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Learn from today to anticipate tomorrow

Overview of

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Janet Wijngaard

GA PRIMAVERA, November 2016, De Bilt

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IMPREX

Improving predictions and management of hydrological extremes

Horizon 2020 call: Water cycle under future climate

Funded under the Horizon 2020 Framework Programme of the European Union

Grant Agreement No 641811

IMPREX

Some facts

- Running 4 years (ends 30 September 2019)
- 8 million Euro funded by EU (Horizon 2020 programme)
- 64 Deliverables, 27 Milestones
- Results/generated data: Open source
- 23 partners, 9 countries

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Partners

Royal Netherlands Meteorological Institute
Ministry of Infrastructure and the Environment

ECMWF

SMHI

irstea

Potsdam Institute for Climate Impact Research
PIK

Arctik

Barcelona Supercomputing Center
Centro Nacional de Supercomputación

Met Office

Technical University of Crete

University of Reading

Helmholtz-Zentrum Geesthacht
Zentrum für Material- und Küstenforschung

Deltares
Enabling Delta Life

vrije Universiteit amsterdam

adelphi

HKV

FutureWater

CETAQUA
WATER TECHNOLOGY CENTER

UNIVERSITAT POLITÈCNICA DE VALÈNCIA

POLITECNICO MILANO 1863

RESEARCH FOUNDATION
cima
OBSERVE TO PREDICT. PREDICT TO PREVENT.

GFZ
Helmholtz Centre Potsdam

bfg
Bundesanstalt für Gewässerkunde

water footprint network

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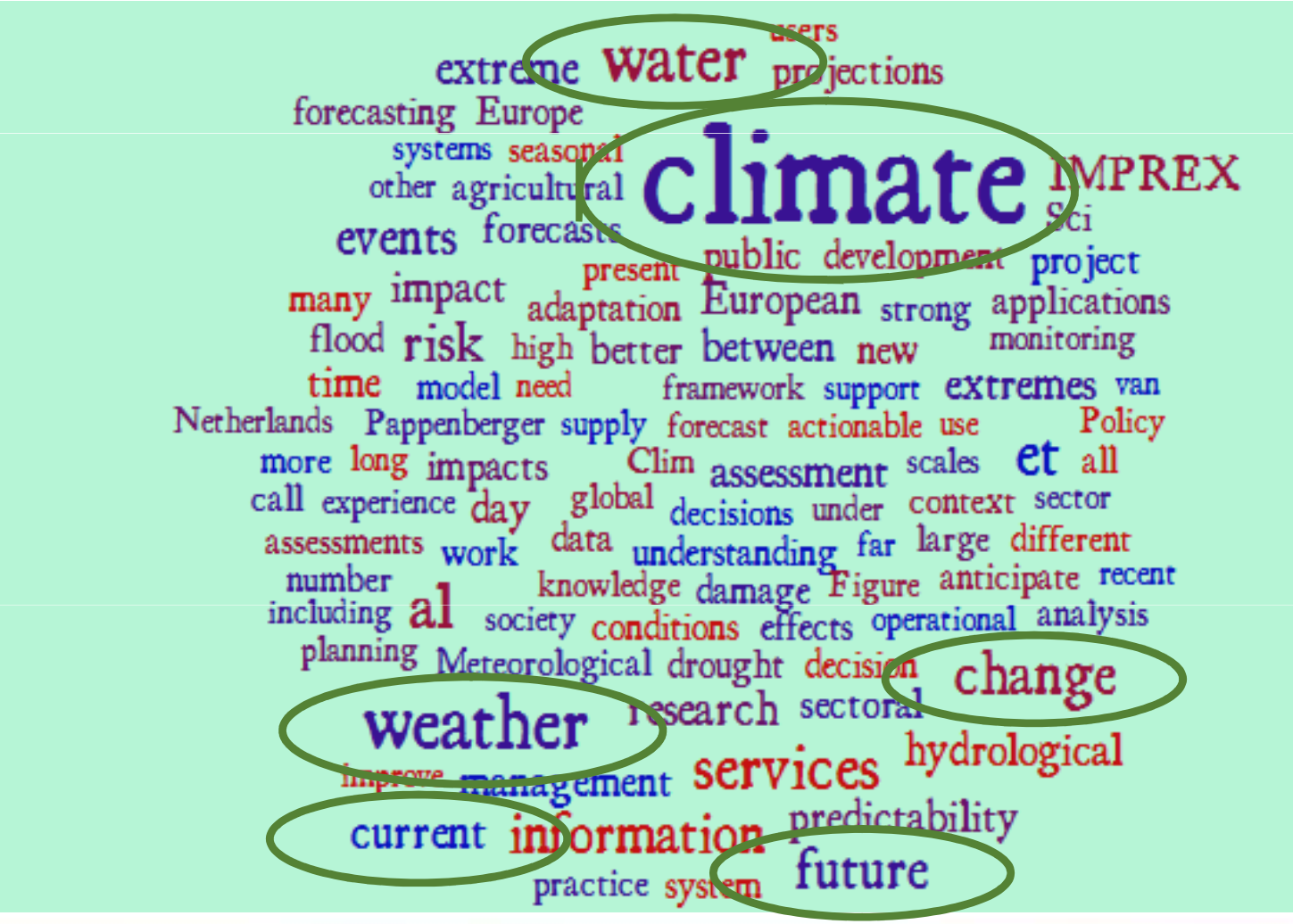
Topics of interest

