Catchment management and governance approach in Denmark

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Rivers Trust Autumn Conference 8th October, York

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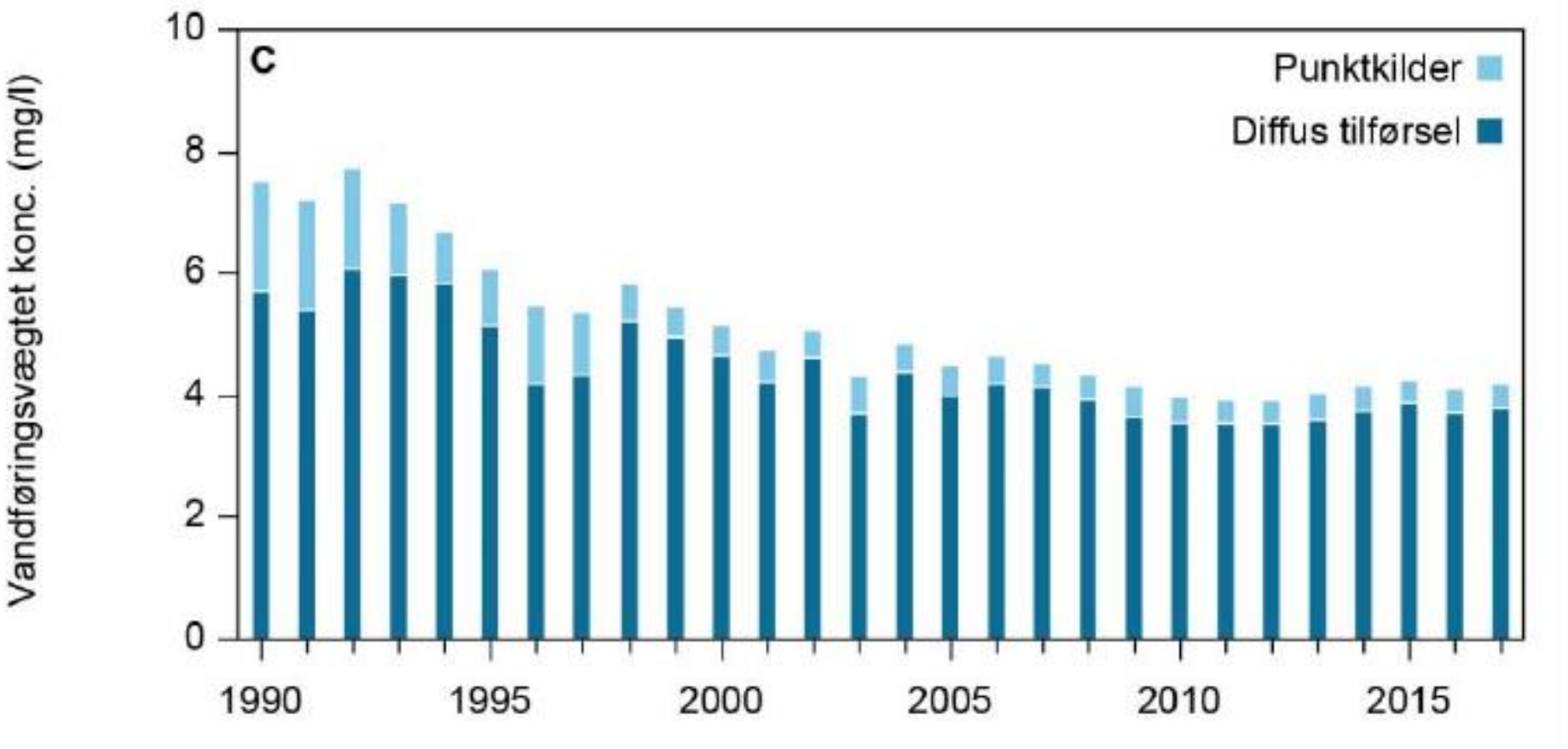
Interreg North Sea Region WaterCoG European Regional Development Fund EUROPEAN UNION

