Pilot area description – Tissoe

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1. General pilot area description

The alliance finds it important to develop and test solutions in cooperation with multiple operators from different areas of the country. One important focus area is the area surrounding the Limfjord. Here the alliance will work in e.g. Skive and Jammerbugt municipalities. Moreover, operators from Varde, Horsens, and Odsherred municipalities will be involved.

So far, the alliance has established 7 pilot areas. These areas will function as test-case areas where scientists and operators can meet and discuss the implementation of different initiatives. Scientific results and experience from these areas can later be used in other localities with similar characteristics. It is therefore important that the pilot areas represent the variability of Denmark not only in relation to geographical location but also to land use, geology, etc. The delineation of the pilot areas is based on water catchment and therefore often relates to a given fjord or a watercourse system.

Operators from other parts of the country will be involved ongoing. Thereby, the different research areas will develop the most optimal way.

Map: Overview of the pilot areas.

2. Tissoe – Geographical location

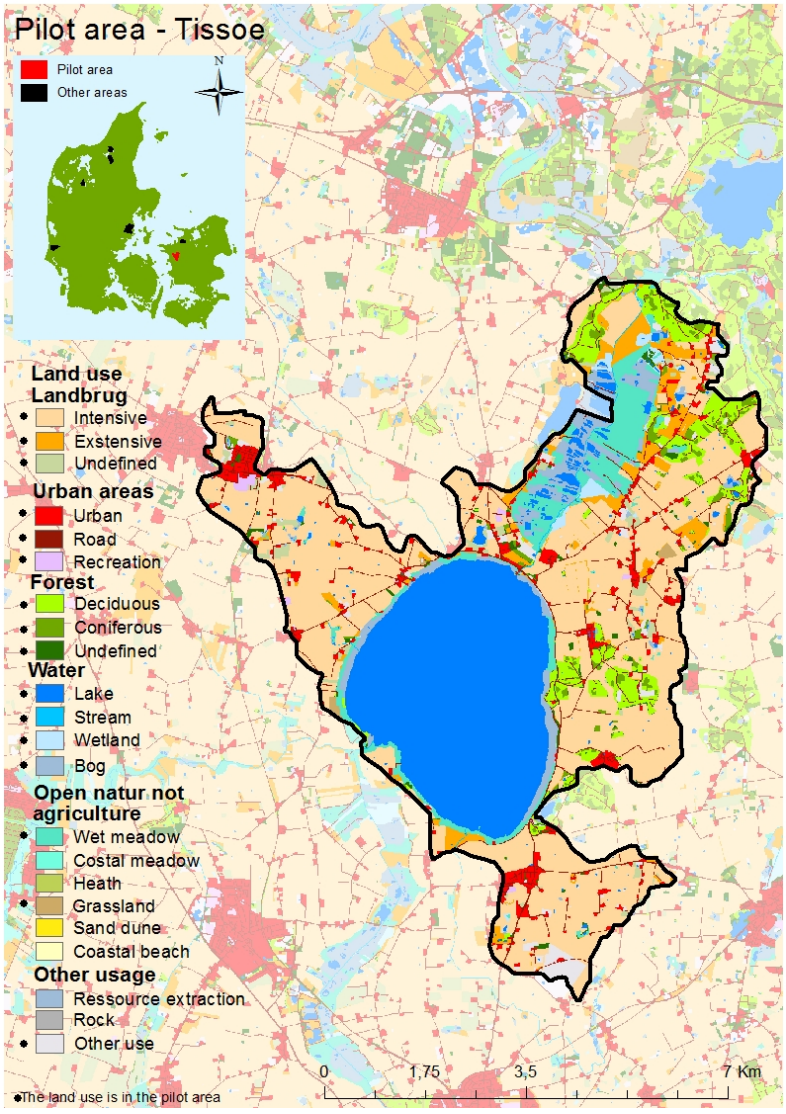
The pilot area Tissoe is located in the western part of Zealand and covers an area of 5256 ha. A large part of the area is located within the administrative borders of the municipality of Kalundborg and a smaller part belongs to Soroe municipality. The area is delineated by the water catchment of the lake. The Tissoe pilot area includes the entire Tissoe (lake) and represents the pilot area which includes most nature outside agriculture in terms of water, forest, and open nature followed by Varde pilot area. The large nature area mainly covers the big lake but also the bog-basins and forest patches in the northern part. Moreover, the area inhabits the smallest intensive agricultural area followed by Varde. The soil is mainly composed of clayey soils with organic soils covering most of the area at the wetlands towards the north. The terrain is highly varying which also reflects the varied land use.