Based on first paper on IMPREX



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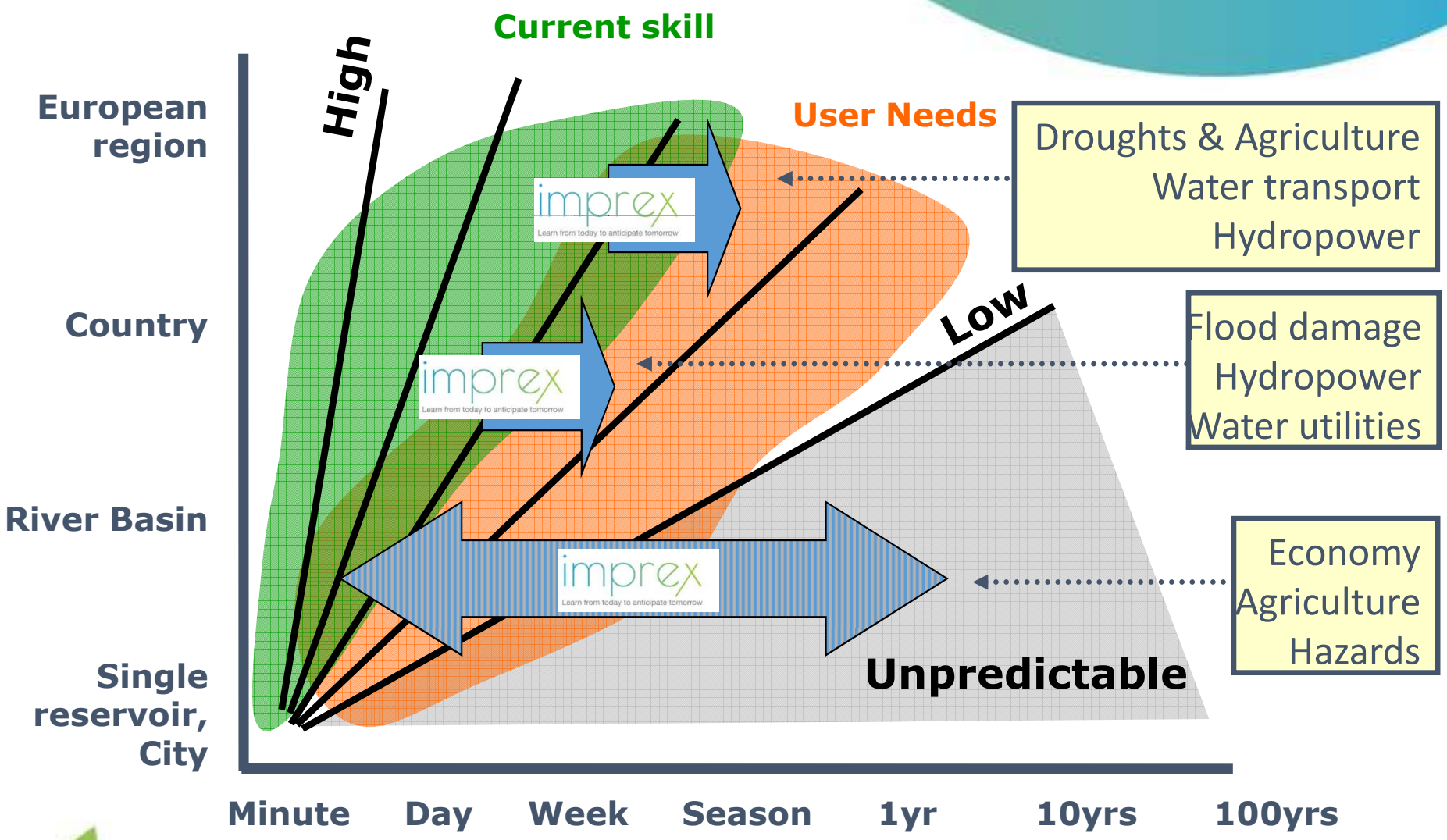
Weather & Climate Services



