



NAIAD: Insurance Value of Ecosystems:

30th August 2017

World Water Week, Stockholm

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ICATALIST

Spain

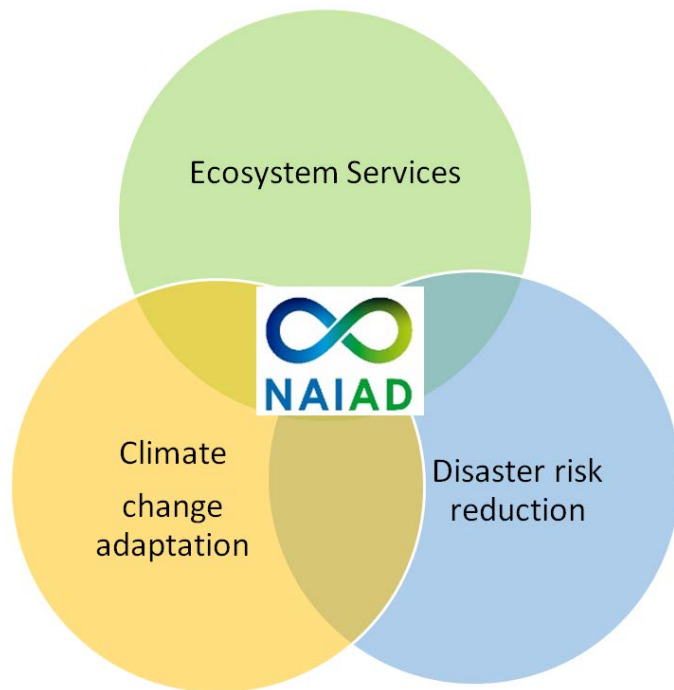


This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 730497.

NAIAD Project : NAture Insurance value-Assessment and Demonstration

- **Objective 1: Synthesis of knowledge; biophysical and socio-economic** to deliver a robust informed decision support and planning tool for NBS implementation
- **Objective 2 – Operationalization of the framework** to test the theoretical knowledge and upgrade it through **testing in real environment**, while at the same time **co-develop novel financial and business models** in support of their implementation and replicability
- **Objective 3 – Policy uptake, communication, dissemination and capacity building** to contribute, through **financially viable and technically sound NBS informed decision support and planning tools**, to socio-economic prosperity and sustainability of natural environment.





HOW?

