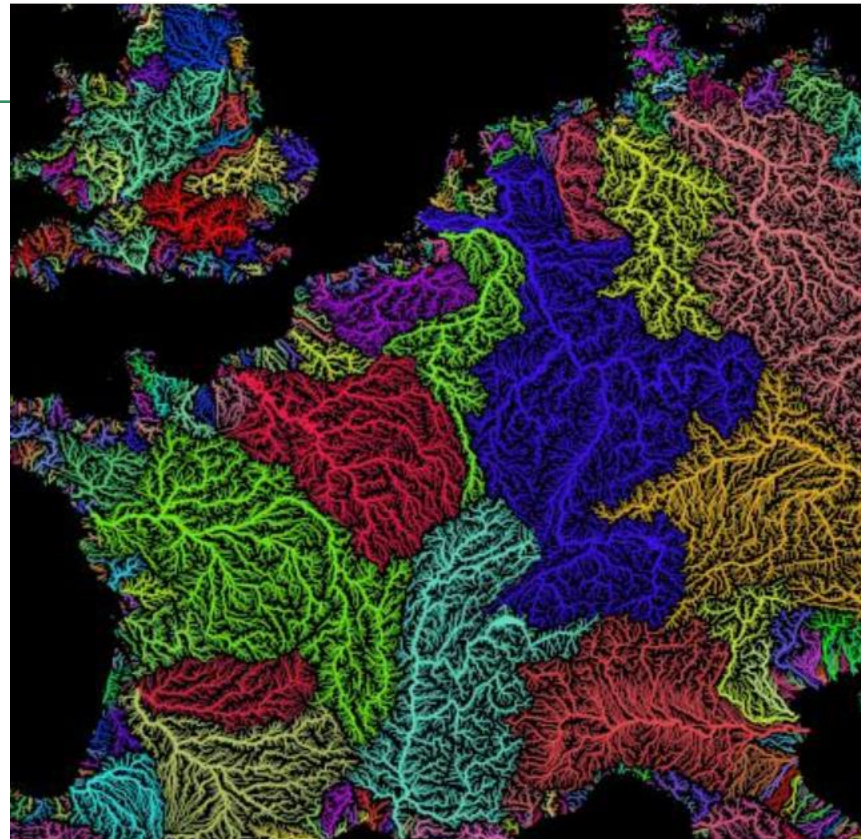
# Focus Regions (see red dotted line) on Watermanagement regional/national/European infrastructure



The focus of the waterchallenge is (-.-.-.-) defined for the Rhine, Meuse, Scheldt, Po riverbasin and especially their sub basins for local/regional water management



# Focus on Riverbasin and local/regional sub-basins (physical water basin regions)



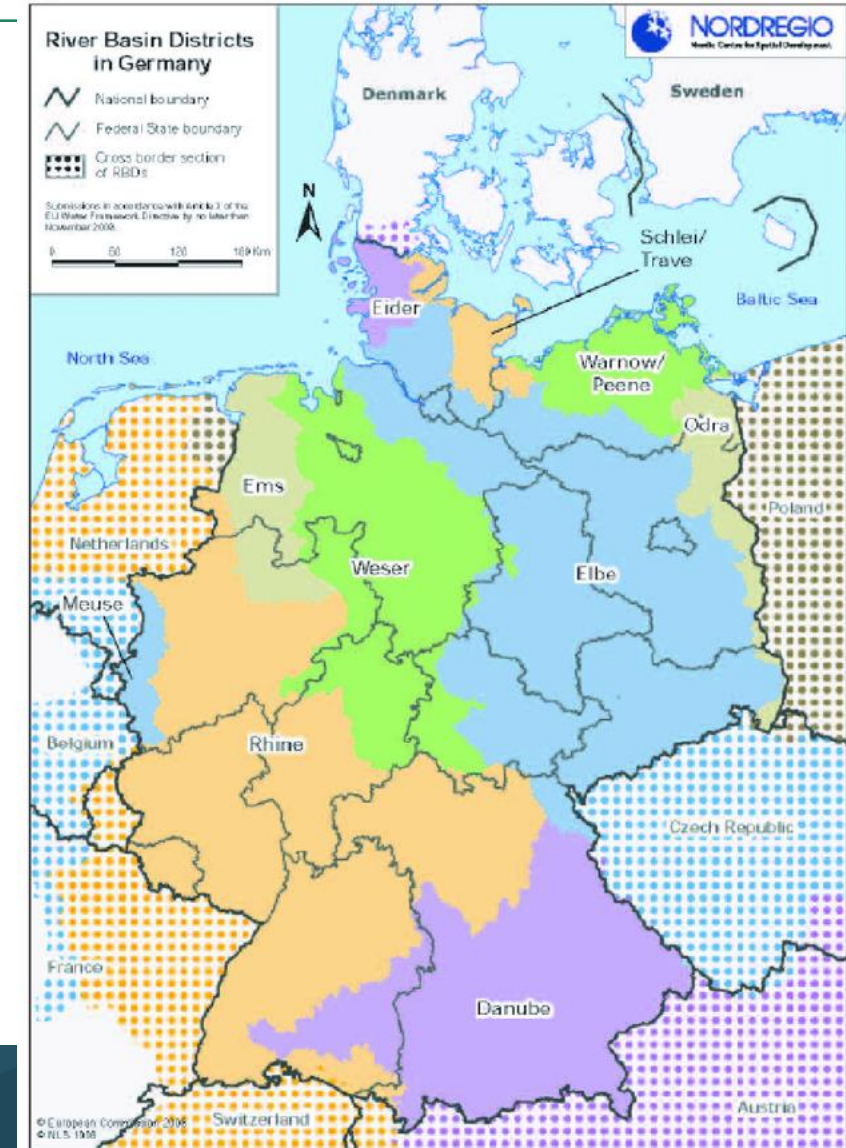
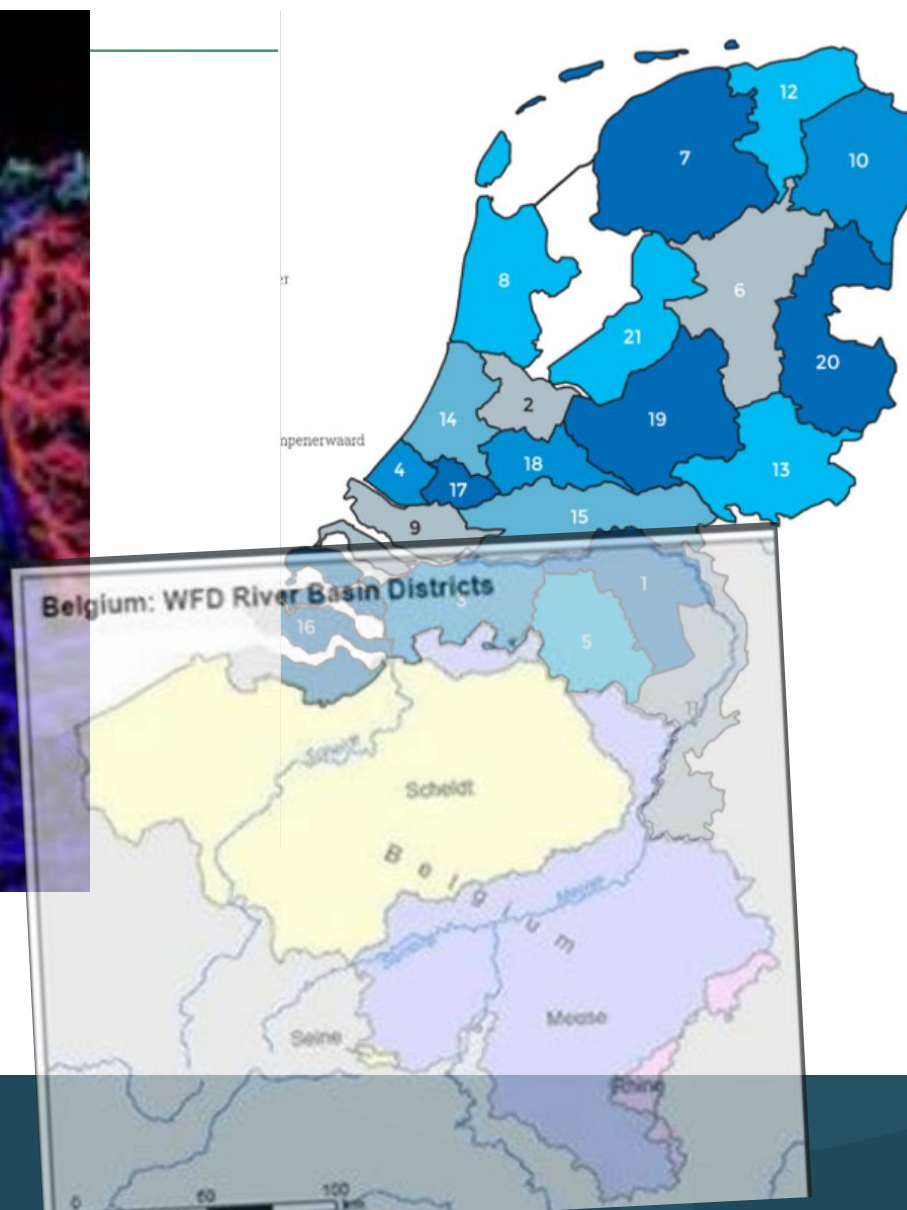
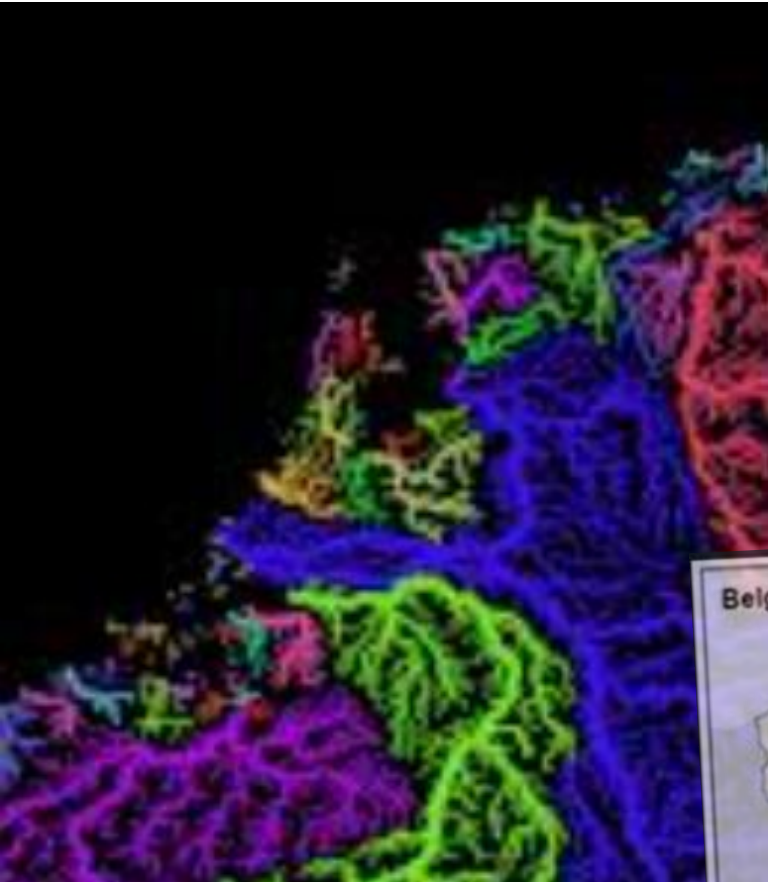
## International and national river basin districts and sea regions