Map: Geographical location of the pilot area at Tissoe.

2.1. Land use

Despite the large nature area outside agriculture in the Tissoe area (43 %) the primary land use is agriculture (47.7 %) of which 41.9 % is intensive (map and table). The large nature area is mainly due to the large lake and the bog-basins in the northern part of the area. Intensive agriculture is surrounding the nature areas and is interrupted by urban areas which covers 7.4 %. Tissoe represents the pilot area with the smallest fraction of agriculture and largest fraction of nature outside agriculture of all pilot areas (figure)

Land use is illustrated on the map and the belonging table for Tissoe below. Furthermore, land use for the 7 pilot areas is illustrated in the figure.



Map: Land use of the pilot area Tissoe in 10×10 meters resolution.

Table: Land use of the pilot area at Tossoe in hectare (ha) and share of the total area in percent (%).

Land use	Area (ha)	Share of total area (%)	Share of total area (%)
Agriculture			47.7
Intensive	2202	41.9	
Extensive	221	4.2	
Undefined	81	1.6	
Urban areas			7.4
Urban	201	3.8	
Road	175	3.3	
Recreation	15	0.3	
Forest			7.7
Deciduous	267	5.1	
Coniferous	86	1.6	
Undefined	53	1.0	
Water			29.7
Lake	1309	24.9	
Stream	11	0.2	
Wetland	41	0.8	
Bog	201	3.8	
Open nature not agriculture			5.6
Wet meadow	281	5.3	
Costal meadow	0	0.0	
Heath	0	0.0	
Grassland	14	0.3	
Sand dune	0	0	
Coastal beach	0	0	
Other usage			1.8
Resource extraction	0	0	
Rock	0	0	
Other use	96	1.8	
Total	5256	100	100

