Soils2Sea:
Future governance approaches for reducing excess nutrients at local farm scale – Part II

24 November 2016 | Norsminde Kro

Programme	
16:00-17:30	Welcome from Hans Jakob Fenger (Norsminde Catchment Council) and Jens Gammelgaard (Chairman of local farmers' association (DLMØ)). Opening presentations from Flemming Gertz (SEGES) and Professor Jens Christian Refsgaard (GEUS) • *Discussion of current state of play including Danish government plans for the efforts to reduce N-loads in Denmark over the next two years.* • *Brief presentation of Soils2Sea and purpose of workshop*
17:30-19:00:	Informal talks and dinner
19:00-20:45	Group work on governance scenarios **World Café Round 1** *Scenario A – centralised (2 tables)* *Scenario B – flexible (market-oriented) (2 tables)* **World Cafe Round 2** *Scenario C – self-governance (water councils) (4 tables)*
20:45 - 21:15	**Summaries and closing remarks**

Summary of the workshop

Introduction

The second BONUS Soils2Sea workshop in the Danish case study region was held on 24 November 2016 at Norsminde Kro Hotel. Invitations to the workshop were sent to members of the Norsminde Fjord catchment council and to all farmers within the Norsminde catchment. There was very large interest for the meeting and the registration had to be closed two days before the meeting due to limited space. Altogether, 35 persons participated in the workshop (details in Appendix B):

- Farmers: 26
- Machine pool (Odder Maskinstation) working for farmers: 3 (local farmers)
- Agricultural advisor: 1
- NGO (Danmarks Jægerforbund – Danish Hunters' Association): 1
- Authorities (Odder Municipality): 1
- Politicians, member of Odder Municipality council: 1 (local farmer)
- SEGES (Knowledge Centre for Agriculture): 1
- Research Institutions (GEUS, Ecologic Institute, Aarhus University): 5

The workshop was hosted by the Norsminde Fjord Catchment Council, an organisation of local stakeholders within the Norsminde Fjord catchment. The workshop was organised jointly by BONUS Soils2Sea and TReNDS. Following introductory presentations and Q and A, discussions continued informally over dinner. The session that followed took a World Café format. Here participants discussed three different governance scenarios, identifying and prioritising the elements necessary to the success of each proposed regime.

Welcome

The chairman of the Norsminde Catchment Council, Hans Jacob Fenger, welcomed the participants to the meeting. He noted that the Norsminde catchment has served as a laboratory for a large variety of field experiments during the past decade and in this way has obtained considerable influence on the government policies with respect to nitrate. Now the government has set aside 400 MDKK to support construction of mini-wetlands during the next two years. The reduction target for the Norsminde catchment for the next two years is 34 ton N/year and Hans Jacob Fenger expressed the hope that this could be achieved through construction of mini-wetlands. He informed about the Norsminde Catchment Council. The council has a board comprising two farmers, a representative of a green NGO (the Danish Nature Conservation Association) and a person from Odder Municipality. The council is open (and free) for all persons with an interest in farming or nature within the catchment area, and the chairman invited all persons not yet being member to join.

The chairman of the local farmers association (Dansk Landbrug Midt- og Østjylland (DLMØ)), Jens Gammelgaard, informed the participants that EU has rejected the new legislation from the Danish Government (Landbrugspakken) that allowed fertilisation to be increased up to the economically optimum level. He did not agree with the EU's arguments for not accepting Landbrugspakken. The Danish government has negotiated a minor revision of Landbrugspakken with the EU implying that farmers have to apply catch crops for larger areas than originally envisaged. This will be subsidised in 2017. This altogether poses new challenges for farmers, also in the Norsminde area. Jens Gammelgaard encouraged all farmers to make a strong effort to jointly meeting the targets of the 34 t N/year reduction, making use of mini-wetlands. He would then try to persuade the government that the additional reductions scheduled for the third WFD planning period would not be required because he argues that the target set for Norsminde Fjord is very uncertain and set too high.

