Government of the Netherlands

AERIUS

Science at the core of policy and practice

an integrated approach to nitrogen

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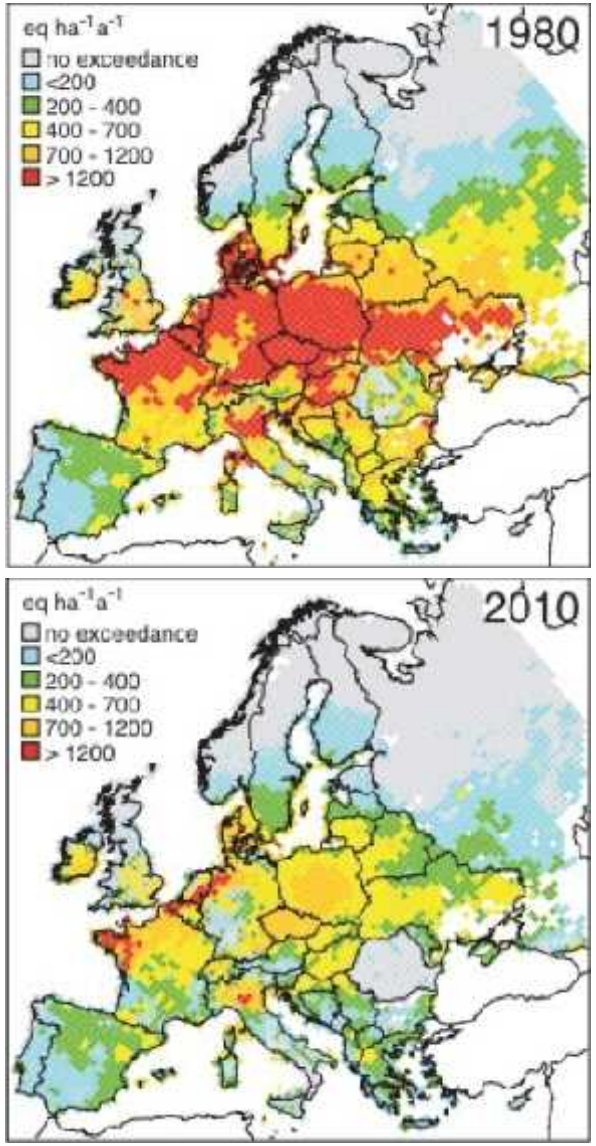


Introduction

- The European Birds/Habitats Directive ensures the conservation of a wide range of rare, threatened or endemic animal and plant species
- Excess in nitrogen as well as hydrology are the two key components in northern Europe

Dutch integrated Approach to Nitrogen

- 118 of 162 sites with excessive nitrogen deposition
- A significant decrease is required to achieve N2000 goals in terms of conservation objectives of the EU directive

- Rigid norms, Dutch Council of State (excess defined by critical loads)
- Assessments focus only on Nitrogen
- Unrealistic level of detail

- Difficulties with assessment of accumulating effects
- Permits issuing in general comes to a halt
- When permits issued it is a costly and lengthy processes

