

PLUREL



Land Use Relationships
In Rural-Urban regions

Module 2

July 2010

**PERI-URBAN LAND USE RELATIONSHIPS –
STRATEGIES AND SUSTAINABILITY ASSESSMENT
TOOLS FOR URBAN-RURAL LINKAGES,
INTEGRATED PROJECT,
CONTRACT NO. 036921**

D2.3.14

**Scenario maps on
agriculture,
environment and
recreation**

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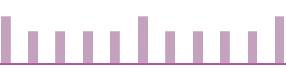
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Draft:	completed
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Final, submitted to EC:	completed



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Abstract

The Deliverable Report at hand presents values for the year 2000 of the different indicators used to describe the environmental, agricultural as well as recreational status of the European NUTSX regions. Moreover it shows the results of the implementation of the generic response functions for these indicators with the results for artificial surface for the PLUREL scenarios (2015, 2025) provided by the RUG model. The resulting changes of the indicator values per scenario for the time steps 2000-2015 and 2000 – 2025 are displayed in the maps.



Classification of results/outputs:

For the purpose of integrating the results of this deliverable into the PLUREL Explorer dissemination platform as fact sheets and associated documentation please classify the results in relation to spatial scale; DPSIR framework; land use issues; output indicators and knowledge type.

Spatial scale for results: Regional, national, European	European
DPSIR framework: Driver, Pressure, State, Impact, Response	Impact
Land use issues covered: Housing, Traffic, Agriculture, Natural area, Water, Tourism/recreation	Agriculture, Natural area, Water, Tourism/recreation
Scenario sensitivity: Are the products/outputs sensitive to Module 1 scenarios?	Yes
Output indicators: Socio-economic & environmental external constraints; Land Use structure; RUR Metabolism; ECO-system integrity; Ecosystem Services; Socio-economic assessment Criteria; Decisions	ECO-system integrity; Ecosystem Services; Socio-economic assessment Criteria;
Knowledge type: Narrative storylines; Response functions; GIS-based maps; Tables or charts; Handbooks	GIS-based maps
How many fact sheets will be derived from this deliverable:	0



Introduction

The study is produced in PLURELs WP2.3. The WP aims at development and application of response functions and D2.3.14-2.3.15 aims to show the application results for certain issues. Thus the values for 2000 and the modelled changes, based on the response functions for agricultural production, habitats and ecological regulation as well as for recreation are presented. The results of WP2.1 (the RUR Sub-delineation, D2.1.4) are included in the response functions. Further on the results of WP 1.4 (RUG model results for artificial surface changes for the four PLUREL scenarios, D1.4.3) are implemented with the regression models and thus deliver values for the indicators on agriculture, ecology and recreation for the four scenarios for the available time steps (2015, 2025). The resulting assessment is fed into the iIAT from WP5.3 (D5.3.1), one of the end-products of PLUREL. In this context, also the results of WP2.2 (typology on governance and spatial planning, D2.2.1) can be used as a filter for the results of the response functions.

The response functions not only contribute to end-products iIAT, but also to the Policy Brochure, where certain development trends of agriculture, etc. are analysed.

The report is structured as follows:

The Abstract and Introduction section is followed by the maps for each indicator for the year 2000 as well as its changes between 2000-2015 and 2000-2025 in percent for each PLUREL scenario.

Indicators and Maps

Indicator Description

- **Agricultural Area**

The share of agricultural area within a region gives information on the potentially utilizable area for agricultural purposes. It is calculated on the bases of Corine Land Cover classes 211-244.

- **Farm Productivity** (Average Standard Gross Margin, SGM)

The SGM provides a measure of a holding's business size, irrespective of its area and intensity of production. It is thus a measure for agricultural income generation.

- **No. of Part-Time Farmers**

This indicator is based on the number of farm holder's being natural person with a work time below 25%. It indicates a shift of farming intensities towards a more diverse income generation, which is supposed to be more likely closer to the urban fringe.

- **Unsealed Soil**

The unsealed soil is the opposite to the share of artificial surface. It highlights areas where ecological processes, like groundwater recharge or soil development can still take place in an undisturbed manner.

- **Unfragmented Landscape** (Effective Mesh Size Index, MESH)

The MESH index is based on the probability that two individuals can meet in a certain area without barriers. It indicates the size of effective meshes, integrating the extent and structure of fragmentation by transportation infrastructure and settlements.

- **Landscape Patchiness** (Landscape shape index, LSI)

The Landscape shape index provides information on class aggregation/disaggregation or clumpiness resp. patchiness of a landscape. It calculates the perimeter-to-area ratio of a landscape. When LSI increases, the patches become increasingly disaggregated – providing more niches for different species and therefore enhancing biodiversity (in a certain direction).

- **Landscape Interspersion** (Interspersion and juxtaposition index, IJI)

The IJI takes the spatial configuration and neighbourhood of the patch types into consideration. The more patch types of an area are equally adjacent to each other and are so directly neighbouring, the higher the IJI. It can be interpreted as the accessibility of habitats of a certain kind.

- **Density of Natural Habitats** (Green Background Index)

The Green Background Index is an indicator for naturality of a region; representing the regional richness regarding natural land-cover types, provided by the European Environmental Agency. It is based on an aggregation of CORILIS components for "green" classes (Pastures & mixed farmland, Forests and transitional woodland shrub, Natural grassland, Heathland, Sclerophylous vegetation, Open space with little or no vegetation and Water bodies).

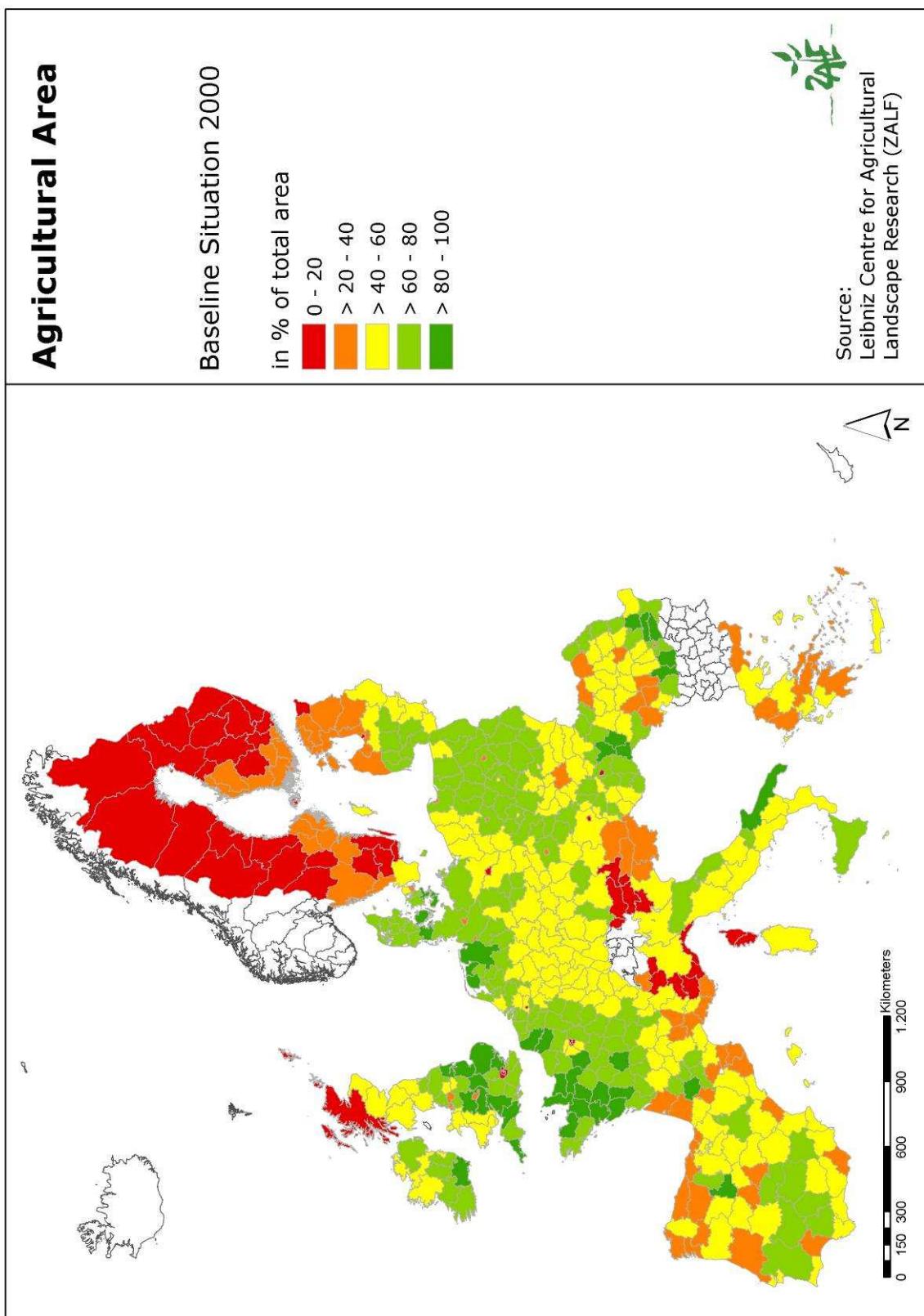


- **Density of Endangered Bird Species**

The number of endangered bird species per 100km² is a measure of ecological integrity of a region; It shows the importance for the preservation of endangered species and is based on data from BirdLife International.

- **Heavy Metal Emissions**

For the Heavy Metal Emissions an index was created, by cumulating and hazard-potential-weighing (thresholds) heavy metal emissions; It shows the degree of pollution of air, water and soil from Heavy Metals. The database is the EPER dataset 2008 with the reporting year of 2001.



Changes in Agricultural Area

Scenario A1
2000 - 2015

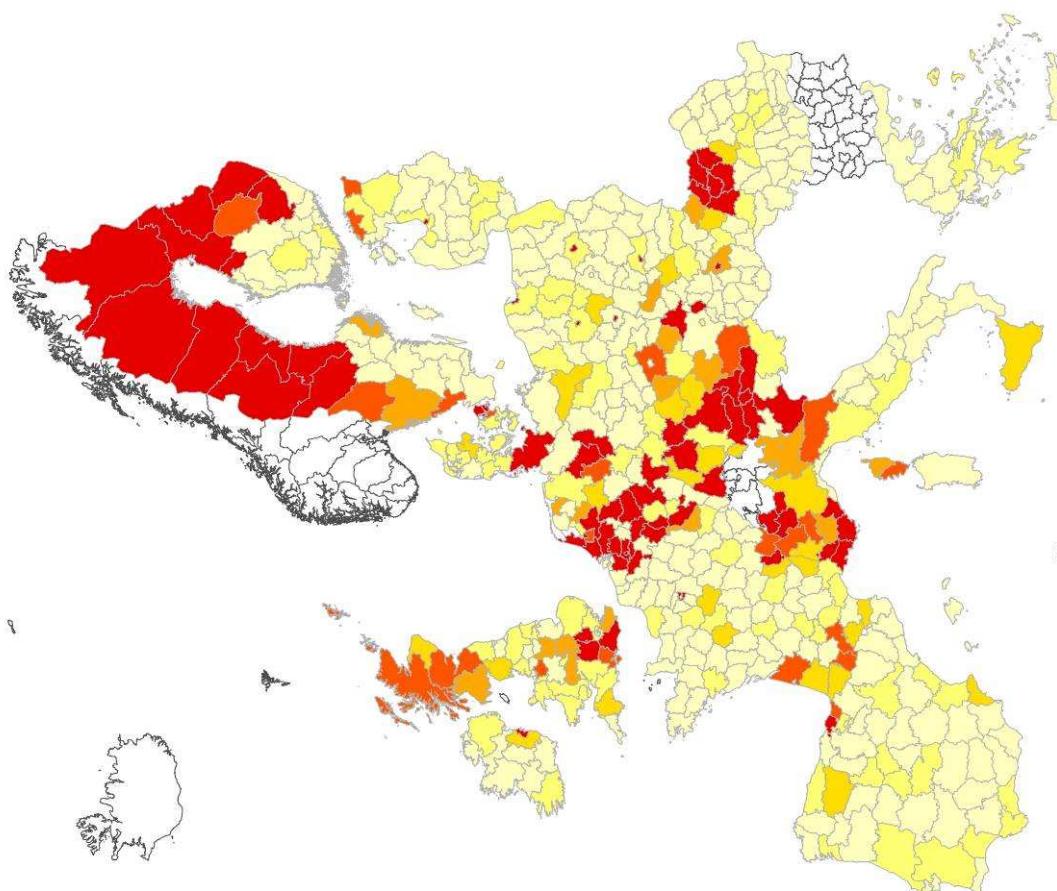
in %
≤ -5 > -5 -4
-4 -3
-3 -2
-2 -1
-1



Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)



0 150 300 600 900 1.200 Kilometers



Changes in Agricultural Area

Scenario A2
2000 - 2015

in %

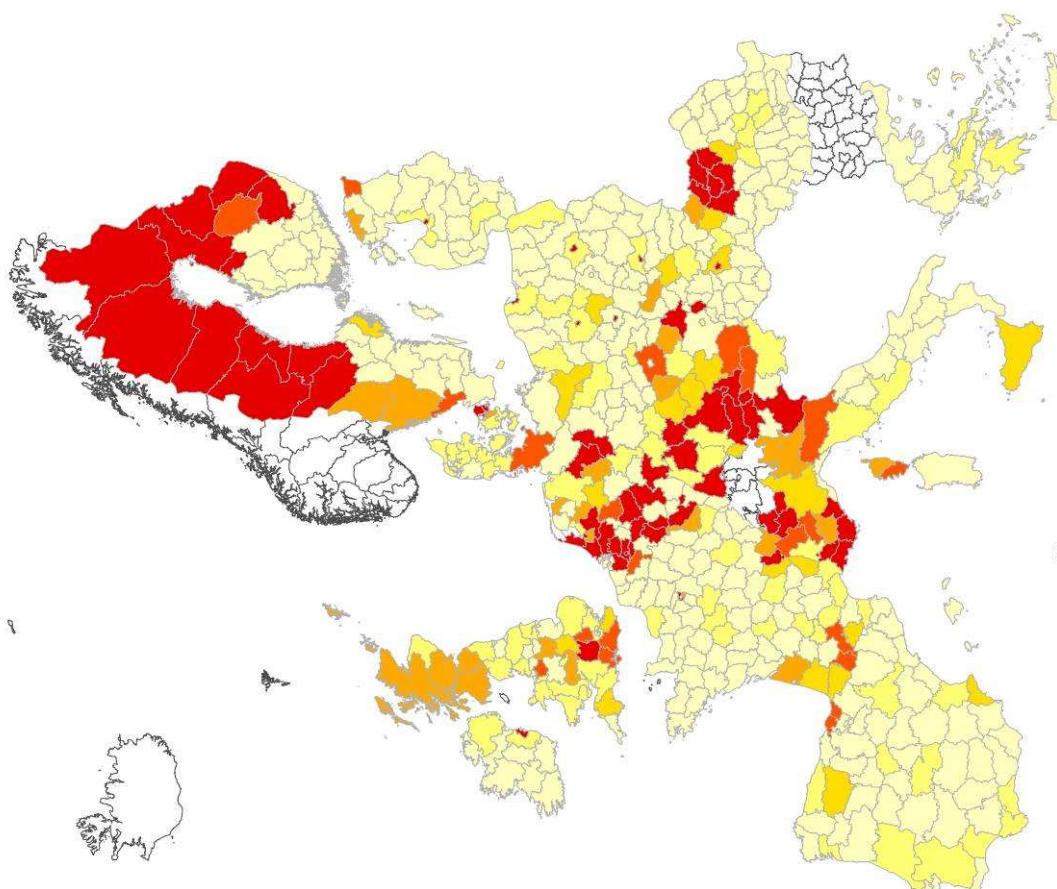
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> -2 - -1
> -1



Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)

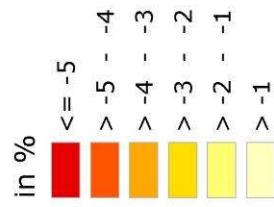


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Changes in Agricultural Area

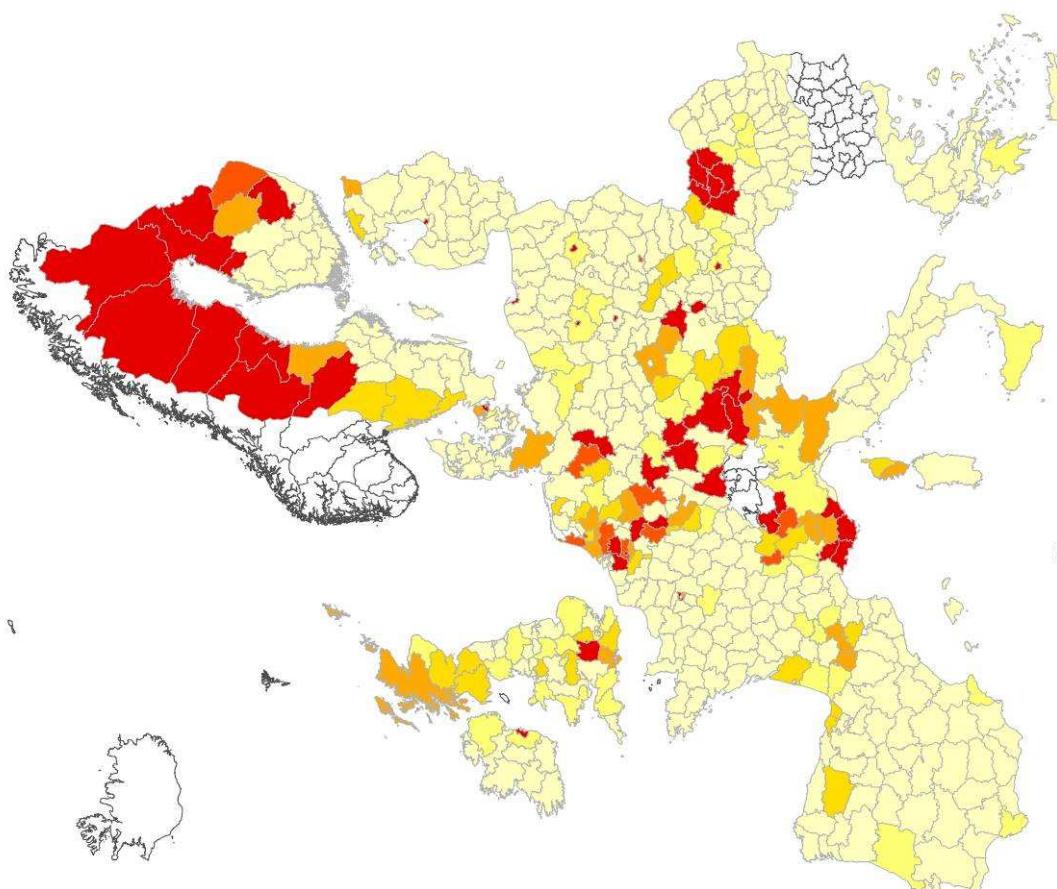
Scenario B1
2000 - 2015



Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)

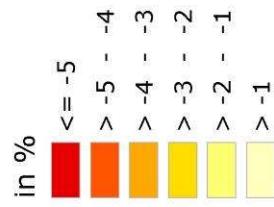


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Changes in Agricultural Area

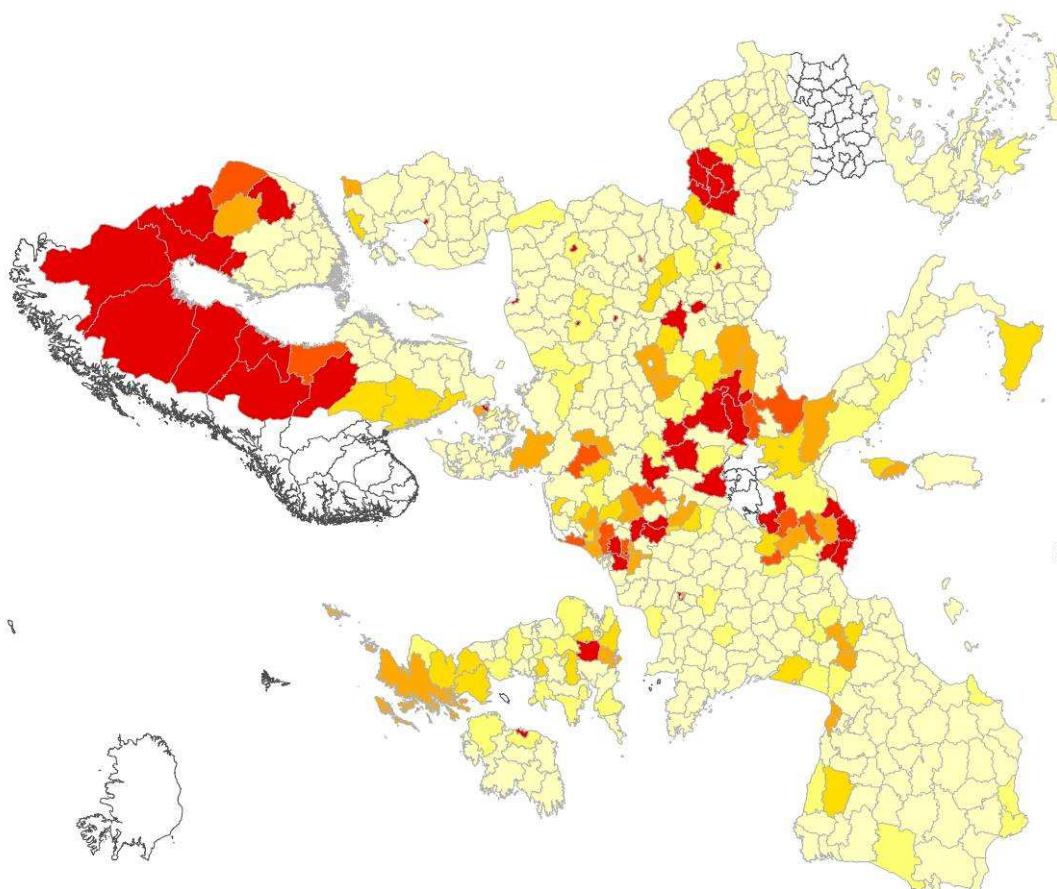
Scenario B2
2000 - 2015

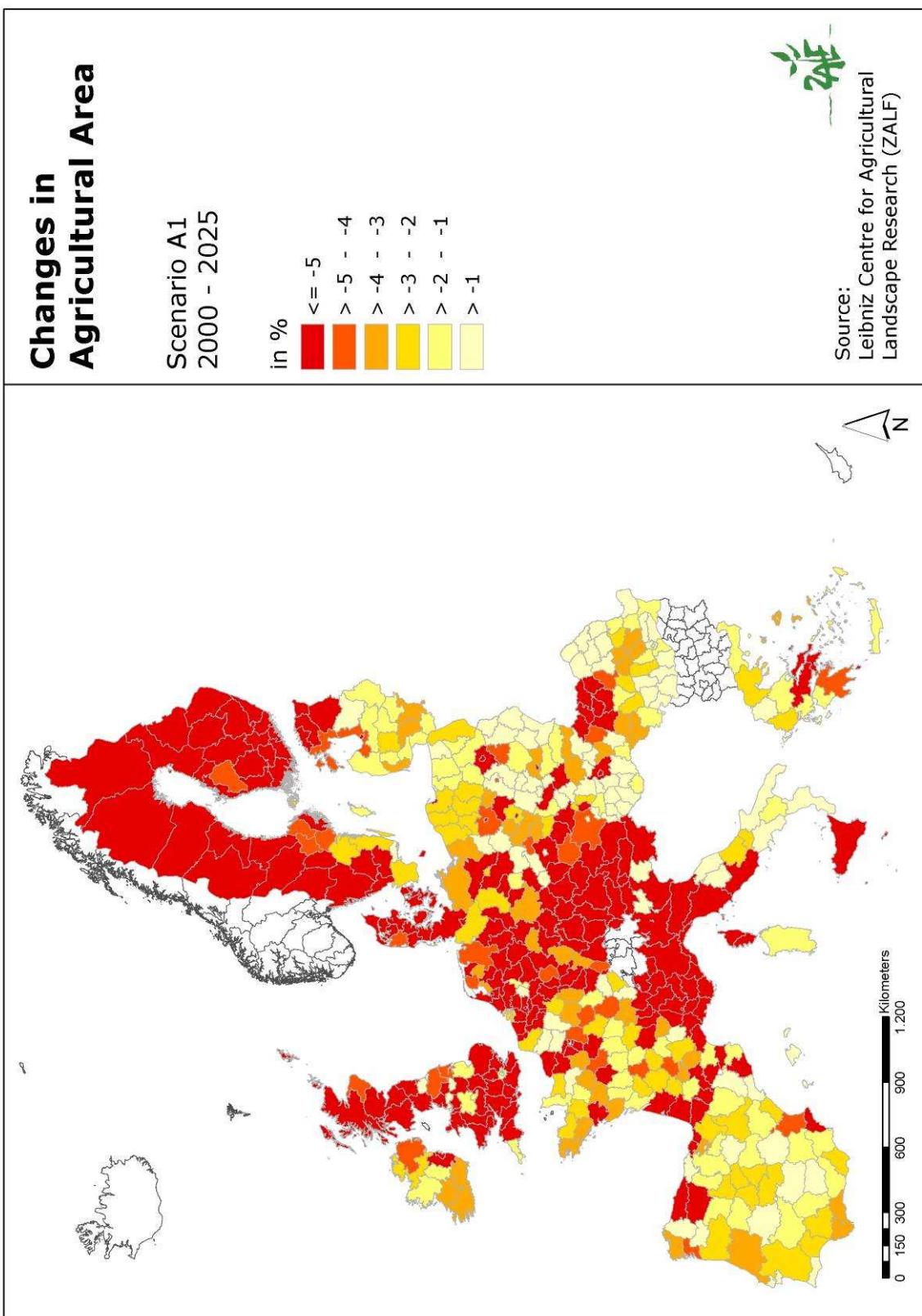


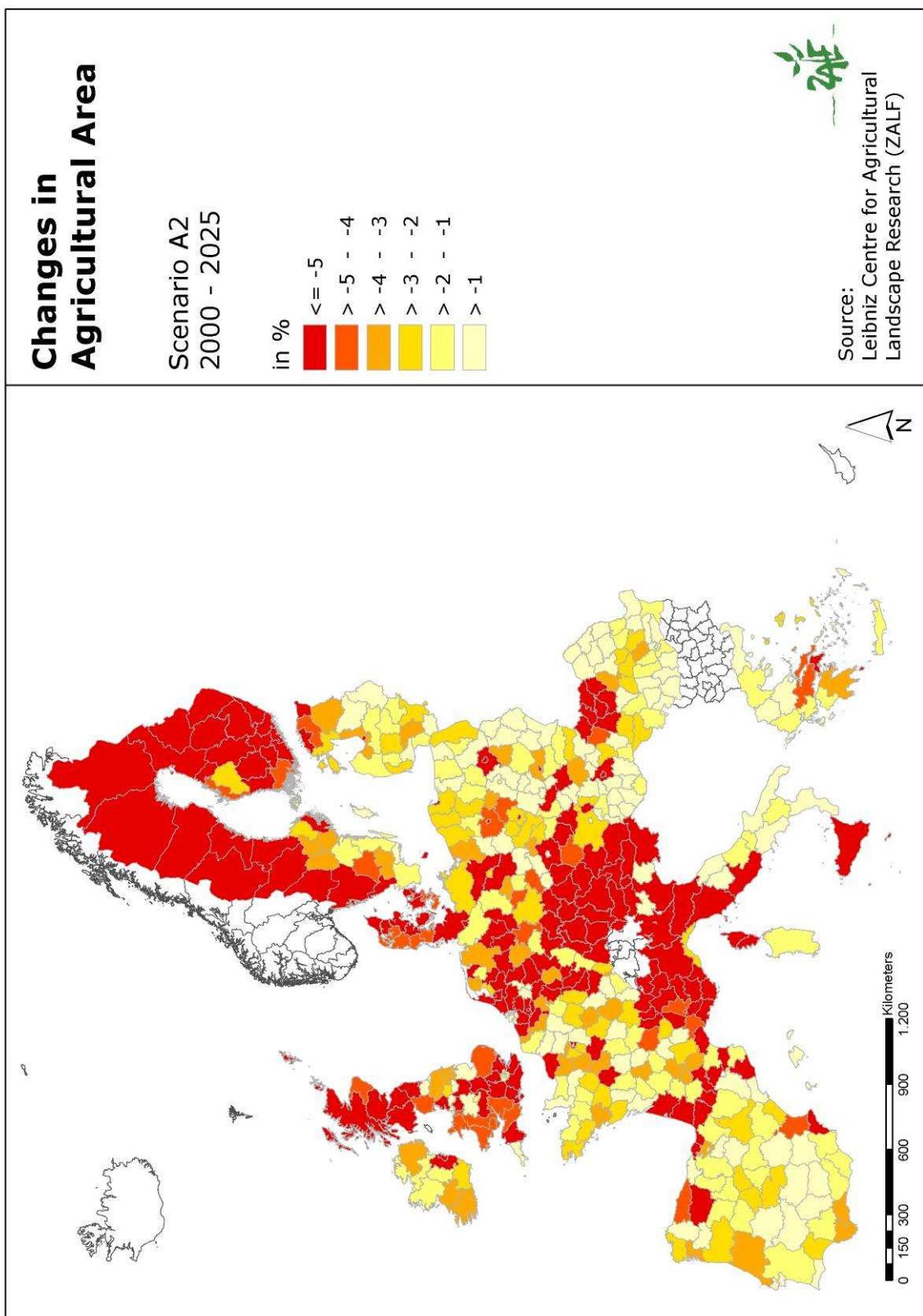
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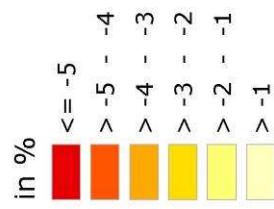






Changes in Agricultural Area

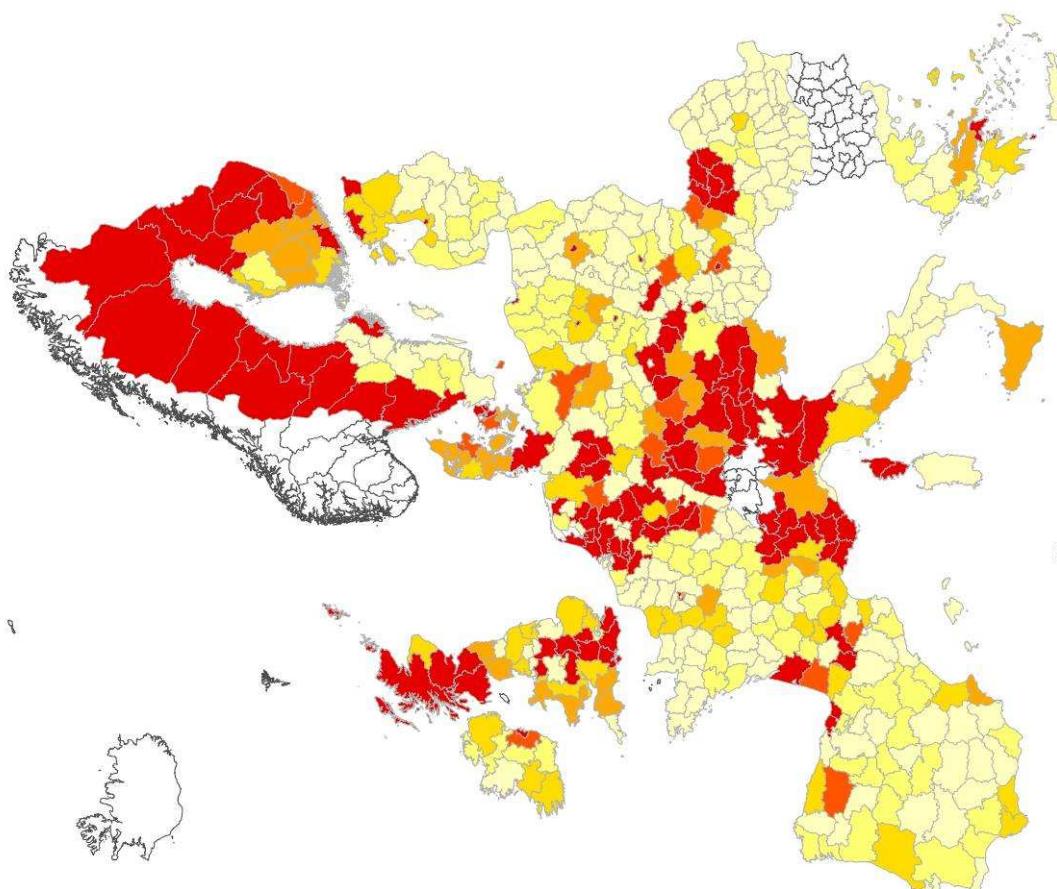
Scenario B1
2000 - 2025



Source:
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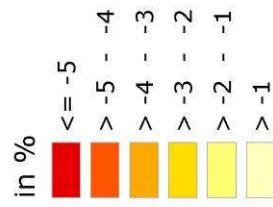