Promilleafgiftsfonden for landbrug

LANDBRUG FØDEVARER

Total Nitrogen - average all streams

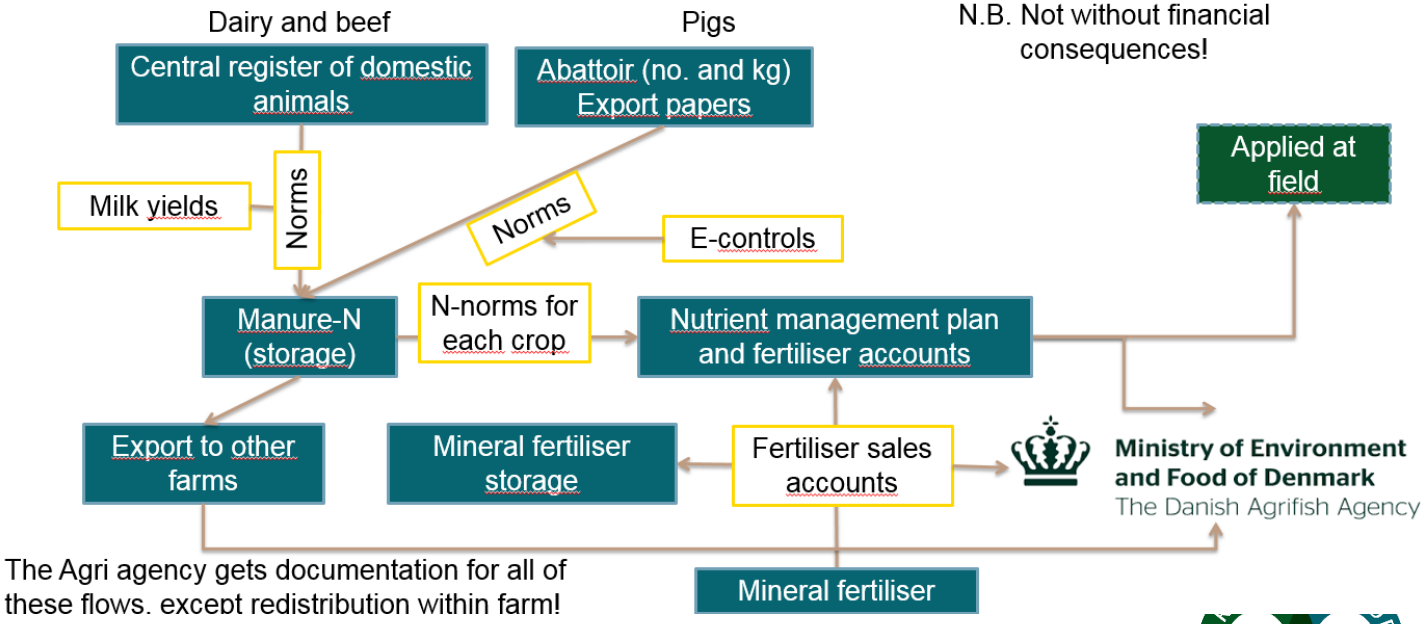


Thodsen, H., Tornbjerg, H., Rasmussen, J.J., Bøgestrand, J., Blicher-Mathiesen, G., Larsen, S.E., Ovesen, N.B., Windolf, J. & Kjeldgaard, A. 2019. Vandløb 2017. NOVANA. Aarhus Universitet, DCE – Nationalt Center for Miljø og Energi, 74 s. - Videnskabelig rapport nr. 306

Legislation

Time	Plan	Significant elements in legislation:
1985	NPO-plan	-regulation of allowed animal unit per ha. - min. storage capacity for animal manure
1987	Water Environm. Plan I	-50 pct reduction in N-leaching from agr. -65 pct "autumngreen fields" -Slurry in autumn only to wintercov. fields
1992	Action plan for sustainable agriculture	-Slurry only to grass or oilseed rape in autumn -Max. N-standards for crops (N-quata per farm) -Min. utilisation of nitrogen in animal manure -Fertilizer plans and -accounts.
1998	Water Environm. Plan II	-10 pct decrease of N-standards (The N-quota) - 6 percent "super" green fields in autumn -15 pct higher utilization of N in animal manure
2003	Water Environm. Plan III	-Target for decrease of P surplus -More wetlands - 10/14 pct. covercrops (10 at <80kg manure-N p
2011-2013	WFD	-More cover crops -Establishment of wetlands
2016	Agricultural package WFD 2. gen plans	- Area specific regulation based on need to ob - N-standards back to financially optimal levels - Raised N-standards compensated by 140.00 - Max. 170 kg N pr. ha (previously 140) for pig

Danish fertiliser accounts and nutrient management plans – a closed mass balance based on register data



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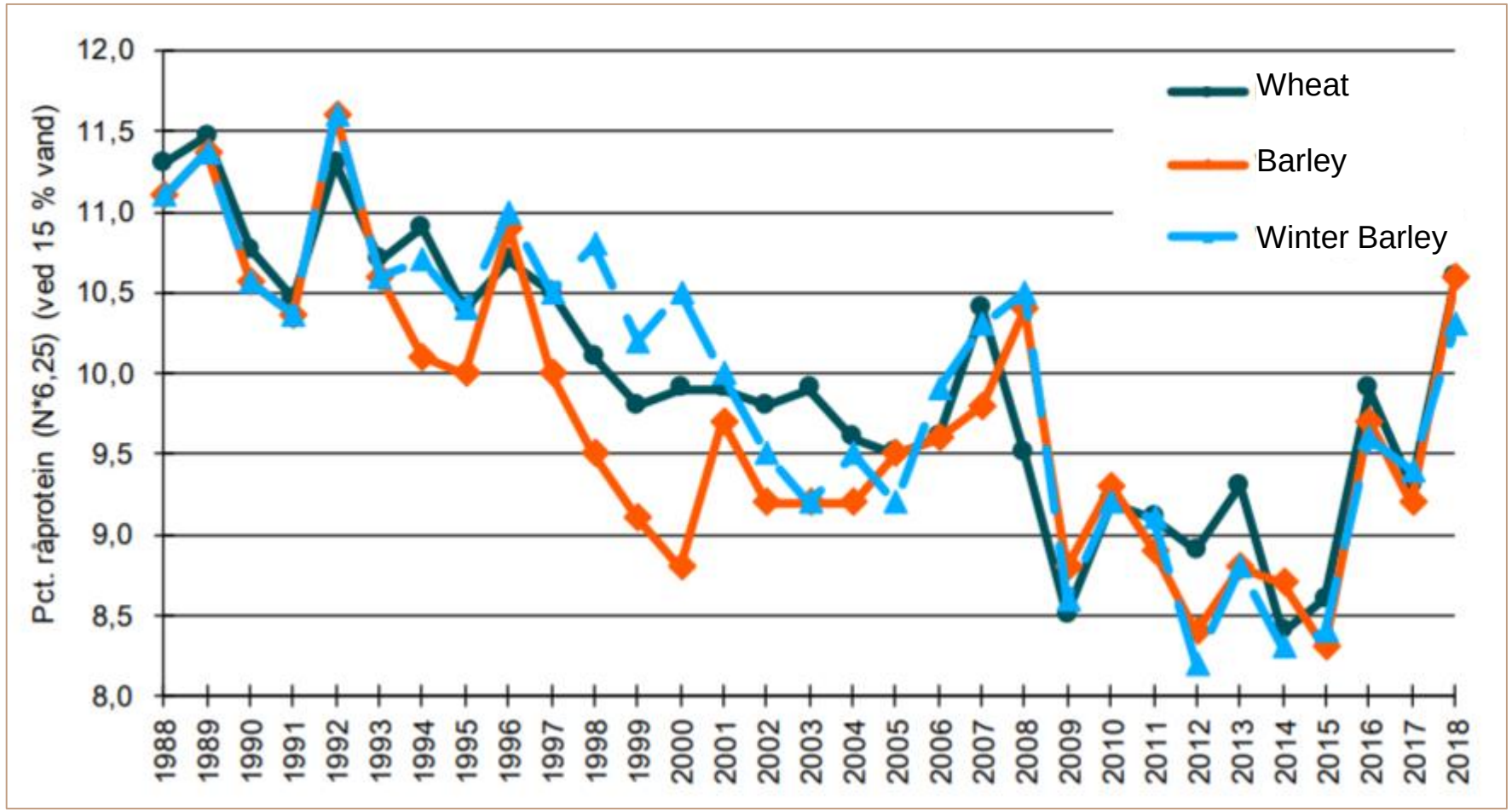
Consequences with reduced N use
Protein content in wheat and barley



