



Reaching better water quality by implementing the EU Nitrates Directive

The case of Flanders - Belgium

Kevin Grauwels
Policy Advisor – Flemish Land Agency



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Topics



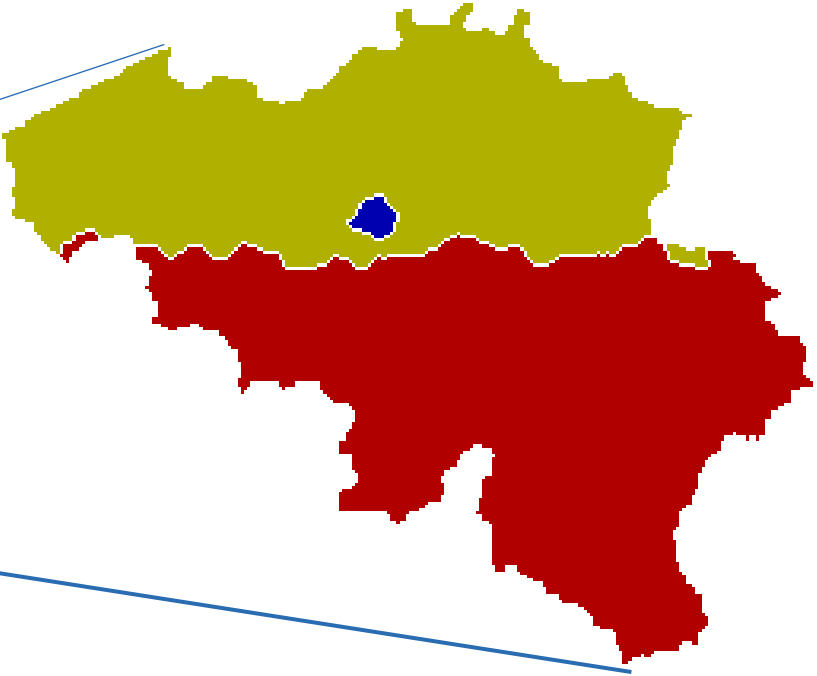


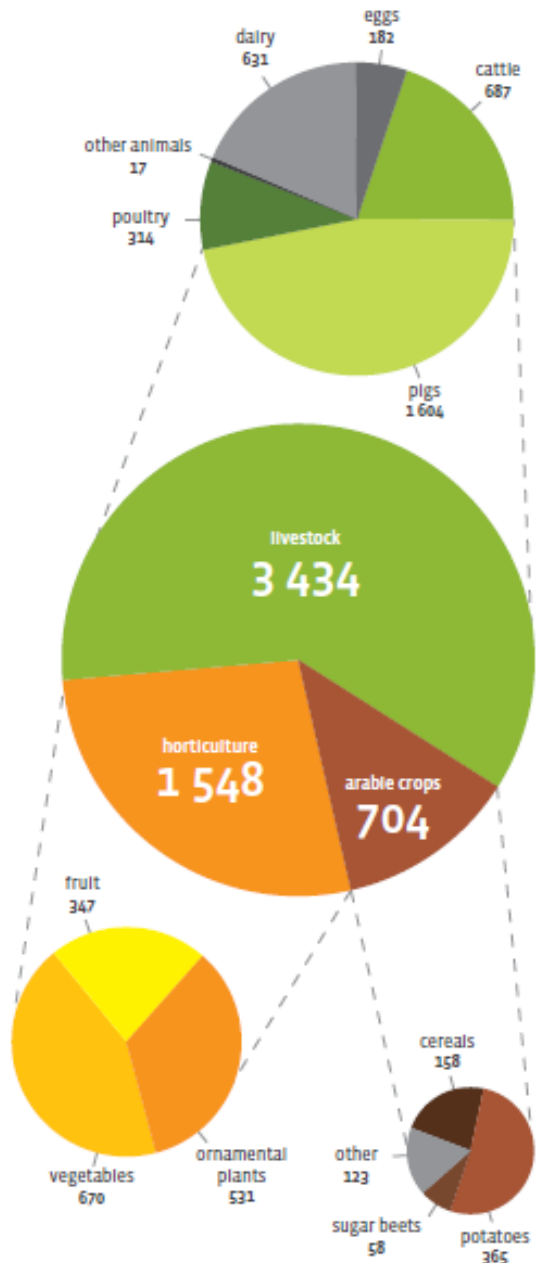
Agriculture in Flanders

Primary sector as engine for economic activity



Flanders?



