Governing Agricultural Nutrient Pollution under the Water Framework Directive: Explaining Policy Instrument Choices Across Dutch Regions

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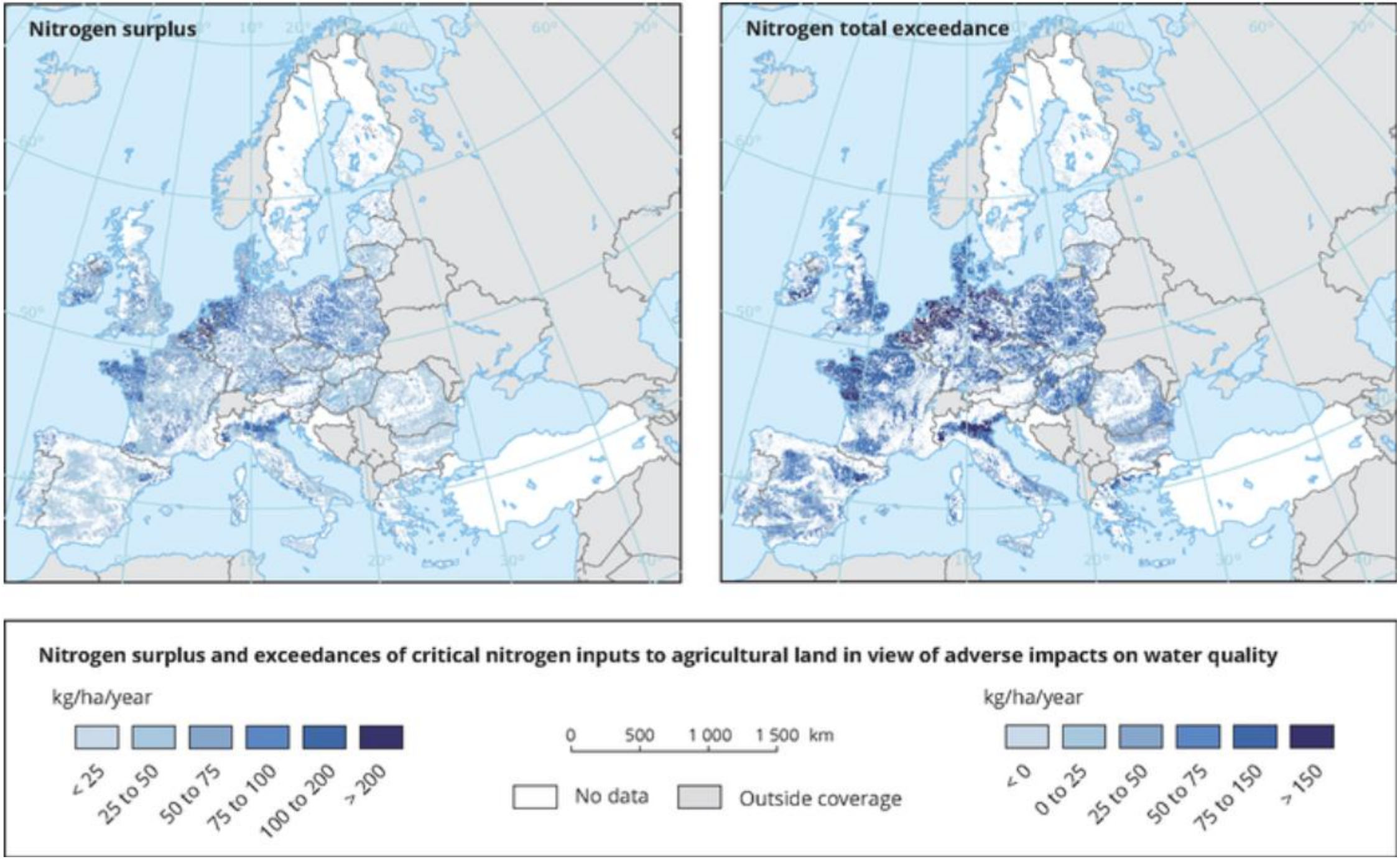
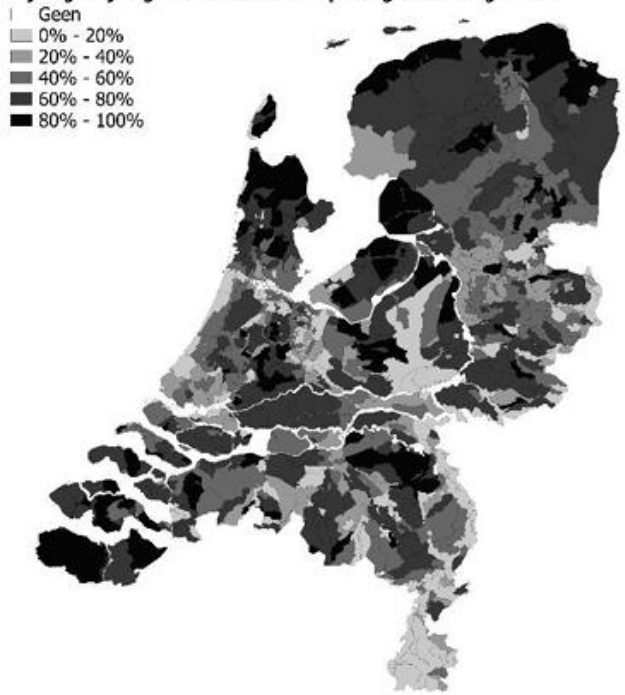
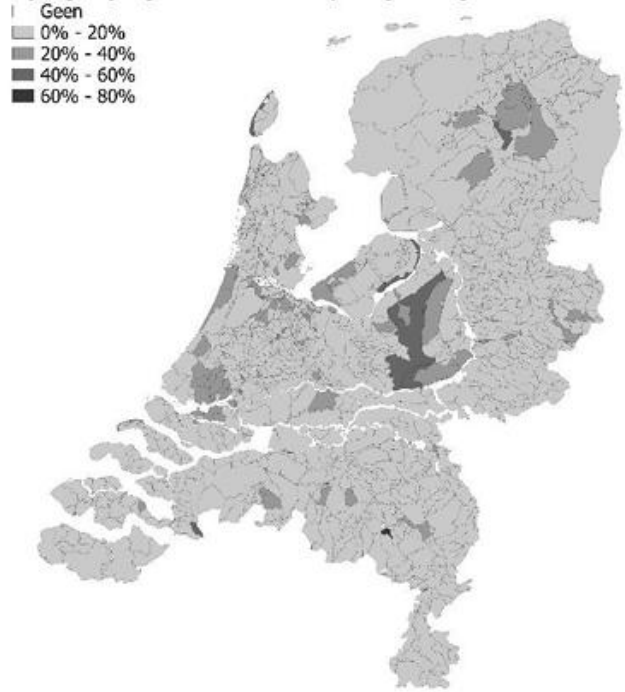