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JESPER POULSEN OG NIELS MORTEN SLOTH, 2018
NÆRINGSINDHOLD I KORN FRA HØSTEN 2018

Restore the landscape

Government decision 2015

- Continue restoring larger wetlands 50- 500 ha, natural hydrology (municipalities/state) budget 200 million EUR

- Implementing 900 ha of constructed wetlands (approx. 1500) within 2021, 52 million EUR

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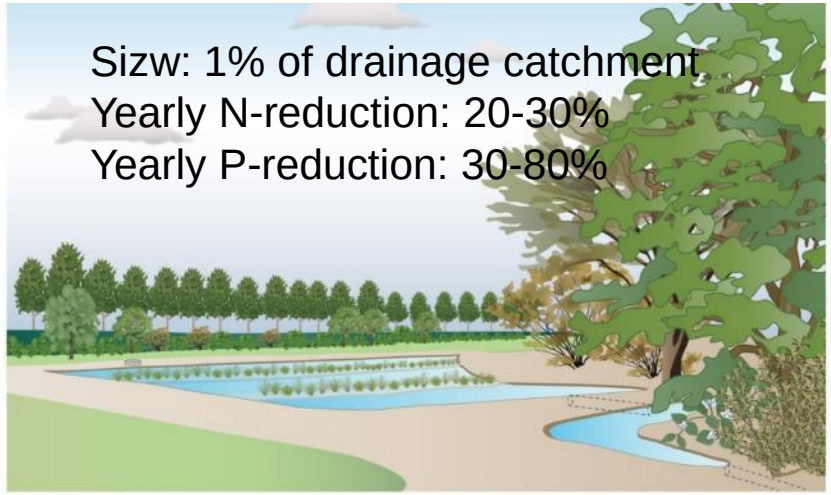
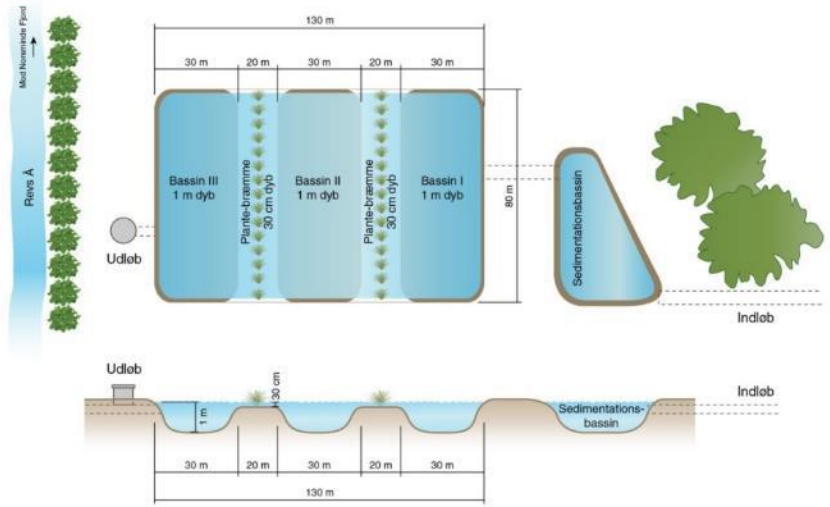
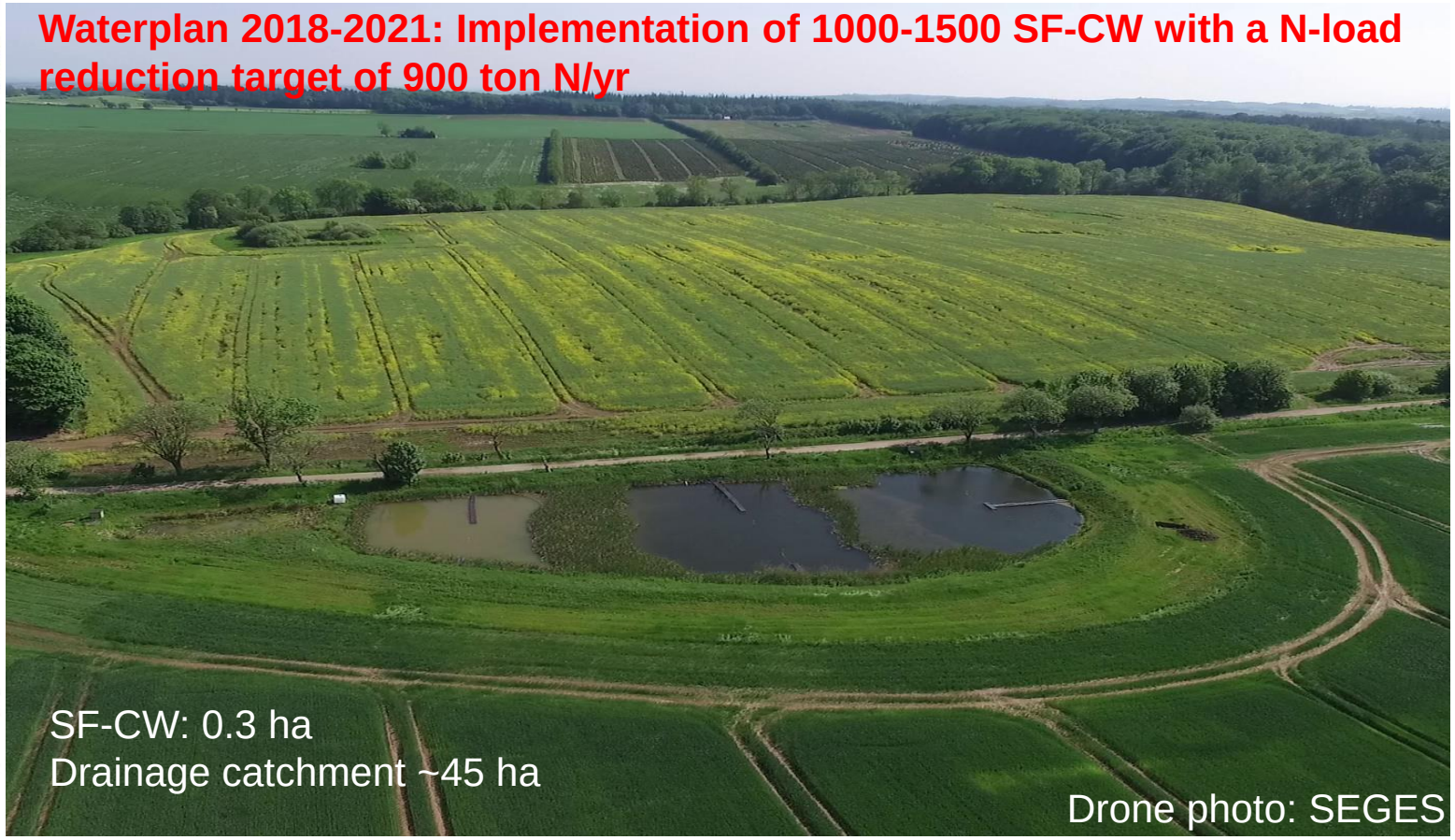
Danish surface-flow constucted wetland – Fillerup