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Changes in Agricultural Area

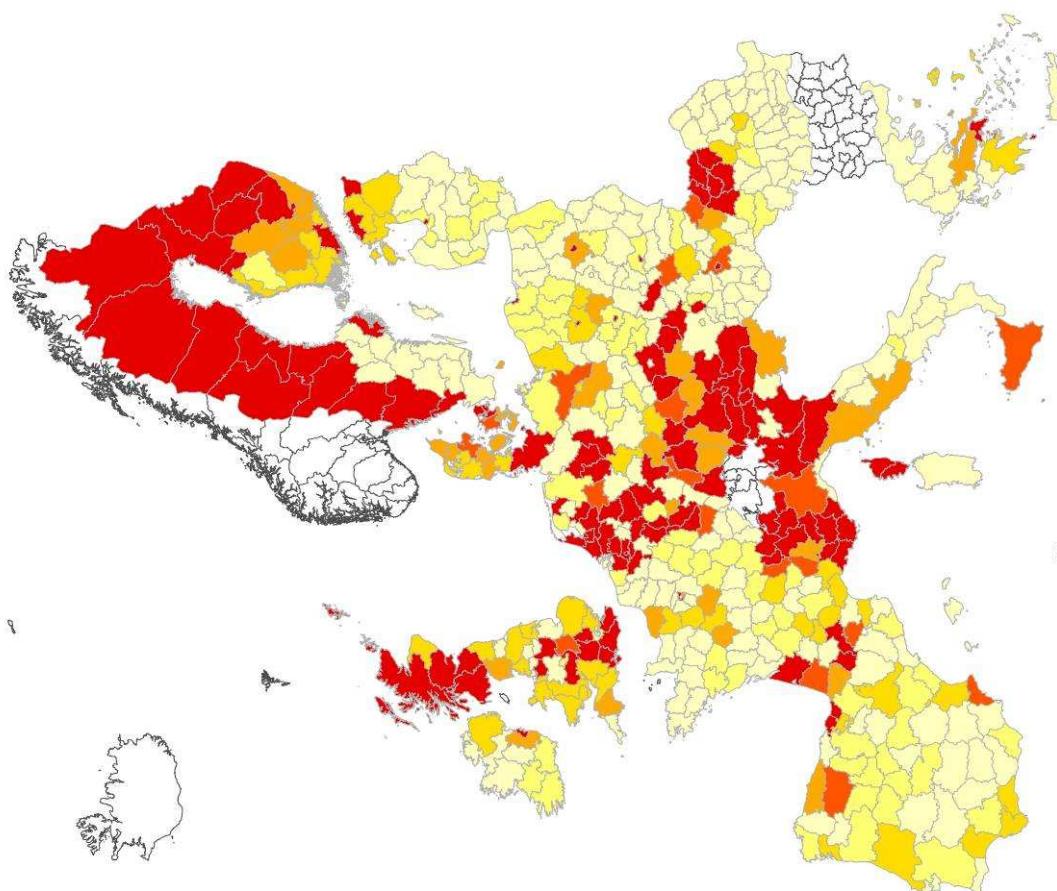
Scenario B2
2000 - 2025



Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)



0 150 300 600 900 1.200 Kilometers



Farm Productivity

Baseline Situation 2000

in Euro/EGE and ha

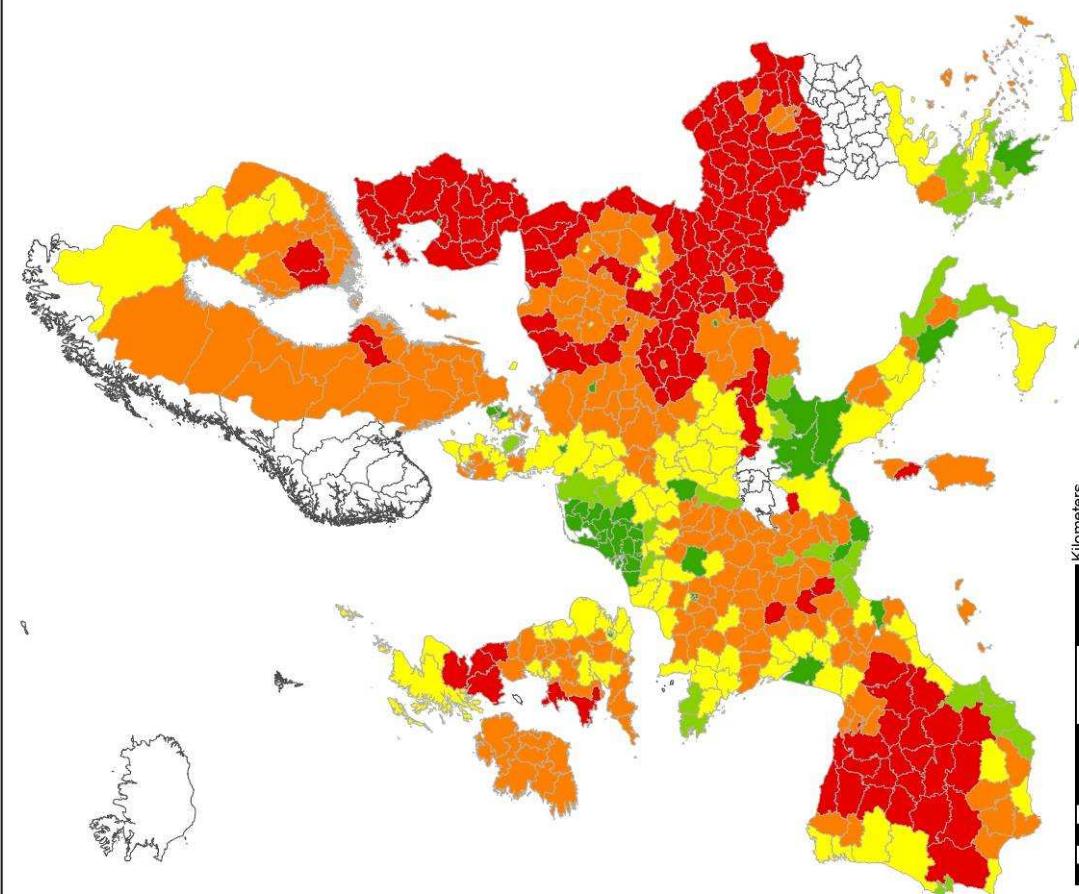
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- > 0.5 - 1
- > 1 - 1.5
- > 1.5 - 2
- > 2



Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)



0 150 300 600 900 1.200 Kilometers



Changes in Farm Productivity

Scenario A1
2000 - 2015

in %

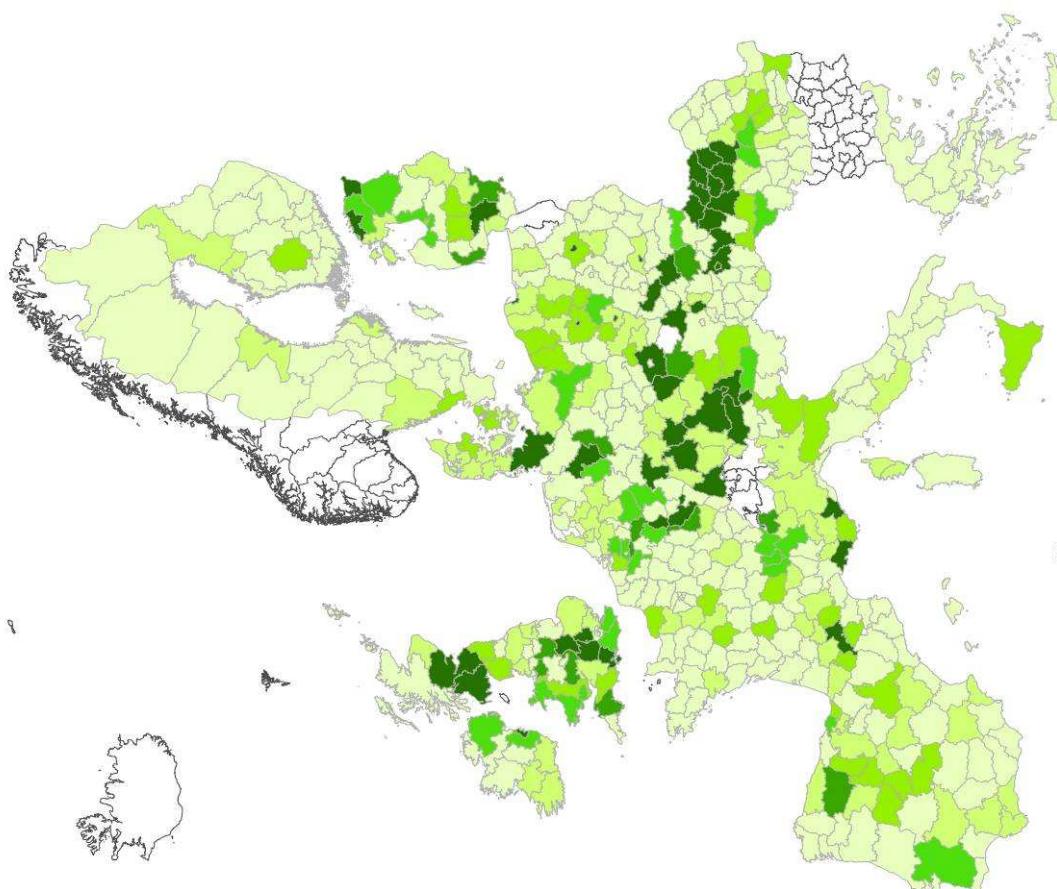
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Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)



0 150 300 600 900 1.200 Kilometers



Changes in Farm Productivity

Scenario A2
2000 - 2015

in %

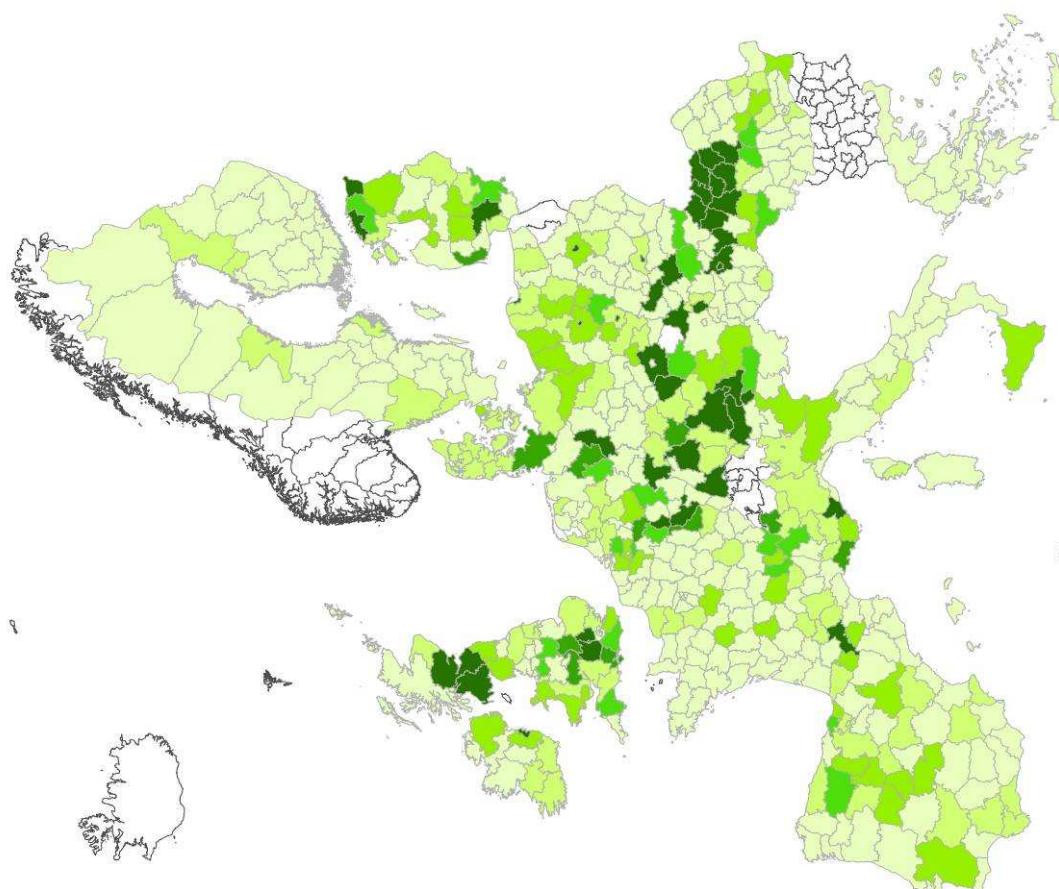
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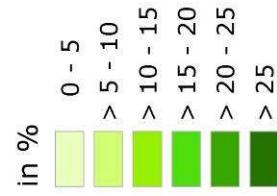


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Changes in Farm Productivity

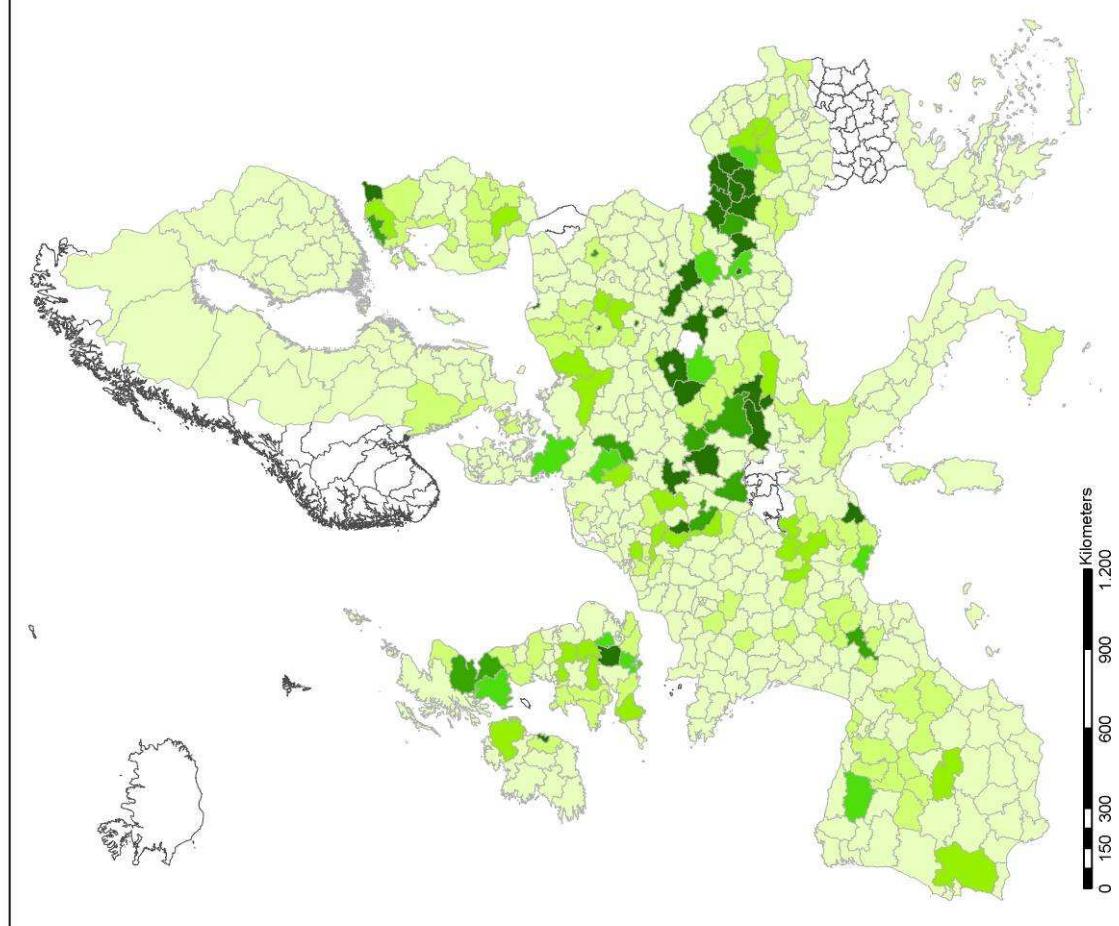
Scenario B1
2000 - 2015



Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)



0 150 300 600 900 1.200 Kilometers



Changes in Farm Productivity

Scenario B2
2000 - 2015

in %

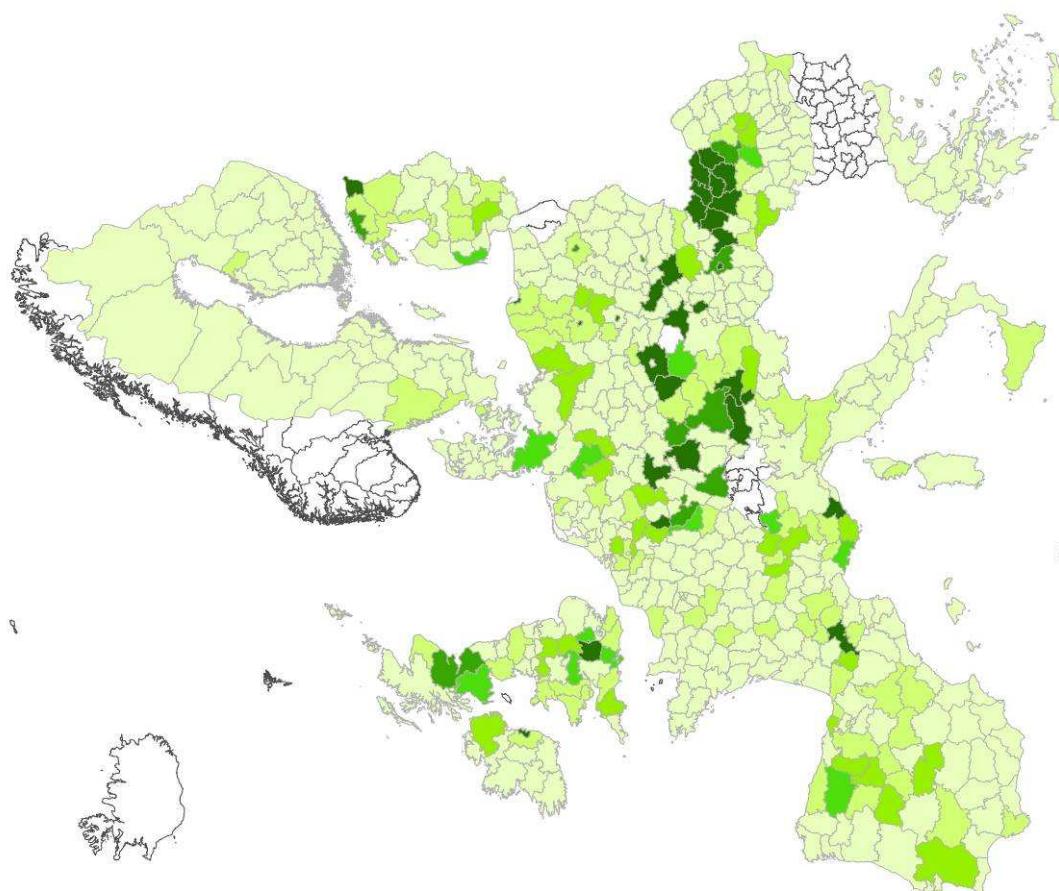
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Source:
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Landscape Research (ZALF)



0 150 300 600 900 1.200 Kilometers



Changes in Farm Productivity

Scenario A1
2000 - 2025

in %

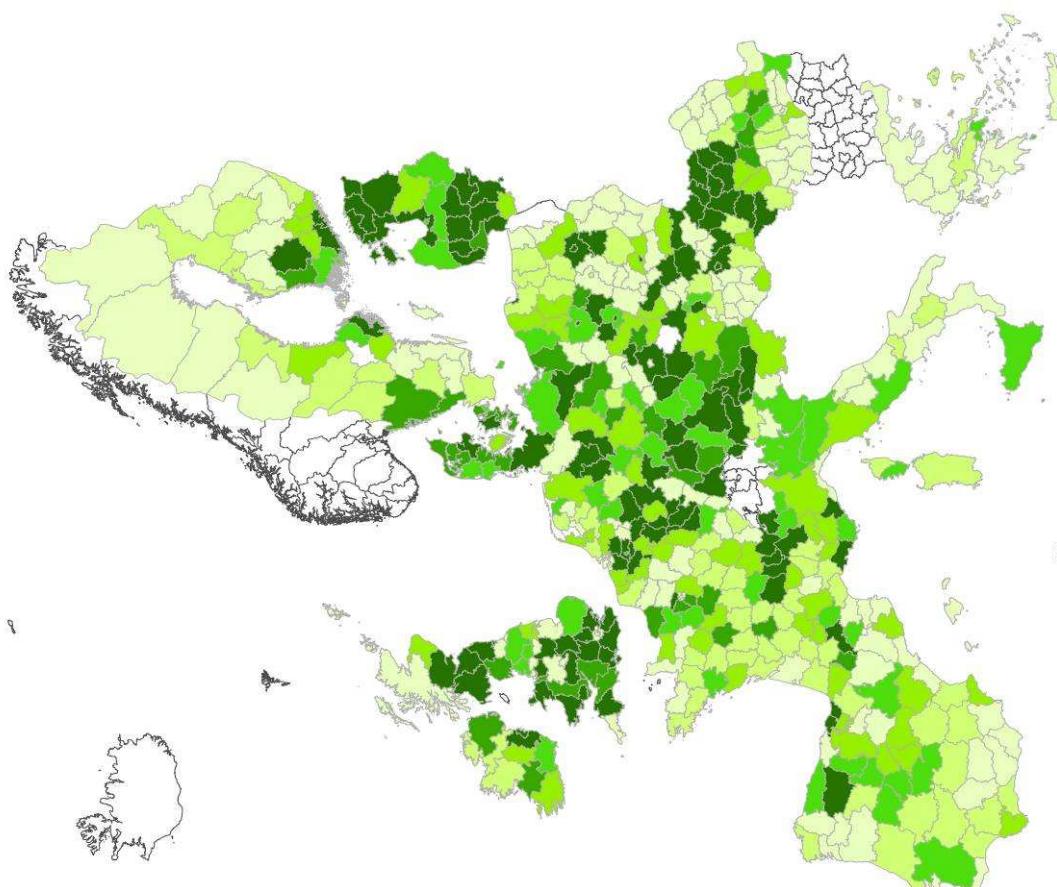
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- > 25



Source:
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Landscape Research (ZALF)



0 150 300 600 900 1.200 Kilometers



Changes in Farm Productivity

Scenario A2
2000 - 2025

in %

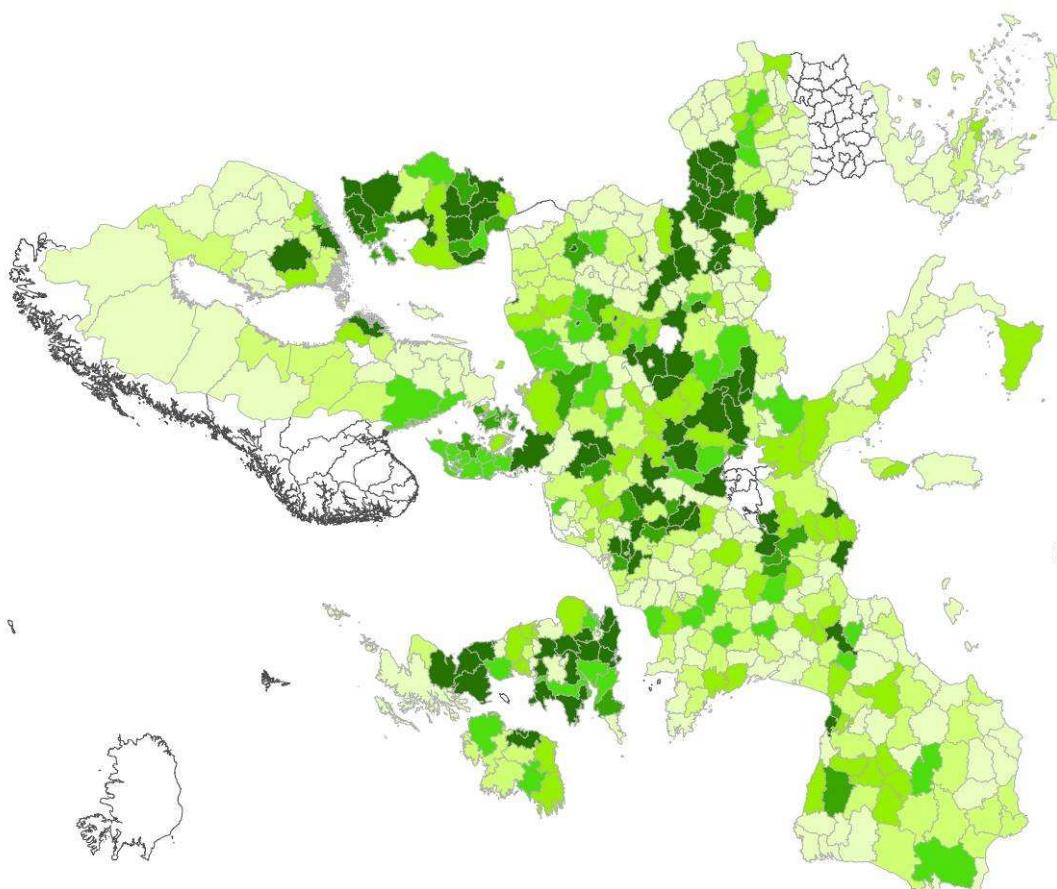
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- > 25



Source:
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Landscape Research (ZALF)



0 150 300 600 900 1.200 Kilometers



Changes in Farm Productivity

Scenario B1
2000 - 2025

in %

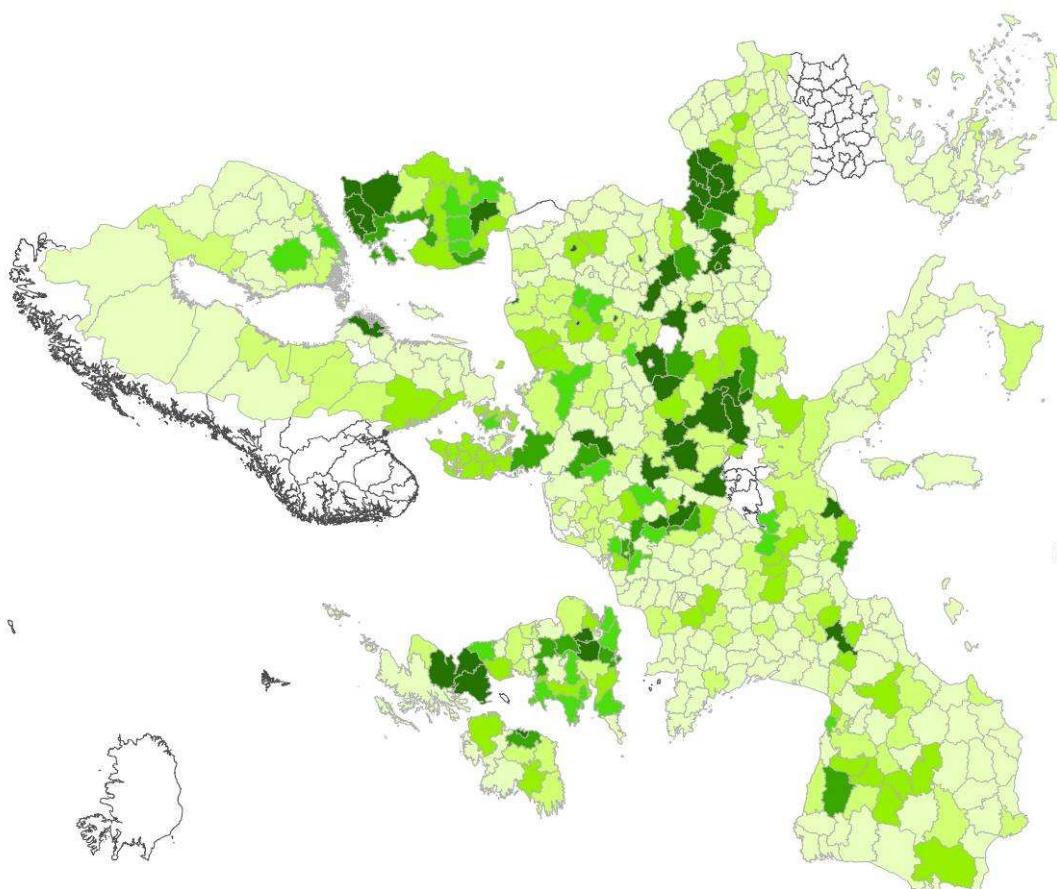
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- > 20 - 25
- > 25



Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)



0 150 300 600 900 1.200 Kilometers



Changes in Farm Productivity

Scenario B2
2000 - 2025

in %

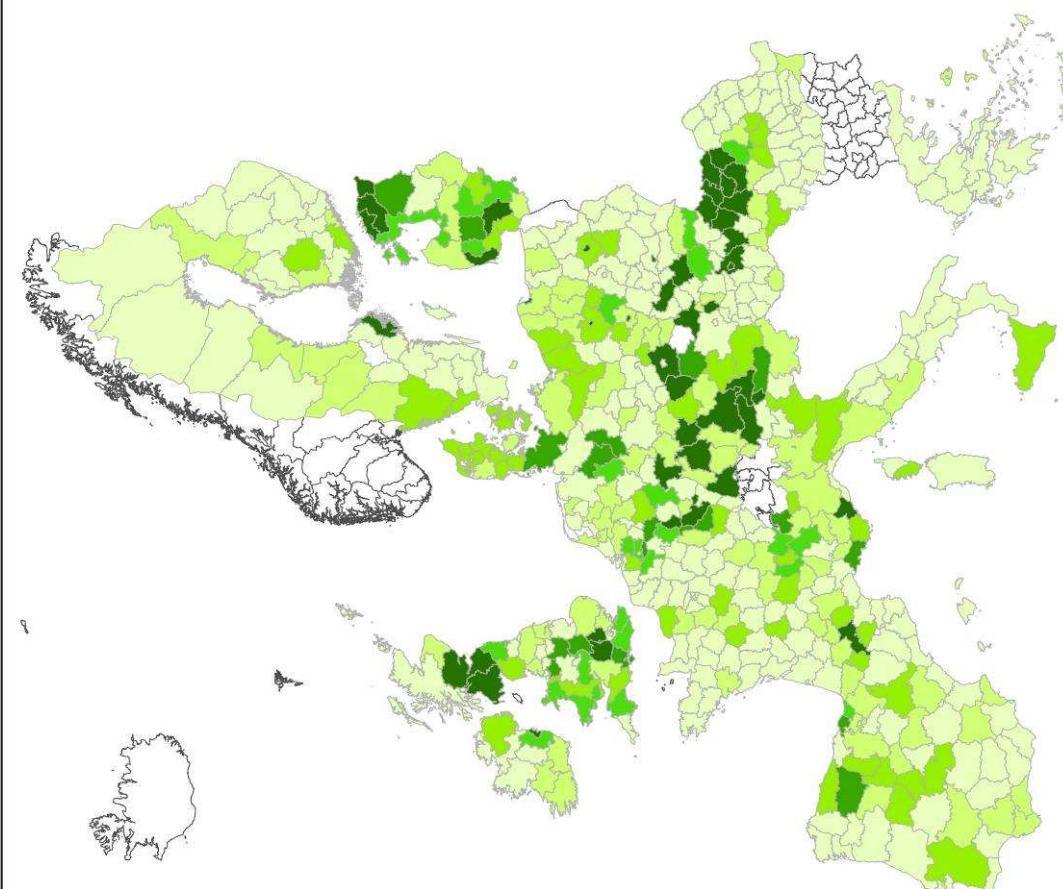
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- > 25