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Characteristics IMPREX

- *Weather* events in a *climate* context
- Reliability of forecasts/projections *and* application oriented research
- Strong User/Stakeholder interaction; co-creation
- Team, combining different expertise
  - forecasting/climate modelling
  - sectoral experts & SMEs
  - outreach & dissemination

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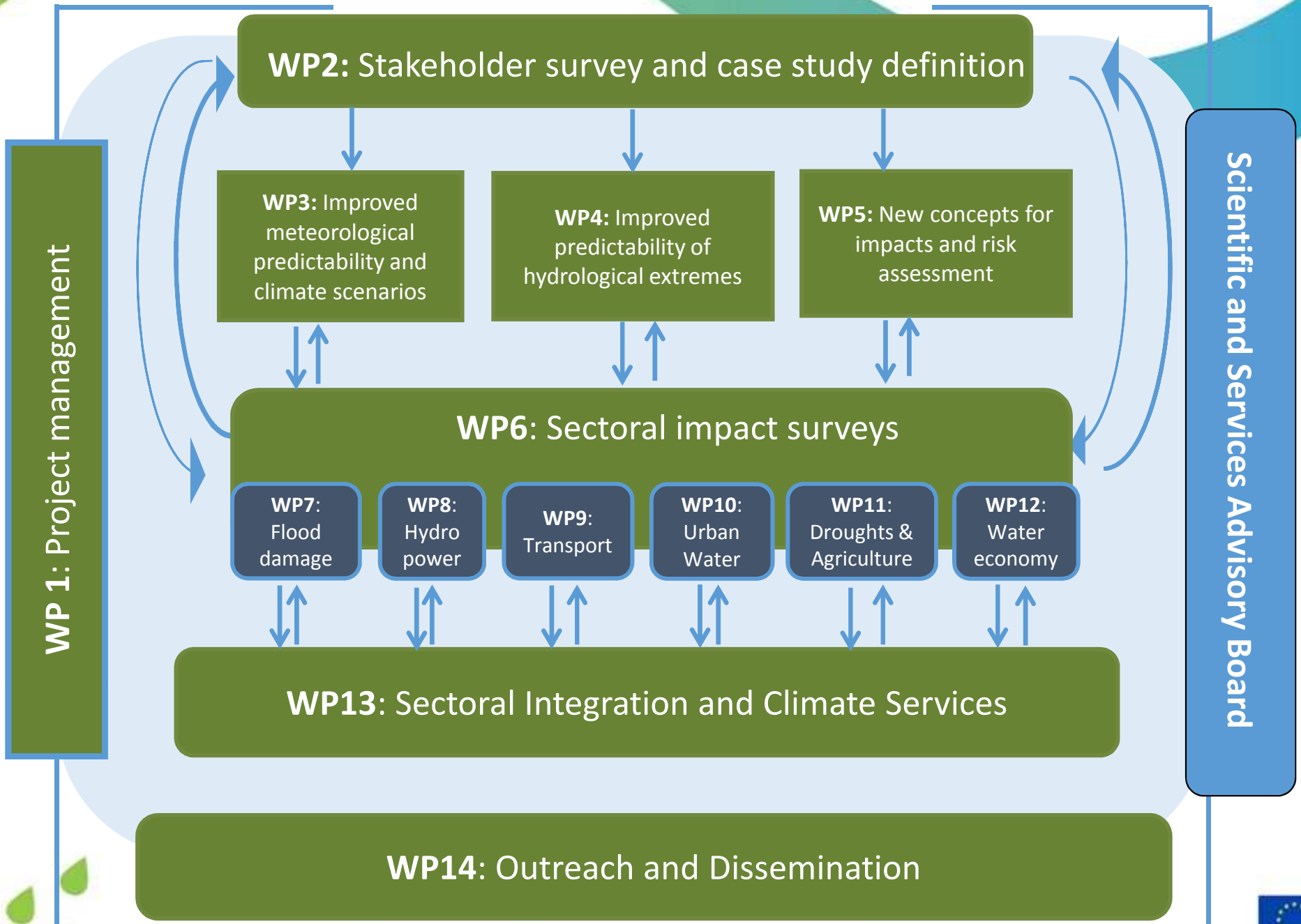

