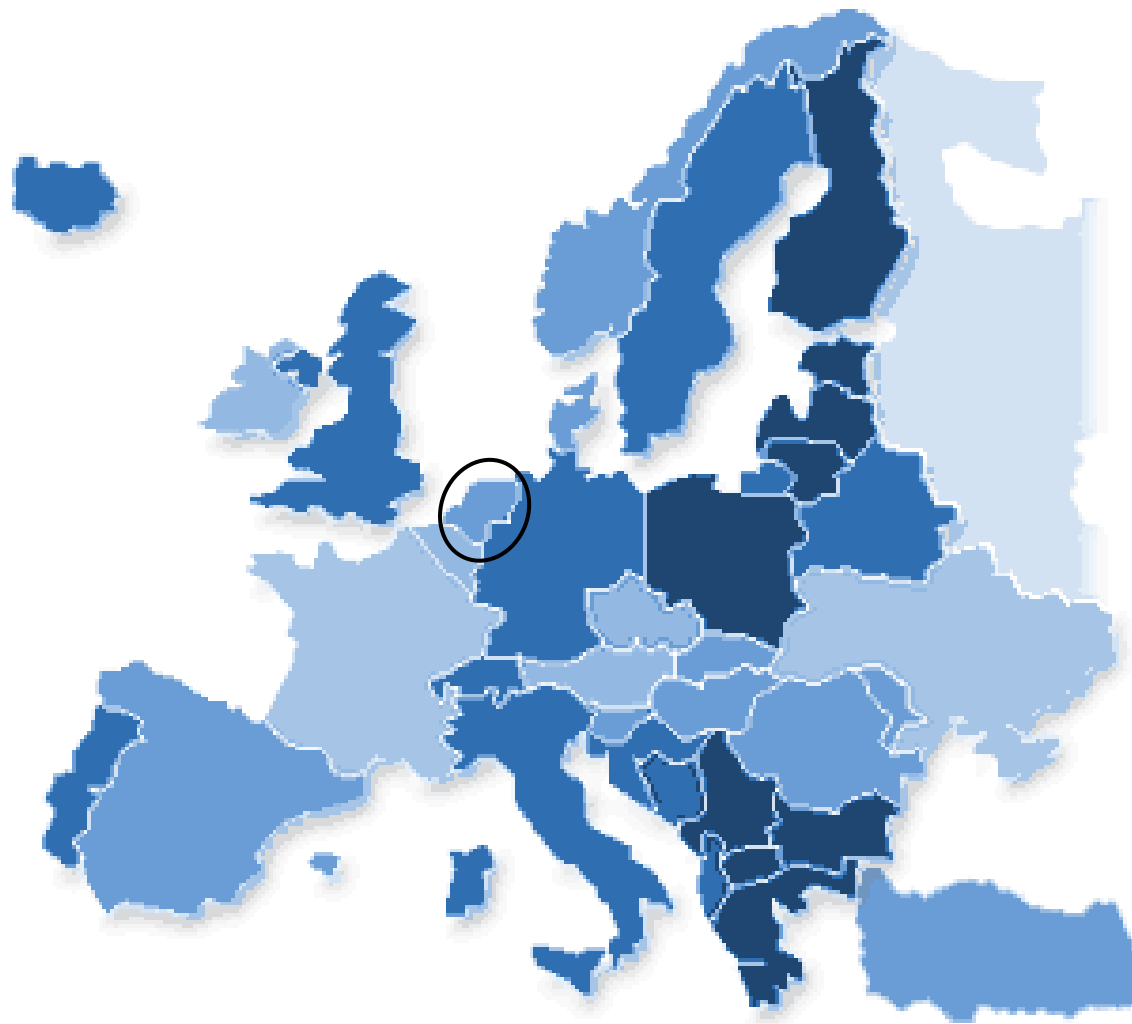# Negotiated expertise in policy support for water quality management in the Netherlands

Sandra Junier

Content

- Introduction to the Netherlands (NL)

- European Water Framework Directive (WFD)

- The role of experts and expertise for WFD in NL

- A software instrument to support WFD

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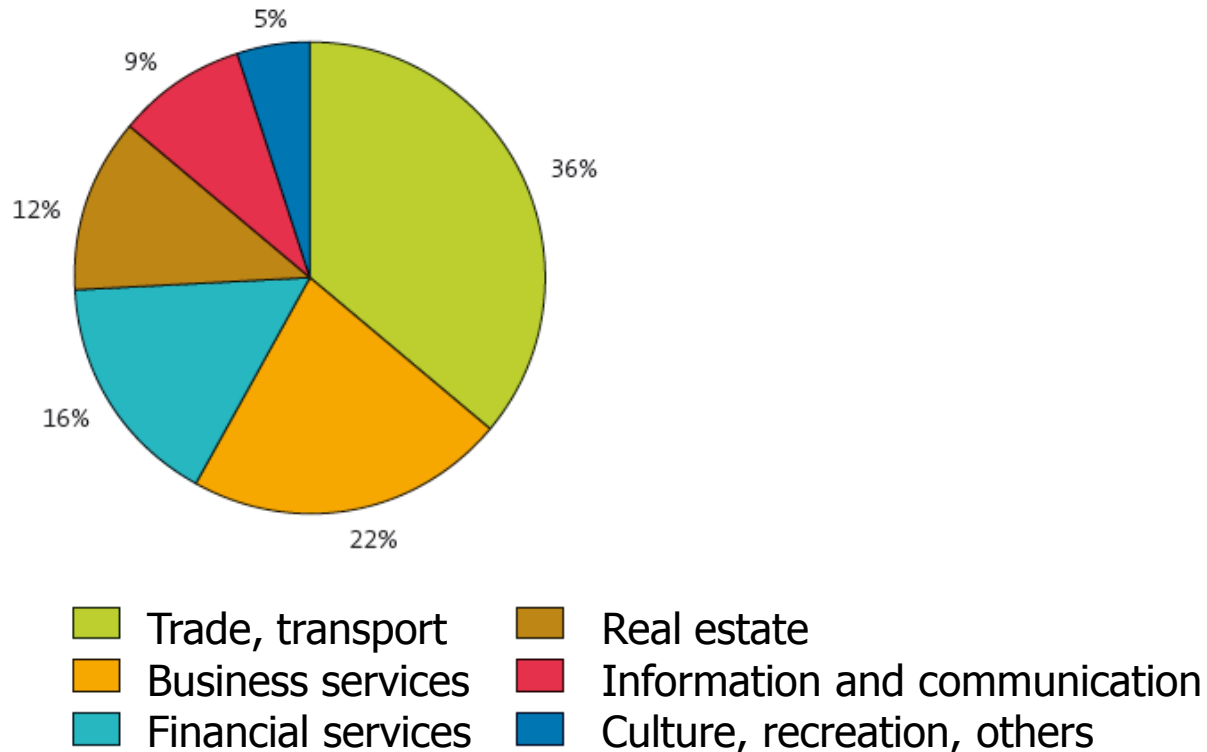Europe

The Netherlands

- Population: 16.8 million people

- Area: 41.526 km²

Services economy (nearly 50%)

Structure commercial services 2010

Toegevoegde waarde (totaal: 274 733 mln euro)

- Trade, transport
- Business services
- Financial services
- Real estate
- Information and communication
- Culture, recreation, others

Bron: CBS, Nationale rekeningen 2010.