Opening presentations

Flemming Gertz (Knowledge Centre for Agriculture – SEGES) gave a presentation on the current Danish scene with respect to nitrate regulations. He informed the audience about the Water Framework Directive reduction targets for Norsminde Fjord and the government plans for introducing mini-wetlands. The government is presently considering to extend the mandate of the existing water councils, who now deals with issues related to water courses, to also include nitrate issues. As a new initiative the government plans to introduce (and fund) about 25 catchment consultants that can help new water councils and farmers to plan nitrate mitigation measures such as constructed mini-wetlands. Questions and answers followed.

Jens Christian Refsgaard (Geological Survey of Denmark and Greenland – GEUS) briefly introduced the BONUS Soils2Sea project, including the Baltic Sea perspective. He provided background on Soils2Sea and its objective to develop proposals for new governance regimes compatible with the spatially differentiated regulation of nutrients. Jens Christian Refsgaard provided an overview of the rationale for the group work and presented the three governance scenarios to be discussed and the methods to be used in the group work session.

World-Café and MoSCoW on Scenarios

The group work was carried out to gather stakeholder views on governance and monitoring issues on the basis of three proposed governance regimes (scenarios):

- Scenario A – centralised (similar to business as usual)
- Scenario B – flexible (market-oriented)
- Scenario C – self-governance (water councils)

The group work was conducted using a World Café method with four groups (tables), hosted by Jens Christian Refsgaard (GEUS), Anker Lajer Højberg (GEUS), Morten Graversgaard (Aarhus University) and Flemming Gertz (SEGES).

Discussions on scenarios A and B were first conducted in parallel to one another with one change of table. Due to the relatively well known aspects of these scenarios, this first round of World Café discussions was kept to a shorter length (20 mins). Following this, all four tables discussed scenario C in parallel. Being the more novel of the proposals, scenario C was allocated slightly more time (30 mins). Before changing tables, participants were asked to prioritise the elements required for the successful

functioning of that governance scenario (e.g. '*creation of an independent monitoring body'*) using the MoSCoW method.

- 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)

The scenarios and key points from the group discussions are presented in the following section.


Scenario A

> *"In the '**Centralised**' context, the state makes all decisions on use of measures, including fertilisation norms, at farm or field level. The government uses retention maps with 15 km^2 spatial resolution (ID15 catchments) to improve the effectiveness of the measures through differentiated regulations on land-use (e.g. location of measures such as catch-crops, different fertilisation norms at different locations). To monitor and control implementation, the government requires farmers to report detailed plans for cropping systems and fertilisation. Government monitoring is focussed on relatively large catchments to evaluate if the reduction targets to the coastal waters are achieved. Farmers fulfilling the government requirements receive subsidies from the EU CAP."*

Stakeholders were not very fond of this scenario. Main critical issues were that this scenario will create less engagement and involvement from farmers that will result in a lack of motivation to be active and participate in additional agri-environmental issues/measures. Farmers would only fulfill the requirement, but would not engage in additional efforts.

If the regulations are based on the retention maps they have to be very accurate. The system would be unfair for the farmers, if the maps are 'wrong'. When restrictions are set based on inaccurate maps, that would lead to a lack of confidence and support for the system. It was mentioned, that the regulations have to be set very clear and different authorities have to agree on these regulations (for example the Agency for Water and Nature Management (SVANA) should not have another opinion than the Danish Agri-fish Agency). It would cause limitations, if the rules are not set clear and legislations are not streamlined. This rather rigid system could mislead farmers to look for gaps in the legislation to avoid these rigid restrictions.

Continuity of the regulation was seen as very important. Regulation should only be changed on the basis of new knowledge and not be based on political changes (for example due to change of political parties in power). Installment of a catchment council or a catchment-officer could be a good solution to negotiate with authorities.