- |  |   |
|--|---|
| International river basin district               | Regional sea coastline                          |
| National river basin district                    | Black Sea                                       |
| International river basin district outside EU-27 | Mediterranean Sea                               |
| National river basin district outside EU-27      | Celtic Sea, Bay of Biscay and the Iberian Coast |
| International river basin district boundary      | Greater North Sea                               |
| Country boundary                                 | Baltic Sea                                      |
| EU-27 boundary                                   | Outside EU-27                                   |

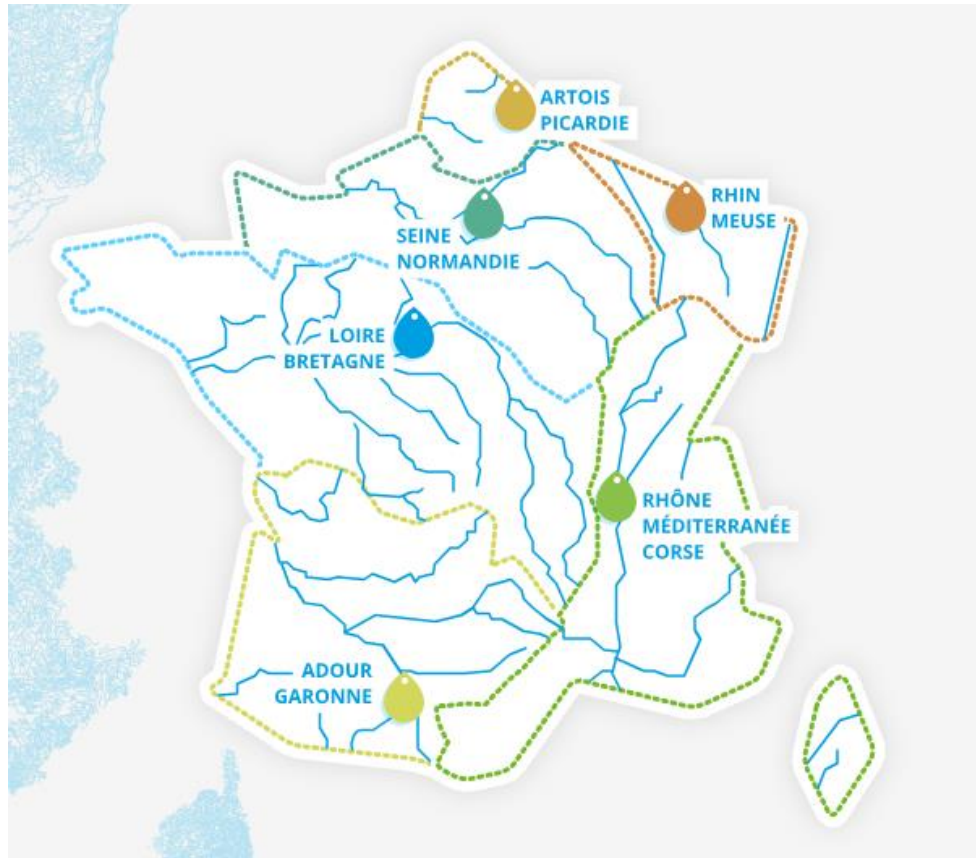
[https://www.reddit.com/r/europe/comments/rcit49/river\\_basin\\_watershed\\_map\\_of\\_europe/?rdt=46102](https://www.reddit.com/r/europe/comments/rcit49/river_basin_watershed_map_of_europe/?rdt=46102)



# Remind!! Difference in physical watershed and administr. water management regions

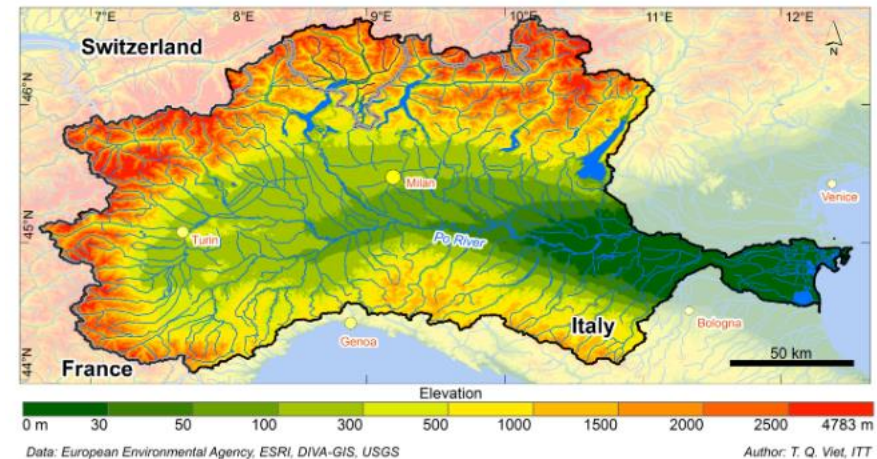


**Areas in the same riverbasins to the lower delta's like in NL, Italy which origin in France and Switzerland (upstream) have mutual interests in commonly shared water information**



## PO RIVER BASIN (ITALY)

The Po River with 652 km of length is the longest river in Italy. The River Basin covers an area of 71,000 km<sup>2</sup>, which belong to 3,200 municipalities of 7 regions: Piemonte, Valle d'Aosta, Lombardia, Veneto, Liguria, Emilia-Romagna, Toscana and the Trento Autonomous Province in the north Italia. The basin has also small areas located in Switzerland and France (Figure 1). The basin plays a significant role in Italian economy as producing 40% national GDP, consuming 48% of national produced energy, and approx. 25% Italian population living here. Large population, vibrant socioeconomic activities lead to water quality degradation, challenging management of water and land resources, increase in hydraulic and hydrogeological risks and loss of biodiversity (PRBA, 2007). Consequently, the region is highly vulnerable to droughts and floods and to further degradation of environmental quality.



[Po\(Italy\) - BASIN INFO – Web based River Basin Information system \(basin-info.net\)](http://basin-info.net)  
[Home | Water agencies \(lesagencesdeleau.fr\)](http://lesagencesdeleau.fr)



# The current European information on Water compared to PROTECT water information

The COPERNICUS program and especially it's EFAS water (model) system on (supra) national Riverbasin level and the European Emergence services are partly built on/updated with EO based information as input to hydrological large scale hydrological/meteo/soil modelling systems. This information sometimes can help local watermanagers but is mostly too general and can indicate trends.

