



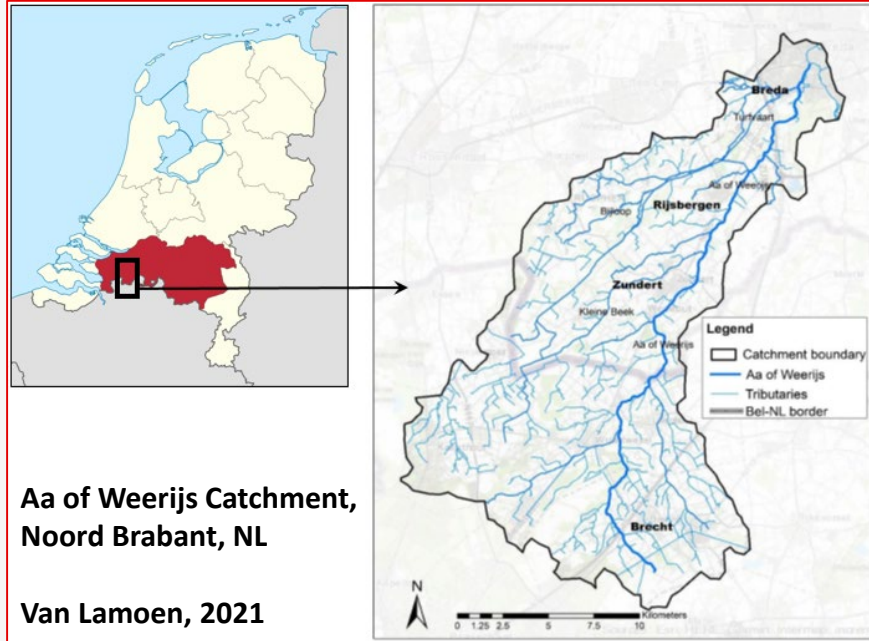
Co-designing user stories for geodata applications to support climate action in 5 GEO Societal Benefit Areas

Ruben Hage¹, Angelique Lansu¹, Borjana Bogatinoska¹, Joop de Kraker^{1,2}

¹Open Universiteit, Faculty of Science

²Maastricht University, Maastricht Sustainability Institute

Who needs local data?