Constructed in 2010 in the Norsminde Fjord Catchment, Odder, Denmark by DLMO, SEGES, AU





www.supremetech.dk

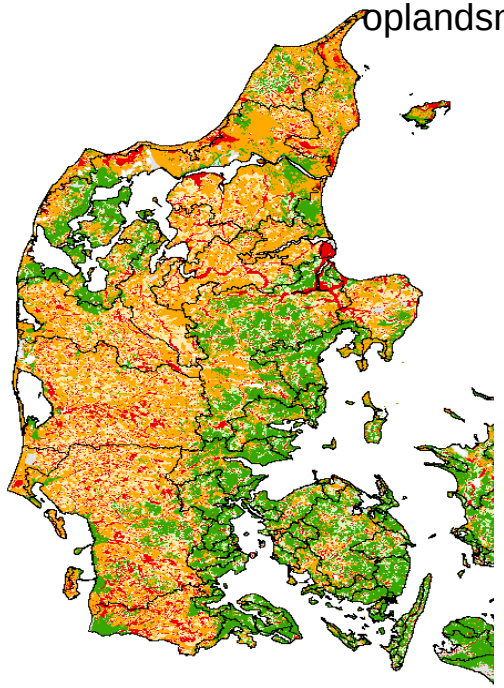


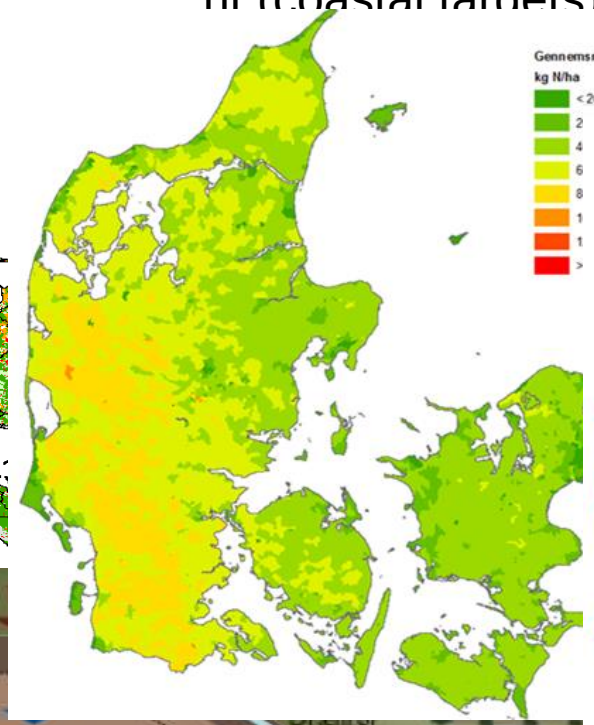
25 SF-CW constructed in DK in 2010-2015
Kjaergaard et al., (2014; 2017; 2019)