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Population density

Country	Density
Bangladesh	1.109/km² (2013)
The Netherlands	449,9/km² (2013)
Japan	336,7/km² (2013)
Vietnam	279,4/km² (2013)
United States of America	32,9/km² (2013)
Mongolia	2,1/km² (2013)

Source Wikipedia, accessed 12 11 2013

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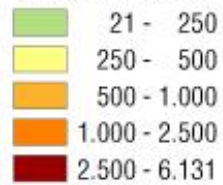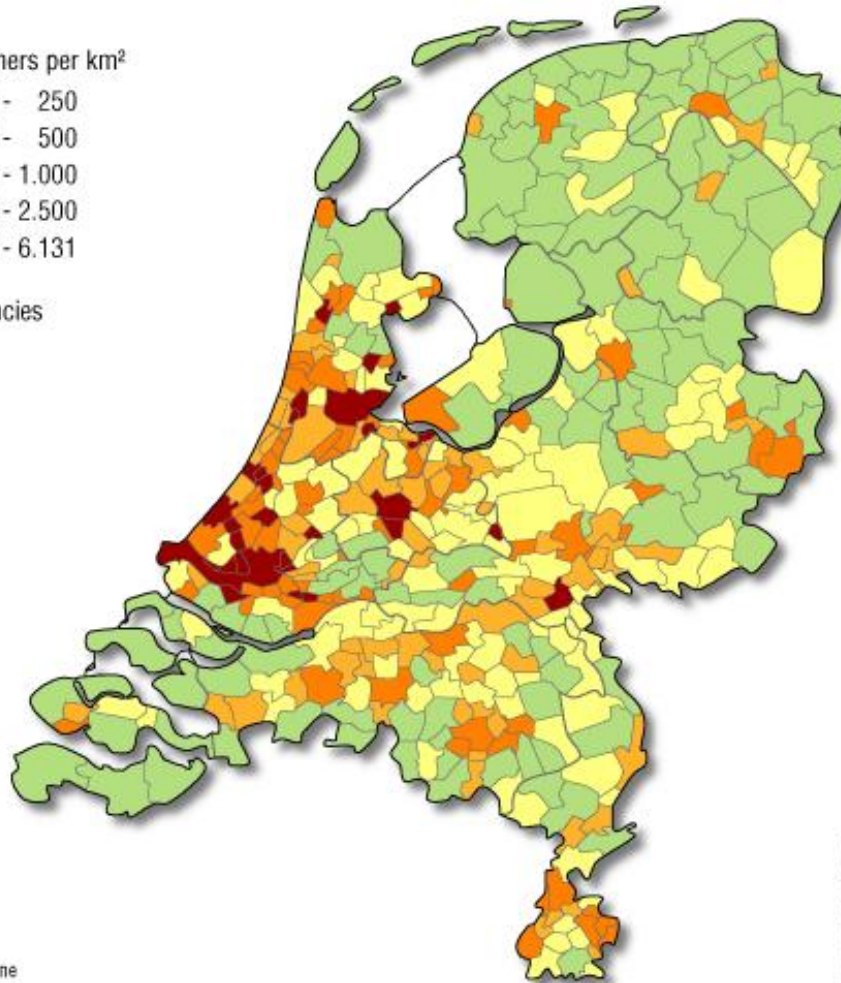
Population density spread

Environmental issues: air, soil, water

Water:

- safety against floods

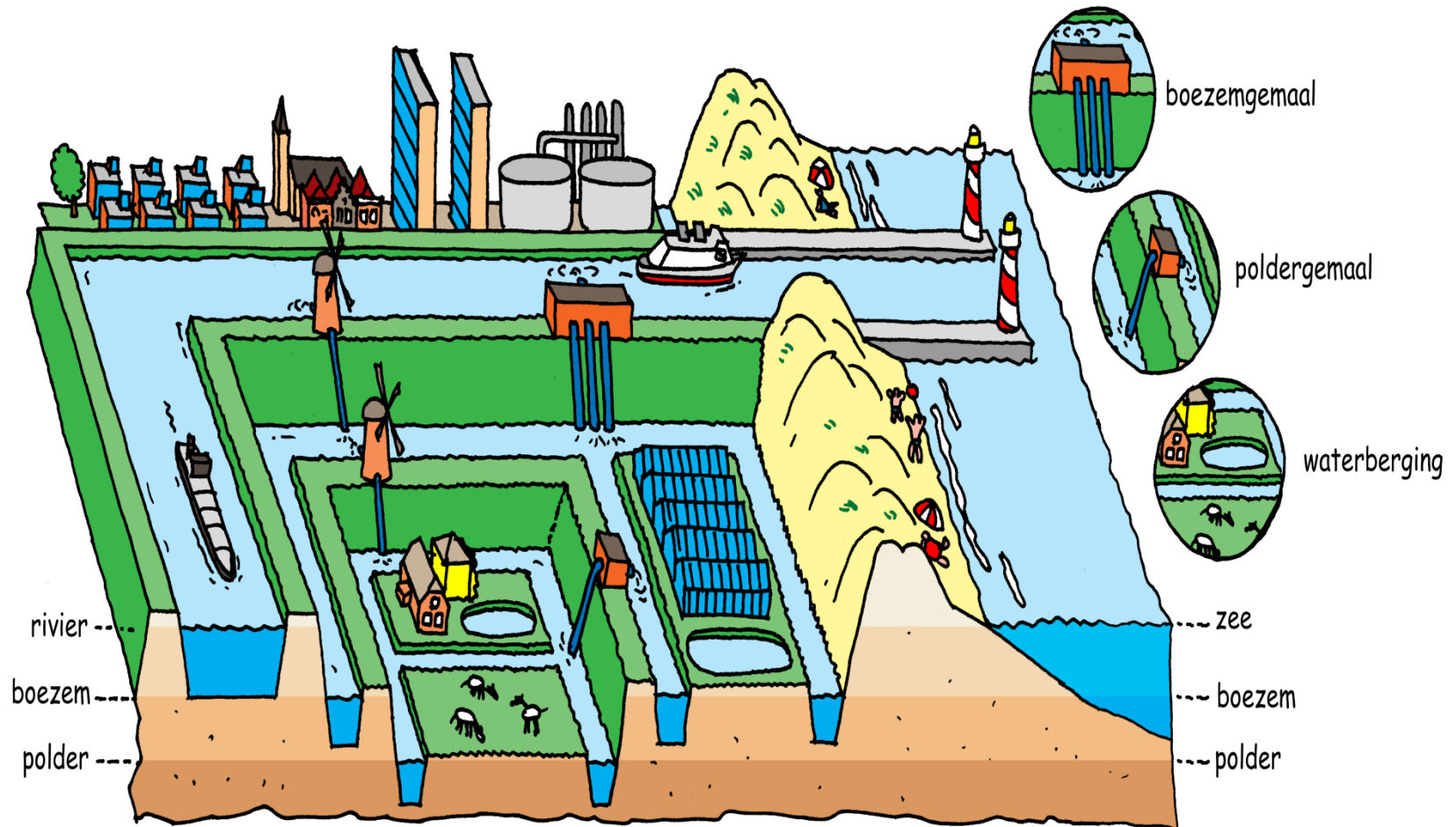- water quality and ecology

Areas at risk from floods

Dunes protect land from sea

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Polder dikes protect land from regional waters

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Polder system, water level control

Water quality

- Pollution by dangerous chemicals

- Eutrophication: too high nutrient content

- Loss of ecological values

Industry

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Waste water treatment

Agriculture

http://www.lto.nl/over-lto/sectoren/Melkveehouderij
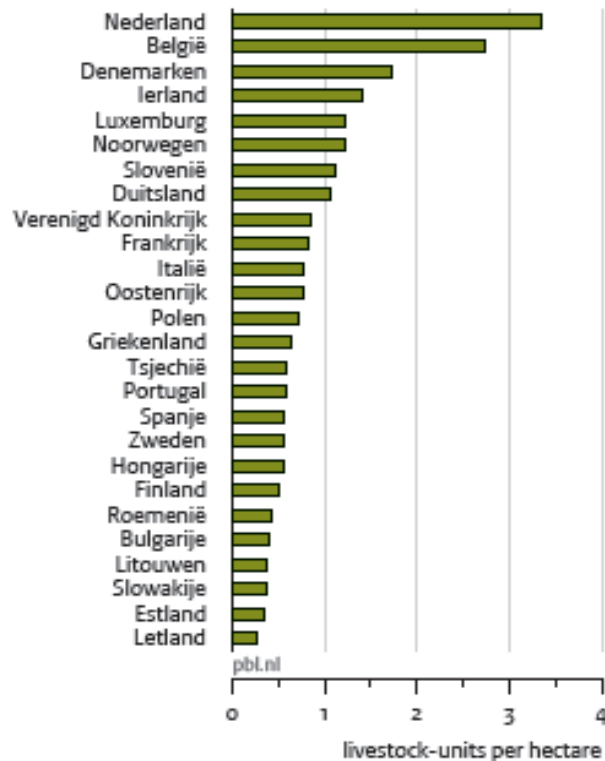
Agriculture in NL

- accounts for about 2% of Gross Domestic Product

- 60% of area used for agriculture

- 70.000 agricultural producers

- Large part production is exported

- Intensive, efficient, highly mechanised

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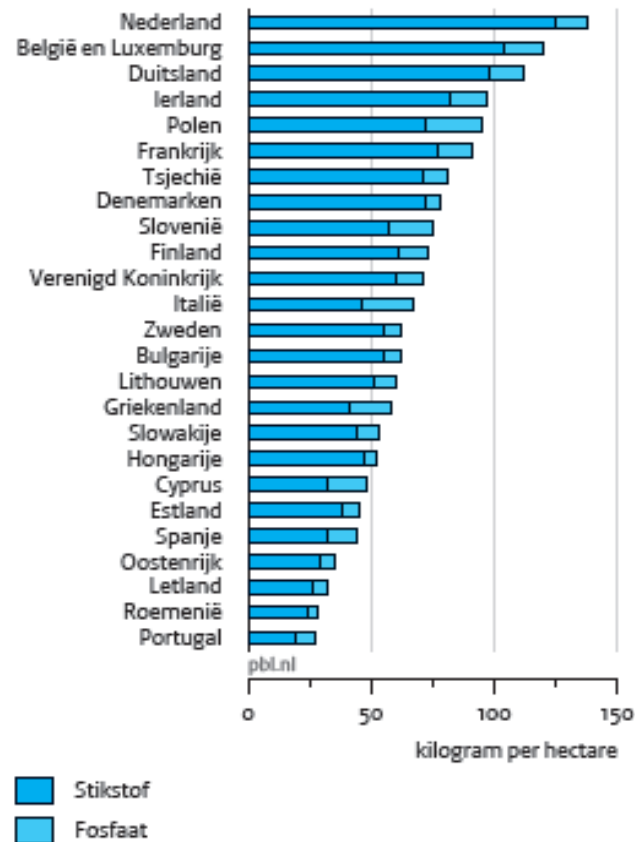# Livestock density and fertilizer use in the Netherlands