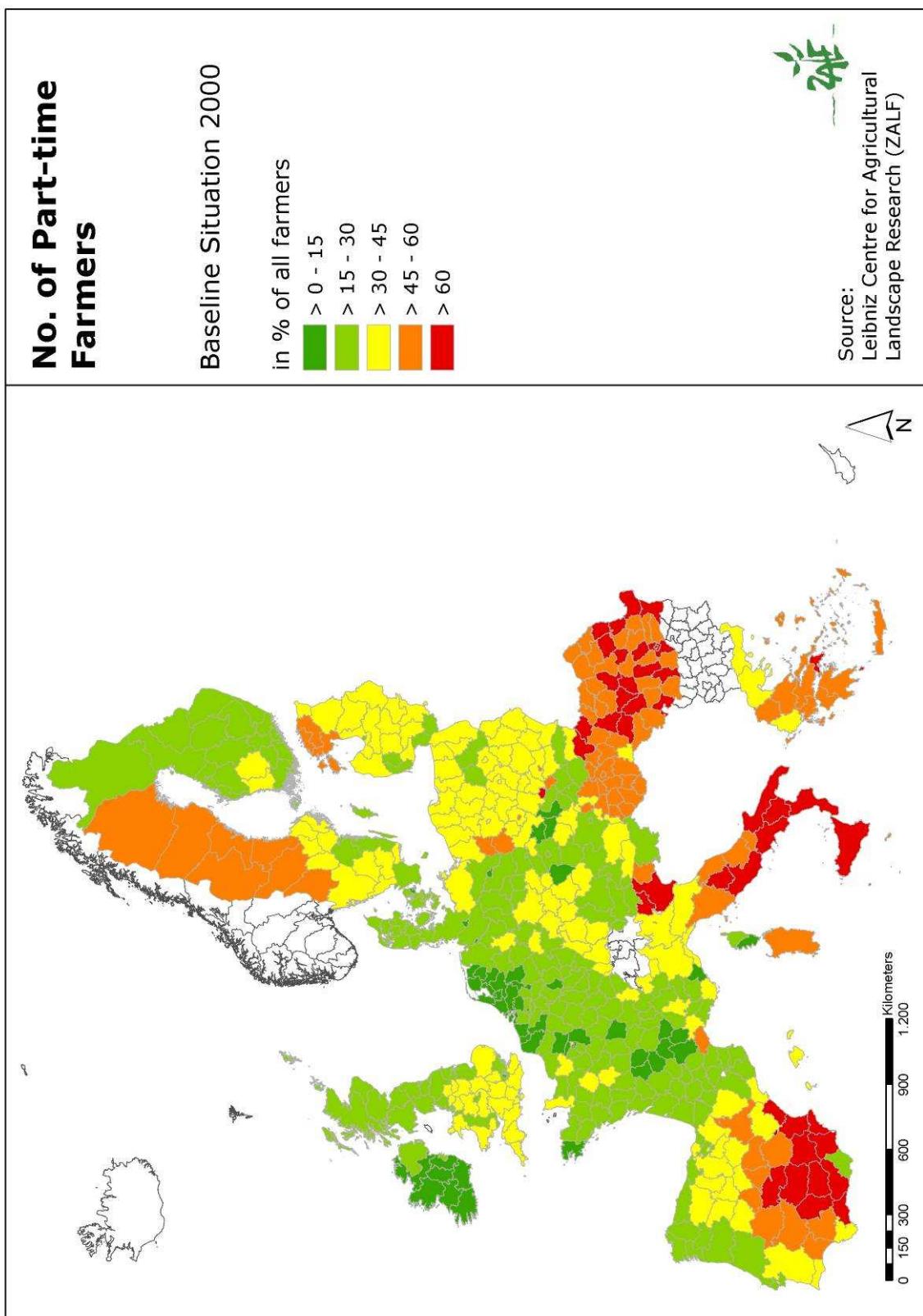


Source:
Leibniz Centre for Agricultural
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0 150 300 600 900 1.200 Kilometers





Changes in No. of Part-time Farmers

Scenario A1
2000 - 2015

in %

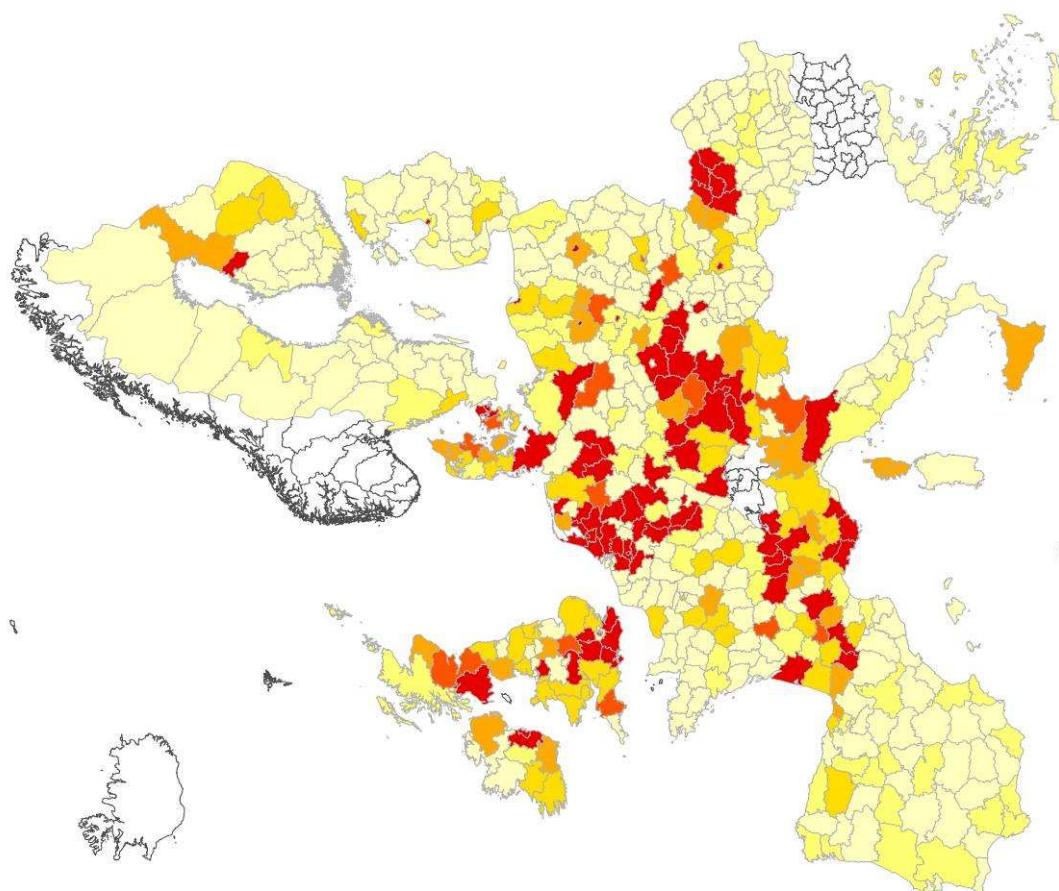
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Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)



0 150 300 600 900 1.200 Kilometers



Changes in No. of Part-time Farmers

Scenario A2
2000 - 2015

in %

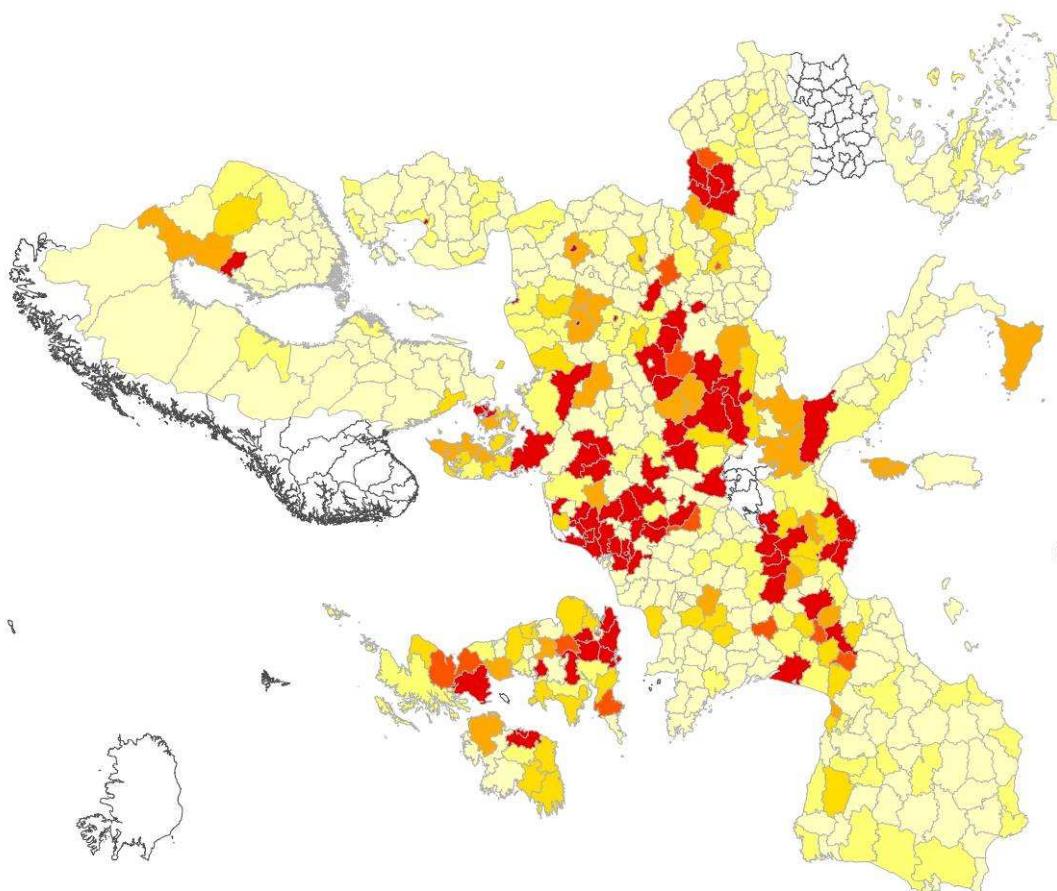
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Source:
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Landscape Research (ZALF)



Kilometers
0 150 300 600 900 1.200



Changes in No. of Part-time Farmers

Scenario B1
2000 - 2015

in %

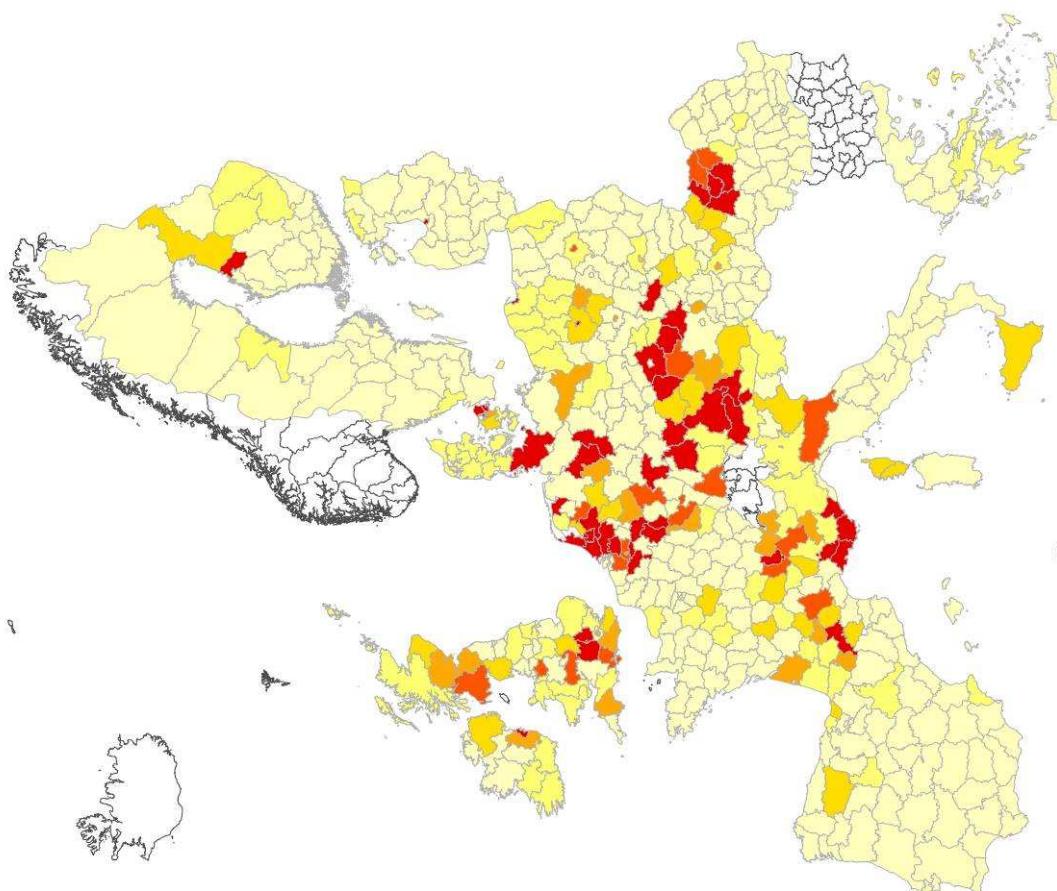
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Source:
Leibniz Centre for Agricultural
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Kilometers
0 150 300 600 900 1.200



Changes in No. of Part-time Farmers

Scenario B2
2000 - 2015

in %

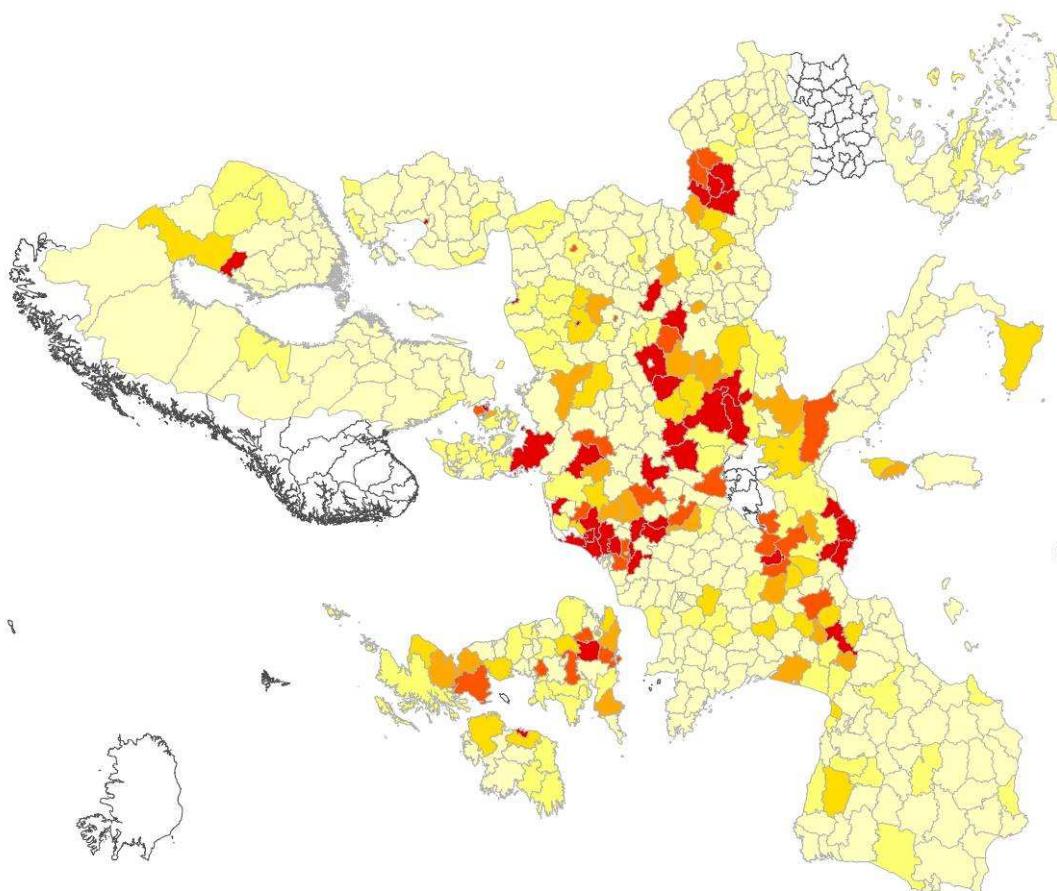
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Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)



0 150 300 600 900 1.200 Kilometers



Changes in No. of Part-time Farmers

Scenario A1
2000 - 2025

in %

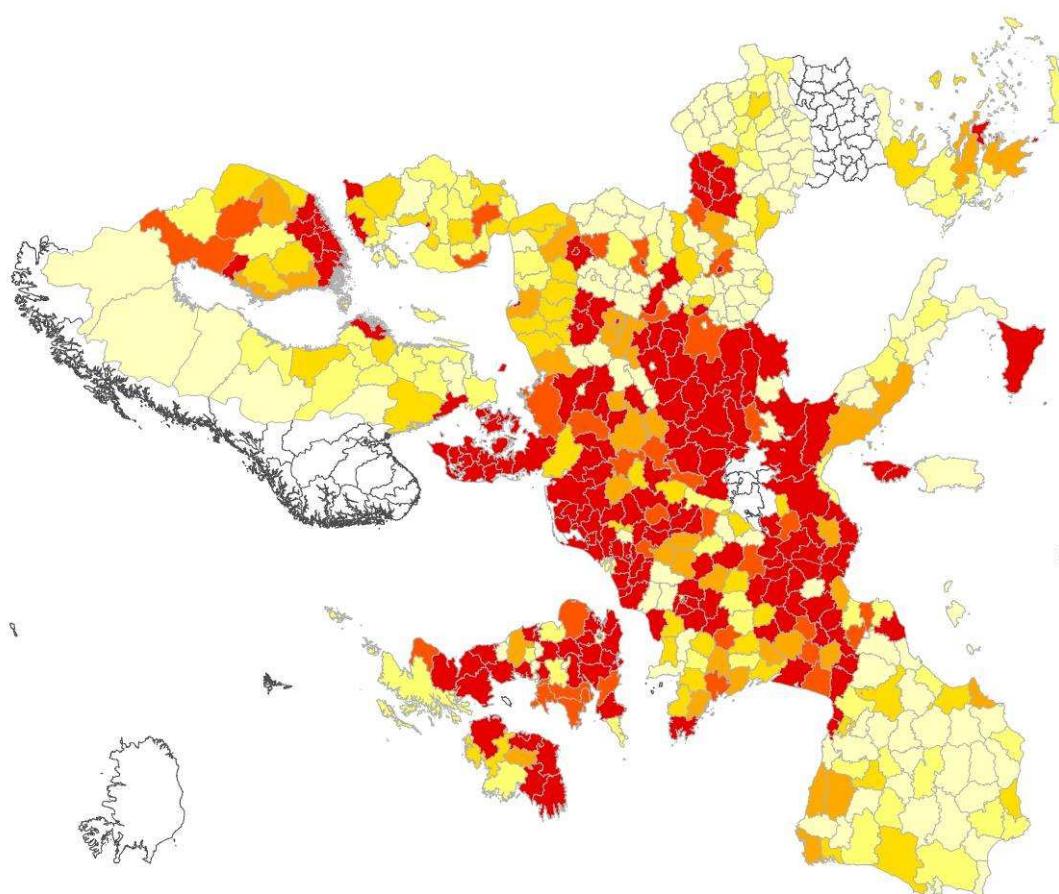
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Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)



0 150 300 600 900 1.200 Kilometers



Changes in No. of Part-time Farmers

Scenario A2
2000 - 2025

in %

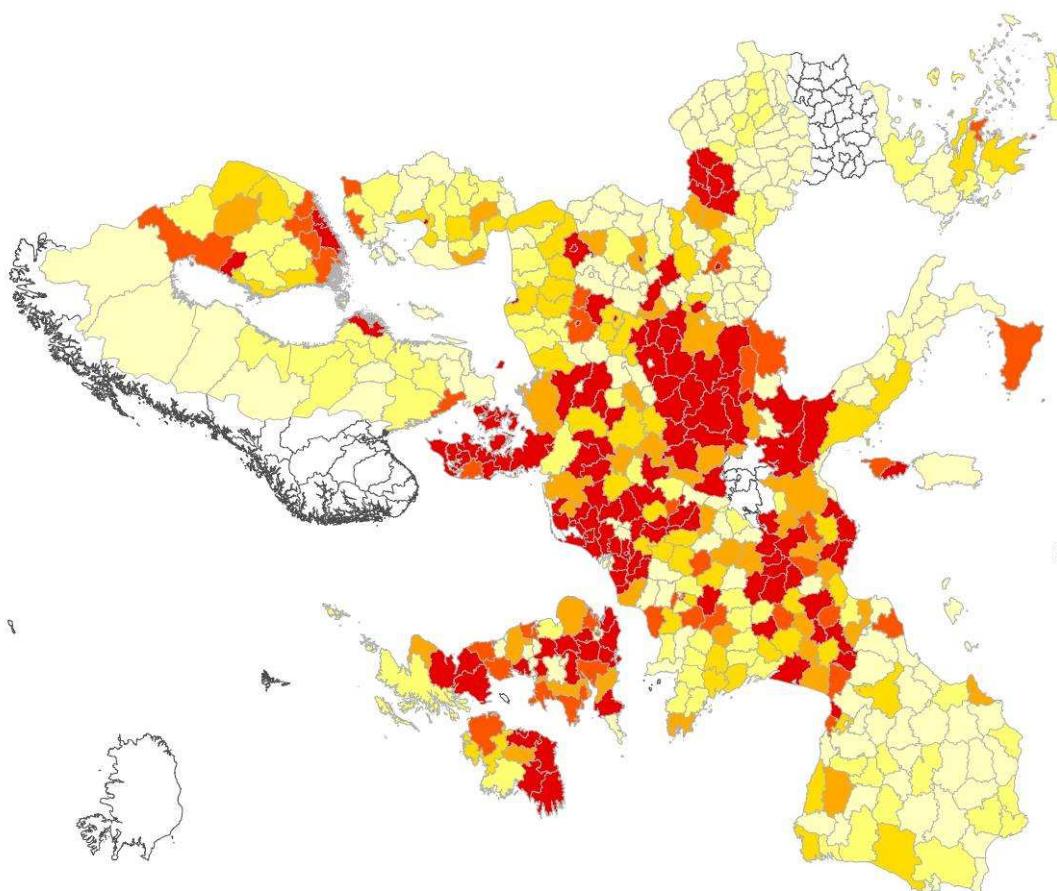
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> -1 0



Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)



0 150 300 600 900 1.200 Kilometers



Changes in No. of Part-time Farmers

Scenario B1
2000 - 2025

in %

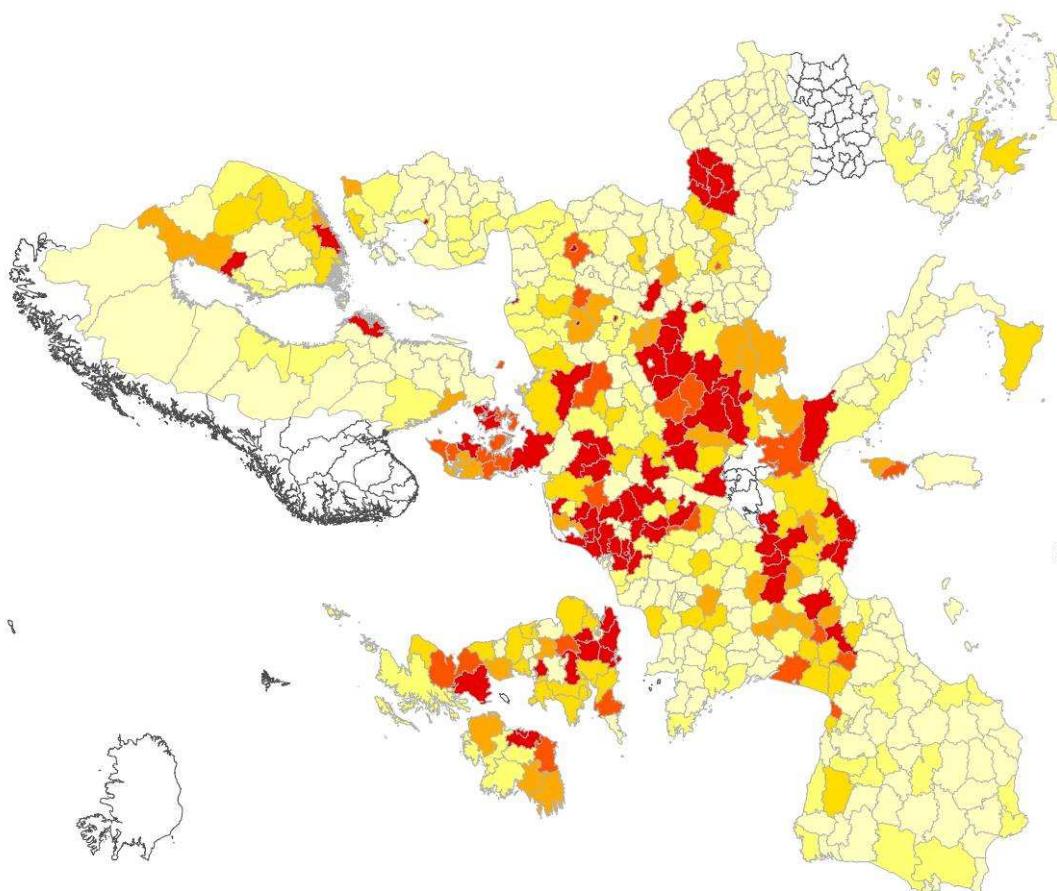
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> -2 - -1
> -1 - 0



Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)



0 150 300 600 900 1.200 Kilometers



Changes in No. of Part-time Farmers

Scenario B2
2000 - 2025

in %

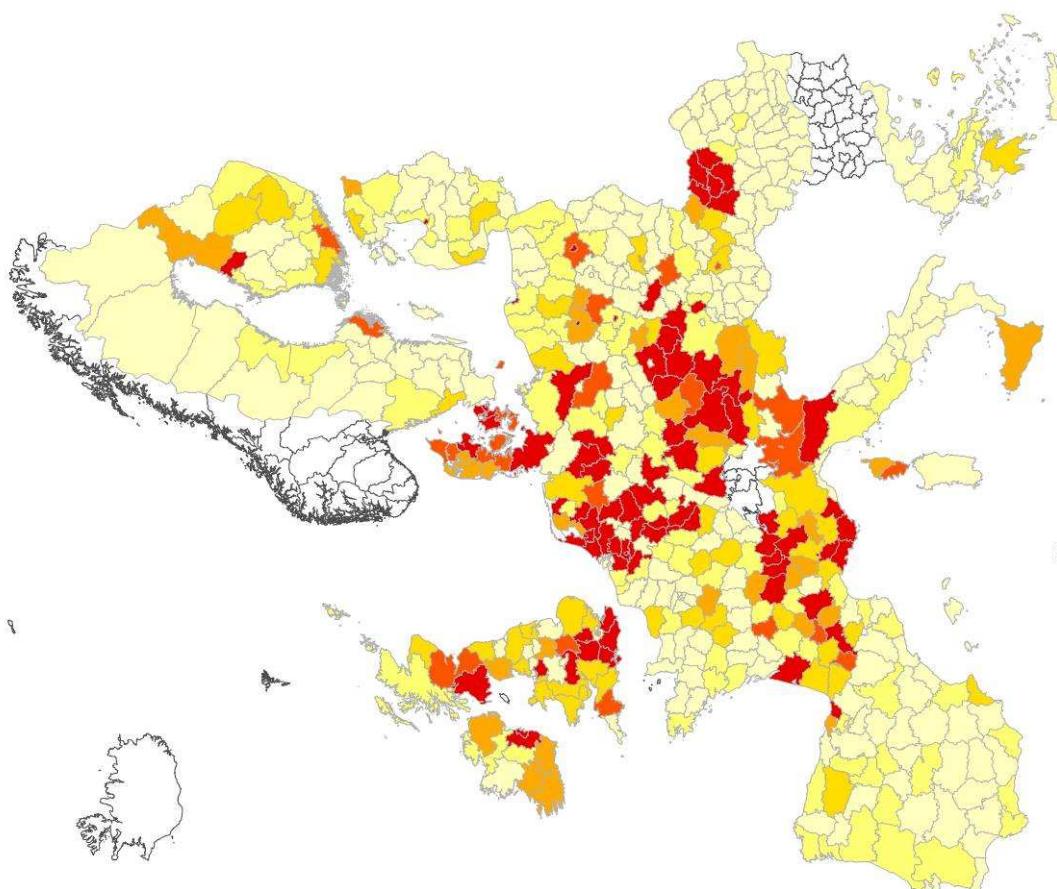
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> -2	-1	
> -1	0	



Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)



0 150 300 600 900 1.200 Kilometers



Unsealed Soil

Baseline Situation 2000

in % of total area

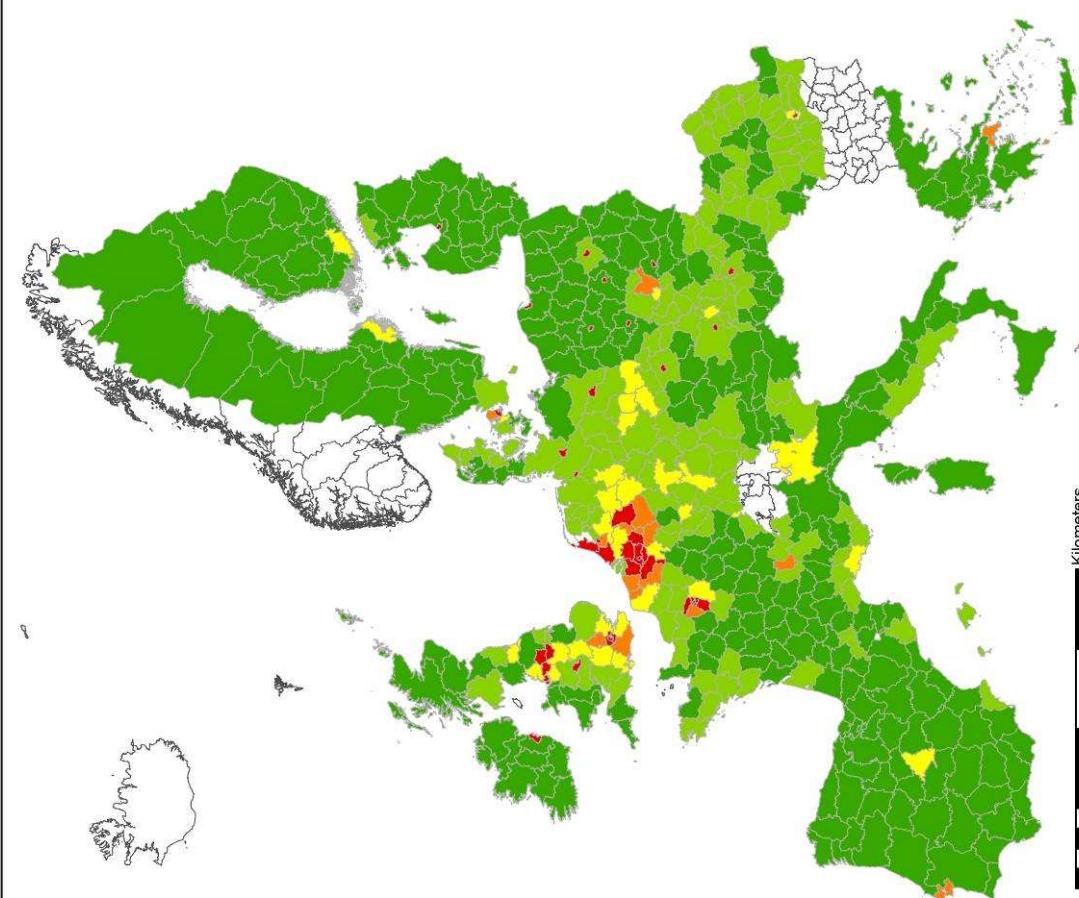
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- > 85 - 90
- > 90 - 95
- > 95