In this complementary PROTECT waterchallenge project the focus is put on daily local validated, tailored and more small scale (high detailed) information, which helps to understand the actual availability of local sweet water and with that water quantity and quality indicators.(for hind-, now- and forecasting purposes)



# European/national/regional (Top-Down) water-management vs Dutch local/regional/national use case example (Bottom-Up)

- **EFAS collects near real-time water level and river discharge observations to display national/regional threshold exceedances**
  - European wide, observation-based flood monitoring:
    - EU-EO & insitu/model based instrument <https://emergency.copernicus.eu/mapping/ems/rapid-mapping-portfolio>
    - National data on hydrology & meteo & satellite based information: <https://www.efas.eu/en/share-your-data-efas>
  - Dutch examples on national operational EO based information products:** e.g. OWASIS (hydrology/wateravailability based on EO based evapotranspiration), WIWB (meteo)
  - Gridded meteorological maps (CEMS)
    - National data on hydrology & meteo & satellite based information: <https://www.efas.eu/en/share-your-data-efas>
  - Dutch examples on national operational information products:** e.g. KNMI, WIWB (meteo). And ground radar: the IRC (international Rain Radar Compsite, with Germany and Belgium)
- **EFAS provides a number of hydrological monitoring products based on LISFLOOD simulations driven by observed meteorological input**
  - Soil moisture and snow water equivalent (mostly model based, maps on national initial conditions),  
**Dutch examples on national operational EO based information products:** e.g. LIBV, soil moisture & OWASIS)

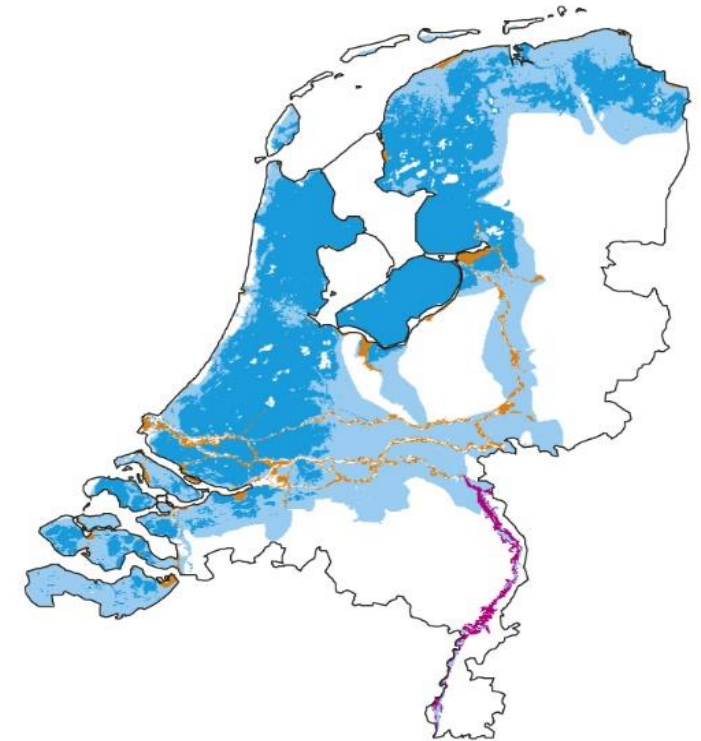




# OWASIS-NL Improved water availability information for water manager

- **Efficient water management** is crucial to the Netherlands sweet water distribution.
- **Drought and availability of sweet/fresh water** is becoming more and more problematic due to climate change.
- Lack of information on water availability and **available storage capacity** is a growing issue in current operational watermanagement.

Overstromingsgevoelig gebied, 2005



Bron: PBL (2009)

Binnen dijkringen

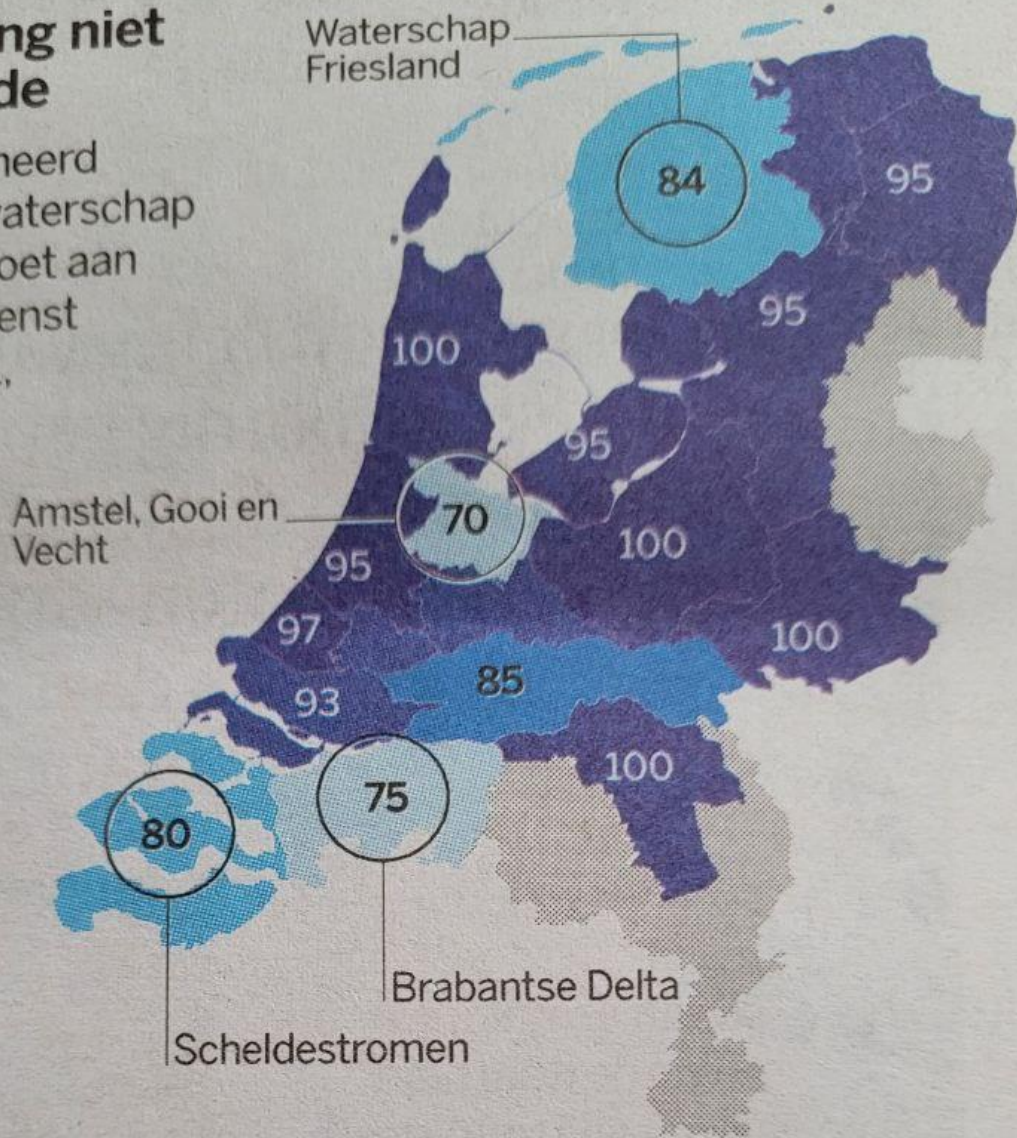
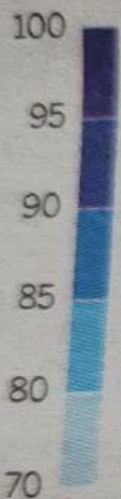
■ Beneden NAP: 26%

■ Boven NAP: 29%



## Waterpeil lang niet overal op orde

Aandeel van beheerd gebied waarin waterschap structureel voldoet aan peilbesluit (gewenst waterpeil), 2021, in procenten



In de grijze gebieden kent het waterschap een 'vrij afwaterend watersysteem' en zijn er geen peilbesluiten