Figuur 5.5
Veebezetting en kunstmestgebruik in Europa

Veebezetting, 2007

Stikstof- en fosfaatkunstmestgebruik, 2009
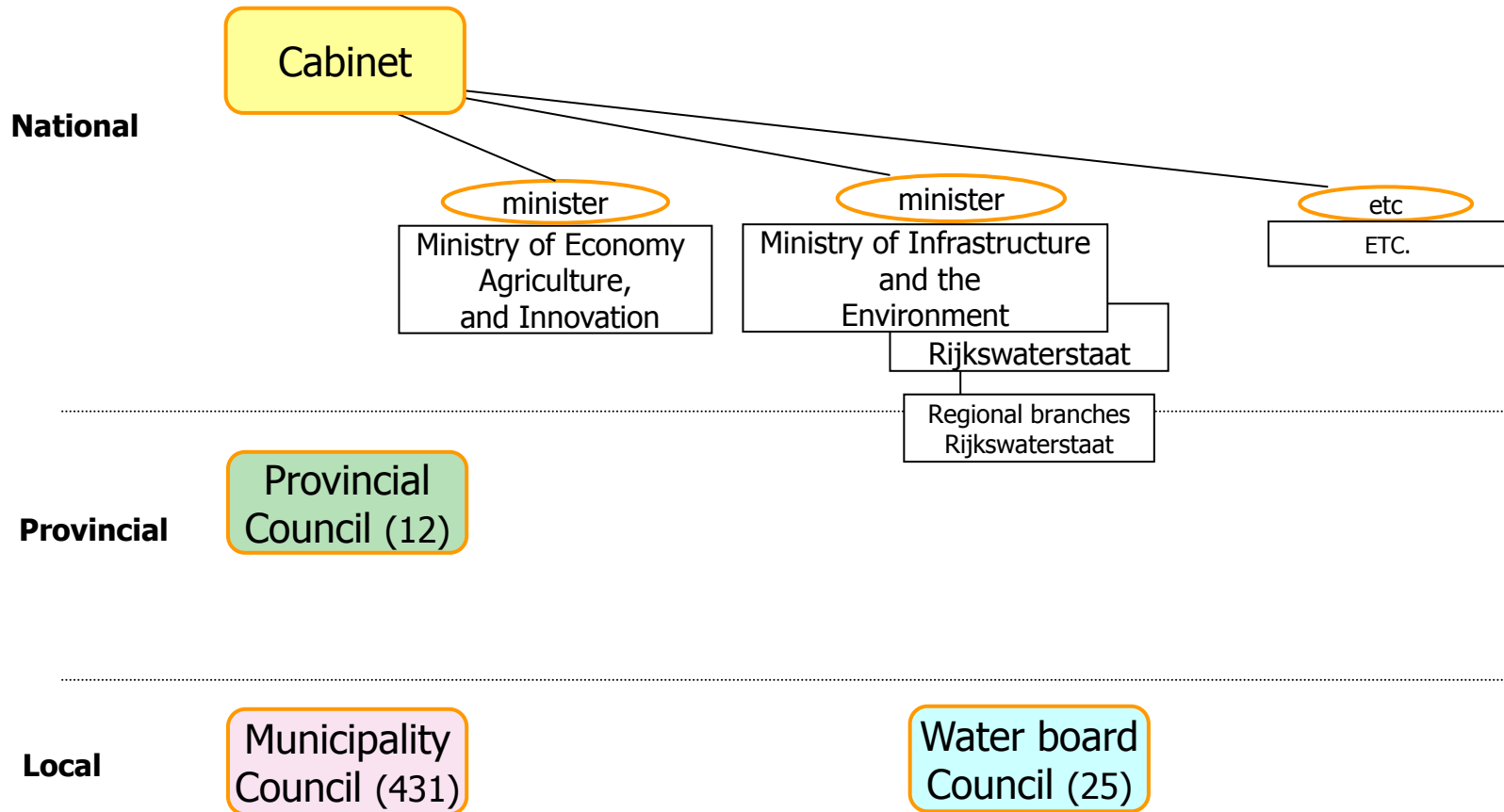
Evaluation manure policy (PBL 2012)

Institutional setting

Main environmental authorities

Two ministries:
- ministry of infrastructure and the environment
- ministry of economic affairs, agriculture and innovation

- State Water Management Agency (Rijkswaterstaat or RWS)
- 12 provinces
- 25 waterboards
- 431 municipalities
- 13 drinking water companies

Main authorities in environmental management

National

Cabinet

minister — Ministry of Economy Agriculture, and Innovation

minister — Ministry of Infrastructure and the Environment — Rijkswaterstaat — Regional branches Rijkswaterstaat

etc — ETC.

Provincial

Provincial Council (12)

Local

Municipality Council (431)

Water board Council (25)

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Finances

- Sewage water collection: direct municipality tax
  - Usually a tax per household (1163 Million euro, 2008)

- Drinking water: drinking water fee
  - Volume-based with small fixed fee for connection to grid
  - Directly paid by consumers to drinking water companies (1511 M euro, 2007)

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Finances (2)

- National water management (Rijkswaterstaat): national taxes, (investments partly from proceeds from gas production)
  - +/- 1300 M euro)

- Regional water management: direct water board taxes
  - Water system tax (989 M Euro, 2009)
  - Sewage treatment tax (1100 M euro , 2009)
  - Water pollution tax (12 M euro, 2009)

- No fee for use of surface water

- Groundwater abstraction fees paid to province depending on size of abstraction

Questions so far?

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EU Water Framework Directive (WFD)

- Aim: to protect or reach a "good status" for all water bodies
  - River basin units
  - Surface- and groundwater
  - Involving all stakeholders
    - Classification of water bodies
    - Setting objectives
    - Choosing and implementing measures

Good status?

- For natural waters: close to natural status

  - Based on reference conditions per water body type

- For heavily modified or artificial water bodies "good potential"

  - Based on reference conditions related to similar water body type
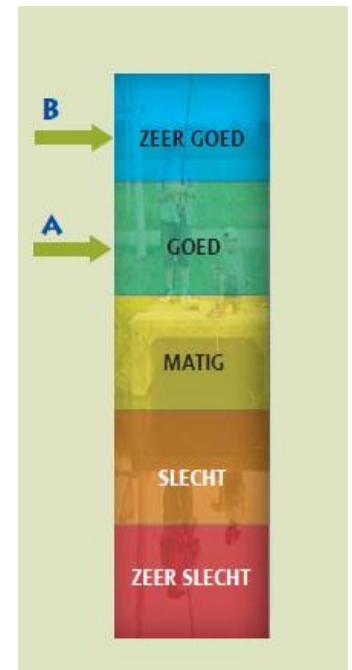
Good potential?