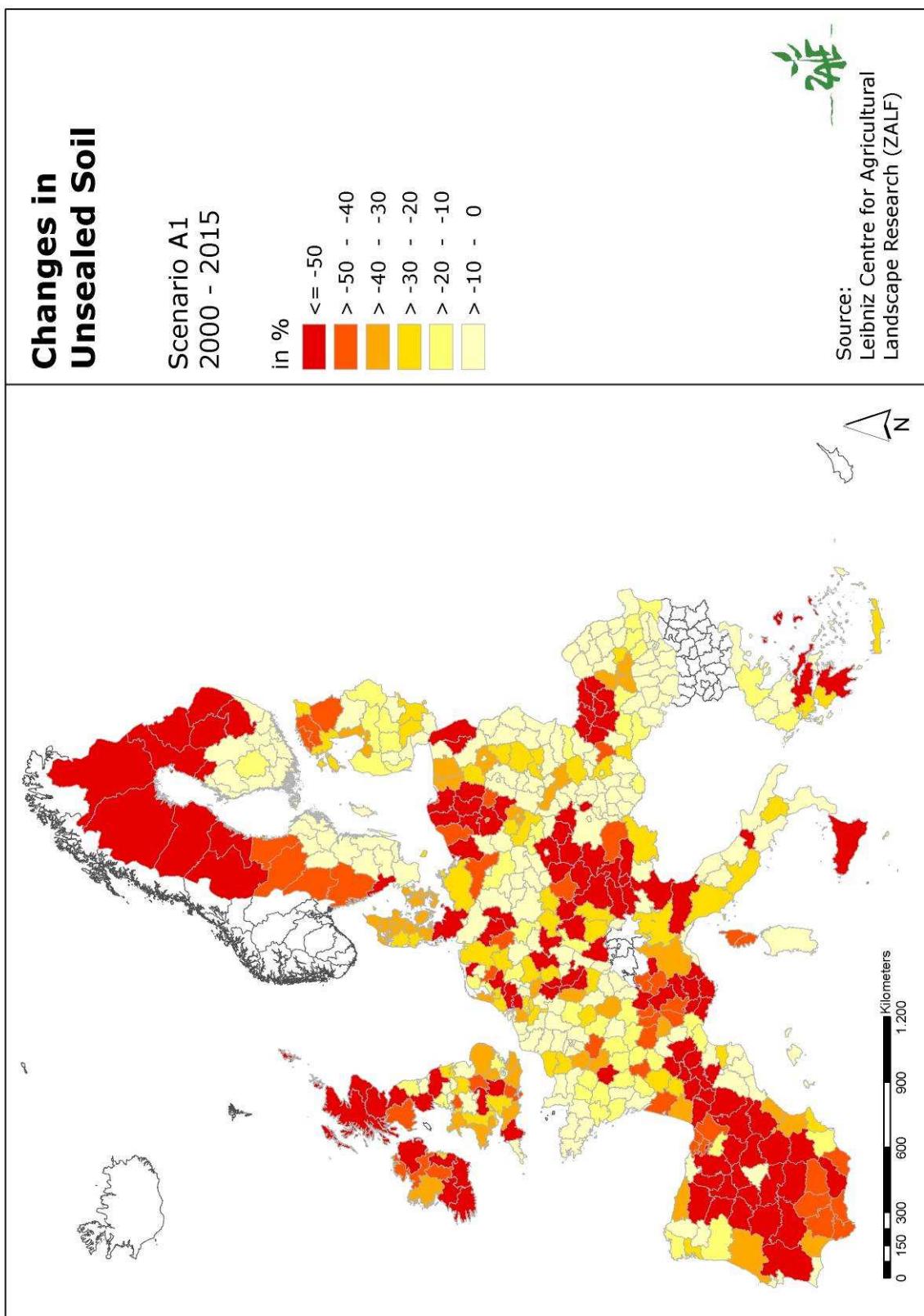


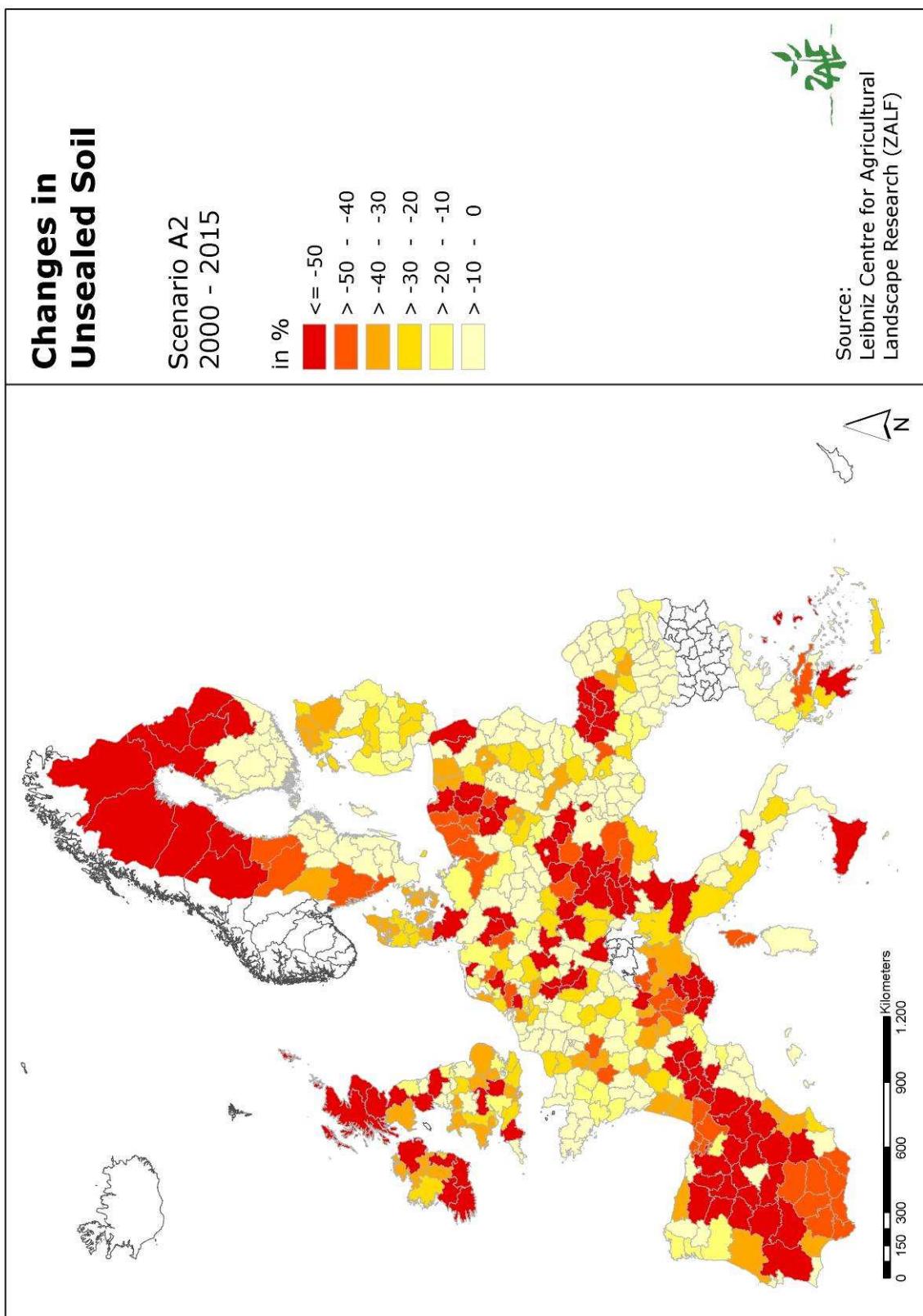
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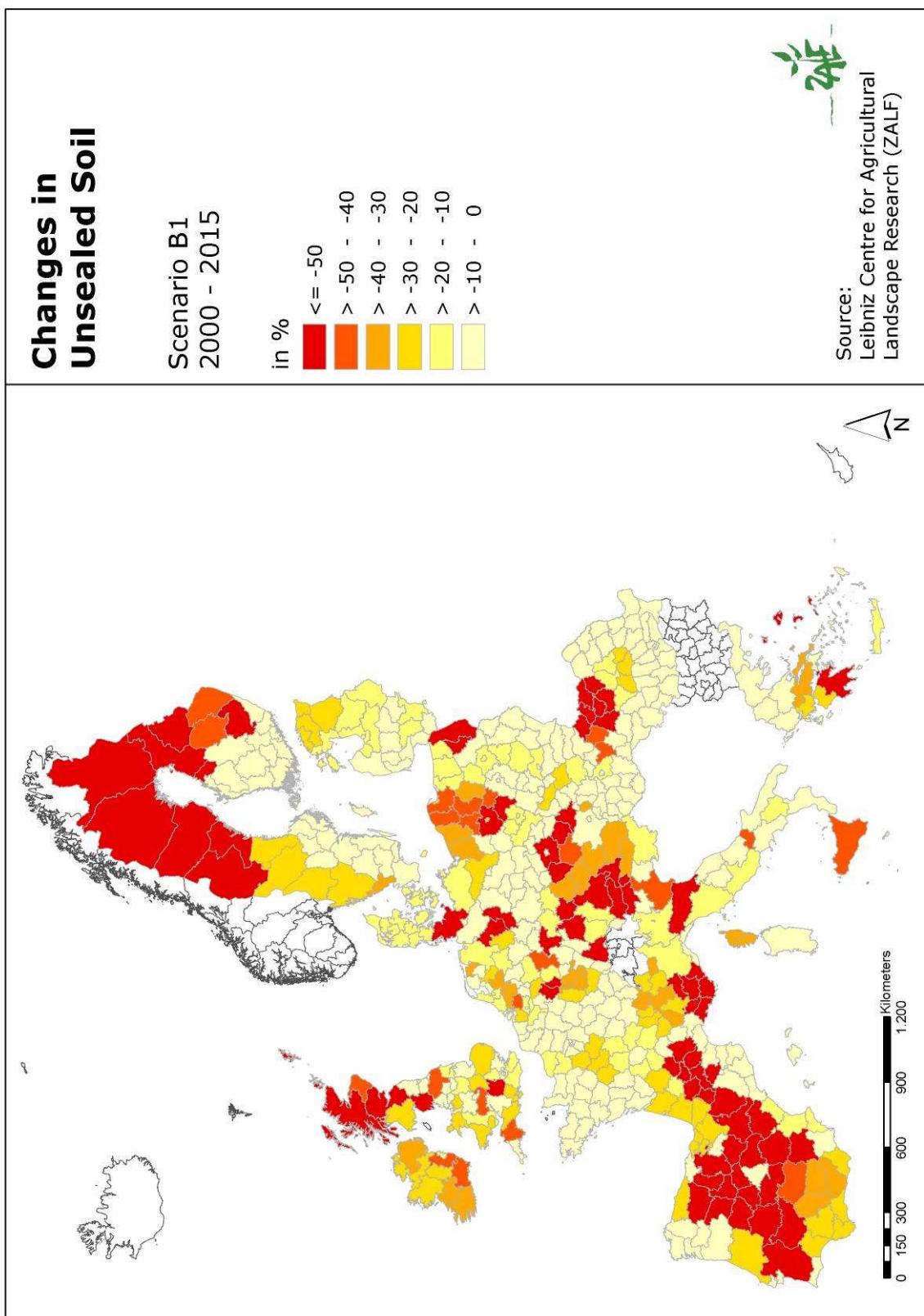


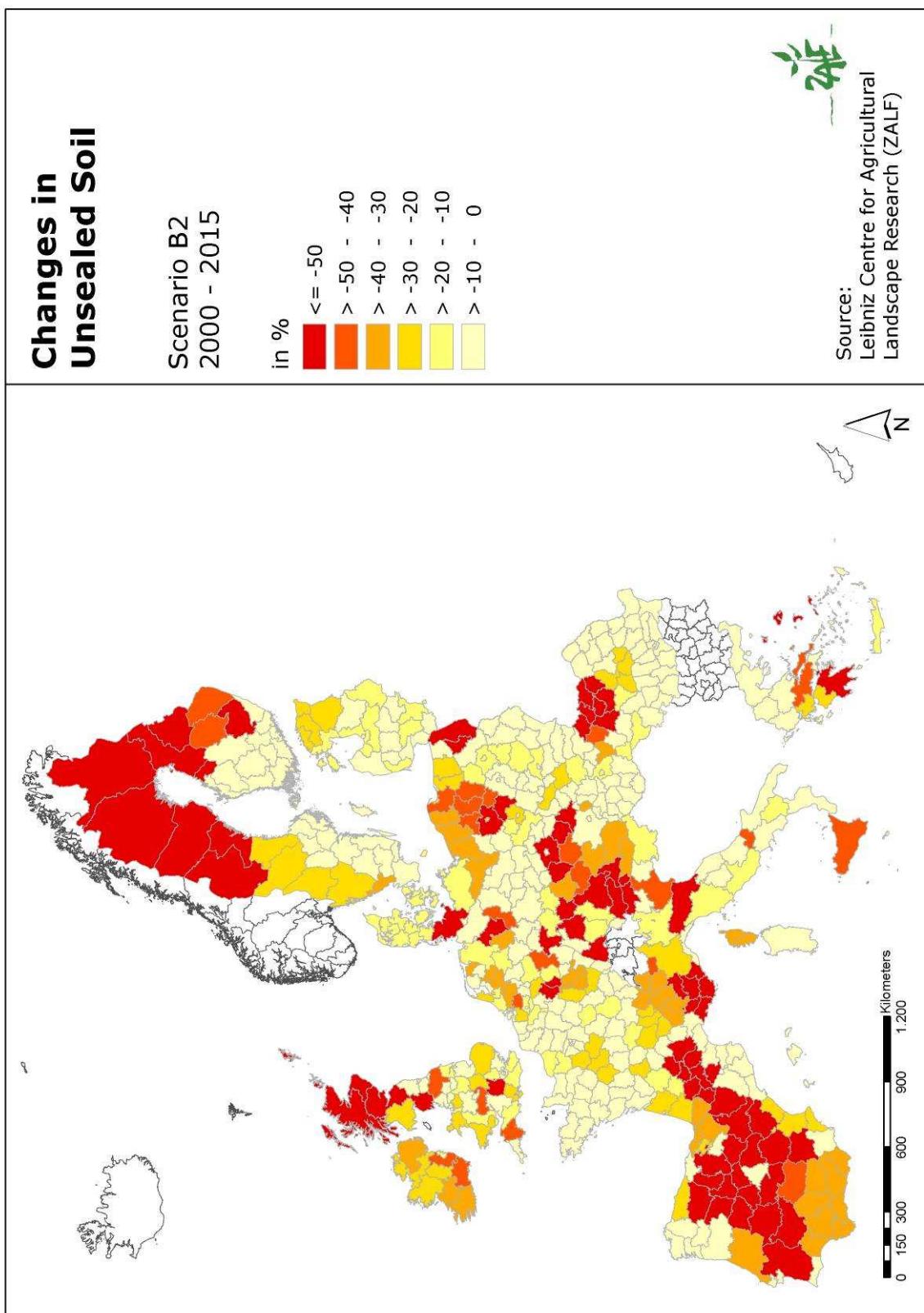
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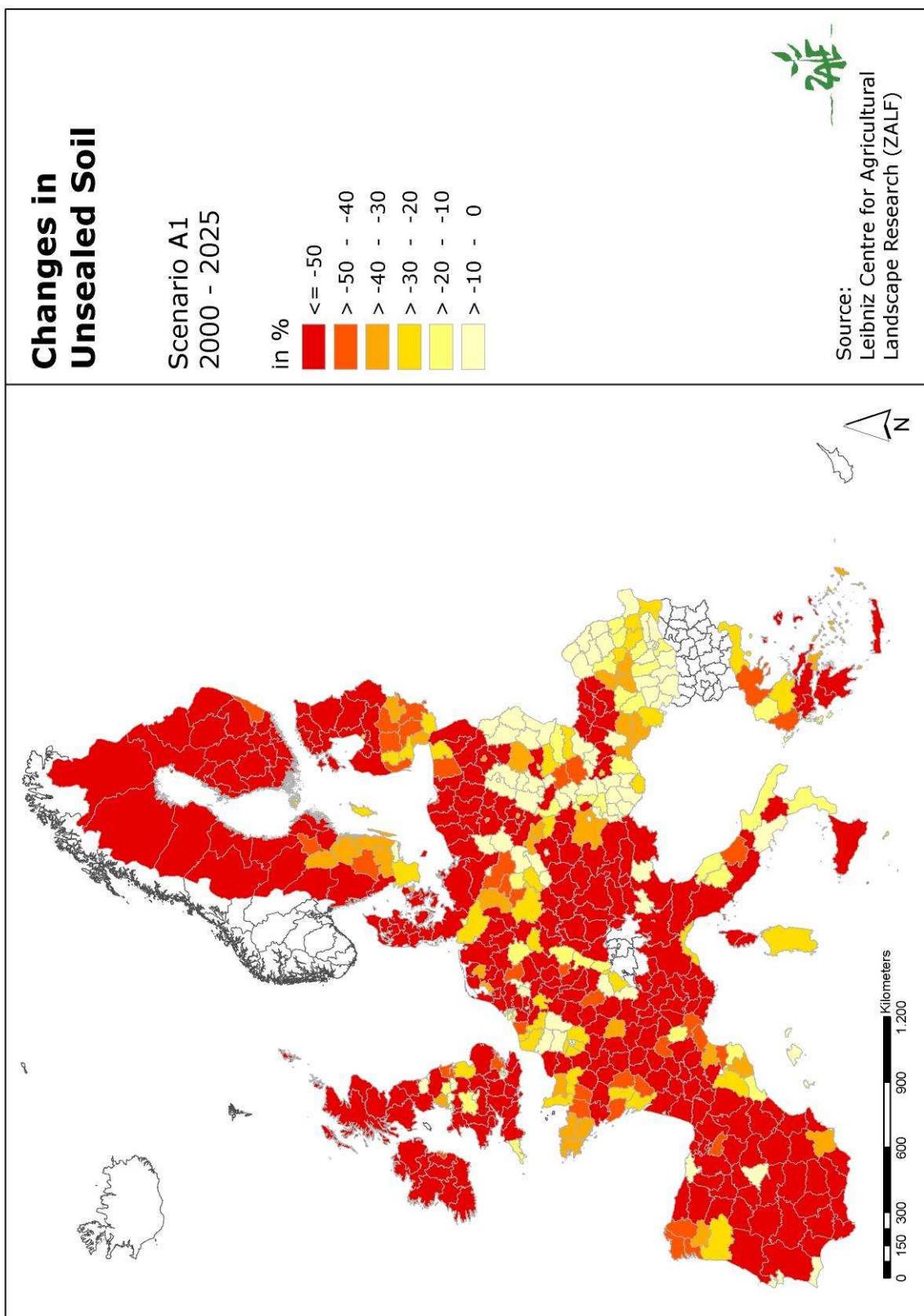


