

# Compiling a database for change analyses in the sustainable energy sector of Schleswig-Holstein

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## The aim of the project

The aim of this project was to compile a database containing information related to the production of sustainable energy in S-H for the past few years. This includes the acquisition of power plant locations and performance characteristics, as well as agricultural statistics (e.g. area covered by biofuel crops, Fig. 1) and climatic data such as wind speed or sunshine duration. As for the data collection, the data was found to be scattered, not consistent and sometimes even restricted. Data providers were the CAU, TenneT TSO GmbH, DWD (Deutscher Wetterdienst).

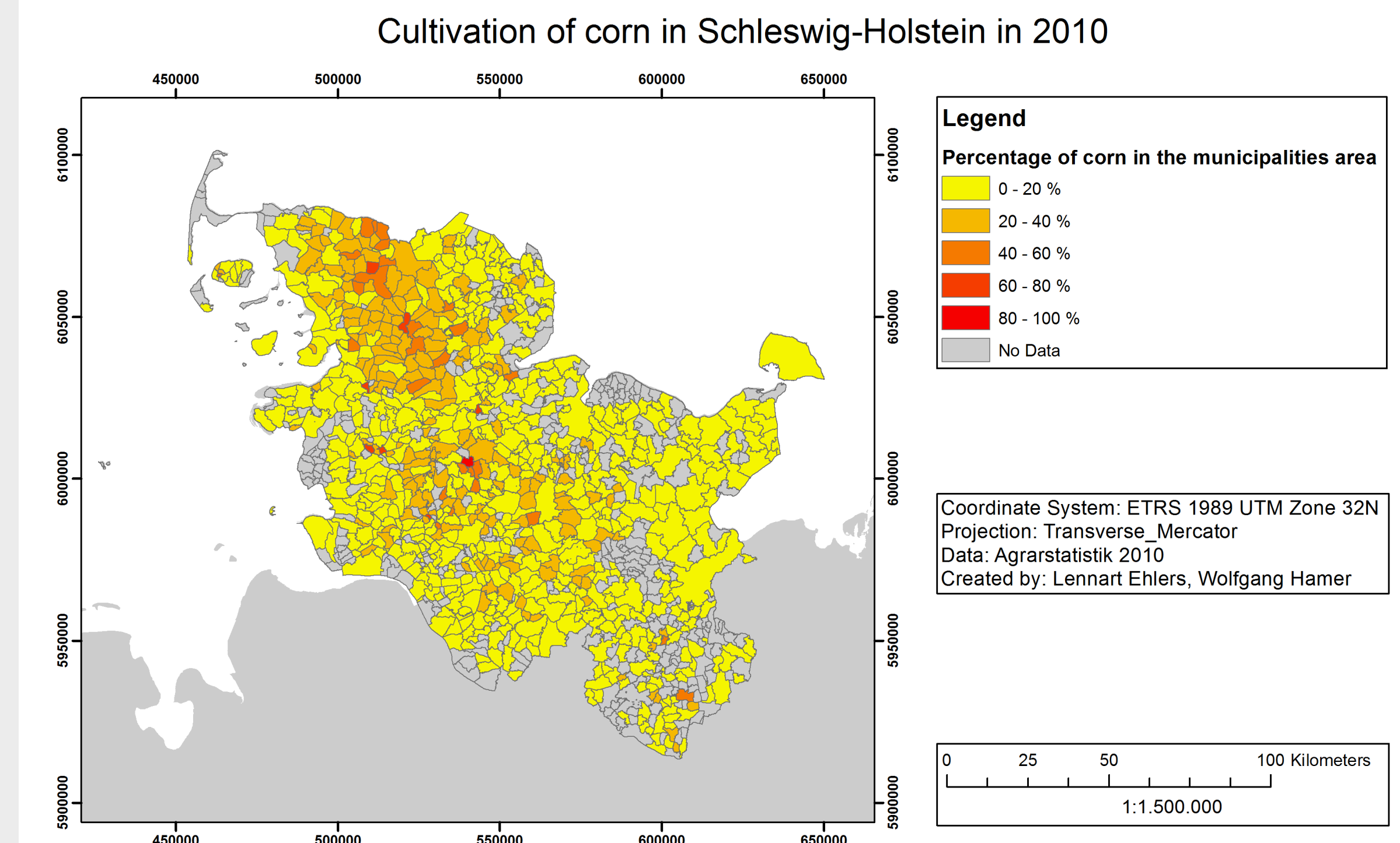


Fig.1

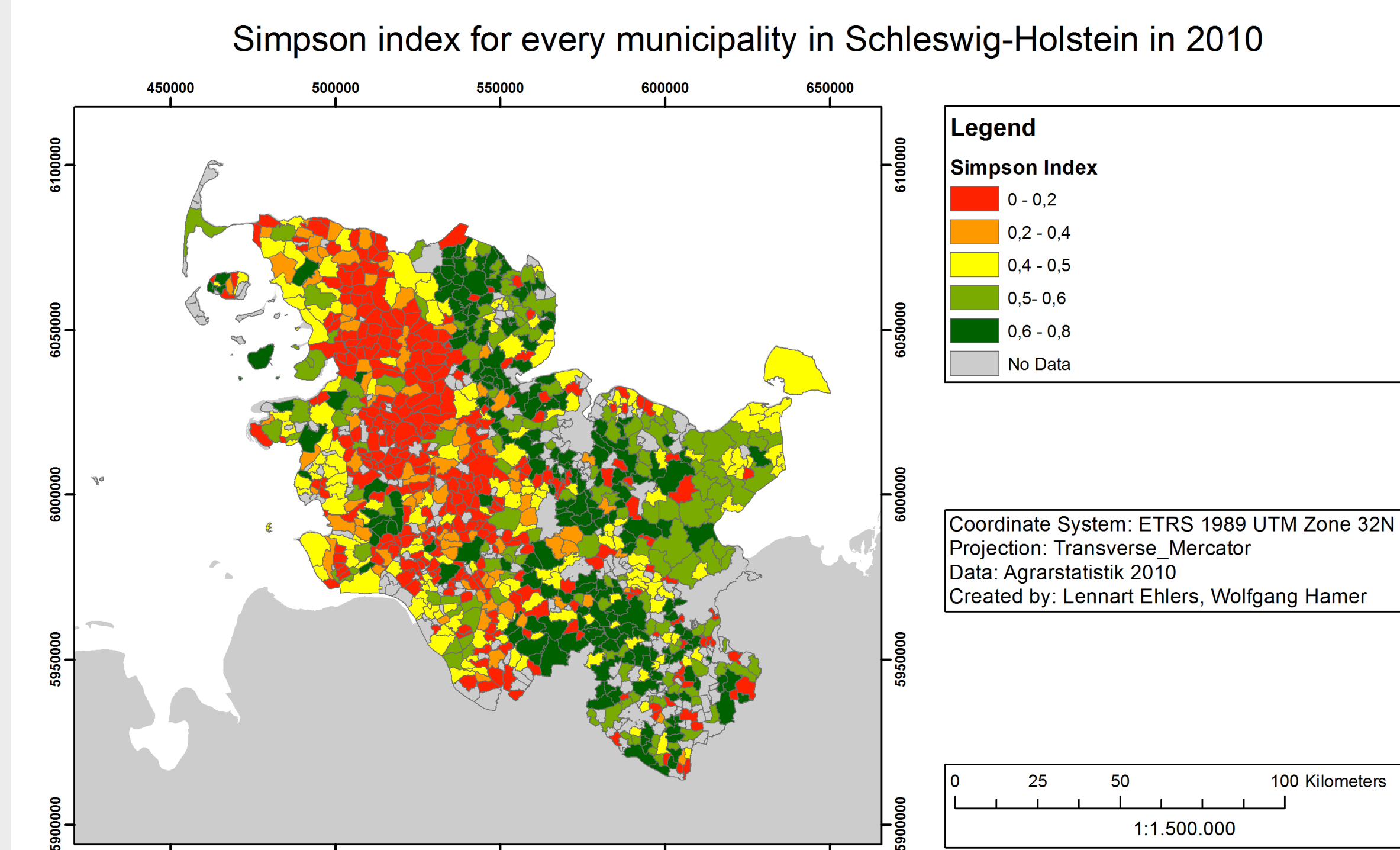


Fig. 2

## Ecosystem diversity

One question that arised was '(How) Does the energy transition in Schleswig-Holstein affect the agricultural diversity?' Hence, two indices for estimating ecosystem diversity were applied, the Simpson Index and the Shannon Index. This was realised by developing and running a python script within the python extension of the ArcGIS field calculator. Find a map with the Simpson Index for the municipalities of S-H on the left side (Fig. 2).

## Results

A database was compiled and may serve as a working basis for further analyses related to the generation of sustainable energy in Schleswig-Holstein. Several questions were investigated for test purposes. On the right, another example of how the collected data could be used in order to investigate questions connected with renewable energy production is given.

## Example: Increase of biomass energy

As this graph shows, the amount of energy, produced with biomass increased from the year 2007 to the year 2011. The amount almost quadruplicated within five years.