Interface: focus on NBS for Water risks



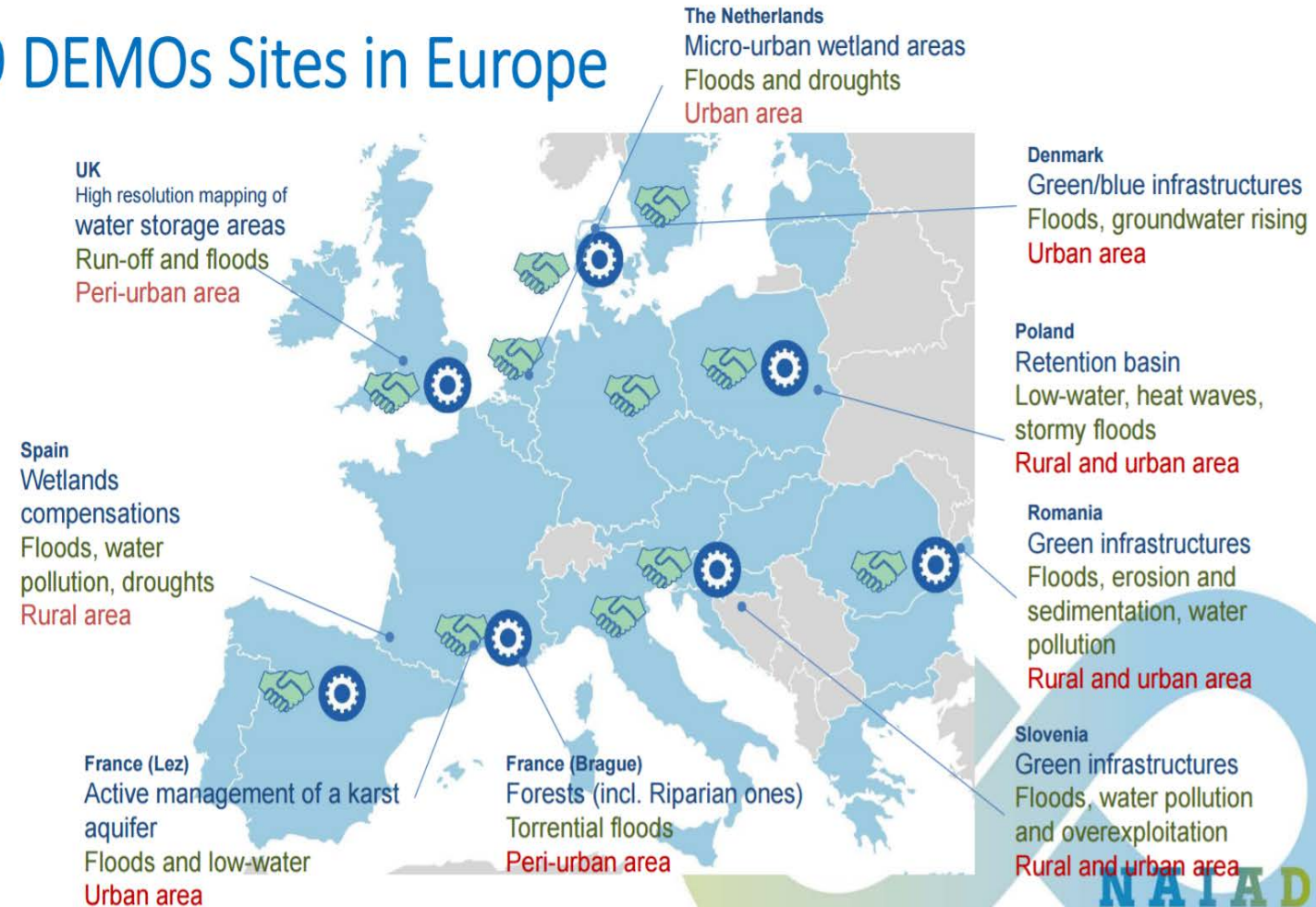
NBS



WHERE?

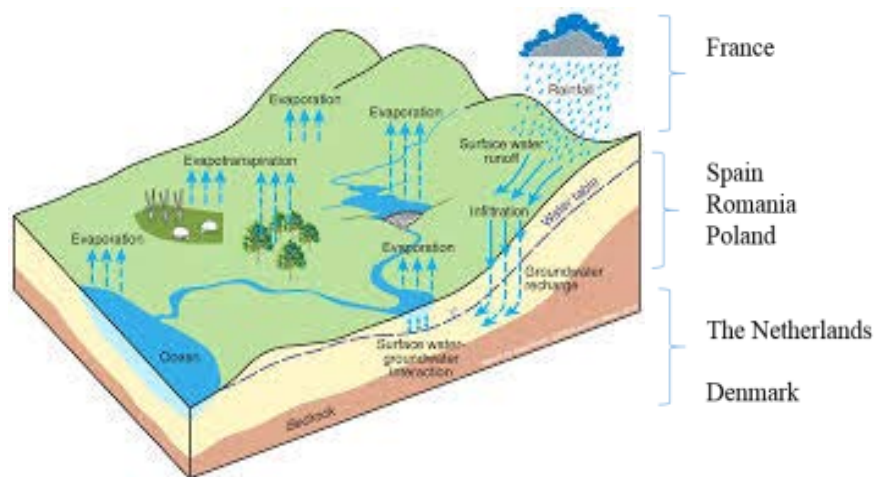
Importance of the NAIAD Project:
Validation by demonstration

9 DEMOs Sites in Europe



Multihazard + Multiscale

- 3 micro scale (city- Copenhagen, Rotterdam and Lodz)
- 3 meso scale (Gliscinka, Slovenia and Nice and Montpellier)
- 3 large scale (Lower Danube, lower Thames and Medina aquifer)



France

Spain
Romania
Poland

The Netherlands

Denmark

Upstream

Midstream

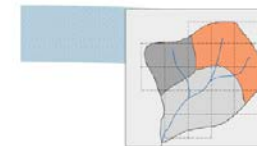
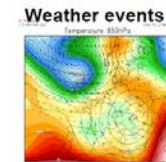
Downstream

Uk (macro)

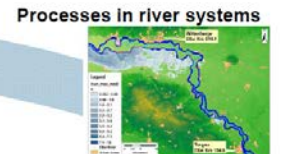
Source to Sea S2S

Slovenia (micro)

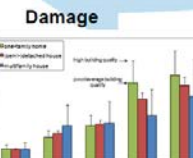
Flood risk modelling: From triggering event to damage