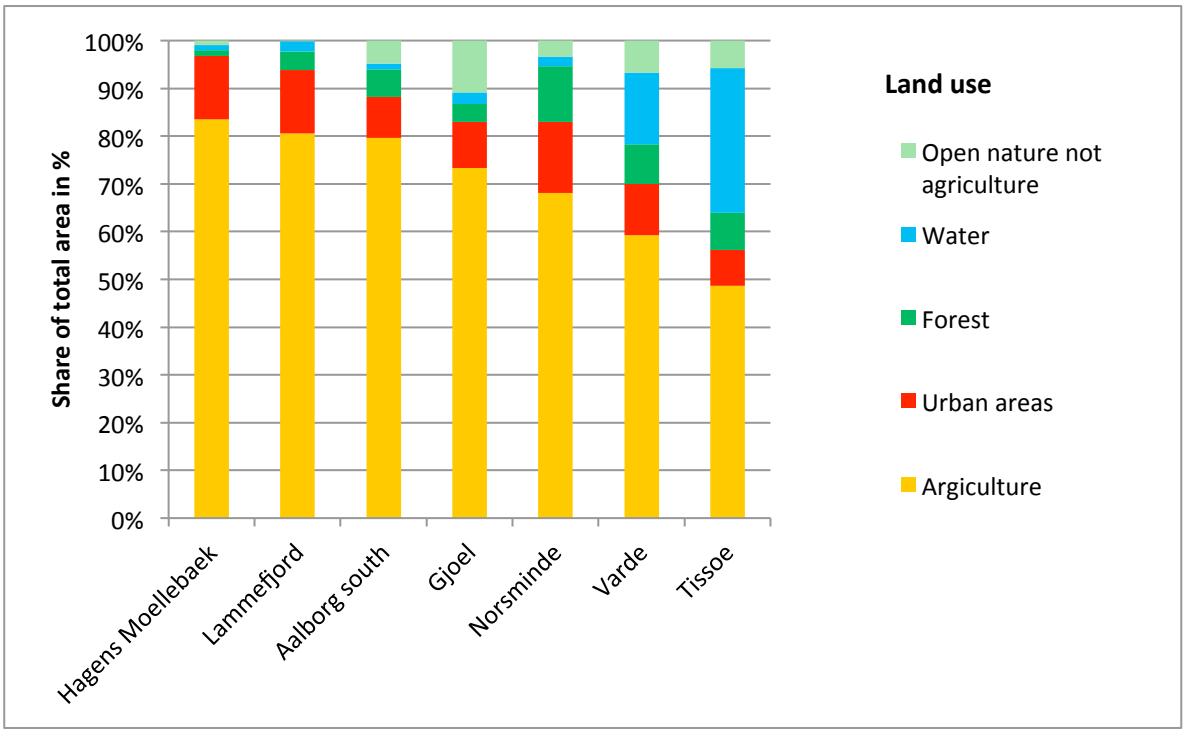
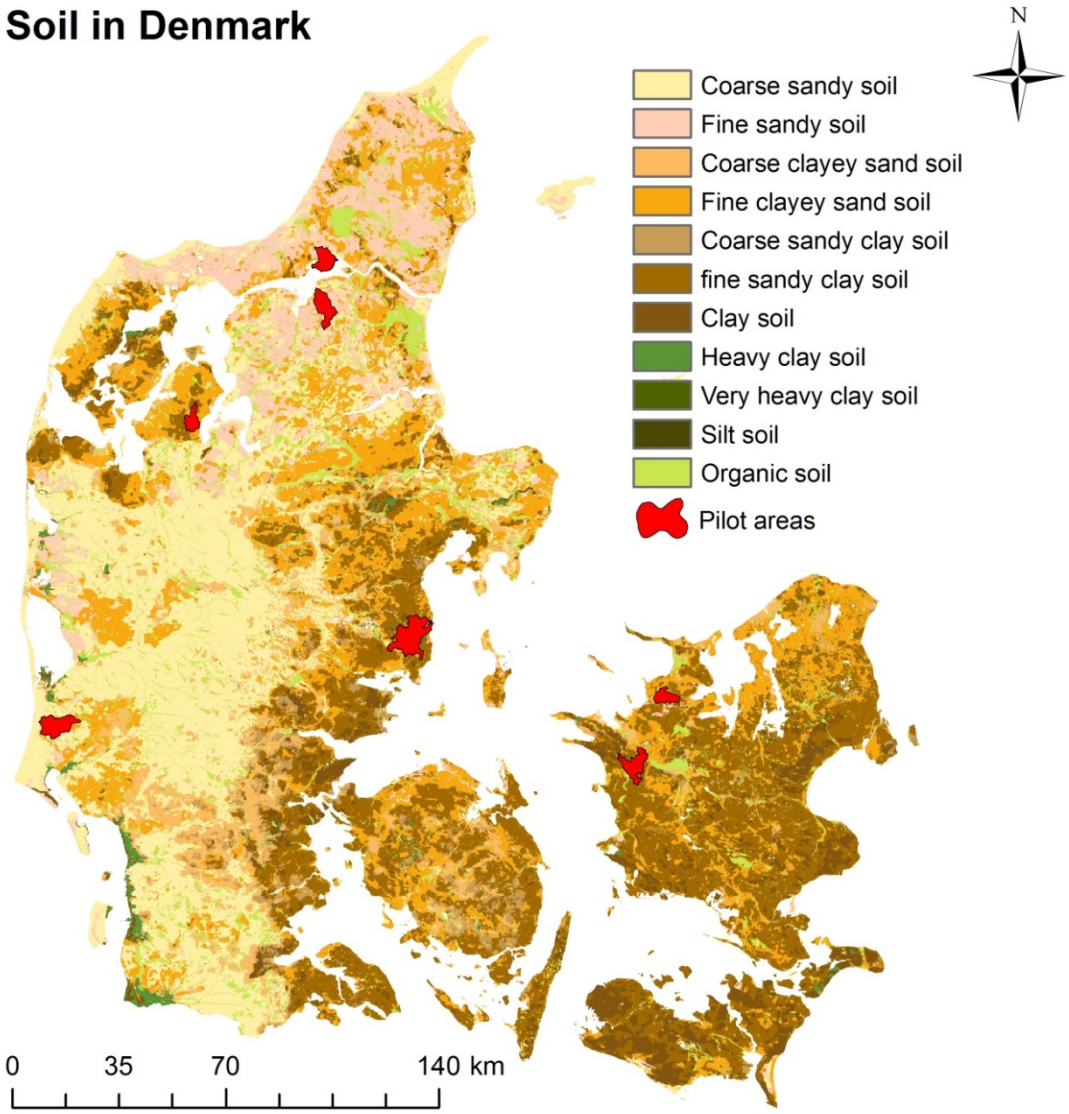


