Pilot area description – Varde

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Content

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. Varde – geographical location

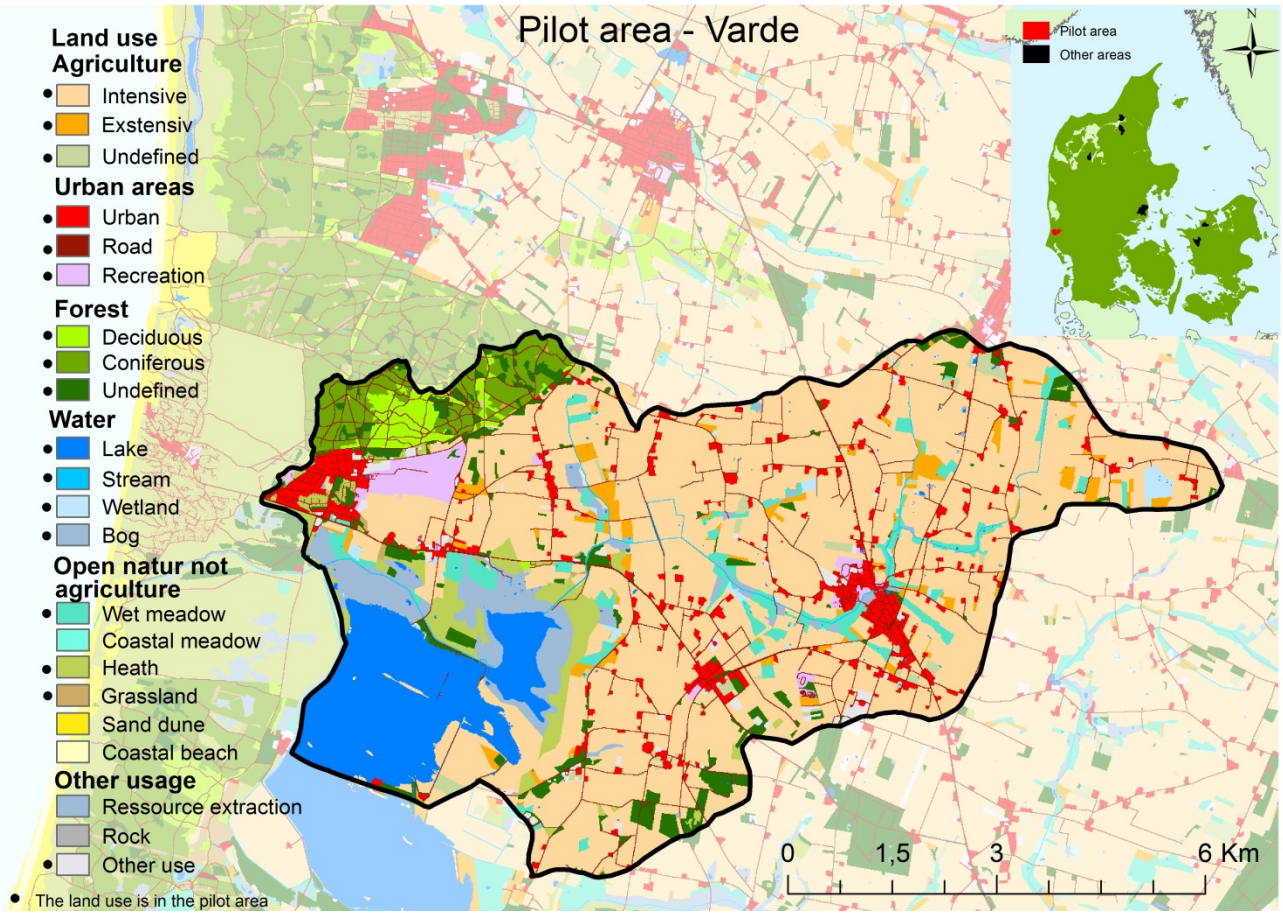
The pilot area Varde covers an area of 6282 ha and belongs to Varde municipality in western Jutland. Varde represents the pilot area with the highest nature area outside agriculture. This is due to i.a. Blaabjerg dune plantation in the northwestern part and the newly restored Filsoe (year 2012) in the southwestern part of the area - in all 29.6 % of the area is set aside to nature. The terrain is highly variable from east to west, and it is also the hilly, wet, and sandy parts in the west that represents nature outside agriculture, whereas the more fertile east is dominated by agriculture.

