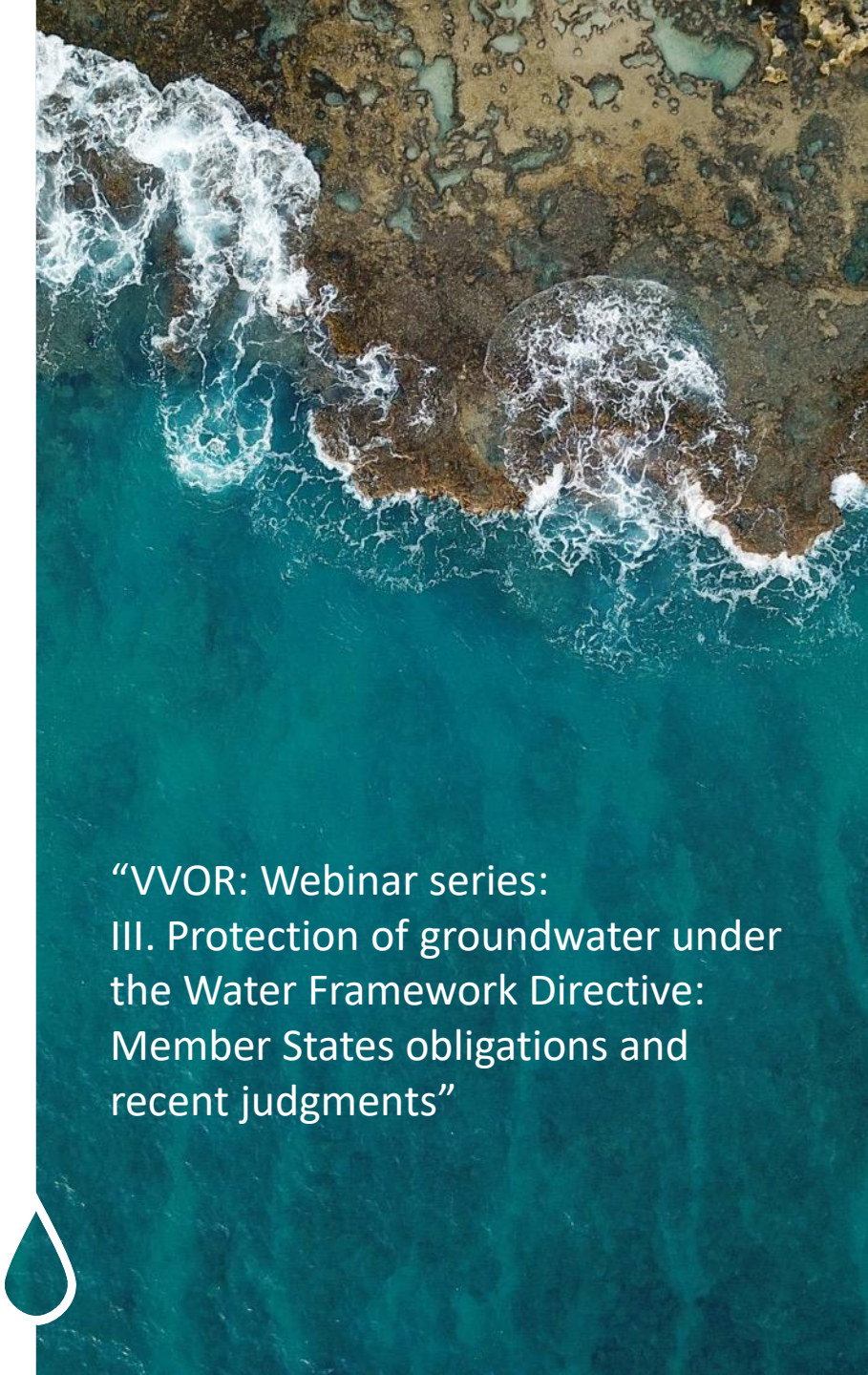
Marleen van Rijswick

9 November 2021

Protecting groundwater resources for ecological and societal needs: struggling at the Member State level

Tackling drought problems in a water rich country
Tackling historical groundwater pollution by soil remediation



"VVOR: Webinar series:
III. Protection of groundwater under the Water Framework Directive: Member States obligations and recent judgments"

Utrecht University

CENTRE FOR
WATER, OCEANS AND
SUSTAINABILITY LAW

Approach discussing groundwater protection: Drivers / Impacts / Solutions

- Groundwater quality
- Ground water quantity
- Cross cutting issues: multi sector challenges ánd benefits (nature, agriculture, chemicals)
- Examples from the Netherlands

<u>Legal framework:</u>

- Water: the Urban Waste Water Treatment Directive (91/271/EEC); the Drinking Water Directive (98/83/EC); the Water Framework Directive (2000/60/EC); the Nitrates Directive (91/676/EEC) and the Floods Directive (2007/60/EC).
- Legislation in other policy fields
- Case law from the ECJ (see Christoph Sobotta)