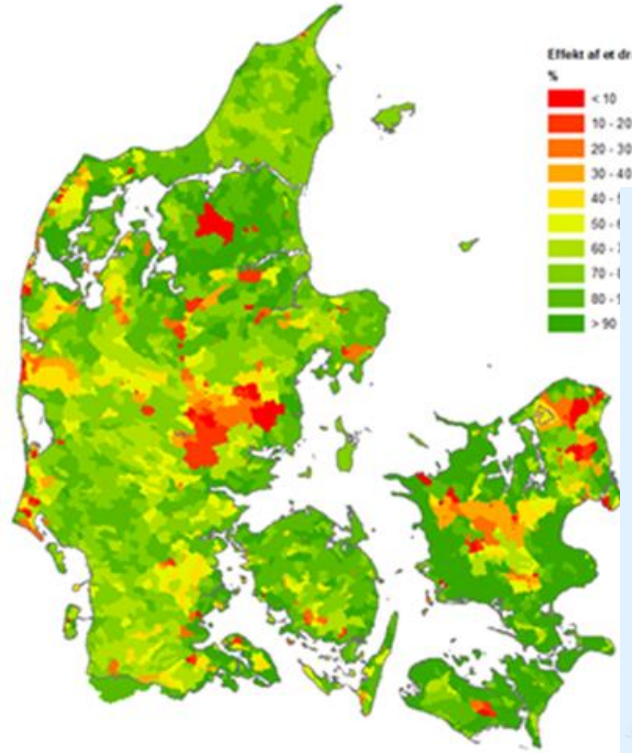
Kjærgaard, C. & Børgesen, C.D. 2017.

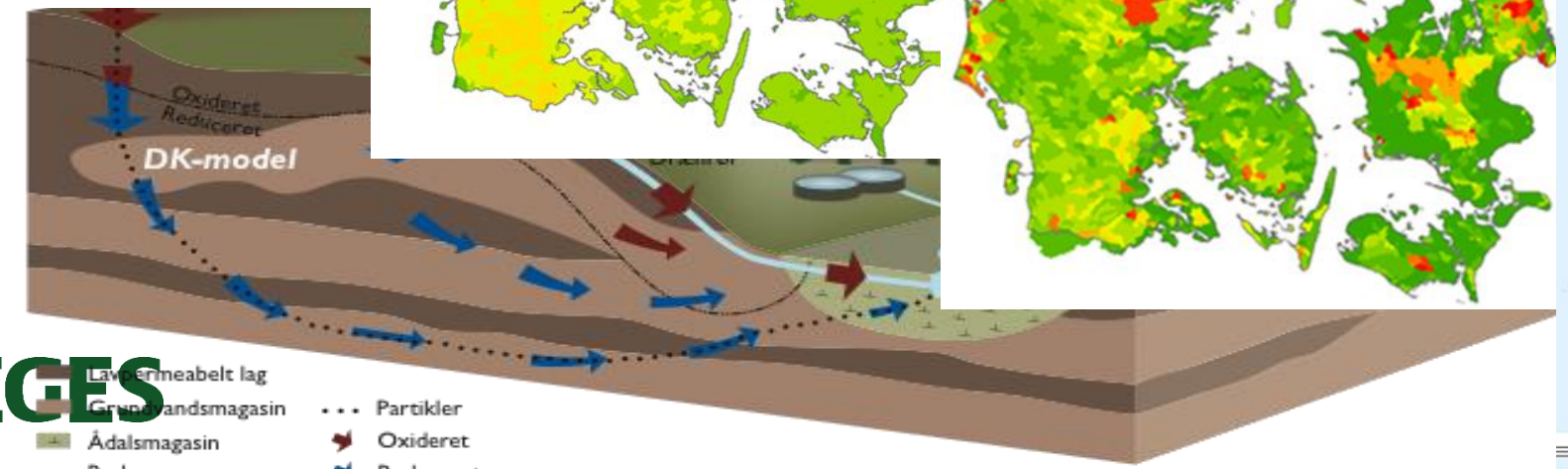
National designation maps for implementing drainage filters

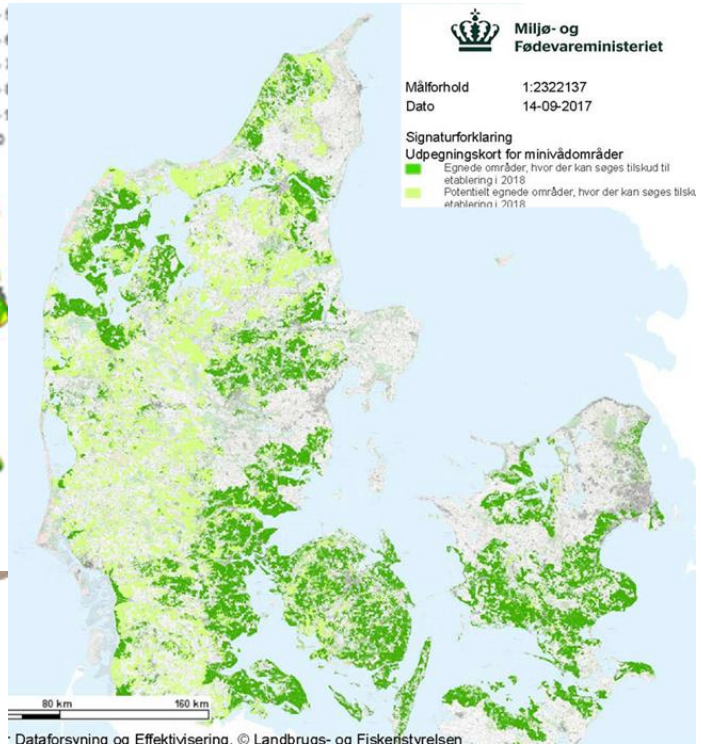
Kjærgaard, C. & Børgesen, C.D. 2017. Udarbejdelse af minivådområdeeffekt (kg N pr. ha minivådområde) på ID15 oplandsniveau. DCA – Nationalt Center for Fødevarer & Jordbrug, J. nt (coastal targets) discharge dominated areas)