Figure: Land use in the 7 pilot areas described as share of total area in percent (%). The pilot areas are listed to % agriculture.

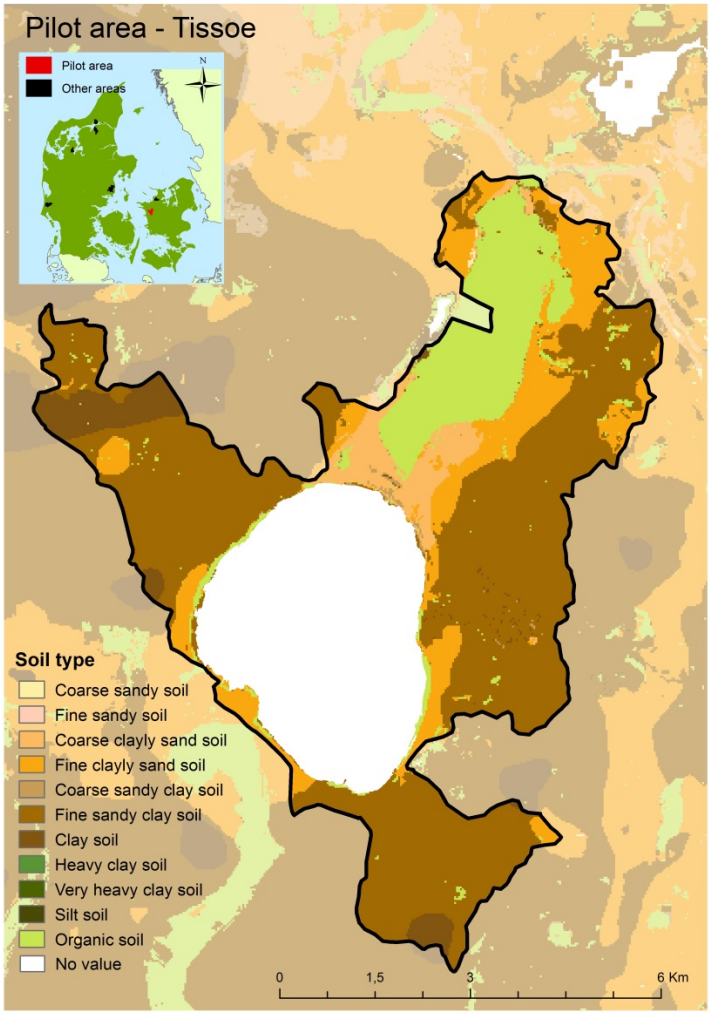
2.2. Soil type

Overall the western soils of Denmark contain a high sand percentage whereas the eastern parts are dominated by the more heavy soils - clay (map 1). Tissoe is located in western Zealand and is also dominated by the more clayey soils (65 %) (table). The northern part of the area is dominated by organic soils/humus (end product of dead organic material) due to the large wetland. Hereby, Tissoe represents the pilot area with the highest humus percentage (15.6 %).