EU environmental law should address both drivers and impacts

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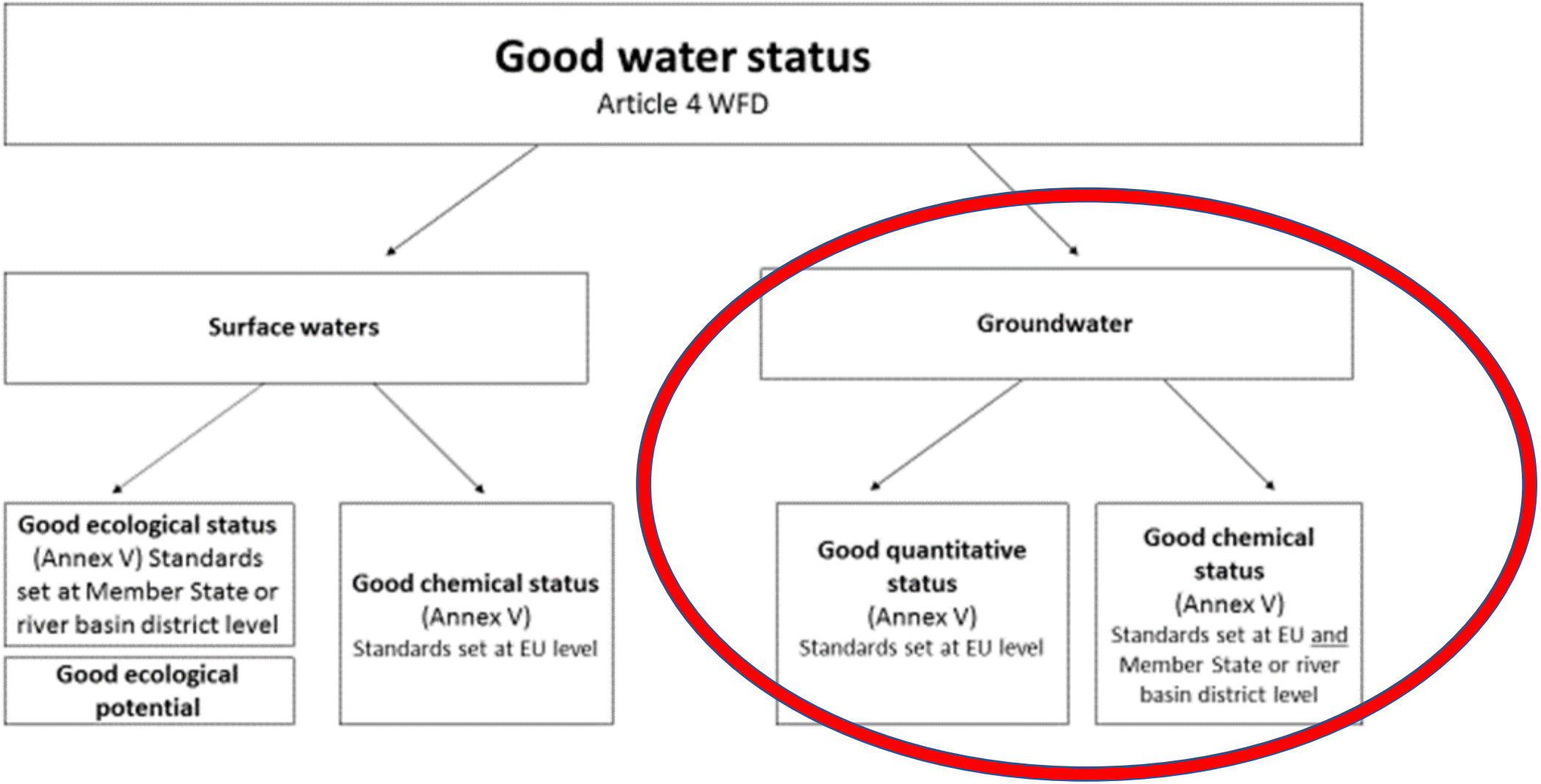
the same goes for non-legal solutions/measures

Goal WFD: achieve a “Good Water Status”



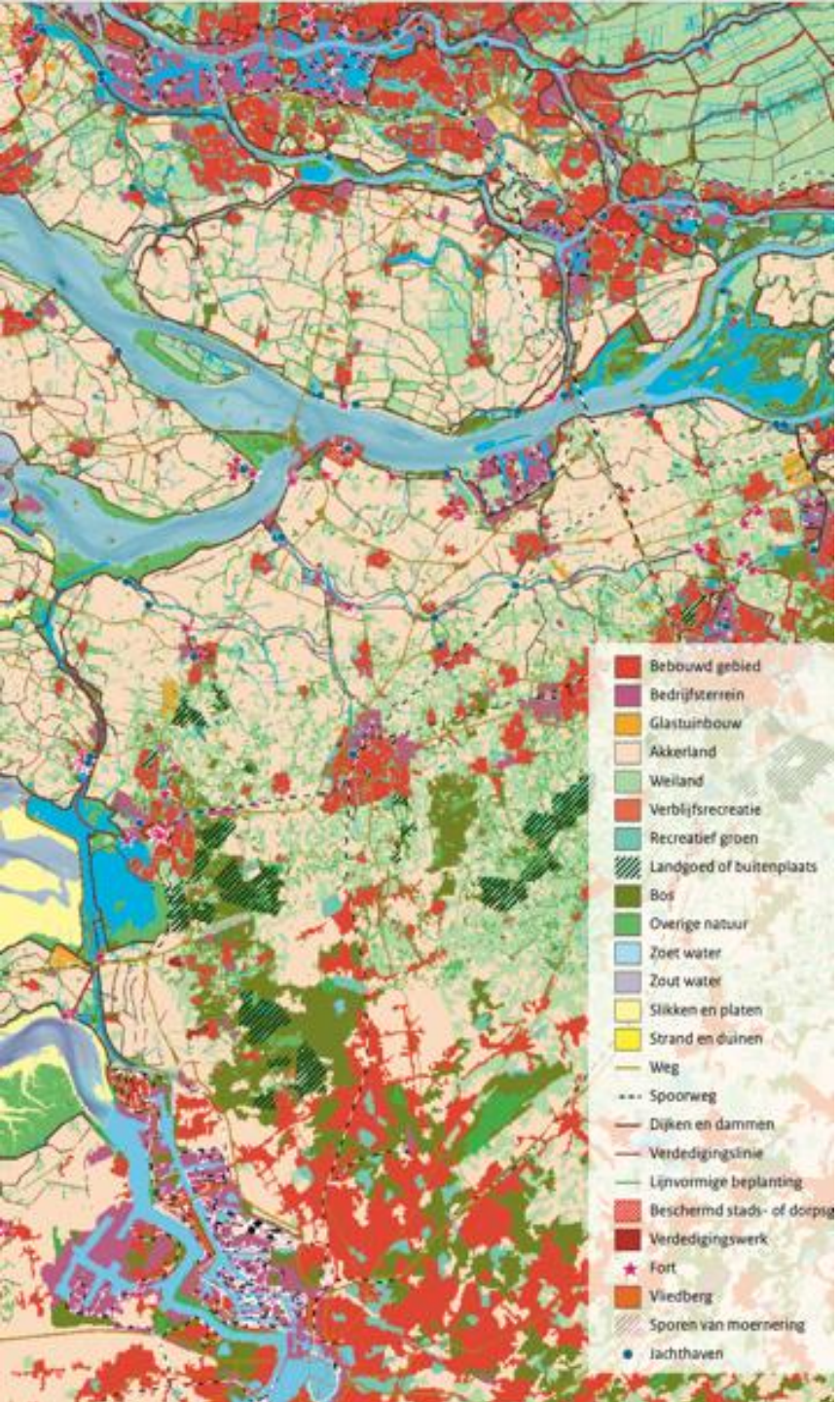
General aims for groundwater under the WFD

