gemeinsam · nachhaltig · transparent

OOWV

Groundwater management

Improving resilience with regard to climate change

Session 2 :

Resilient soil and groundwater resources –

Lessons learnt during the EU-TOPSOIL-project

Dr. Christina Aue, OOWV (D)

TOPSOIL Interreg North Sea Region European Regional Development Fund EUROPEAN UNION

Content

- Introduction
- Groundwater management and climate change
- Aspects of improving resilience and adaptation to climat change
- Lessons learnt from few local TOPSOIL pilots
- Findings and messages

Groundwater management and climate change

German Working Group on Water Issues of the Federal States and the Federal Government **(LAWA, 2017)** „Impact of Climate Change on Water Management“ *(www.lawa.de/english-About-LAWA.html)*

- The LAWA expects „exceptional impacts“ on
  - groundwater recharge, available groundwater, and groundwater levels…..
  - groundwater composition and temperature
- The LAWA is forcasting the possibility of
  - an increased exploitation of groundwater reserves
- The LAWA is warning:
  - Water resources management should be prepared for an intensification of the decline in groundwater recharge.
- The LAWA is stating:
  - The heavier use of groundwater reserves…is already evident.

Aspects of improving resilience and adaptation

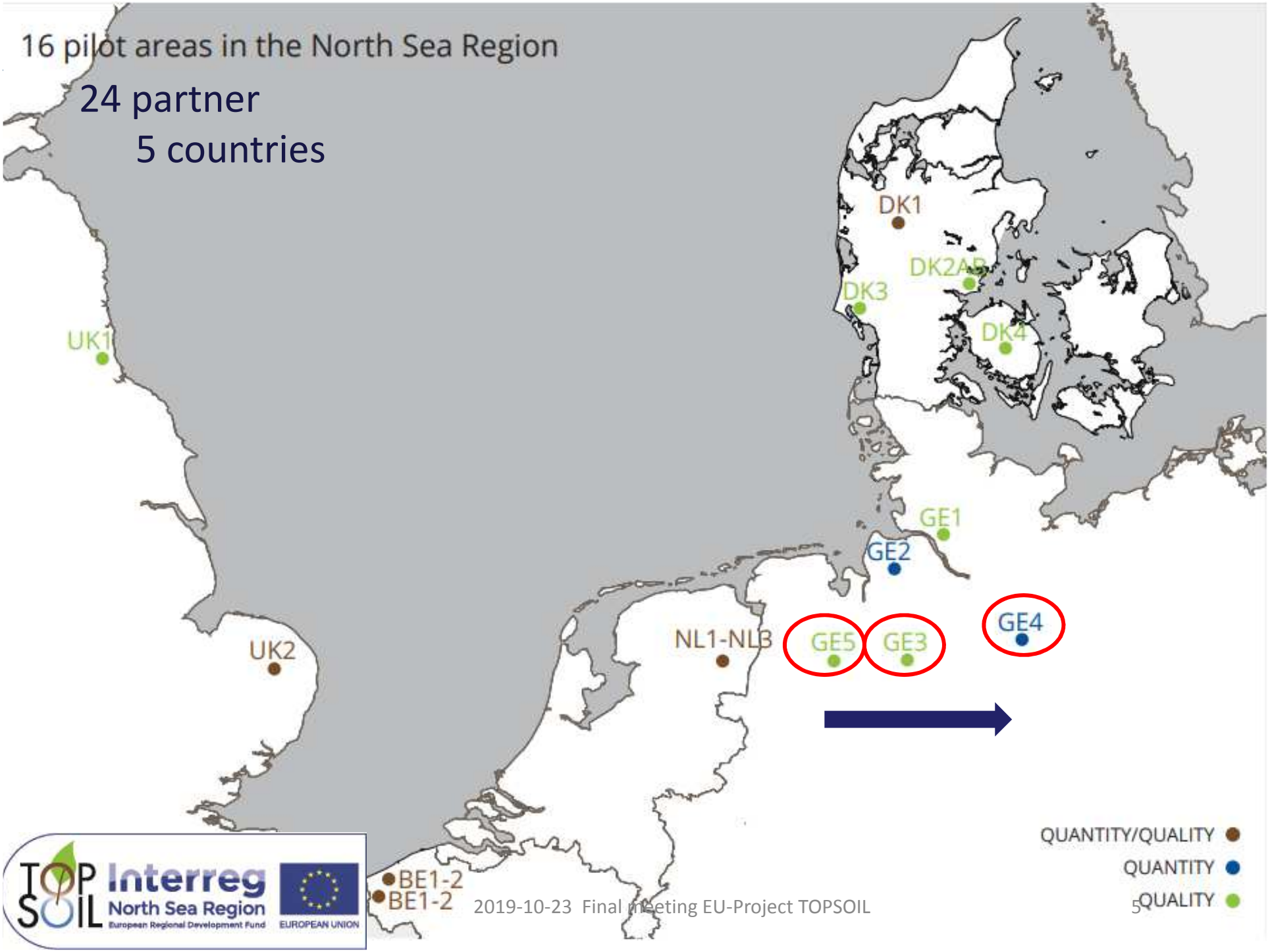
→ Aim of the TOPSOIL Project:

- ❖ Improving resilience of soils against extreme rainfall events to improve water quality and crop yields

→ Meaning of resilience:

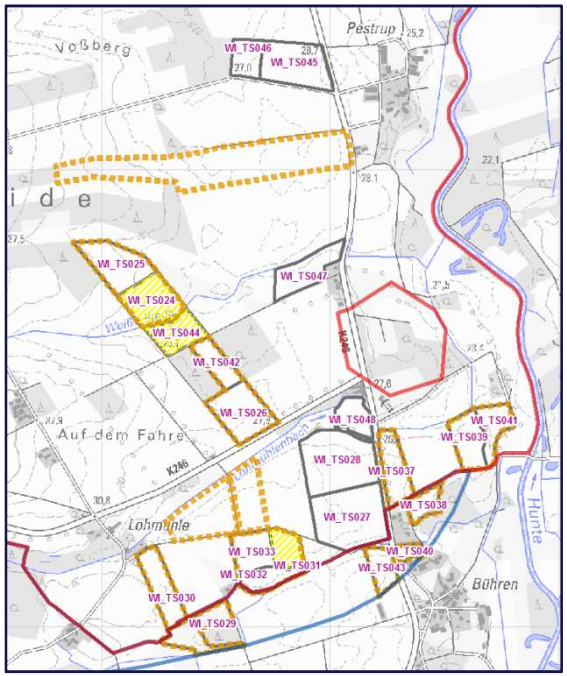
- ❖ The capacity to recover quickly from difficulties
- ❖ The ability of a substance or object to spring back into shape, elasticity

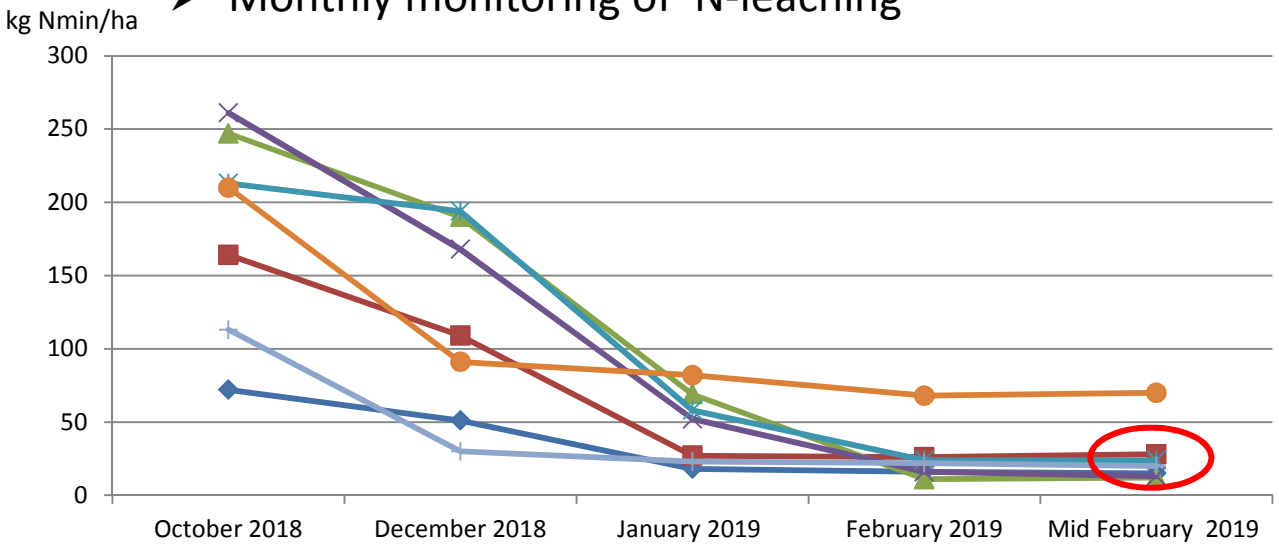
Here: **How to turn data into valid and usable knowledge in the field of water and soil mangement to cope with the consequences of climate change**