- Chemical:
  - defined substances with specified norms

- Ecology:
  - four quality elements measured in 'Ecological Quality Ratio': fish, invertebrates, water plants, phytoplankton
  - additional: hydro-morphology

- Assessed at water-body level

- One out, all out

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Implementation process

Timeline
- WFD accepted in 2000
- Integrated in national laws 2003
- First River Basin Management Plan 2009
- Good status or good potential in 2015

Derogations (if technically not feasible or disproportionately expensive)
- Extended deadlines, ultimately 2027
- Lower objectives

• Policy ⟷ • Science

Decision Support Systems (DSS)

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WFD implementation in the Netherlands

- Institutional arrangements stayed the same as much as possible

- To facilitate RBM a coordinating commission was introduced

- Two main constraints in meeting WFD requirements:
  - Hydro-morphology (artificial nature of water system)
  - Nutrients (2/3 agriculture, 1/3 waste water treatment plants)

Need for expertise

- New way of looking at water quality

- "New" elements to take into account

- Need to set attainable objectives

- Need to know the effect of measures on ecology

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Aquarein, 2003
(Alterra on behalf of Min. of Agriculture)

- Scenario A: 2/3 agricultural area out of use

- Scenario B: all of the area

Tabel 1. Landbouwareaal, NTW, totale NTW en de directe en indirecte werkgelegenheid voor beide schaalniveaus en ambitieniveaus als percentage van de uitgangssituatie

Ambitieniveau en schaal	Landbouw areaal (%)	NTW/ha (%)	Totale NTW (%)	Directe werkgelegen-heid (%)	Indirecte werkgelegen-heid (%)
Referentie 2015	100	100	100	100	100
Ambitieniveau A, grof	35	94	33	36	36
Ambitieniveau A, fijn	31	96	30	32	32
Ambitieniveau B, grof	0	0	0	0	0
Ambitieniveau B, fijn	0	0	0	0	0

Ambitienotitie: (ambition brief)

The government's approach is

- realistic and pragmatic, leading to
- achievable and affordable objectives
- on the basis of minimum requirements of WFD and present Dutch policy

Source: Staatssecretaris van Verkeer en Waterstaat (2004). Pragmatische implementatie Europese Kaderrichtlijn Water in Nederland. Van beelden naar betekenis. Kamerstukken II, vergaderjaar 2004-2005, 28 808, nr. 12.

Characterisation of water bodies

- Determine boundaries

- Determine type (M1-32; R4-18; O2; K1-3)

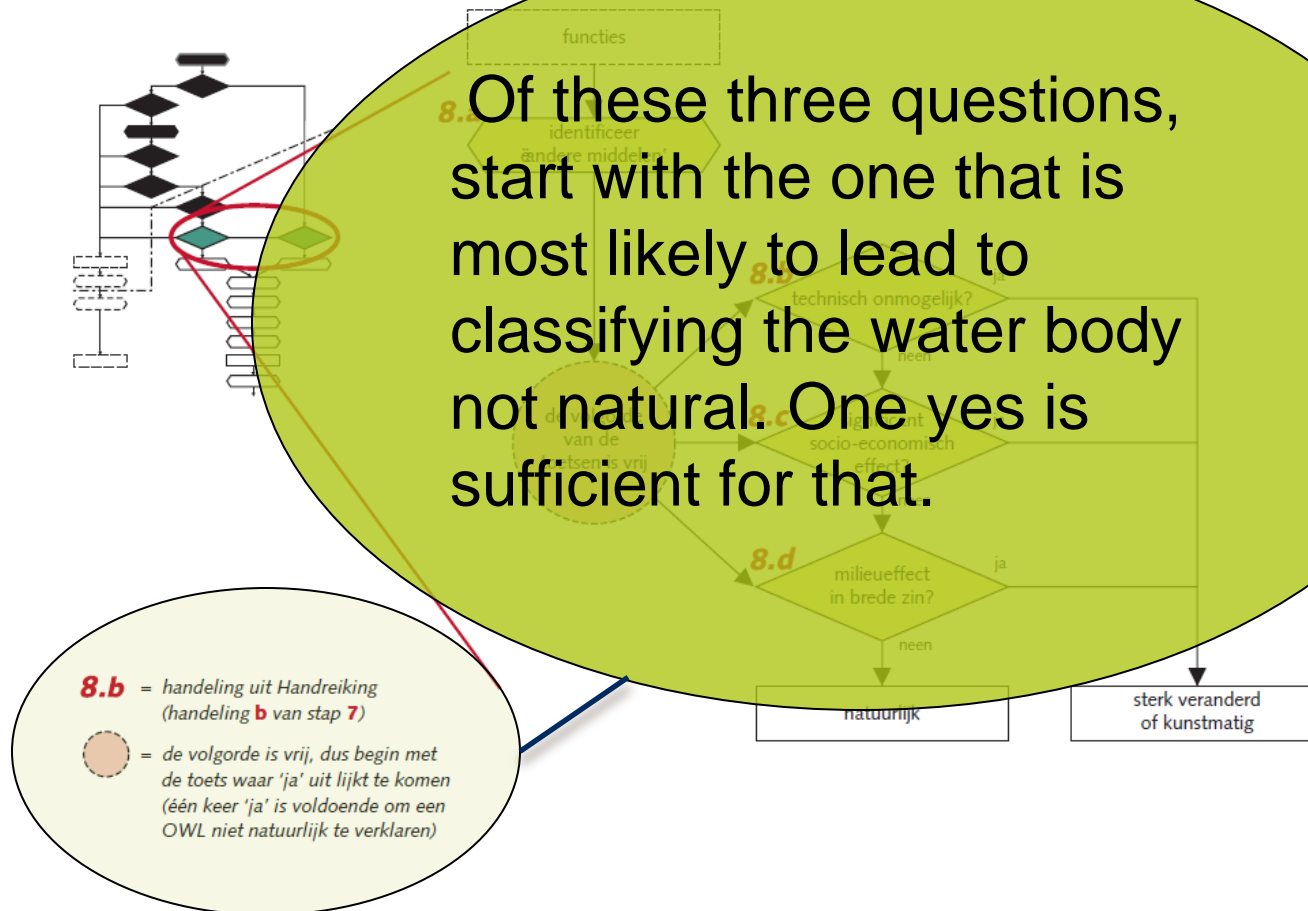- Classification: natural, heavily modified, artificial

How to do this?

- Defining boundaries water bodies:
  Where possible on the basis of existing procedures. Avoid small vulnerable waters to become the norm for large waters by separating them.

- Classification of water bodies:
  Where possible classify waters as artificial and heavily modified, as this gives authorities more leeway in assigning objectives and measures

Source: Staatssecretaris van Verkeer en Waterstaat (2004). Pragmatische implementatie Europese Kaderrichtlijn Water in Nederland. Van beelden naar betekenis. Kamerstukken II, vergaderjaar 2004-2005, 28 808, nr. 12.

