WATER CONFERENCE

Speeding up to a water resilient Europe. Towards an EU water resilience agenda

Irish College – March 12th, 2024



9.00h - 9.15h Welcome and opening speech

9.15h - 9.30h **Key-note speech**

Program 9.30h – 10.25h Opening session

10.25h - 10.50h**Coffee break**

10.50h - 11.30h **Panel discussion** 11.30h - 12.10h Panel discussion

12.10h – 12.30h Closing remarks

Program

12.30h - 13.30h Lunch break

14.00h – 16.00h Boots on the ground: site visits

Opening speech

Florika Fink-Hooijer Director-General of the Environment Department of the European Commission



Key-note speech: 'Changing risks of hydrological extremes'

Prof. Patrick Willems Professor on water engineering at KU Leuven



Global warming -> more hydrological extremes



Temperature increase over European land area:



+ changes in atmospheric circulation

Incl. increase in persistence due to decreasing temperature gradient with North Pole



Increase of saturation concentration air vapour:

Increasing drought frequency and water stress

KINGDOM

NETHERLANDS

Low-medium Medium-

(10-20%)

high

(20-40%)

High

(40 - 80)

Extremely

high

(>80%)

IRELAND

Low

(<10%)

curren

Hydrological cumulative rainfall deficit (= impact rainfall & evapotranspiration) Flanders' average from start hydrological summer season:



Increasing peak rainfall and flood frequency



Relative change in annual expected flood damage:



Stabilisation of river water quality improvement

% of water bodies in Flanders that meet the water quality standard for oxygen, nitrate, phosphorous and total nitrogen:





Higher frequency of saltwater intrusion and impacts



Assessment of major climate risks for Europe

Climate risks for 'Infrastructure' cluster	Urgency to act	Risk severity			Policy characteristics		
		Current	Mid-century	Late century (low/high warming scenario)	Policy horizon	Policy readiness	Risk ownership
Pluvial and fluvial flooding		+++	+++	++	Long	Medium	Co-owned
Coastal flooding		++++	+++	+++	Long	Advanced	Co-owned
Damage to infrastructure and buildings (*)		++		++	Long	Medium	Co-owned
Energy disruption due to heat and drought (hotspot region: southern Europe)		++	++	++	Medium	Medium	Co-owned
Energy disruption due to heat and drought		++	++	+	Medium	Medium	Co-owned
Energy disruption due to flooding		++	++	++	Long	Advanced	Co-owned
Marine transport		++-	++	++	Medium	Medium	Co-owned
Land-based transport		++	++	++:	Medium	Medium	Co-owned

Legends and notes

- Urgency to act
- Urgent action needed
- More action needed
- Further investigation
- Sustain current action
- Watching brief

- Risk severity
 Catastrophic
- Critical
- Substantial
- Limited
- Confidence Low: + Medium: ++ High: +++

(*) Urgency based on high warming scenario (late century).



Time for an ambitious EU plan to increase our water resilience

towards a resilient water management to fight climate crisis within an EU Blue Deal ...



Flanders' Blue Deal as a leading example

 \checkmark investments in the field







✓ communication and awareness-raising



✓ innovation, research and monitoring







Ons voorbereiden op wat al gebeurt

Advies van het expertenpanel hoogwaterbeveiliging aan de Vlaamse Regering

Juli 2022

I. Heldere, geïntegreerde en taakstellende waterdoelen Van diverse en vage waterkwantiteitsdoelstellingen paar

2

Vån diverse en vage waterkwantiteitsdoelstellingen naar geïntegreerde waterdoelen

Geïntegreerde en adaptieve actieprogramma's per deelbekken Van een reactieve verameling aan losstaande sectorale acties maar een uitvoeringsgerichte taakstelling op deelbekkenniveau

3. Water, bodem en klimaat sturen nieuwe rechtszekerheid Van vrijblijvende wateradviezen

en onzekere uitvoering naar een robuust en rechtszeker ruimtelijk en uitvoeringskader

