

Revision of the German EU-Nitrate-Monitoring Network (Groundwater)

Dr. Rüdiger Wolter
Federal Environment Agency
(Umweltbundesamt)



ruediger.wolter@uba.de

Aim of the EU-Nitrate-Monitoring Network (groundwater):

Reporting is based on the requirements of Annex V of the European Nitrates Directive (91/676/EWG)

According to Annex V “Information to be contained in reports to in article 10” it has to be reported:

4 (d) a **summary of the results of the monitoring programs** implemented pursuant to Article 5 (6)

According to Article 5 (6):

Member States shall draw up and implement suitable monitoring programmes to **assess the effectiveness of action programmes** established pursuant to this Article.

Member States which apply Article 5 throughout their national territory shall monitor the nitrate content of waters (surface waters and groundwater) at **selected measuring points** which make it possible to establish the **extent of nitrate pollution** in the waters from **agricultural sources**.

Former philosophy of monitoring and reporting upon the EU-Nitrates Directive:

- The German EU-Nitrate Monitoring network contained **186 sites**
- Sites should have a nitrate concentration of more than 50 mg/l but at least of more than 25 mg/l.
- Sites should be situated in the upper groundwater layer,
- High nitrate concentration should be caused by agriculture
- Sites should be located in areas with elevated nitrate concentrations

Advantage:

It could be expected, that groundwater quality will improve over quite a long time (several reporting periods). The number of sites with nitrate concentration of more than 50 mg/l will decrease continuously. It can be demonstrated, that the measures implemented in Germany are effective!

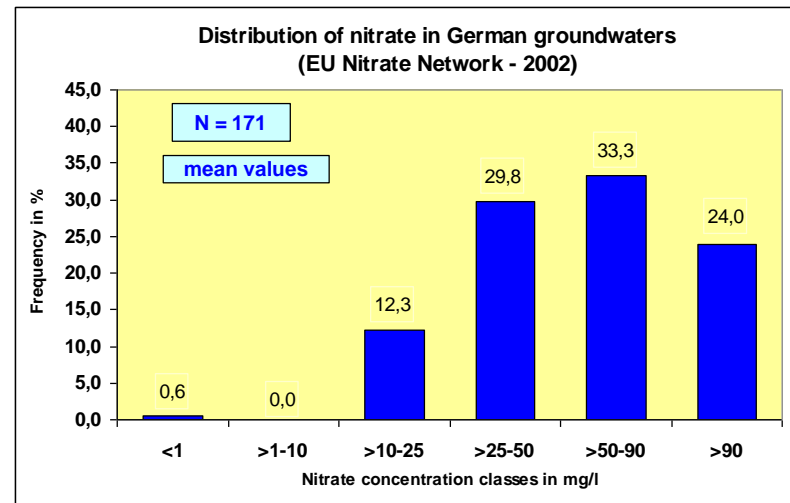
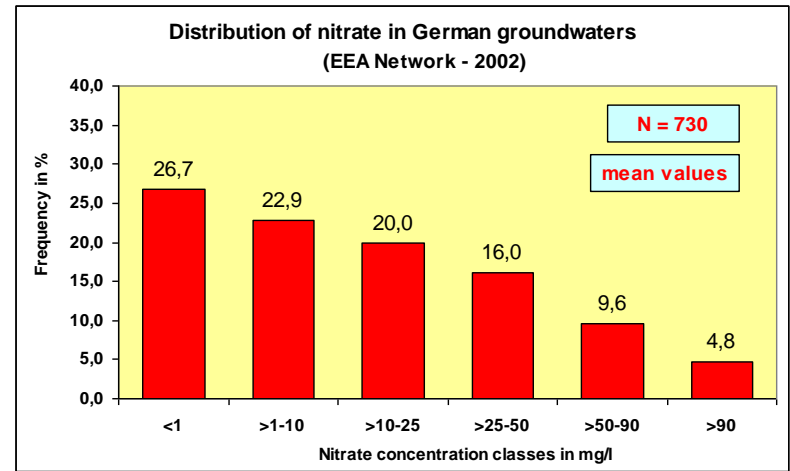
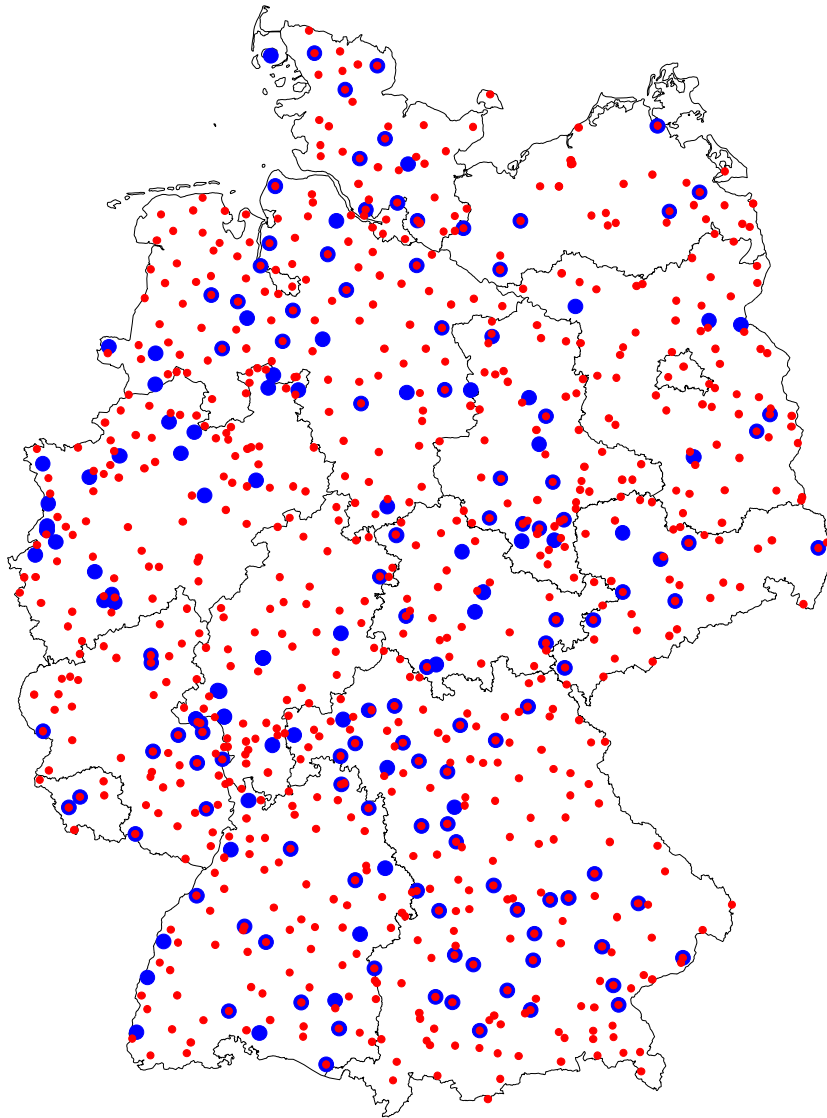
Disadvantage:

The monitoring network generated is not representative for Germany as a whole and might be misinterpreted.

The former German EU-Nitrate Monitoring Network was fully in line with the requirements of the Nitrates Directive!

Revision of the German EU-Nitrate-Monitoring Network (Groundwater)

● EEA Network (representative)



● Former EU-Nitrate Monitoring Network

Federal Environmental Agency: R. Wolter – 25 June 2004

Revision of the German EU-Nitrate-Monitoring Network (Groundwater)

Reasons to review the EU-Nitrate Network

Report from the Commission COM (2013) 683 final ... on the implementation of Council Directive 91/676/EEC

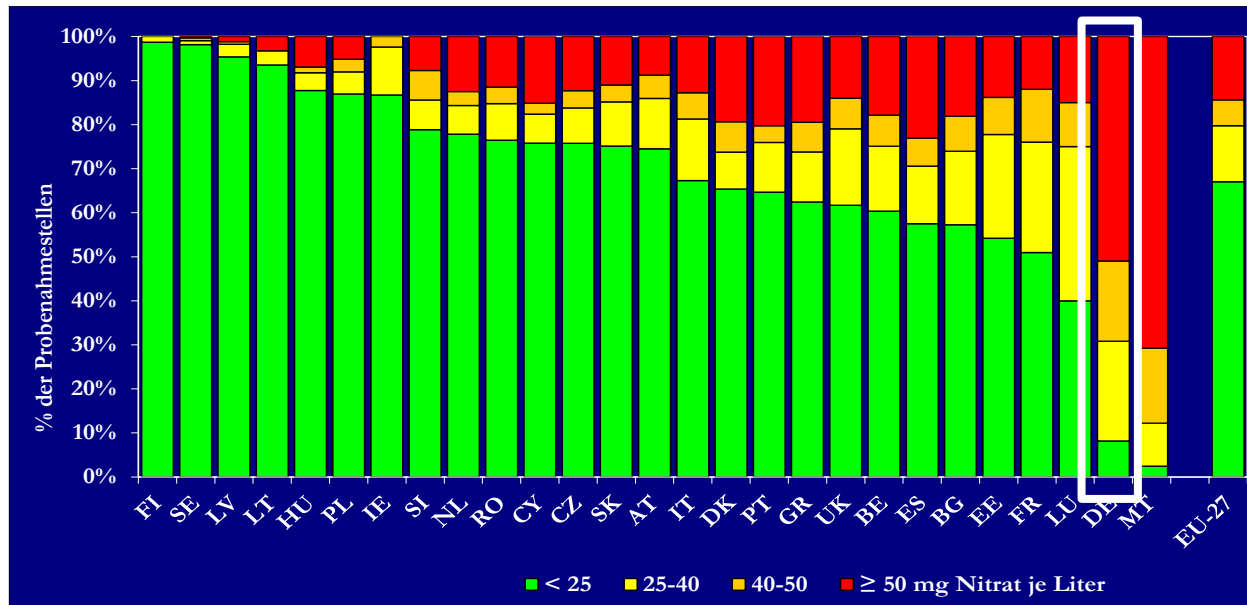
Technical: Very low density of the German Nitrate Network

The average density of Nitrate-Monitoring Networks in the EU is **8** stations per 1 000 km². Density of the Germany Networks was **0,4** stations per 1000 km².

Statistical uncertainty is quite high.

Political: Misinterpretation of data

Data reported were interpreted as representative for Germany as a whole.



Requirements for the revision of the German EEA-Monitoring Network and the new EU-Nitrate-Monitoring Network

- The former EEA- and the EU-Nitrate-Monitoring Network should be **merged**,
- The total number of sites shall be **1200**,
- All former EEA und EU-Nitrate-Monitoring sites should be **preserved**,
- Distribution of **land use** has to be **reflected representatively** by the sites selected (dominant land use in the catchment of each site),
- Each sampling site has to be **distributed** to the dominant **land use**,
- The **distribution of nitrate concentration** in each of the federal states has to be reflected by the sites selected,

Sites with the dominant land use **“arable land”** and **“grassland”** are summarised in the Sub-Network **“Agriculture”**.

Which of the new monitoring networks (new **EEA-Network or the new **Agricultural Network**) should be used for reporting?**

Referring to the Annex V (4) and Article 5 (6) of the European Nitrates Directive (91/676/EWG) monitoring and reporting should be done at and refer to:

.... selected measuring points which make it possible to establish the **extent of nitrate pollution** in the waters from **agricultural sources**.

Decision:

For reporting about the effectiveness of measures implemented by the nitrates directive the new Sub-Network "**Agriculture**" should be used.

For reporting about the status of groundwater data from the new **EEA-Monitoring Network** should be used.

Revision of the German EU-Nitrate-Monitoring Network (Groundwater)

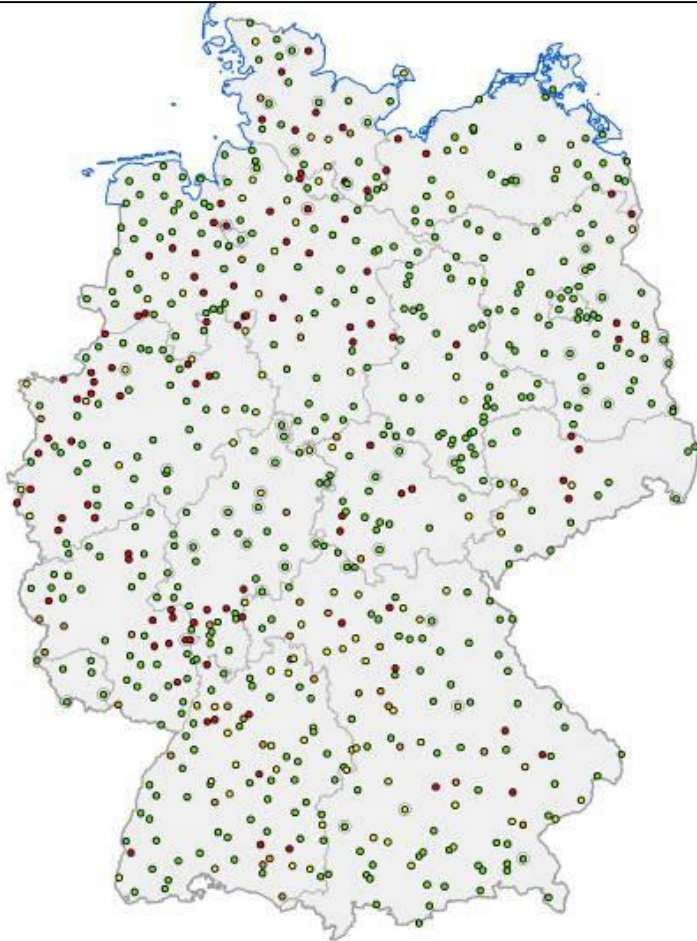
Distribution of land use in Germany, in the **EEA-Monitoring Network** and in the new EU-Nitrate-Monitoring Network (Sub-Network “**Agriculture**”)