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HYDRO

Verbeterde hydrologische tools afvoerverwachtingen

CONCEPT

Ontwikkelen van nieuwe en snellere methodes risico analyse hydrologische hazards op basis van verbeterde meteo en hydro verwachtingstools

METEO

Verbeterde meteorologische ~~tools verwachtingen~~ neerslag e.d

PRAKTIJK

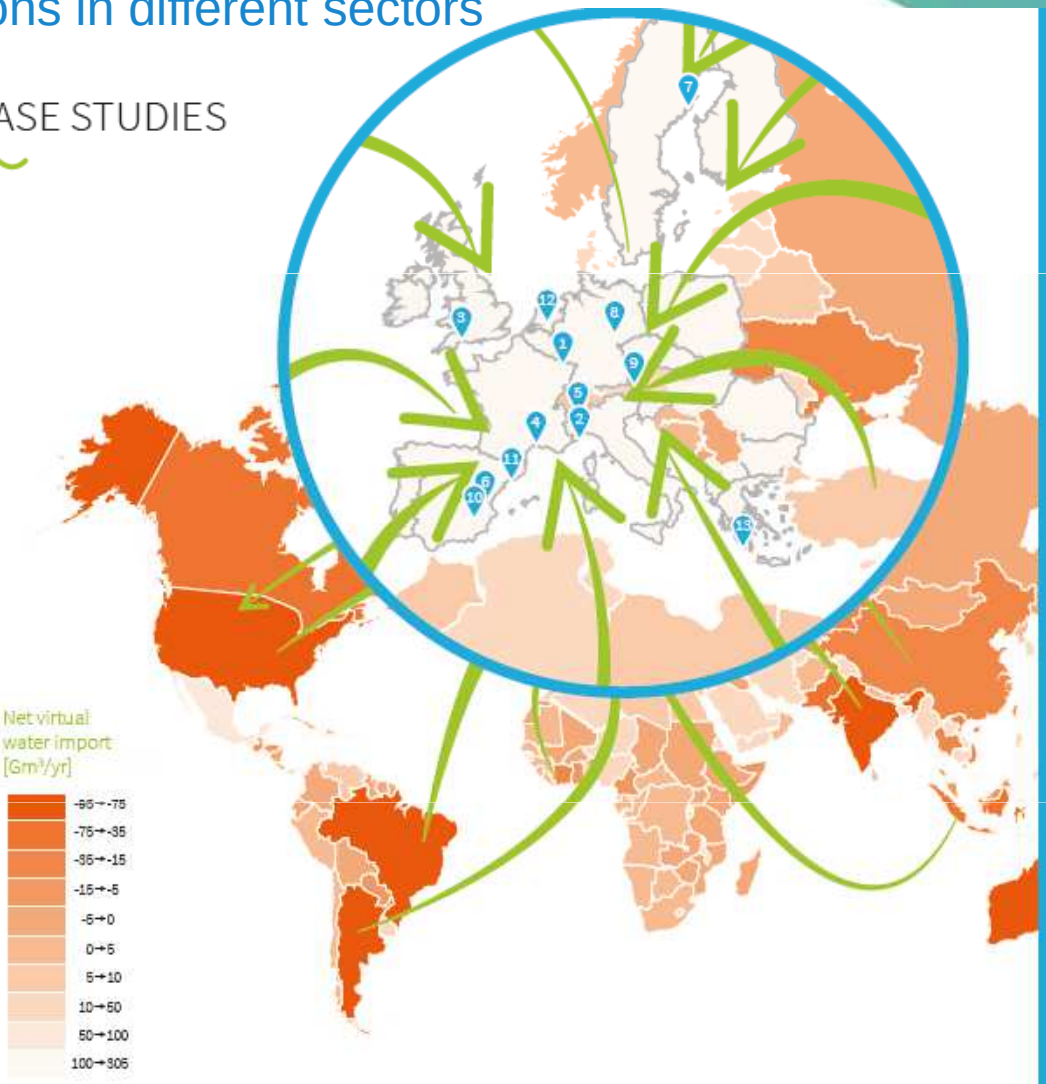
Verbeterde verwachtingen voor overstromingen voor diverse sectoren getest in case-studies