No significant effects for groundwater dependent ecosystems

Protect, improve and restore all groundwater bodies

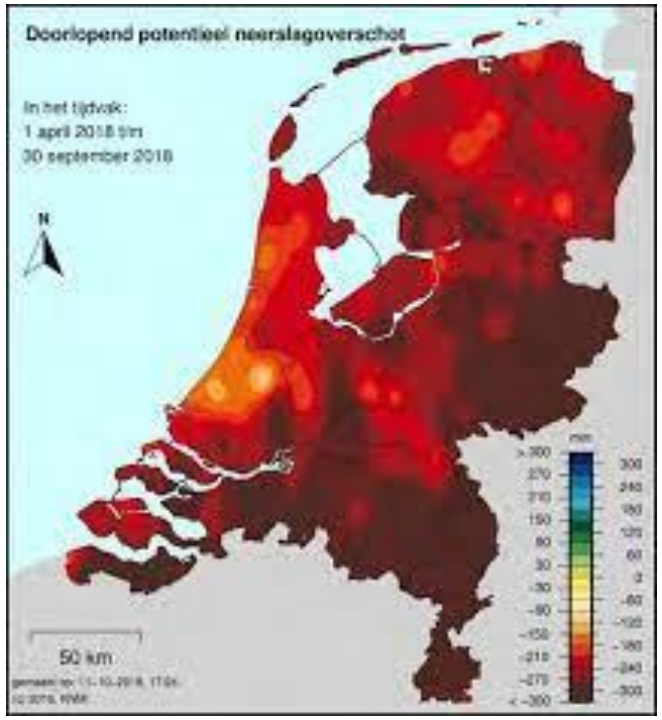
Ensuring a balance between abstraction and replenishment of groundwater

Protection of groundwater as a drinking water source



Drivers

- Land use: agriculture, urbanization, industry
- Use of groundwater as a resources (drinking water, water for industrial cooling, water for agriculture, wastewater, drainage)
- Climate change/droughts
- Historical pollution and existing groundwater use rights



Impacts on groundwater *quantity*

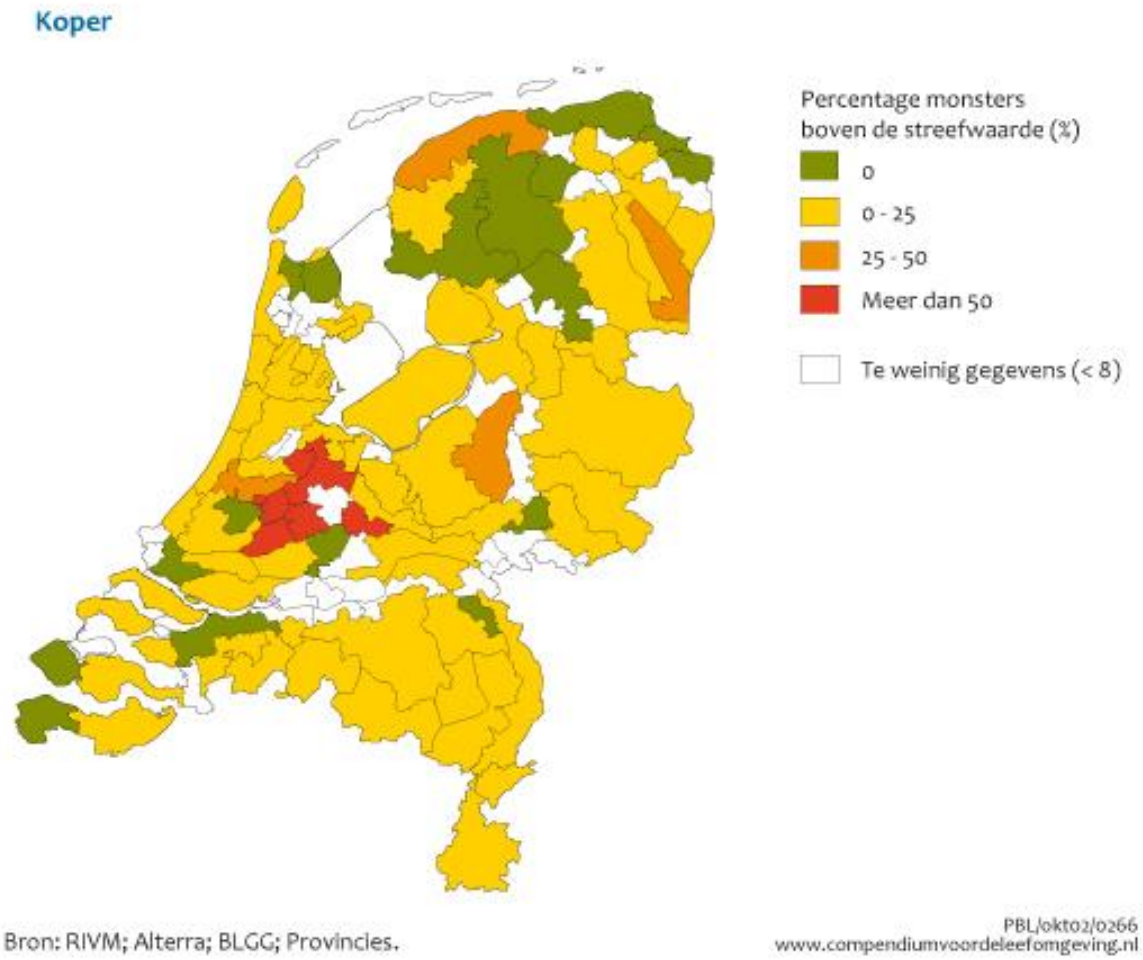
- Overuse of groundwater, leading to an imbalance between abstraction and (natural) refill: consequences for the good quantitative status
- Water stress for drinking water supply
- Water stress in nature areas