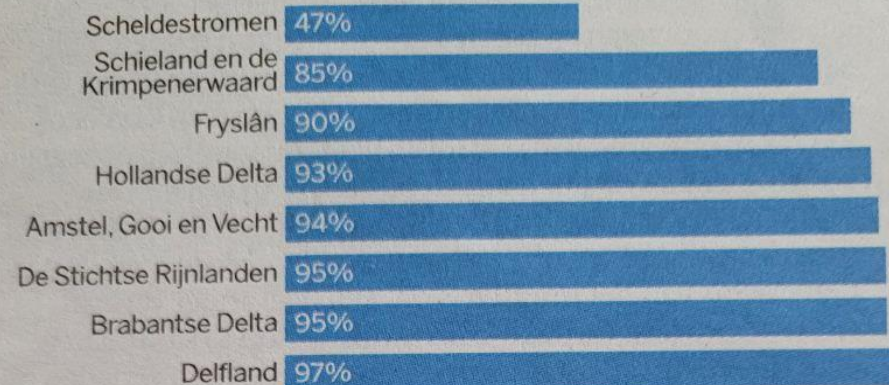
**Press VK'14mrt23**

140323 © de Volkskrant

Bron: Unie van Waterschappen, Waterschap Scheldestromen; kaartgegevens hWh

## Gewenst waterpeil niet altijd haalbaar

Aandeel van gebied waarin het waterpeil technisch haalbaar is

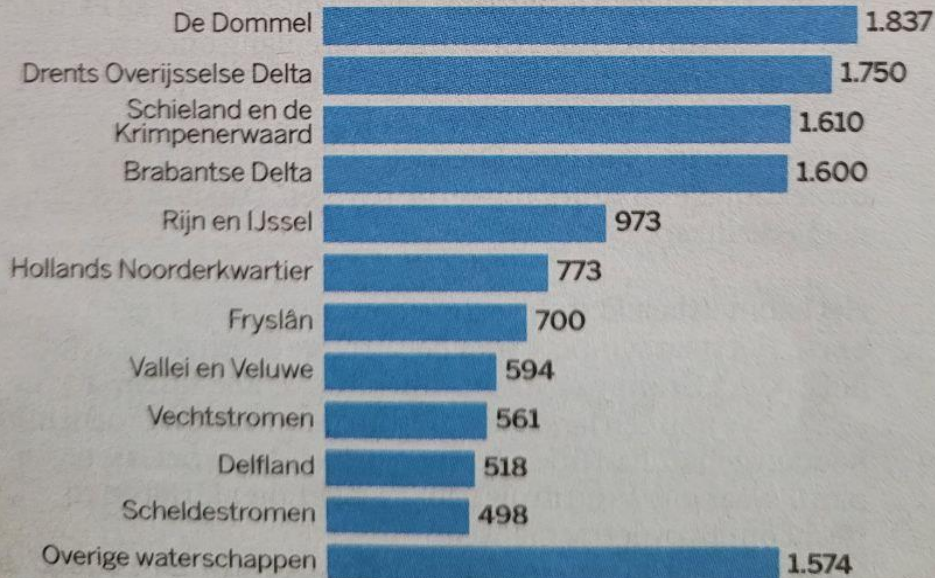


Voor de overige water- en hoogheemraadschappen is het peilbesluit voor 99% of 100% technisch op orde.

140323 © de Volkskrant. Bron: Unie van Waterschappen

## Duizenden hectaren voldoen niet aan overlastnorm

Aantal hectaren waar (nog) niet wordt voldaan aan normen voor wateroverlast, per waterschap (2021)



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# Input to integral systems (BIGDATA & AI)

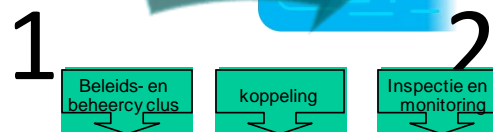
## Smart Governance on water management



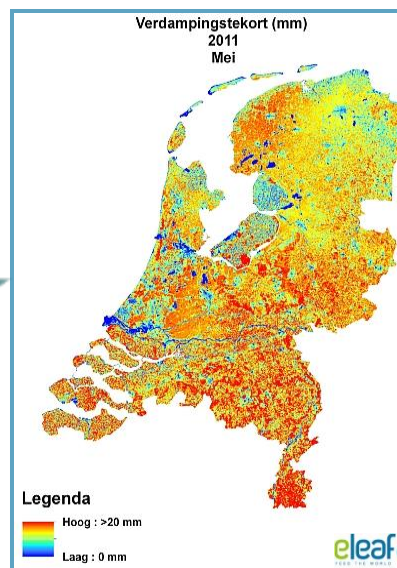
Meteo



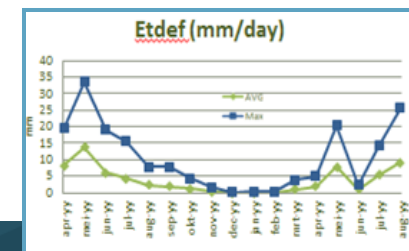
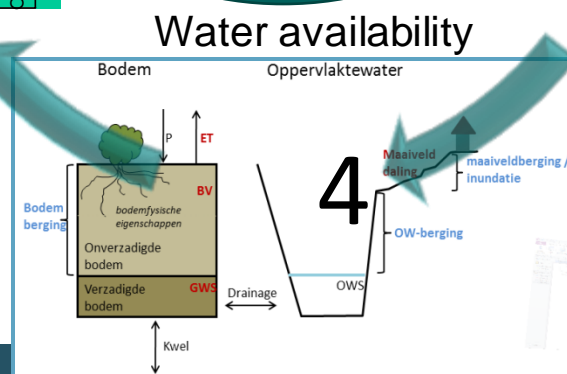
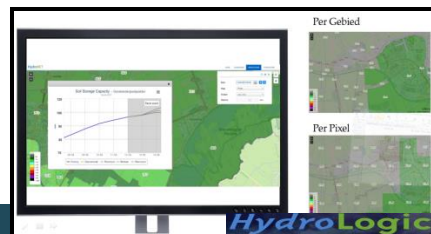
EO-Info: evapotranspiration



1. Governance: smarter & better cooperation
2. Meteo & Info Network &
3. RS monitoring &
4. Modelling, AI
5. Smart management by better information



Operationele Sturing



# Satellite information input to Models/DSS !!



## OWASIS 2.0



INPUT DATA



MODEL AS SERVICE



STORAGE & DISTRIBUTION



Historical

- Precipitation (radar)
- Evaporation (Satellite based)
- Groundwater & Soil Moisture data

Forecast 10 days

- Precipitation
- Evaporation

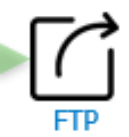
extended Water balance solver

System characteristics (soil type, land use, elevation,...)

- Water availability
- Soil Moisture
- Ground water levels
- Water demands



Database history & forecasts



FTP



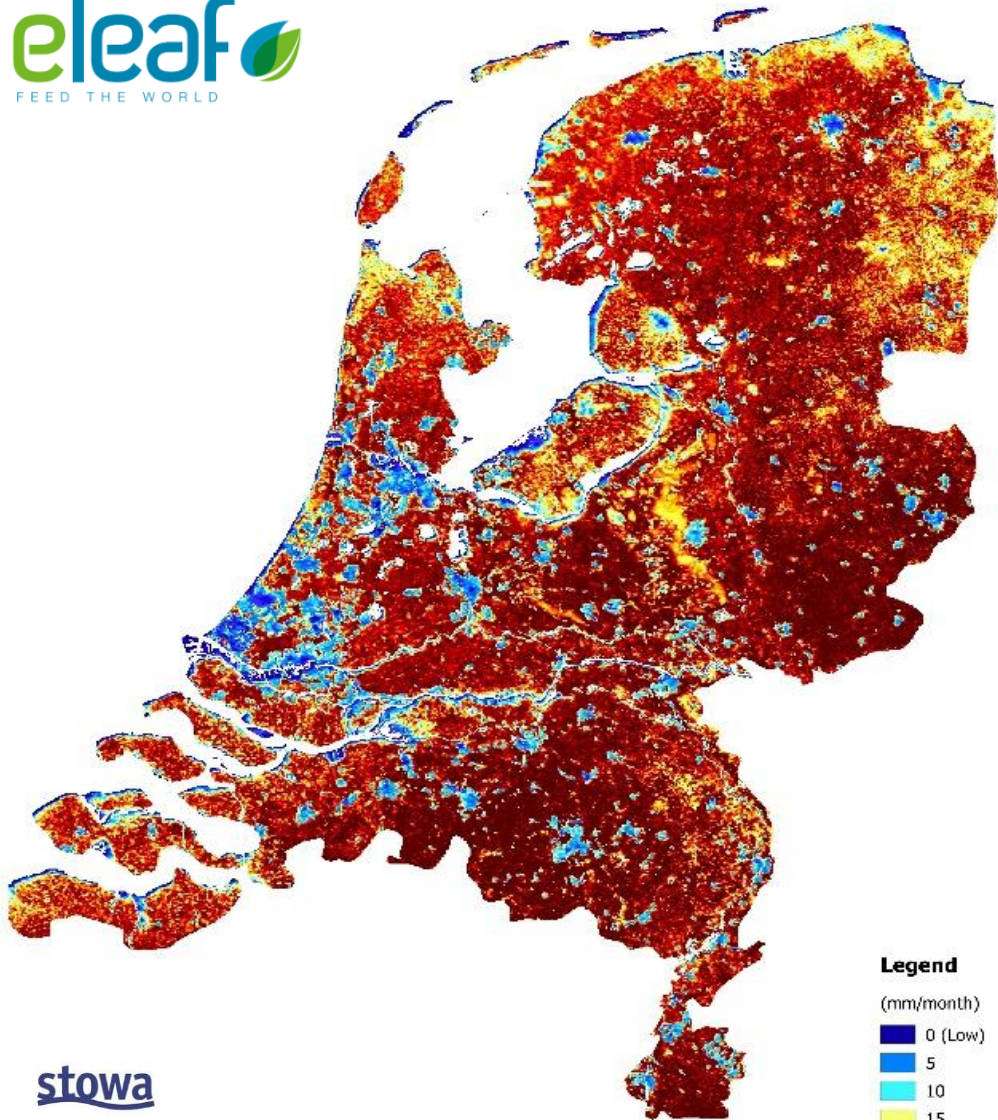
HydroNET Portal



Use in  
Water Management & Policies  
DSS



Evapotranspiration deficit (mm)  
1-23 July 2018



stowa



**Legend**

(mm/month)