Land use	New EEA-Monitoring Network		New EU-Nitrate Monitoring Network (Agriculture)	Germany (2012)*
	Number of sites	Percentage	Number of sites	Percent
Forest	349	29,8	0	30,2
Settlements	118	10,1	0	13,5
Grassland	135	11,5	135	13,8
Arable land	570	48,6	570	37,7
Others				4,8
Sum:	1172	100	705	100

* According to the latest data (2012) reported by the German „Federal Statistical Office“

Revision of the German EU-Nitrate-Monitoring Network (Groundwater)

Former EEA-Monitoring Network (about 800 sites)



Gesamtsituation Nitrat (Mittelwert 2008 - 2010)
Nitratkonzentration im Grundwasser (mg/l Nitrat)

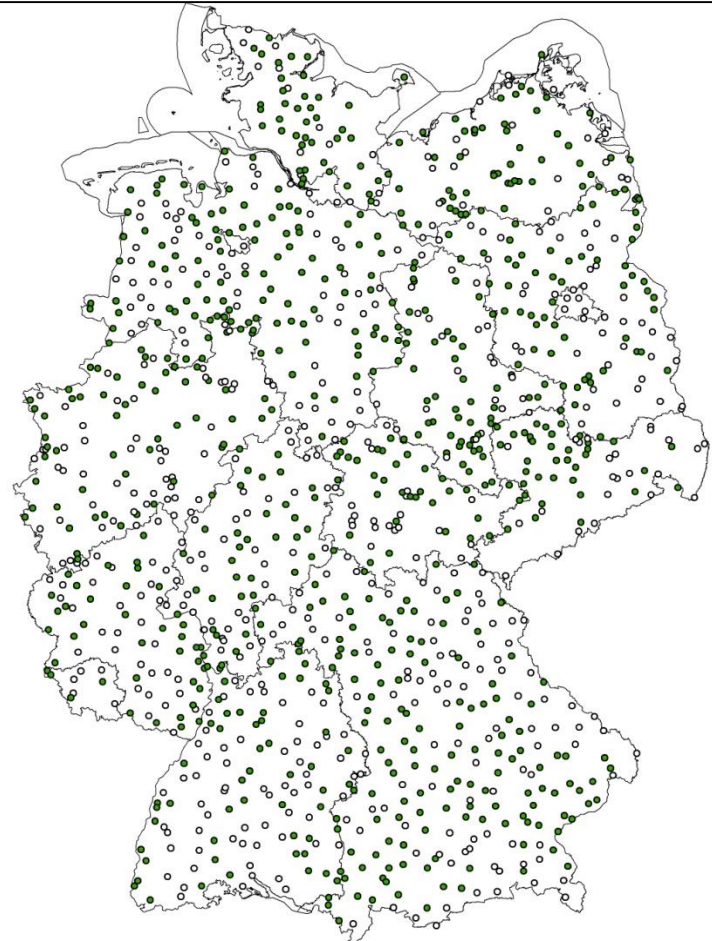
- 0 bis <= 25
- > 25 bis <= 40

Grundwassertypen (Tiefe der Verfilterung)