Dutch integrated Approach to Nitrogen

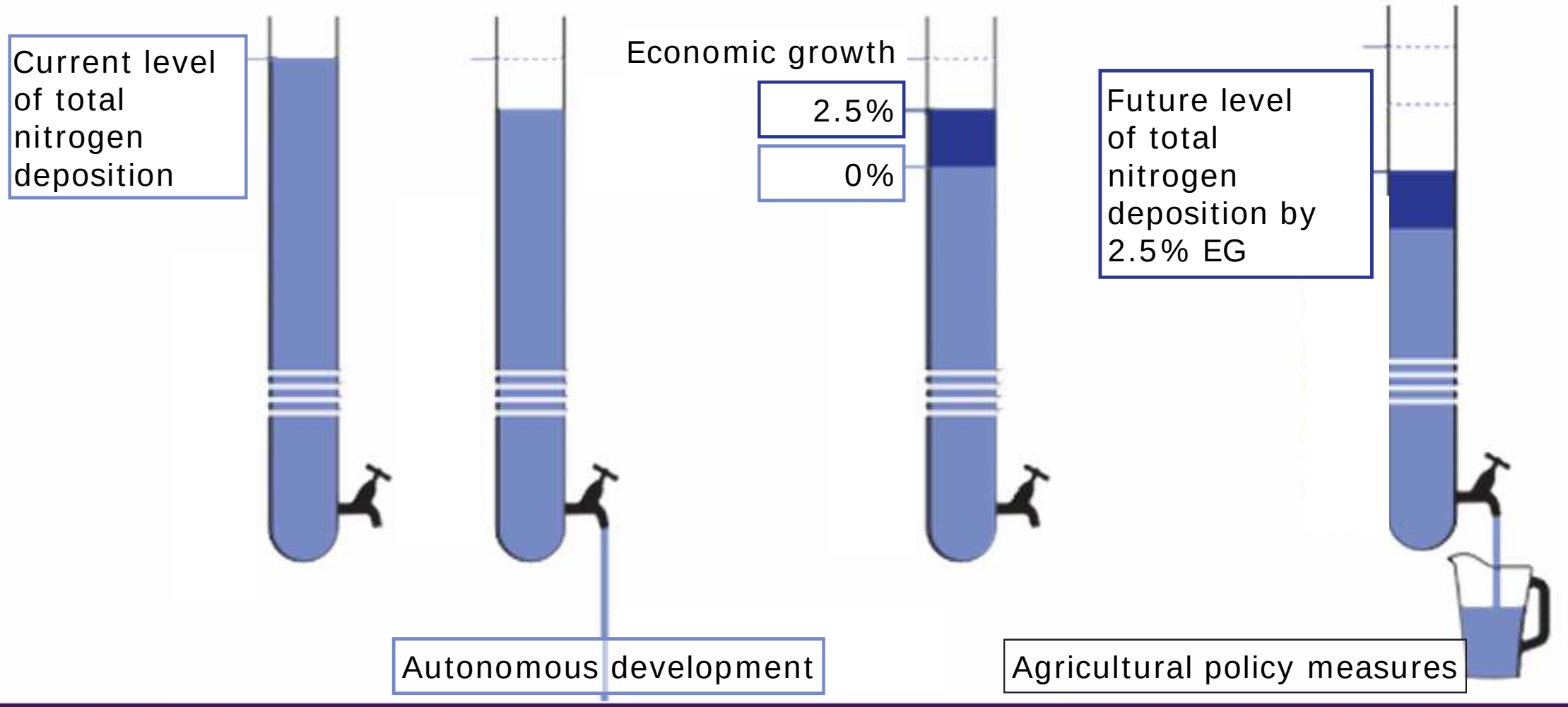
Ecological restoration measures

Accounting for nitrogen deposition

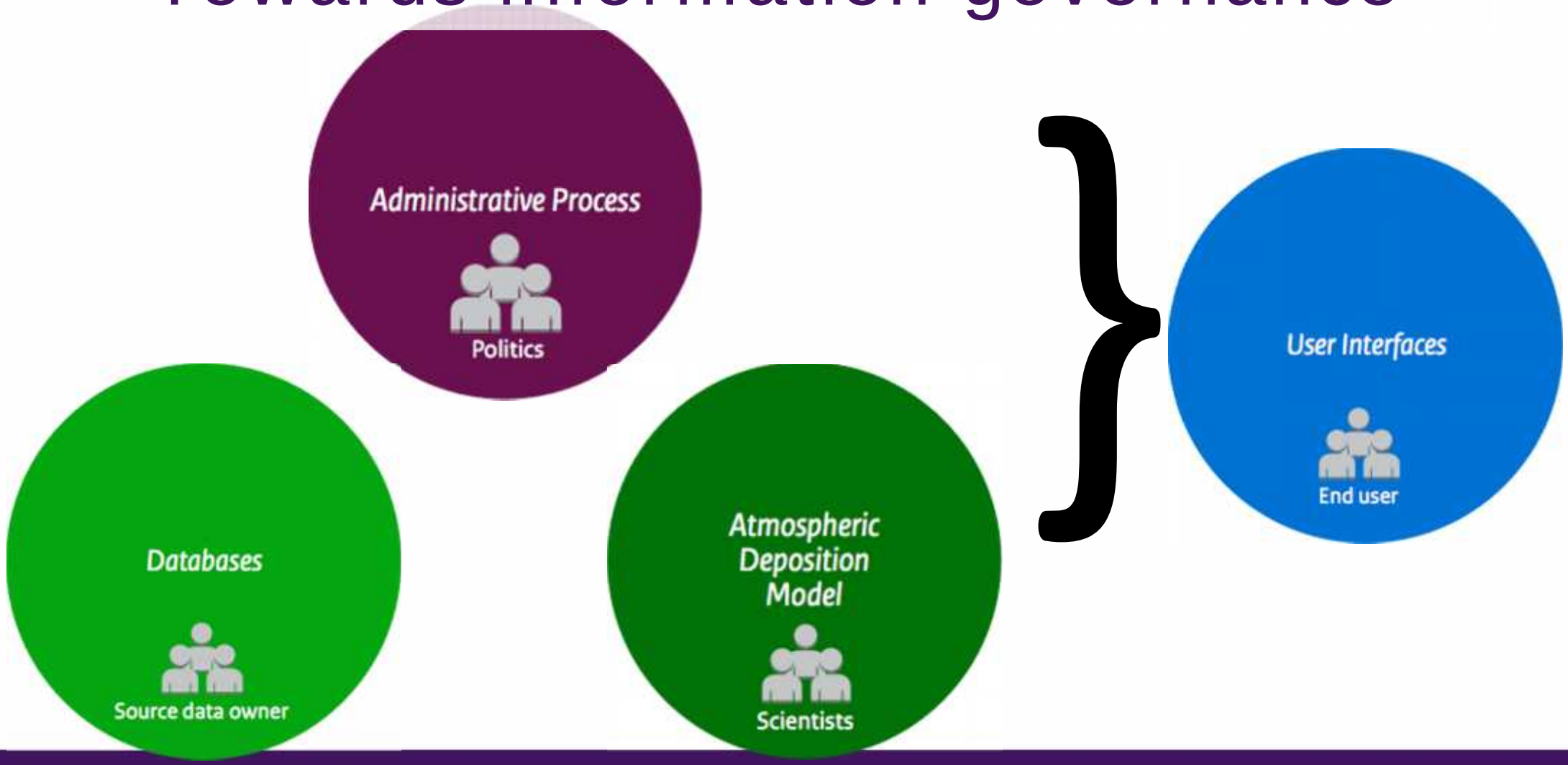
Dutch integrated Approach to Nitrogen

- The premise of PAS is that a reduction in nitrogen deposition and extra effort on ecological restoration will enable recovery of habitats