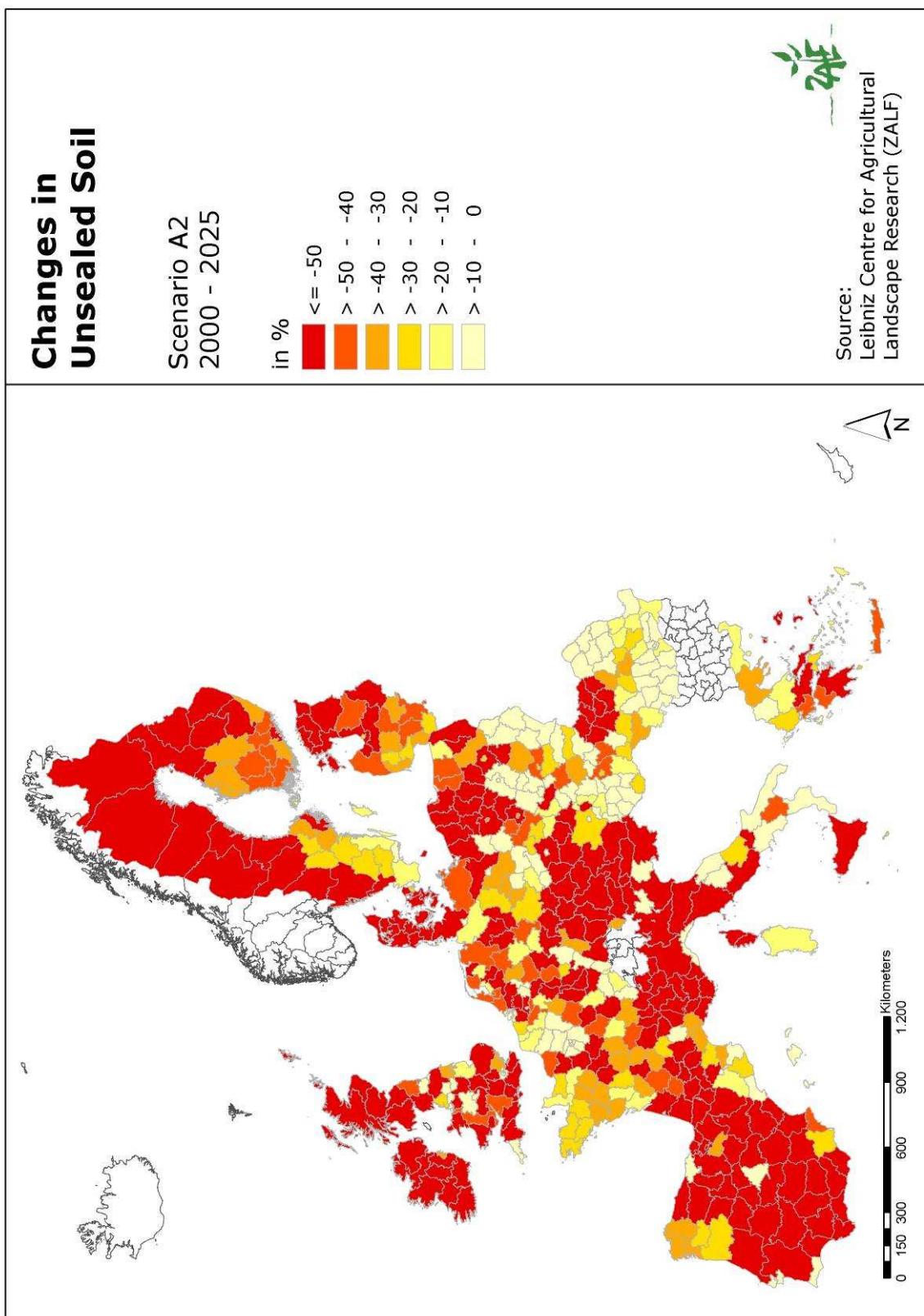


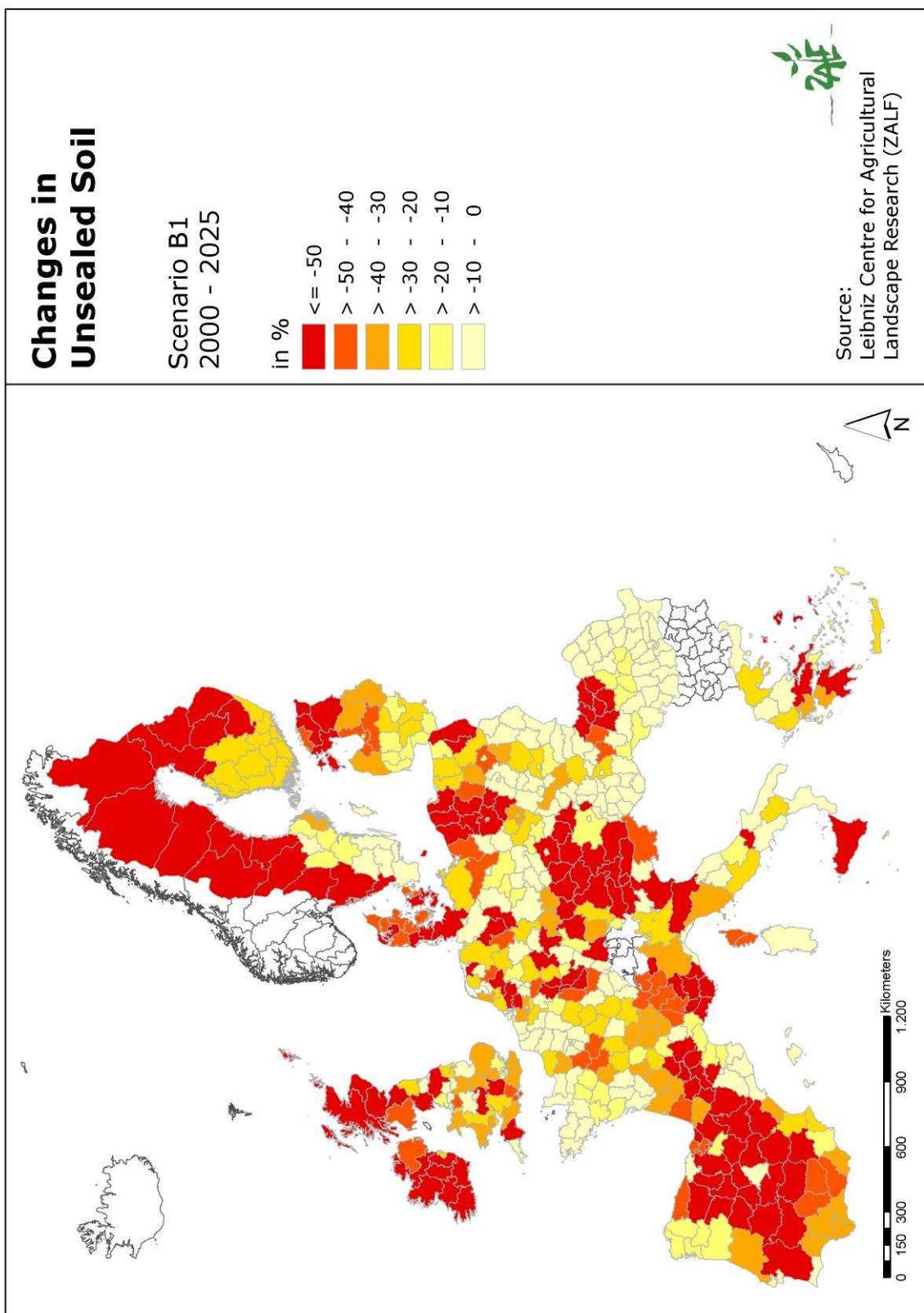


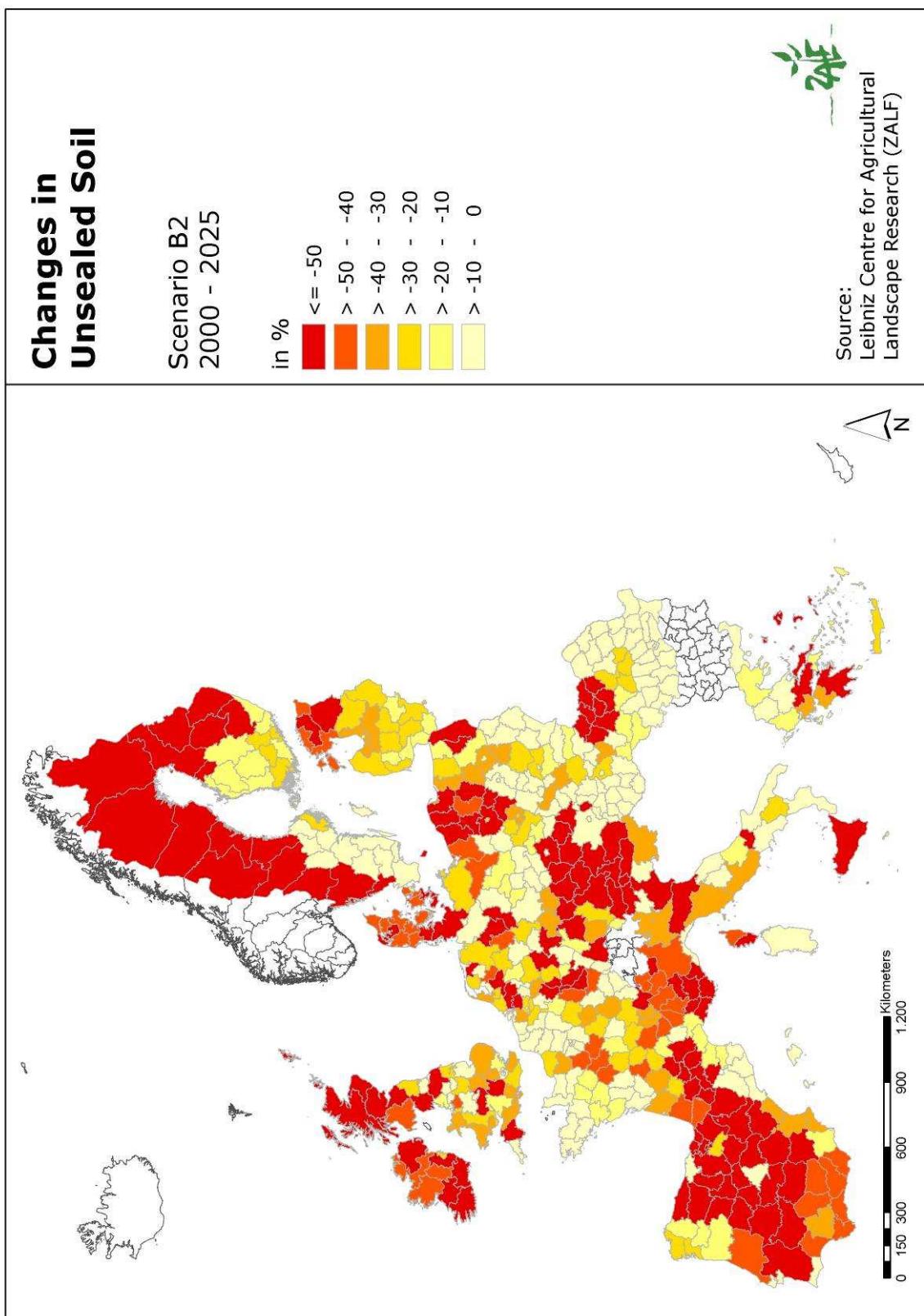


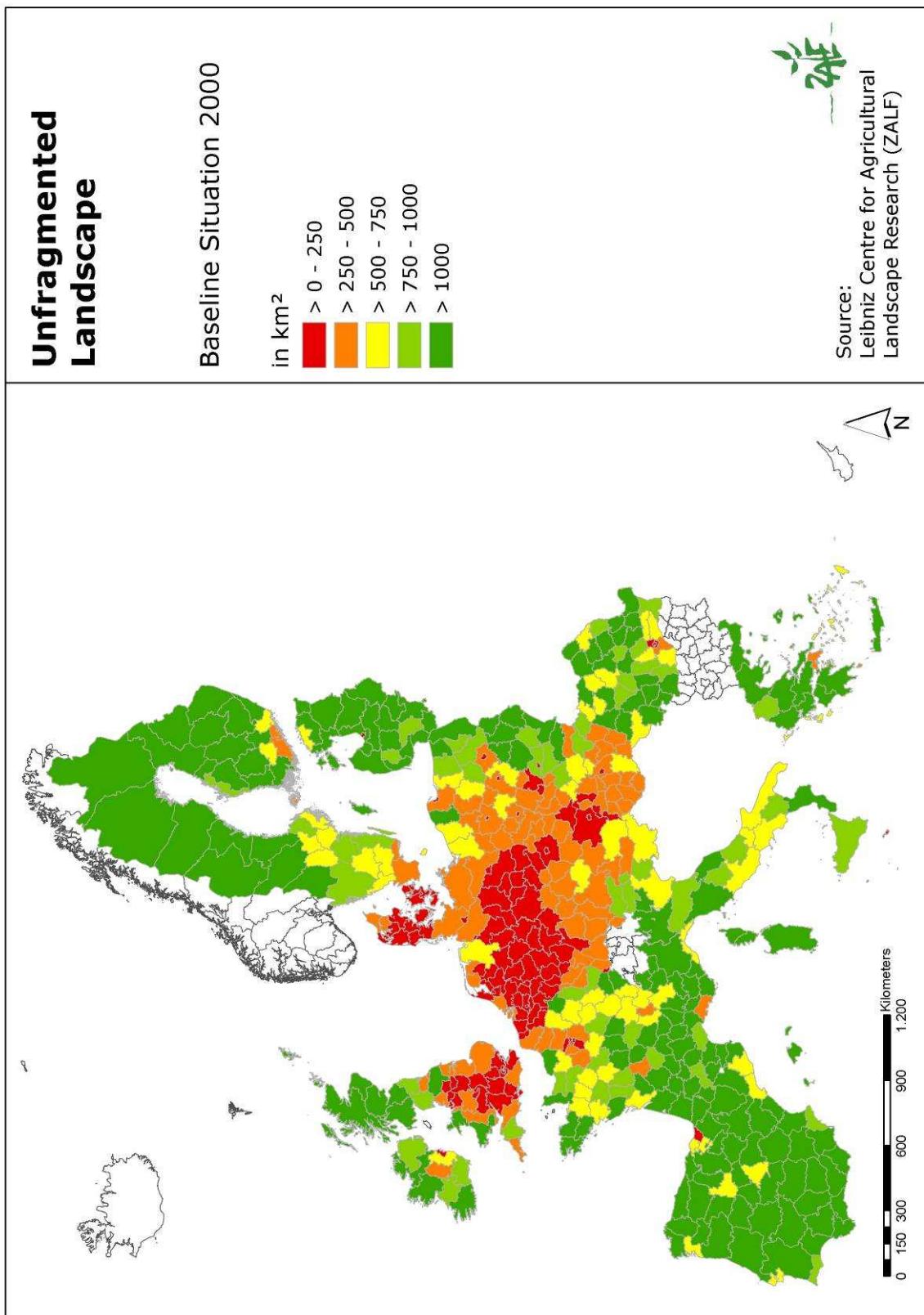


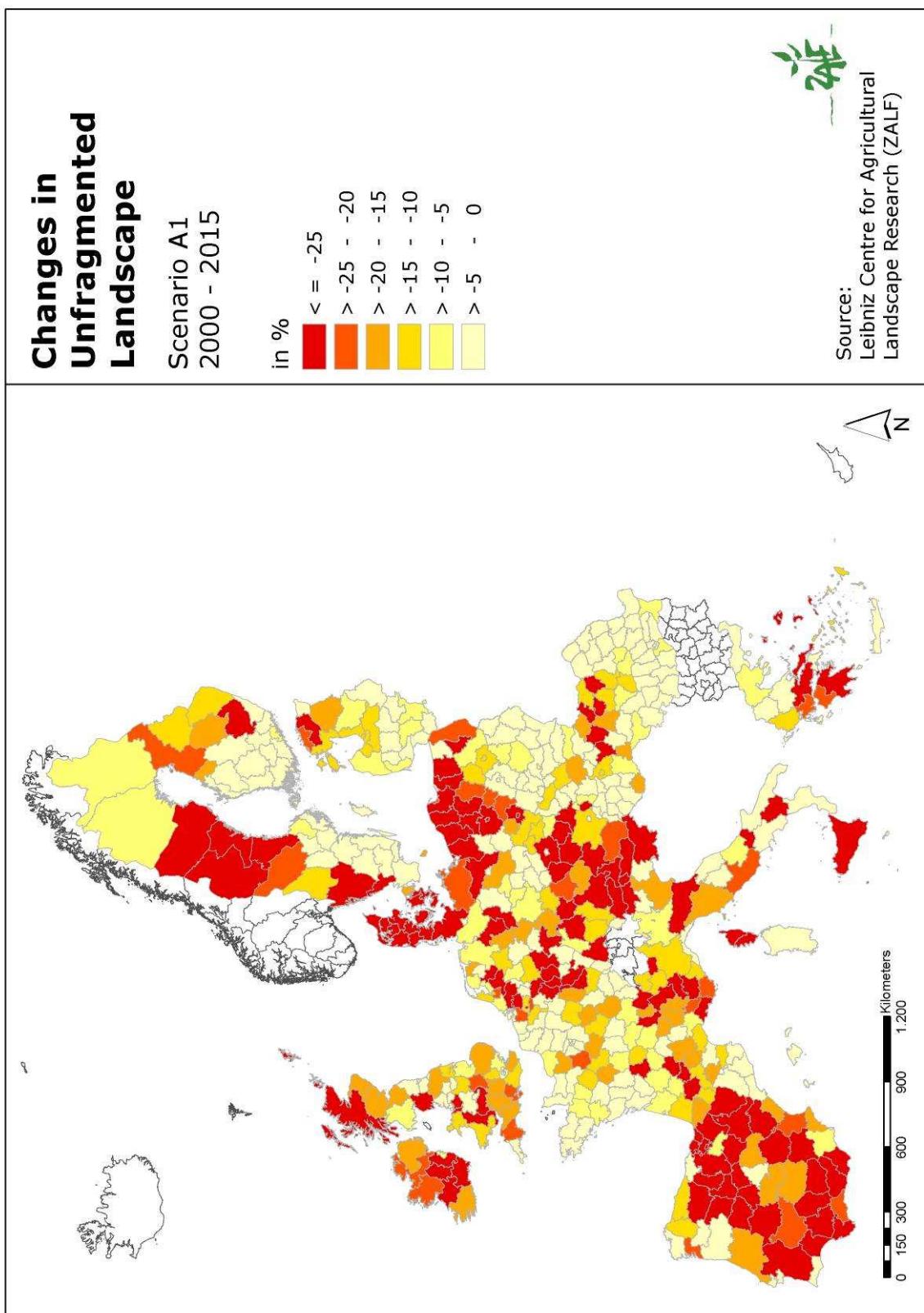


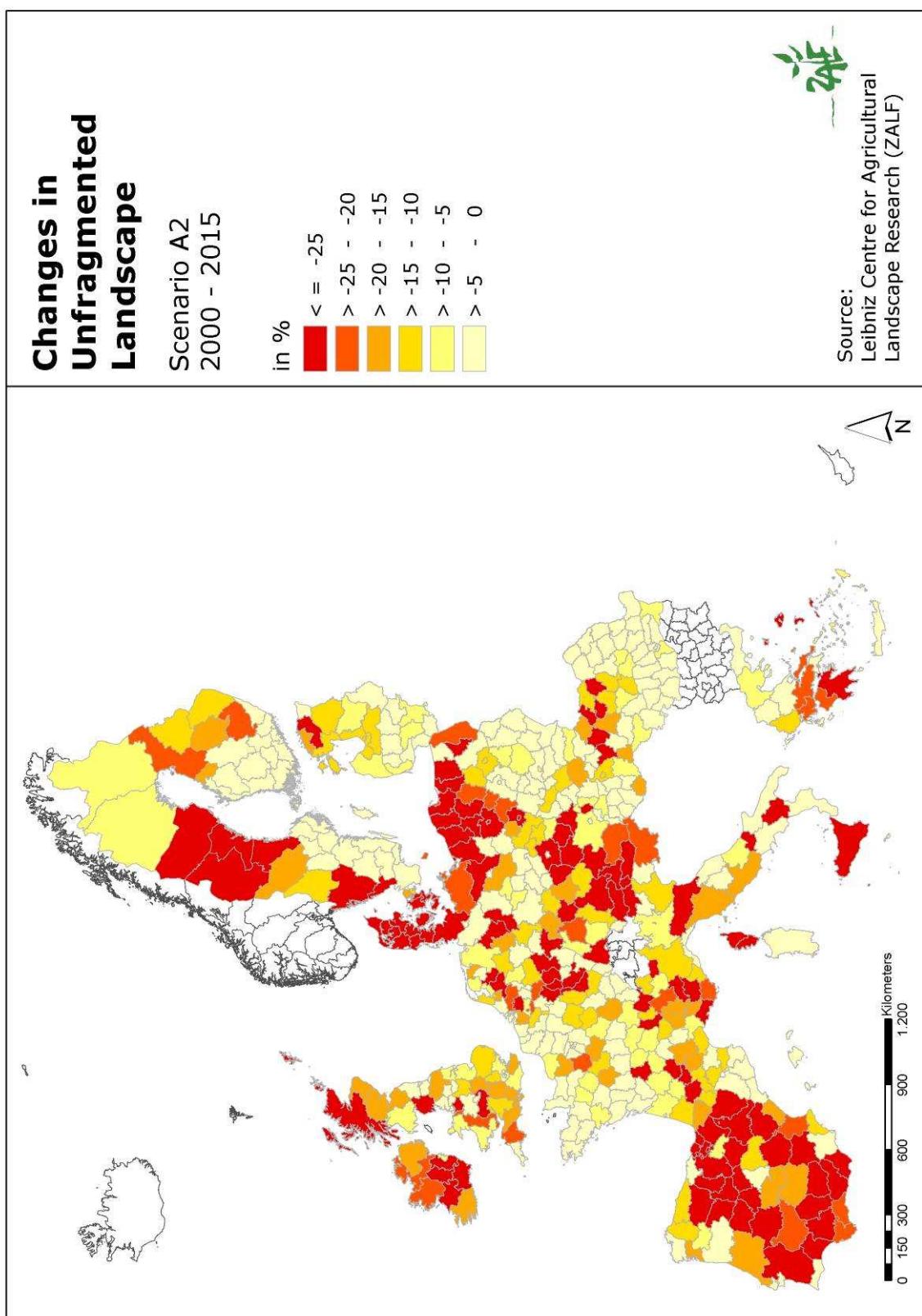


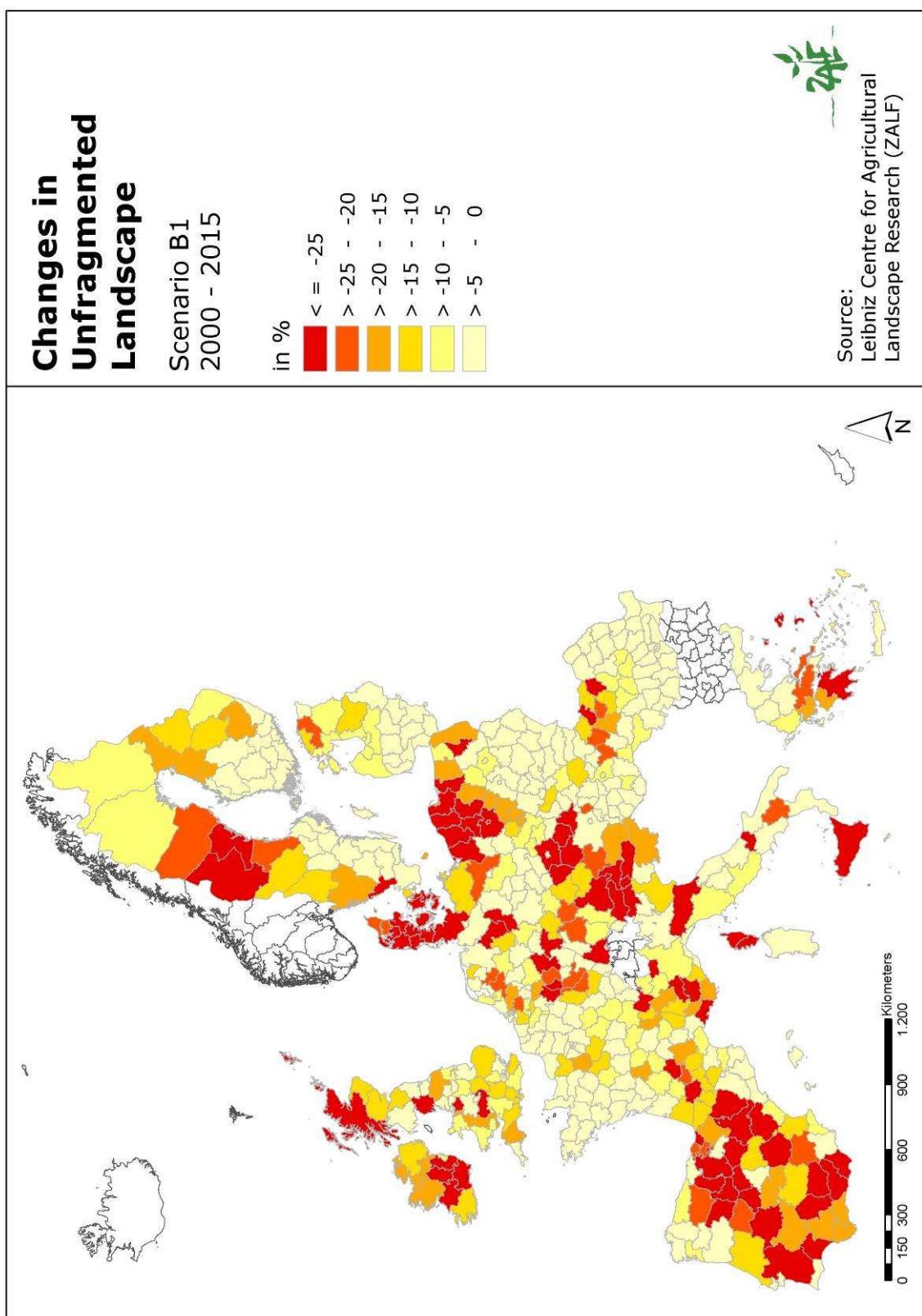


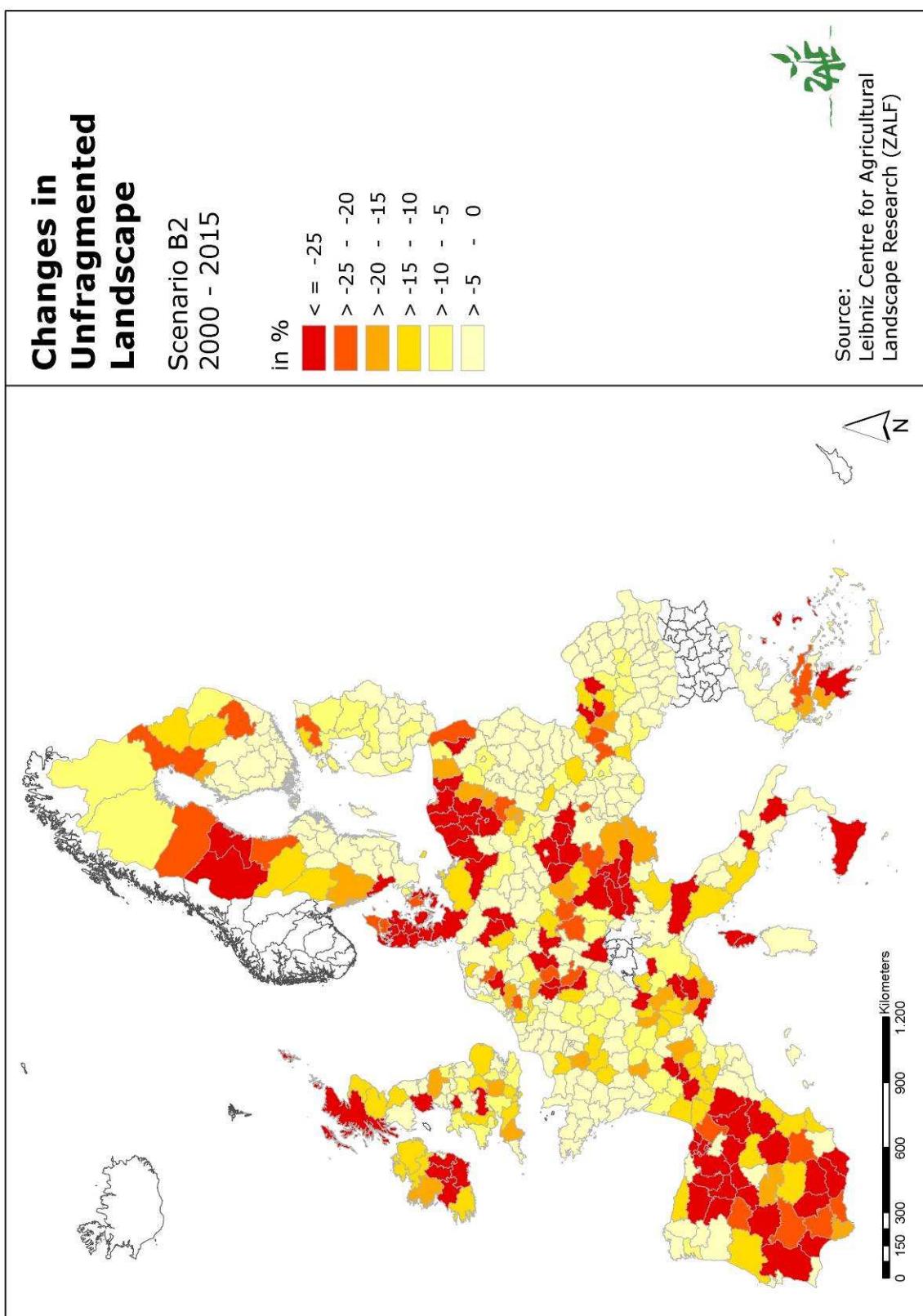


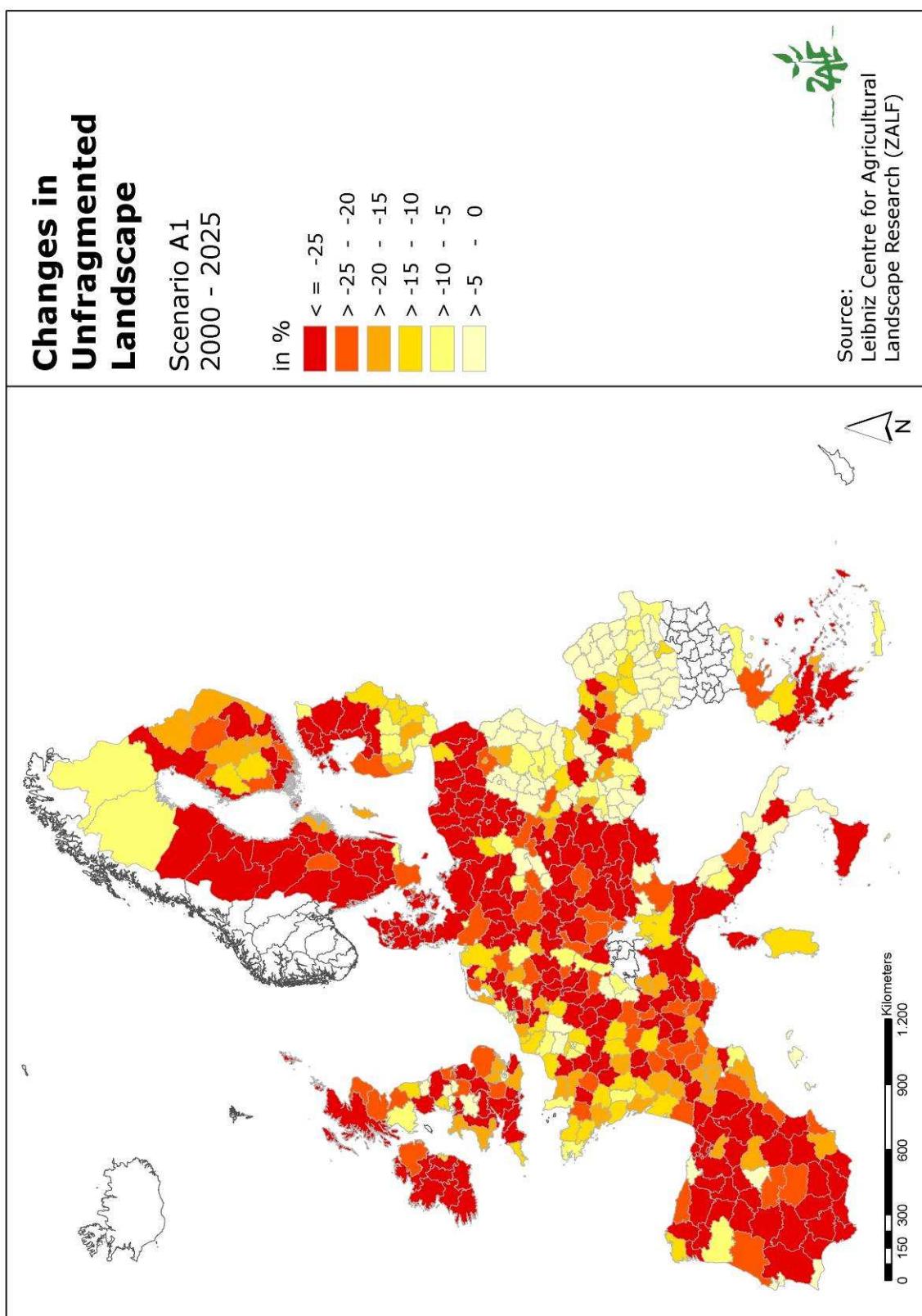


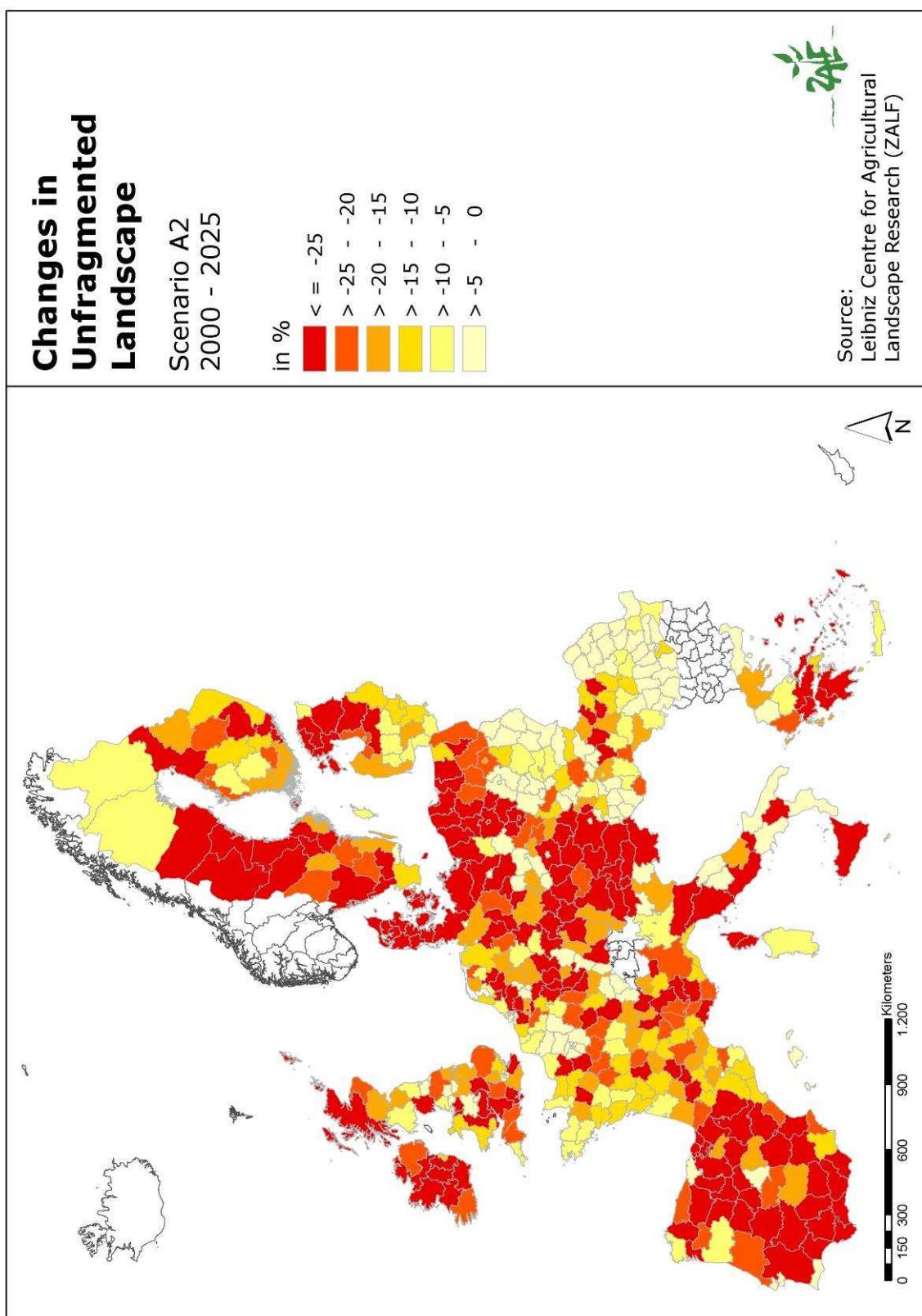


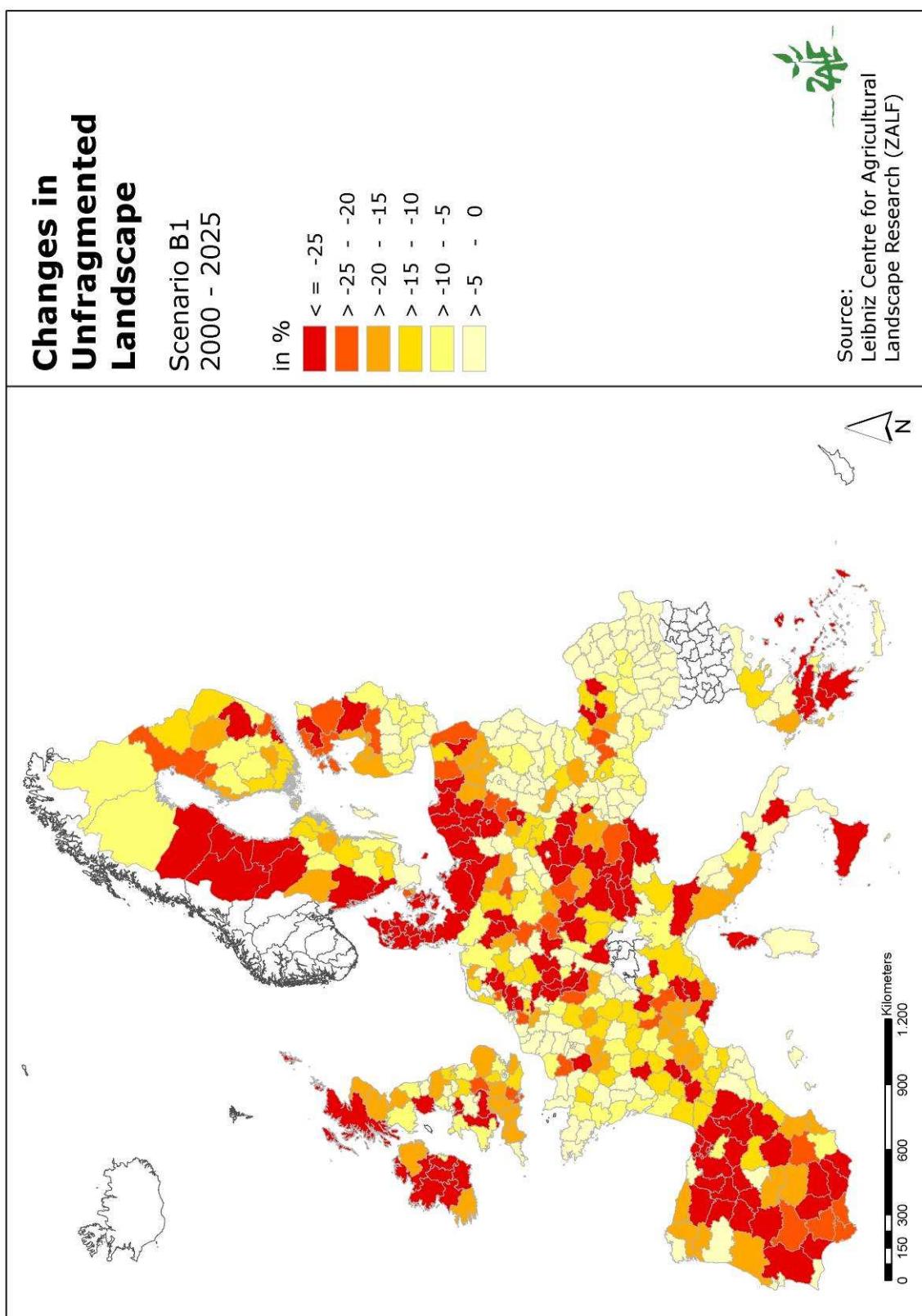


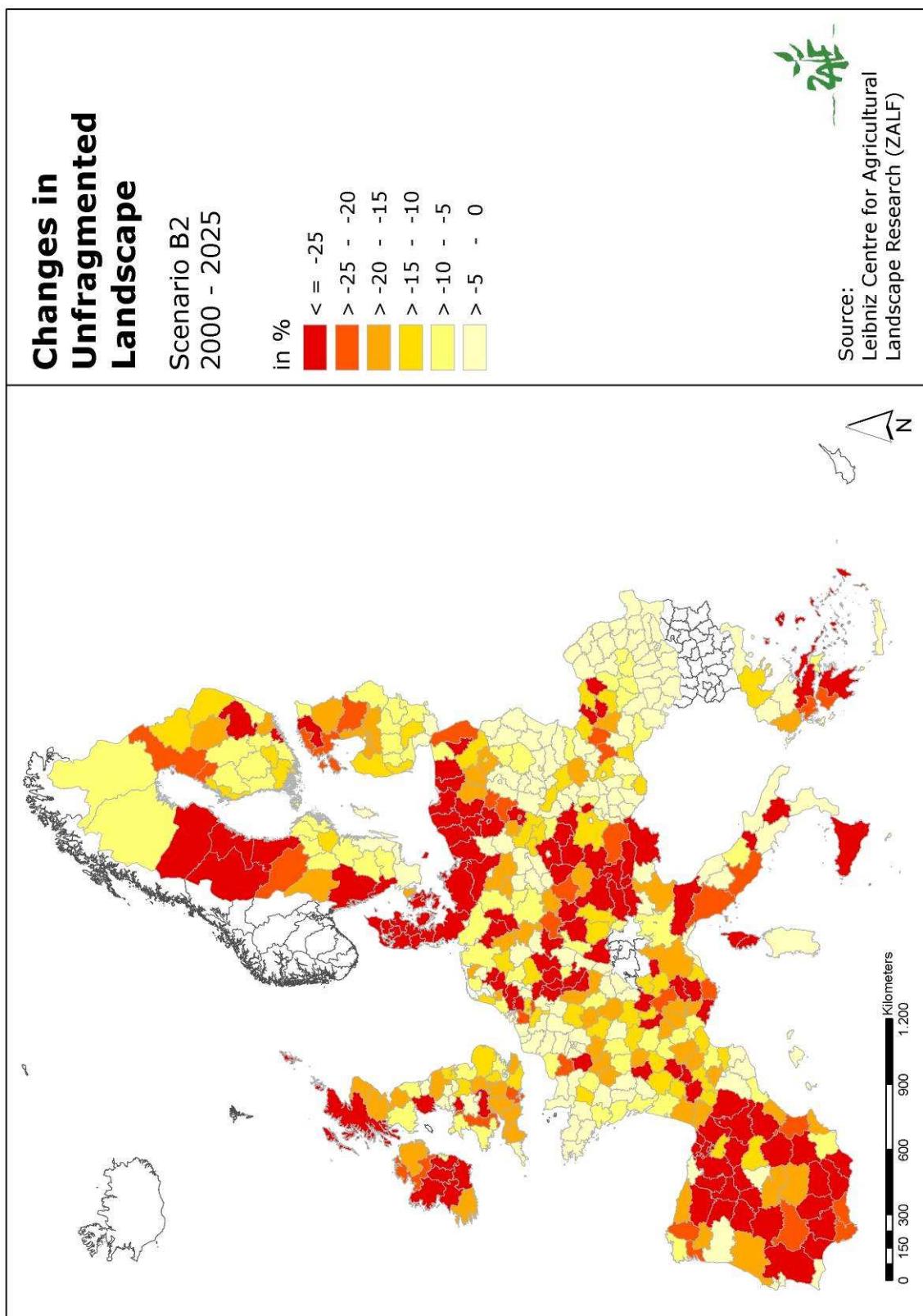


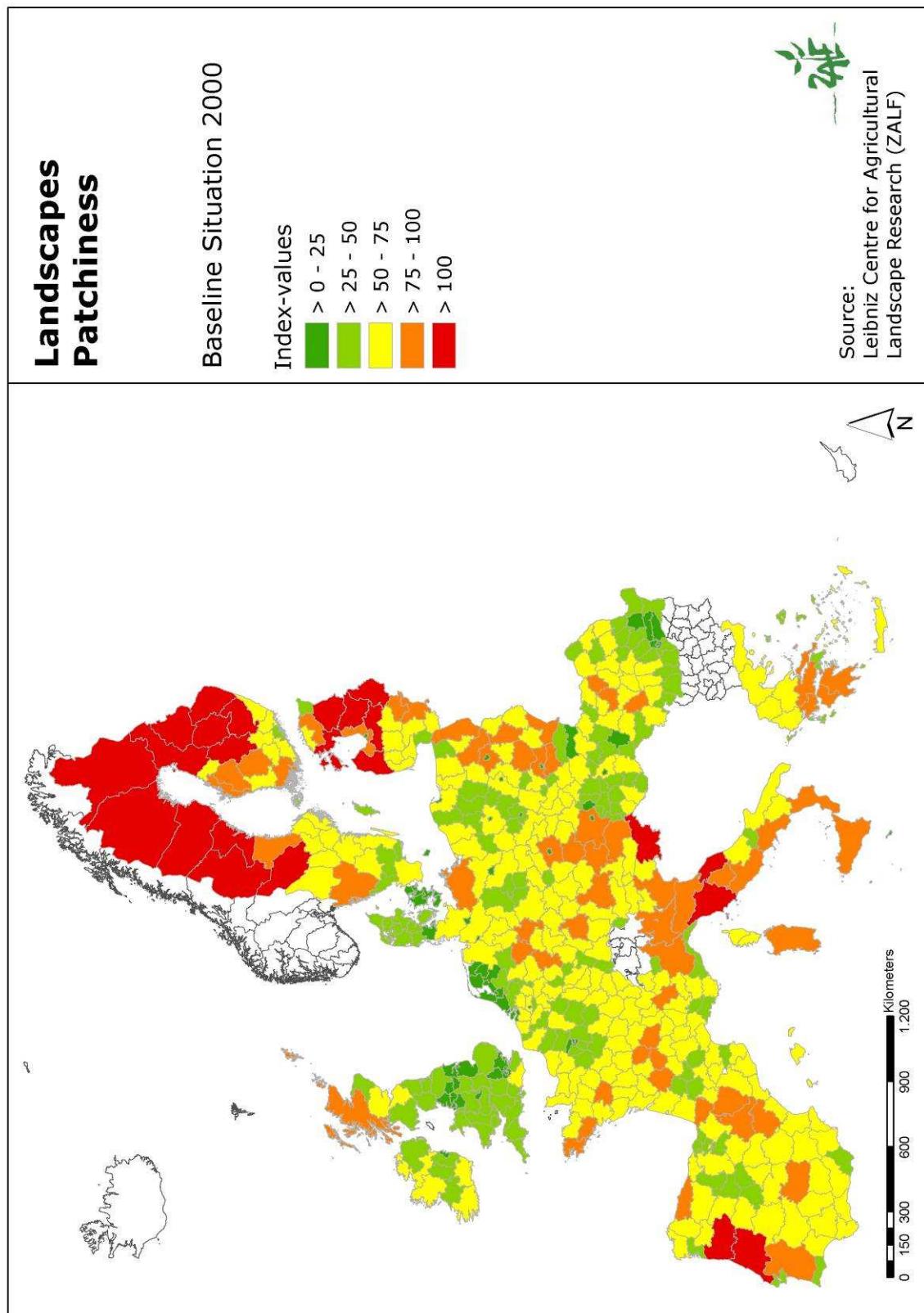


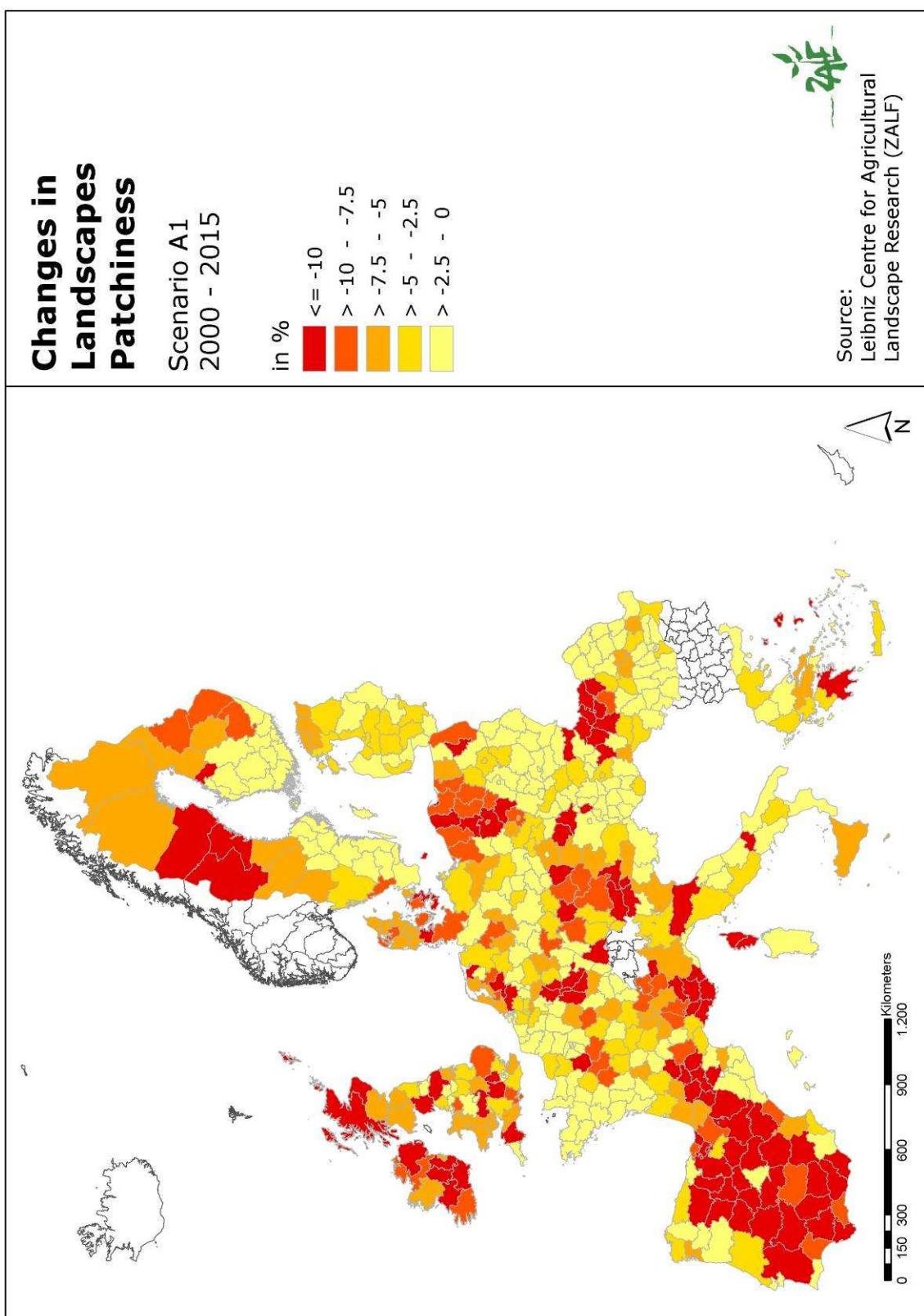


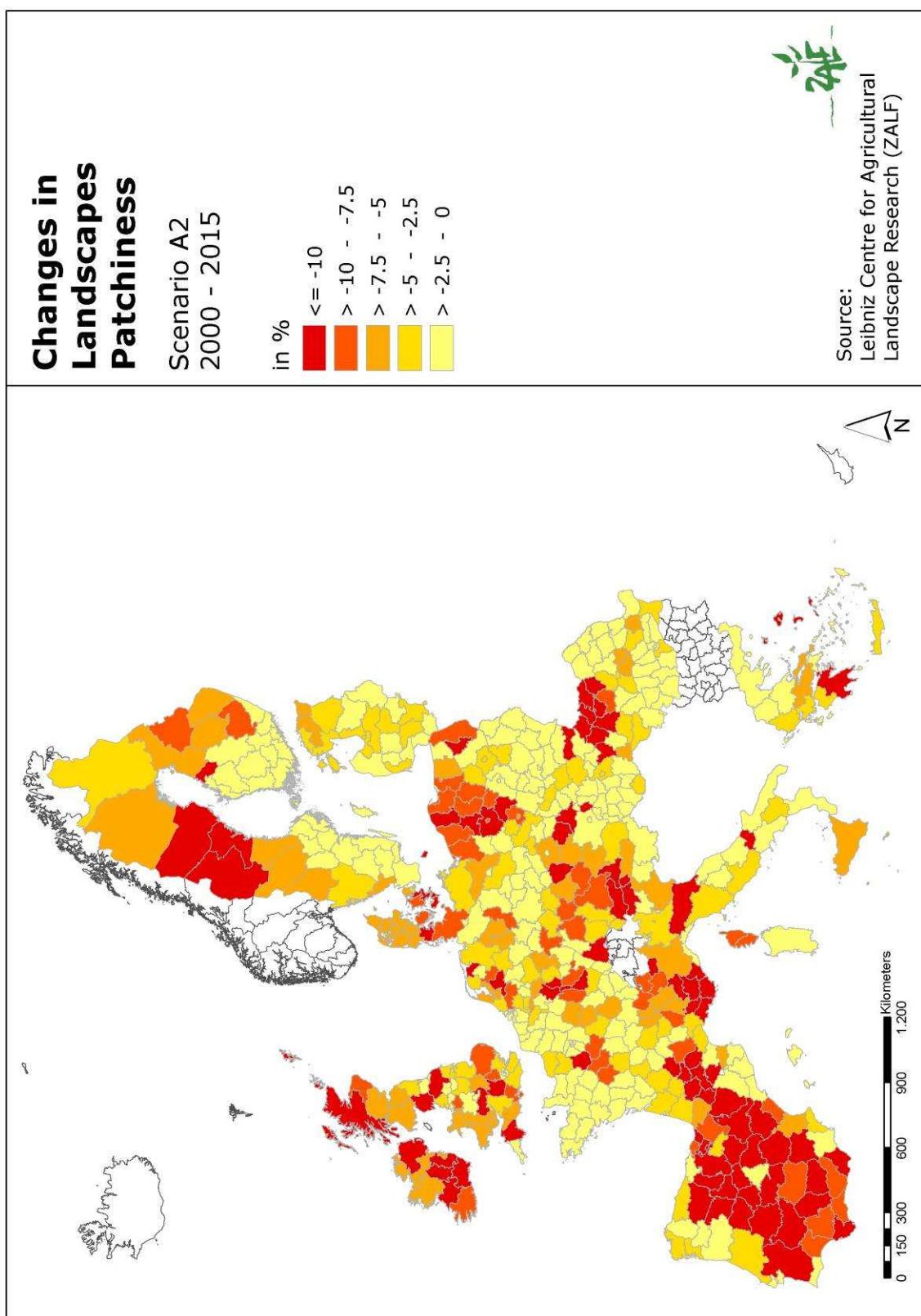


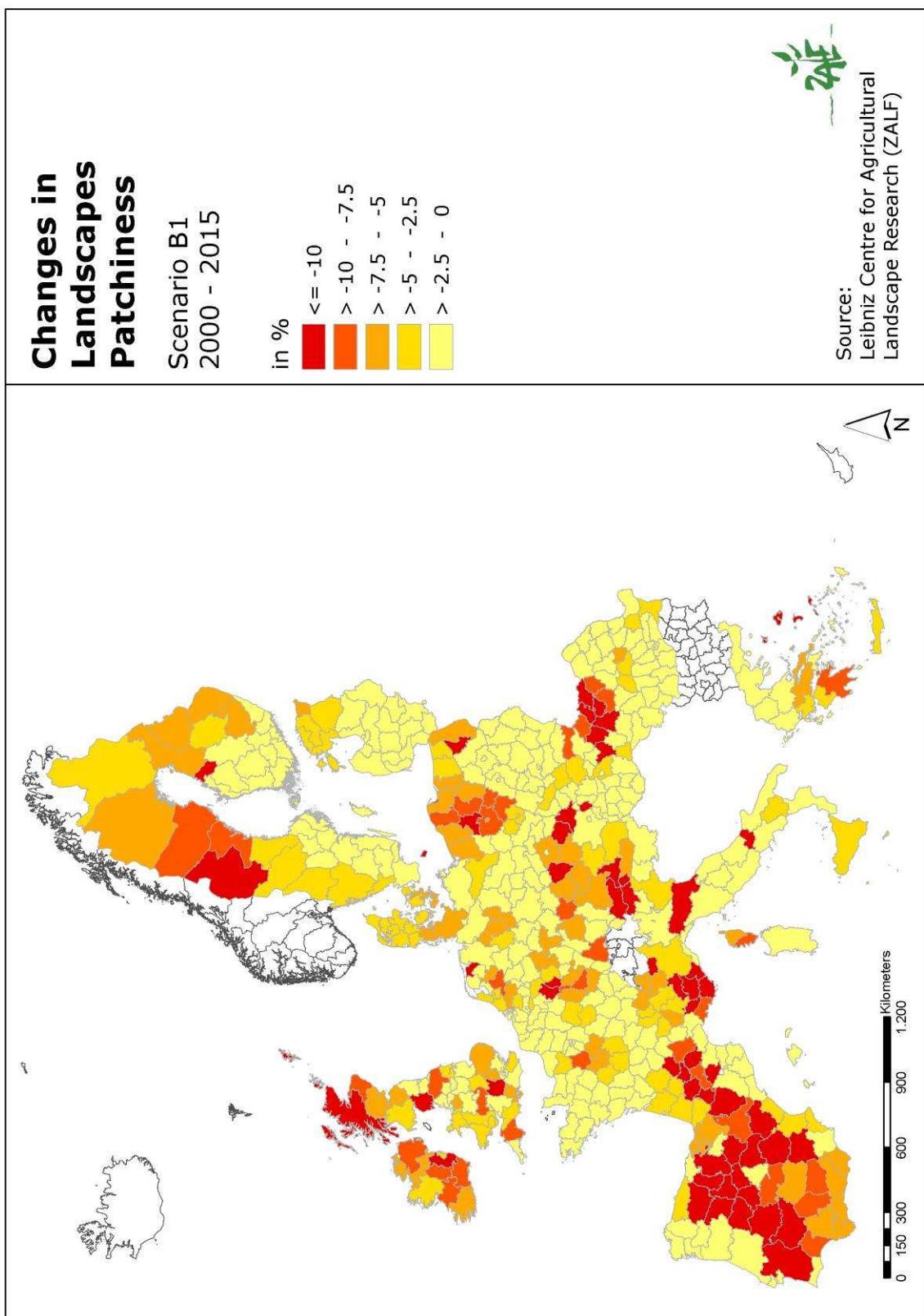


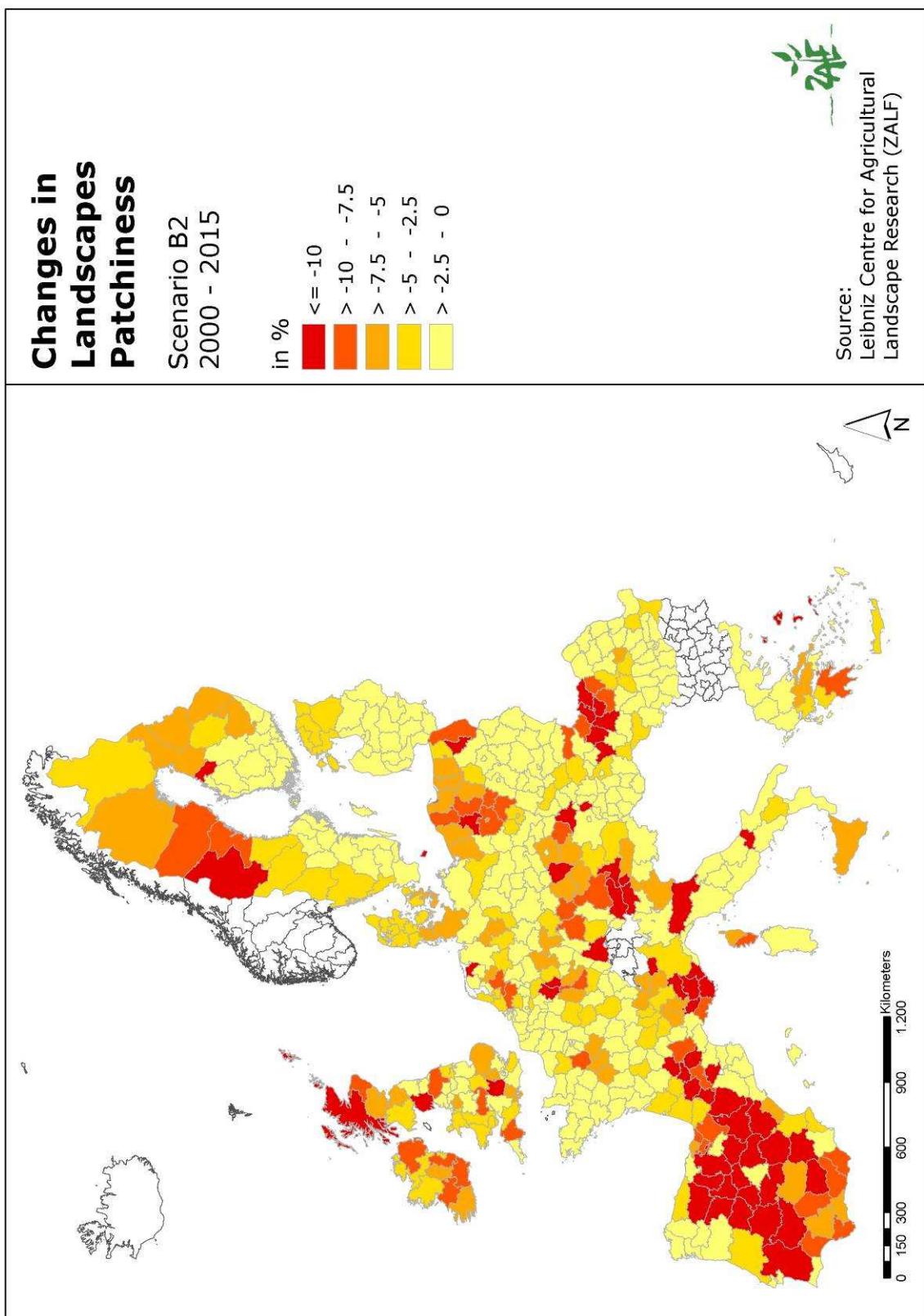


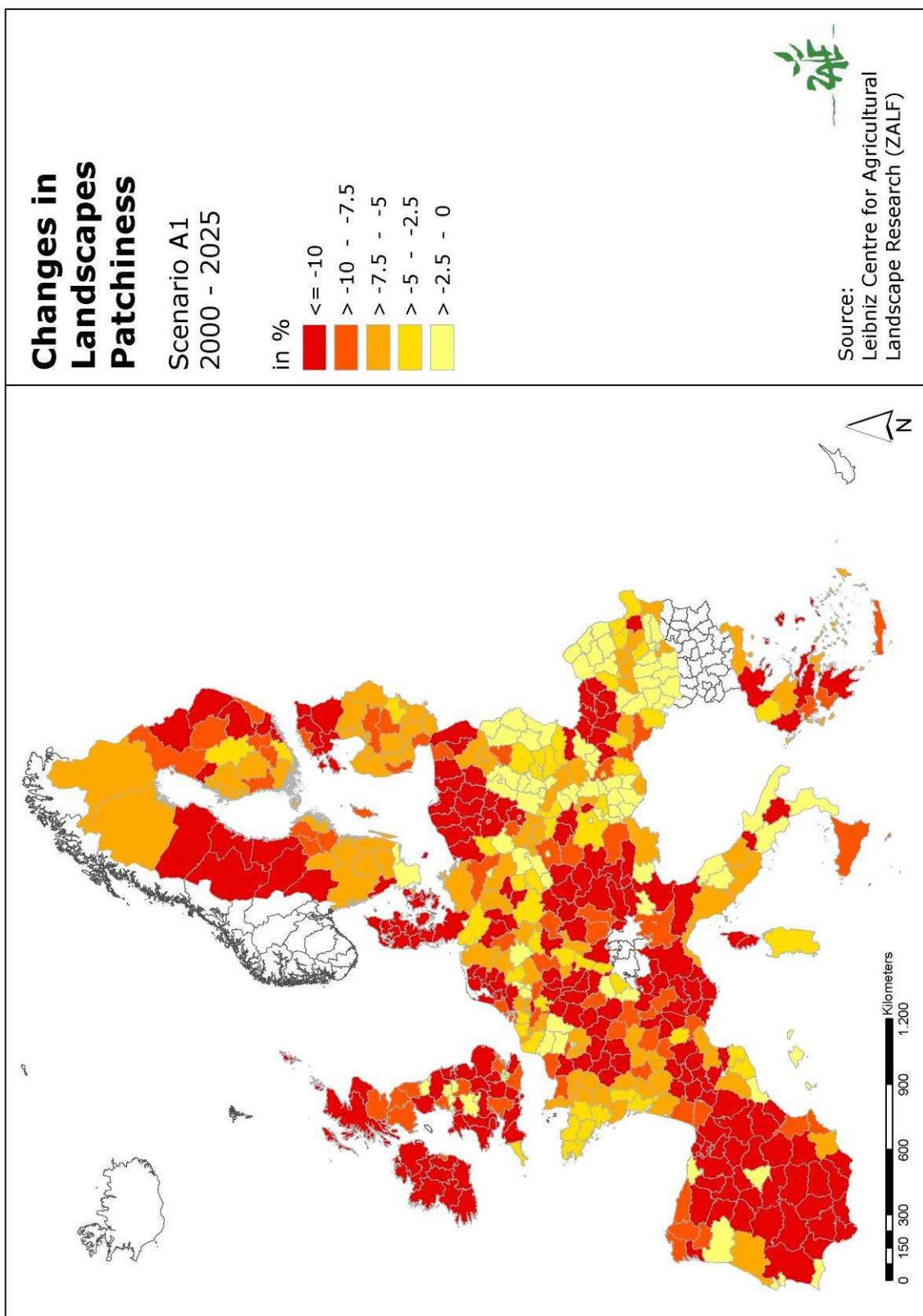


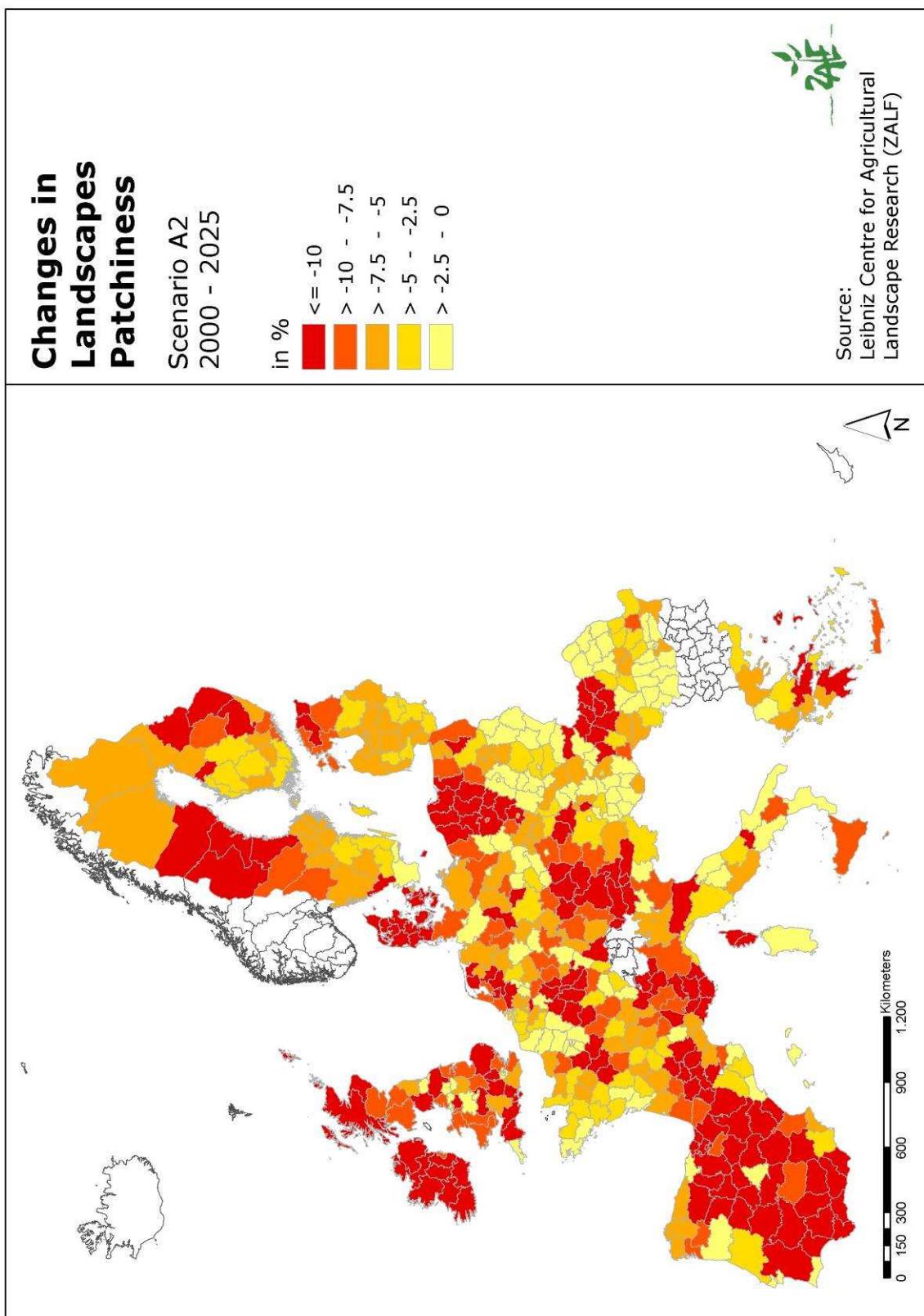