Drie maal mandaat, van regie tot uitvoering Van een uitvoering afhankelijk van vrijwilligheld en wetraagd door fragmentatie van bevoegdheden naar duidelijke regie

Verankerd Waterzeherheidsfonds Van jaarlijkse projectbudgetten naar een legislatuuroverschrijdende systeemaanpak Z

Paraatheid van mensen en infrastructuur Van relatieve onweiendheid naar verhoogde zelfredzaamheid

S. Cultuuromslag Van individuele risico's naar maatschappeiijke winst

Vlaams Kennis- en Innovatieprogramma Van sectorale wetenschappelijke ontwikkeling naar transdisciplinaire en praktijkgerichte innovatie

10. Grensoverschrijdende aanpak en samenwerking Van een reactieve, atwaarts gelegen regio naar voorloper in Europese hoogwatebeverliging



Address of the second s

- July 2021 in Belgium:
- 41 deaths
- tens of missed persons
- 38 000 houses damaged
- 5 000 very strongly damaged
- 642 houses destroyed

What if ... the next water bomb bursts over Elanders? rever 230 mm total rainfall volume in 48 h: ca. 4900 houses damaged Total damage of 8,1 billion EUR

BELGIE

Water security = water safety + water availability



Restore the sponge landscapes: nature based solutions

Take advantage of co-benefits

Other options to optimize water availability



Agricultural land management: soil health, organic matter content, soil biodiversity and associated biological activity





Options to reduce water abstractions



Reuse of water: rainwater, treated wastewater





Drought resistant agriculture and horticulture



Overall water security goals for Flanders



Water "loss" to the sea: approx. 60%

Climate adaptation needs: approx. 10% extra water storage and/or less abstraction

(current climate)

approx. 20% (high climate change scenario)



- What if 50% of the rainwater that currently flows into the sewer system would be infiltrated? approx. 150 to 200 Mm³/year = at least <u>3% gain</u> compared to 60% water "loss" to the sea (2% on private domain, 1% on public domain)
- Suppose that every citizen would store and use rainwater for toilet flushing, washing clothes and gardening: approx. 100 Mm³/year = approx. <u>2% gain</u>
- Suppose we can reduce all drainage from farmland to rivers by 20%: min. <u>2% gain</u>, probably more
- ✓ Suppose we install weirs in ditches to reduce the total overland runoff by 30%: approx. <u>2% gain</u>
- ✓ Suppose that all industrial companies replace 50% of their surface, ground and tap water by reuse of wastewater = approx. <u>2% gain</u>

✓ Etc., etc...



Codesign



Transition agenda with green-blue spatial implementation plans

Culture change

✓ Stimulate new culture of handling water

 Prepare future generations through education and also propagate the water issue politically as a transversal and therefore intersectoral challenge

 Work on awareness to make the transition from the individual 'right to rainwater drainage' to a collective 'duty of maximum retention' among citizens and companies as well

KU LEUVEN

patrick.willems@kuleuven.be

Opening session: 'Outline the future towards a water resilient Europe – searching for accelerators at EU level and at regional level'

Moderator: Jan Verheeke Vice chair European Environment and Sustainable Development Advisory Councils Network

Opening speech

Mrs. Zuhal Demir Minister of Justice & Enforcement, Environment, Energy and Tourism

Call for an EU Blue Deal: How the EESC lead the way to the Declaration for an EU Blue Deal, and the work ahead

Pietro Francesco De Lotto

President of the Consultative Commission on Industrial Change (CCMI) of the European Economic and Social Committee (EESC)

Opening session

Creating an EU Blue Deal from an agriculture and rural development perspective across EU Regions

Karl Vanlouwe Rapporteur EU Blue Deal European Committee of the Regions

Opening session

The Flemish Blue Deal

- Although Flanders is known as a region who experience a lot of rainfall, it has low water availability, partly due to the high degree of paving and urbanization, and is therefore very sensitive to drought, which leads to water shortages.
- In 2020, Minister Zuhal Demir of the Flemish government launched a Blue Deal plan to fight water scarcity and drought, under which Flanders is moving towards less sealing, soil rewetting and maximum circular use of water.