Map: water stress in dry periods

Impacts on groundwater *quality:*

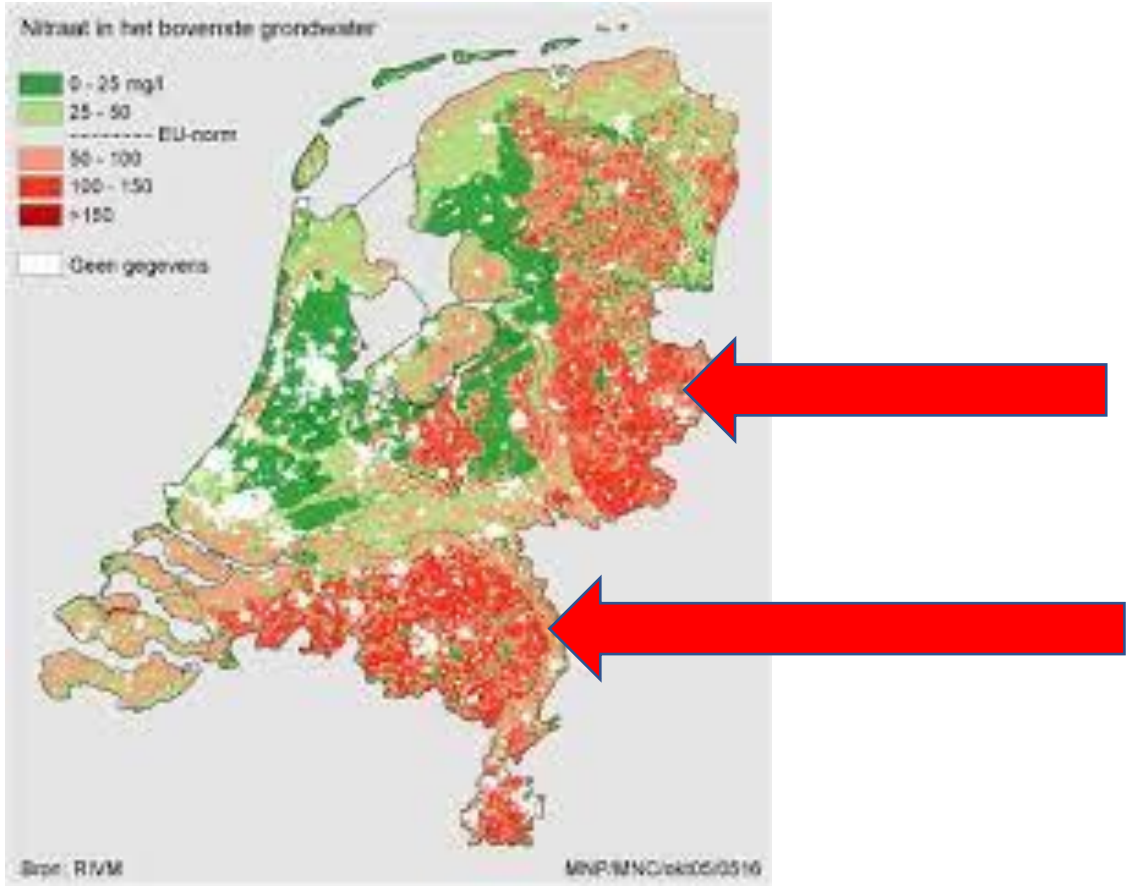
Pollution with chemicals and nitrates; consequences for the good chemical status

