Fact sheet: Local landscape scenarios – addressing targeted nitrogen regulation

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dNmark research alliance

Summary

Developing scenarios at local level has been a key focus in the dNmark research alliance. Scenarios have been developed in a co-creative process involving a variety of local stakeholders. The stakeholders have given their ideas to how the landscape could develop in the future with special focus on changes in land-use and agricultural practices in order to meet national demands for nitrogen leaching reductions.

The scenarios are developed as forecasting scenarios addressing the effects of landscape changes on the nitrogen leaching. The scenarios are compared with baseline scenarios of current land-use and crop rotations in order to assess the differences. The scenarios consist of a decription of: storyline, measures, instruments, characteristics, and co-benefits.

Several scenarios have been developed in the study areas including this use of land-based measures like new wetlands, zonations, setaside areas, afforestations, and reduced soil preparations as well as measures focusing on ocean-based measures such as mussels and seaweed farms. The effects of the used measures have described in a "measure catalogue" (Virkemiddelkataloget). In this fact sheet two scenarios of changes in land use in order to address the need for targeted regulation are presented in two study areas.

General characteristics of the two study areas

Study areas

- **Hagens Møllebæk**: Is located in the north-western part of Denmark in the municipality of Skive.
  The study area is 2761ha mainly consisting of arable land (83% of the area). The land is typically owned by full-time farmers both pig farmers (approx. 10) and dairy farmers (approx. 20).
  The watercourse is called Hagens Møllebæk and the study area is the catchment area of watercourse.
- **Henne Mølleå**: Is located in the south-western part of Denmark in the municipality of Varde.
  The study area is 6282ha consisting of arable land (65%) and forest / nature areas (approximately 25% of the area). The farmers in the area are mainly dairy farmers (approx. 50) but also pig farmers live in the area (approx.7).
  The watercourse is called Henne Mølleå.

Figure 1: dNmark study areas

Two landscape scenarios in local landscapes

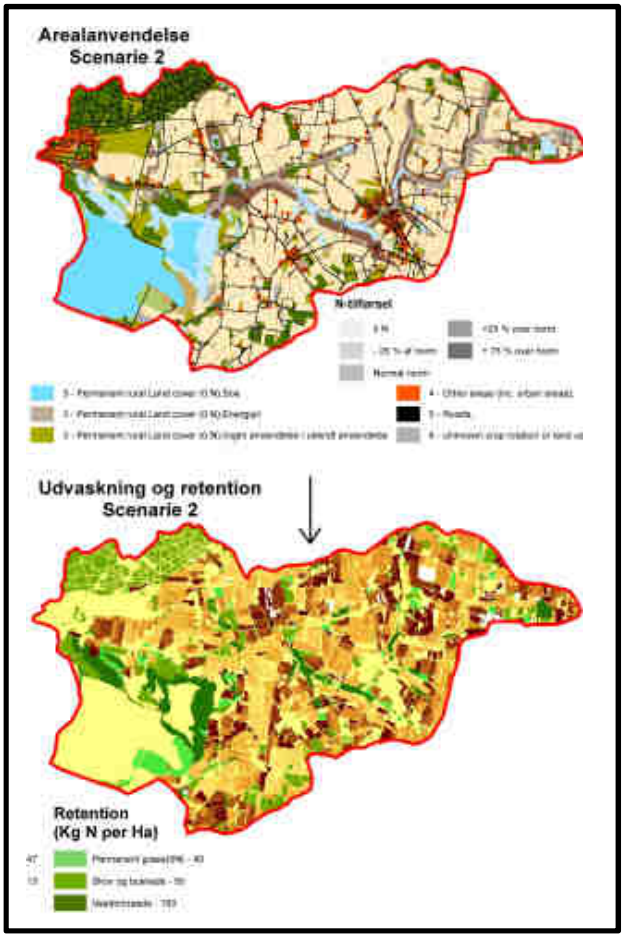

Fig. 2: Henne Mølleå; Scenario land use and leaching.

The two landscape scenarios addressed a spatially targeted situation where different parts of the catchment are allocated with different measures.

Study area:	**Henne Mølleå**
Scenario storyline:	Empirical data suggest that leaching in general is highest close to recipients and on vulnerable soil types (JB 1, 2 and 7). The scenario suggests a zonation with extensification on vulnerable areas and intensification on robust areas.
Measures:	Reduced input of N on vulnerable areas defined by proximity to watercourse and soil types.
Instruments:	No N input allowed on most vulnerable areas and gradually allowing increased N input in areas of low N leaching risk.
Characteristics: *(LSU = Livestock Units)*	The four zones: Zone 1: No N input Zone 2: N input corr. to 0,8 LSU Zone 3: N input corr. to 1.4 LSU Zone 4: N input corr. to 2.0 LSU
Co-benefits:	Nature areas will most likely increase and be better connected. Recreational opportunities.

Study area:	**Hagens Møllebæk**
Scenario storyline:	Farmers are in general interested in the measures with largest reduction effect for the least cost.
Measures:	Allocation of constructed wetlands where the highest effect can be expected.
Instruments:	Constructed wetland combined with a normal wetland.
Characteristics: (reductions)	Constructed wetlands: 5-35 Kg N/ ha catchment Wetlands: 120-190 kg N/ha
Co-benefits:	Nature / biodiversity benefits from wetlands

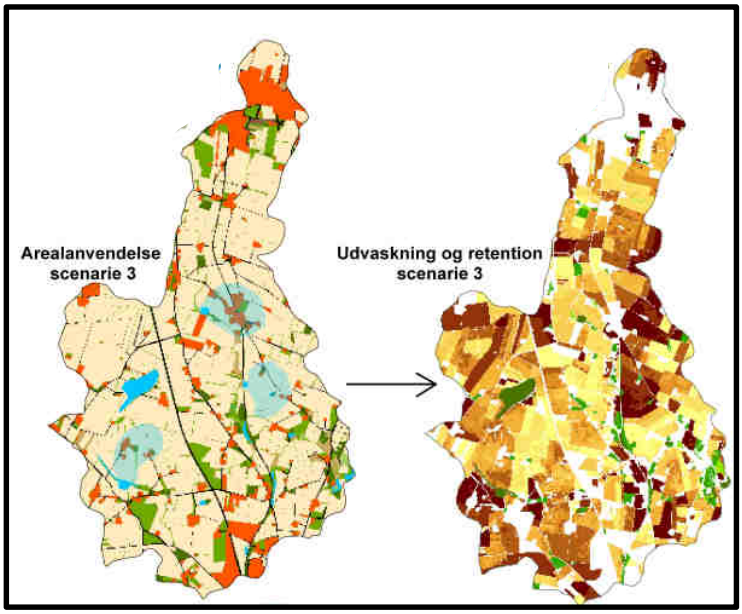

Figure 3: Hagens Møllebæk; Scenario land use and leaching.

More Information

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