Telling the Flemish Story in a European Context

- Water issues all around Europe, especially in Southern Europe: droughts and floods can mostly be explained by the effects of climate change, the impact of these natural phenomena is made many times more severe due to human activity like paving and urbanization.
- We took the Flemish outline and tried to see what that would look like in a European context:
 - **Public authorities lead by example** and ensure appropriate regulation
 - Circular water use as a rule
 - Agriculture and nature as part of the solution (natural based solutions)
 - Encourage private citizens towards **depaving**
 - Increasing security of supply
 - Investing together in innovation to make our water system smarter, more robust and sustainable

Notable Remarks and Findings

Meetings with DG Agriculture and DG Regio

Implementation:

- Financing water policy
- Implementation: a difficult coordination problem

Monitoring:

- Subsidiarity
- Cross border cooperation

Information sharing:

- Lack of sharing good practices
- Coordinating innovation

1. Coordinating and Monitoring Water policy

• Water Directive is an important tool, but the problem is implementation

Within the Water Directive, there should be more attention for frequent and strategic consultation between local stakeholders and across regions. With respect to the subsidiarity principle, there should be a shift towards a larger bottom-up integration of water management.

• Implementation is as important as finance of water policy

At this moment, the lack of coherent management and coordination is slowing water infrastructure projects more than the lack of finance.

• European framework for structural sharing of best practices

2. Research, Development and Innovation

• A European innovative framework

A framework for innovation which can combine essential investments with efficient use of European funds where member states and stakeholders can work together on innovation, research and development across the EU.

• Encouraging the potential of water innovation in our schools and research centers

There is a large potential for making water management more efficient and sustainable through water reuse. Educational institutions should organize research and courses about rainwater management, renovation and remodeling of irrigation systems, water efficient irrigation practices, but also water efficient systems for households and industry.

3. Agriculture

- Proper compensation for farmers to adapt to water efficient techniques and supporting green-blue infrastructure. Focus should be on making farmers more resilient against droughts and flows, not dependent on CAP-funds.
- **Reform CAP** towards more sustainable farming by **promoting less water intensive practices** like crop rotation, **reuse of water** and **modernization** of irrigation systems.

4. Rural development

- Building green-blue infrastructure should go hand in hand with rural development as support to the local governments. **Financial attention** is needed to help less-wealthy regions to adapt to climate change.
- Encouraging rural proofing towards new water directives.

5. Civil protection

- Civil protection should be a **horizontal part** in water management. Resilience against water disasters play a key role in **minimizing the extreme effects** of droughts and floodings.
- **Reverse counterproductive measures** like straightening rivers and removing wetlands which lead to higher water stress and soil desiccation

6. Consumer protection

- The costs of keeping water clean **shouldn't disproportionally fall on local consumers** as it is a basic, human right.
- The polluter pays
- **Transparency in water pricing** to stimulate efficiency and cutting costs through a calculable cost-benefit analysis

Conclusions

- 1. Focus on **implementation** of the Water Directive and **monitoring** water management across different regions
- 2. Approach water management in a **long-term strategy** with attention towards **regional characteristics, needs and wishes**
- 3. The need of a holistic water approach and policy coherence between sectors on water management, climate change and reducing the risk of water disasters
- 4. Using the **restauration of nature and natural based solutions** as greenblue infrastructure to restore the **sponge function** of nature
- 5. Overall, a shift in water use towards reuse in all economic sectors: not only agriculture, but also industry, tourism and water use by consumers
Too less and too much water: building a strategy to address climate change