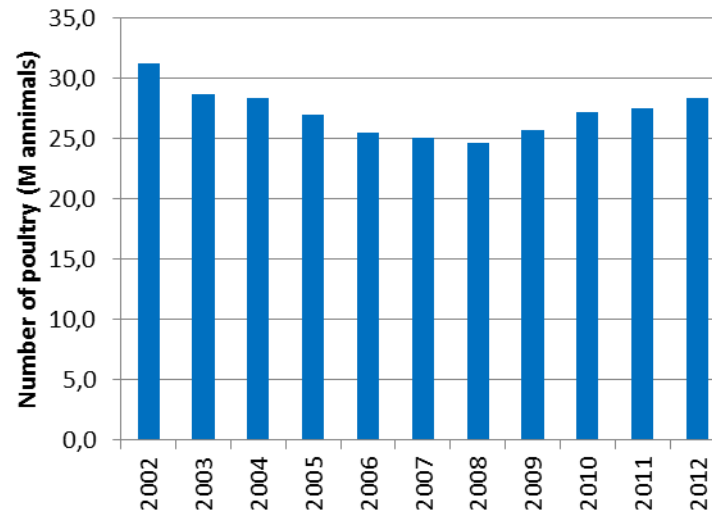
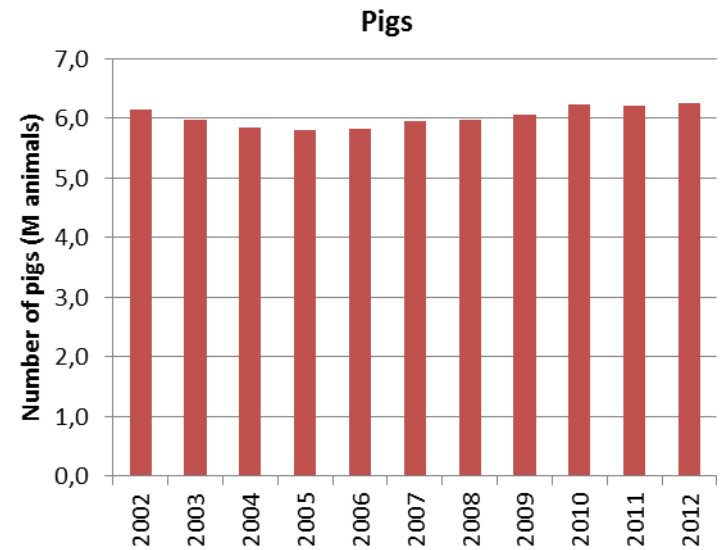
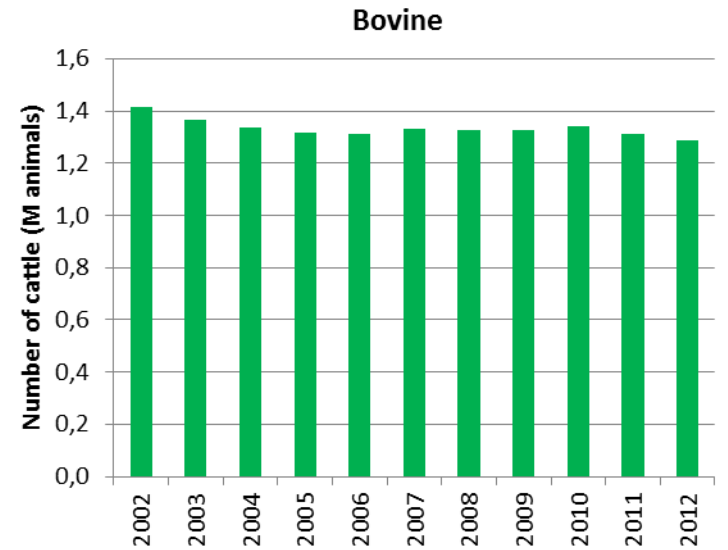