Aa of Weerij's Catchment,
Noord Brabant, NL

Van Lamoen, 2021



Pijnappels, 2019

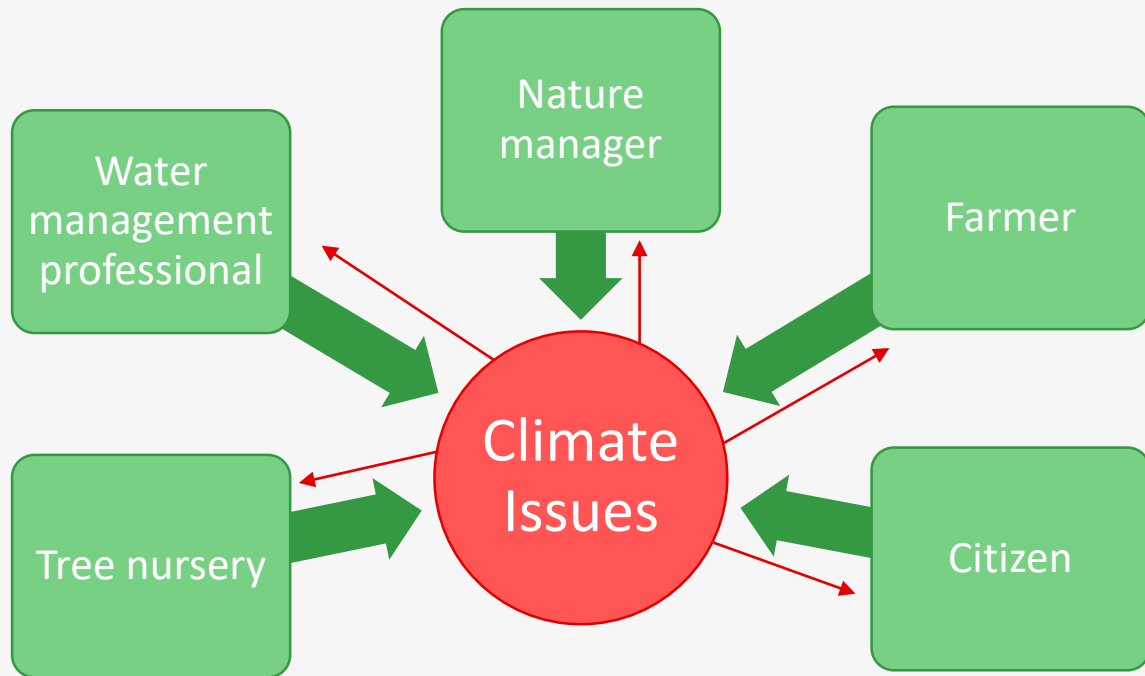


Pijnappels, 2019



Bogatinoska, 2022

Concerns and perspectives on climate issues

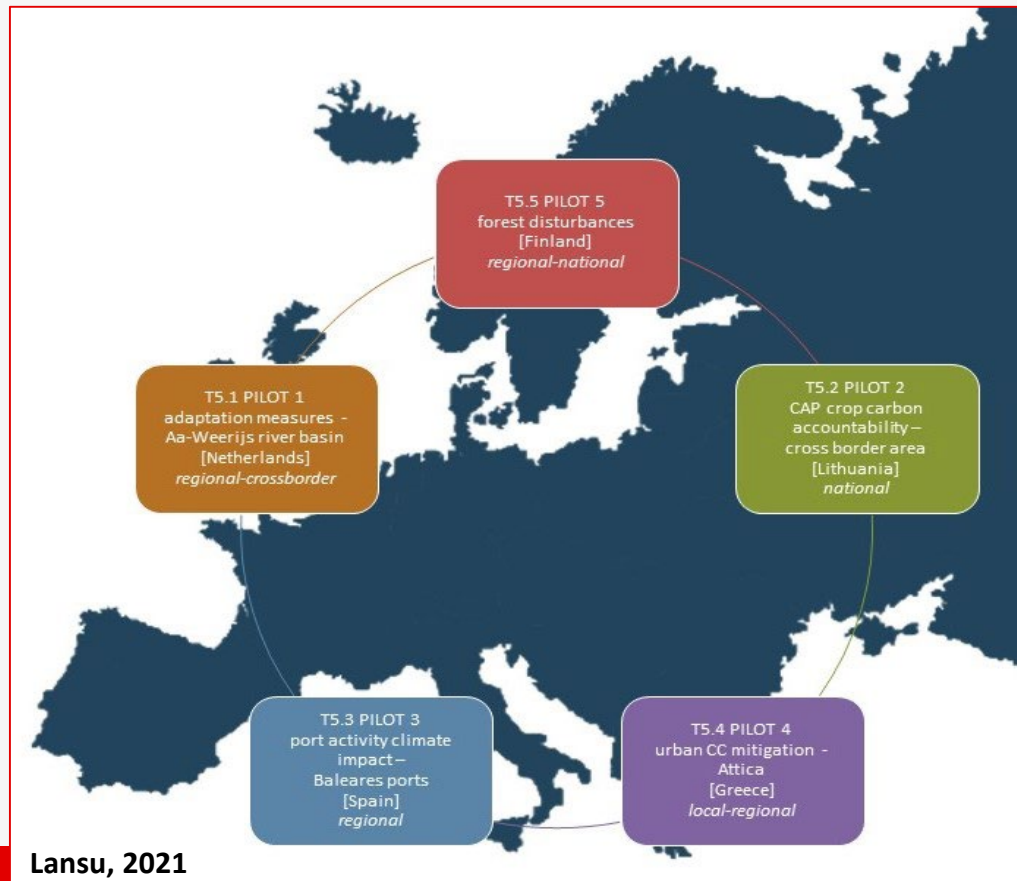


How can we make sure climate services 'work' for everyone?



How should we design climate services?

Developing new climate services in 5 SBA's



Lansu, 2021

5 GEO Societal Benefit Areas:

1. Water and Land Use Management
2. Sustainable Agriculture
3. Transport Management
4. Sustainable Urban Development
5. Disaster Resilience

Goal: bring data closer to practitioners & stakeholders through co-designed climate services



- Co-design approach to application development
- Who are the users of applications and what do they want and need?
- Data collection through online co-design sessions with practitioners and developers