- <= 40 m
- ⊙ > 40 m

Umwelt
Bundes

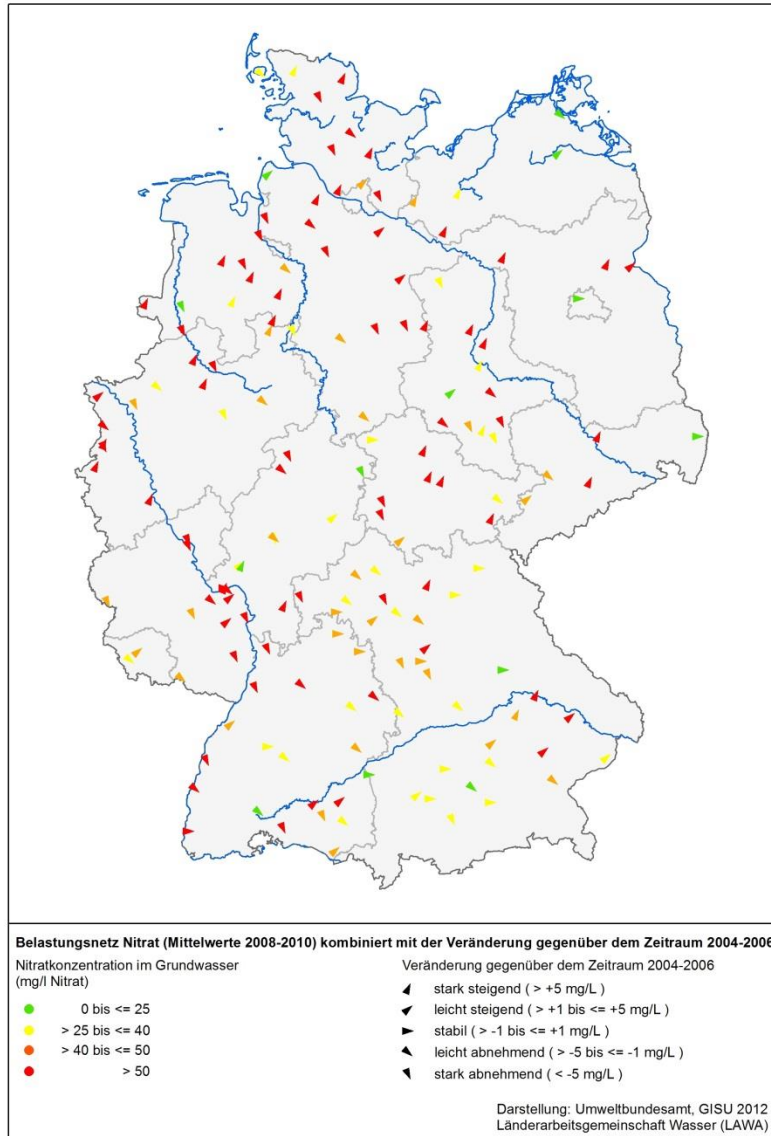
New EEA-Monitoring Network (about 1200 sites)



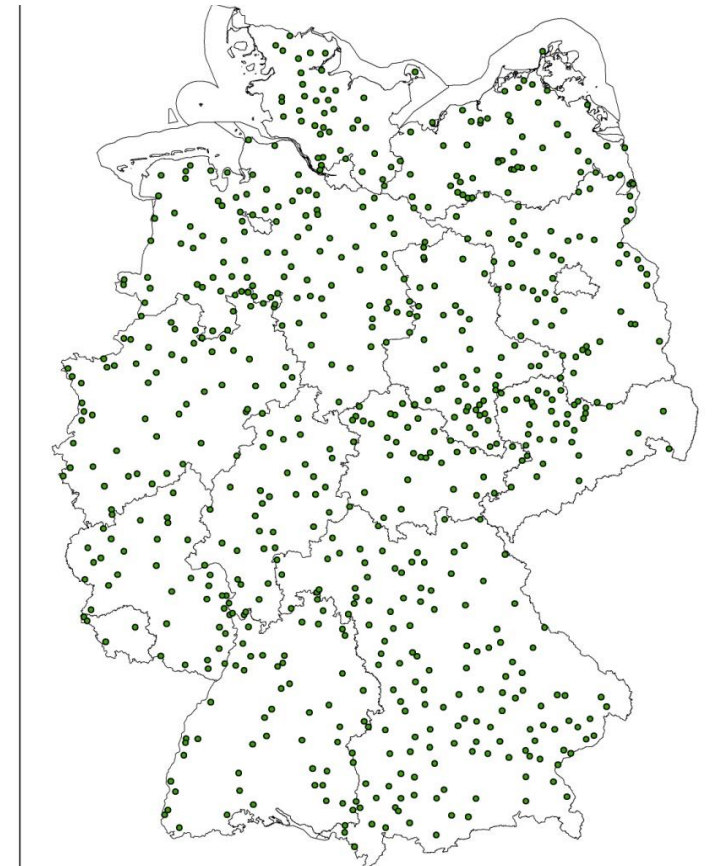
● Sites dominated by agricultural use (about 700 sites)