Agricultural area, hectare			
	2005	2011	2012
fodder crops	342 944	338 620	345 847
meadows and pastures	226 314	212 422	228 426
feed maize	110 961	117 264	114 558
arable crops	229 637	224 428	221 472
cereals	142 969	142 342	151 486
sugar beets	32 747	21 407	20 703
potatoes	38 960	46 606	35 752
horticulture	49 072	50 110	49 211
vegetables	26 911	27 885	26 327
fruit	16 060	16 099	16 751
ornamental plants			
other uses			
fallow			
utilized agricultural area			

Intensive agriculture on a small surface



- Competition for land
- Pressure on environment





Water quality

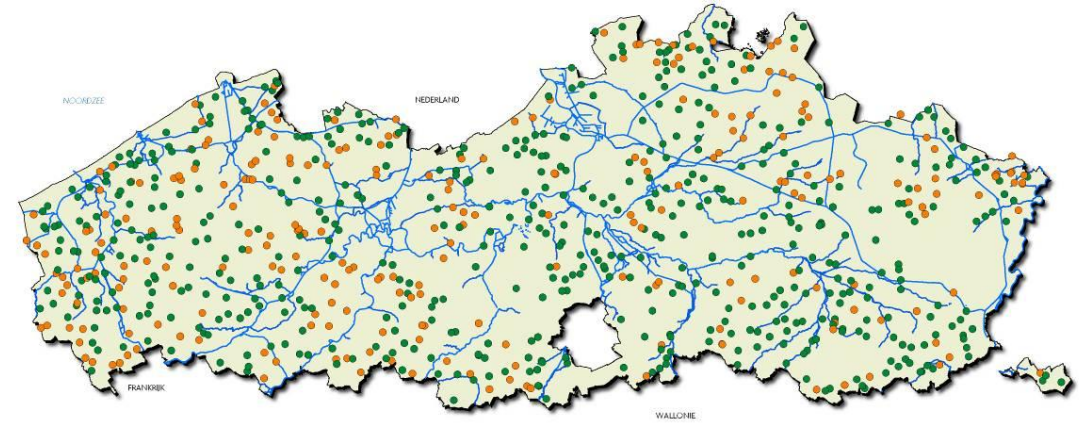
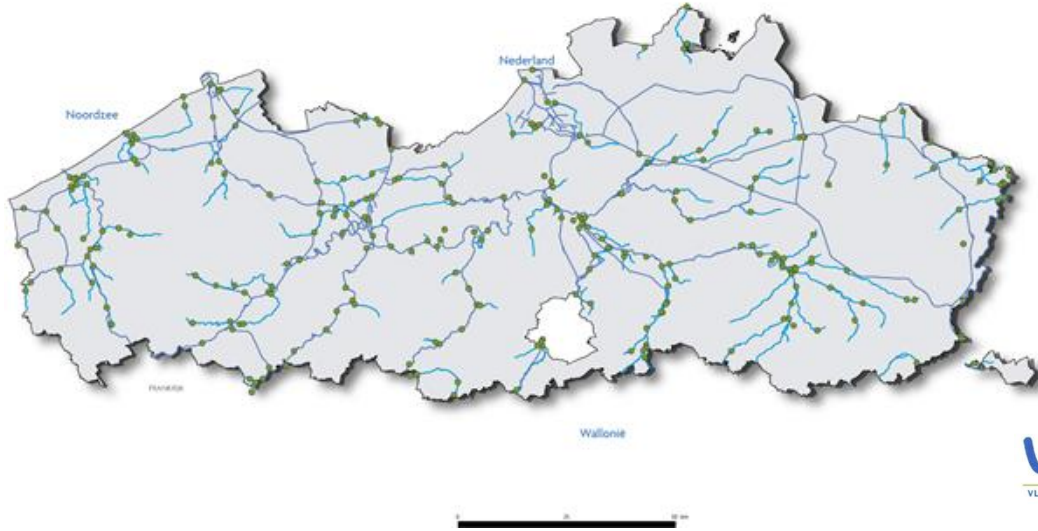
To measure is to know