Map: Geographical location of the pilot area Varde.

2.1. land use

The main land use in Varde is intensive agriculture (55.2 %) followed by nature areas outside agriculture such as water, forest, and open nature (29.7 %) and urban areas (10.5 %) (map and table). The area hereby represents – together with Tissoe (43 %) – those areas with the largest portion of nature of all pilot areas (figure). The large nature area is mainly due to Blaabjerg dune plantation in the northwestern part and the newly restored Filsoe (year 2012).

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



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

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Table: Land use in Varde in hectare (ha) and share of total area in percent (%).

Land use	Area (ha)	Share of total area (%)	Share of total area (%)
Agriculture			58.6
Intensive	3466	55.2	
Extensive	154	2.5	
Undefined	60	1.0	
Urban areas			10.5
Urban	289	4.6	
Road	274	4.4	
Recreation	98	1.6	
Forest			8.3
Deciduous	84	1.3	
Coniferous	177	2.8	
Undefined	259	4.1	
Water			14.8
Lake	584	9.3	
Stream	29	0.5	
Wetland	39	0.6	
Bog	279	4.4	
Open nature not agriculture			6.6
Wet meadow	209	3.3	
Costal meadow	0	0	
Heath	202	3.2	
Grassland	6	0.1	
Sand dune	0	0	
Coastal beach	0	0	
Other usage			1.2
Resource extraction	0	0	
Rock	0	0	
Other use	73	1.2	
Total	6282	100	100