Metals in agricultural soil

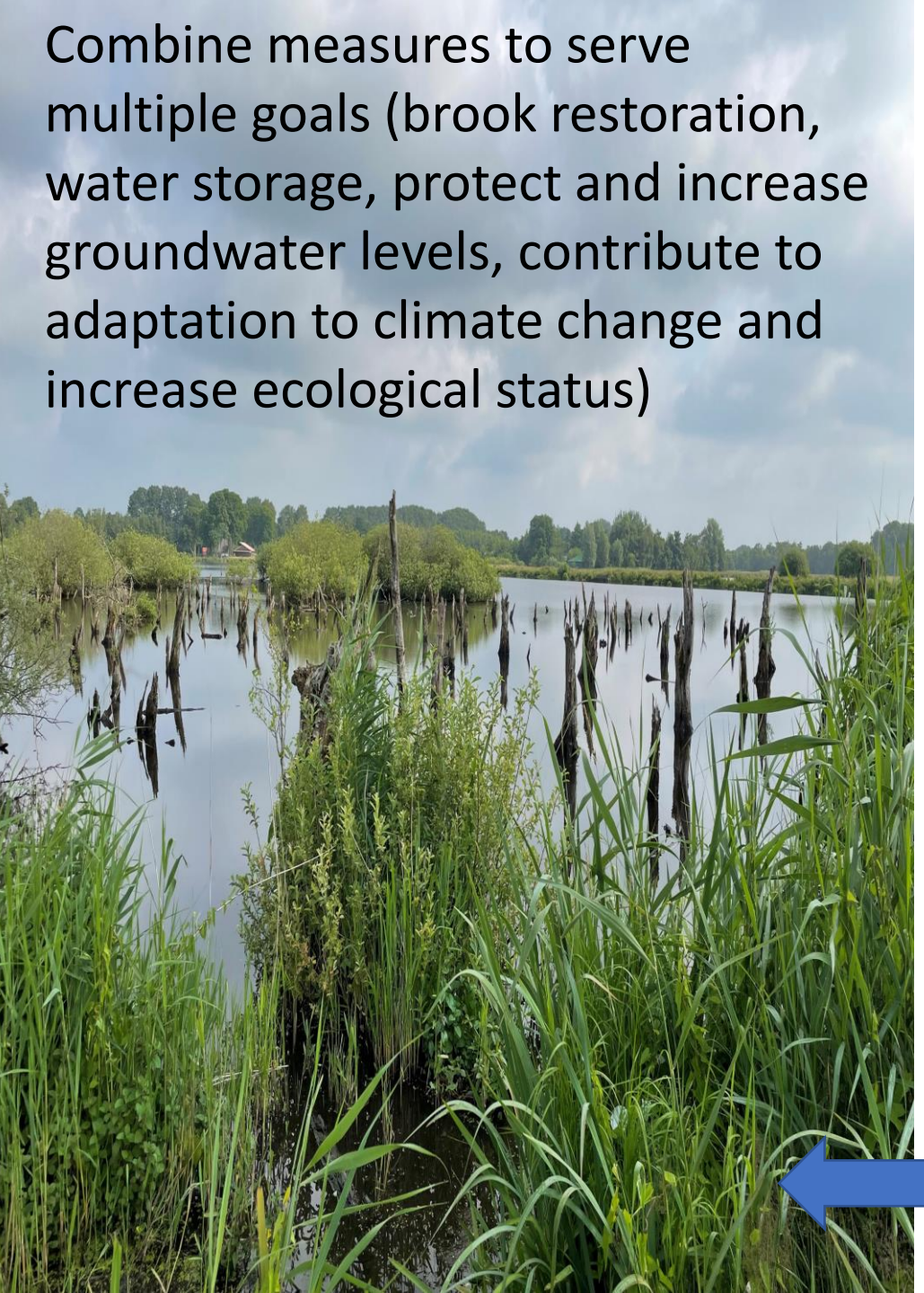


Nitrates in groundwater

High Sandy soils are critical areas



Combine measures to serve multiple goals (brook restoration, water storage, protect and increase groundwater levels, contribute to adaptation to climate change and increase ecological status)



Solutions

from a practical and legal perspective

- Increase the implementation of current directives (WFD, Groundwater Directive, Nitrates Directive, Habitats Directive) (permits/general rules)
- Use instruments available in current directives (WFD, Groundwater Directive, Nitrates Directive, Habitats Directive)
- Increase enforcement
- Soil remediation (for historical pollution)
- **Raise water levels or store water during wet periods** (and more)

Dutch Delta programme Fresh waters/ High sandy soils: proposed water quantity measures

https://www.deltaprogramma.nl/gebieden/hoge-zandgronden/maatregelen

- flexible level management in the main water system of the *regional* water managers;
- stream restoration and reprofiling of laying waterways;
- disconnect the paved surface to a storage or infiltration facility;
- adaptation of land use: changing function into space for water;
- area-oriented work on the retention of freshwater and/ or the economical use of water with all stakeholders;
- convert coniferous forest into heath or deciduous forest;
- adjustable and underwater drainage;
- reducing local drainage and drainage;
- business-oriented incentive plans
- targeted watering systems;
- improve soil structure;
- **FOR MOST OF THEM LEGAL INSTRUMENTS ARE NECESSARY**

Groundwater quantity: case in the province of Noord-Brabant

- Water stress in nature areas, drinking water companies & farmers
- Do province and water authorities comply with the WFD (and the Habitats Directive)?
- Research: Bastmeijer, K., van Rijswick, H., & Verschuuren, J. (2021). Verdroging in Brabant; Een Europeesrechtelijk Perspectief: Een onderzoek in opdracht van de Brabantse Milieufederatie, Het Brabants Landschap, Natuurmonumenten en Staatsbosbeheer, uitgevoerd door Tilburg University en Universiteit Utrecht, June 2021
- https://www.uu.nl/medewerkers/HFMWvanRijswick/Publicaties

When do we speak of deterioration?

- Protection of groundwater under the Water Framework Directive and the Habitats Directive ECJH- C 559/19 (Doñana, 24 June 2021)
- Good quantitative status: a balance between abstraction and recharge
- Increasing the imbalance is deterioration
- Not meeting the good status is not a deterioration persé

Evaluation irrigation policy Brabant 2014-2018

Twan Tiebosch, Esplanada Advies, In opdracht van het beleidsteam beregenen

The irrigation policy responds to changing needs (double aim by taking an area-oriented regime):

- a robust water supply for farmers with more flexibility in time and space to address their needs
- protection of the groundwater supply around nature reserves

Has the irrigation policy turned out to be well applicable (feasible)?