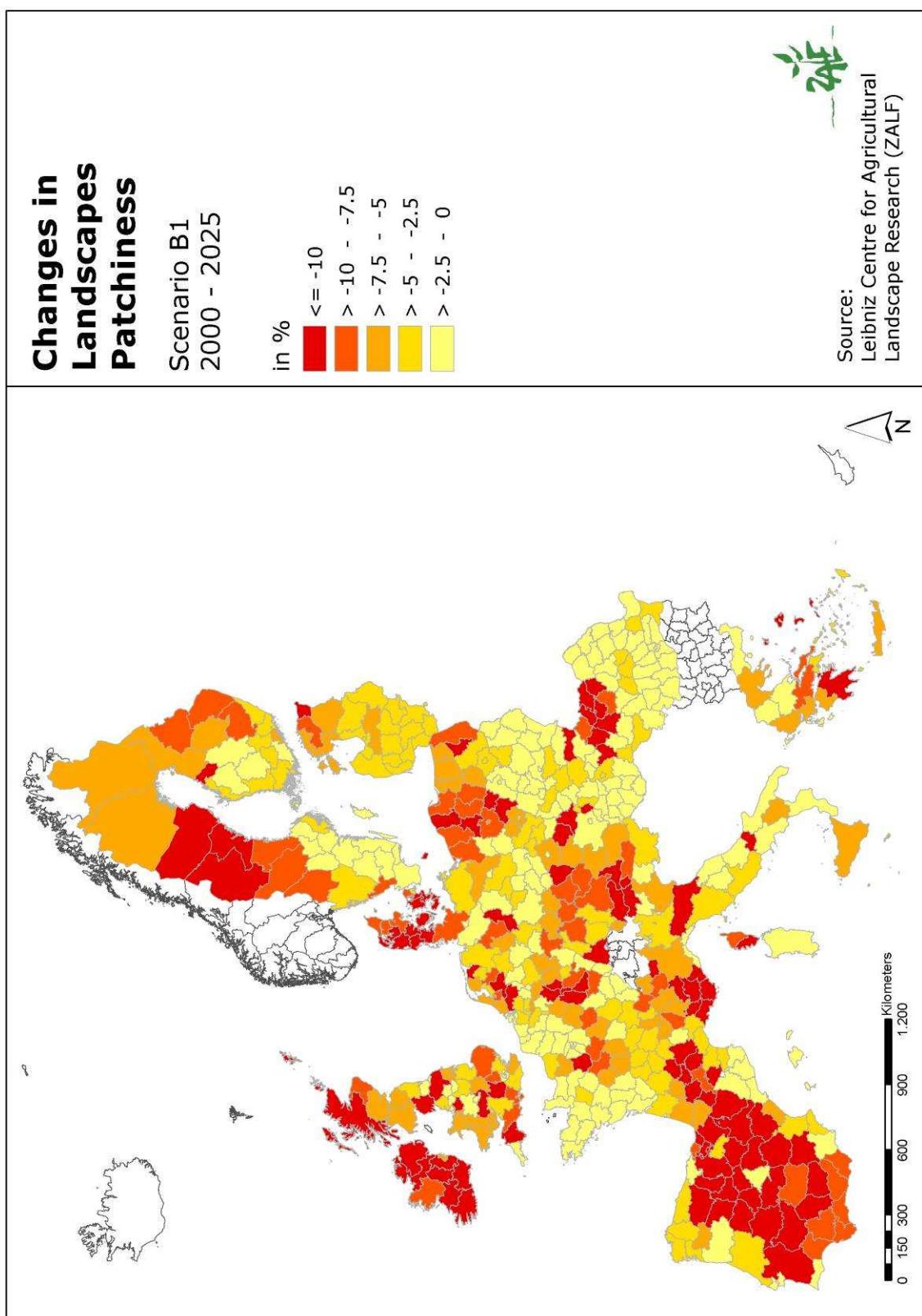


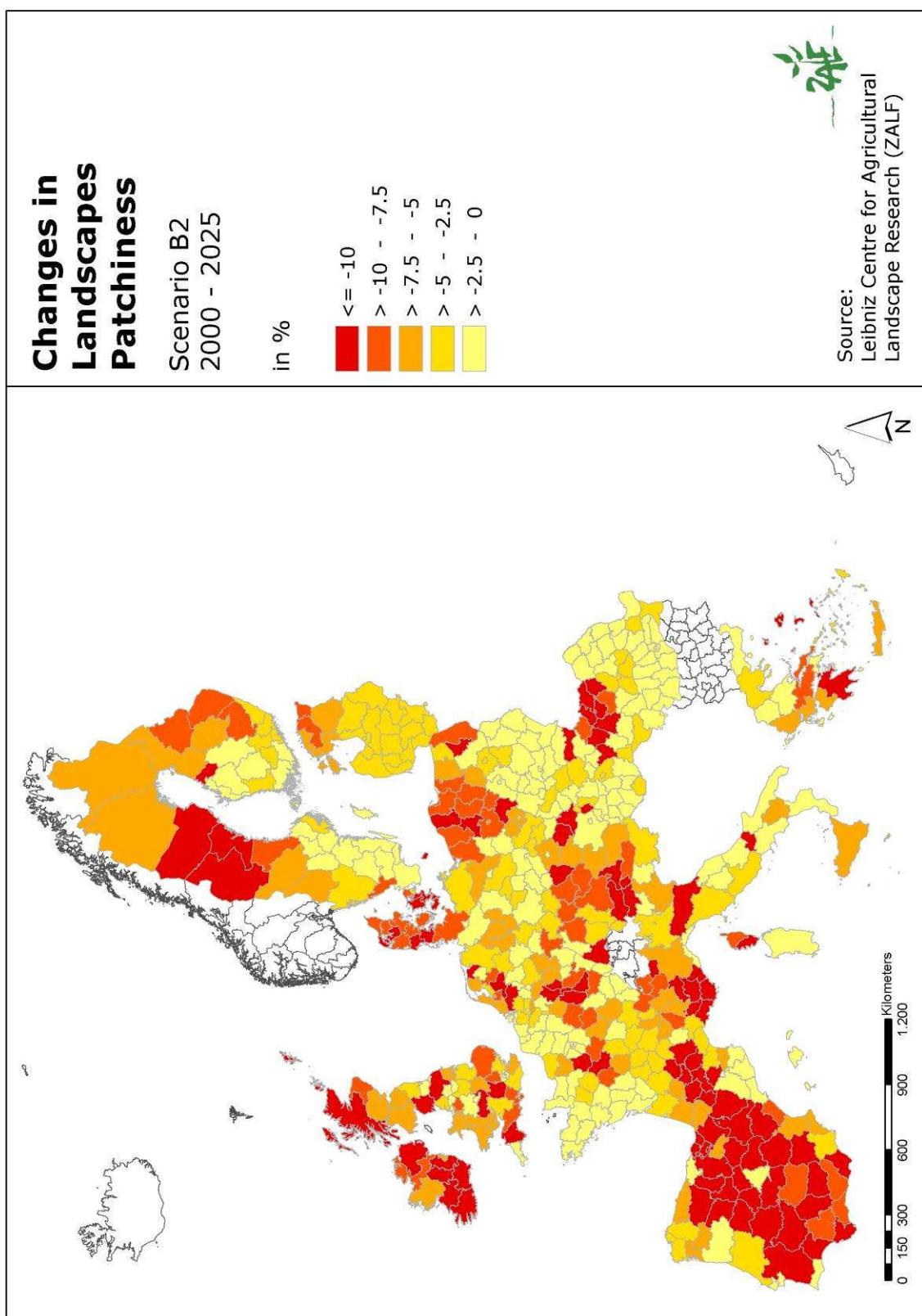


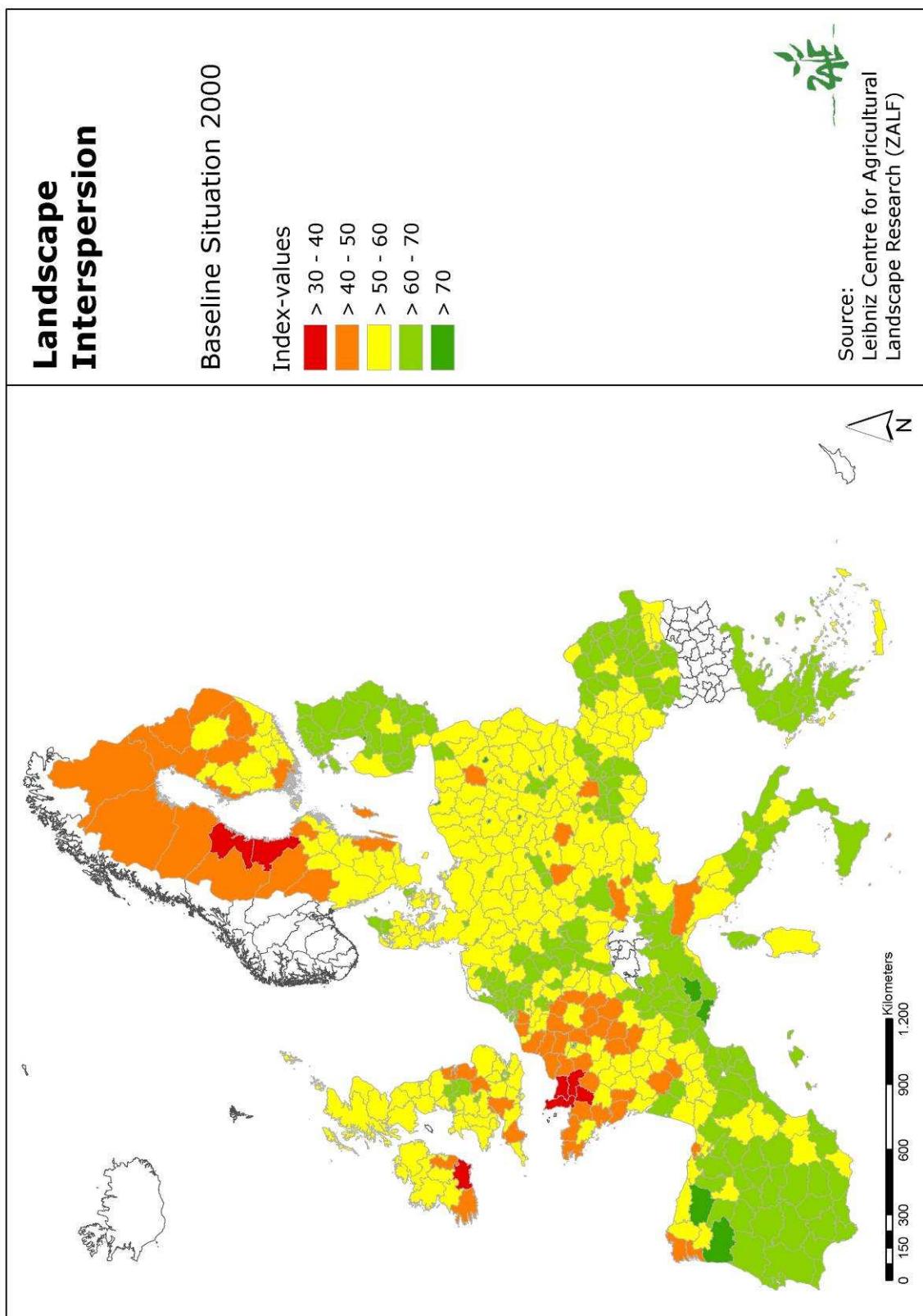


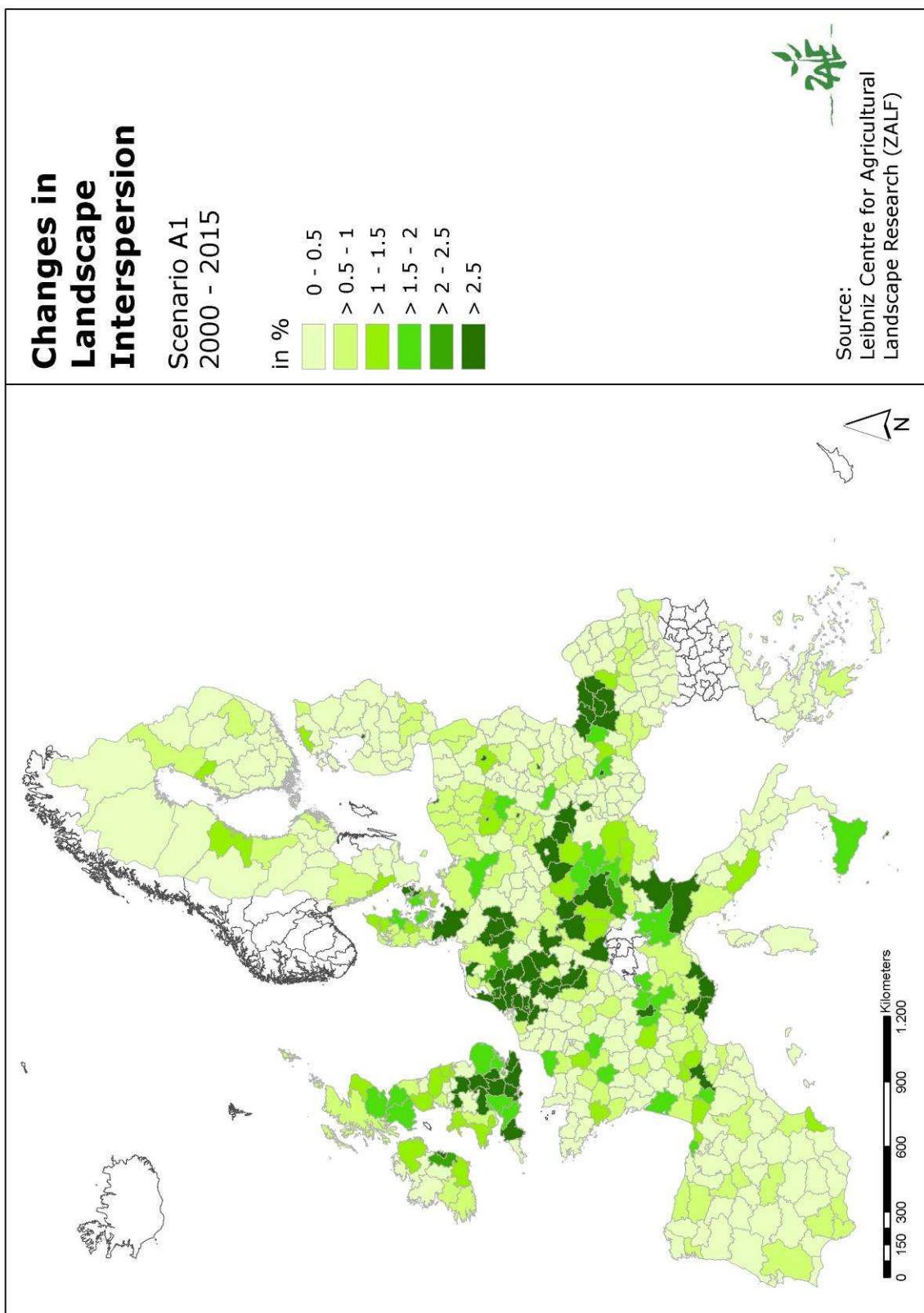


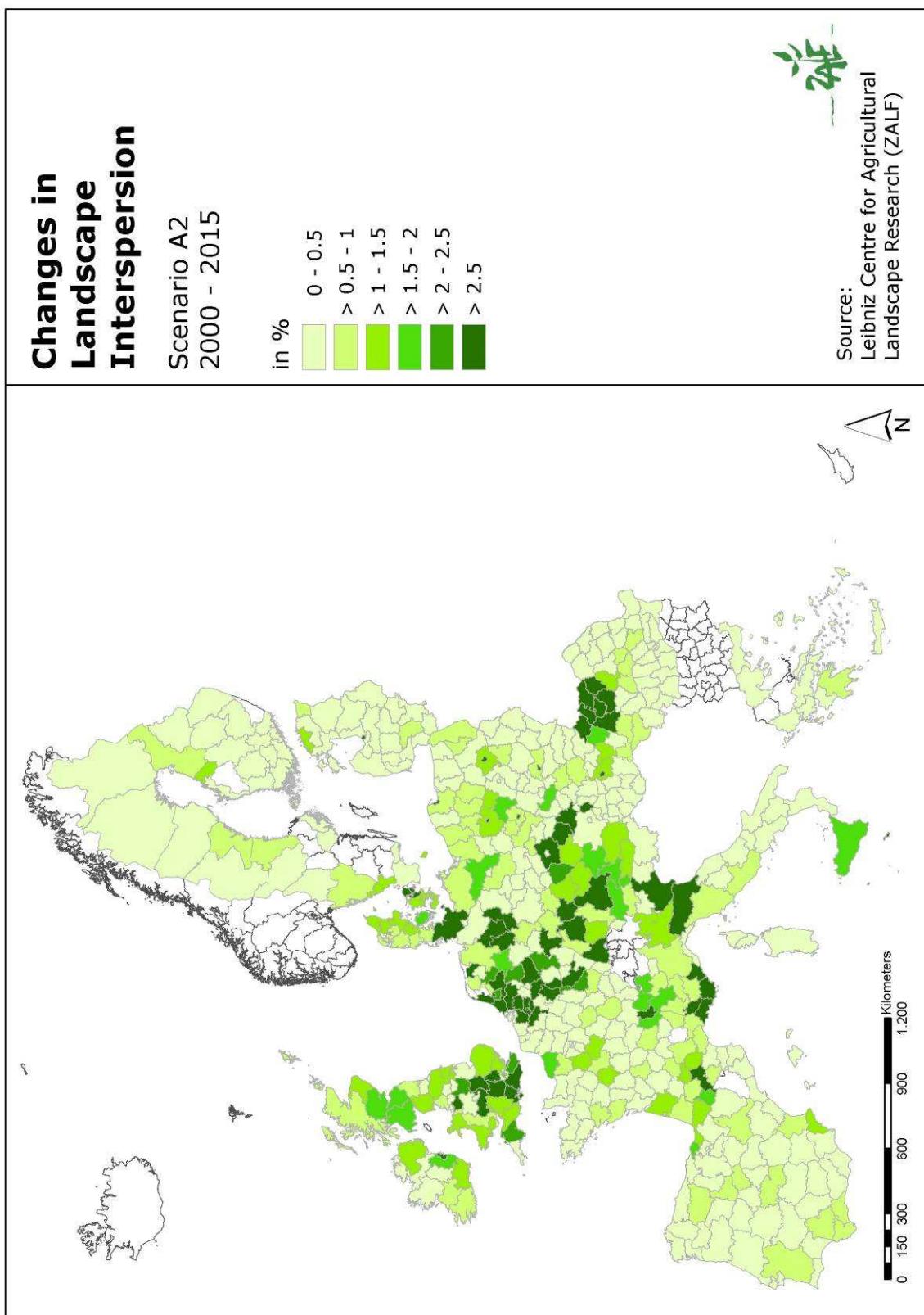


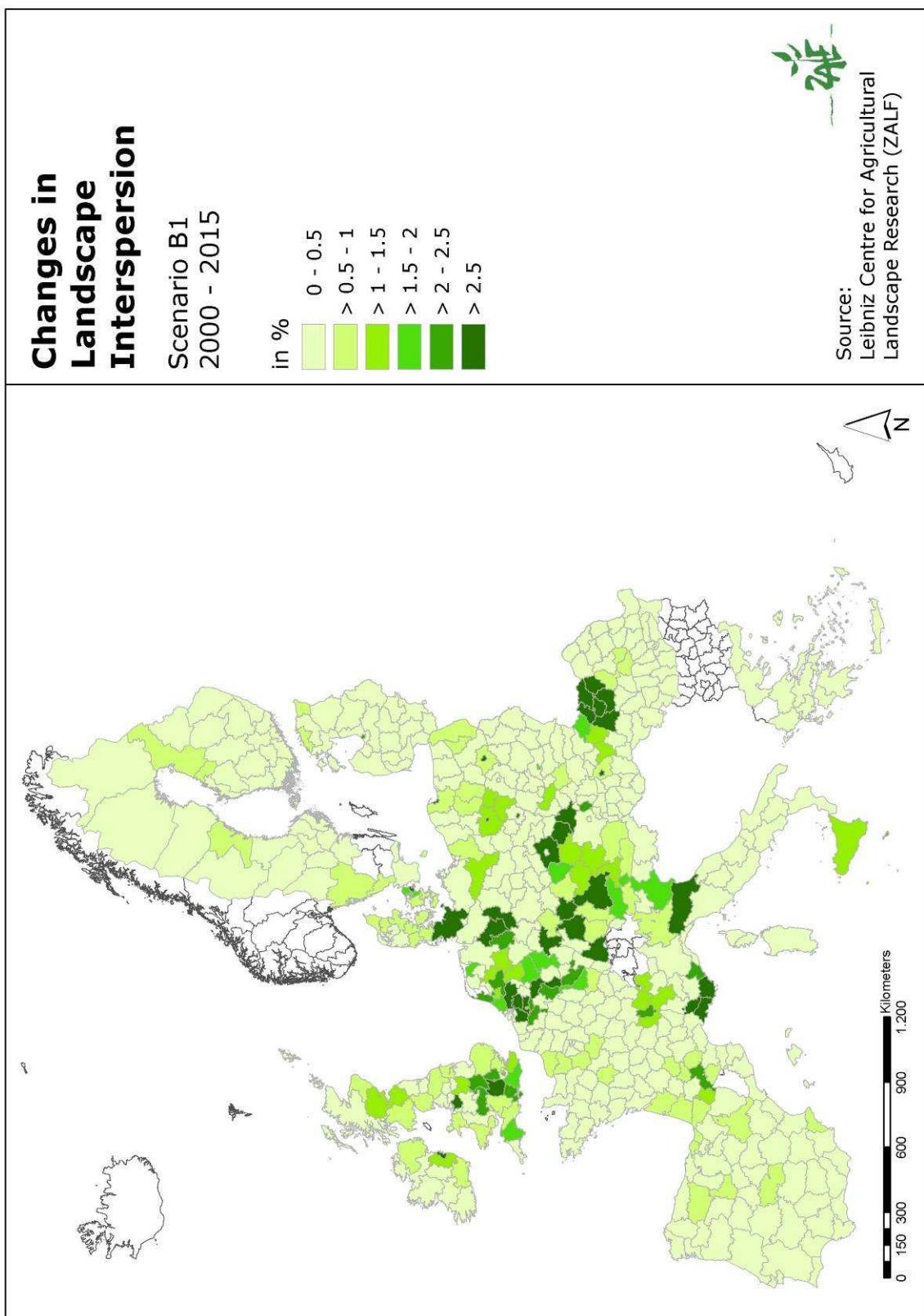


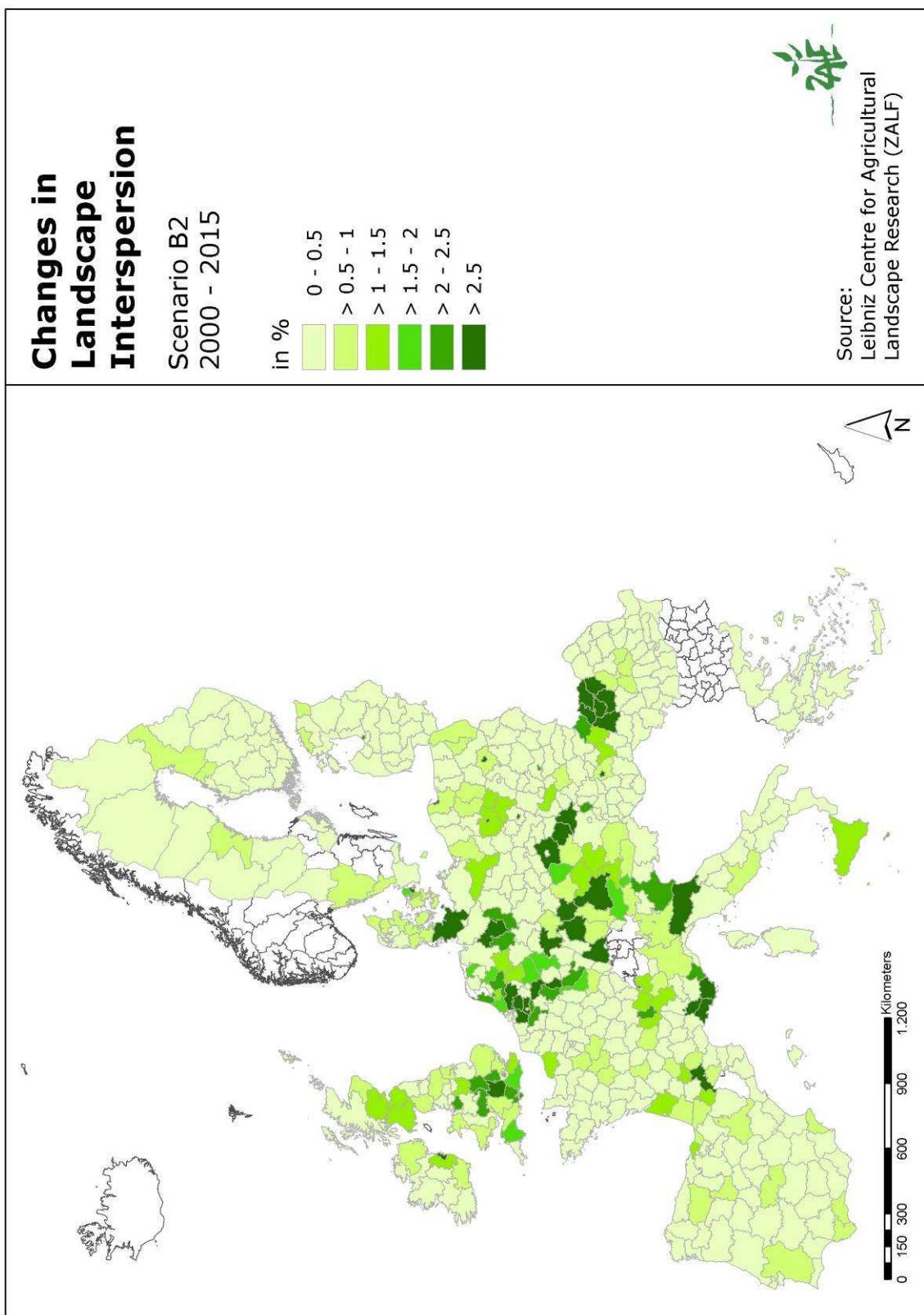


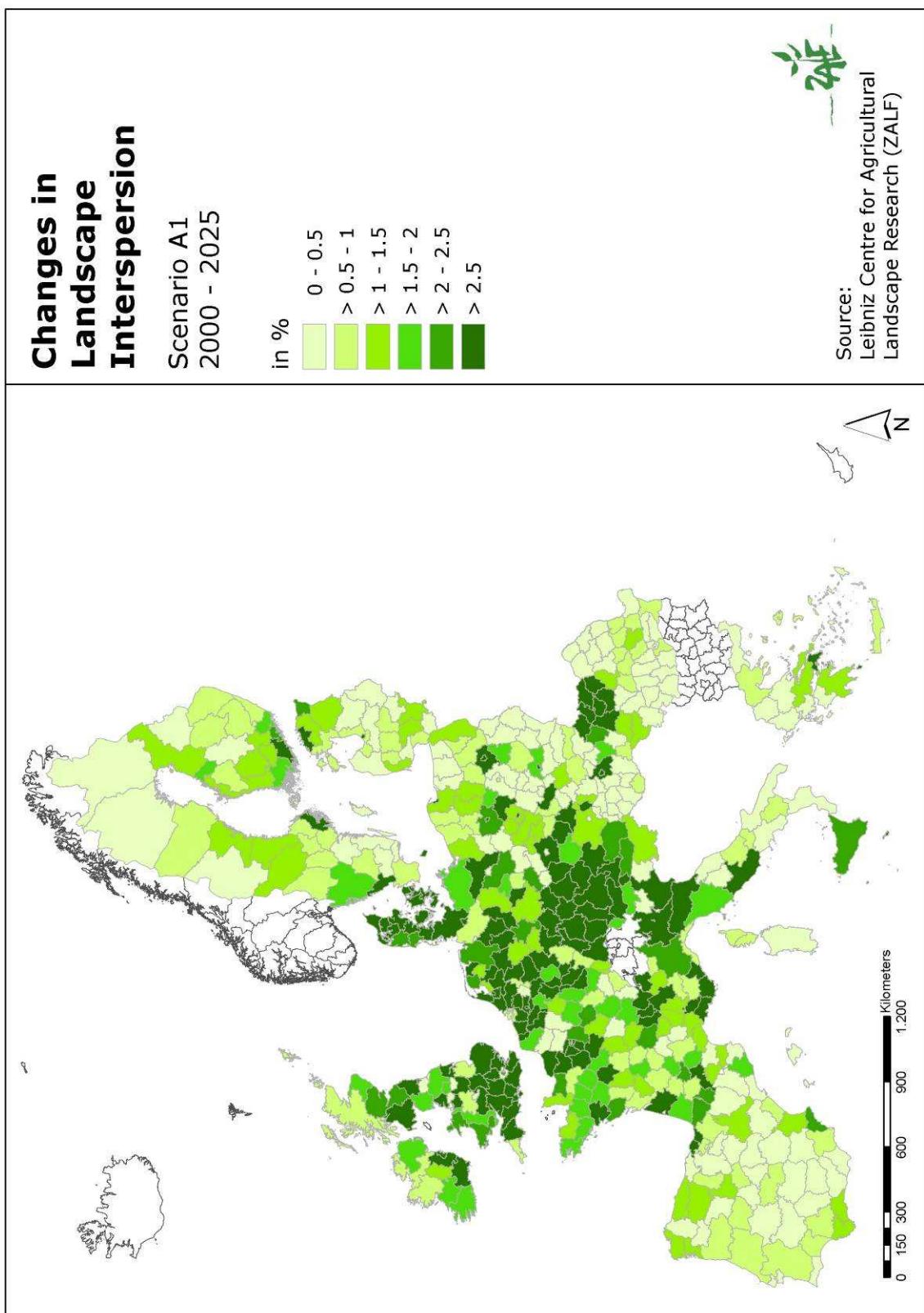


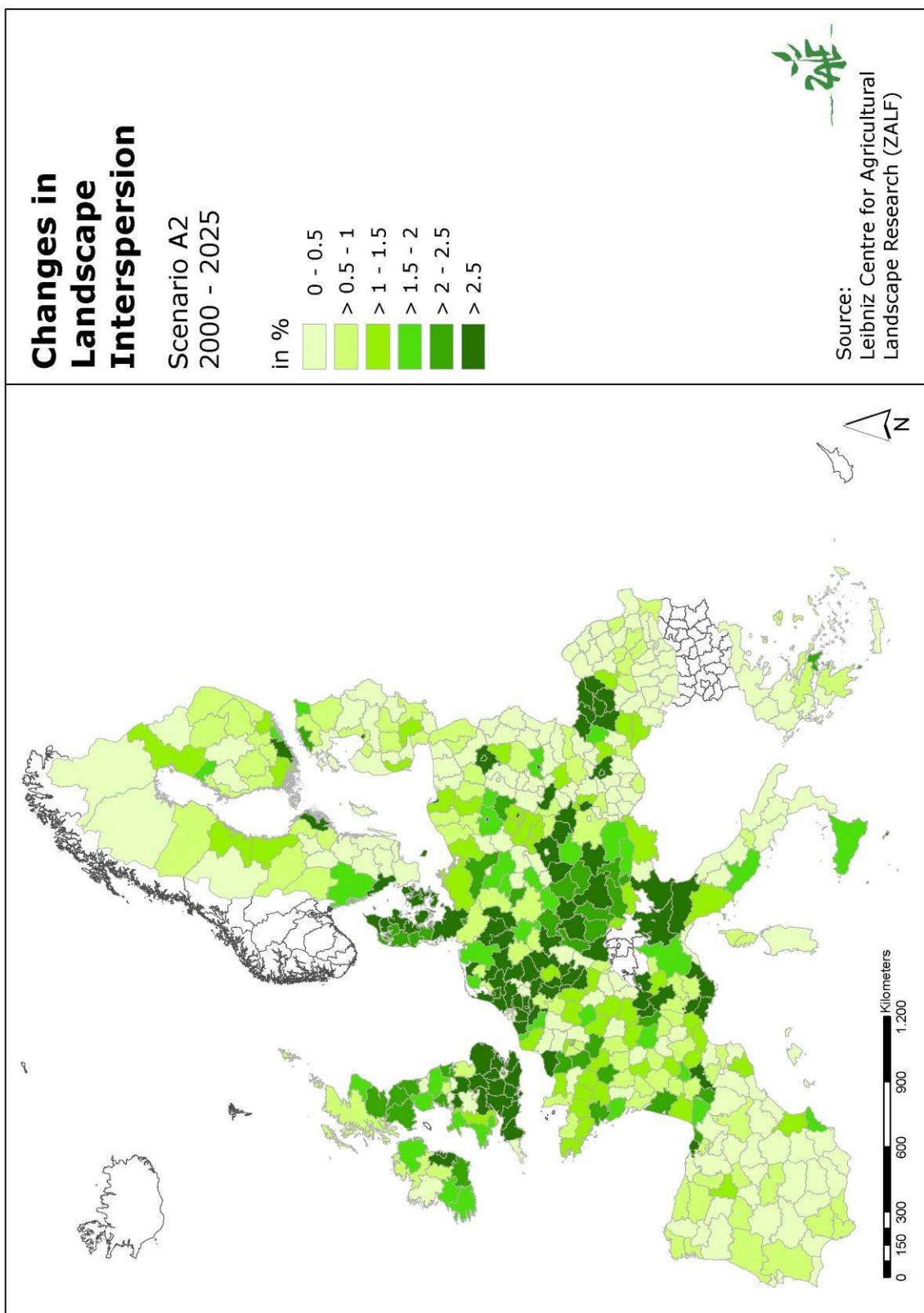


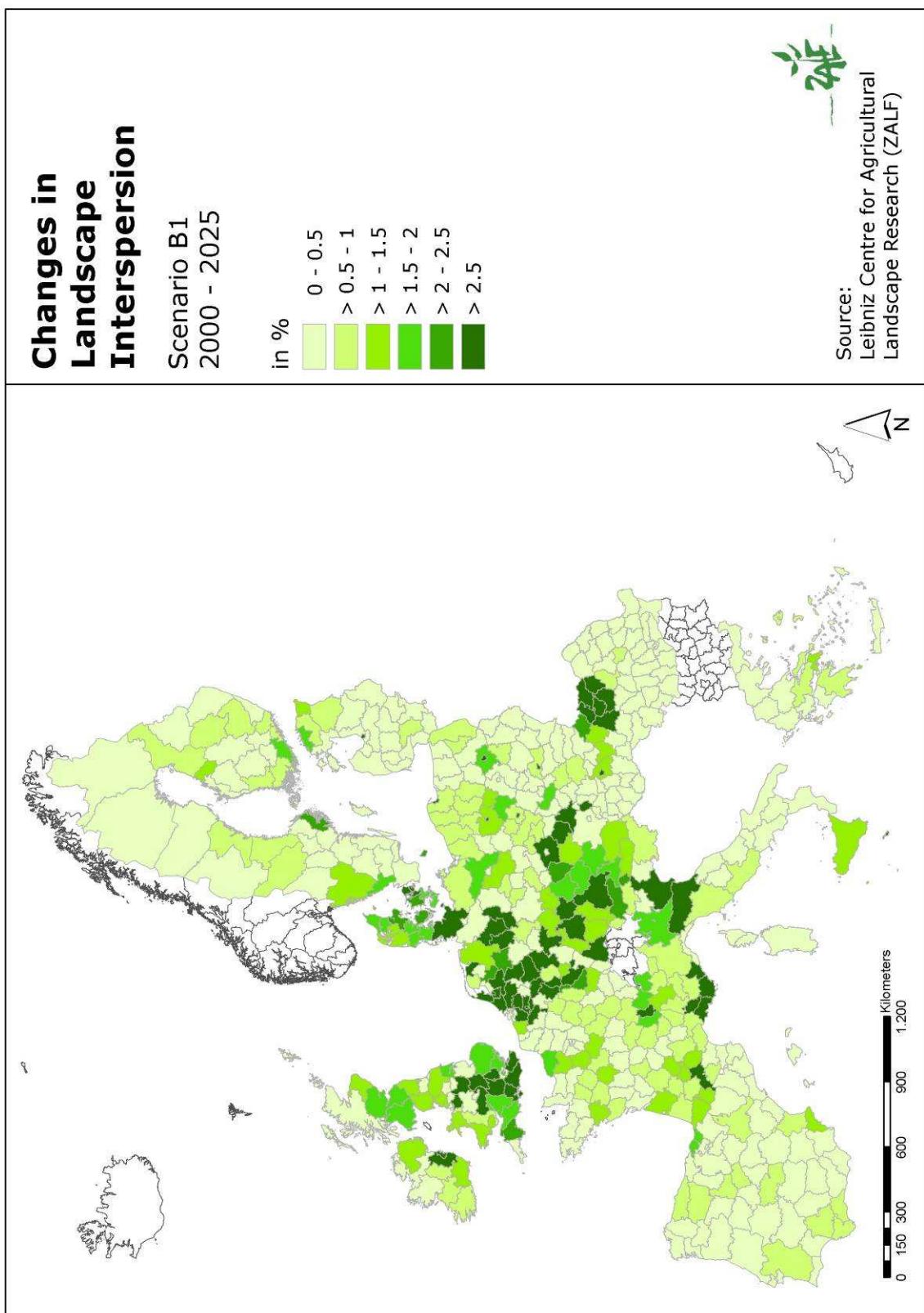


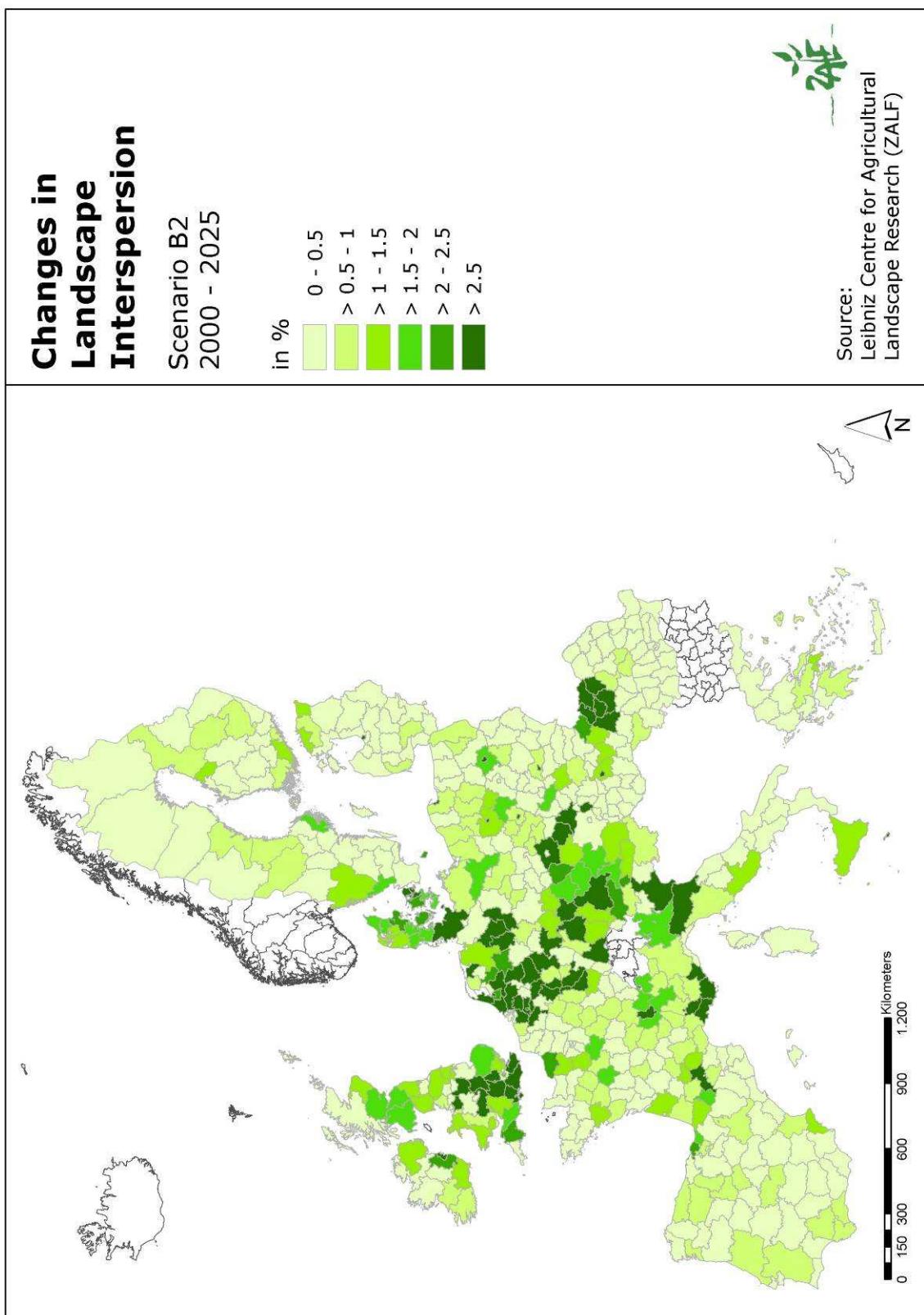






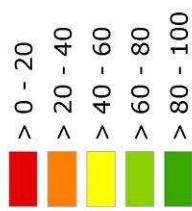




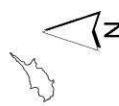


Density of Natural Habitats

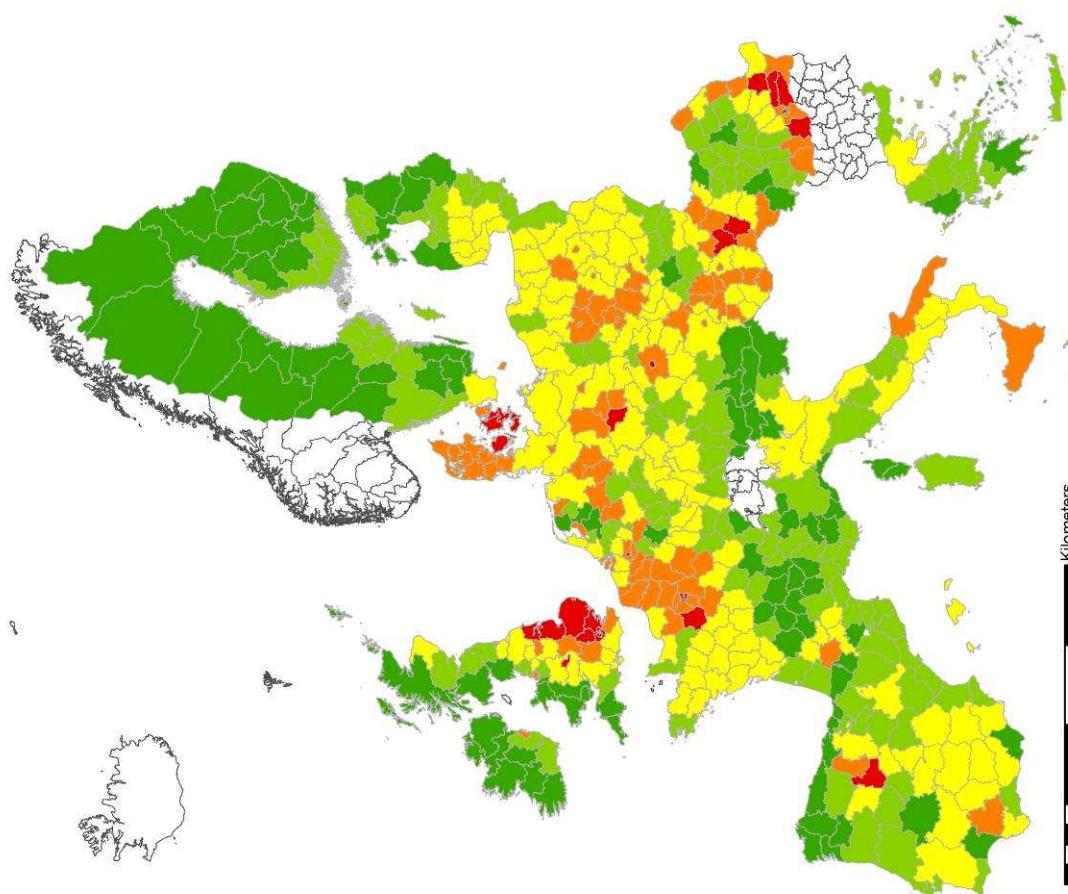
Baseline Situation 2000



Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)

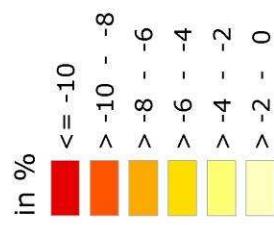


0 150 300 600 900 Kilometers 1.200

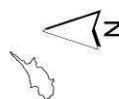