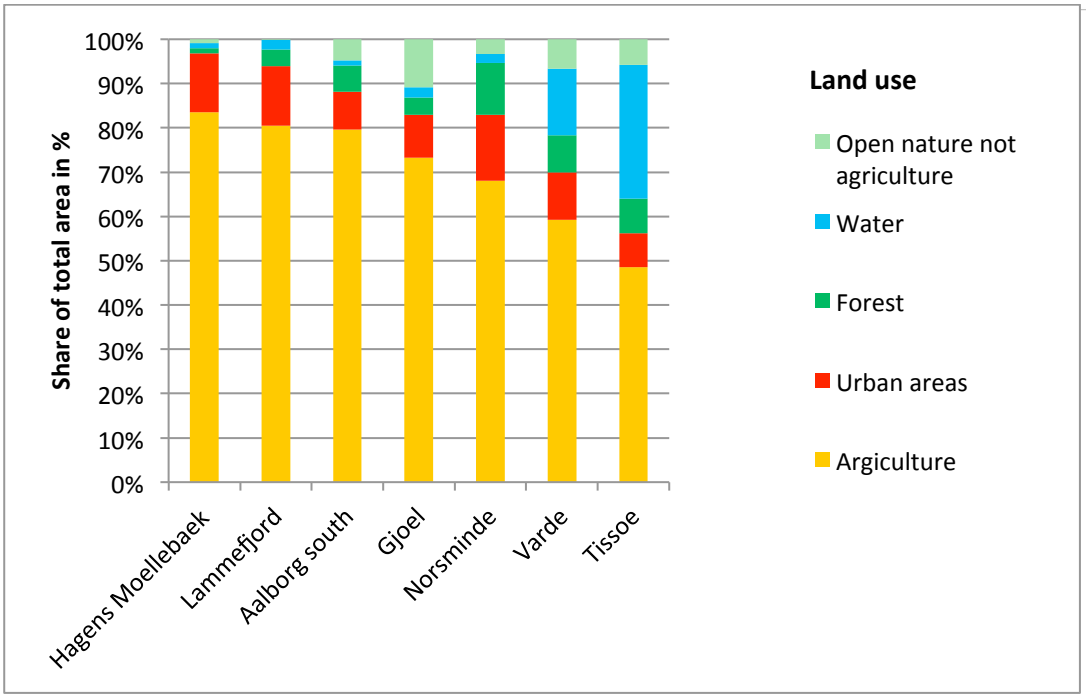
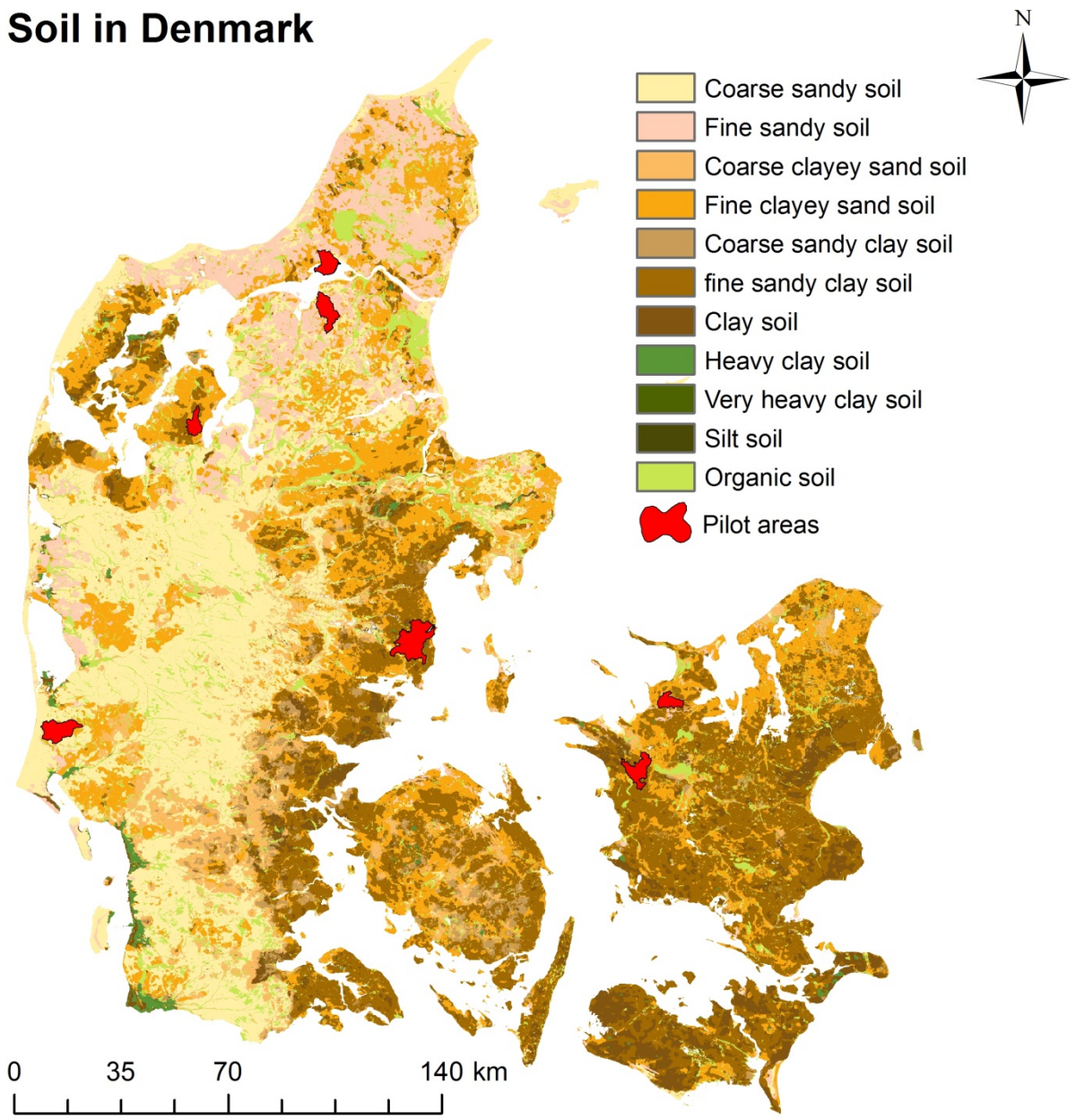


Figure: Land use in the 7 pilot areas described as share of total area in percent (%). The pilot areas are listed to % agriculture.

