Storyline & Scenarios

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1. Round of workshop in 2014

First set of Workshop were in:

- Denmark
- Sweden
- Poland

Focus: Measures

2. Round of Workshops

2. round of workshops in autumn 2016

- Poland
- Sweden
- Denmark

Focus: Scenarious und Storyline

Spatially differentiated measures

Reduction of N varies with factors like soil-type, soil depth, slope and how much tile drainage there is.

If the retention is high, lower amounts of N reach the stream.

Spatially differentiated measures (like different amount of N used, placement of wetlands, land-use) can help nitrate reduction

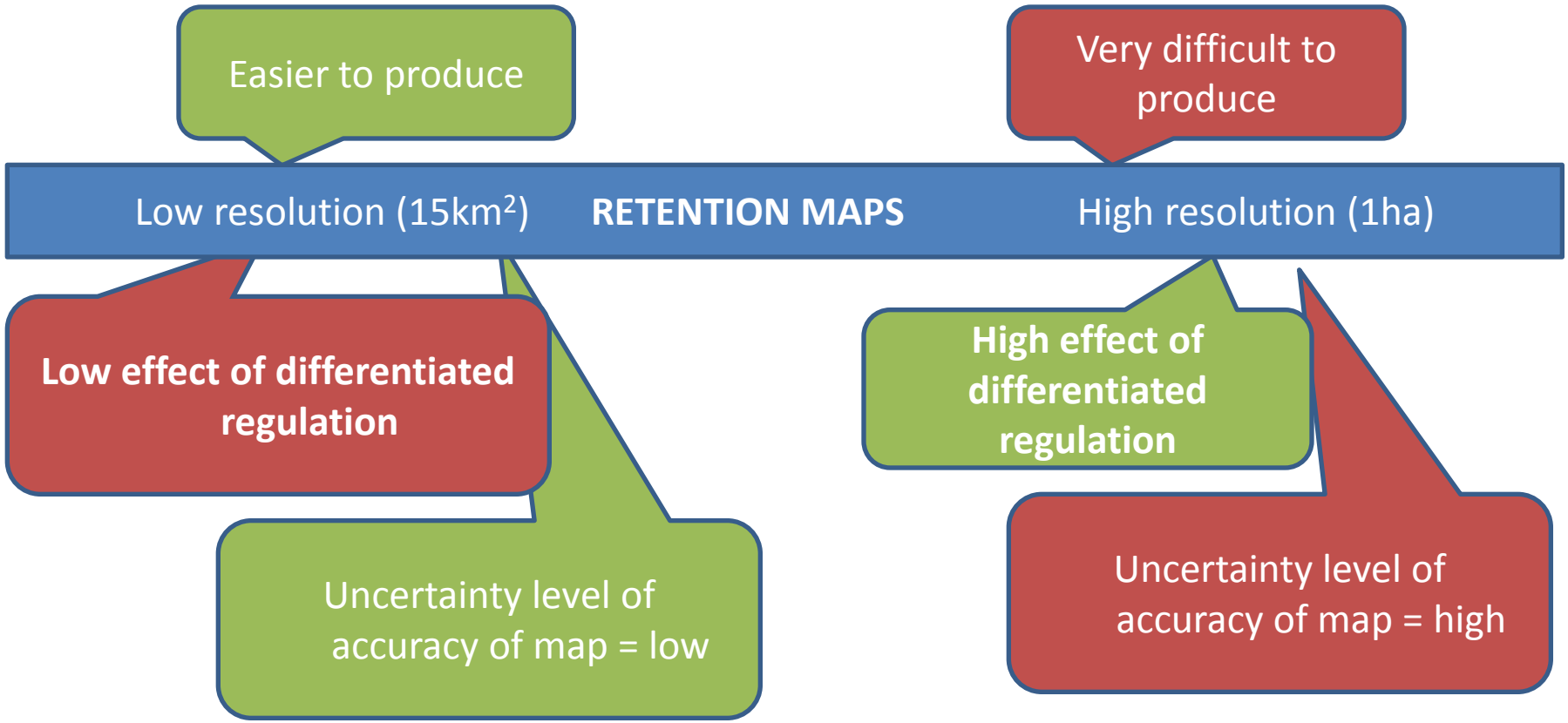
Spatially differentiated measures II

- In the Norsminde and Odense catchment area (Soils2Sea Case Study area in Denmark), 10-20% extra nitrate reduction can be obtained in the subsurface through optimal spatial location of crops.

Retention maps

- Retention maps estimate the N-transport and N-retention based on models and observation data.
- Retention maps can be one tool to exploit potential of spatially targeted measures.
- To achieve the best results, retention maps with a fine spatial resolution (1- 25 ha) are necessary.
- The level on uncertainty rises with the resolution (= is the map showing real conditions)
- In Denmark currently retention maps at around 1500 km2 resolution are used – they cancel out almost all economic and environmental gains of a spatially differentiated approach.

Retention maps



Methods

World Café

- *Table 1:* 'Centralised' context
- *Table 2: flexible management*
- *Table 3: self-governance*

'**Centralised**' context

In the '**Centralised**' context, the **State makes all decisions** on the use of measures, including **fertilisation norms**, at farm or field level. The government uses retention maps at a **low resolution** (e.g.15km^2) to produce spatially differentiated regulations for land-use. This differentiation can increase the effectiveness of catch-crops, constructed wetlands, and help to define fertilisation norms. Government **monitors at large catchment** level to evaluate if N reduction targets to coastal waters are met. To monitor and control implementation, farmers are required to **report detailed** plans for cropping systems and fertilisation. Farmers fulfilling the government requirements receive **subsidies** from the EU CAP.

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‘flexible management’

Under the ‘**flexible management**’ scenario, authorities and farmers **work together** to reduce N emissions through a market-based ‘**cap and trade**’ system. All farmers are obliged to **participate**. Based on retention maps with relatively high resolution (e.g. 25 ha), permits for N loading are distributed on a field basis. The community of farmers can **trade N load allowances amongst themselves**. To document compliance each farmer reports with detailed plans for cropping systems and fertilization. Non-compliance with individual allowances is **sanctioned**. Government authorities can **intervene** in the market by buying up or selling permits. The government performs **control monitoring at catchment level** to evaluate if the reduction targets to the coastal waters are achieved.

„self-governace“

The ‘**self-governance’** approach describes a **low level** of State involvement. Farmers in the catchment **self-organize**, (e.g. forming a water council) to decide on measures to reach government-set targets. Detailed retention maps - at 1 ha resolution - can be used by farmers as a tool for spatially differentiated management. A system of **self-monitoring** is established. Authorities provide **financial and technical support** and information (e.g. establishing a water council with a technical support, detailed retention maps, monitoring process support). The authorities will **monitor only the entire catchment** at the outlet. **Subsidies** are based on reaching the target loads for the entire catchment and their **distribution is negotiated** between the farmers. If farmers/water council cannot agree , a central regulation based on Scenario A is imposed.

MoSCoW

- M - MUST (necessary, essential, and not for discussion)
- S - SHOULD (should be addressed, if all MUST-requirements can still be achieved)
- C - COULD / nice to have (could be implemented/addressed, but only if items above are not hindered)
- W - WON'T (not of interest now/ could be addressed at a later stage)

Thank you!

For more visit:

www.soils2sea.eu

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