The soil types of the pilot area are illustrated on map 2 and the belonging table below.



Map 1: Soil in Denmark.



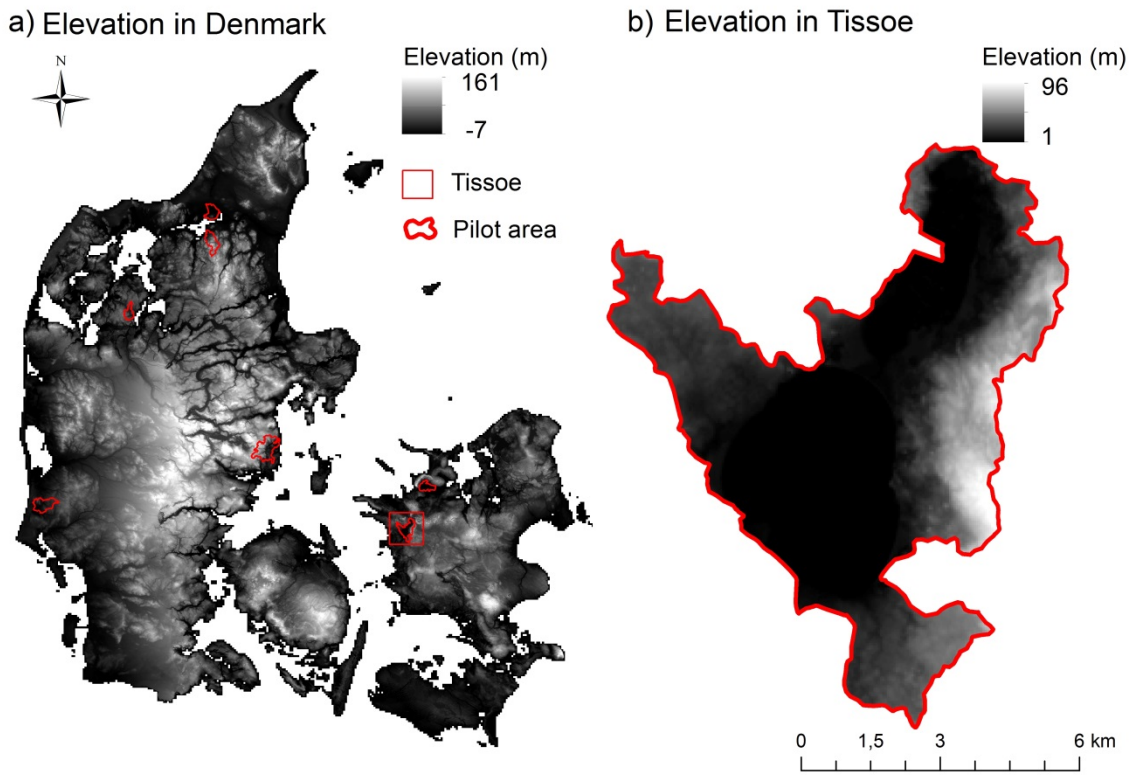
Map 2: Distribution of soil types in the pilot area Tissoe in 30.4×30.4 meters resolution.

Table: Distribution of soil types in the pilot area Tissoe in hectare (ha) and share of the total area in percent (%).