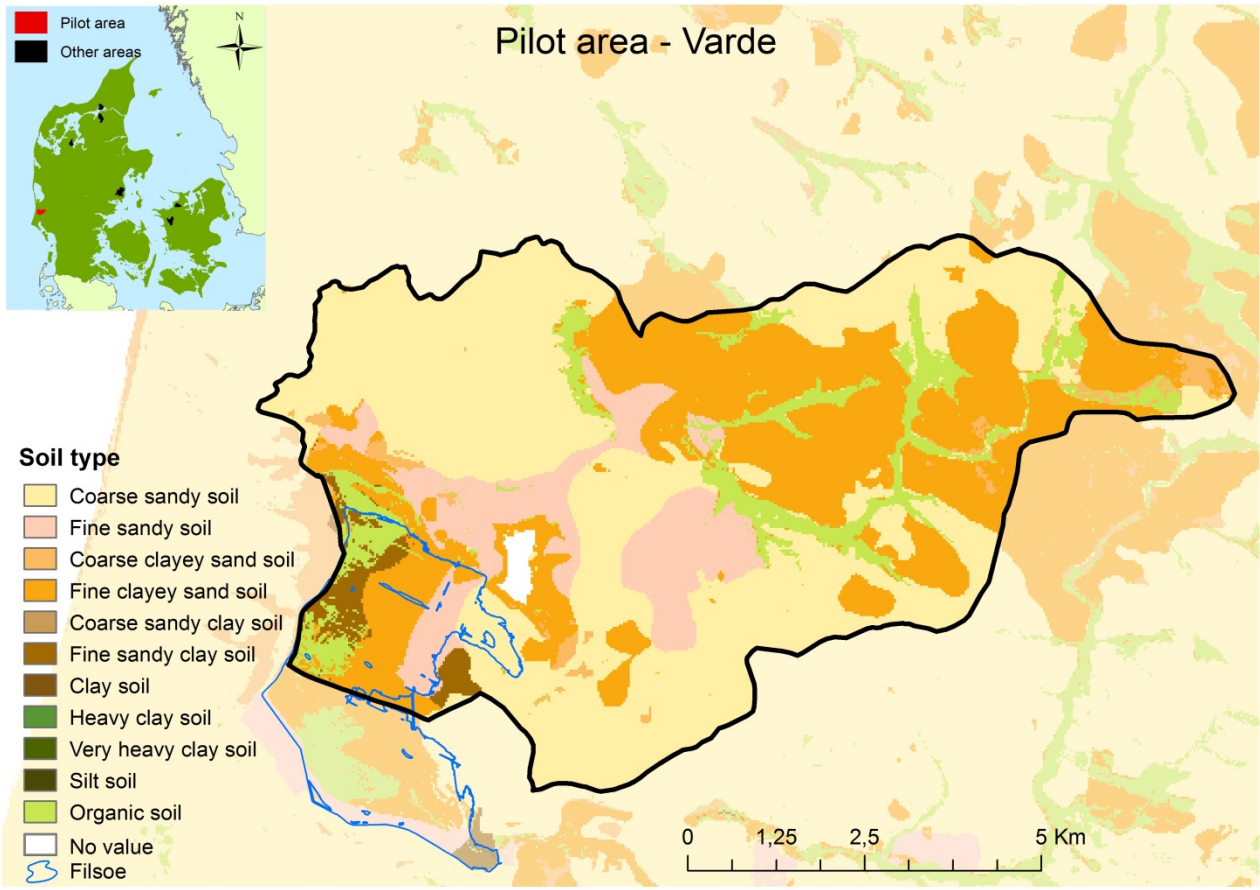
2.2. Soil type

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). Varde is located in western Denmark and is also dominated by the sandy soils (89.7 %) (map 2 and table).

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



Map 1: Soil type in Denmark.