User		Climate Change Challenge		Goal		Core Task										
Urban planners	Administrative authorities (e.g. prefectures, municipalities)	intense phenomena like rain, flooding	tool is more on CC mitigation, so blue-green infrastructure and connection to adaptation measures	photovoltaic, urban mobility, air quality connected green parks	programme exist on early warning / urban flooding system (not in EIPFEL)	extreme weather events: heat waves, high temp.	co-benefits of adaptation and mitigation actions, demonstrate co-benefits	greening cities by parks, gives co-benefits (CC adaptation / mitigation effects)	to demonstrate how modern is to combine with urban level	to demonstrate adaptation planning to climate change	awareness, action or adaptation linked to adaptation	to develop urban structures, green infrastructures, green roofs, walls	collect data for common use places / green places	coordinate plans at different scales	citizens will be having power in energy planning, no democratic extension, possible control	40% of population of Greece is in Attica
to discuss how contracted?	intending to discuss the future, not the past, so it is not a contract, it is a discussion						air quality application is a co-benefit demonstration									what to prioritise to set goals in planning
Energy providers / distributors (e.g. PPC/PPCR, ITO)	Ministry of Environment & Energy	decarbonising	is it not cheaper to focus on rural and on importing energy?				priority of the city of use, because to measure to provide rate sets and to be realistic in effect	e-mobility to enlarge	new dimension is that citizen as producer of energy complicated the market operation - new market		is a priority important for energy providers, probably directly at the place	to develop scenarios that could cover the larger need on energy by mobility	to develop totally new concepts as smart grids	transmission and spatial distribution has to be more efficient on small scale	to demonstrate citizens as both users and producers of (new) energy	to co-design the use of land for PV, compostable use (rural areas)
citizens as energy providers											proximity is also important to minimize transmission costs					proximity of the place
											is the step being public, even also might take up this		should be studied if data and a public or government, should have priority, should have the tools	Difficult demonstration because, depending on the user and the priority requirements		
Ministry of Health	Ministry of Environment & Energy	air quality change/accidents	heat waves: mitigation co-benefit air q							transformation to benefit and investments CO2		monitoring and alerting by transmittal air quality (accidents, base level)	scenario analysis to plan ahead (provisioning water) and temporal	scenario analysis / land use analysis	spatial analysis in line with territorial scales, target measures in locations (MAP above NUMBER)	

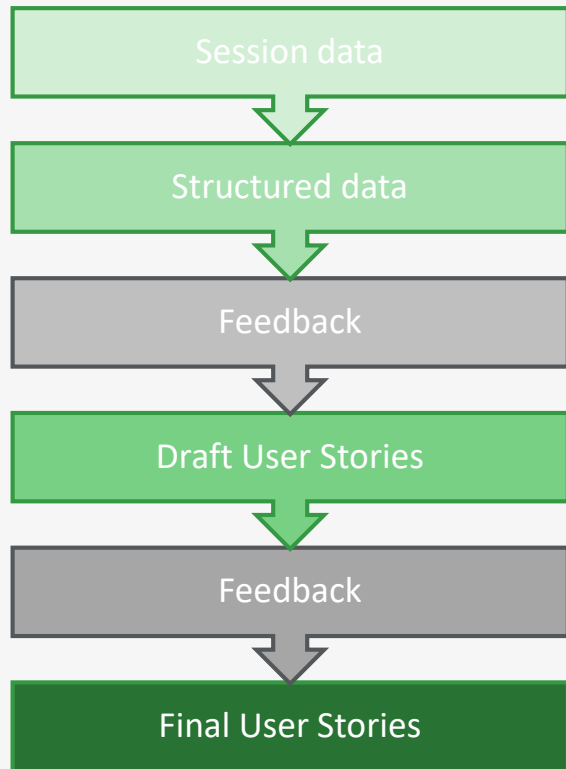
Co-design user stories

Explore application functionalities

User	Functionalities
URBAN PLANNERS Administrative authorities (e.g. prefectures, municipalities)	adaptation synergies with green infra screening for feasibility, space usage decarbonisation effectiveness to meet targets feasibility? cost?
Energy providers / distributors (e.g. PPC/PPCR, ITO)	decarbonising Is it not cheaper to focus on rural and on importing energy?
Ministry of Environment & Energy	
citizens as energy providers	
Ministry of Health	
Ministry of Environment & Energy	

Necessary Functionalities	Optional Functionalities
Visualize to develop scenarios that could cover the larger need on energy by mobility to develop totally new concepts as smart grids transmission and spatial distribution that to be more efficient on small scale to demonstrate citizens as both users and producers of their energy to co-design the use of land for PV, compostable use (rural areas)	adaptation synergies with green infra screening for feasibility, space usage decarbonisation effectiveness to meet targets feasibility? cost?