stowa

# Bodemvocht

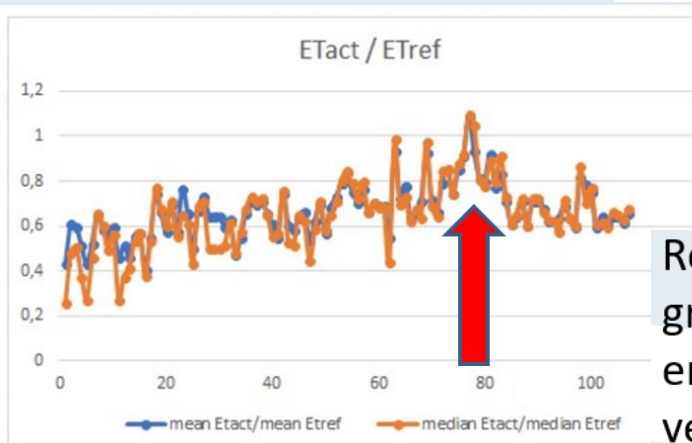
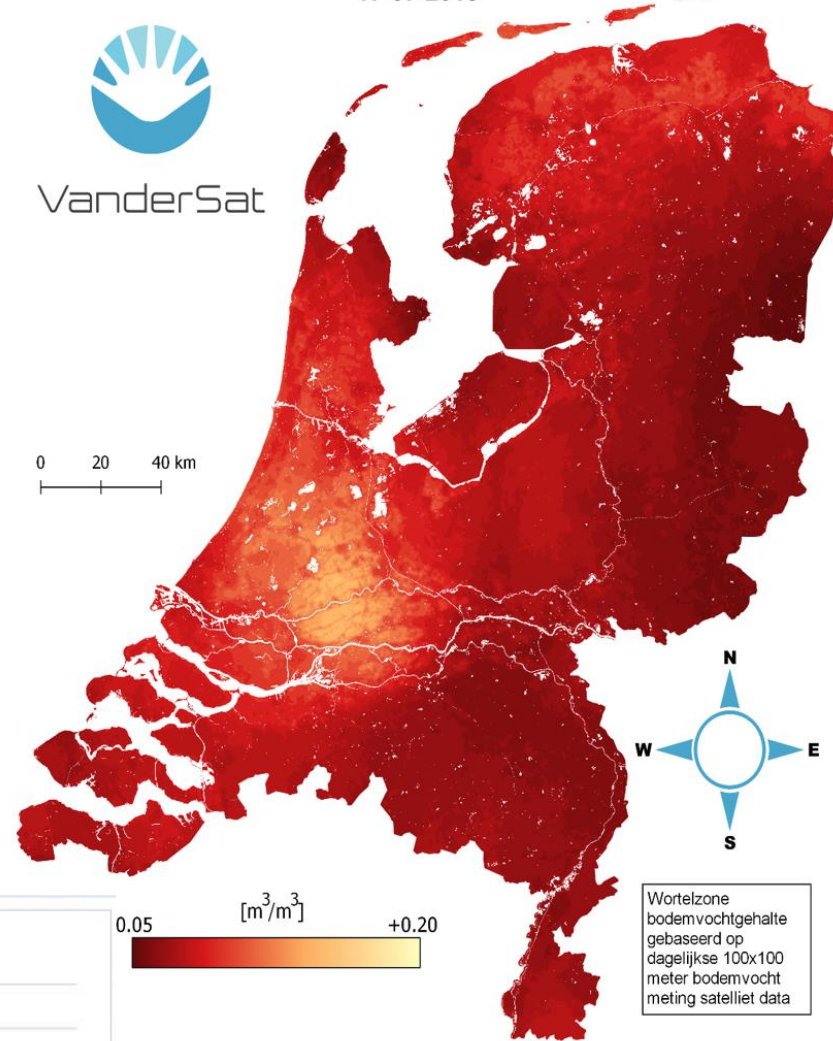
Wortelzone  
Gebaseerd op 100x100m  
bodemvocht data uit satelliet  
(zie later Planet/VdS)

Letop:  
Hoge Zandgronden Z & O NL  
Veen-weide gebied West NL



VanderSat

17-07-2018



Relatieve verdamping eind juni slaat om:  
groeibeperking van gewassen zichtbaar:  
er is bijna geen water meer om te  
verdampen door gewas

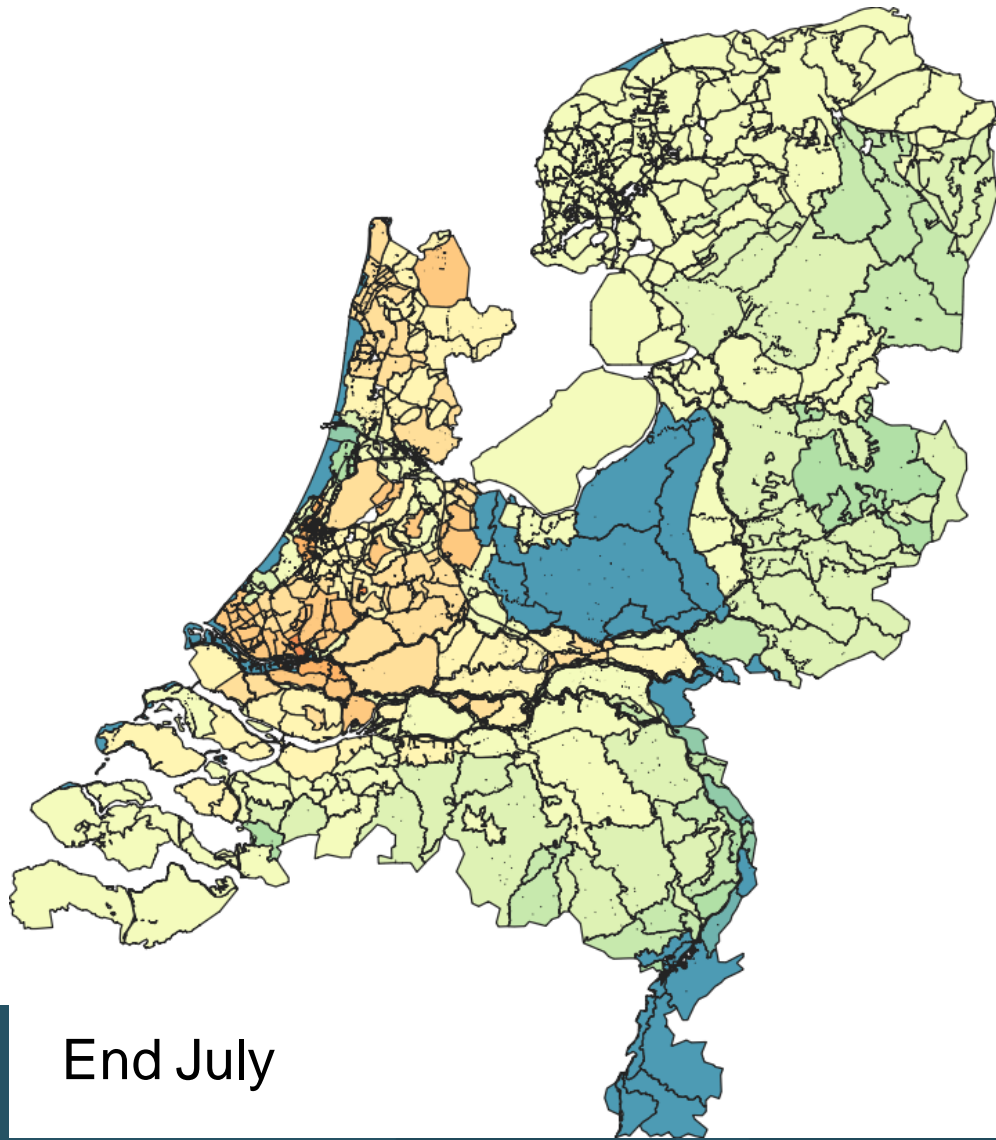


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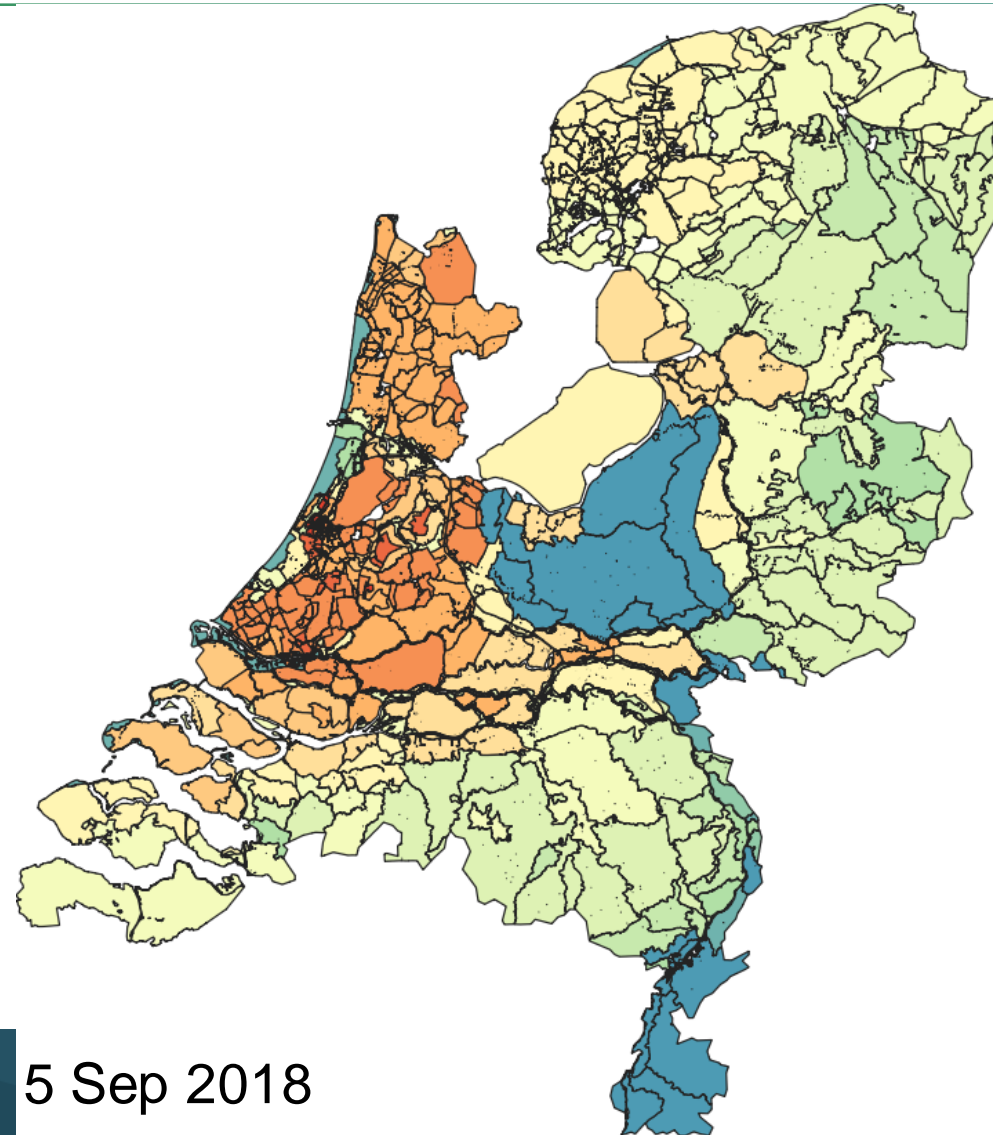