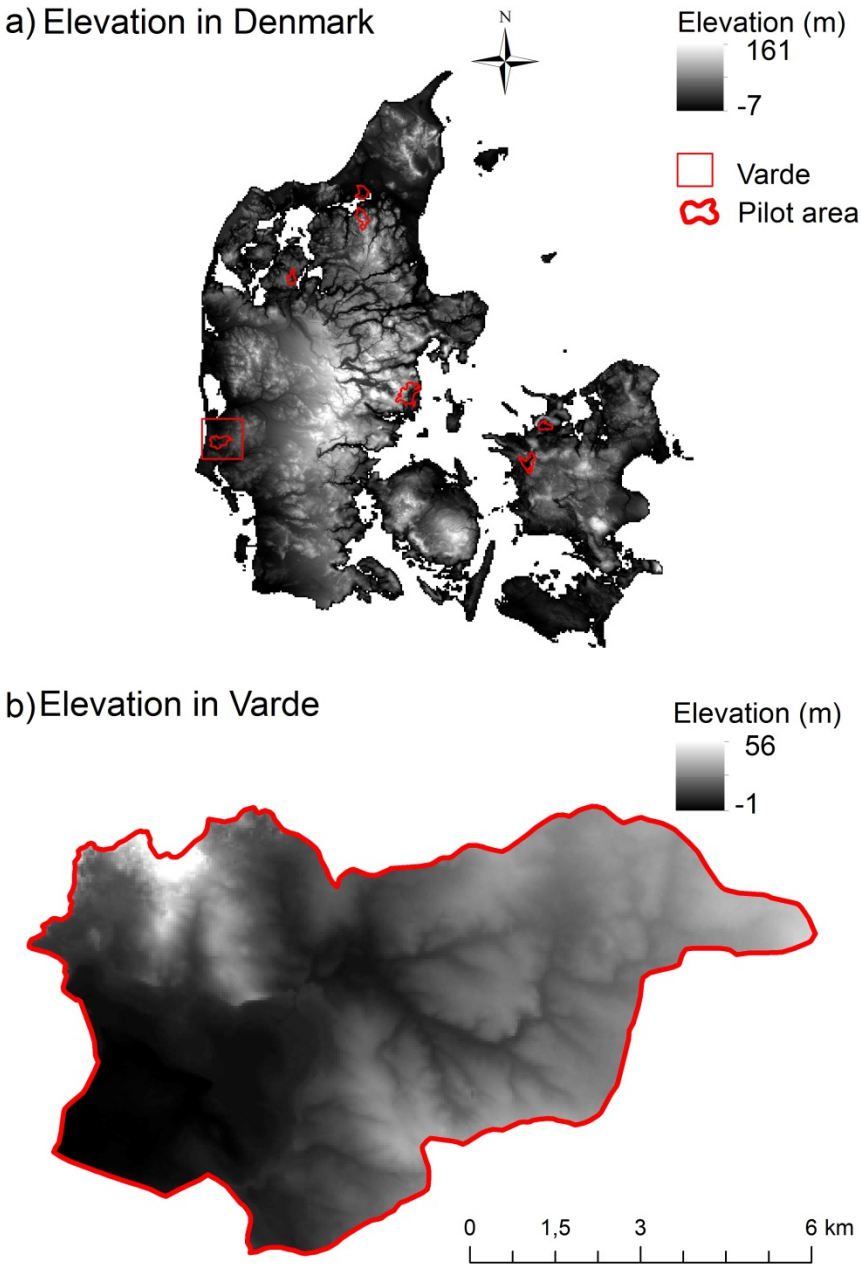
Map 2: Distribution of soil types in the pilot area Varde in 30.4×30.4 meters resolution.

