

Effectiveness of voluntary measures to reduce agricultural impact on groundwater as a source for drinking water

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1

Content

- Introduction & context
- Engagement process
- Method to assess the effectiveness of the governance approach
- Results of:
 - Farm scale measures
 - Engagement process
 - Effectiveness of governance approach
- Conclusions



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2

Introduction and context

- Groundwater Governance as a Complex Environmental Problem
- Water Framework Directive – diffuse agricultural pollution of nutrients is a risk for meeting the objectives for vulnerable drinking water abstractions
- No political support for tightening of national or provincial regulations regarding nutrients and pesticides
- No political support for financially based measures
- Measures are based on voluntariness – and a Mutual Gain Approach

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3

Mutual gain: genuine interest in farmer rather than win-win

- For the farmer and his management
- For the economy of the measures
- For the future of the farm
- For the relation between agri management and GW-quality

What we ask and expect:

- Active participation of meetings and activities
- Feedback on our advices and way of working




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4

Comparison of two Dutch Cases



Schoon Water voor Brabant!







Boeren voor Drinkwater

Province of Overijssel –
Farming for drinking water

Province of Noord-Brabant –
clean water for Brabant

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5

Yearly engagement activities

	Farmers for Drinking Water Overijssel Since 2011	Stakeholders	Clean Water for Brabant Since 2001	Stakeholders
Individual farm management advice	2	Farmer and agricultural advisor	1	Farmer and agricultural advisor
Small group meeting	2-4 (6 out of 10 farmers)	Farmers and agricultural advisor/expert	1 (10-15 farmers)	Province, water company, water authority, farmers
Field demonstration	2-4	Province, water company, agricultural lobby organization, agricultural advisors, groundwater quality experts, farmers and regional stakeholders outside the GWPA's	3	Farmers, experts, province, water company, water boards
Crop groups (e.g., arable, tree nursery, asparagus)			1-2 indoor; 1-2 in the field (50% of the farmers, group size 10-15 of groups ranging from 15 to 150 farmers)	Farmers and agricultural advisor/expert
Annual meeting	1 (20 out of 26)	Province, water company, agricultural lobby organization, agricultural advisors, groundwater quality experts, farmers	1 (250-375 out of 750)	Province, water company, water authority, agricultural lobby organization, agricultural advisors, farmers

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6

Method

- Engagement process in which **qualitative information** is collected about the functioning of the MAP
 - Individual farm advice
 - Small group meetings
 - Field demonstrations
 - Crop groups
 - Annual meetings

- **Quantitative data** on agricultural management
 - N-surplus from the Annual Nutrient Cycle Assessment (ANCA) & nitrate concentrations from the monitoring network
 - Environmental Impact Points calculated by the Environmental Yardstick for pesticides

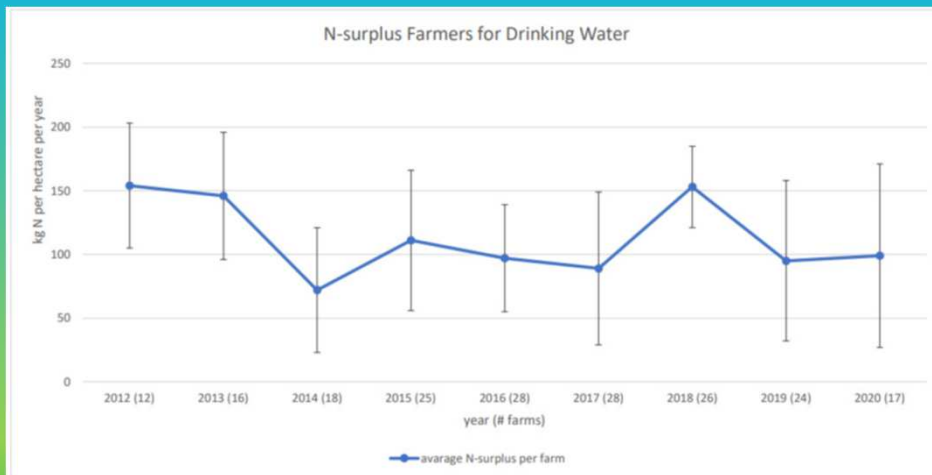
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7