Revision of the German EU-Nitrate-Monitoring Network (Groundwater)

Former EU-Nitrate-Monitoring Network (162 monitoring sites)



New EU-Nitrate-Monitoring Network Sub-Network "Agriculture" (about 700 sites)

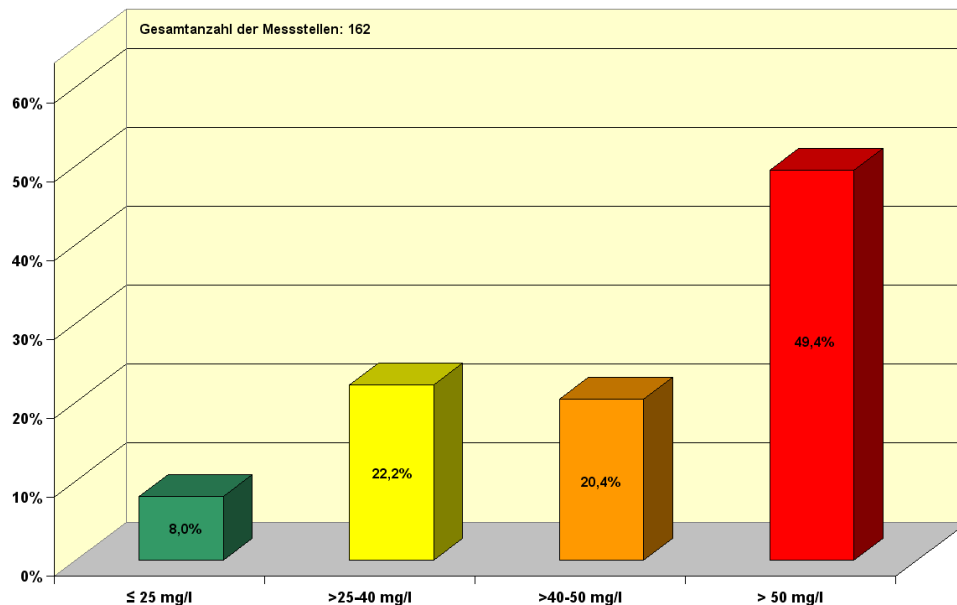


Average density per 1000 km²:

Former Network: **0,4**

New Network: **1,9**

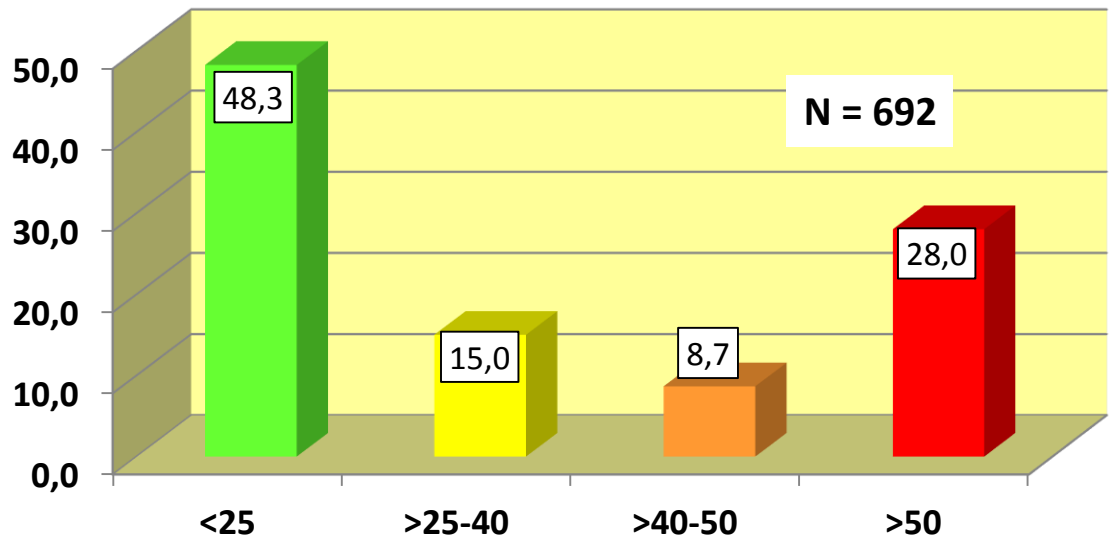
Revision of the German EU-Nitrate-Monitoring Network (Groundwater)



In the former EU-Nitrate Monitoring Network at **49,4%** of all sites the Quality Standard of 50 mg/l nitrate was exceeded.