Processes in catchments



Processes in river systems



Damage

Elements at risk



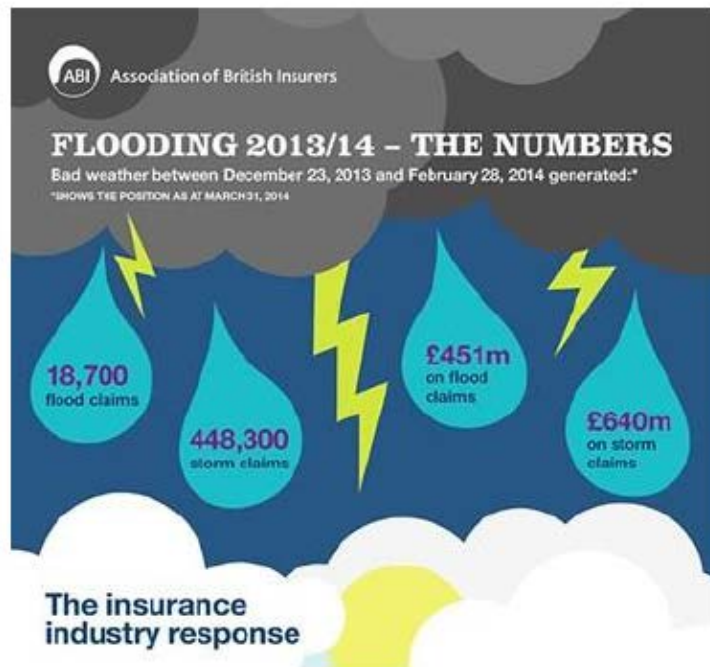
WHY? WATER RISKS

*Around 90% of natural hazards are water related, and they are likely to become more frequent and more severe as a result of climatic change. **The costs of floods in the EU alone have been € 4.9 billion a year on average from 2000-2012 and are predicted to increase fivefold to € 23.5 billion by 2050** (IIASA, 2014). The European Environment Agency has set out the risks related to water in Europe, which also includes water scarcity, already a problem for many regions of Europe with some **45% of European territory expected to be facing water scarcity** problems by 2030. The World Economic Forum has assessed water challenges as the **greatest risk in 2015** to the global economy: investments in water management will be critical to achieving the Sustainable Development Goals. Over the next 15 years, an estimated **22 trillion dollars will need to be invested in water infrastructure**, which is more than half of the total expected infrastructure investment demand (USD 41 trillion).*

Example: Flood risk mitigation and the role of the insurance value of ecosystems



Is climate change already having an effect on extreme events?



nature climate change ARTICLES
PUBLISHED ONLINE: 1 FEBRUARY 2016 | DOI: 10.1038/NCLIMATE2927

Human influence on climate in the 2014 southern England winter floods and their impacts

Nathalie Schaller^{1,2*}, Alison L. Kay³, Rob Lamb^{4,5}, Neil R. Massey^{2*}, Geert Jan van Oldenborgh⁶, Friederike E. L. Otto², Sarah N. Sparrow², Robert Vautard⁷, Pascal Yiou⁷, Ian Ashpole², Andy Bowery⁸, Susan M. Crooks³, Karsten Haustein², Chris Huntingford³, William J. Ingram¹⁰, Richard G. Jones^{2,9}, Tim Legg⁹, Jonathan Miller⁸, Jessica Skeggs¹⁰, David Wallom⁸, Antje Weisheimer^{11,12}, Simon Wilson⁹, Peter A. Stott⁹ and Myles R. Allen^{1,2}

A succession of storms reaching the insured losses. In a large ensemble the atmosphere can hold, anthropogenic with westerly flow, both of which in 30-day-average Thames river flow catchment's sensitivity to longer-duration shows a small increase in properties of uncertainty, demonstrating the impacts risks when quantifying present-day

Climate Change

Human influence on climate in the 2014 Southern England winter floods and their impacts

ALEXANDRA SCOTT | 17th FEBRUARY 2016 | CLIMATE CHANGE

New research published in the journal Nature Climate Change concludes that climate change has made winter flood events in the UK more likely.



www.jbatrust.org

READ MORE

Example: Flood risk mitigation and the role of the insurance value of ecosystems

LSE report will help insurance sector manage climate change risks



Lloyd's of London wants natural infrastructure in flood pricing

"If you are in a more resilient city... then those risk levels should be taken into account."