Changes in Density of Natural Habitats

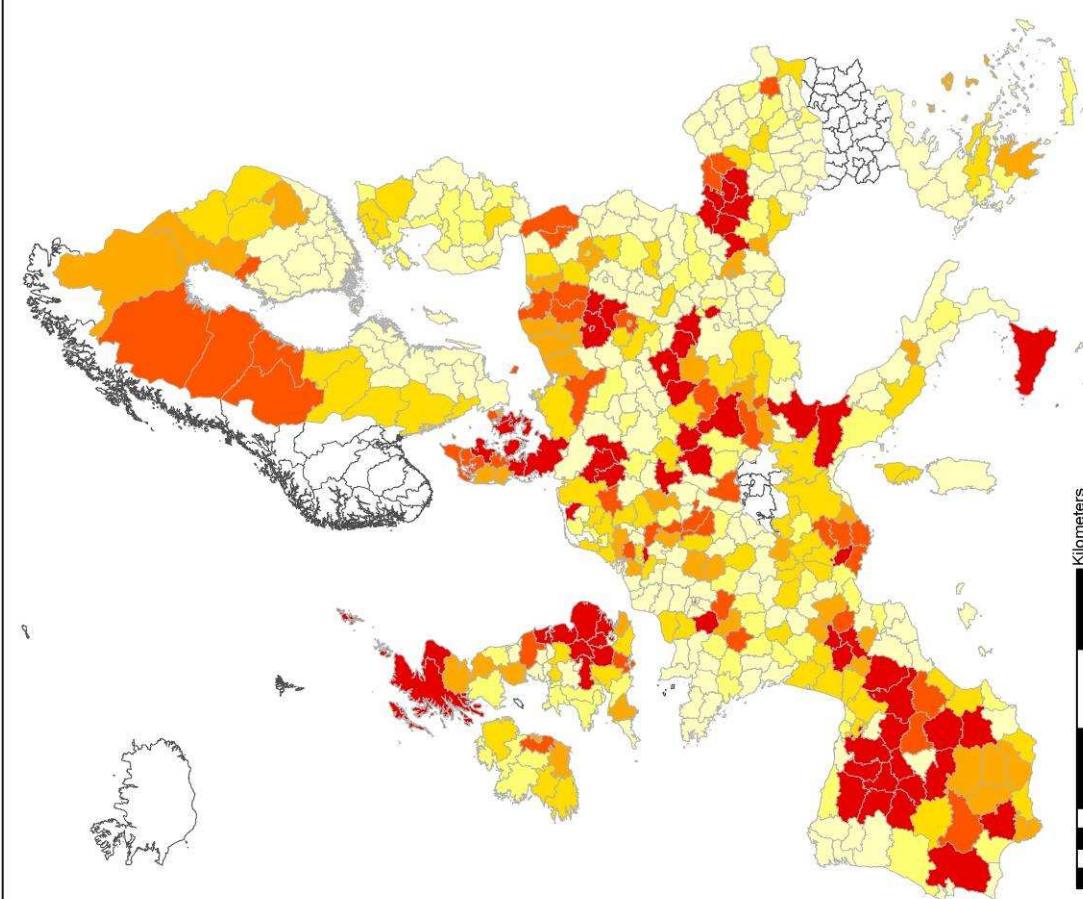
Scenario A1
2000 - 2015



Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)



Kilometers
0 150 300 600 900 1.200



Changes in Density of Natural Habitats

Scenario A2
2000 - 2015

in %

<= -10	> -10 - -8
> -8 - -6	> -6 - -4
> -4 - -2	> -2 - 0

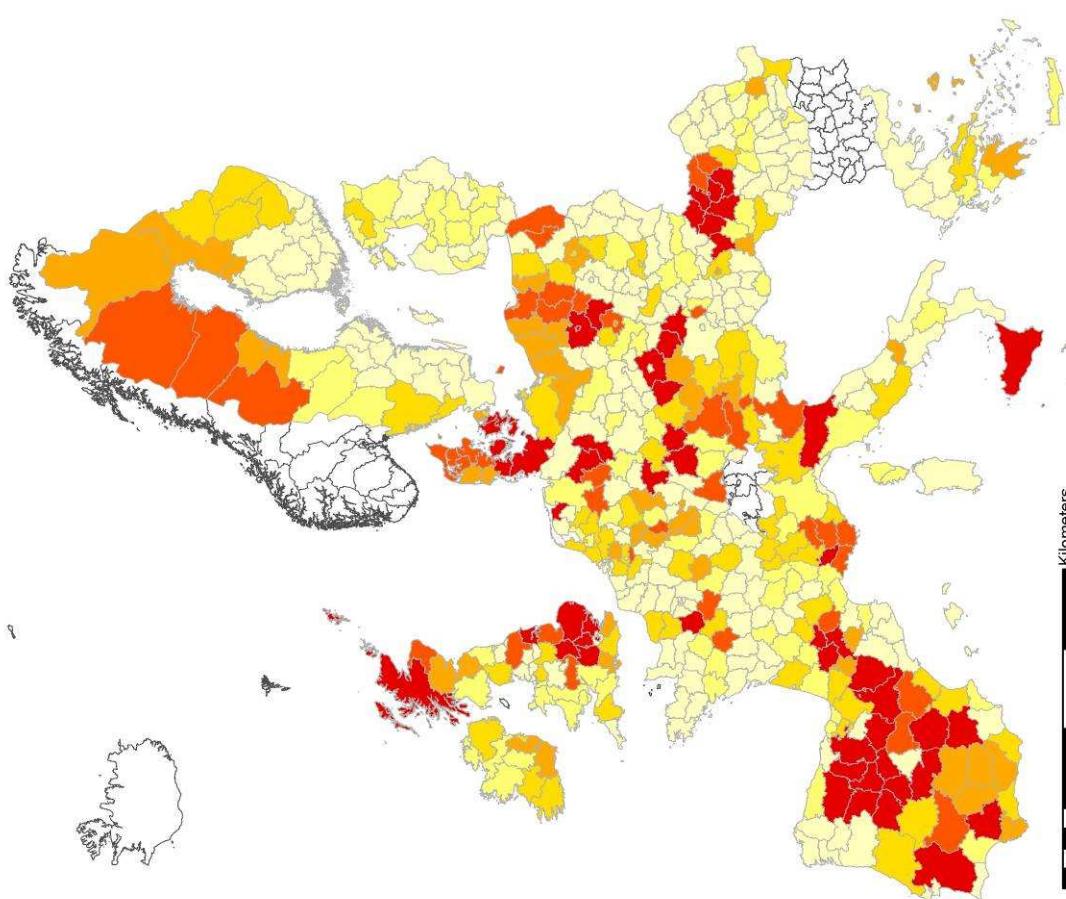


Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)



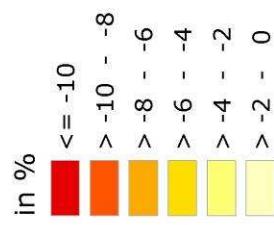
Kilometers

0	150	300	600	900	1.200
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Changes in Density of Natural Habitats

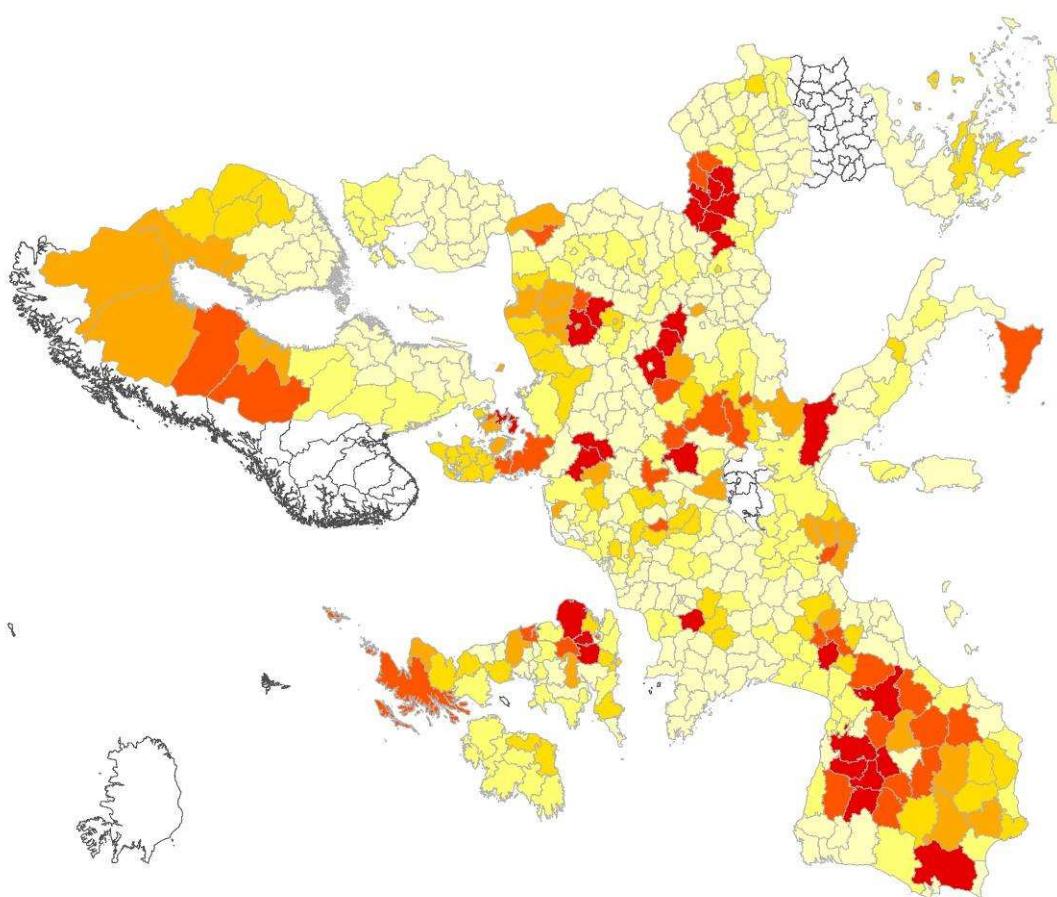
Scenario B1
2000 - 2015



Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)

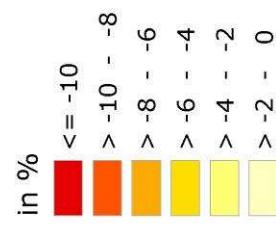


Kilometers
0 150 300 600 900 1.200



Changes in Density of Natural Habitats