- Due to its area differentiation, distinction between crops and the combination of irrigation under general rules or with a permit, or even without any specific regulation the irrigation policy is complicated.
- It is also not clear how much groundwater is being abstracted.

Has the irrigation policy led to better protection of the groundwater supply? NO

- Increase in the annual quantity of water abstraction from **36 million m3 in 2009 to 54 million in 2017.**
- The **long-term average increased by 6 % per year over this period.**

>> Significant increase in the amount withdrawn, while water saving, and water conservation should lead to a decrease.

- Dependence on groundwater increased over this period.
- Irrigation from groundwater is often an essential part of the company-level water supply.
- Water-saving measures have been implemented, but do not outweigh the scale at which irrigation from groundwater is applied.

Has the irrigation policy led to better protection of the groundwater supply?

Current policy: if the groundwater levels are too low on April 1 an extraction ban will be imposed for the area concerned for grassland for a period of 2 months.

To what extent this protects the groundwater supply better should be based on a trend analysis of groundwater levels. This is not established, although a slightly decreasing trend has been observed since 2015.

Recommendation: Focus more on the groundwater supply.
This concerns both the **replenishment** of the groundwater supply after periods of drought,
as well as **regulating groundwater abstractions**.

Is the irrigation policy sufficiently differentiated for the groundwater-dependent nature?

- There is a decline in the desiccation status of nature reserves (both groundwater dependent and beyond).
- Caused by extracting groundwater and climate change (more evaporation).
- Advice: view them in conjunction
- Advice: retain more rainwater regionally (as a further elaboration of the Delta Plan High Sandy Soils).

The legal perspective shows urgency to act (I)

- The WFD requires realization by 2027: a good groundwater status; a **balance** between replenishment and utilization. This is not yet the case;
- There is a **deterioration in the quantitative groundwater status**, which is **prohibited from 2009** under the WFD;
- The desiccation problem contributes significantly to the deterioration natural features of Natura 2000 areas within the meaning of Article 6(2) of the Habitats Directive;
- Due to climate change, summers will become longer and experience longer periods of extreme drought, which will reduce the replenishment of groundwater and, in fact, increase the demand for groundwater significantly.
  See the strong increase in groundwater use for irrigation in the Netherlands in general and Brabant in particular;

The legal perspective shows urgency to act (II)

- Limited control over the total size of groundwater abstractions. Permit-free irrigation (under both the Water Act and the Nature Conservation Act) is not limited with regard to cumulative abstraction. No maximum has been set for these total abstractions.
- Not all permits use the permitted abstraction in full (latent space), but this latent space is often regarded as existing rights;
- Risk of legal disputes, for example by drinking water companies and NGOs. This applies in the short term in particular because of the deterioration bans of the Natura 2000 regime and the WFD, the Natura 2000 assessment framework for new plans and projects, and in the future also possibly because of the endangerment of the realization of the 2027-WFD objectives for groundwater.

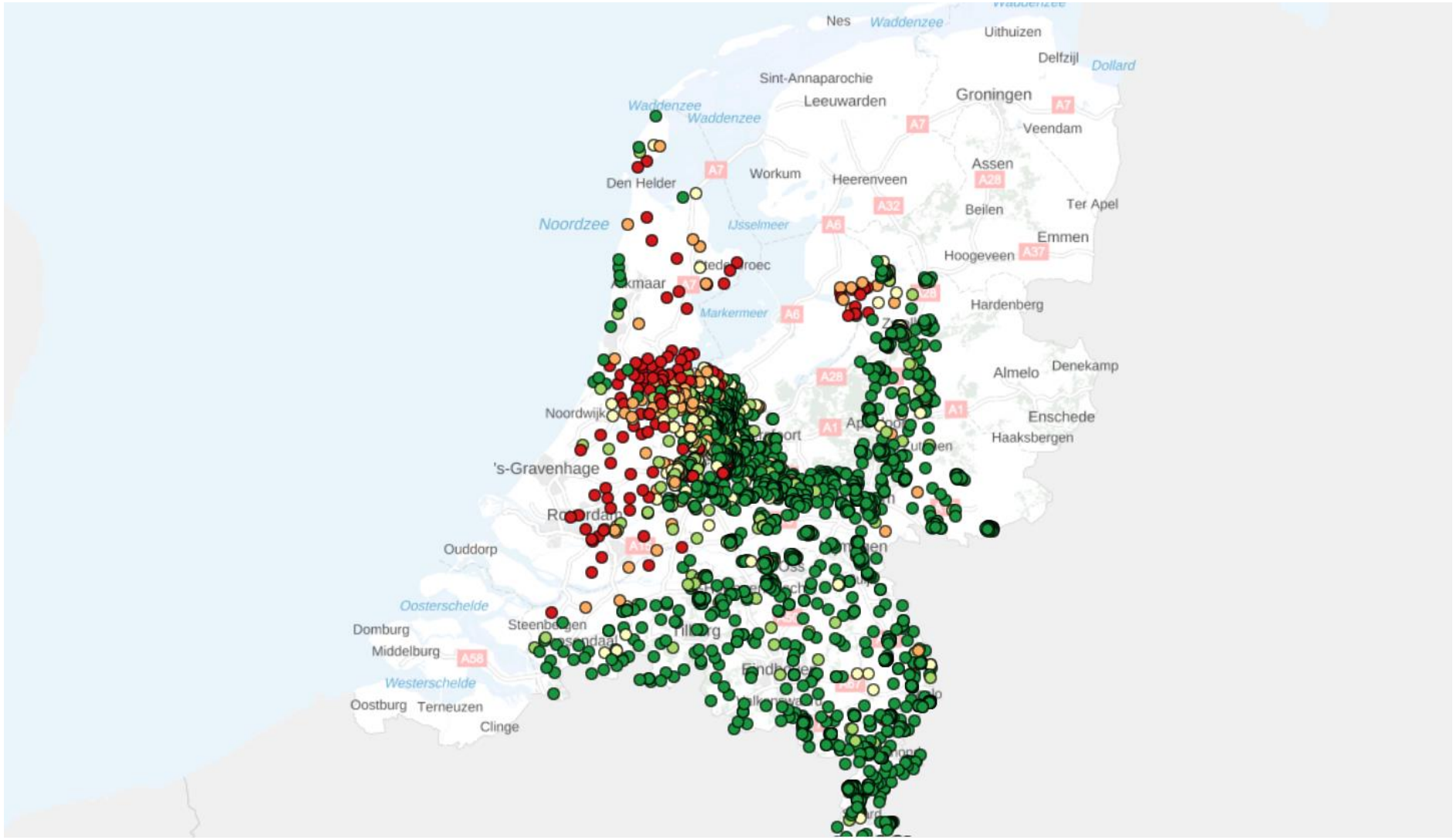
Finding: groundwater protection is about cross cutting issues and complementary legislation