Overall, this approach is seen as very bureaucratic, not taking into account the local conditions or the motivations of farmers. It would be very difficult to value the land and define a fair compensation scheme. The only positive comment was that everyone would be subject to the same rules/restrictions, which make the regulation transparent.

Scenario B

Under the 'flexible management' scenario, authorities and farmers work together to reduce N emissions through a market-based 'cap and trade' system. This would be initiated by government authorities per catchment, with all farmers obliged to participate. Based on retention maps with 25 ha resolution, 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 (as in Scenario A). Non-compliance with individual allowances is sanctioned by forfeit of a deposit that is then passed onto other farmers for carrying out mitigation measures. Government authorities can intervene in the market by buying up or selling permits from the system to reduce or allow increases to N loads. The government performs control monitoring at catchment level to evaluate if the reduction targets to the coastal waters are achieved.

For this scenario there was absolutely no support from the stakeholders. It would not reward farmers that are very competent in managing crops and fertilization and can produce crops with less leaching than stated in the norms. It would also not honour sustainability. Farmers buying up emission permits do not have to operate farming in an environmentally sustainable manner. This would be a wrong signal to send.

Bad experiences with the milk quotas also led to this assumption. It was also feared, that this approach could lead to faster centralisation of farming, with big farmers buying up permits.

This approach would likely be too bureaucratic, with a lot of planning and management involved. In addition, these permits could be used as a political handle to turn and therefore not serve the purpose anymore.

Scenario C

"The 'self-governance' approach describes a low level of State involvement in the management, monitoring and control of N loading. This scenario places a focus on the self-governance of farmers within one catchment. 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 - have higher uncertainty, but can be used by farmers as a tool for spatially differentiated management of the catchment. A system of self-monitoring is established to check and modify the retention maps and ensure that the target goals are reached (e.g. monitoring at a field or sub-catchment level). Authorities support the process of self-monitoring by providing 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. The allocation of EU CAP subsidies is based on reaching the target loads for the entire catchment and their distribution is negotiated between the farmers. If farmers/water council cannot agree on a plan for implementation, the State will impose a central regulation based on Scenario A."

This scenario was evaluated on all world café tables as the most interesting scenario. The stakeholders were aware, that some general rules and a central management are necessary. And even though it will put much burden on single farmers, they liked the ability to interact and have power to select

their own measures. It is seen as a more motivating scenario, the farmers have influence what happens and can see the results.

In this scenario the retention maps are seen as a good tool. It can provide good guidance for implementing differentiated measures. In comparison with the previous scenarios it was seen positive that the use of maps is not mandatory and no extensive decisions are based on the maps. With technology enhancement, new tools can be developed that help to choose different measures or crops. For example precision farming can help to reach the goals.

It could be a problem, if a farmer is not willing to participate (risk of free-riding). In this case this farmer will be subject to a collective positive social pressure and is likely to eventually join.

One break-out group suggested that the monitoring should be undertaken by a third party or authorities to ensure credible data, while another group suggested that self-monitoring performed by farmers could be interesting. The use of fertilizer has to be accounted (in fertilizer budgets/accounts), also clear requirements for data collecting are needed, in this way the phenomenon of 'free-riders' could be avoided. Monitoring data could also be used to improve the use of fertilizer.

It could be a good scheme to implement measures like mini-wetlands or riparian wetland, even in a joint effort with more than one land-owner, this approach could be feasible if compensation schemes are developed.

The administrational costs (monitoring, meetings, etc.) are seen as rather high, which could affect the scenario negatively. A catchment-officer and a well functioning catchment council are seen as very important.

Overall, this scenario creates a lot more demand on the farmers, but also gives more freedom and self-control. If executed in a smart way, this would be seen as a preferably scenario by the stakeholders.

Final plenary
The views expressed at the tables were presented and briefly commented in plenum. Subsequently, Jens Christian Refsgaard thanked the participants for having spent time providing valuable inputs to the research projects. Finally, Hans Jacob Fenger, chairman of the Norsminde Catchment Council, thanked the participants for participating and expressed the view that it had been a very fruitful workshop.