Processing data: developing user stories



User

CC
Challenge

Goals

Core
Tasks

The central user in **User Story P5.1** is the **Water Professional**. This concerns *professionals working for the regional authority, as well as hydrologists*. Both are **primary stakeholders** in pilot 5. This user is dealing with various challenges related to **changing water resources**, with **drought** being the most important one. These challenges are also associated with **longer and hotter summers**. At the regional level, issues surrounding **depleted water resources** are experienced. Other challenges include **over-sulphated soils** and **water quality issues due to severe rain and drainage**. A challenge related to these issues is the **changing of water use types** (e.g., irrigation).

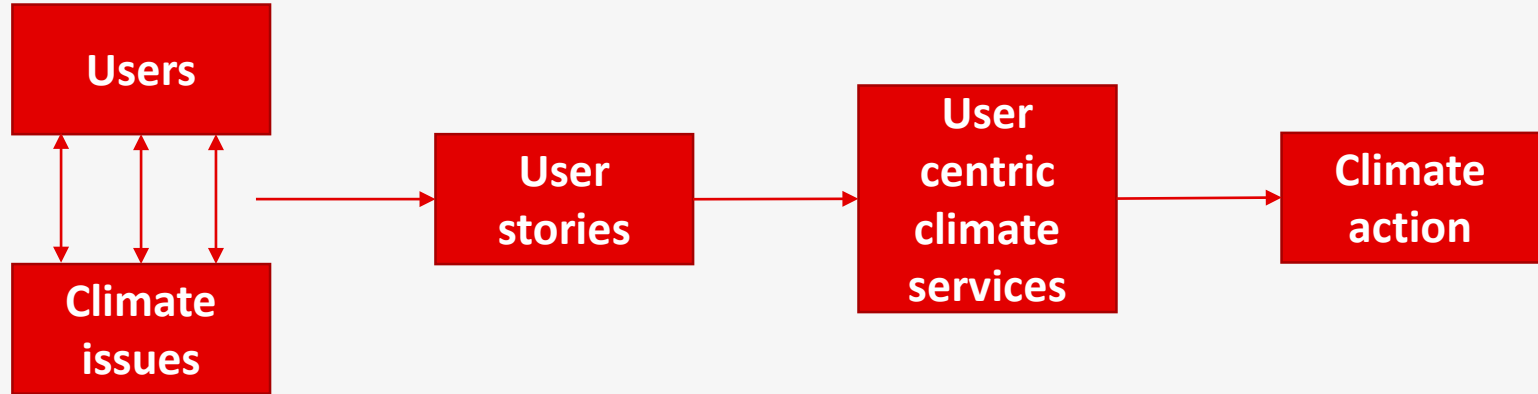
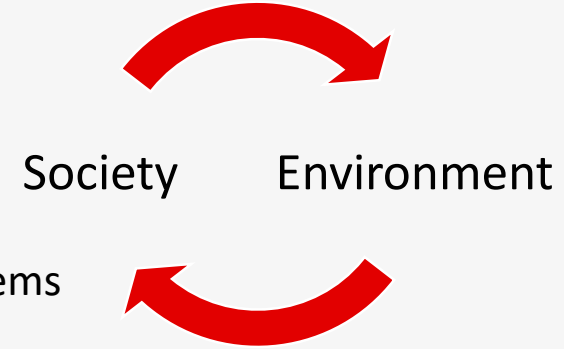
The user strives for **advance warnings** and to **be prepared for water problems**. Furthermore, the user wishes to **be prepared for changes in water use** that will inevitably result from the climate change challenges. More generally speaking, the user aims to **adjust the water management to future water uses and climate conditions**.

In order to achieve these goals, the user must **take climate change and drought into consideration** and **take steps to be better prepared for drought**, which is a relatively new challenge in Finland. The user must also **discuss with other parties what specific measures must be taken**. The user furthermore needs to **incentivize utility companies to prepare for drought**, including measures that these companies must take with regards to their pipe lines. The user must also **consider drought mitigation plans of municipalities**. As of yet, only one municipal plan exists, but more will be developed for the areas that are most prone to the climate change challenges.



Embedding new climate services in socio-ecological systems

- ~~'Environmental problems'~~ -> issues are socio-ecological
- Climate services must
 - Provide **accurate & up-to-date** data
 - Be **contextualized** -> local (cross-border) socio-ecological systems
 - Be **designed for users**



**THANKS
FOR
YOUR
ATTENTION**

Open Universiteit



WWW.OU.NL