INSURANCEBUSINESSMAG.COM



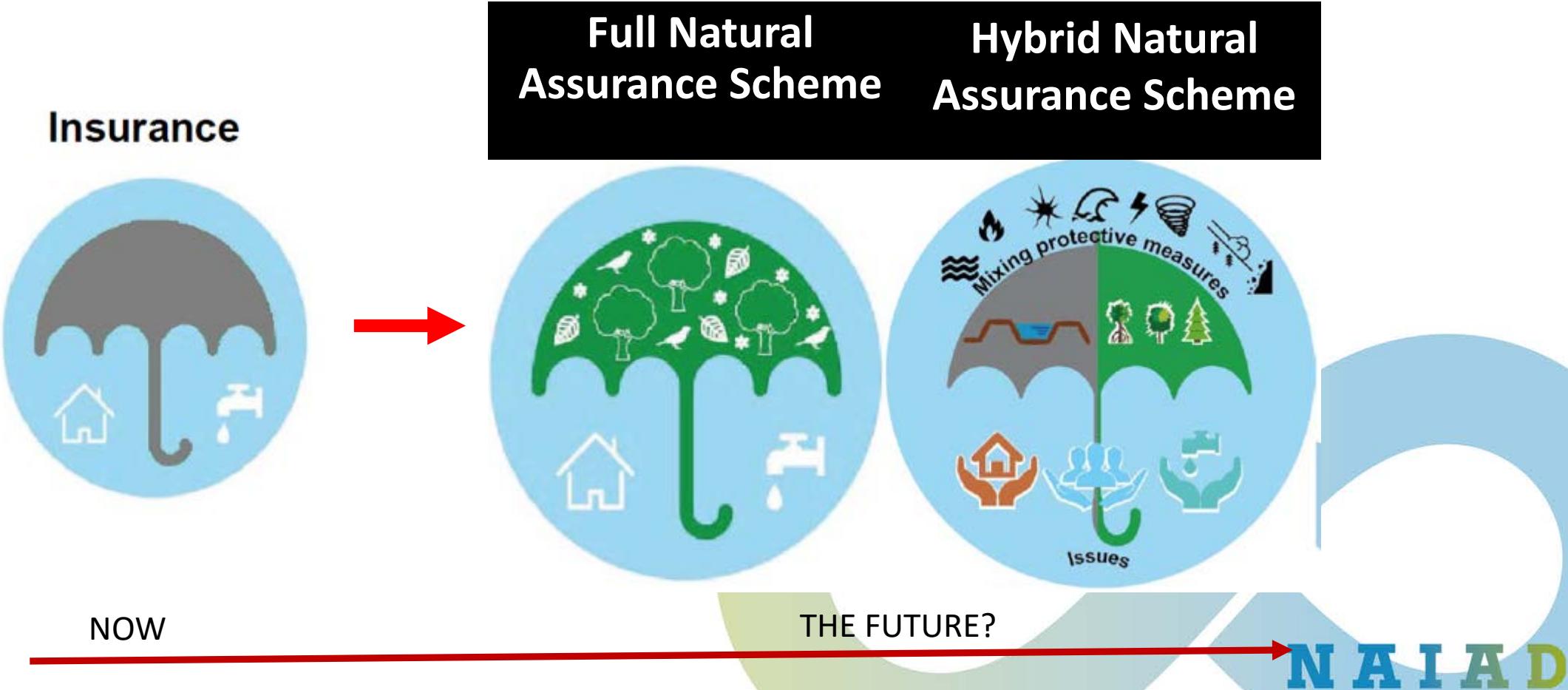
The London School of Economics and Political Science (LSE) has released the findings of a five-year research project tracking the impact of climate change on the insurance sector.

The multi-million pound project, undertaken by the ESRC Centre for Climate Change Economics and Policy, has involved more than 30 academics, government and industry bodies, all working together to analyse the financial risks and opportunities posed by climate change.

Links to more than 50 academic publications resulting from the research project are now publicly available in a summary document for the first time, titled "[Evaluating the Economics of Climate Risks and Opportunities in the Insurance Sector](#)".

Sponsored by Munich Re, one of the world's leading insurance reinsurers, the project has linked scientific findings of climate change with their economic impact on financial products, disaster loss insurance and forecasting.

The Insurance Value of ecosystems



Case Study: Rivers, Streams, and Floodplains

Ecosystem Service



River + floodplain: integrated system (prevent river overwhelmed)

Degradation of the Ecosystem



Hazards



Floods

NBS



Riparian forest restoration

Hazard Mitigation



Flood and erosion reduction

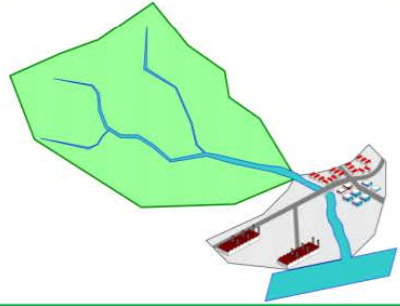
Co-Benefits

- Improved water quality
- Supplies of freshwater
- Natural filters, removing excess sediment and nutrients
- Floodplain: replenish
- Supporting the broader ecological health of the watersheds
- Home to some of the most biologically rich habitats
- Spawning grounds for fish
- Critical areas of rest and foraging for migrating waterfowl and birds
- Outdoor recreational industry.
- Fishing, hunting, camping, hiking, wildlife watching and boating