Paolo Ferrecchi Director-General for Environment and Mobility Region Emilia-Romagna



Opening session

Emilia-Romagna Region on the map

- Link between northern/southern Italy, Mediterranean/northe rn Europe
- At the heart of Italy most industrialised area.
- Efficient network of infrastructure



Drought emergency in 2022 until April 2023

After the **drought of 2017** which led to the declaration of a "State of national water emergency", in **2022 a second drought** lasting until April 2023 leads to a new national water emergency. The **Po river**, the main Italian river, from which the Region Emilia-Romagna draws around 50% of total water consumption, reaches the historical minimum flow value of 114 m3/sec in July 2022.





The first half of July 2022 was characterized temperatures bv significantly higher than the for the averages period. Precipitation accumulations were lower than usual for the period throughout the District. Inflows were progressively decreasing. close to or below historical lows.







Drought emergency

The **intrusion of the salt wedge** from the Po delta reaches 39 km from the coast.

The water accumulation of the mountain dams and of the large **regulated lakes** of the Po basin is generally lower than the average of the period and the regulation limits.





Strong measures are needed to support the flows of the Po river in the downstream section in order to:

- guarantee the drinking water supplies of various Provinces
- prevent the rise of the salt wedge
- reduce the deterioration of surface and underground water bodies!

The May 2023 flood in Emilia-Romagna

- Combined meteoric event **1-4 May and 16-18 May 2023**: exceptional in terms of its intense, extensive and persistent character with 4.5 billion m3 falling over an area of 16,000 km2
- return times in many watercourses far exceeding 500 years
- 23 waterways affected by bank overflows/breaks for a total flood volume estimated at approximately 350 million m3 with flooding of approximately 540 km2
- in the plains in the hilly and Apennine areas **77,000 landslides for a total area of 81.51 km2**
- 15 dead, 36,600 people displaced
- 311 buildings affected by landslides
- 1959 road sections interrupted or partially damaged by landslides
- **5 railway sections** interrupted due to landslides or collapse of embankments



The May 2023 flood in Emilia-Romagna



- **9 billion euros in damages**: 4.5 for the reconstruction of public infrastructures and 4.5 billion in damages to private properties: agriculture, businesses, homes
- According to the Global Catastrophe Recap Report by Aon (an international group for risk management and insurance programs), the flood in Emilia Romagna is the **third worst catastrophe of** 2023 "an unprecedented event in observed history" in Italy
- This event has determined the need to resort to new planning and programming models: we will be a national point of reference (and not only...) for new strategies regarding soil protection

The May 2023 flood in pictures







Building back: a paradigm shift needed

- Carry out works of **stabilization of single slopes and regulation of surface waters** with particular attention to the minor hydrographic network, coupled with a correct maintenance of the territory and to the adoption of good agricultural-forestry-pastoral practices
- Adopt Territorially Forestry Plans at river basin scale
- Raise the level of protection from flood phenomena compared to the levels guaranteed by the protection works currently planned in the area: flood lamination works
- Allow more space to rivers, and focus the maintenance of riparian vegetation on specific management plans that guarantee the best balance between hydraulic needs and all other ecosystem services performed; manage fossorial animals
- Revisit the planning of interventions in the logic of minimizing of residual risks
- Use controlled flooding of specific portions of territory, of lesser value than other areas affected by greater exposure in terms of settled assets and values, external to the current defensive system, as a strategy for mitigating residual risks
- Fully implement the regional urban planning law in urban regeneration and in the protection of areas susceptible to be flooded or at risk of instability

RegioneEmilia-Romagna

Impact of the 2017 Regional Urban Planning Law and the Plan for the management of Flood risks (PGRA)

Based on the regional Urban Law, many settlement forecasts were removed in areas subject to hydraulic risk, or in areas potentially affected by floods according to levels P3 (areas relating to frequent floods) and P2 (areas relating to infrequent floods) of the Flood Risk Management Plan (PGRA)

12,380 hectares of settlement forecasts removed in "danger zones" of areas potentially affected by floods according to levels P3 and P2

Previsioni insediative DECADUTE Pericolosità P2

Impact of the Urbanistic Law on the areas and elements characterised RegioneEmilia-Romagna by hydrological instability

Settlement forecasts removed by LR 24/17 in areas subject to hydrogeological risk, or near active or quiescent landslides.