- WATER IN DE STAD
- SCHEEPVAART
- WATER ECONOMIE
- HYDRO-POWER
- LANDBOUW

Case studies

Applications in different sectors

CASE STUDIES



SECTORAL APPLICATIONS AND CASE STUDY EXAMPLES

FLOOD INUNDATION PREDICTION AND RISK ASSESSMENTS
- Rhine River Basin (The Netherlands and Germany) 1
- Bisagno River Basin (Italy) 2
- Somerset Region (UK) 3

HYDROPOWER
- South Eastern French Catchments 4
- Lake Como Basin (Italy) 5
- Jucar River Basin (Spain) 6
- Upper part of River Umeälven (Sweden) 7

TRANSPORT
- Central European River Basins of the Rhine, Elbe and Danube 1 8 9

URBAN WATER
- Segura and Llobregat River Basins (Spain) 10 11

AGRICULTURE AND DROUGHT
- Rhine-Meuse Estuary (The Netherlands) 12
- Segura and Jucar River Basins (Spain) 10 6
- Como River Basin (Italy) 5
- Messara River Basin (Greece) 13

WATER ECONOMY
- Global Supply Network

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Case study Central EU rivers

Rhine

- Fresh water management (drought)
- Flooding
- Transport

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Stakeholder Transport

Skipper on an inland waterway craft in the Rhine River in charge of the safe execution of the transport

Issues are:

- Decide on the maximum load to be carried
- Determine if lightering is necessary

What is needed:

- real-time information on the measured water-levels along the route.
- short-term (several days ahead) forecast information on water levels, discharge, but also floods & river ice.
- Uncertainty information

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Stakeholder Transport

How to support the skipper, but also other stakeholders in the inland waterway transport

Next steps:

- Ten day forecast for relevant parameters
- Semi operational: monthly and seasonal forecast
- Hindcasting: to show added value
- Workshops/training stakeholders (uncertainty)

Ongoing process:

- Stakeholder feedback<-> tailoring system

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Impact of IMPREX

New tools and applications lead to

- More efficient management in water sectors
- Underpin adaptation strategies
- Pan European periodic risk outlook

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PRIMAVERA & imprex

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- Case studies
- Modelling (high resolution)
- ……

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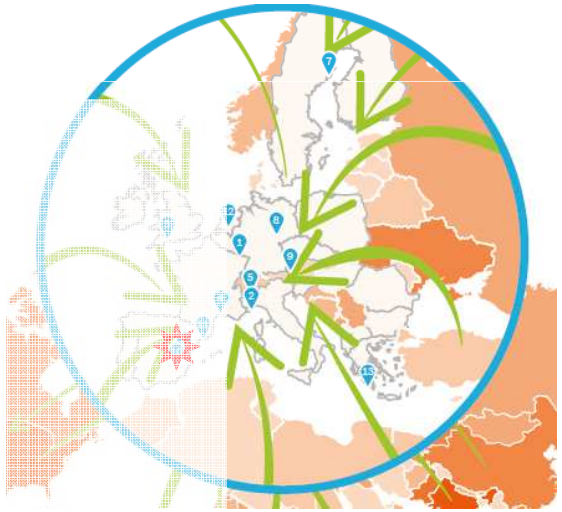
Segura case study – Drought and Agriculture

Issue

Water scarcity; Extremely high inter-annual variability

Main stakeholders' needs



Farmers association

City

Irrigators:

Basin authority

→ a seasonal flow forecasting system

Missing

High resolution climate projections

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Benefits

- Scientific community: better understanding models; applicable to other regions
- Water sectors: earlier and better management/measures
- Politics: underpinned guidelines
- Society in general: less economic loss due to hydrological extremes

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