Nitrogen surplus
Nitrogen total exceedance
Nitrogen surplus and exceedances of critical nitrogen inputs to agricultural land in view of adverse impacts on water quality
kg/ha/year
< 25
25 to 50
50 to 75
75 to 100
100 to 200
> 200
0 500 1 000 1 500 km
No data
Outside coverage
kg/ha/year
< 0
0 to 25
25 to 50
50 to 75
75 to 150
> 150

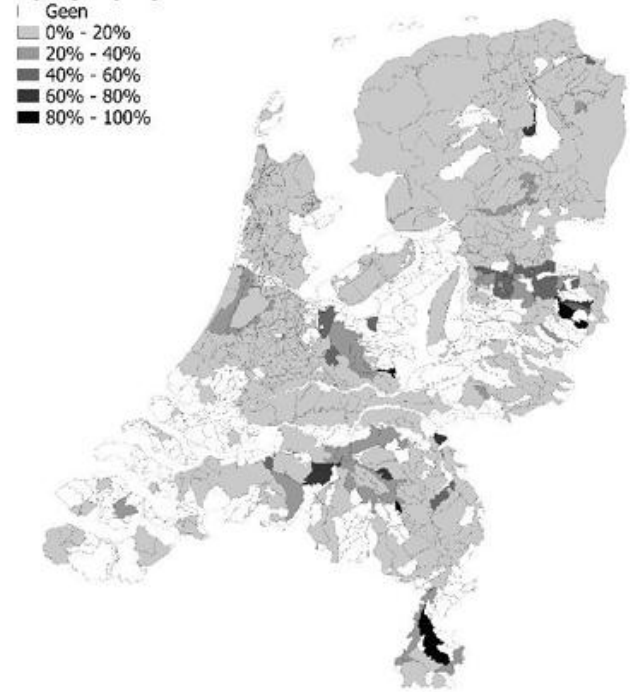
Bijdrage N jaargemiddeld uit- en afspoeling landbouwgronden



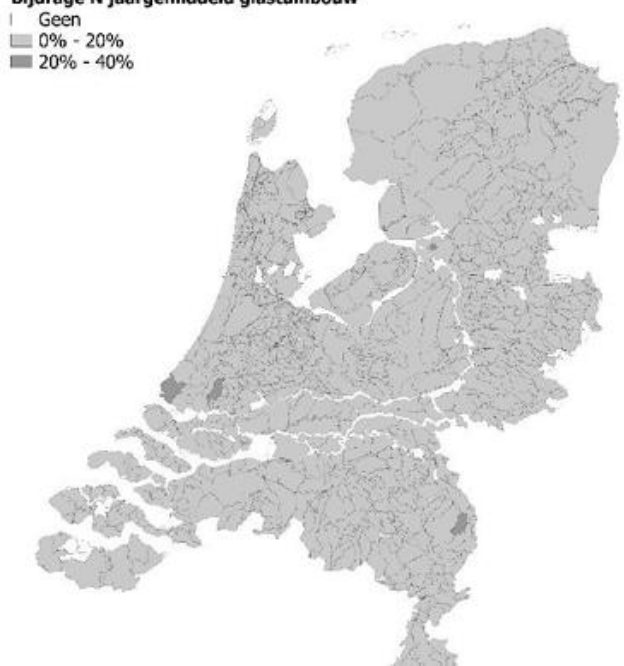
Bijdrage N jaargemiddeld uit- en afspoeling natuurgronden