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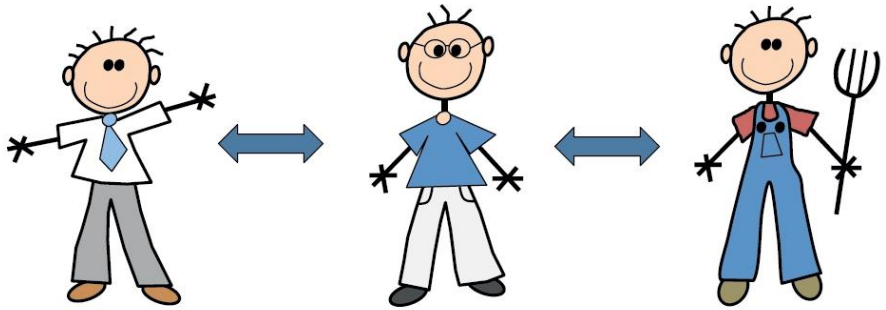
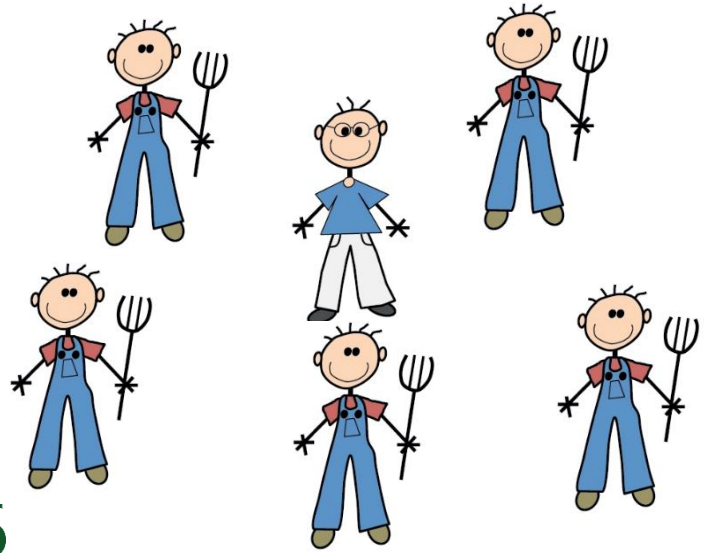
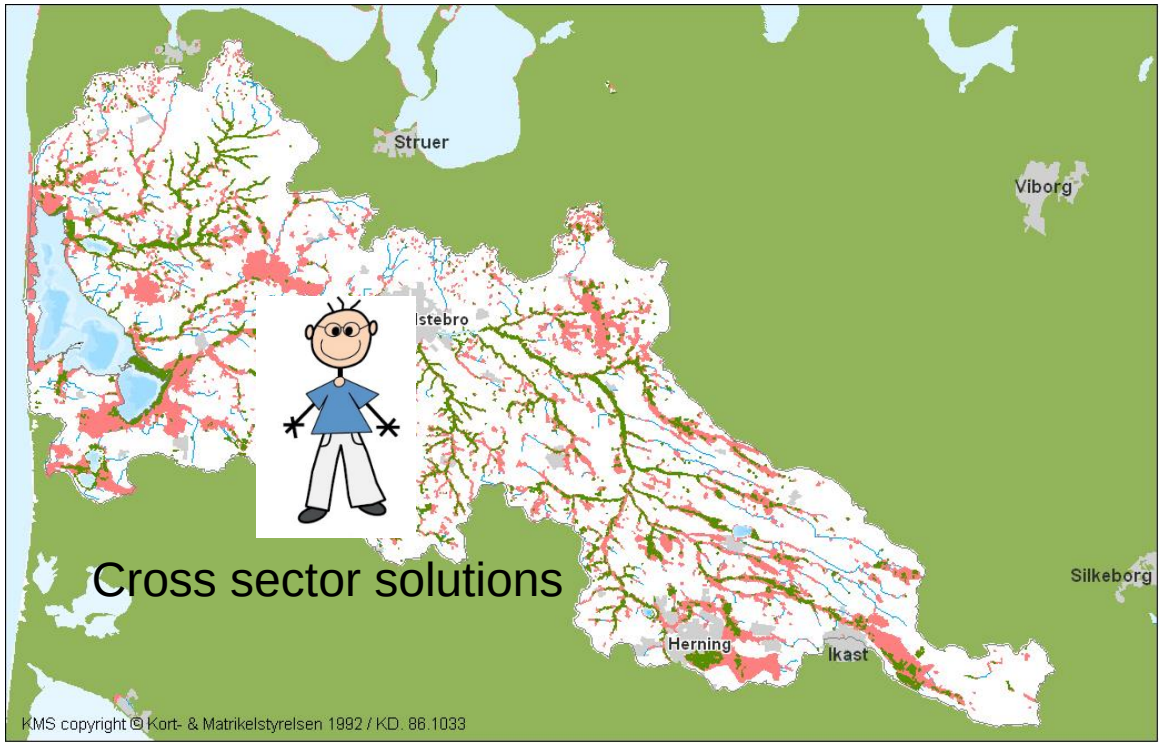
Catchment officer