# Monitoring Drought & Waterexcess

using available soilmoisture storage (info from OWASIS)  
with actual evapotranspiration SATDATA 3.0 data in watermanagement areas



End July



5 Sep 2018

### Legenda

Beschikbare bodemberging (mm)

- 0 - 25 mm
- 25 - 50 mm
- 50 - 75 mm
- 75 - 100 mm
- 100 - 125 mm
- 125 - 150 mm
- 150 - 175 mm
- 175 - 200 mm
- 250 - 300 mm
- 300 - 400 mm
- 400 - 500 mm
- 500 - 600 mm
- 600 - 700 mm
- 600 - 700 mm
- 800 - 1000 mm
- > 1000 mm

# OWASIS on drought & waterexcess: practical level

1. **Actual Moisture Content soil profile Water management area ( peilgebied):** Waterboards use OWASIS to assess the status of profile watercontent every day (for operational measures in times of waterexcess and drought)
2. **To pump or keep the water in management area:** Waterboardrds use OWASIS in combination with weather predictions to advice the water managers
3. **Waterbalance:** Waterboards use OWASIS as indicator for interactive waterbalance insights (e.g. Waterschap Brabantse Delta in their crisisroom for alerting and communication or water management measures)
4. **Information dashboard ARK/NZK (amsterdam region):** Ministry Infra & Water (Rijkswaterstaat) use OWASIS to present regional difference in soil moisture for mutual smart management (between the water areas).



# OWASIS: what on policy level?

1. **Effect/impact monitoring:** Waterboards use OWASIS to evaluate the impact/effects on the change from winter to summer waterlevels
2. **Validation - waterbalance.** Indirectly OWASIS is used as indicator to validate waterbalance models and daily (field)measurements
3. Operational **Decision Support systems** (VIDENTE, peilbeheer)
4. To **advise waterboards** on the transition from summer to winter water levels (& vice versa)
5. And **many other functions in the policy cycle** not yet discovered (reference level (0-meting), time-series (trends/anomalies), monitoring & evaluation, Cost-benefits and efficiency, etc.



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# Central Model instrumentarium (NHI) as basis for policy based climate indicators

In order to cover the water management and policy needs spectrum one needs to be aware of the waterinformation/indicator user chain:

1. Basic information carriers (Lufo or high resolution Satellite data, Detailed height model, Admin. Boundaries, basic topographic data, etc. and mutations tracking)
2. Thematics EO-based thematic water related information (evapotranspiration, soil moisture, weather/meteo)
3. Model-based WaterManagement information (wateravailability in soil profile)
4. Decision modeling based on Policy indicators (water/climate)



# Example of EO-based input to the Dutch national Hydrological (modelling) Instrumentarium (NHI) from STOWA-hetWaterschapshuis.

EO-Based Information on Water and Basic



Basisdata

SW-Tools & Water Information model

<b>Software</b>
Modelcodes
Tools
<b>Data</b>
Gedeelde modeldata
<b>NHI</b>

Applied Models for Policy indicators

Toepassingen
LHM's: Landelijke Hydrologische Modellen
RHM's: Regionale Hydrologische Modellen
WHM's: Waterschap Hydrologische Modellen
PHM's: Provinciale Hydrologische Modellen
DHM's: Drinkwateronttrekking Hydrologische Modellen
SHM's: (probleem) Specifieke Hydrologische Modellen
Etc.

Water Management & Policy

- Nutrients ground & surface water
- Soil Subsidence
- Yield losses
- Terrestrial nature values
- Aquatic nature values
- Groundwater (drinking water) reserves
- Sweet water demand & salt concentration
- Waterdepth

For the benefit of national & regional policies and water management

# Information base and additional needs

Information challenge in this PROTECT project between memberstates:

- Create a common regional basic information carrier (interoperability) as common foundation for the water thematical information:
- Create a common regional water/meteo information main EO-based parameter base (as input to the aforementioned water availability and further indicators to local water management/policy)
- Development of additional prioritised EO-based water information for management and policies based on national member states user needs assessment



# Needs (hWh) from PROTECT water Challenge: Cooperation on EU scale (watermanagement)

- Need for exchange of national information & knowledge(!) is crucial for European scale information monitoring. Therefore a combination of forces of knowledge, Government & business/market (KGB model) is required!
- Need for scaling: embedding the national/regional scale (local finetuning, validation & acceptance) into this framework in order to cooperate is also a prerequisite
- Therefore the (inter)operability information provision (including, standards, management & maintenance of archives, procurement/contracting, regulations on AI, IP, etc.) on national level to support regional/national/European waterpolicies is crucial
- This requires a national strategy & implementation on continuous monitoring/information production, which is qualified (calibrated and validated to local/national and European standards (exchange))

Example of blueprint (?) of information production on EO (Earth Observation):

The Dutch Waterschapshuis and STOWA national water management information production hub  
(through its SAT-WATER programme, see annex)



# BUYER group (2 categories)

The **Water managers** responsible for the regular day-to-day practise need information to monitor the (sweet) water situation of their area.

Therefore it is important to avail over up-to-date daily information:

1. To model the wateravailability (and spatial distribution)
2. To model the level of water saturation in the profile
3. Indicator of the quality of the water
4. To anticipate on extreme shortage or excess of water (crises)

**Basic information** management (interoperability, standards, combination)

In order to organise the water information information carriers are essential (like basic topographic layers, administrative information on water infrastructure (channels, fields, etc.)

Sometimes central water (& ICT) Organisations procure or manager these 2 type of datasets in their own organisation or sometimes they work together with other organisations (like kadaster, topographic centers)



# Participation of Public Buyers



# Questions to Public Buyers

The public authorities should be able to specify about their challenges:

- **Spatial resolution desired.** Or in non-technical words the area they would like to be covered in km/m and how closely they would like to look at that area in meters, centimeters or even millimeters, depending on their need.
  - If they have already worked with other solutions before to specify this for the previous solutions and to express the new measurements desired ( for example: if the previous solutions was able to provide an image with a coverage of 10 m now they would like to have for 2 m) and if they have not worked with CS before to specify it in a form of wish based on their own knowledge regarding the problem by conducting studies or what other actions they did in order to collect data about their need.
- **Update frequency which means how often the data will be updated** (for example: real-time, near real-time, daily, weekly, seasonal etc.)
- **If as a part of the CS, the providers should/shouldn't provide training to the public authorities** in order to use their CS. Depending on the public authorities' familiarity's level on working with space data and CS, this might/might not be required.



# Providers

- Through well defined procurement the market is invited through a competitive procedure to produce both type of information categories (basic and water information).
- The example of the Waterschapshuis in the NL shows that this way of information production can work in operational mode (this project TRL5 towards TRL8) on the long term by implementing a business case based on contributions of the local watermanagement organisations. (framework of 3 to 4 year with a selected consortium)
- To co-create and develop new additional products on top of the information base (earlier mentioned) by common R&D based on needs priorities.