N-surplus Farmers for Drinking Water



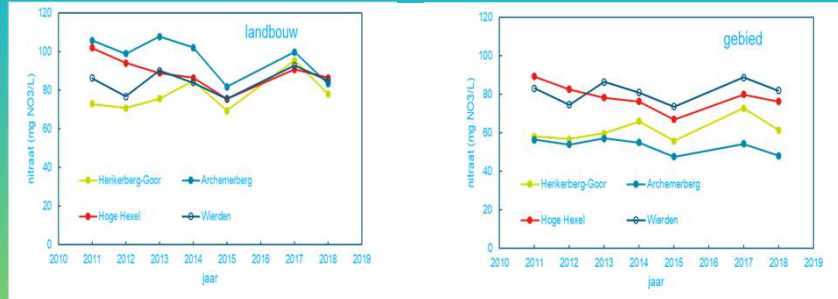
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8

Results: GW-quality



- No detectable decrease in nitrate concentrations in agricultural areas
- Not – or not only – because of lag-time, because the lag-time towards the shallow phreatic groundwater is appr. 3-4 years
- NO₃ concentrations still higher than nitrate objective at the scale of the recharge area

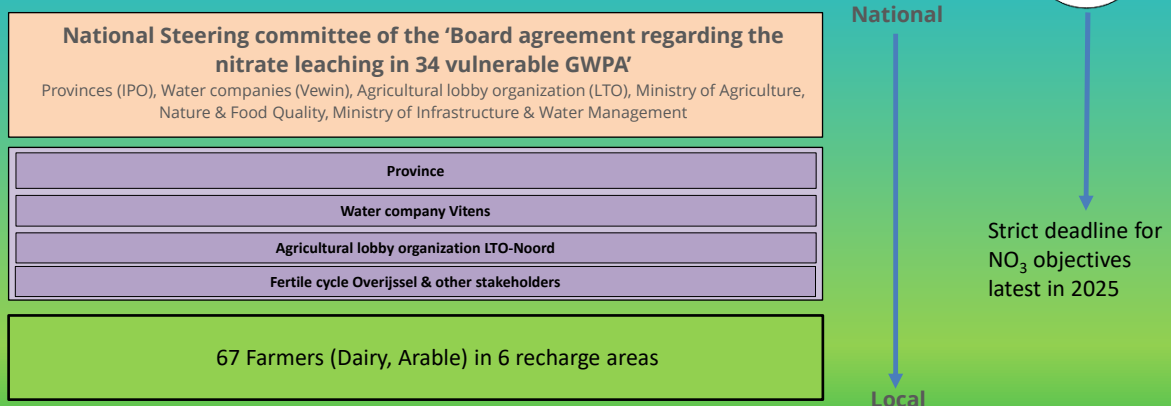
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9