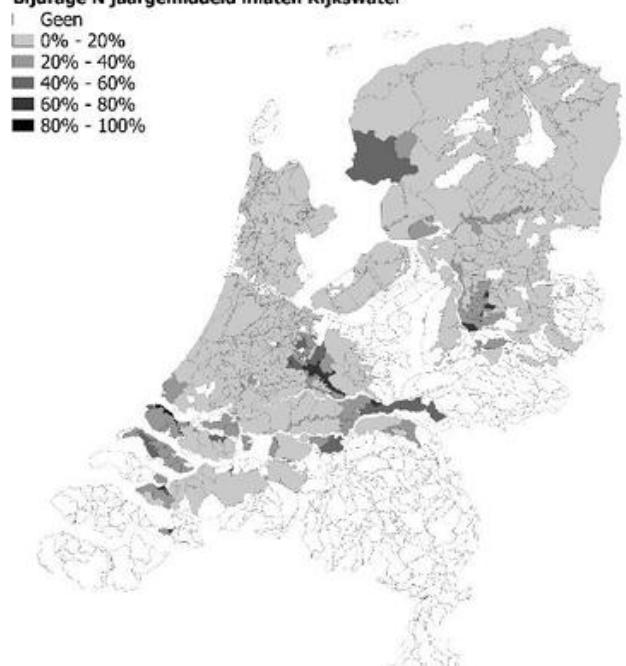
Bijdrage N jaargemiddeld RWZI



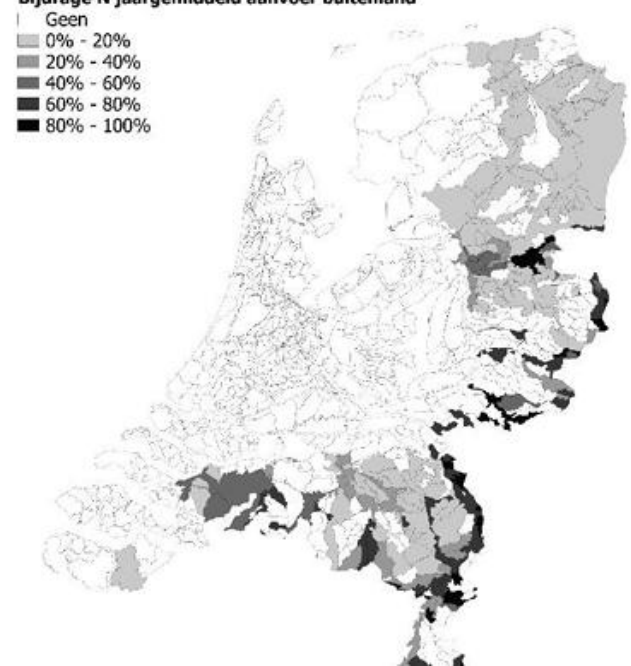
Bijdrage N jaargemiddeld glastuinbouw



Bijdrage N jaargemiddeld inlaten Rijkswater

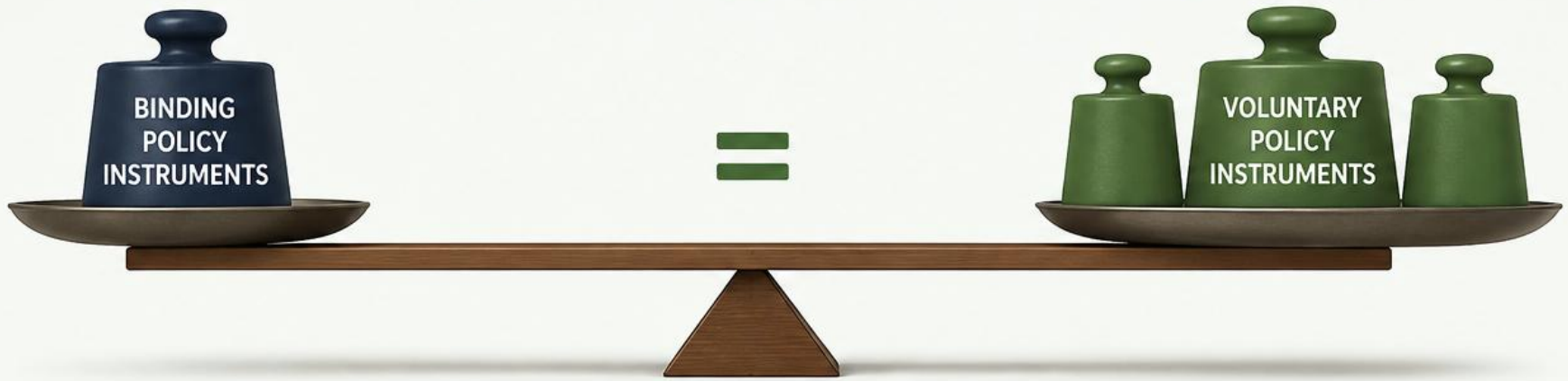


Bijdrage N jaargemiddeld aanvoer buitenland



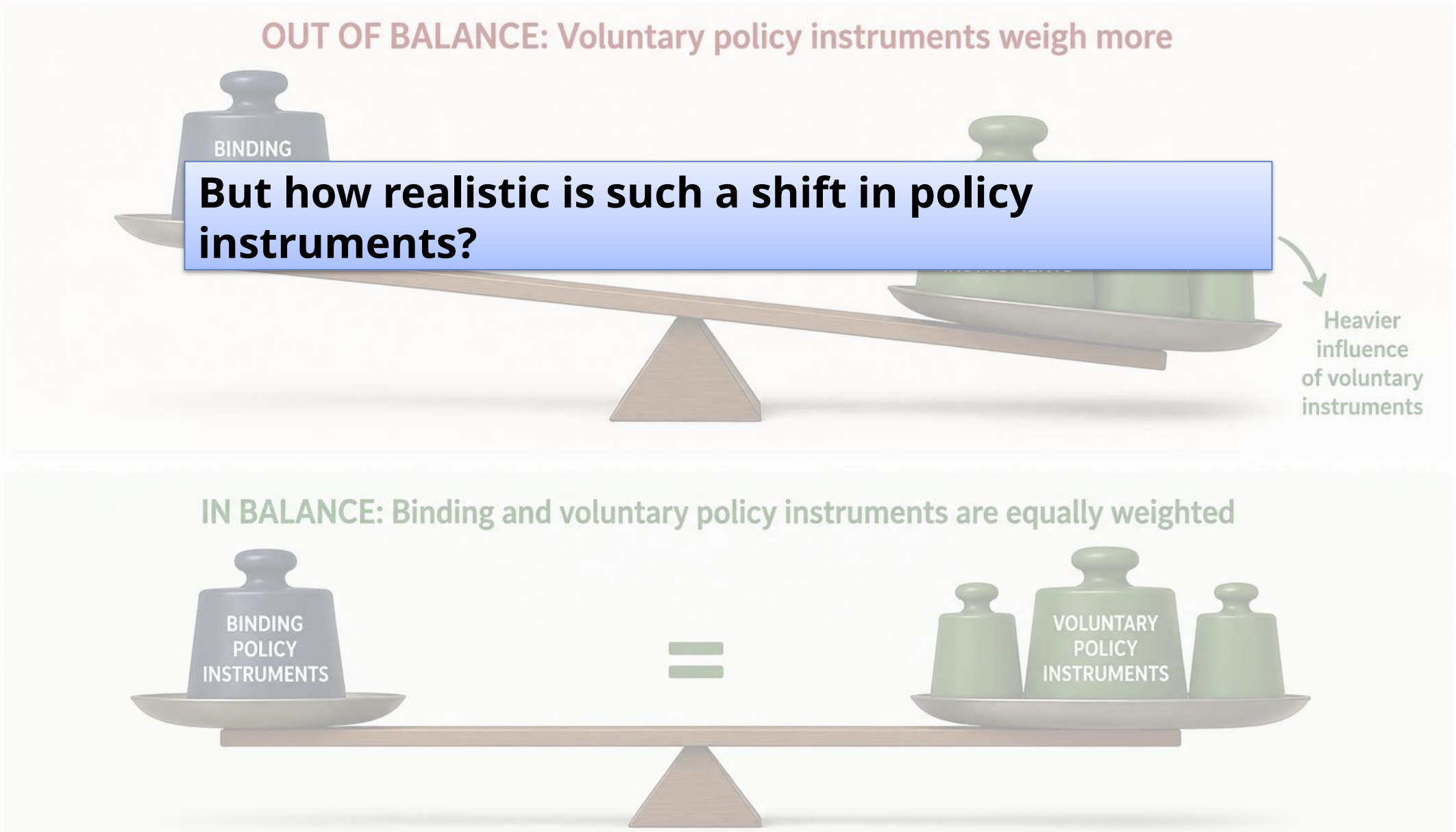
OUT OF BALANCE:

IN BALANCE:



Binding policy instruments
Legally mandatory, enforceable
(e.g., laws, regulations, standards)

Voluntary policy instruments
Non-binding, based on cooperation
(e.g., agreements, guidelines, incentives)



But how realistic is such a shift in policy instruments?

But how realistic is such a shift in policy instruments?

To answer this question, we need to know better why MS stick to voluntary instruments.

Case study of regional government in NL:

1. What instruments do Dutch provinces choose?
2. Why do the provinces choose these instruments (and not others)?

Content

- Method
- Results
  - Policy instrument choices
  - Factors influencing the choices
- Recap & looking forward

Method

- Creating a framework
- Document analysis & instrument categorization
- Interviews
- Qualitative comparison of 12 provinces

Method – creating a framework

Type of leverage point	Leverage point	
Source	A	Less livestock units per hectare (LSU/ha)
	B	Less fertilizer use/ha
	C	Optimizing nitrogen use efficiency (timing and method of application)
	D	High proportion of ammonium in initial fertilization
	E	Use of organic fertilizer
	F	Use of nitrification inhibitors
Pathway	G	Deep-rooted crops, break crops, catch crops and green manures in the crop plan
	H	Adjustment in crop choice, crop rotation and land use
	I	Conversion to extensive grassland or nature
	J	Permanent grassland
	K	Adjusting wheel load against soil compaction
	L	No more grassland destruction or renewal in autumn
	M	Subsurface drainage with subirrigation of grassland in peatlands
	N	Buffer strips along water courses
	O	Preventing farmyard nutrient runoff
End-of-pipe	P	Monitoring
	Q	Phosphorus removal from drainage water

Table. Possible changes in farm management practices. Based on Groenendijk et al., 2021.