Authority Broker Farmer





Cross sector solutions

Tested in WaterCoGovernance in 2016

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Catchment officer – new concept in Danish water management

- National Program in 2017
- 25 Catchment officers (16 full time)
- Budget: 8 million eur over 4 years
- 50 % payed by farmers (farmer union) and 50 % payed by the government
- No direct payment for the farmer
- Applications:
  - April 2018: 78 constructed wetlands
  - April 2019: 338 constructed wetlands

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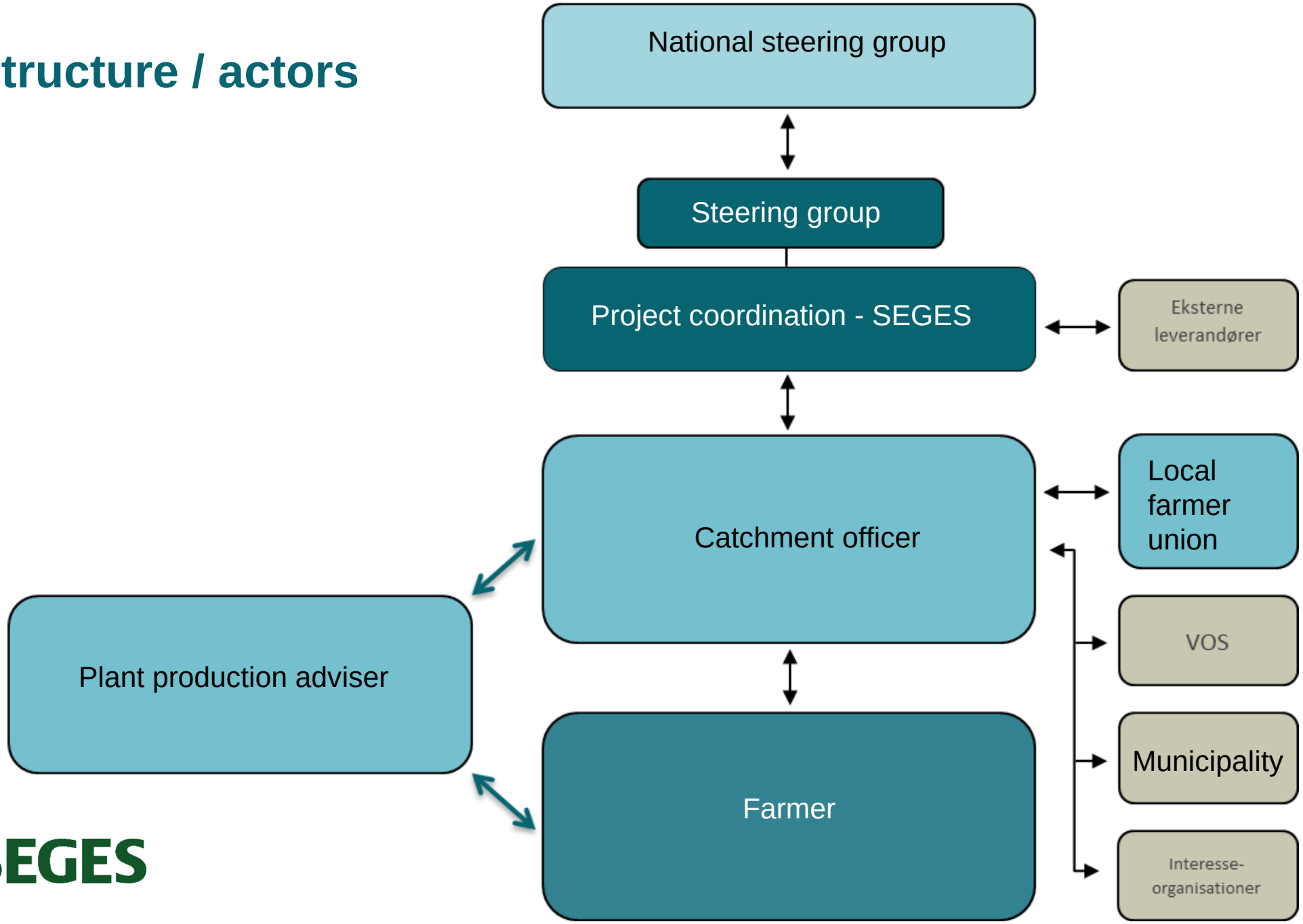
Structure / actors