16 pilot areas in the North Sea Region
24 partner
5 countries
DK1
DK2AB
DK3
DK4
UK1
GE1
GE2
GE4
GE5
GE3
NL1-NL3
UK2
BE1-2
BE1-2
QUANTITY/QUALITY
QUANTITY
QUALITY

Lessons learnt: Enhancing the break down capacity (GE 5, Oldenburg)

- 4 Farmers contributed to solve the nitrat problem in water winning areas, got digital soil maps of their farmland, made contracts with the water supplier and were evaluated on each plot of their farms, whether or not 35 kg Nmin/ha has been achieved in october.
  - ➢ Very difficult farming conditions in 2018 (drought)
  - ➢ 1 farmer was successful
  - ➢ Monthly monitoring of N-leaching

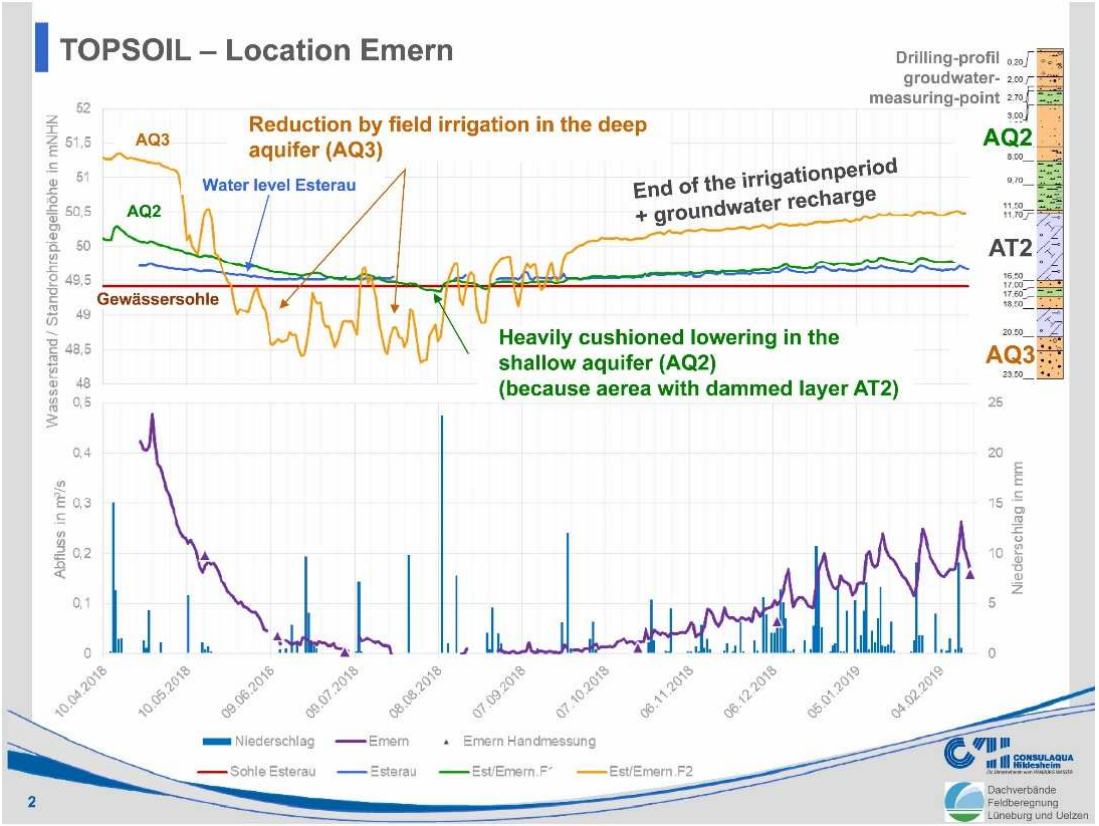




Lessons learnt: Scarcity/ Buffer capacity (GE4, Uelzen)

– Exploring nature compatible groundwater extraction for irrigation- purposes

  - ➢ Uptake from sensible groundwater depending areas on the basis of discharge-data.
  - ➢ Monitoring equipment was tested.