Extraordinary Plan (EPl) on Hydrogeological Instability as the driver

The reconstruction needs to be based on risk mitigation



Extraordinary Plan (EPl) on hydrogeological Instability: Redesigning the hydrographic network



Extraordinary Plan (EPl) on hydrogeological instability: managing landlides



STATUS OF LANDSLIDES RELIEF PROGRESS



Extraordinary Plan (EPl) on instability: managing landlides

	Impact 1 Inhabited Nucleus impacted	Impact 2 Inhabited nucleus. potenzially at risk	Impact 3 Impacted building	Impact 4 Building potentially at risk	Impact 5 Impacted road	Impact 6 Road potentially at risk
Landslide type a	A	G	0	U		
Landslide type b	В	н	Ρ			
Landslide type c	С	I	Q			
Landslide type d	D	L	R			
Landslide type e		М				
Landslide type f	F	N	т			



Examples of impact on the most affected areas: Modigliana before



Modigliana after



Examples of impact on the most affected areas: Predappio before



Predappio after



Useful links:

- <u>Alluvione in Emilia-Romagna Regione Emilia-Romagna</u>
- Acque Ambiente (regione.emilia-romagna.it)
- Transizione ecologica e cambiamenti climatici Ambiente (regione.emilia-romagna.it)
- Osservatorio Permanente Autorità di Bacino Distrettuale del Fiume Po (adbpo.it)
- Comunicato stampa del Consiglio dei Ministri n. 27 | www.governo.it
- Commissario straordinario di Governo alla ricostruzione nei territori colpiti dall'alluvione verificatasi in Emilia Romagna, Toscana e Marche -

RegioneEmilia-Romagna

Thank you very much Dank u wel

00



Panel discussion: 'Evidence based pathways to a water resilient Europe – actionable knowledge for decision makers'

Moderator: Louise Vanysacker

Chair Innovation Working group at Aquaflanders



The socio-economic study on the value of water

Hans Goossens President Water Europe



Building blocks for a water research and innovation agenda

Dirk Halet

Strategic Coordinator at VLAKWA Chair Research and Development Platform at Commission Integrated Water Management Flanders



Innovative solutions for sustainable and future-proof drinking water and process water production

Jacob Bosaer CEO at Bosaq

Innovation into practice – solutions for the circular transformation of water

Pär Larshans Chief Sustainability Officer at Ragn-Sells Group



Introduction: A preview on the State of Water 2024 report – adapting to water scarcity, drought and flood risk

Trine Christiansen

Project manager at the European Environmental Agency



Water Vision 2023

Water-Smart Society:

- A society in which the value of water is recognised and realised to ensure water security, sustainability, and resilience.
- all available water sources are managed so that water scarcity and pollution are avoided.
- water and resource loops are largely closed to foster a circular economy and optimal resource efficiency.
- the water system is resilient against the **impact** of climate and demographic change.
- all relevant stakeholders are engaged in guaranteeing sustainable water governance.