- Assessment on Nitrogen, Hydrology and other major effects that threaten the quality of habitats
- Legally embedded in National law
- Room for development (permitting expanding or new activities)
- Monitoring and hands-on control

Room for development



Towards information governance



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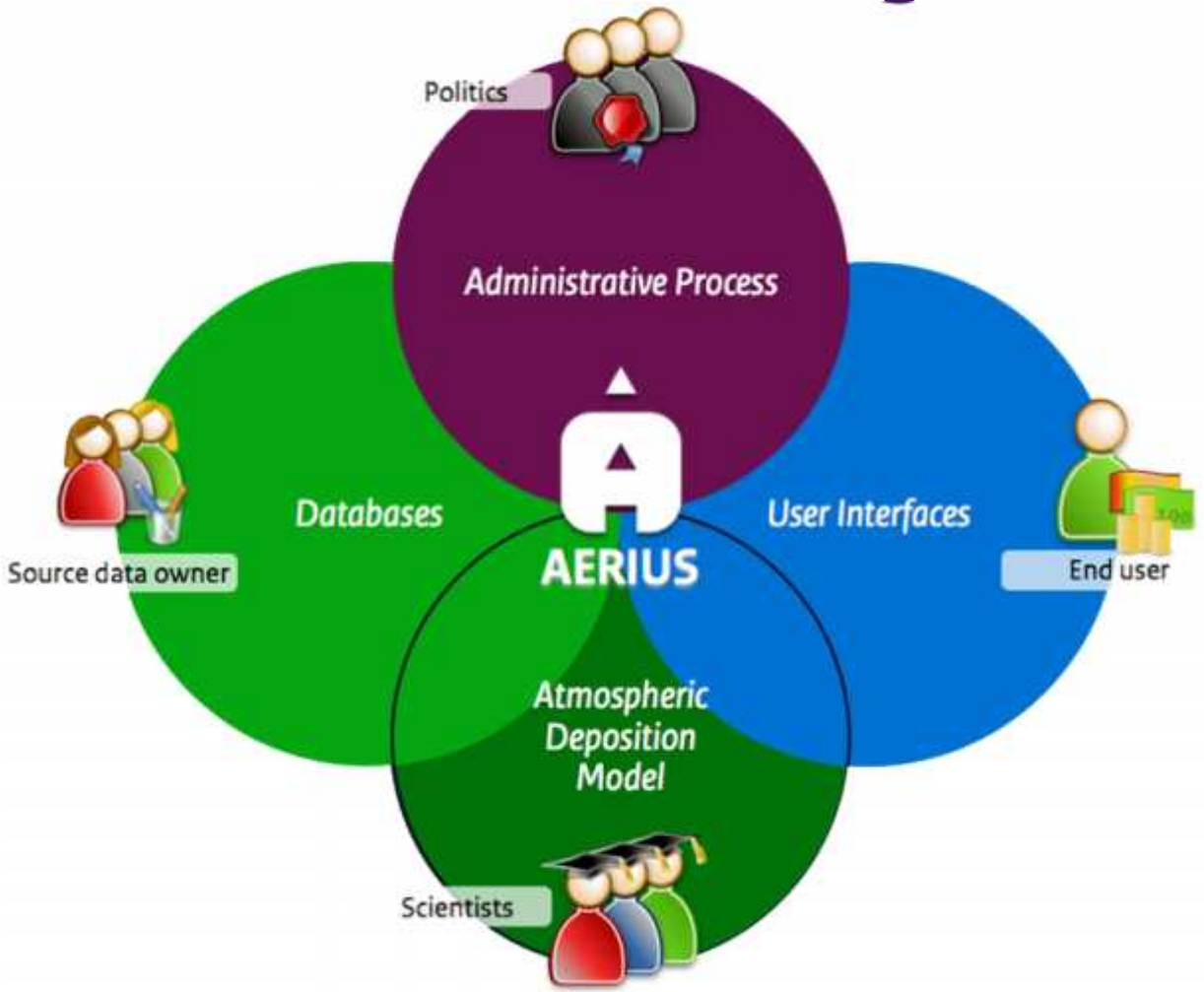