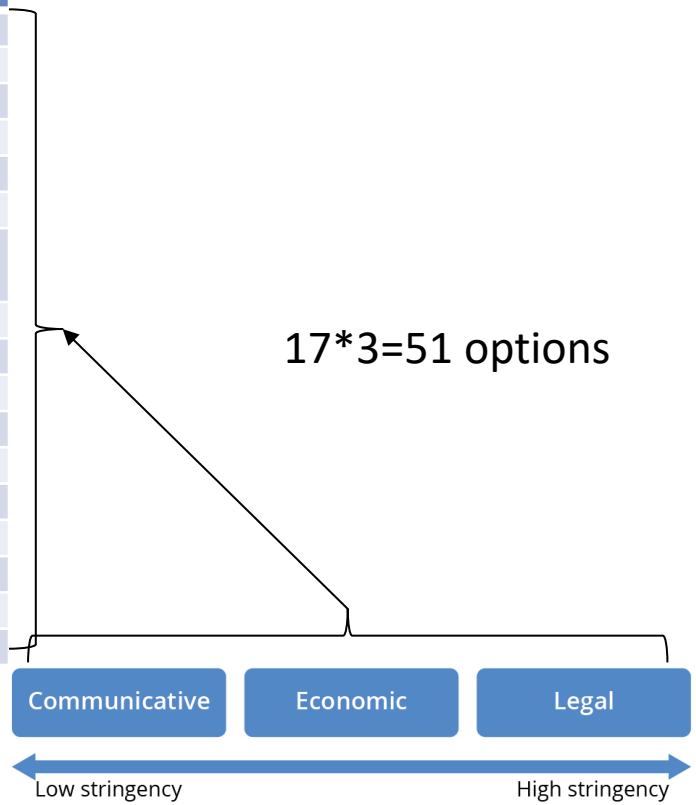
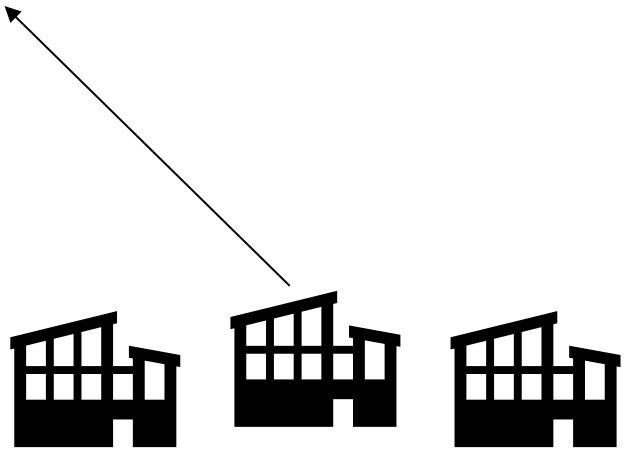


Figure. How policy makers can stimulate or enforce changes in farm management practices through policy instruments.

Method – creating a framework



Method – creating a framework

Type of leverage point	Leverage point		Communicative	Economic	Legal
Source	A	Less livestock units per hectare (LSU/ha)			
	B	Less fertilizer use/ha			
	C	Optimizing nitrogen use efficiency (timing and method of application)			
	D	High proportion of ammonium in initial fertilization			
	E	Use of organic fertilizer			
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Pathway	G	Deep-rooted crops, break crops, catch crops and green manures in the crop plan			
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	O	Preventing farmyard nutrient runoff			
End-of-pipe	P	Monitoring			
	Q	Phosphorus removal from drainage water			

Table. Available policy instrument choices of the Dutch provinces. Green = available, red = not.

Method - Document analysis & instrument categorization

- WFD-Factsheets for groundwater for the last WFD policy cycle (2021-2027)
- Regional water management plans of the province for the planning period 2021-2027
- Forward tracking (but with limits)

- List of chosen instruments

- Every instrument choice was categorized by a type (communicative, economic or legal) and a leverage point per province

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Method - Interviews

- 12 interviews on explaining policy instrument choices
- WFD experts at the provinces
- Semi-structured interview, based on:

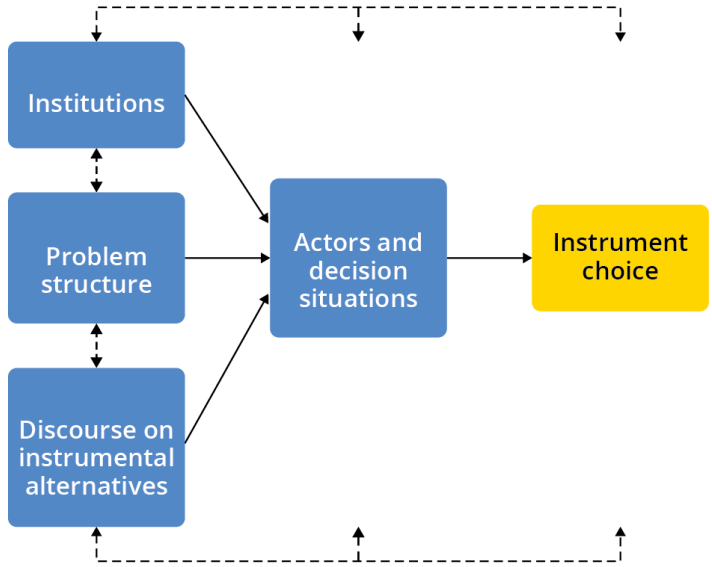

Figure. Analytical framework for understanding instrument choice (based on Böcher, 2012).