Determine state of water body (MEP/GEP)

Figuur 12
Stap 8 bestaat uit het toetsen of de functie(s) met andere middelen kunnen worden gediend. Deze toets bestaat in essentie uit drie toetsen die in willekeurige volgorde mogen worden uitgevoerd.

functies

8. identificeer andere middelen

8.b technisch onmogelijk? ja

neen

8.c socio-economisch effect

8.d milieueffect in brede zin? ja

neen

natuurlijk

sterk veranderd of kunstmatig

Of these three questions, start with the one that is most likely to lead to classifying the water body not natural. One yes is sufficient for that.

8.b = handeling uit Handreiking (handeling b van stap 7)

= de volgorde is vrij, dus begin met de toets waar 'ja' uit lijkt te komen (één keer 'ja' is voldoende om een OWL niet natuurlijk te verklaren)

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Expertise and WFD in the Netherlands

- Mutual influencing of science and policy

- Experts and policy interact, the outcome of the process can be called negotiated expertise

- Dominant part for water board experts in supplying expertise

Decision support tool

Original objectives:

- Support setting objectives and choosing measures

- Communication tool to support stakeholders discussing alternative measures

- Users would be policy developers and decision makers

River basin database

computational core

+

knowledge, data and models
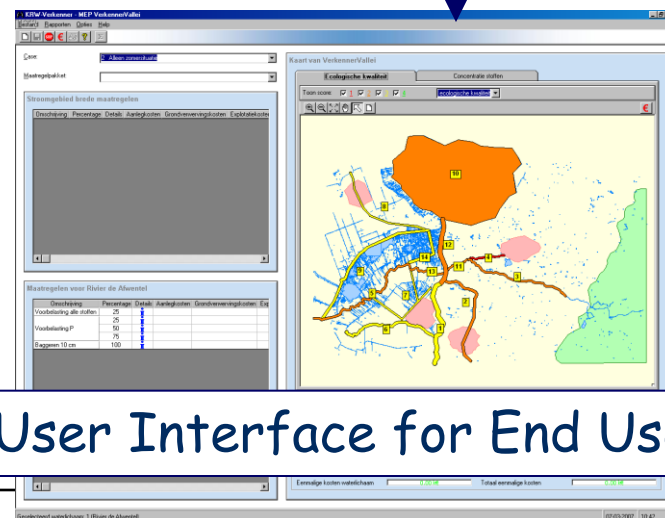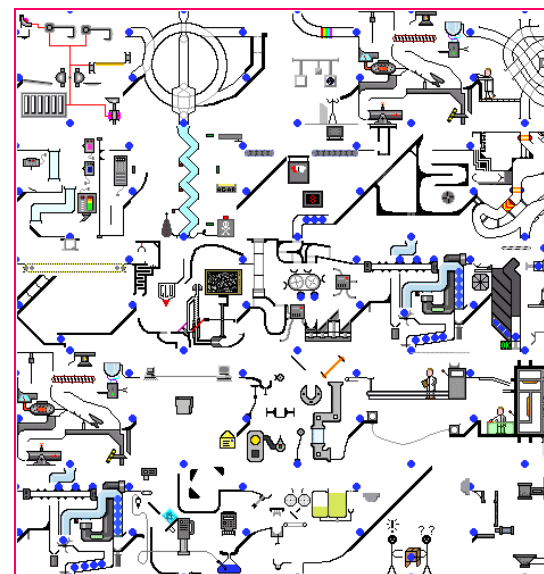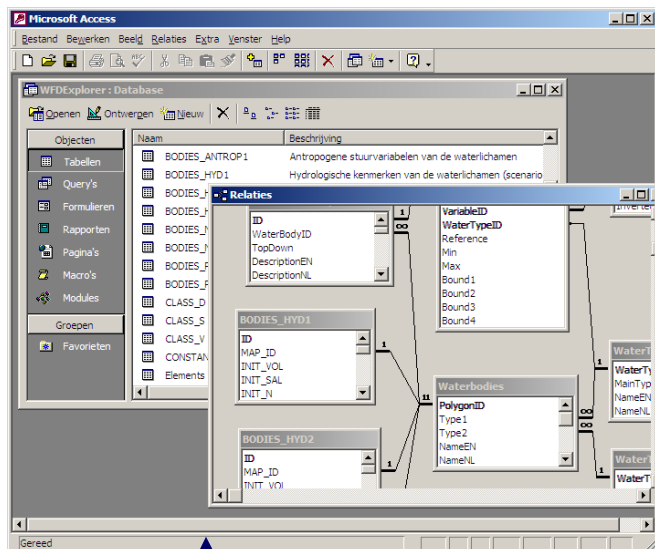
User Interface for End Users