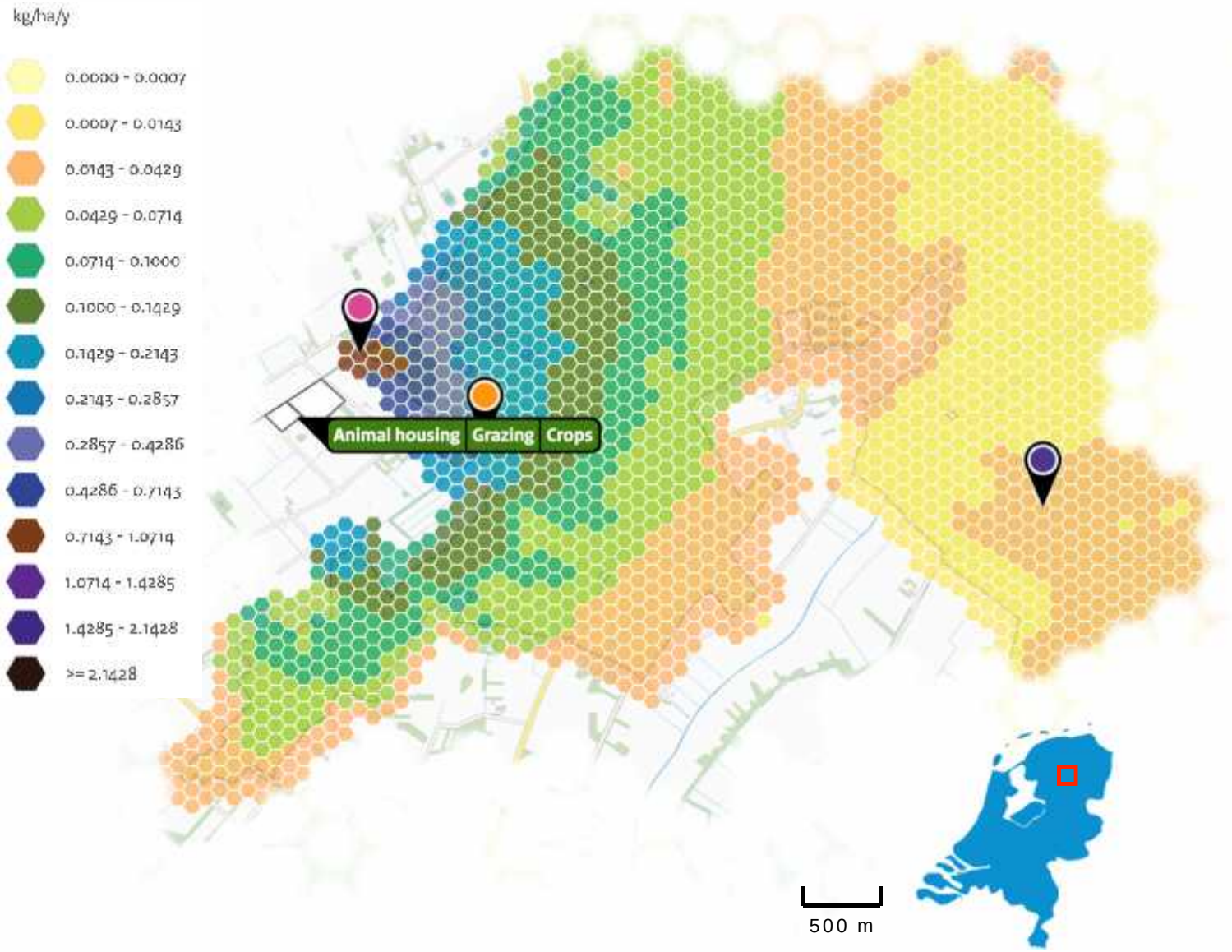
What is AERIUS?

AERIUS is an Open Source software instrument specifically developed to support the Integrated Approach to Nitrogen for the evaluation of policy decisions, ecological assessments as well as issuing permits.

AERIUS combines the complexity of atmospheric transportation modeling, ecological assessments and reporting with the ease of use of e.g. online banking.