Results: Policy instrument choices & factors influencing the choices

- *Most of the results shown at the Symposium have been deleted from this powerpoint because the research is currently under review with a scientific journal and has not been published yet.*
- *Keep track of the publication by following me (Charlotte Offringa) on LinkedIn or my Utrecht University page.*

	Type of instrument			
Leverage point	**Communicative**	**Economic**	**Legal**	**Total # Instruments**
A. Less livestock units per hectare (LSU/ha)				
B. Less fertilizer use/ha				
C. Optimizing nitrogen use efficiency (timing and method of application)				
D. High proportion of ammonium in initial fertilization				
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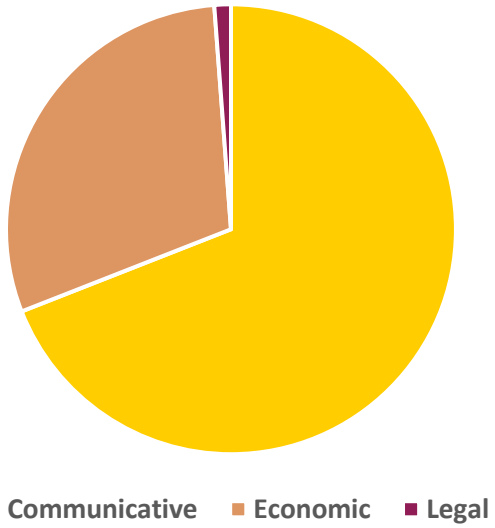
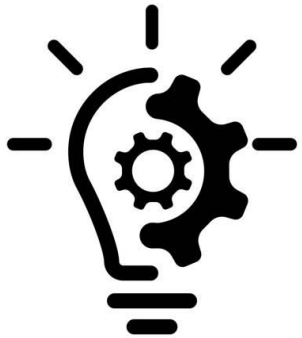
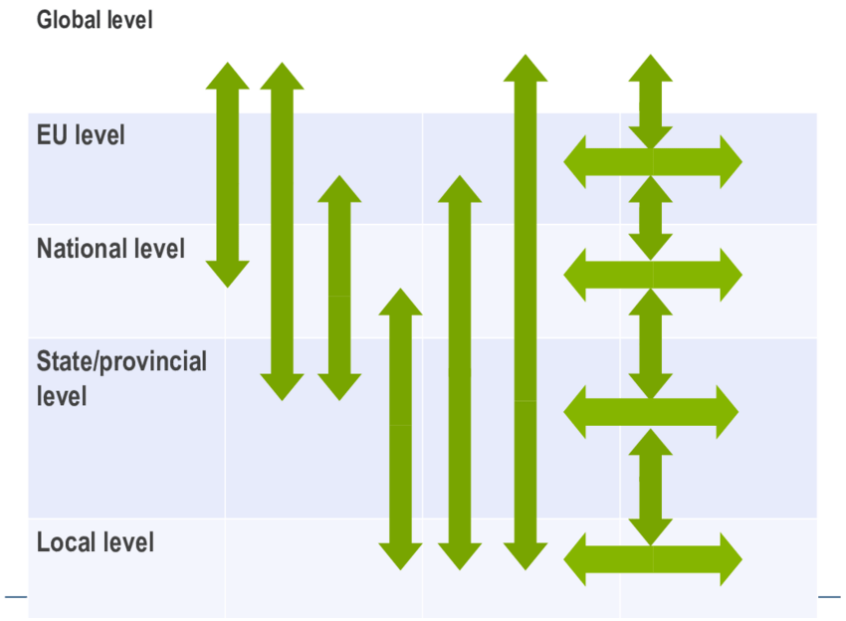
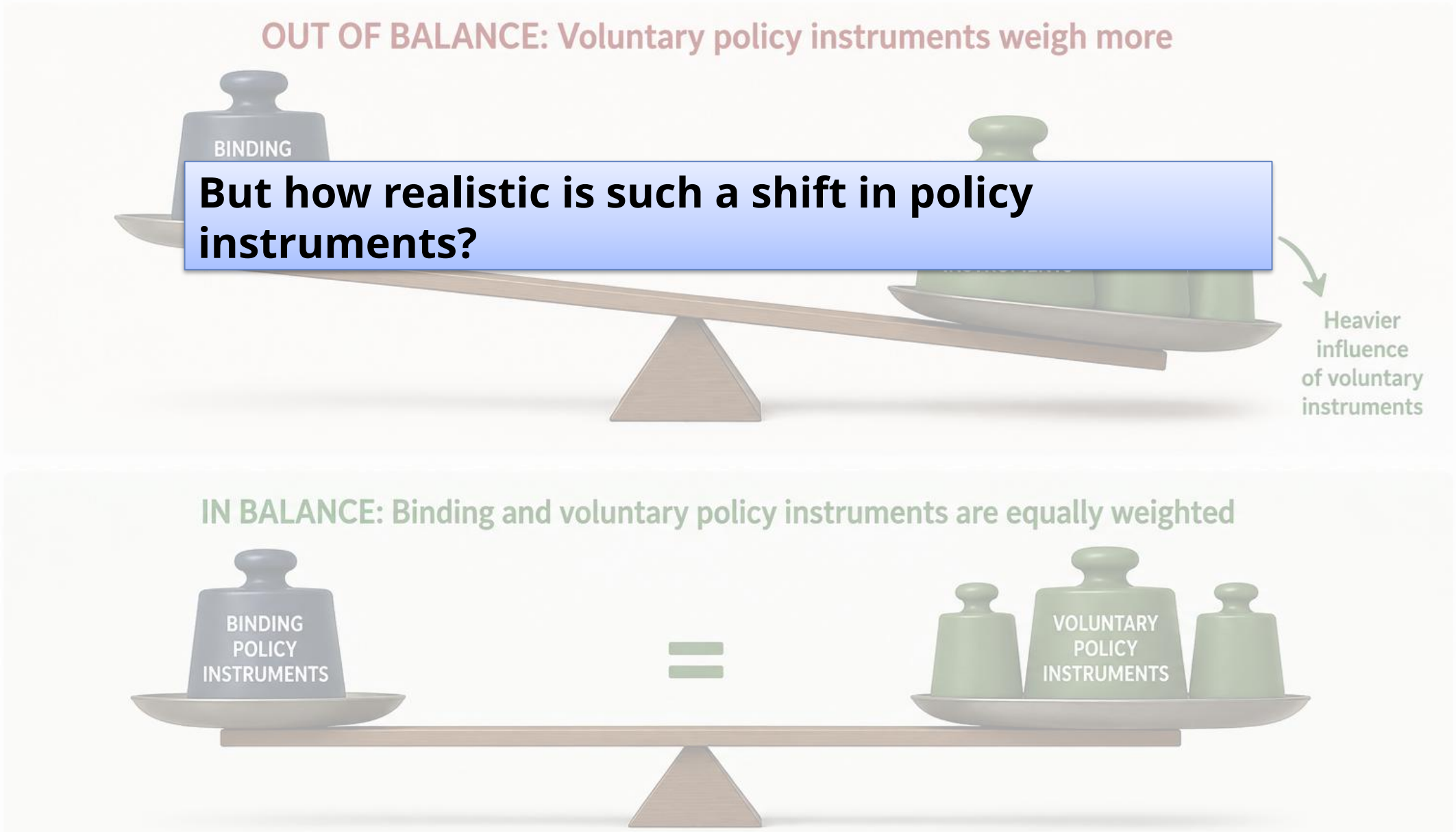
O. Preventing farmyard nutrient runoff				
P. Monitoring				
Q. Phosphorus removal from drainage water				
Total number of instrument choices per type				