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

Soil type	Area (ha)	Share of total area (%)
Coarse sandy soil	2874	46.0
Fine sandy soil	684	10.9
Coarse clayey sandy soil	125	2.0
Fine clayey sand soil	1922	30.8
Coarse sandy clay soil	1	0
Fine sandy clay soil	118	1.9
Clay soil	0	0.
Heavy clay soil	0	0
Very heavy clay soil	0	0
Silt soil	0	0
Organic soil	523	8.4
Total	6246	100

2.3. Terrain

The elevation of Varde varies from -1 to 56 meters above the sea level (map 1), and a slope of the terrain from 0-5 degrees (map 2). Thereby, Varde is a relatively flat area except from the more hilly terrain in the northwestern part of the area (map 1b) and steep slopes near watercourses. The terrain, high sand percentage in the soil, and the high wetness of the area (all factors which are unfavorable for agriculture) are important drivers of the land use.



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

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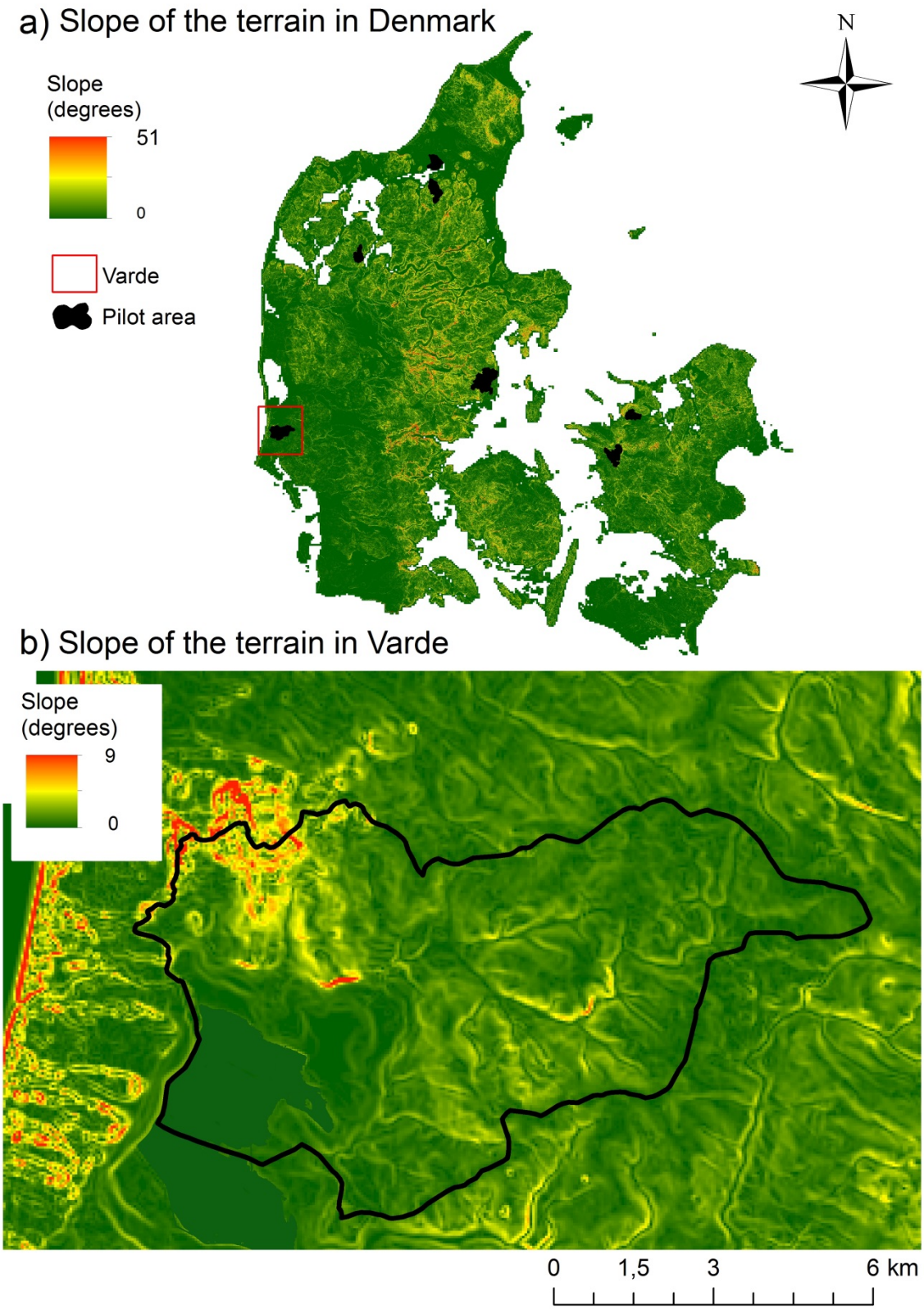