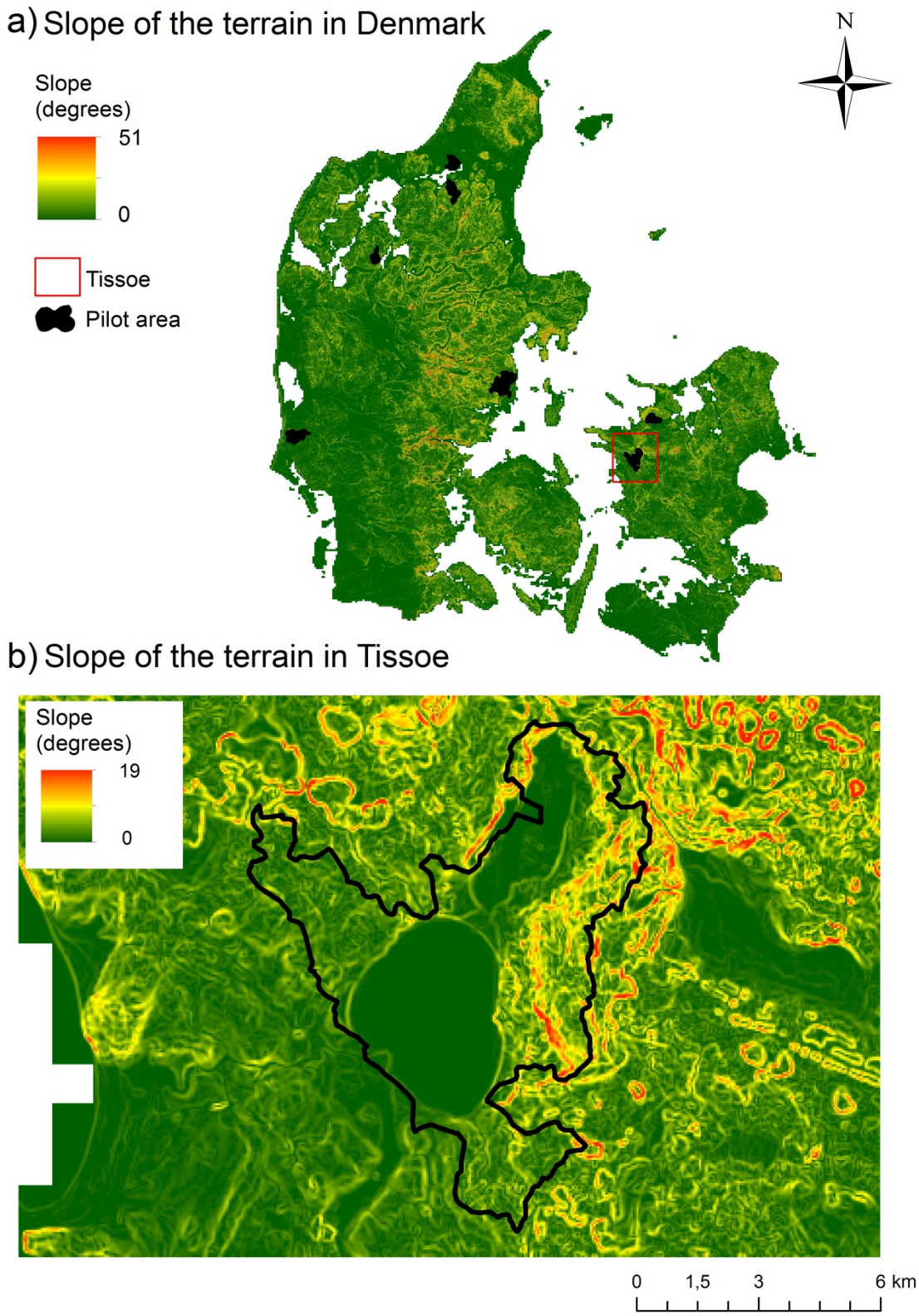
Soil type	Areal (ha)	Share of total area (%)
Coarse sandy soil	2	0
Fine sandy soil	0	0
Coarse clayey sandy soil	207	4.6
Fine clayey sand soil	660	14.7
Coarse sandy clay soil	24	0.5
Fine sandy clay soil	2691	60.1
Clay soil	196	4.4
Heavy clay soil	0	0
Very heavy clay soil	0	0
Silt soil	0	0
Organic soil	696	15.6
Total	4477	100

2.3. Terrain

The elevation in Tissoe varies from 1 to 96 meters above the sea level (map 1) and the slope of the terrain from 0 to 12 degrees (map 2). Hereby, Tissoe represents a relatively hilly terrain. This is especially pronounced east from the lake and near the wetland in the northern parts.