Communicative
Economic
Legal




Global level
EU level
National level
State/provincial level
Local level

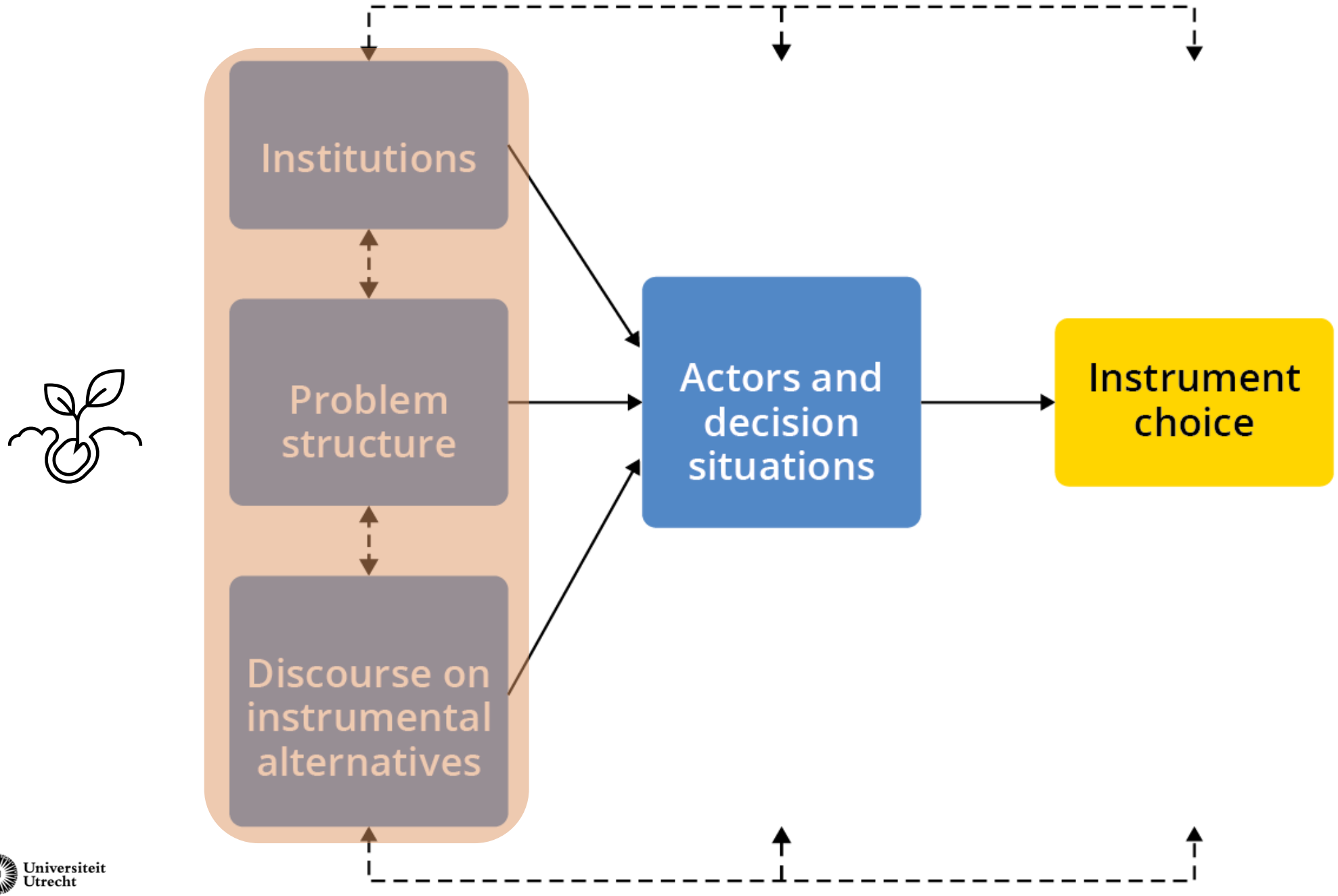
Recap & looking forward

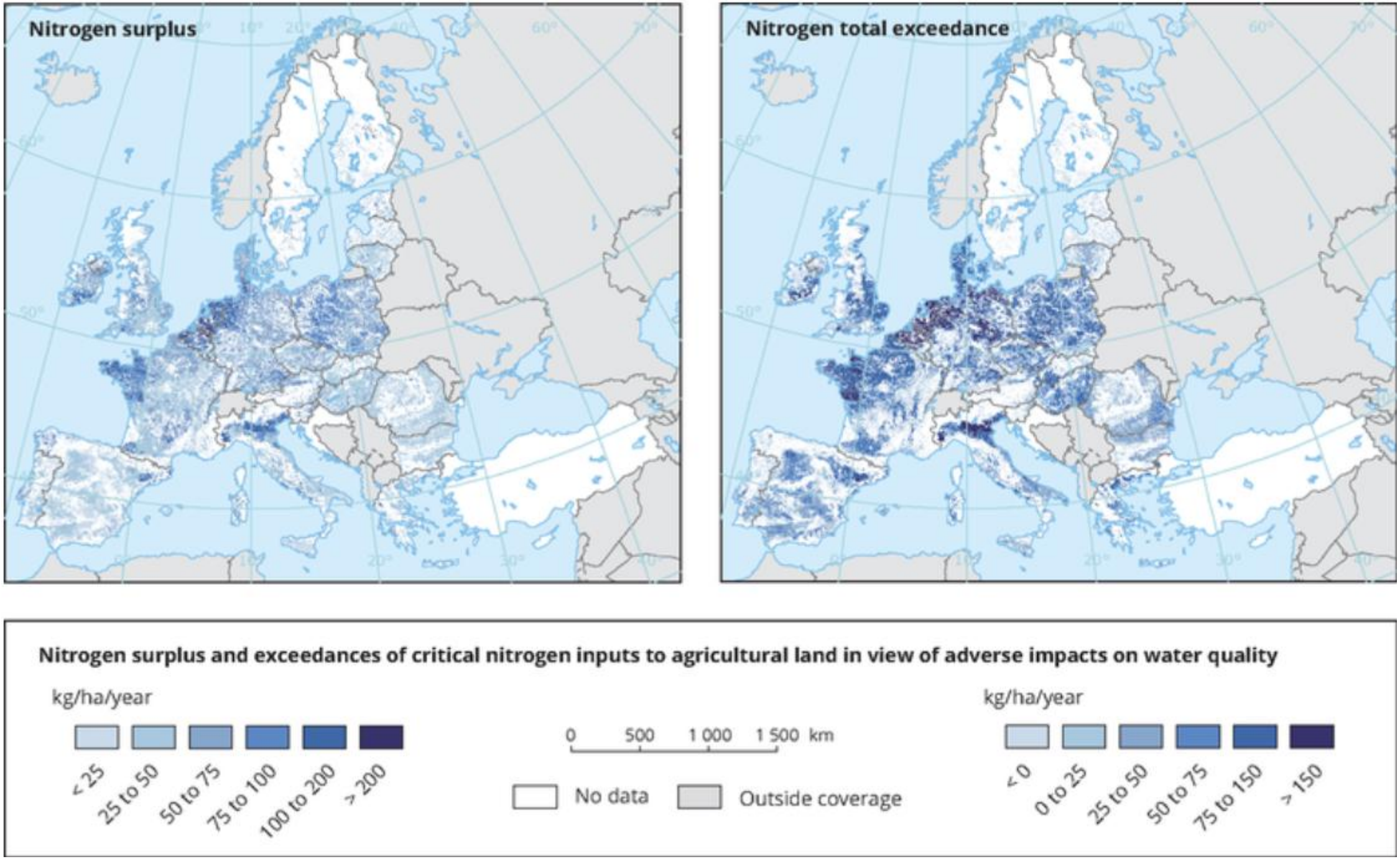


But how realistic is such a shift in policy instruments?

Recap

- Overview of choices – comm & econ
- Deeper understanding of the choices
- What now?


Institutions
Problem structure
Discourse on instrumental alternatives
Actors and decision situations
Instrument choice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Sharing science,
shaping tomorrow

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