2005   2006   2007   2008   2009   2010

Time
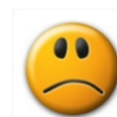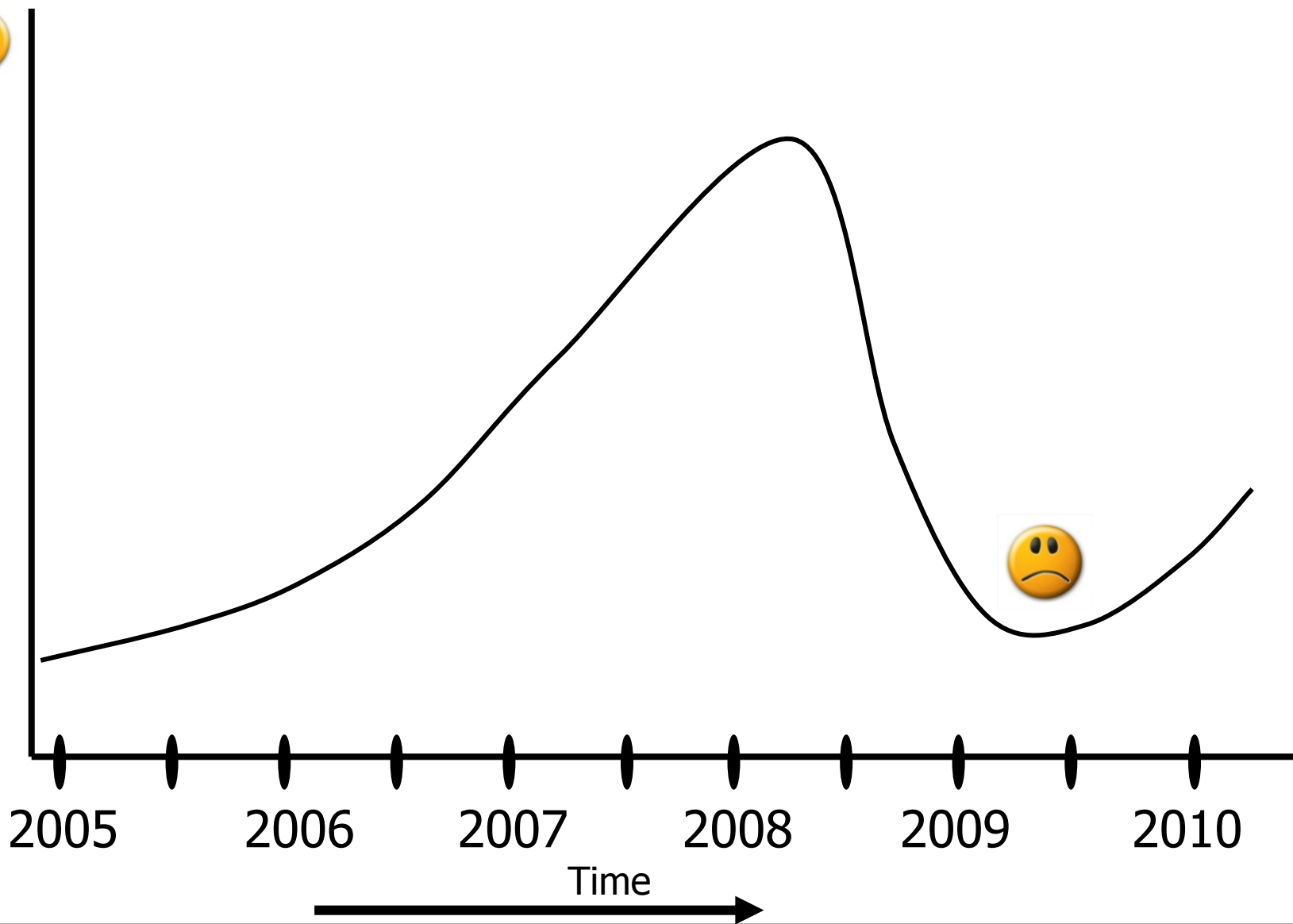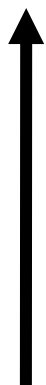
Latour

- Latour presents a method of studying science and technology that is related to social theories on the relation between science, technology and society.

- Latour demonstrates in his work that science, technology and society are interwoven in such a way that they cannot be usefully distinguished. They form hybrid networks.

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How did I use Latour?

- Look at controversies
  - The nature of the instrument

- Follow the lines of influence to draw actor-networks

- Treat people and technology 'equally'

Methodology proper

- Data collection
  - Documents
  - Interviews
  - Observations of meetings (mostly project team)

- Atlas.ti
  - Analysis of content
  - Drawing of networks of influence

- Interpretation of the process of shaping WFDE

Findings

- The nature of the instrument changed during the development process

- This change can be seen in:
  - Who supports the instrument?
  - What it is supposed to do?
  - Who is the user?

- Why did it change?
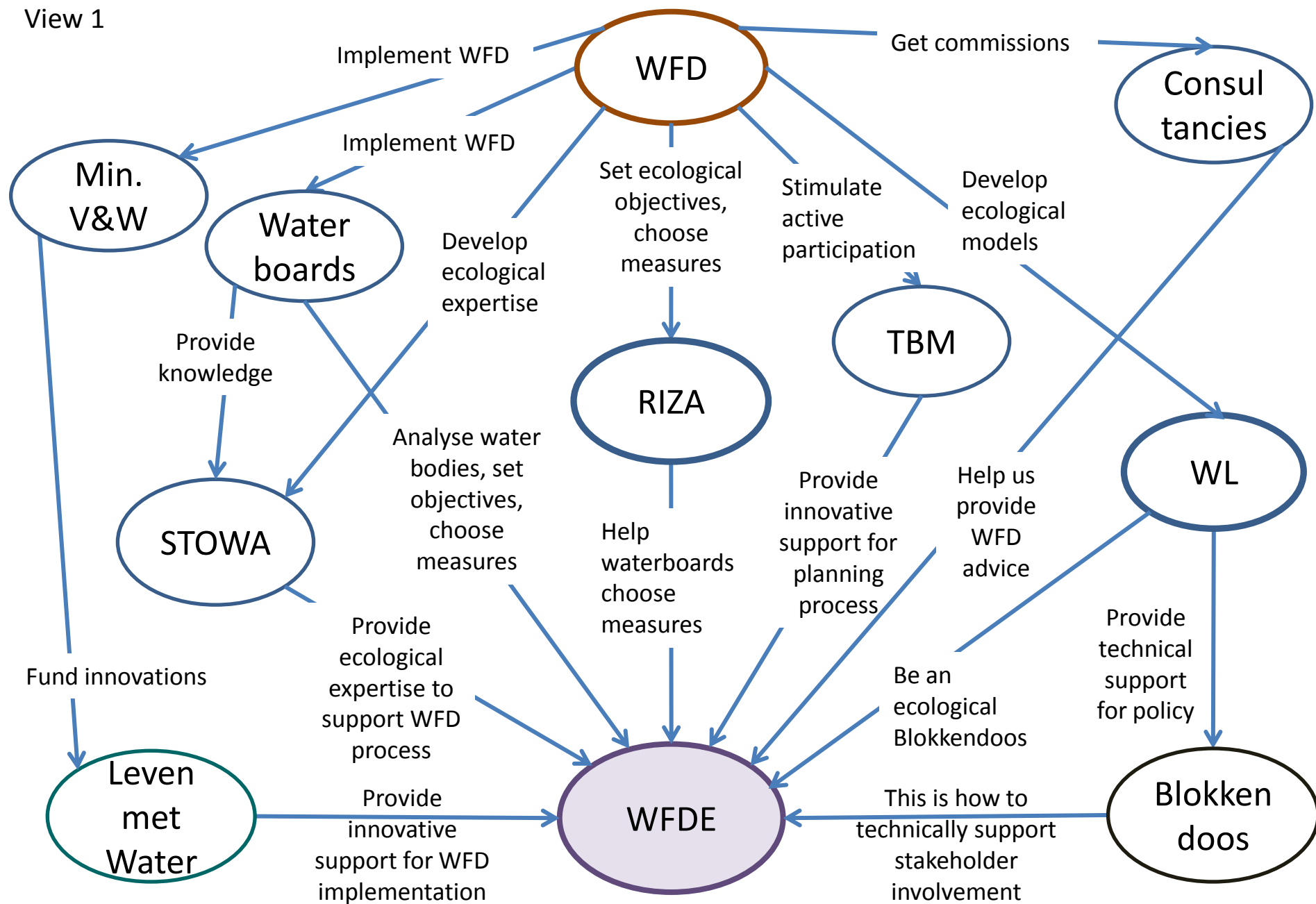
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View 1

