

# #125 Protection of drinking water resources from agricultural pressures: embracing **interdisciplinary cooperation** to enhance governance approaches

**Authors:** Susanne Wuijts<sup>1,2</sup>, Morten Graversgaard<sup>3</sup>, Cors Van Den Brink<sup>4</sup>, Sandra Boekhold<sup>1</sup>, Frode Sundnes<sup>5</sup>, Luke Farrow<sup>6</sup>, Nicolas Surdyk<sup>7</sup>, Rozalija Cvejic<sup>8</sup>, Helle Tegner Anker<sup>9</sup>, Antti Belinskij<sup>10</sup>, Marleen Van Rijswijk<sup>2</sup>

1. RIVM, National Institute for Public Health and the Environment, Bilthoven, Netherlands
2. Centre for Water, Oceans and Sustainability Law, Utrecht University, Utrecht, Netherlands
3. Department of Agroecology, Aarhus University, Tjele, Denmark
4. Province of Drenthe, Assen, the Netherlands
5. Norwegian Institute for Water Research (NIVA), Oslo, Norway
6. Agri-Food and Bioscience Institute, Belfast, UK
7. BRGM, Orléans, France
8. Biotechnical Faculty, Department of Agronomy, University of Ljubljana, Ljubljana, Slovenia
9. Department of Food and Resource Economics, University of Copenhagen, Denmark
10. Centre for Climate Change, Energy and Environmental Law (CCEEL), Law School, University of Eastern Finland, Finland

Contact: [susanne.wuijts@rivm.nl](mailto:susanne.wuijts@rivm.nl)

## Methods

- Hypothesis tested for 5 cases from H2020 Fairway (<https://www.fairway-is.eu/>)
- Conceptual framework on interactions, developed on systematic literature review (<https://doi.org/10.3390/su10040914>)
- Interdisciplinary discussion on case study results, including legal, hydrogeological, social-economic and agronomic scholars

## Scope and case selection

- EU cases, same legal framework
- Cases selected that focus on local governance arrangements
- Data included from both national level and local arrangements
- Average to high agricultural intensity
- All cases have to deal with water quality issues
- Cases: Denmark, France, Netherlands, N-Ireland, Slovenia

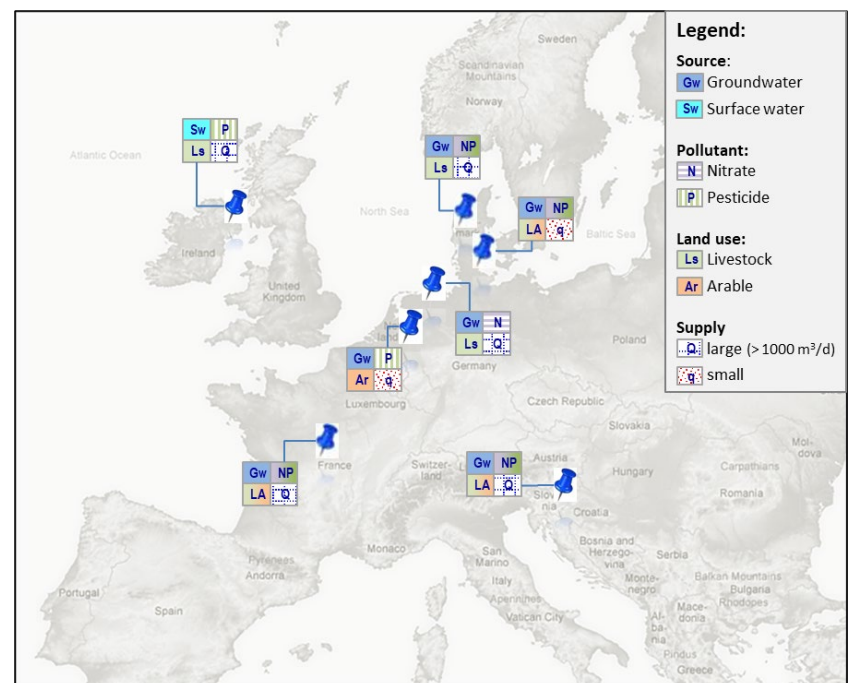


Figure 2. Cases studied

## Background

- Nutrients and pesticides are a major source of pollution of water sources in Europe,
- Difficult to reduce pressures from agriculture on drinking water resources,
- After initial reductions (90-ies), water quality improvement stagnated since 2010
- Why? Explanations from different perspectives:
  - Extensive European legal framework but complex
  - National implementation by sectoral law and policies, fragmented responsibilities
  - Complex interactions between land use and water system
  - Low hanging fruit already harvested

## Hypothesis

Interactions between social-economic, legal and ecological knowledge domains play a pivotal role in water quality improvement.

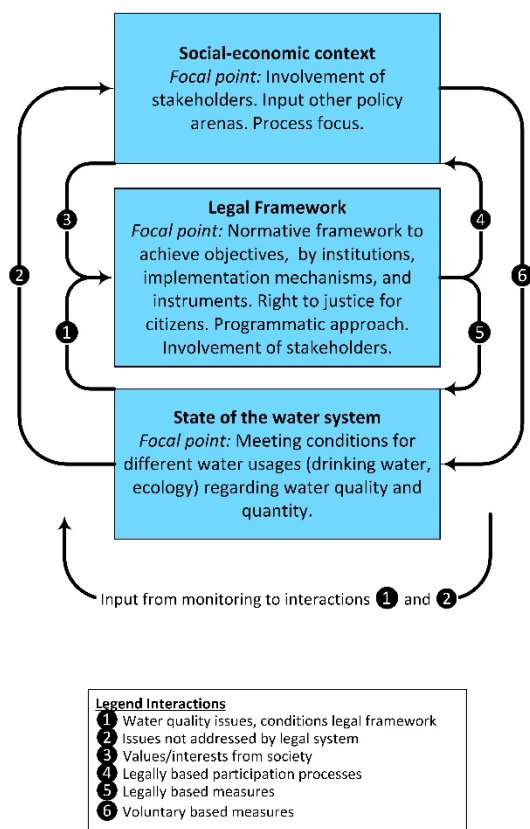


Figure 1. Conceptual framework



## Observations

Table 1. Interdisciplinary discussion

Perspective	Observations	Questions
Social-economic context	Different pressures in MS → different sense of urgency	Can you compensate for just achieving legally set goals?
Legal Framework	Stakeholder involvement limited to larger interest groups (capacity)	Is using <u>only</u> voluntary instruments allowed if you don't meet objectives?
	Focus on voluntary practices in cases, legal instruments perceived insufficient to meet objectives	
State of the water system	Tension polluter pays principle vs. property rights	Adaptive capacity WFD vs. infinite licensing: how to improve?
	Investigative monitoring (WFD 11.5): difficulties to identify pathways and effects of measures	How to develop monitoring that monitors effectiveness of policy/instruments/measures?

## Conclusions

Interdisciplinary discussion gave insights and open questions towards what would be necessary for water quality improvement:

- Interventions, effects and adaptive measures need to be linked
- Need for balance between legal and voluntary based instruments
- Focus on outcomes in governance approaches, long-term commitment

More results: <https://doi.org/10.1002/eet.2136> (or scan the QR-code)