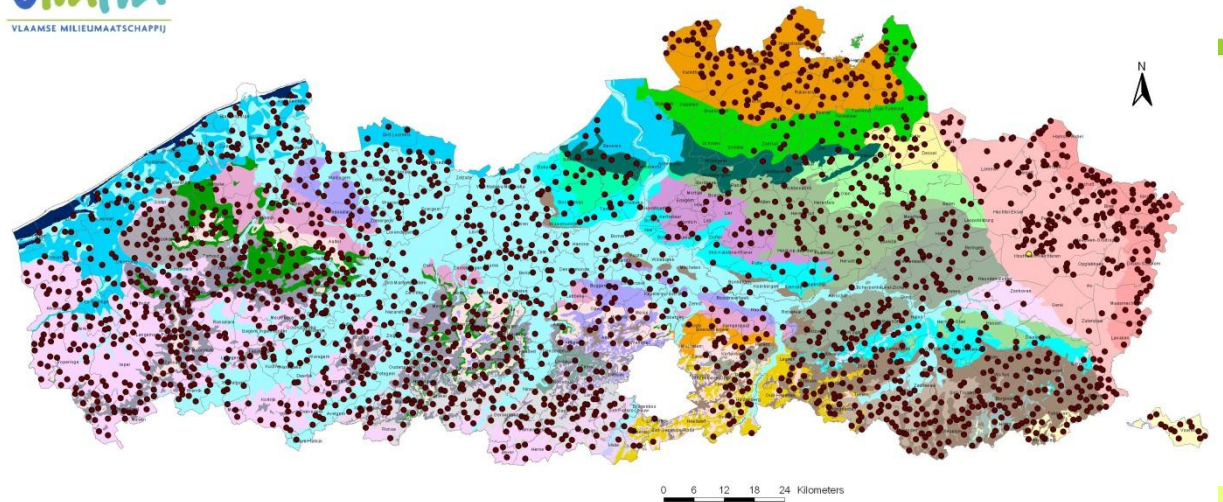
Water quality monitoring

Orange: monitoring station since 1999
 Green: monitoring station since 2002

Operational monitoring network for WFD