Decision support tool

Original objectives:

- Support setting objectives and choosing measures

- Communication tool to support stakeholders discussing alternative measures

- Users would be policy developers and decision makers

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The actor-network shows:

- Actor-Network snapshot captures a moment in time

- Different actors translate the demands of for instance WFD in different ways, related to their own interests and expertise

- The nature of technology is determined by both (human) actors and technology

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Timeline WFDE-1

2005 Prototype development
- Bucket model as background
- Focus on user interface and (deterministic) ecology

2006 Elaboration of prototype
- Extension to all water body types, long list of measures
- 4 pilots

End of 2006
- end of research phase: two partners leave project, two partners merge, funding ends
- More traditional project structure with funders commissioning the development

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Timeline WFDE-1

2007, 2008 Implementation
- First release in 2007
- Regular new releases
- Helpdesk, courses, support, release administration

- Gradual shift to more expert users

2009 Evaluation
- Lack of trust in results
- Little use of the instrument for WFD implementation
- Shift to statistical instead of deterministic ecological model
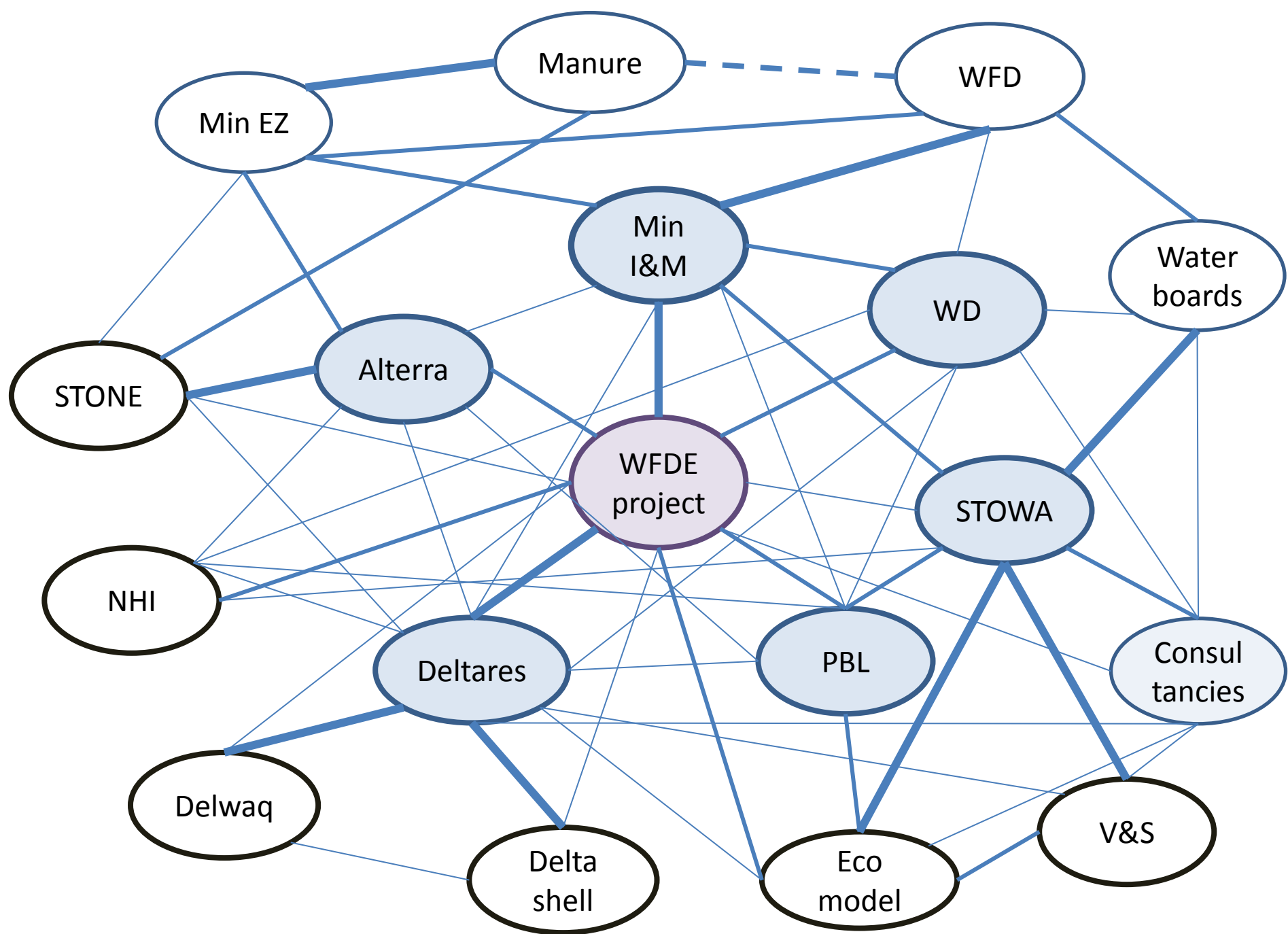
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Timeline WFDE-2

2010 start redesign
- No longer a communication tool
- A specialist tool for analysis and prediction
- Statistical ecological model
- Many more connections with other instruments
- More connections with other policy areas

2011, 2012
- National pilot
- A large schematisation of the entire country in 20.000 nodes
- Evaluation of manure policy

To summarize:

- WFDE is an instrument to supply background information to the actor in the planning process

- WFDE is now an instrument mainly for use by national research institutes and perhaps consultancies on behalf of water boards

- Users are experts in modelling

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Role of experts and expertise in policy making

- Expert is part of actor-network

- Technology is part of actor-network

- Expertise has a negotiated nature: the content and the value of it depend on the actor network in which it is produced and used.

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Discussion/conclusion

- WFDE can be usefully studied as a hybrid system

- Looking at different snapshots in time shows how the system changes

- The nature of WFDE changed through a process of negotiations between actors and technology

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Thank you for your attention.

Any Questions?