Outlook

The workshop was the third workshop in the second round of workshops at the BONUS Soils2Sea Case Study sites. Workshops in Poland and Sweden in October and November preceded the Danish meeting. These adopted the same methodologies, but using different scenarios as basis for discussion. The results from these workshops as well as the results from the first round of workshops will feed into a BONUS Soils2Sea report on new governance concepts to be published in 2017.

The workshop was also used to be the first part of an exchange and uptake of results that is foreseen in the project.

Appendences

Appendix A: Scenarios

Scenarios for the workshop in Norsminde, Denmark 24 November 2016

Background

The total allowable loads of N to Norsminde Fjord is defined by the national government. Yet imagine that we as stakeholders have the possibility to influence the *way* in which nitrate loads are managed under the third WFD implementation cycle (2021-2027). We would like to have a discussion of the three alternative governance scenarios outlined below. They differ in the degree and approach to centralised/decentralised decision making, the scale of the retention maps to be used and in the ways in which to monitor and control N loading.

Spatially differentiated measures

Spatial targeting of mitigation measures has the potential to produce economic and environmental benefits. In the Norsminde catchment area, 5-10% extra nitrate reduction can be obtained in the subsurface through optimal spatial location of crops. Gains can be further increased through optimal location of constructed mini-wetlands. Altogether there can be substantial economic and environmental gains, because it will be possible to produce the same crop yield with reduced nutrient load or increased crop yield with unchanged nutrient load. To exploit the full potential of spatially targeted measures, retention maps with a fine spatial resolution (1- 25 ha) are necessary. However, the level of uncertainty associated with maps at this resolution is too high for use in government regulation. For this reason, the Danish government currently uses retention maps at around 1500 km^2 resolution, while expecting to improve this towards 15 km^2 resolution (ID15 catchments) in the future. Although these maps have a lower level of uncertainty they also cancel out almost all economic and environmental gains of a spatially differentiated approach.

Scenario A

In the '**Centralised**' context, the state makes all decisions on use of measures, including fertilisation norms, at farm or field level. The government uses retention maps with 15 km^2 spatial resolution (ID15 catchments) to improve the effectiveness of the measures through differentiated regulations on land-use (e.g. location of measures such as catch-crops, different fertilisation norms at different locations). To monitor and control implementation, the government requires farmers to report detailed plans for cropping systems and fertilisation. Government monitoring is focussed on relatively large catchments to evaluate if the reduction targets to the coastal waters are achieved. Farmers fulfilling the government requirements receive subsidies from the EU CAP.

Questions (core questions to be addressed are in **bold**)

1) What does the governance setting look like in this scenario (which policies, ministries, legal framework, financing, technical support)?
2) What role do different stakeholders play? How do they behave/react/participate in this scenario?
3) **How effective is differentiated regulation in this scenario? How are farmers compensated for this?**
4) What are the issues related to monitoring in this scenario?
5) **What are main constraints / difficulties / barriers / problems concerning the scenario?**
6) **What are main benefits of this scenario?**

Scenario B

Under the '**flexible management**' scenario, authorities and farmers work together to reduce N emissions through a market-based 'cap and trade' system. This would be initiated by government authorities per catchment, with all farmers obliged to participate. Based on retention maps with 25 ha resolution, 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 (as in Scenario A). Non-compliance with individual allowances is sanctioned by forfeit of a deposit that is then passed onto other farmers for carrying out mitigation measures. Government authorities can intervene in the market by buying up or selling permits from the system to reduce or allow increases to N loads. The government performs control monitoring at catchment level to evaluate if the reduction targets to the coastal waters are achieved.

Questions (core questions in **bold**)

1) **What does the governance setting look like in this scenario (which policies, support from which ministries, legal framework, financing, technical support)?**
2) What role do different stakeholders play? How are they likely to behave/react/participate in this scenario?
3) **What does differentiated regulation look like in this scenario? How do more detailed retention maps help/hinder?**
4) **What are the issues related to monitoring and control in this scenario? Are other types of sanctions preferable e.g. removal of CAP subsidies?**
5) What are main constraints / difficulties / barriers / problems concerning the scenario?
6) What are main benefits of this scenario?