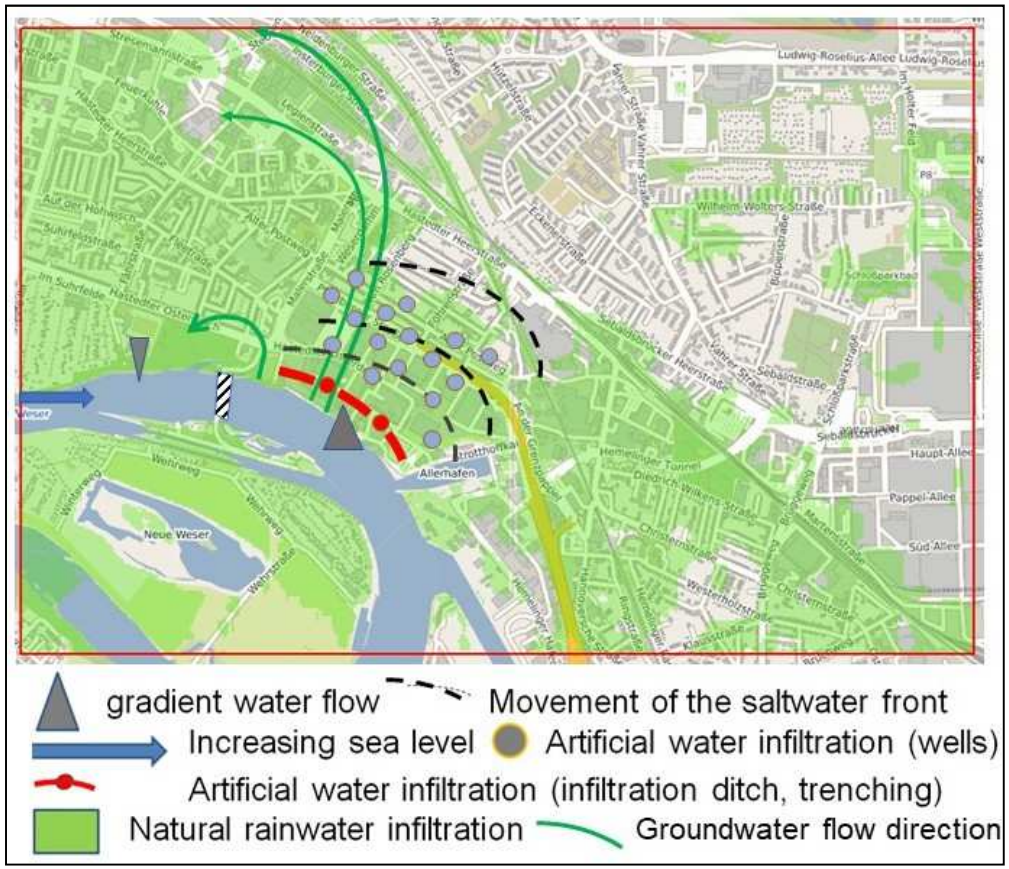


Lessons learnt: Salt water intrusion and groundwater (GE 3, Bremen)

– By shifting the Bremen dam of the river Weser, the dynamical fresh-saltwater interface is predicted to move into urban areas (voxel model)

Findings for successful climate change adaptation:

- Increase of the recharge by unsealing free areas or by a drainage/ infiltration of water flow near the Weser river can be achieved.
- In cooperation with urban companies it is possible to regulate /adapt extraction rates of groundwater.



Findings

- Whether or not being influenced by climate change: Water quality is always a product of all processes in soil above. → Every square meter is relevant.
- Great burdens from the past: Today Lower Saxony has a severe quality problem in surface- and groundwater (nitrate, metabolites from pesticides). Considering the actual situation and assuming the high risk of growing pollution in future → Improving resilience will be very difficult.
- Ordiances for agricultural practise have to realize the 50 mg nitrate limit in groundwater. → EU-nitrate directive is the most important driver.
- The most stressing factor, the rising temperature will not tolerate more time for try and error:
  - ➢ Efficient measures for all aspects of the water cycle are needed to get implemented immediately.

Message

- Get the EU-WFD fullfilled

More messages

- Get the authorities involved
- Get the politicians in close contact with the experts
- Demand stuff and budget for water authorities and for investigation/ monitoring
- Talk about the „polluters pay priniciple“ and about „environmental costs“
- EU should have a longer „breath“ regarding duration of projects and should enhance exchange among Member States
- EU is tremendously relevant regarding protection of water

gemeinsam · nachhaltig · transparent

OOWV

Vielen Dank für Ihre Aufmerksamkeit.

Mange tak

Thanks for your attention