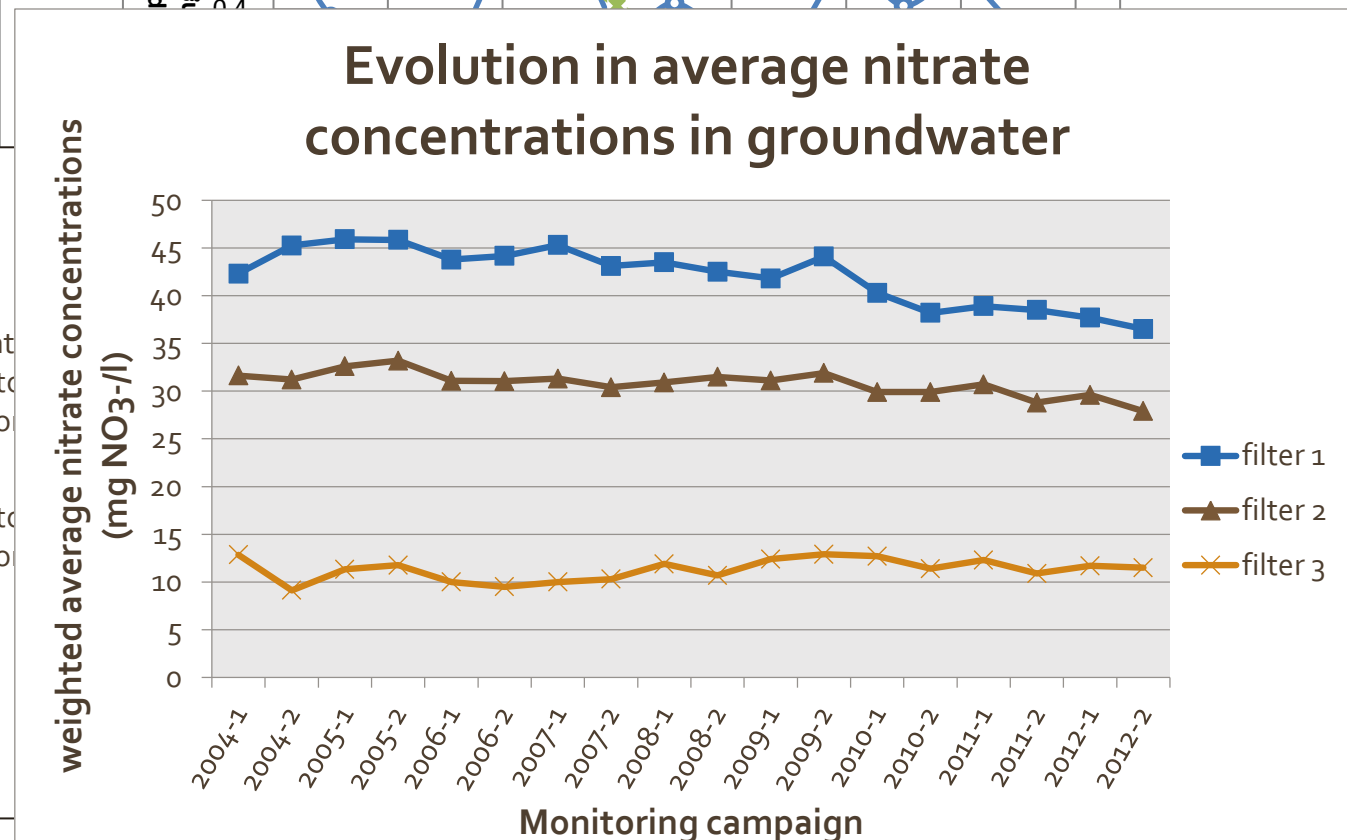
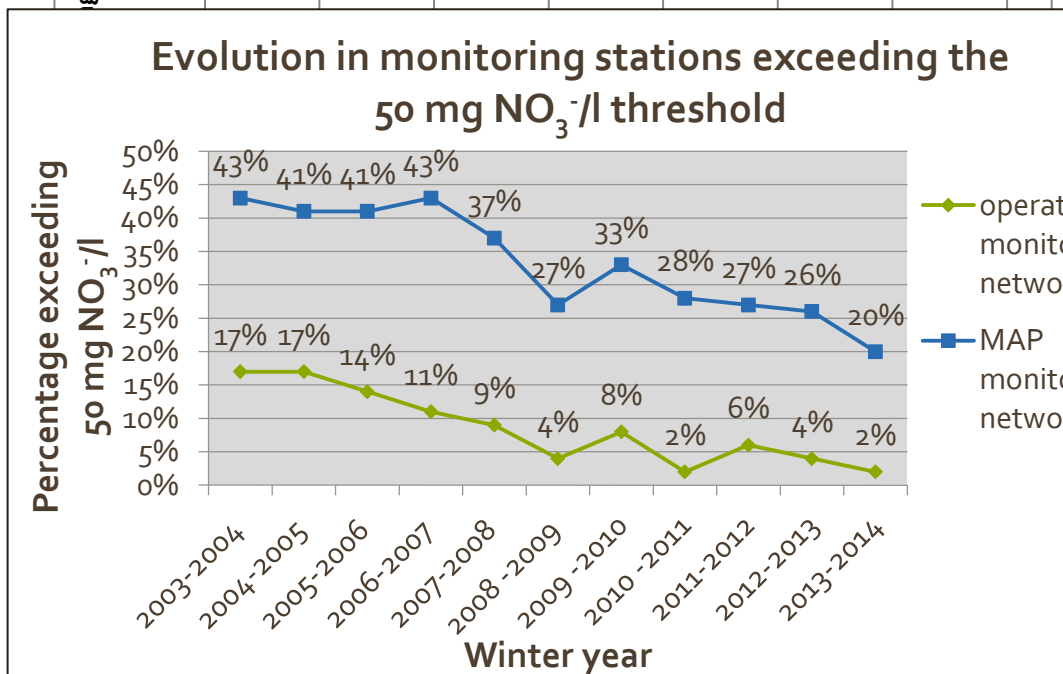
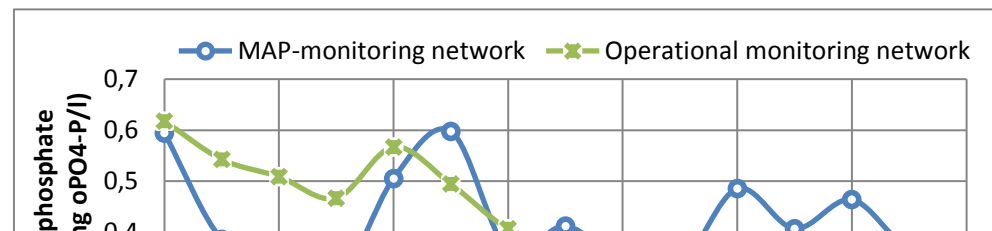
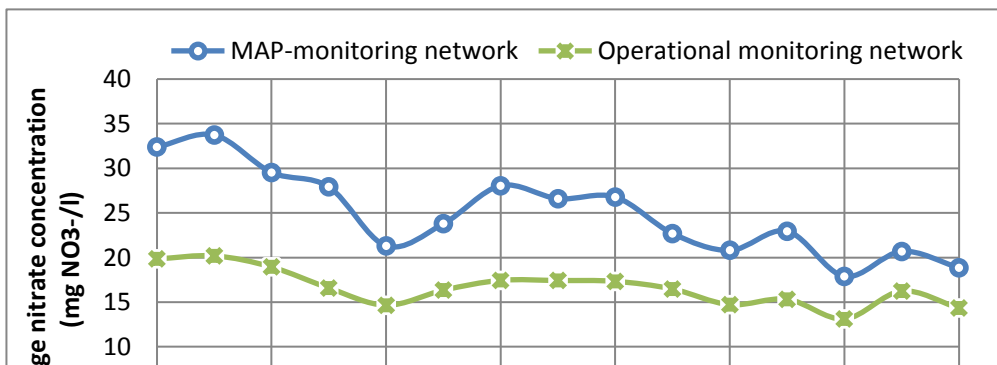