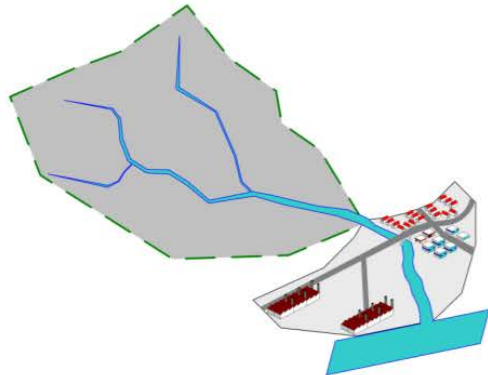
Trade-offs

- Impact of the management of a forest for wood production on local recreation and downstream water quality).
- Overharvesting of fish stock

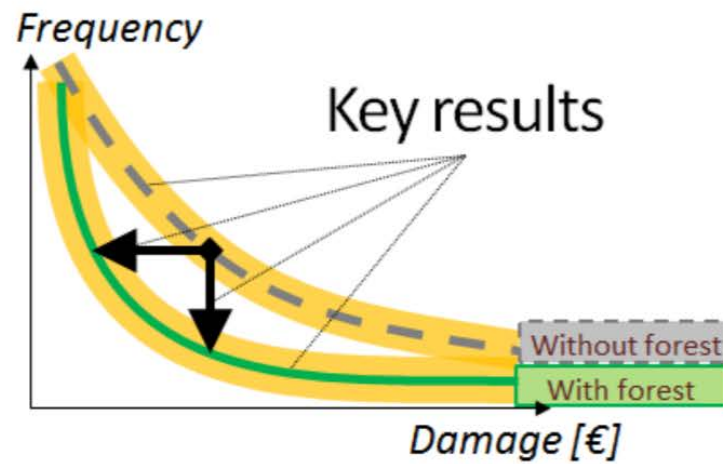
Forest as GI



Forested catchment



Unforested catchment

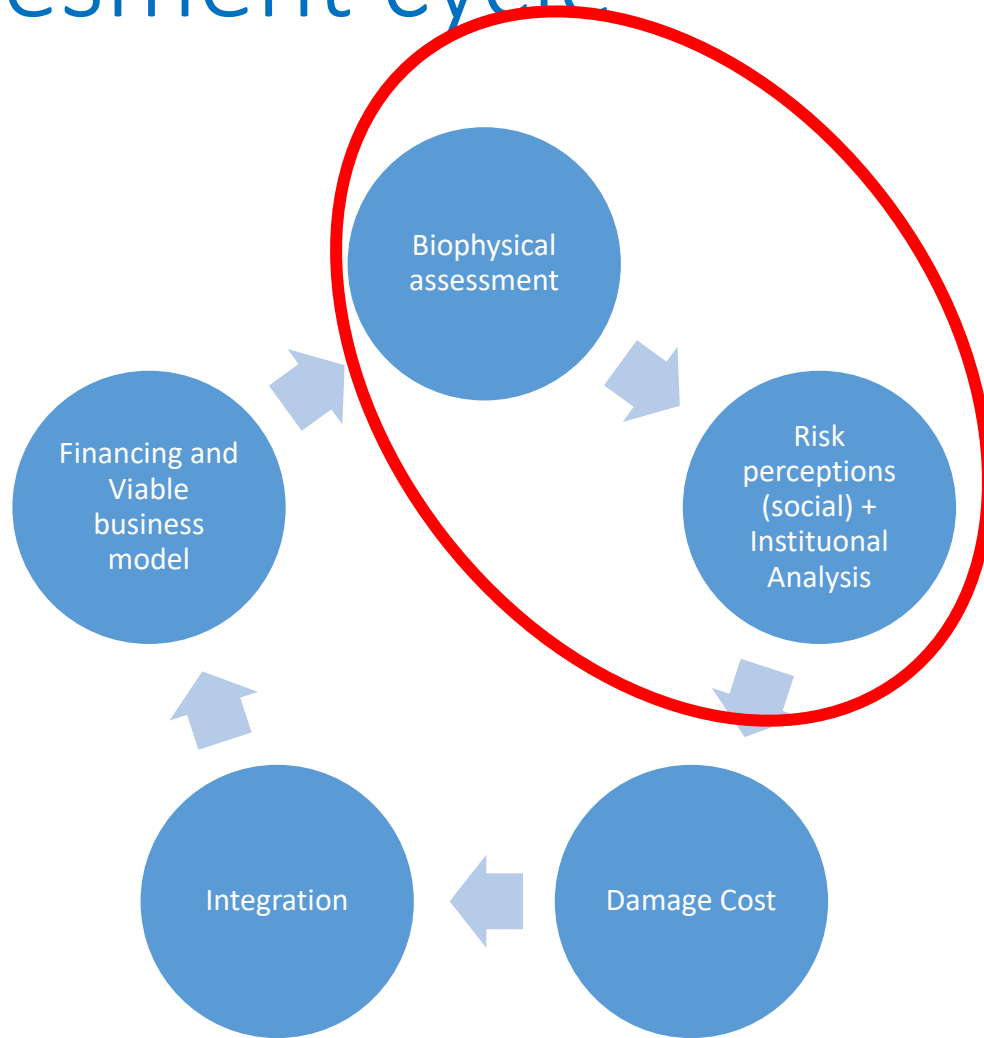