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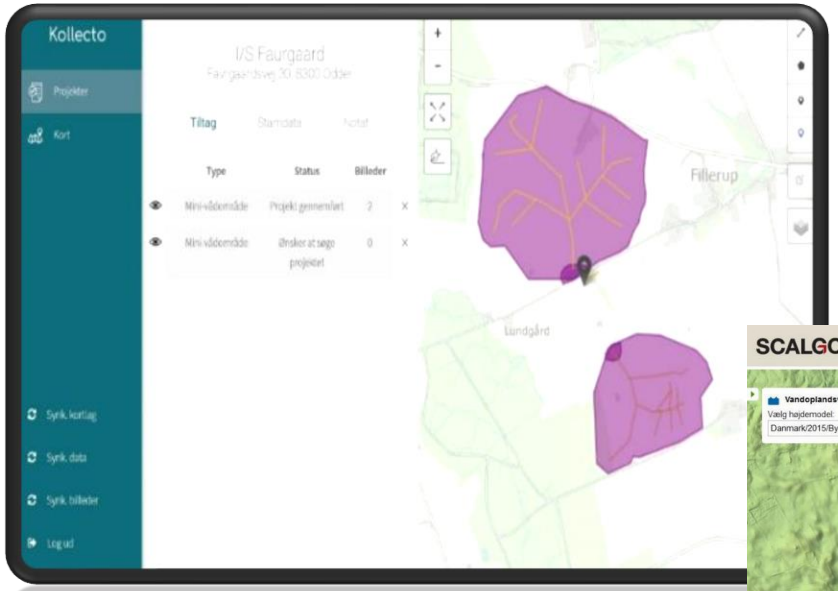
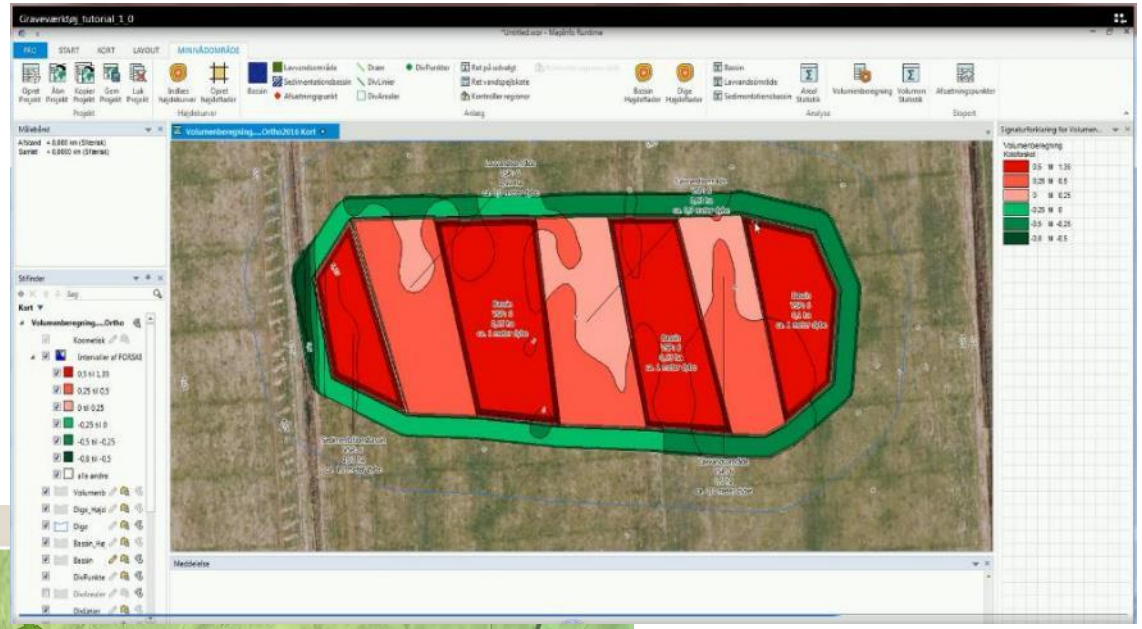
Tools

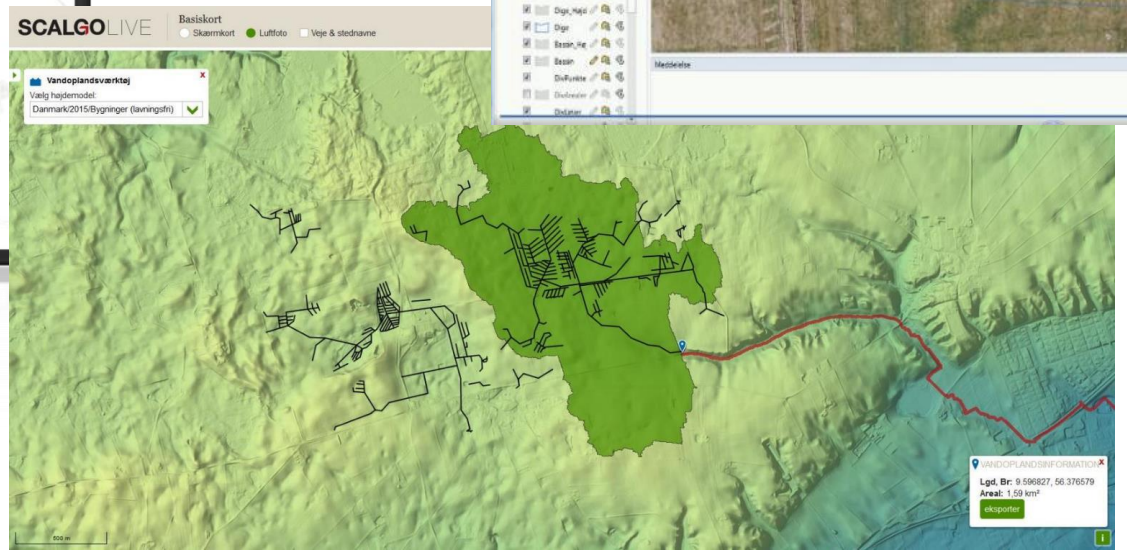
Kollecto



Designing



Scalgo



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Thank you for your attention