Since 2017: Farmers for Drinking water part of National Agreement

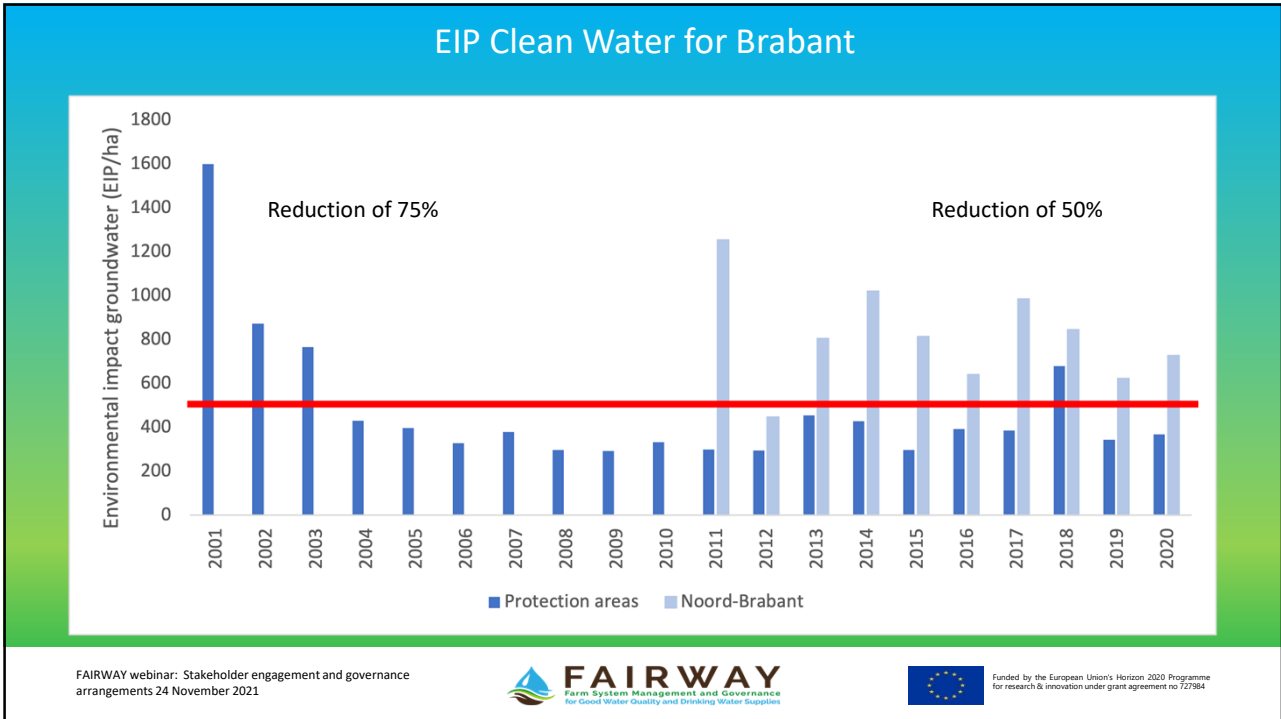


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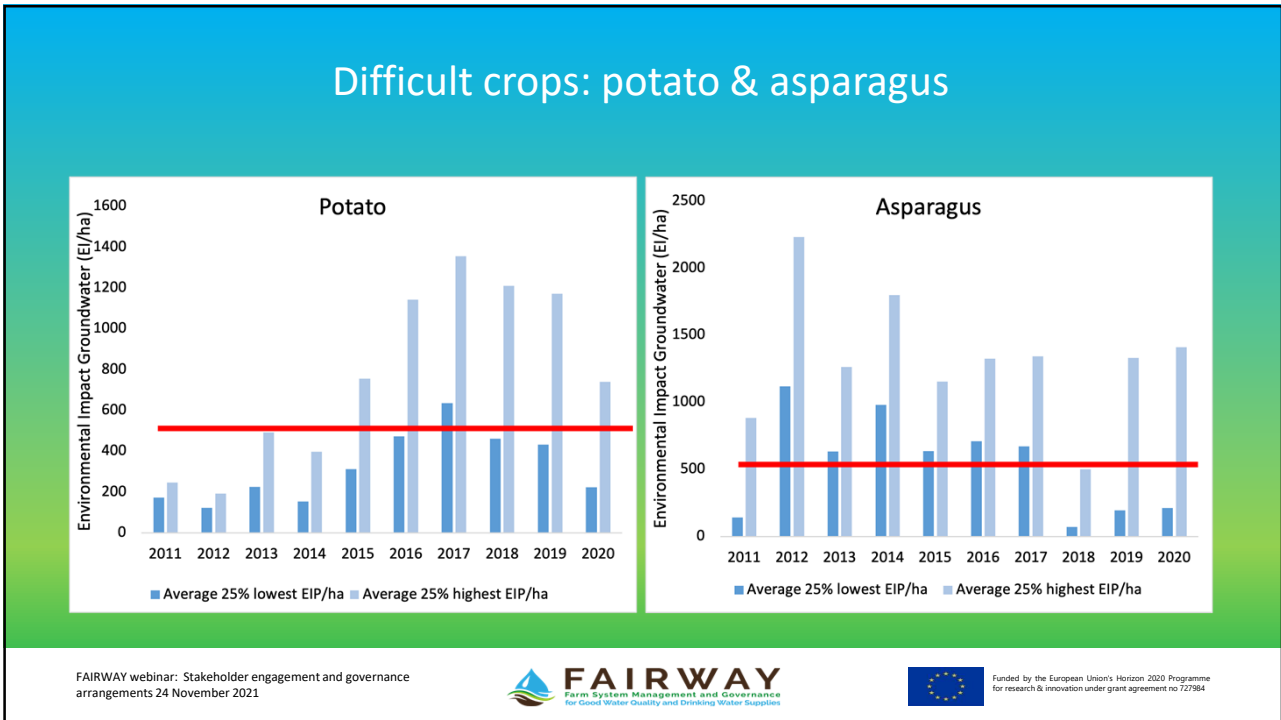