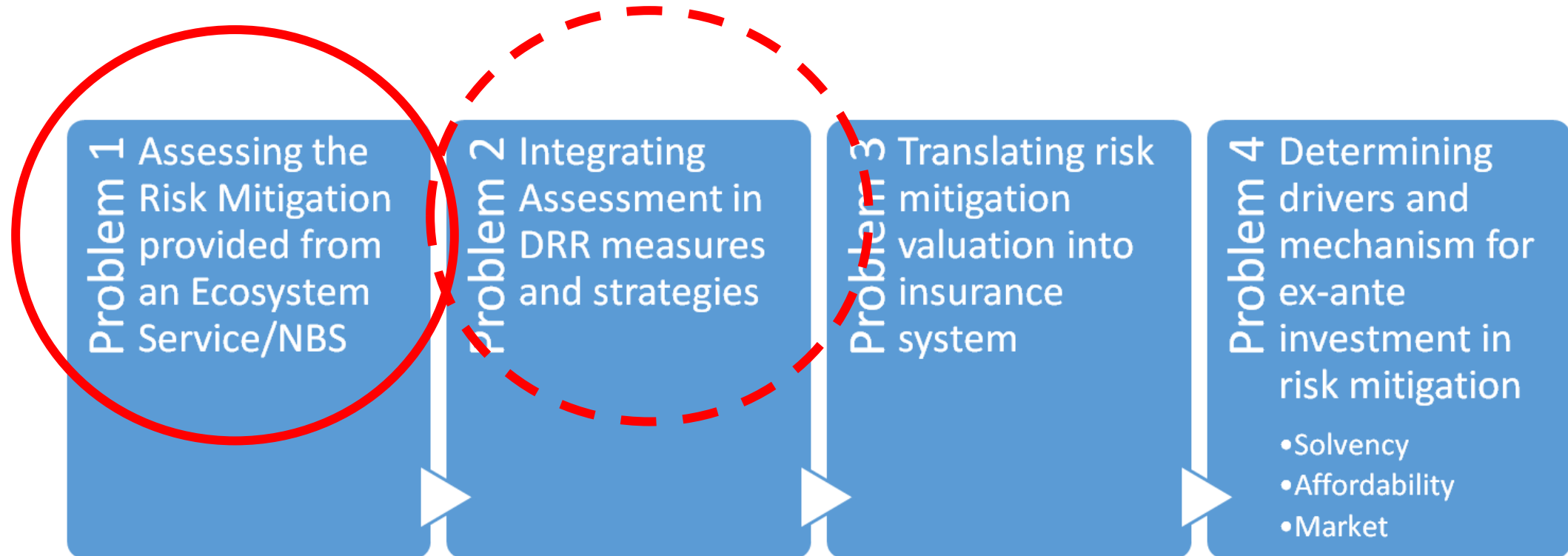
The floodplain restoration project, just upstream of Breda, known as "WBieberg", incorporates re-meandering and secondary bypass channels. The project has worked with the river's natural processes by allowing it to expand onto the restored floodplain at times of high flow.

(photo: Tiny Arts/Ron Lambregts)