Scenario C

The '**self-governance'** approach describes a low level of State involvement in the management, monitoring and control of N loading. This scenario places a focus on the self-governance of farmers within one catchment. 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 - have higher uncertainty, but can be used by farmers as a tool for spatially differentiated management of the catchment. A system of self-monitoring is established to check and modify the retention maps and ensure that the target goals are reached (e.g. monitoring at a field or sub-catchment level). Authorities support the process of self-monitoring by providing 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. The allocation of EU CAP subsidies is based on reaching the target loads for the entire catchment and their distribution is negotiated between the farmers. If farmers/water council cannot agree on a plan for implementation, the State will impose a central regulation based on Scenario A.

Questions (core questions in **bold**)

1) **What does the governance setting look like in this scenario (which policies, support from which ministries, legal framework, financing, technical support)?**
2) **What role do different stakeholders play? How are they likely to behave/react/participate in this scenario?**
3) **What does differentiated regulation look like in this scenario?**
    a. **What is the legal basis?**
    b. **How can retention maps at a detailed scale support differentiated regulation?**
    c. **How could compensation mechanisms work?**

4) **How could self-organised monitoring work?**
    a. **What benefits or incentives are necessary for self-organising the control of N loading (e.g. public recognition through media coverage; dinner costs covered, presentation of topics of interest to compensate for time invested at regular meetings)?**
    b. **What burdens or costs exist (e.g. regular meeting time, learning new ways of organizing, lack of trust in the group) how can these be overcome?**
    c. **Is a Water Council a conceivable solution to define indicators and methods for local self-organised monitoring, to discuss and reflect on the analytical results of monitoring and potential sanctioning mechanisms? Should a Water Council further or only organize the allocation of subsidies?**
5) What are main constraints / difficulties / barriers / problems concerning the scenario?
6) What are main benefits of this scenario?

Appendix B: Participants list

Participants	
Navn	**Organisation/virksomhed**
Hans Jakob Fenger	Lodsejer/Formand for oplandsrådet
Lene Andersen)	Odder Kommune, Teknik & Miljø
Jørgen Pedersen	DN
Carl Ove Bredkjær	Lodsejer
Flemming Gertz	SEGES (sekretær styregruppe)
Helge Kjær Sørensen	DLMO
Per Højgaard Andersen	Danmarks Jægerforbund
Jens Gammelgaard	DLMO
Morten Laursen	Lodsejer
Ole Haahr	Lodsejer
Ole Lyngby Pedersen	Lodsejer
Vagn Pedersen	Lodsejer
Jens Peder S. Rasmussen	Lodsejer
Lars Kreutzfeldt Rasmussen	Lodsejer
Allan Gammelgaard	Lodsejer
Søren Fink	Lodsejer
Svend G. Nielsen	Lodsejer
Jens Ejnar Mogensen	Lodsejer
Klaus Dahlgaard Mortensen	Lodsejer
Per Høisgaard	Lodsejer
Herbert Ravn	Lodsejer
Niels Hesselbjerg	Lodsejer
Anne Arentoft	Lodsejer
Arne Mathiesen	Odder Maskinstation
Lasse Sørensen	Odder Maskinstation
Tenna Sørensen	Odder Maskinstation
Hans Ole Thomsen	Lodsejer
Per Sørensen	Lodsejer
Claus Fenger	Lodsejer
Ole Munk Nielsen	Lodsejer
Thue Hansen	Lodsejer
Morten Graversgaard	Aarhus Universitet
Anker Højbjerg	GEUS
Jens Christian Refsgaard	GEUS
Nico Steljes	Ecologic Institute, Berlin
Katriona McGlade	Ecologic Institute, Berlin