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10



11



12

Engagement process

- Overijssel:
 - *"I (the farmer) was used to focus on feeding cows, but now I'm also focused on feeding the soil with a focus on the groundwater quality"*
 - *"I (the farmer) read and hear about measures implemented by colleagues but only after discussing these measures in the context of my farm with my advisor I feel confident enough to implement these measures myself"*
 - *"In the MAP, you are talking with farmers rather than talking farmers"*
- Brabant:
 - *"Of course we have a wish to produce sustainably; my 400-year-old farm should still be in action 400 years from now. I'm also very interested in technical solutions, like my self-built biofilter."*
 - *"It always teaches you something new. In the past we would see each other at auctions, but that doesn't happen anymore. The number of study groups has also decreased."*
- The engagement process enlarges the knowledge base of the processes and increases the legitimacy of the outcomes and the experienced ownership influence over them

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13

Effectiveness of the governance approach

- Overijssel:
 - Reduction of nutrient losses with appr. 40%
 - No detectable reduction of nitrate concentration in GW, GW-objective not (yet) met
 - Voluntary measures contribute to BE of farm by improved nutrient efficiency
 - Additional measures prohibited by diminishing economic returns
- Brabant:
 - Reduction of EIP with appr. 75%
 - Objective of < 500 EIP met in GWPA
 - Objectives can be met without BE-losses
 - Shift towards capital intensive crops also endangers the GW-quality

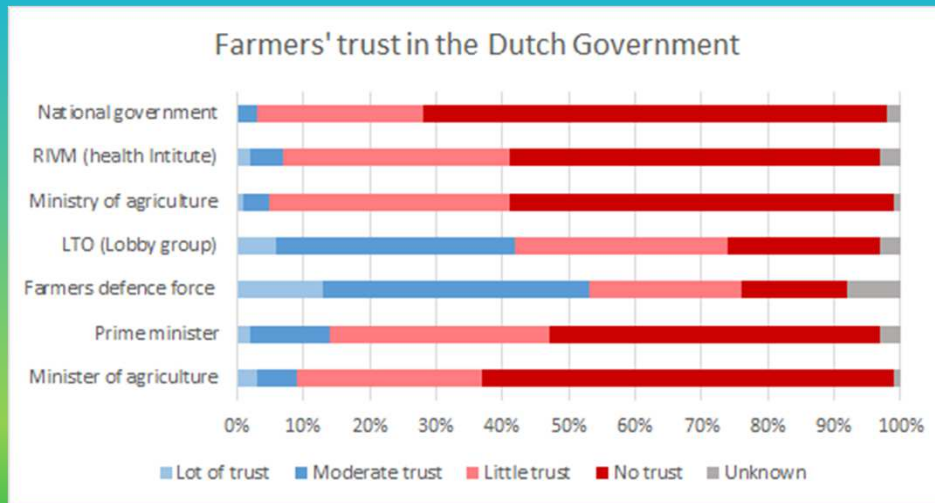
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14

Trust is an issue in The Netherlands



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15

General conclusions

The governance approach based on voluntariness:

- creates a platform for meaningful engagement and helps to build trust and equity, facilitates the exchange of ideas, knowledge and experience – and helps to reduce agricultural impacts.
- may not be adequate for meeting standards as BE considerations prohibit additional measures
- needs additional fuelling to guarantee long-term engagement and commitment to maintain and improve the outcomes in the longer run: (ground)water quality 'doesn't pay'



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16

Thank you for your attention



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