Grondwatermonitoring



- Monitoring of
- Surface water and groundwater
- Large waterbodies and smaller systems
- Nitrogen and phosphorus

Water quality results





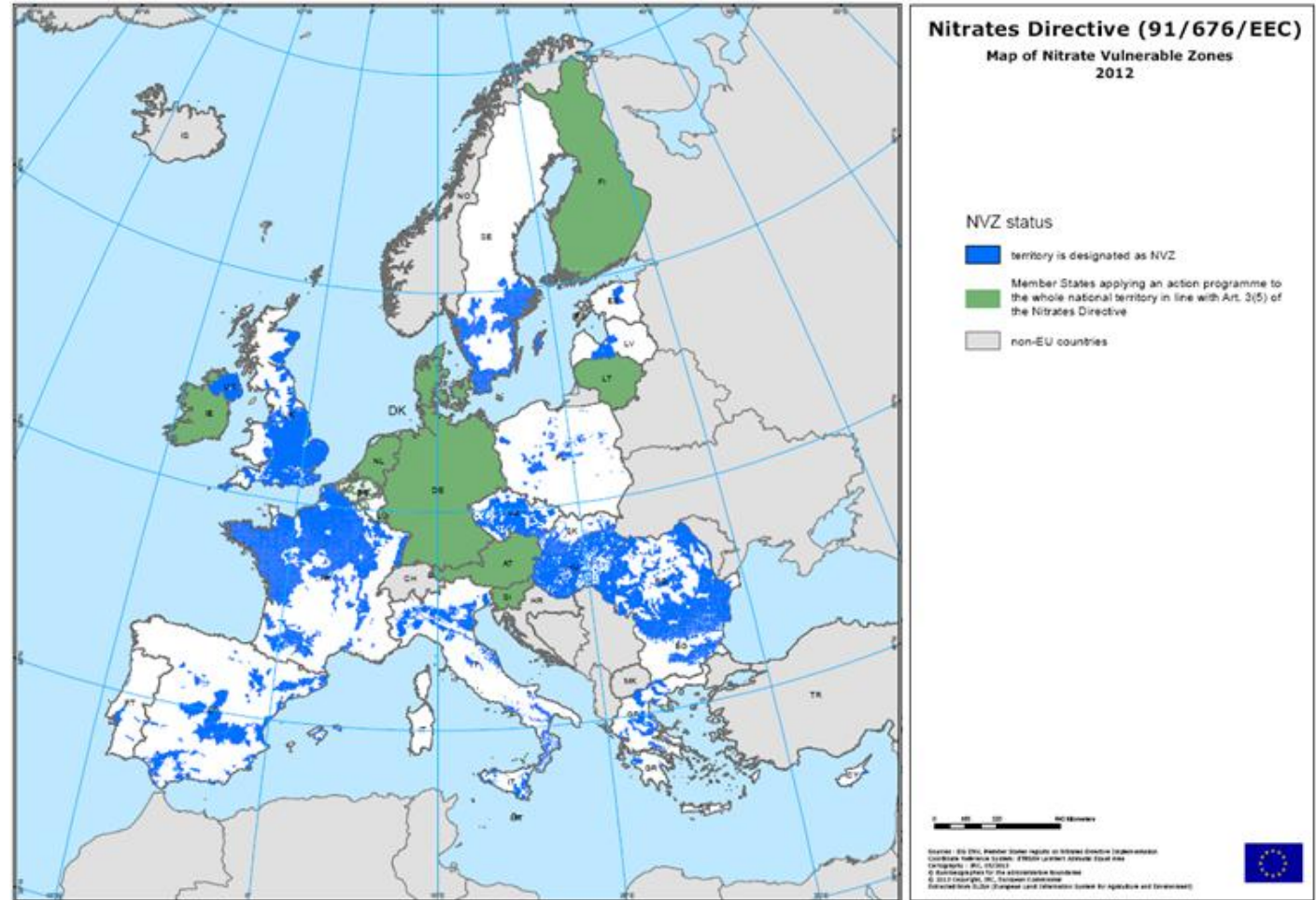
Measures

Action Programmes in execution of the Nitrates Directive



Nitrates Directive as driving force in nutrient management

1. Identification of polluted waters
2. Designation of nitrate vulnerable zones (NVZ)
3. Code of good agricultural practices
4. Action programmes in NVZ
5. Continued monitoring



Evolution of manure policy in Flanders



1991

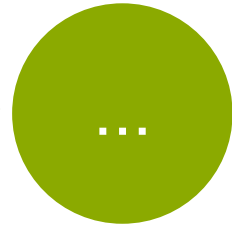
1995

1999

2005

2007

2011



- Legislation
- (Re)distribution of manure
- General fertilization standards

- Gradually more restrictive
- Stand still in livestock production

- From redistribution towards manure policy
- Three pronged approach

Conviction European Court

- New manure decree
- Whole of Flanders = NVZ
- Possibilities for growth on livestock farms
- Nitrate residue
- Advisory service

- Balanced fertilization
- Fertilization advises

Summary of manure policy in Flanders

Three pronged approach:

1. Source-oriented approach