Assesment cycle

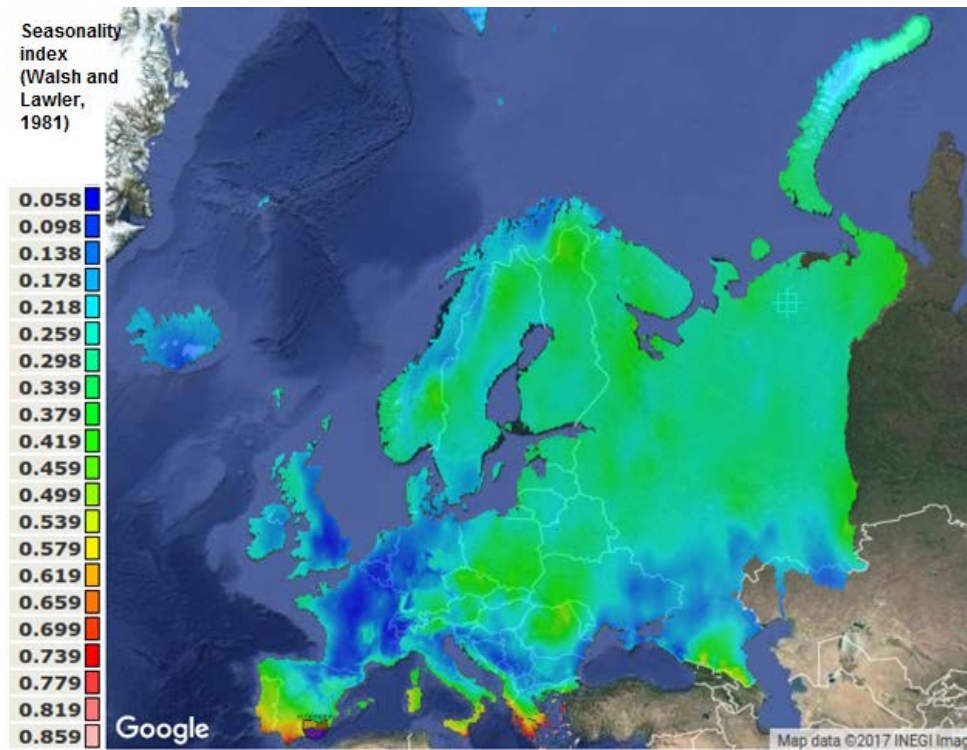


Problem hierarchy: operationalization of IVE

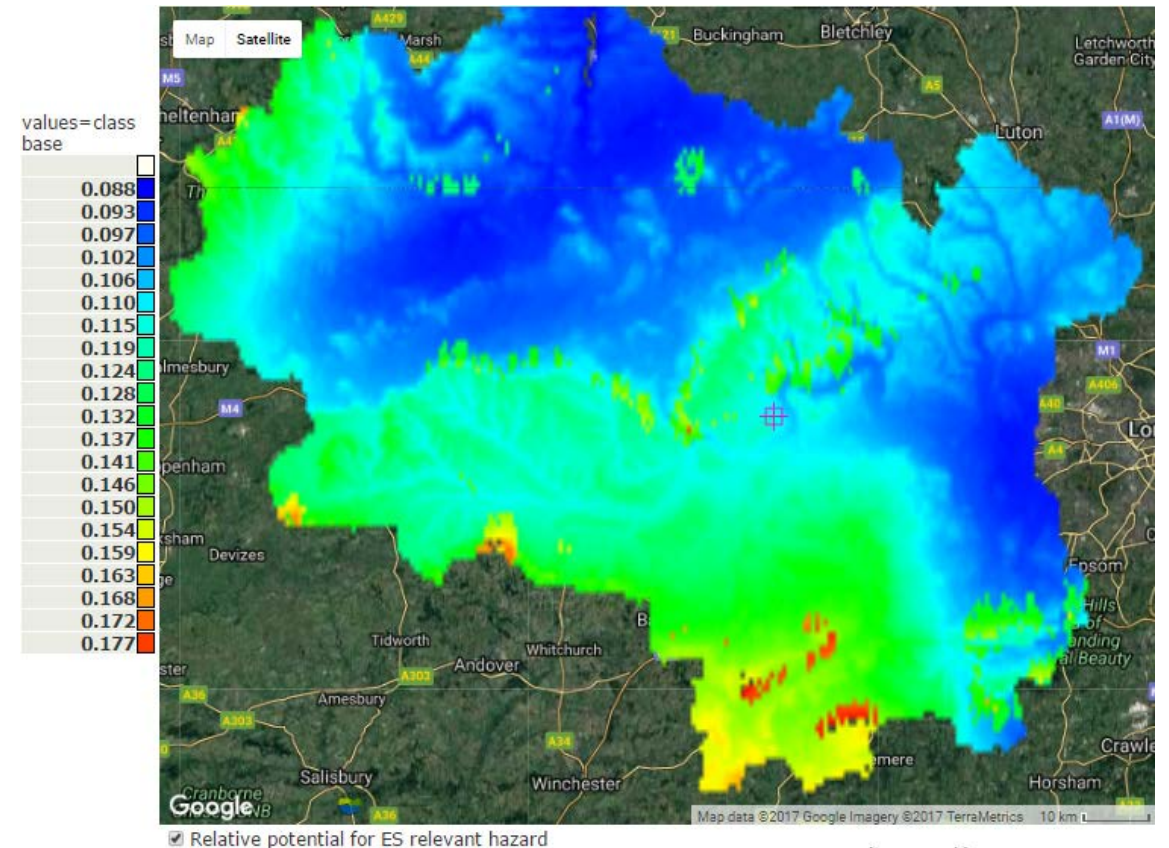


Natural hazards in Europe- 9 demo sites

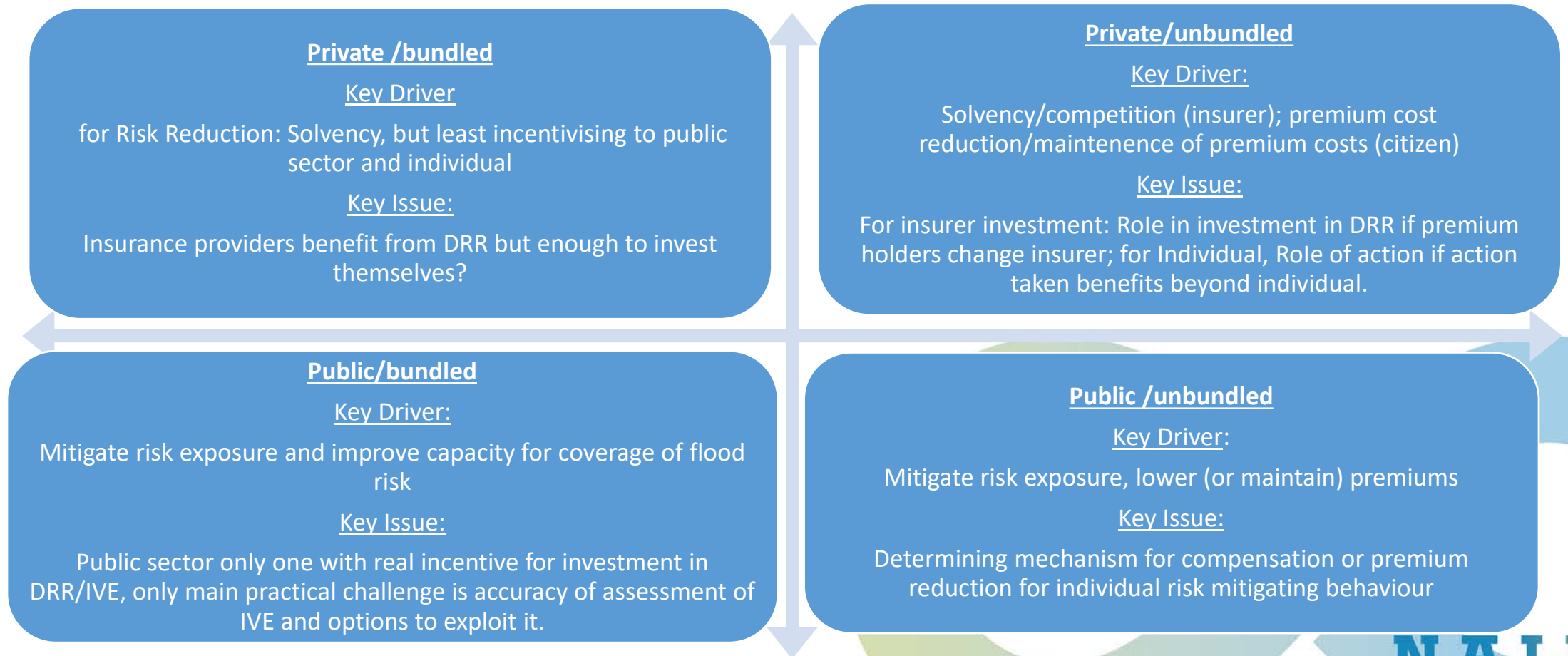
DoA: Water related hazards:



D2.1. Figure 6 Relative potential for Ecosystem Service potential hazard for the Thames basin by pixel



Regulatory frame- Insurance systems: public, private, bundled and unbundled



NAiAD and An Action Agenda for GI

- **Evidence: simulated + keep an eye out for NAIADs! E.g. FONAG**
- **Risk perceptions (stakeholder engagement protocol)**
- **Regulatory analysis**
- Criteria, etc,...: analysis of KPIs (e.g. Eklipse) and LCC
- Capacity: MOOC as end result
- Financing and viable business models
- Integrated Assessment Methodology
- Policy dialogues key audiences/targets: Insurance (IVE), policy

Medina del Campo

<https://youtu.be/IHMXg722ZJ0>