Map 2: Slope of the terrain in Denmark (a) and in the pilot area Varde (b) in 48×48 meters resolution

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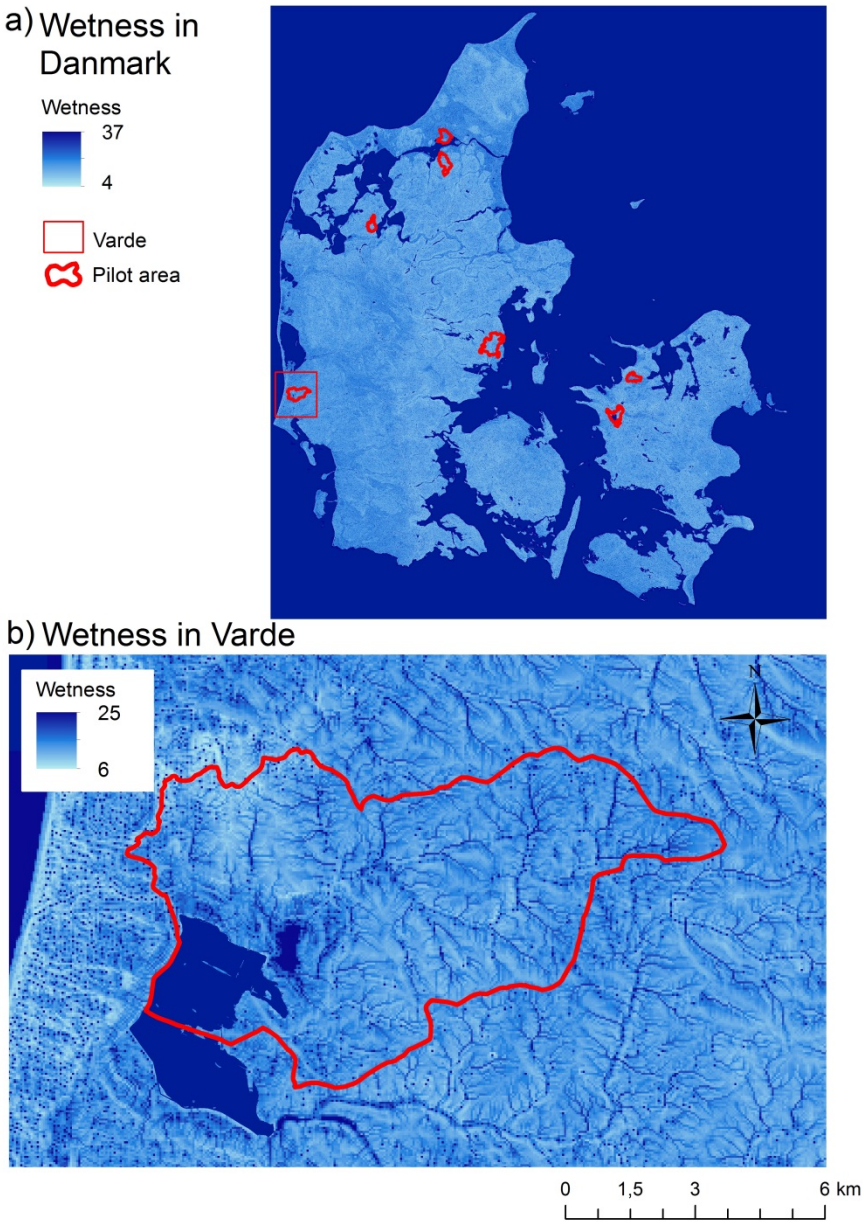
2.4. Hydrology

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 water catchment defined by the watercourse system in Varde. It is a relatively wet area, especially in the southwestern parts.



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

3. References

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