(„Worst case“ monitoring Network – not representative for Germany as a whole.)

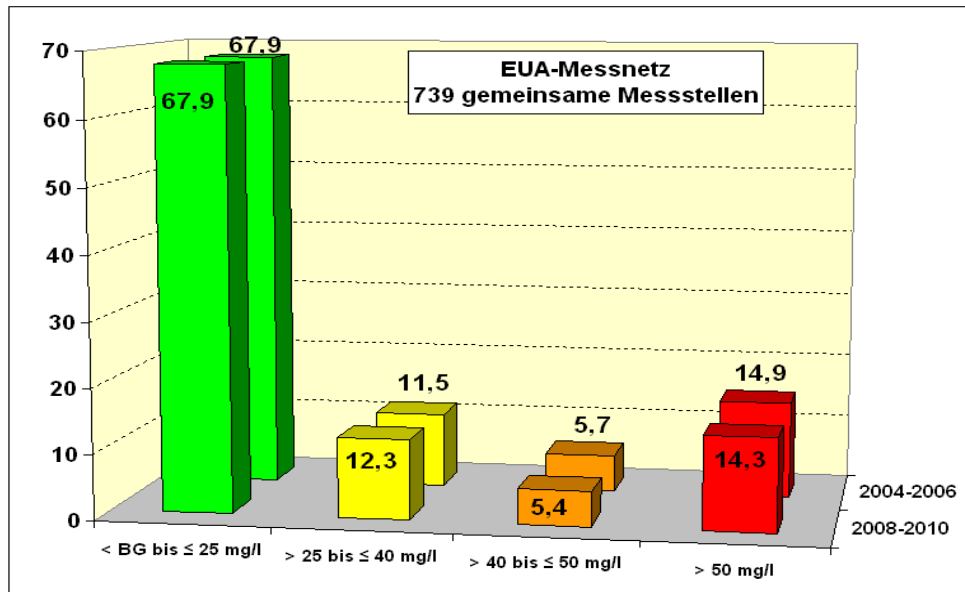
Distribution of Nitrate in the new Sub-Network „Agriculture“ (2008/10)



In the new EU-Nitrate Monitoring Network (Sub-Network „Agriculture“) at **28%** of all sites a nitrate concentration of 50 mg/l is exceeded.

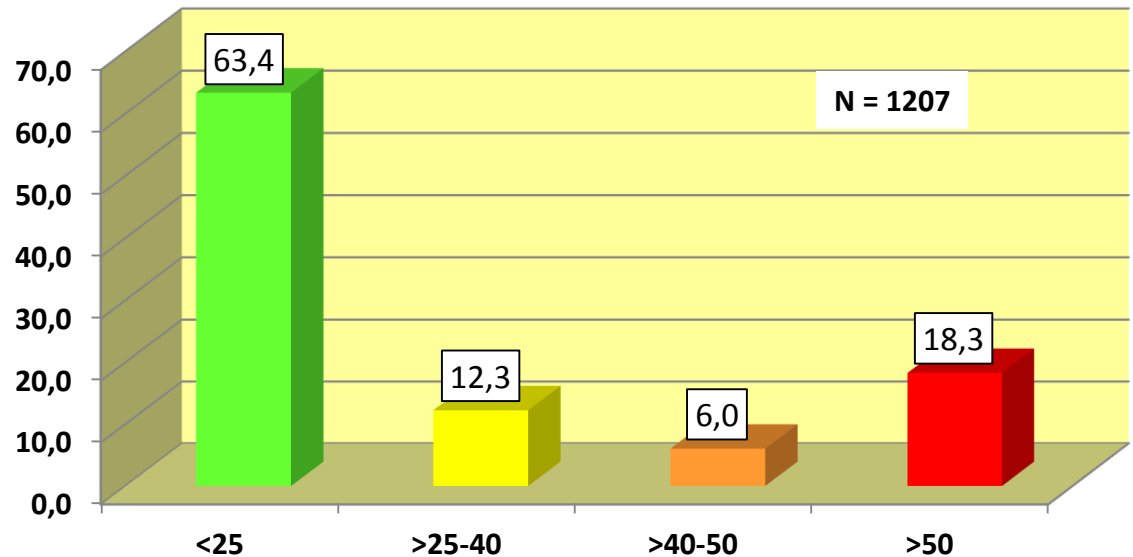
(representative for agricultural use in Germany)

Revision of the German EU-Nitrate-Monitoring Network (Groundwater)