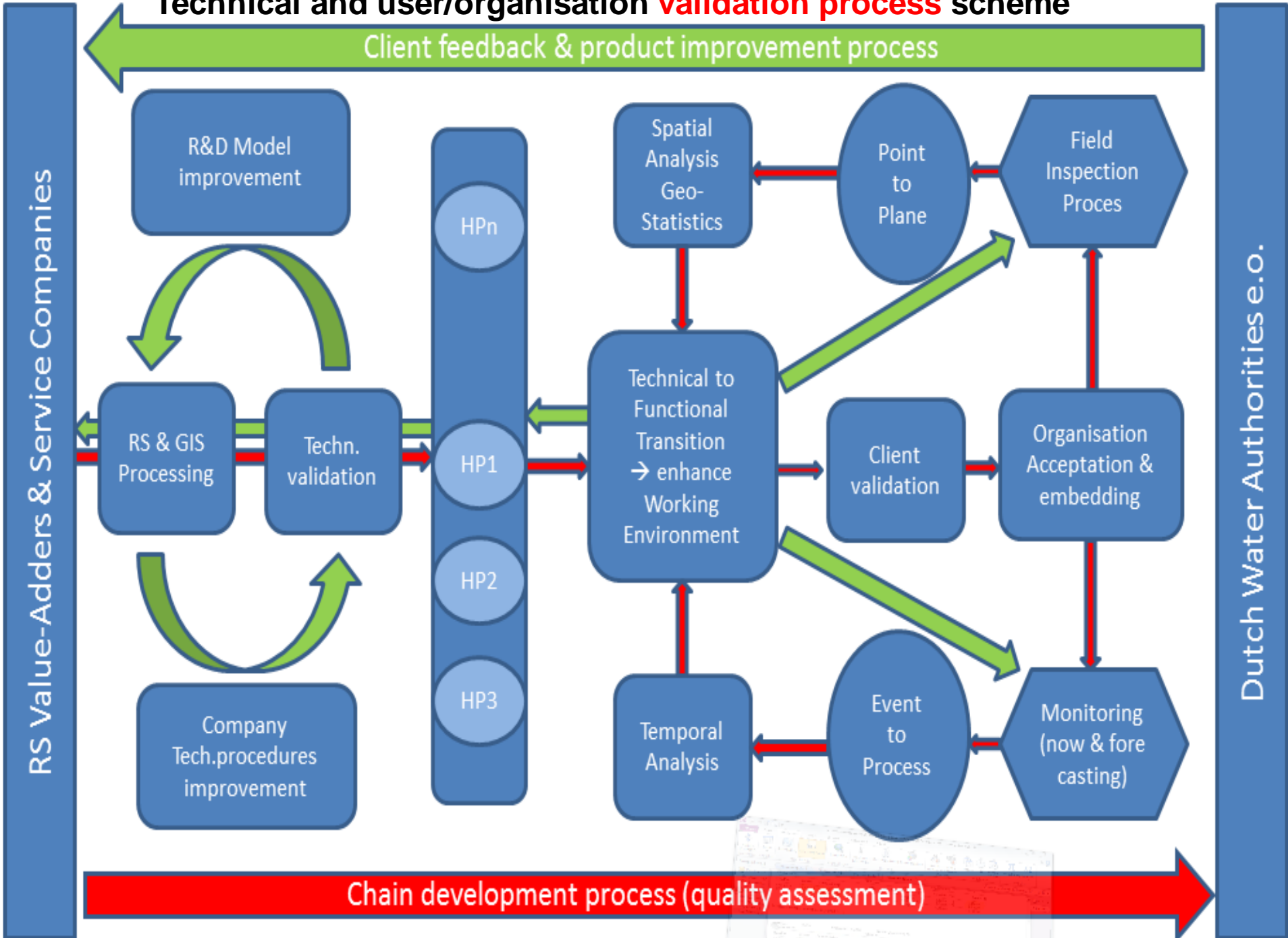
# R&D in PROTECT

- To develop operational procedures for information products, three phases can be distinguished:
  - design & definition of local cases (user & technical partner)
  - demonstration & testing by selected market parties (procurement)
  - validation (technical) by selected market parties (procurement)
- Central is the technical guidance of an institute/partner to be selected which has as well developed (and up-to-date) water as technical (earth observation) knowledge capacities as well the technical instrumentation (AI, modelling, etc.)
- Additional Assistance is asked from a guidance group with European renown knowledge entities (DG-JRC, memberstates institutes)



# Technical and user/organisation validation process scheme

**TECHNICAL  
VALIDATION**



**ORGANISATION  
VALIDATION**



# User validation by local watermanagers

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- Very important is the user acceptance and commitment of the regional water organisations who have to steer the requirements (timeliness, replaceability, cost efficiency, quality, etc.) of the technical information production.
- To assist for design of local representative practical cases
- To shape user requirements for the final procurement of information products to be supplied by selection of market service provider
- Etc., etc.



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Thank you for your attention !!



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50  
JAAR

PROTECT

hetWaterschapshuis

Questions  
& Discussion



## Dutch SAT-WATER Program: Blue print for Regional Use

Waterboards, ministries: monitoring needs in the frame of:

- Delta Program (oa. DPRA), Sweet/Silt Water, Subsidence, etc.
- Agriculture transition (oa. subsidence, waterquality, waterquantity)
- Natura2000 policy (waterquality, waterquantity)
- Climate Adaptation (DONAS, 6 ministries) (drought, waterexcess, heat, sealevel-rise/floods) & related emissions of greenhouse gasses
- Etc.



## SAT-WATER Program & reach out for Europe

National monitoring (water management) and **need for cooperation** with other similar EU-member states programmes on the EC policies in order to learn from each other and cooperate on supra national level is essential (e.g. watershed level, atmosphere and coastal issues, etc.) !!

Exchange mechanisms between national & European (member state) programmes need to be encouraged! Discussion on how to join? (Copernicus, ESA or user groups?)





Information production Watermanagement  
Satellite Applications = SATWATER Program

*Slogan: “Van Wetenschap naar Waterschap” or  
“From Science to WaterManagement*

Landingsbaan/Launch: “from innovation to  
implementation”

Users: Waterboards, Ministries, DrinkingWatercompanies, etc



Wetenschap (universiteiten; kennisinstiteiten)

Science

Toegepaste Wetenschap (STOWA)



Landing in ICT- Informatiesysteem structuren (HWH)



Landing op de werkvloer

Implementation

5-10 jaar

5-10 jaar

2-5 jaar

12-25 jaar

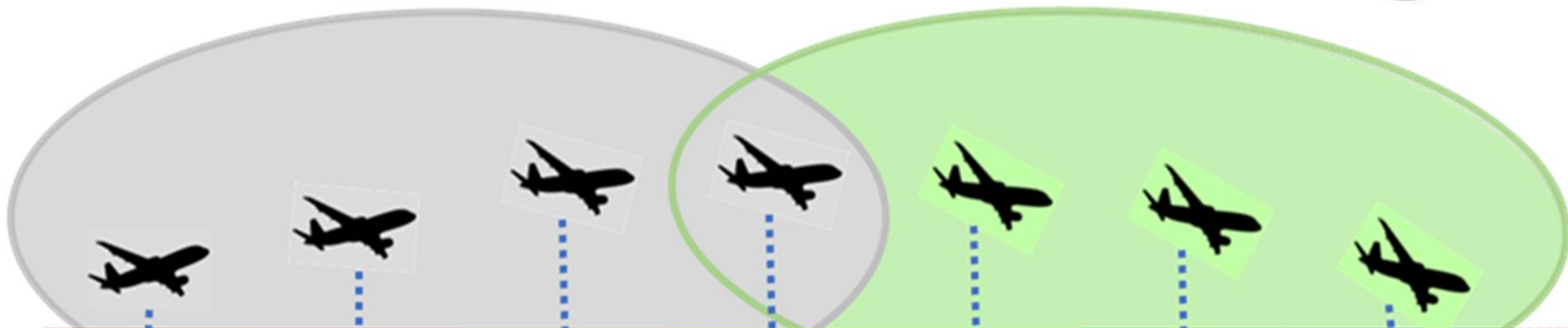
# Het Landingsbaan Principe

Disruptive



- Information acquisition (Satellite & Field)
- Knowledge, Algorithms, Field experience
- Processing & integration (Data Science)
- Implementation of Application (Open data & SW)
- Validation (Technical & Use/Organization)
- Organization (acceptation, Business case, & Procurement Process)
- Hybrisation with working process (CoP)
- Acceptance and Scaling up (more use)
- Management & Maintenance/continuity (Archive)