2. ~~Judicious/sustainable fertilization~~
3. Manure processing

- Nutrient Emission rights
- Low nutrient feed

- Manure processing obligation
- Growth through manure processing

- Fertilizer application standards
 - Balanced N-fertilization
 - P-mining
- Derogation
- Nitrate residue
- Fertilization advices
- Closed periods
- Manure storage

Measures on fertilization

Fertilizer application standards 2014	N _{manure} (kg/ha, year)	N _{efficient} (kg/ha, year)	P ₂ O ₅ (kg/ha, year)
Grassland (mowing)	170/250	310	95
Maize	170/250	150/230	80
Winter wheat	170/200	175/195	75
Leak	170	250	65
Potatoes	170	210	65



Nitrate residue

- Determination of residual nitrogen in autumn (0-90 cm)
- Potential leaching nitrogen
- Threshold (depending on soil, crop, ...)
- Guidance measures when exceeding

Conclusions

1. Decreasing pressure of (animal) nutrients on agricultural land
 - i. Animal numbers
 - ii. Feeding techniques
 - iii. Manure processing
2. Measures on fertilization
 - i. Balanced fertilization
 - ii. Fertilization advices
3. Accompanying measures
 - i. Land development?
 - ii. Agri-environmental agreements
 - iii. CAP – greening?