Photo: water storage in the province of Limburg, WFD, Groundwater protection, Floods Directive, adaptation to climate change or a municipal planning responsibility?

- WFD also aims to protect nature areas: “prevents further deterioration and protects and enhances the status of aquatic ecosystems and, with regard to their water needs, terrestrial ecosystems and wetlands directly depending on the aquatic ecosystems”
- Drinking water sources (protection and use)
- Agricultural groundwater use and pollution
- Industrial groundwater use
- Climate change (less rainfall, more periods of drought)
- EU Adaptation strategy: less paved surfaces

Groundwater pollution

Grondwatertools.nl



Goals for groundwater

The environmental objectives from art. 4(1)(b) of the WFD require the Member States to take measures to:

- Preventing or limiting the input of contaminants (preventive soil policy)
- Achieving good groundwater status in 2015 = achieving good chemical status and good quantitative status (‘obligation of result’ although ECJ is not explicitly using this wording, art. 2.20 WFD))
- Reversing the persistent and increasing trend of the input of pollutants into a declining trend (preventive soil policy)

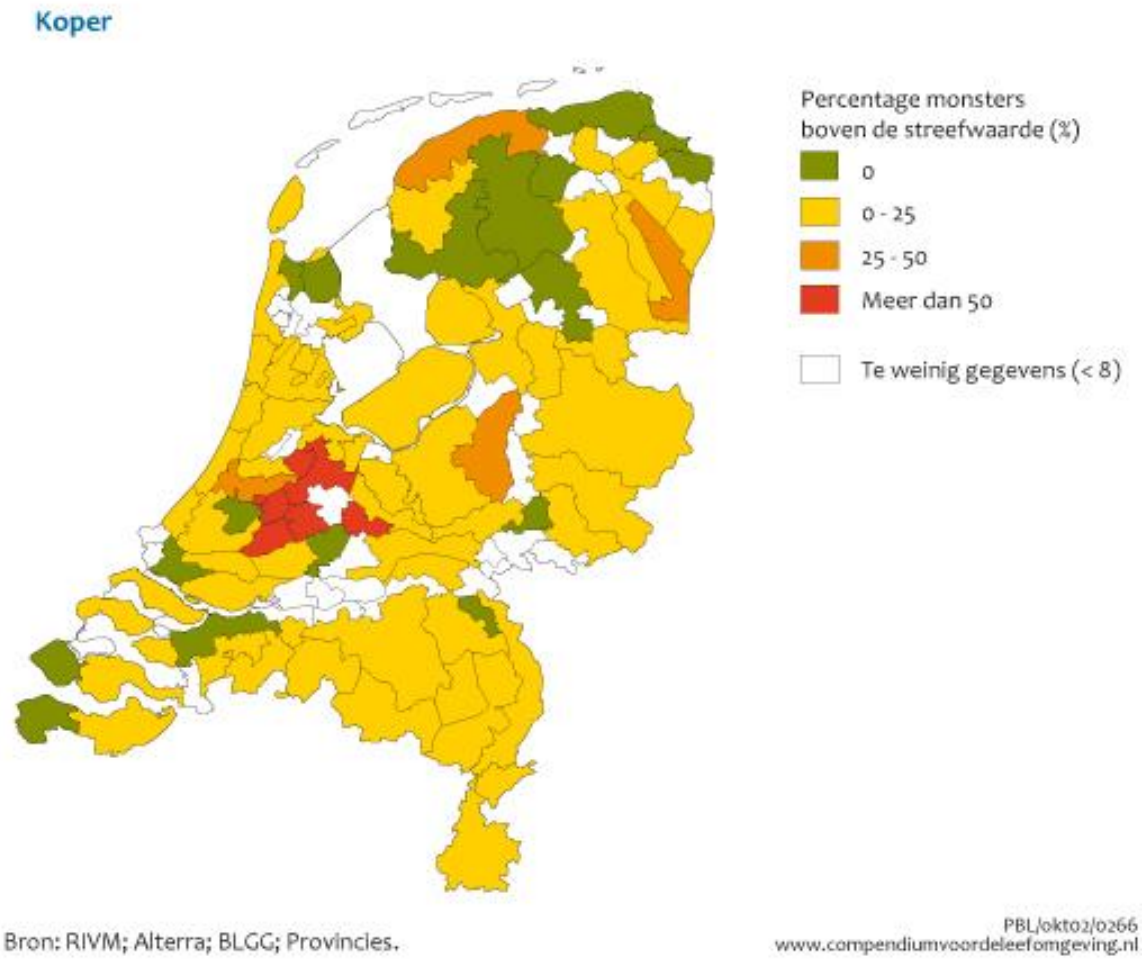
The good chemical status of groundwater

- Quality standards apply to a groundwater body and may in principle not be exceeded
- Quality standards at European level in Groundwater Directive (daughter directive to WFD) (Nitrate and pesticides): but what about diffuse sources of pollution and the relationship with the Nitrates Directive?
- National quality standards (threshold values) if necessary (other, determined per country, (sub)basin or groundwater body, not per individual location)