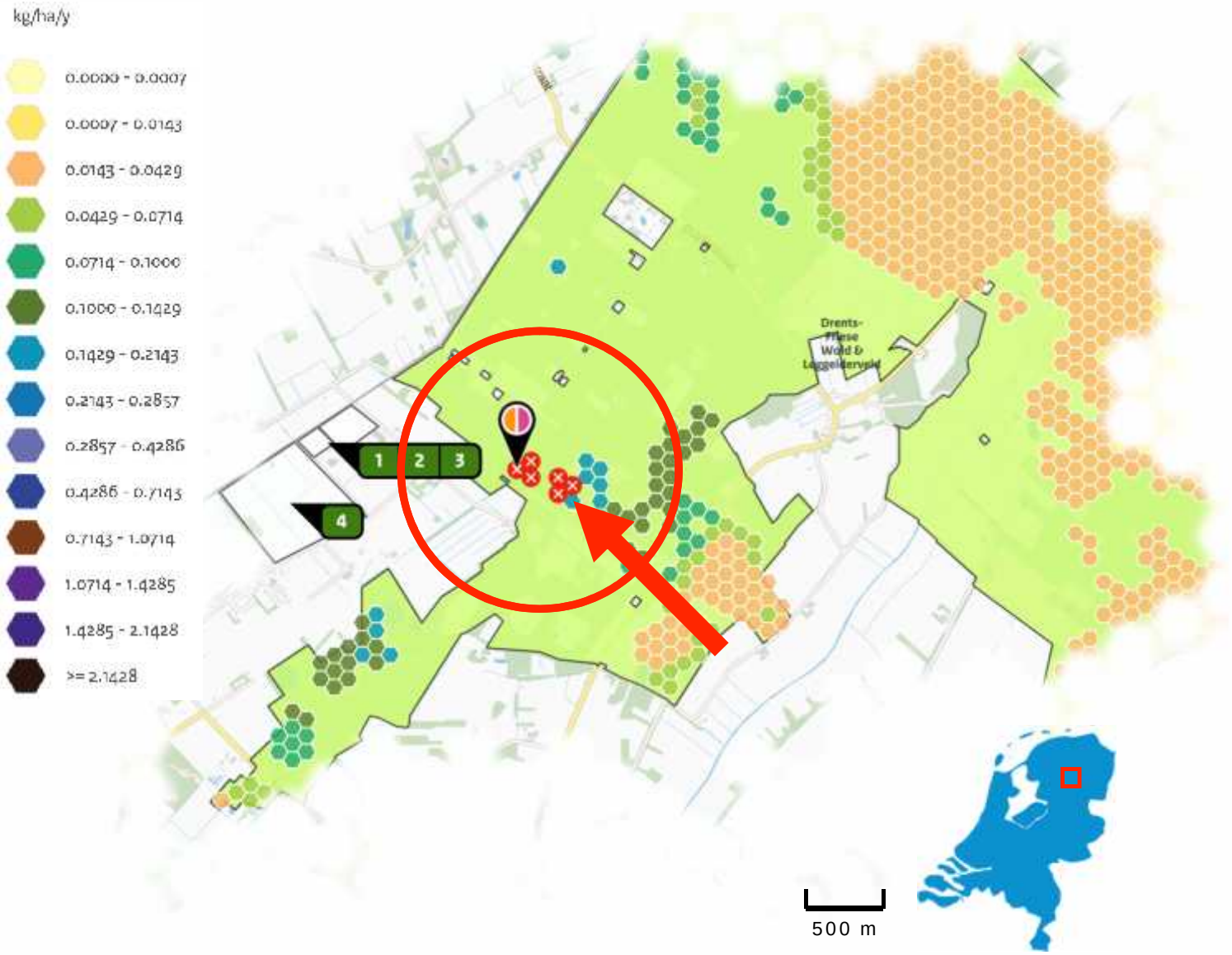
AERIUS products are publicly available and free of charge