Idee/ nieuwe  
toepassing

Onderzoek

Pilot / Demo

Validatie/  
toepassing op  
kleine schaal

Businesscase  
voor bredere  
toepassing

Centrale  
inkoop

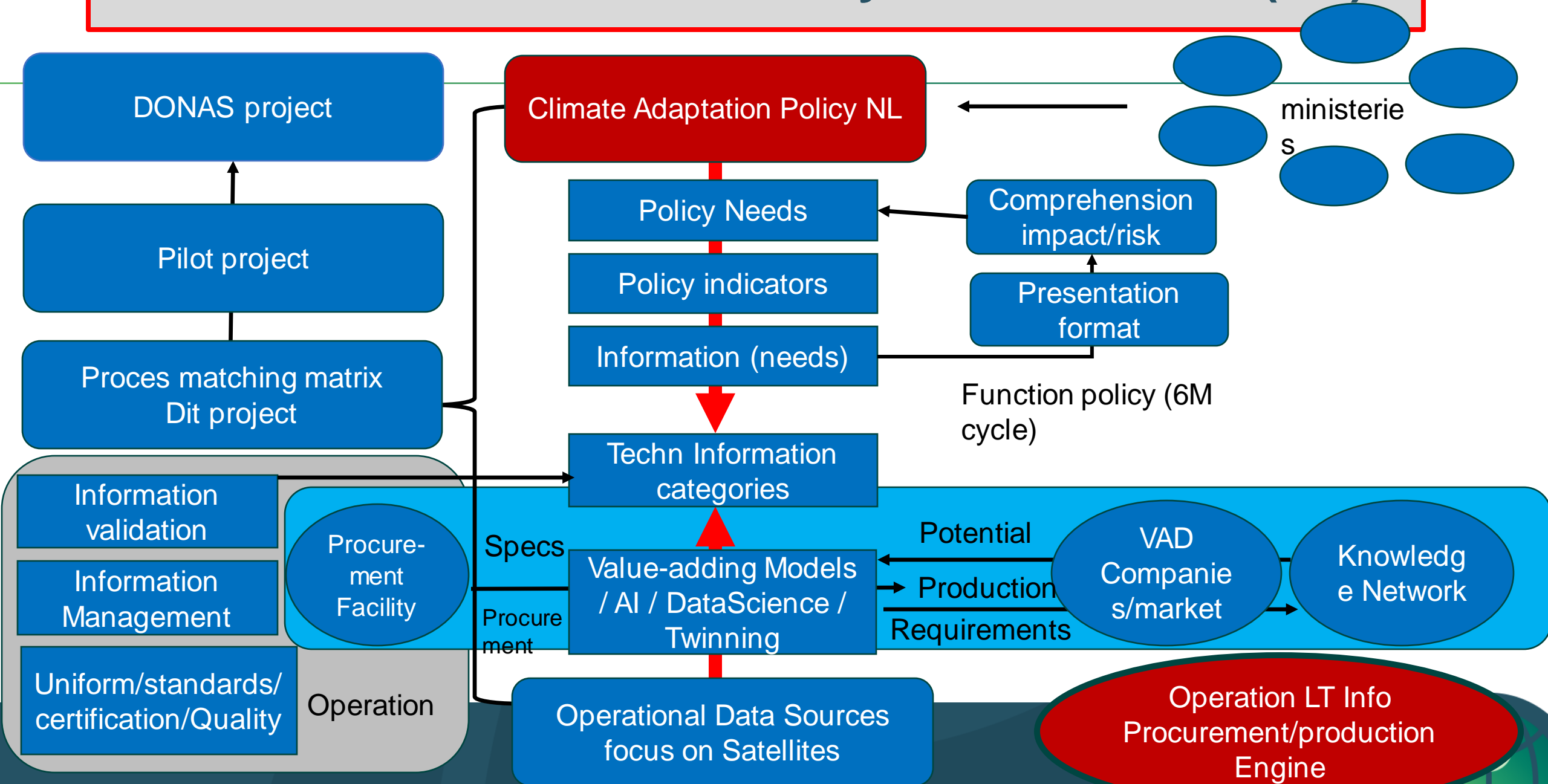
Operationeel  
geaccepteerd

Beheer

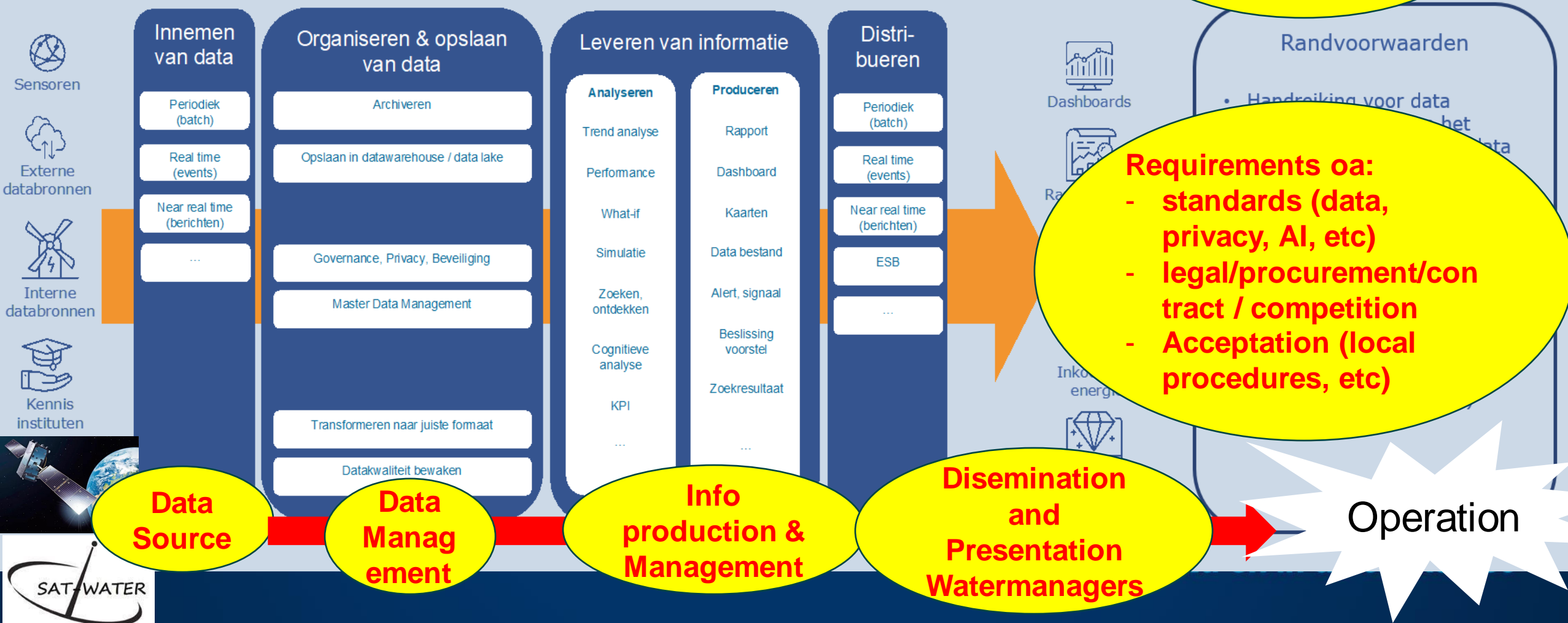


Samenwerking STOWA en Het Waterschapshuis

# Translation Process from Policy to Information (RS)



Belangrijkste functionaliteiten van een data platform



**Business case based on needs WaterBoards**

**Requirements oa:**

- standards (data, privacy, AI, etc)
- legal/procurement/contract / competition
- Acceptation (local procedures, etc)



# European/national water monitoring

- Monitoring Water Quantity and Quality (regular): <https://www.rijkswaterstaat.nl/en/water/water-management>
- Monitoring extreme high water & Early warning (crisis): <https://www.rijkswaterstaat.nl/en/water/water-management/monitoring/efas>
- Main waterway network & maintenance, construction & traffic management (European level): for economic drivers like Transport, Storage, recreation cooperation Netherlands, Germany (Rhine), Belgium (Scheldt): <https://www.eurisportal.eu/>



# Examples RS use for Climate Adaptation (on top of former water excess and drought examples) related to the Water Challenge (PROTECT PCP)



- Greenhouse gas emission indicators (water management):
  - In case of droughts: CO<sub>2</sub> emission by peat oxidation (subsidence)
  - In case of water excess: CH<sub>4</sub> en N<sub>2</sub>O emission in anaerobic soil conditions
- Salinization risks (due to increase of drought and seepage pressure by sea level rise)
- Insight in the available sweet water storage in large Lakes like IJsselmeer (relevant for the Dutch National LCW commission decision support)
- Insight in the amount of local water storage (saturation level) in soils in times extreme climate conditions in management areas (to anticipate timely for local flooding (e.g. Limburg 2021))
- Insight in drought conditions (agriculture & nature), irrigation limitations/ban, etc
- Transition/monitoring of the rural area functions in future (distribution of blue, green grey infrastructure)
- etc.







# Las Rozas City Council

## Las Rozas de Madrid (Spain)

### Challenge description

- To achieve a sustainable irrigation system that reduces the use of purified water in the urban park of La Vaguadilla through the collection and natural regeneration of water and its efficient accumulation.

### Climate data already used

- National meteorological services

### EO needed

- Real-time local information about terrain parameters and weather.

### Expected outcomes

- Rainwater harvesting and reclaimed water use
- Efficient water storage reducing losses
- Implement innovation nature-based solutions



Population:  
**95.000**

City surface:  
**58 Km<sup>3</sup>**

Irrigation water percentage  
**96 % of water consumption**

Purified water used for irrigation:  
**445.000 M<sup>3</sup>/year**



# Open discussion



# Wrap-up and next steps

Mélissa CAMPAGNO

GAC, project coordinator



# Next steps



## OMC – SUSTAINABLE INFRASTRUCTURES

16th of November

14h30 – 16h00

- Publication of the OMC report – 25 Nov 2023
- Final webinar with providers – Jan/Feb 2024
- Building consortium/a of buyers & aggregation of needs – up to Feb 2024
- Final event – Q1 2024



# How to get involved?



Sign up for the **Community Platform** to get access to its ever-expanding Knowledge Hub on Innovation Procurement, Climate Services and Earth Observation (EO) data, get invited to all PROTECT webinars, and stay up to date through our newsletter.



Join a PROTECT Buyers Group each targeting one of the identified and selected common challenges.



Access to the relevant material and documentation to best prepare for the PCP call, please visit: <https://www.protect-pcp.eu/relevant-resources/>