Map 1: Elevation in Denmark (a) and in the pilot area Tissoe (b) in 48×48 meters resolution.

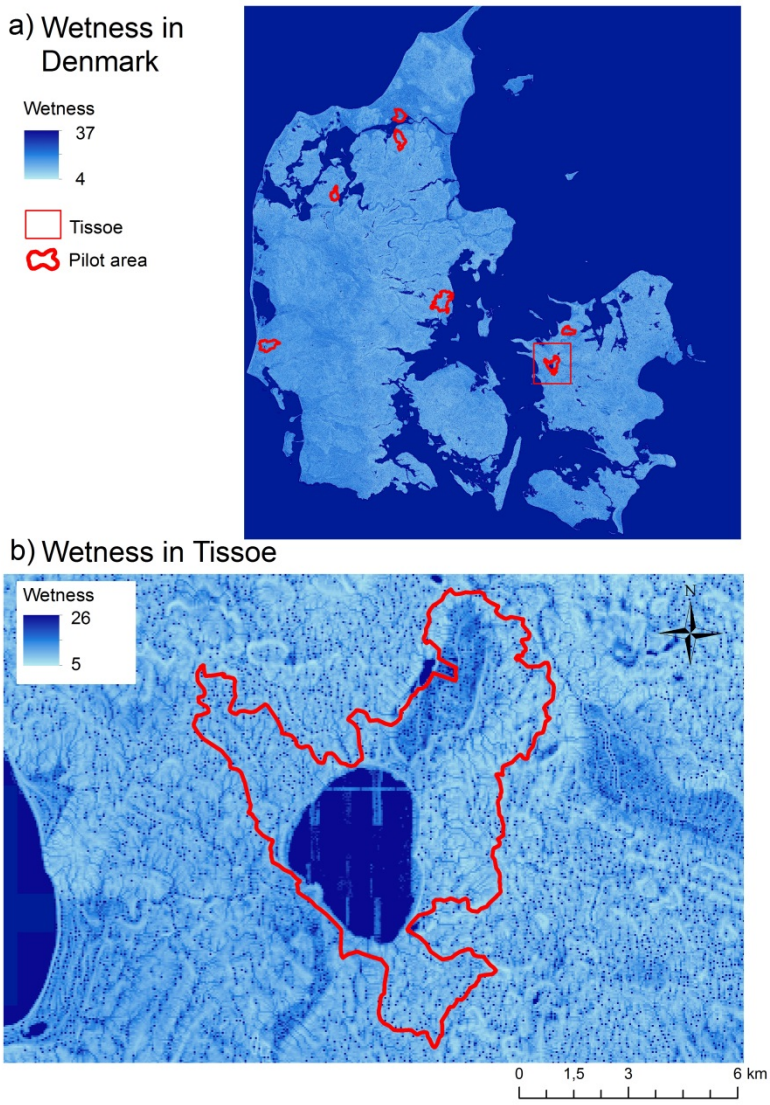


Map 2: Slope of the terrain in Denmark (a) and in the pilot area Tissoe (b) in 48×48 meters resolution.

2.4. Hydrology

Wetness is here illustrated by the topographical wetness index. The wetness index calculates how much water a given point in the terrain potential can receive (the size of the catchment) in relation to its ability to drain itself (slope of the terrain). The index expresses the ability of the point to accumulate water. It is based alone on placement of the point in the terrain and the shape of the terrain, and does not include other factors such as soil type, precipitation, etc.

The pilot area is delineated by the Tissoe water catchment. The area is relatively wet as illustrated by the lake and the large wetland.



Map: Topographical wetness index in Denmark (a) and in the pilot area Tissoe (b) in 48×48 meters resolution.

3. Referencer

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