The AERIUS N-cycle



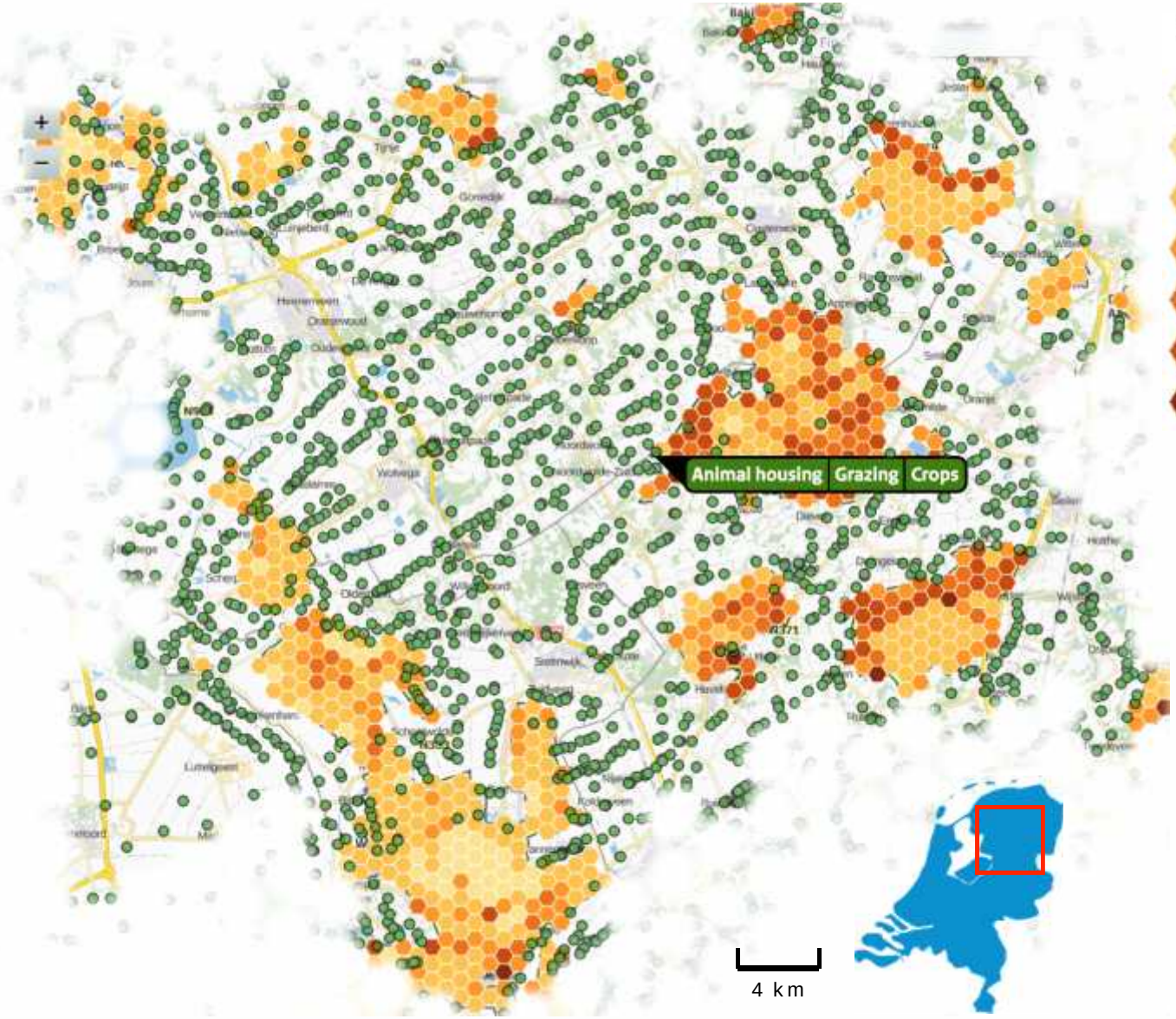
Local

- Asses nitrogen impact of individual emission sources, project and plans
- Incorporate multiple sectors if necessary