Key Figures





MANIFESTO

The European Union needs an ambitious Water-Smart Strategy





Retaining water

Take responsibility

Function < water level

Collaboration

Nature-based solutions

Steering < societal impact

Evaporation en Precipitation sheds

Circular thinking







PLANETARY BOUNDARIES, WATER RELATED UNEA-6 BUILT ON THE PLANETARY CHALLENGES



Both phosphorus and nitrogen ends up in our lakes, rivers and oceans, risk causing eutrophication – resource treatment plants where the process can be reversed has a huge potential





RESOURCE PLANTS REPLACING WASTEWATER TREATMENT PLANTS THAT BOTH DETOXIFIES AND RETURNS VALUABLE RESOURCES

WWW.EEA.EU – JULY 2022



UNECE June 2021

From Wastewater Treatment Plants to Resource Plants (ragnsells.com) –

WTO Geneva May 2022

 <u>"We need international agreements based on the quality, not origin"</u> (ragnsells.com) – WTO 18th of May 2022

WCO Brussels October 2022

"Not only rich people should be able to buy eggs in the future" (ragnsells.com)

Want to learn more:

From wastewater treatment plant to resource plants (ragnsells.com)

RAGN<u>Å</u>SELLS

Potensiale og bærekraft oav 2/05/2022 v1.0

PFAS

SELPAXT FOR PFAS REMOVAL IN BELGIUM

- Installed SELPAXT for landfill leachate with very high share of short PFAS.
 2-step treatment resulting in 97% reduction in collaboration with local partner.
- Several lab tests from Belgian companies with great results.
- Huge interest for our technology with several on-going dialogues.

PFAS reduction results from the 2-step SELPAXT installation:







REDUCTION %

The symbol > indicates that the reduction result after SELPAXT treatment is below the detection limit (LOQ).

N-MeFBSAA	97%		
PFAS22	97%		
PFAS4	>99%		
PFAS11	98%		



RAGN<u>Å</u>SELLS

Q-Drop: innovation to minimize footprint

ElectroClean:

- Elimination of chemical handling
- Minimization of chemical discharge
- 15% reduction on OPEX

• IoT & AI:

- Max. water efficiency & min. energy consumption
- Min. maintenance frequency
- Min. chemical use

B-Free – CCRO

- Maximal RO recovery, no biofouling
- +90% recovery
- Min. chemical use



Panel discussion: 'Towards a water smart society – water actors and citizens in charge'

Moderator: Ignace Schops Director RLKM and President BBL




Recognition of the key role of water in Europe and having an integrated approach to water by mainstreaming it into all relevant EU policies

Wendy Francken President of the Europe Water Association





Water Conference – 12.03.2024

Blue Deal buy-in for policy-makers in Flanders – experiences gained from the Flemish Blue Deal 1.0

Vincent Wolfs

General manager and business developer at SUMAQUA



More infiltration & groundwater recharge...



Jumagua

... but we cannot hold it for long due to fast drainage.



Water resilience projects in Flanders – Evidence based accelerators for decision makers

Isabelle Putseys CSO & Expert Climate & Water planning at SWECO



Speeding Up to a Water Resilient Europe Role of engineering

Buildings and urban districts Water, energy and industry Transport infrastructure Renewable energy · Railway and rail- Architecture bound traffic design · Sustainable buildings Electrification Public transportation · Environmental impact City planning planning assessment Climate and environment · Cycling in cities Efficient logistics assessment and processes Traffic and urban · Parametric design planning Water treatment . and water protection

Urban & Societal Transition

Industrial Transition

Energy Transition

Transport Transition



sweco 🖄









Call for a new EU Climate and Water Resilience Law to address the climate and water crises

Claire Baffert Senior Water Policy Officer WWF European Policy Office



The Living Rivers Europe's coalition vision for a water resilient Europe



"Without sufficient and good quality water for nature there won't be enough water for people."

- A fully implemented EU Green Deal and the full implementation of the Water Framework Directive.
- A new EU Water and Climate resilience Law with
 - Higher requirements for ecological flows in waterstressed areas
 - "Sponge facility" to upscale nature-based solutions
 - Water saving targets at river basin level in waterstressed areas



'How to make the North-West Europe region more water resilient

David Grzegorzewski

Programme Director at Interreg North-West Europe





Closing remarks: 'Water resilience in a transboundary context'

Mr. Bernard De Potter Water Director Flanders