Quality standard: a standard (concentration of a specific substance) that (…) may not be exceeded

Pollution from agriculture with chemicals and nitrates

Metals in agricultural soil



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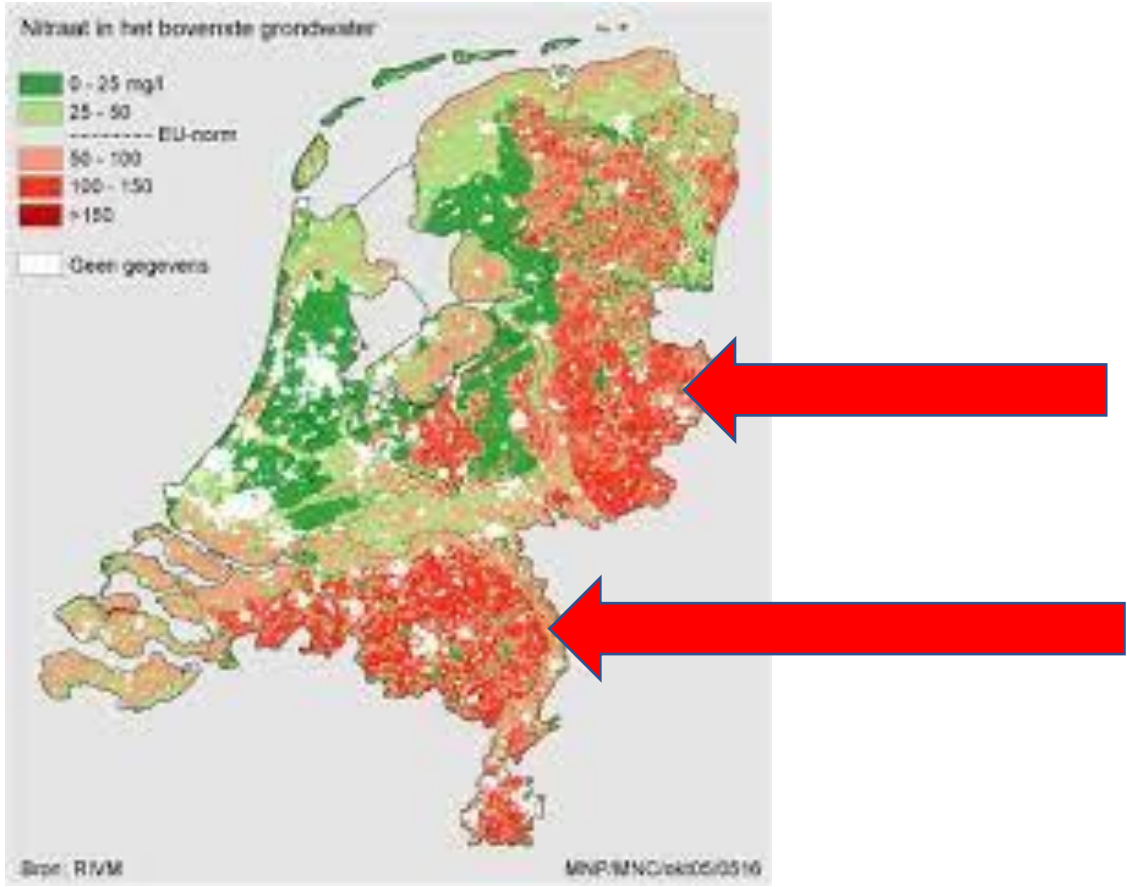

Discharge of substances and groundwater and soil contamination

- Ban on **direct introduction of polluting substances** art. 11 paragraph 3 under j WFD further elaborated in article 6 paragraph 3 Groundwater directive
- Diffusion of contamination in the soil (leading to groundwater pollution) can be qualified as the input of contaminants
- Soil pollution therefore falls under the prohibition of art 6 paragraph 3 GWR and in principle regulation or / and remediation is required
- In case of remediation also polluted groundwater is being discharged in surface water..
- Strong relationship between groundwater and surface waters
- Dutch case law:
  * 18 februari 2021 (District court Gelderland AWB 19/1733): Water Act; vergunning, abstraction of groundwater, EIA, transport of dioxines/PCB's, Natura 2000
  * 17 februari 2021 (District court Gelderland AWB 19/1339 en 19/1342): Environmental Protection Act, Water Act; additional permit requirements,

Manure: nitrates ánd other polluting substances

- Agriculture pollution of groundwater is often related to the (over) use of manure
- After coming into force of the WFD it is not clear what the legal regime is exactly
- Before the WFD the ECJ decided that the regulation for pollution with manure is exclusively regulated under the Nitrates Directive (with many voluntary instruments), also when other polluting substances lead to groundwater pollution: ECJ 8 September 2005, case C-121/03 & C-416/02 (Commission vs Spain).
  Is this still relevant case law? See also distinction between point source pollution and diffuse pollution under the regime of 76/464/EEG/(2006/11))
  (see van Rijswick, H. F. M. W. (2007). The relationship between the Water Framework Directive and other environmental directives, with particular attention to the position of agriculture. Journal of Water Law, 2006(17), 193-203).
- EU wide achieving the goals of the Nitrates Directive is a struggle
  (see: ECJ, 2 October 2003, case C-322/00, Commission vs the Netherlands and many others)
- Will the WFD and the Groundwater Directive be of help?

Thank you
Any questions?