Local

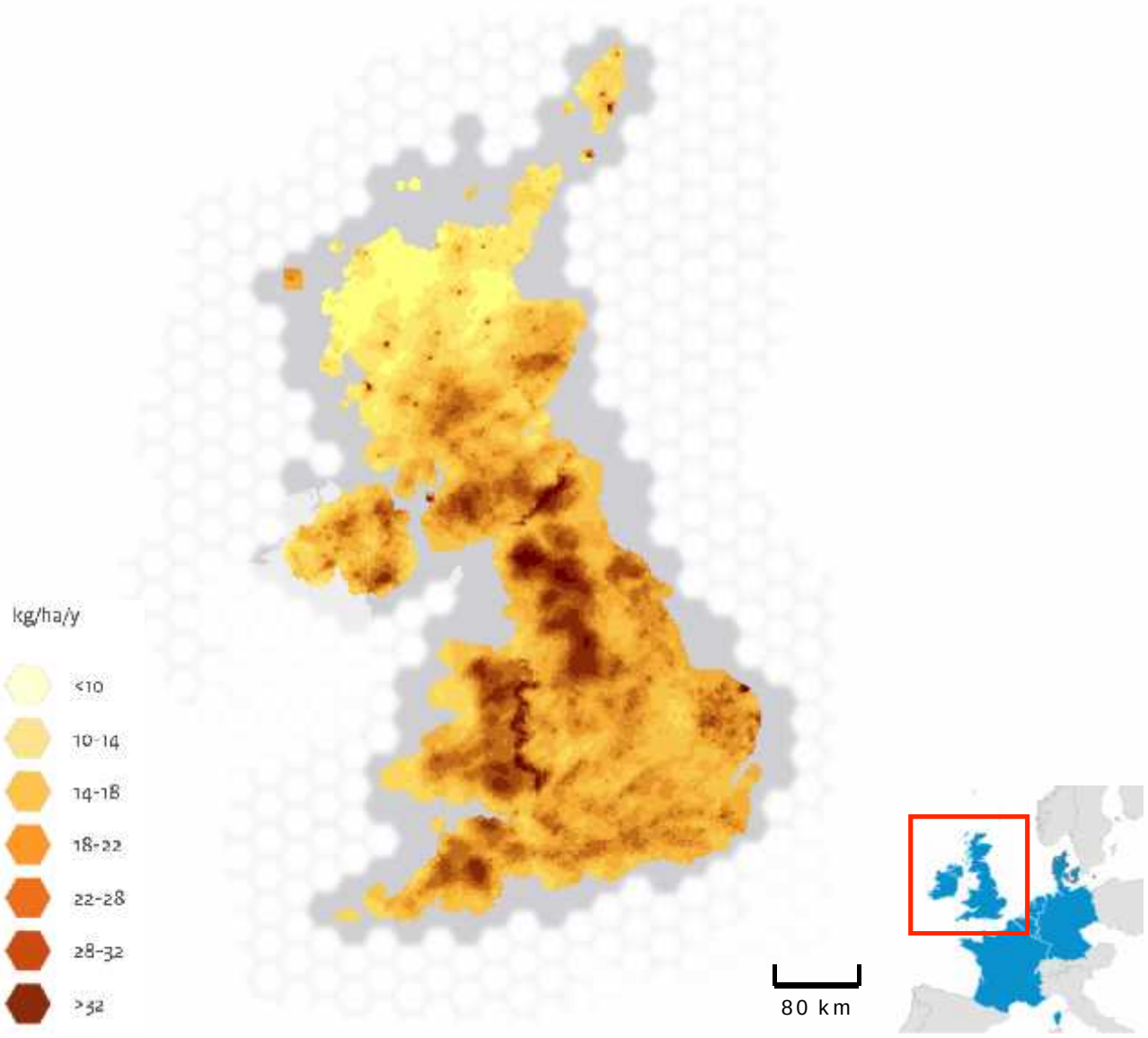
- Immediate feedback whether or not the project is eligible for required permitting
- If so, permit request can be done directly from AERIUS