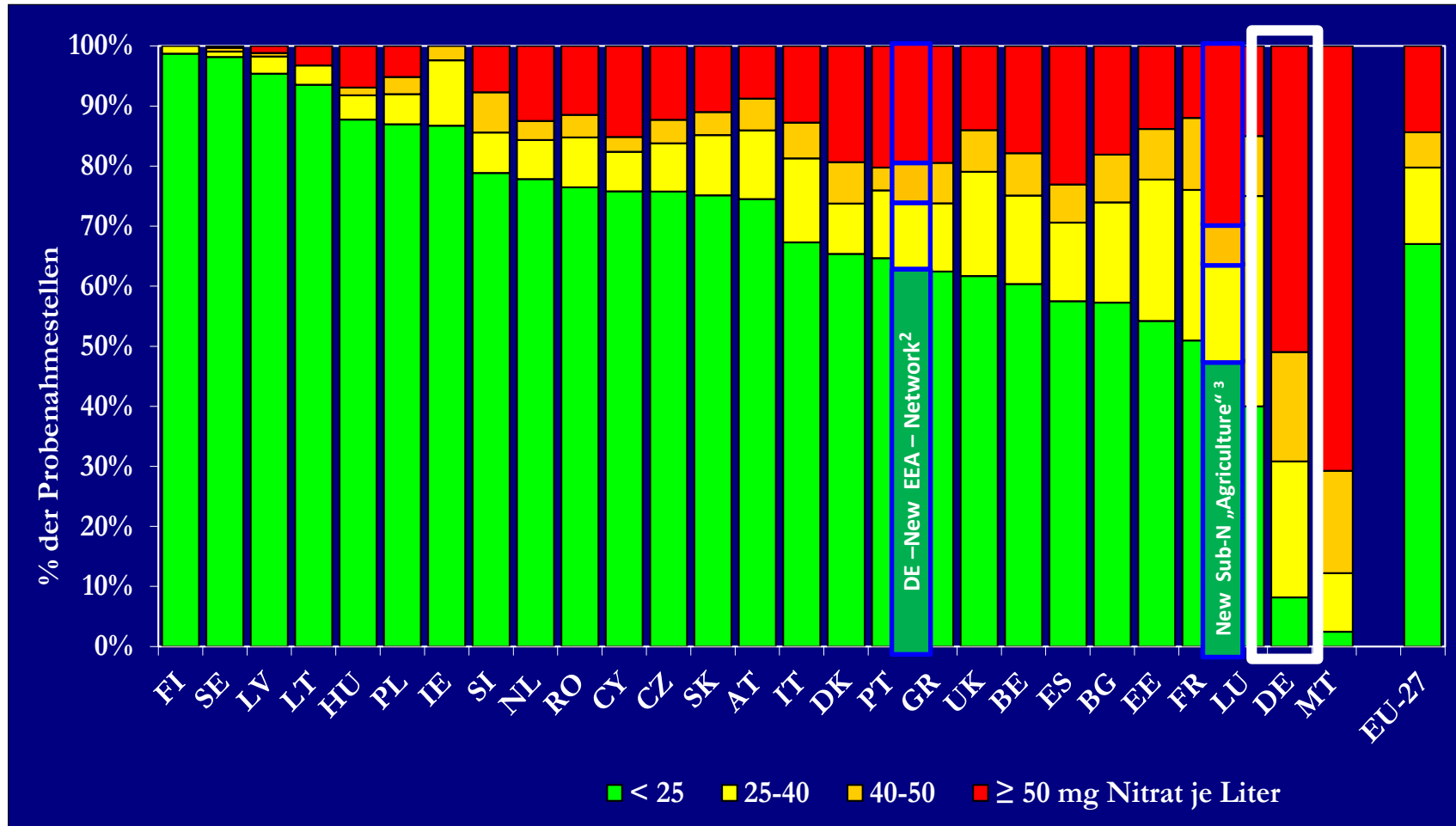
Former „EEA-Network“:
At **14,9 resp. 14,3%** of all monitoring sites a nitrate concentration of 50 mg/l was exceeded. (2004/6 resp. 2008/10)

Distribution of nitrate concentration in the new EEA-Network (2008-2010)



„New EEA-Network“:
At **18,3 %** of all monitoring sites a nitrate concentration of 50 mg/l is exceeded (2008/10).

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Frequency diagram of groundwater classes (Annual average nitrate concentrations) (COM 2013) accomplished by data of the new EU-Nitrate Monitoring Network (Sub-Network „Agriculture“³ and the new EEA-Network²