Regional

- Asses nitrogen impact from multiple sources
- Across multiple sectors if necessary
- Evaluate regional policy drivers

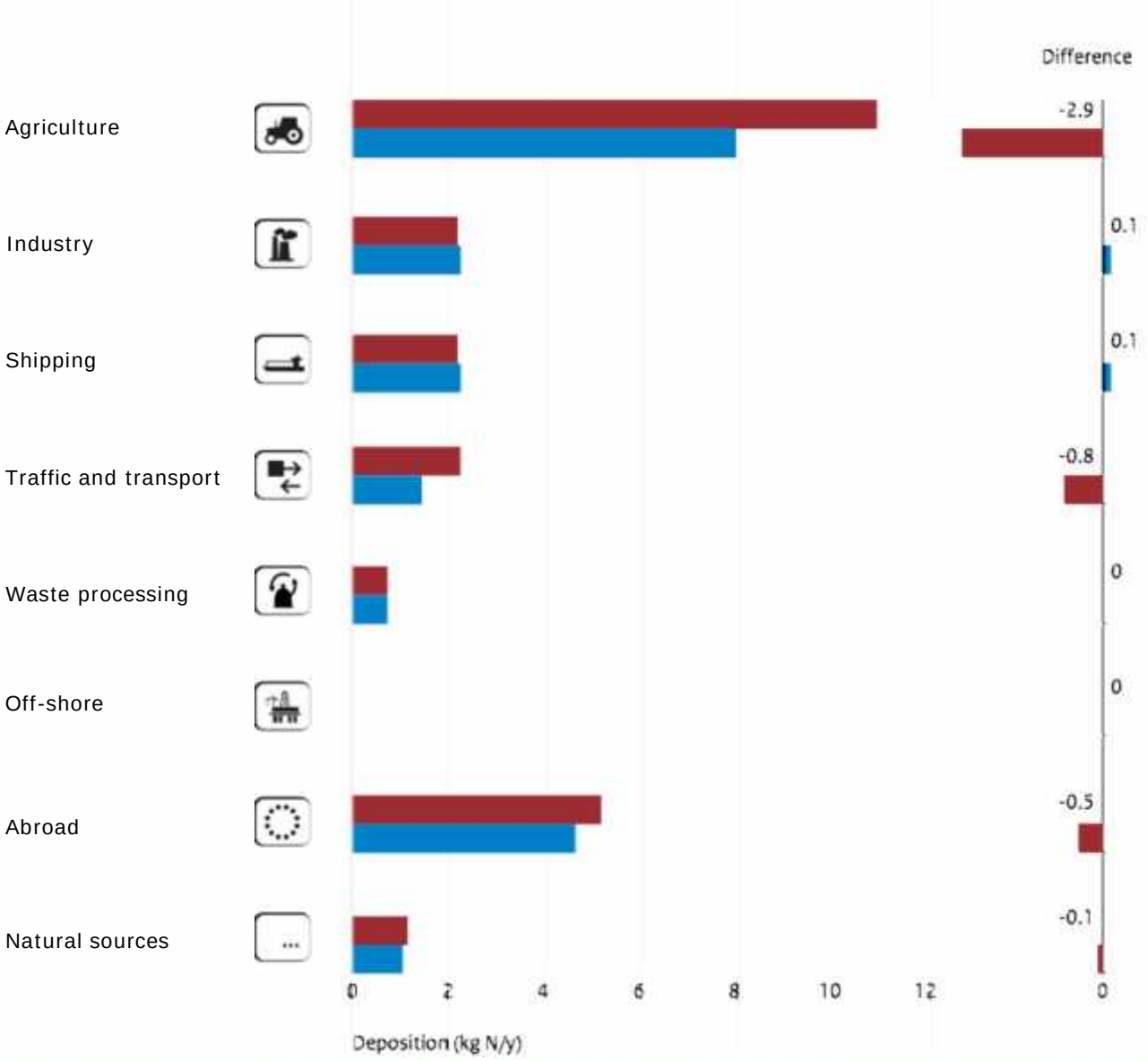
National



- Asses impact of different policy scenario's
- Monitoring of effects of policy decisions

Continental

- Asses potential impact of different policy scenario's
- Monitoring of effects of policy decisions



On every level

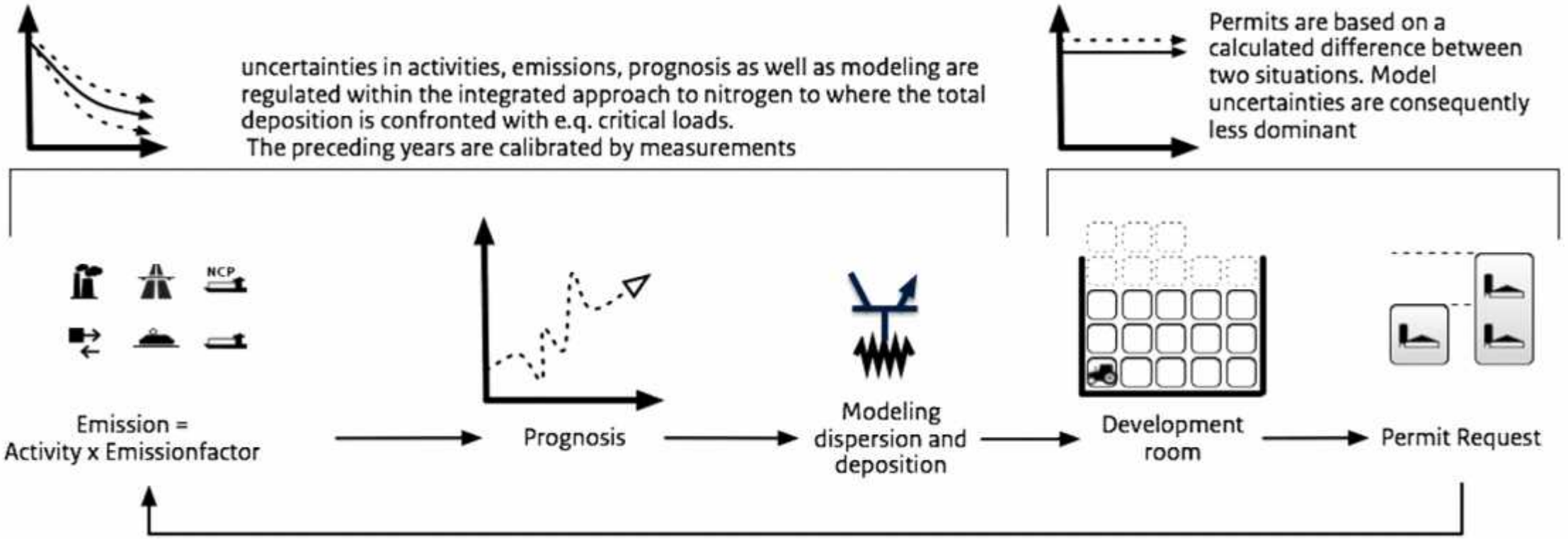
- Insight into contribution of different sectoral emissions
- Insight into potential effects of different policy scenario's

Quick remarks on modeling approach

- Operational Priority Substances Model (OPS)
  - long-term climatological trajectory model
  - DEPosition of Acidifying Compounds (DEPAC)
  - Compensation point model
- On going research for use of EMEP(4NL)

Jaarsveld et al. (2012)
Zanten et al. (2010)
Wichink Kruit et al. (2007)

Model uncertainties and the integrated approach



https://www.aerius.nl

https://gitlab.com/AERIUS/AERIUS

Concluding remarks

- “Scientifically” utilizing all existing knowledge and data in a single “ecosystem” is a great challenge
- But delivering the information into a form that made the user susceptible is the greatest achievement
- I’ll be happy to give you more detailed information or a demonstration

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