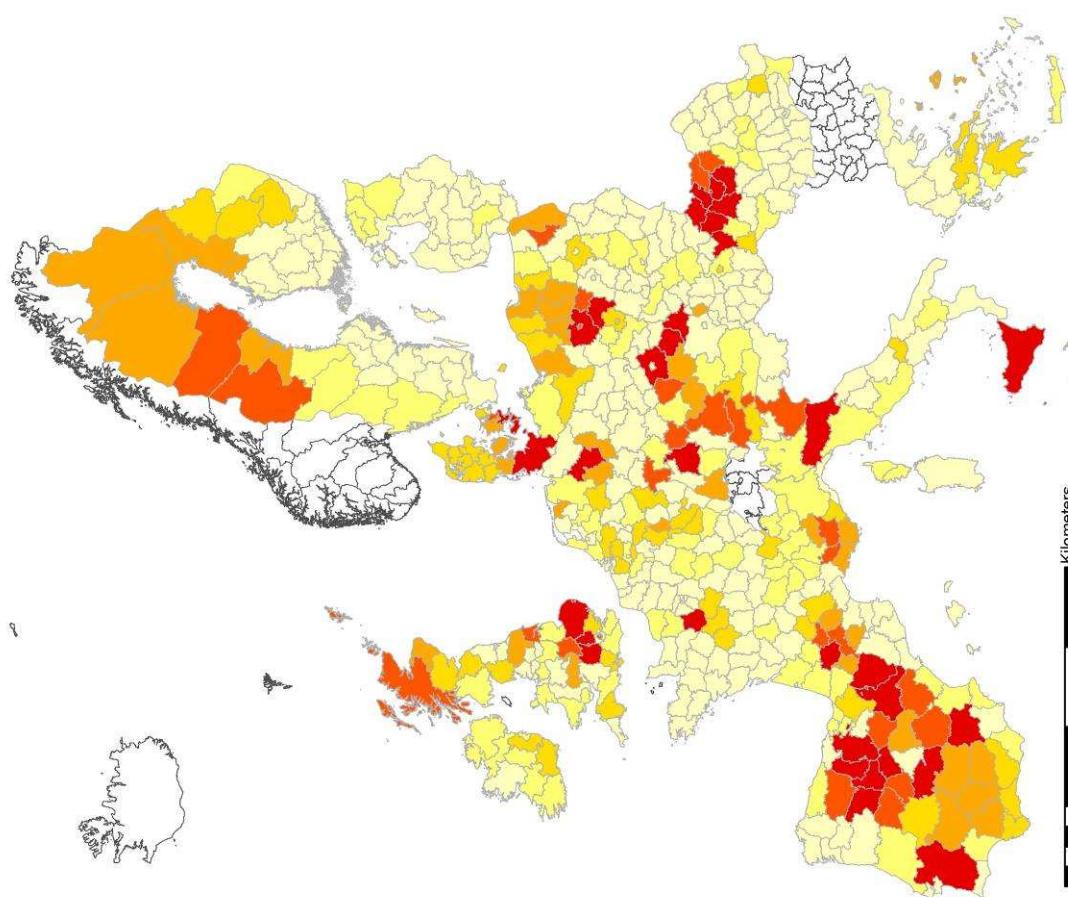
Scenario B2
2000 - 2015



Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)

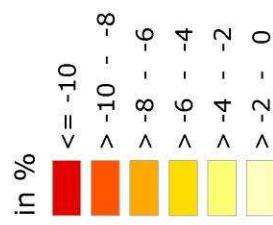


0 150 300 600 900 1.200 Kilometers

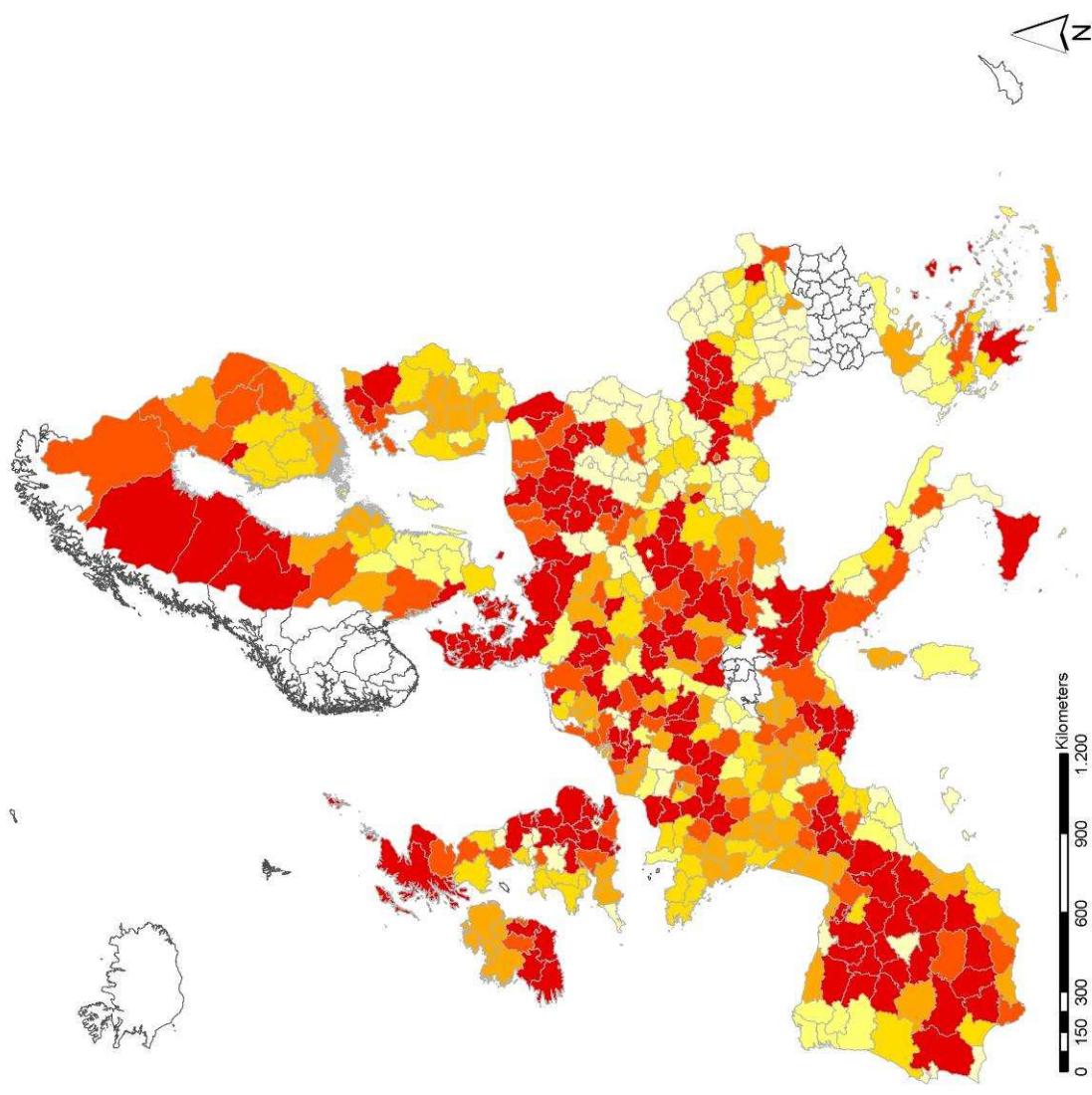


Changes in Density of Natural Habitats

Scenario A1
2000 - 2025

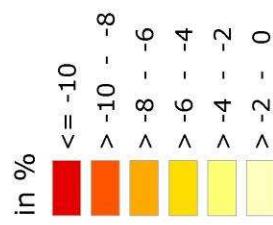


Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)

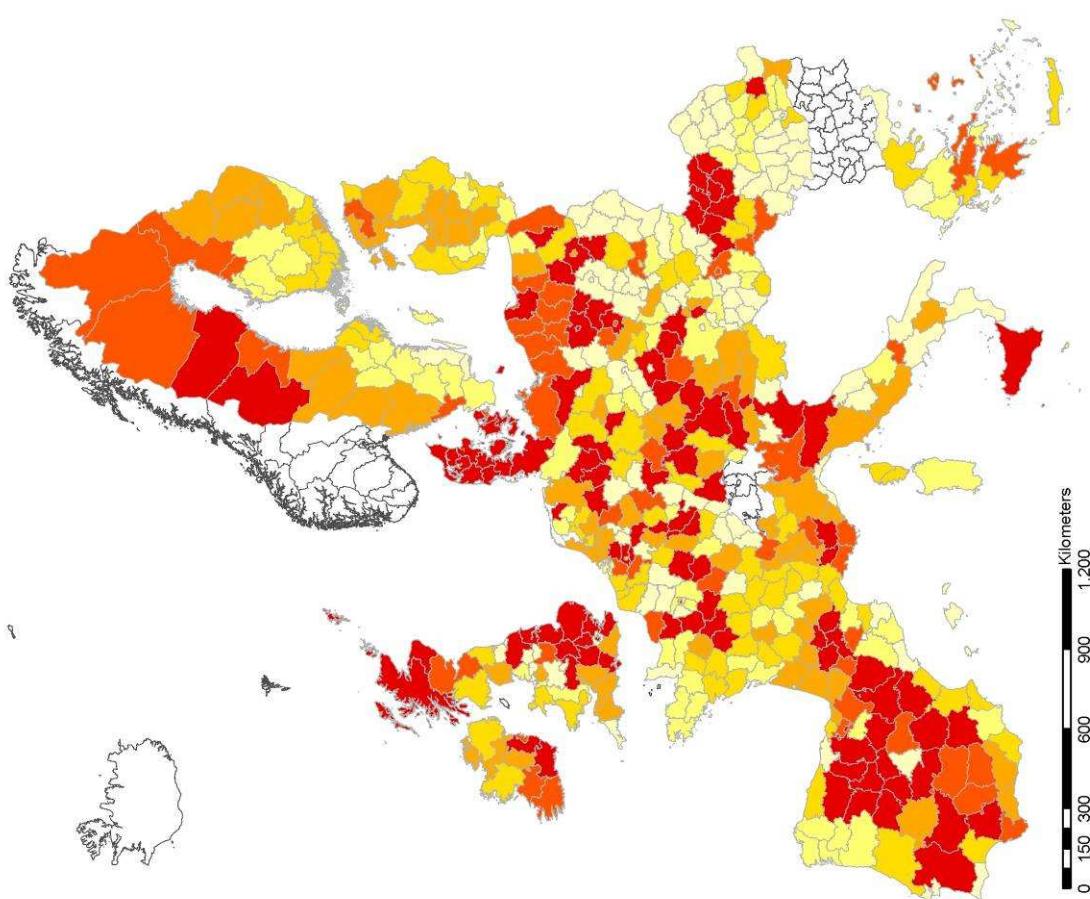


Changes in Density of Natural Habitats

Scenario A2
2000 - 2025



Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)



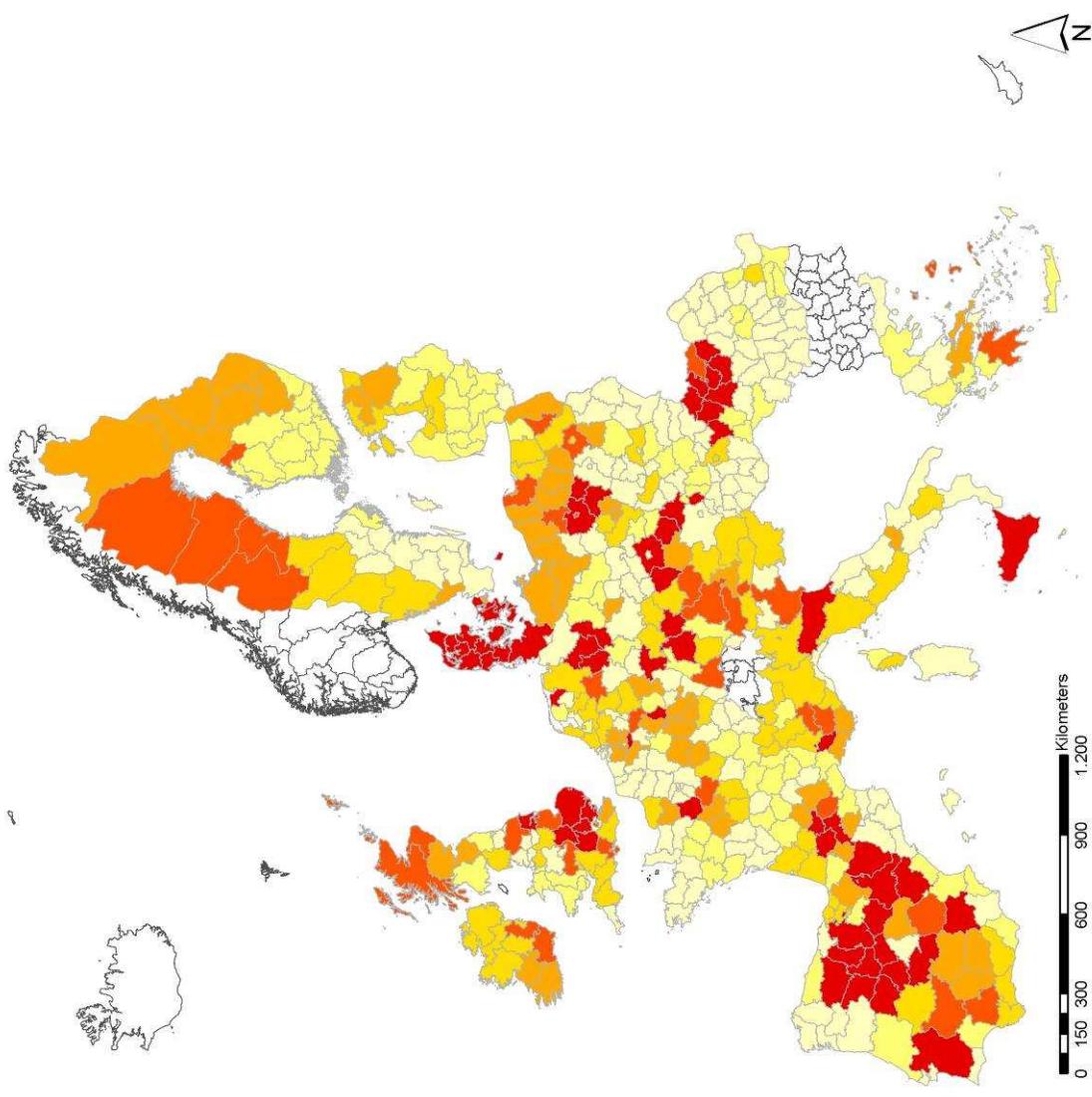
Changes in Density of Natural Habitats

Scenario B1
2000 - 2025

in %
≤ -10 > -10 - -8
> -8 - -6
> -6 - -4
> -4 - -2
> -2 - 0

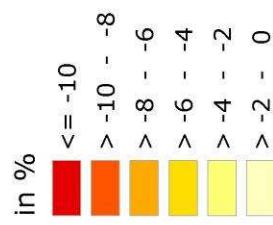


Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)

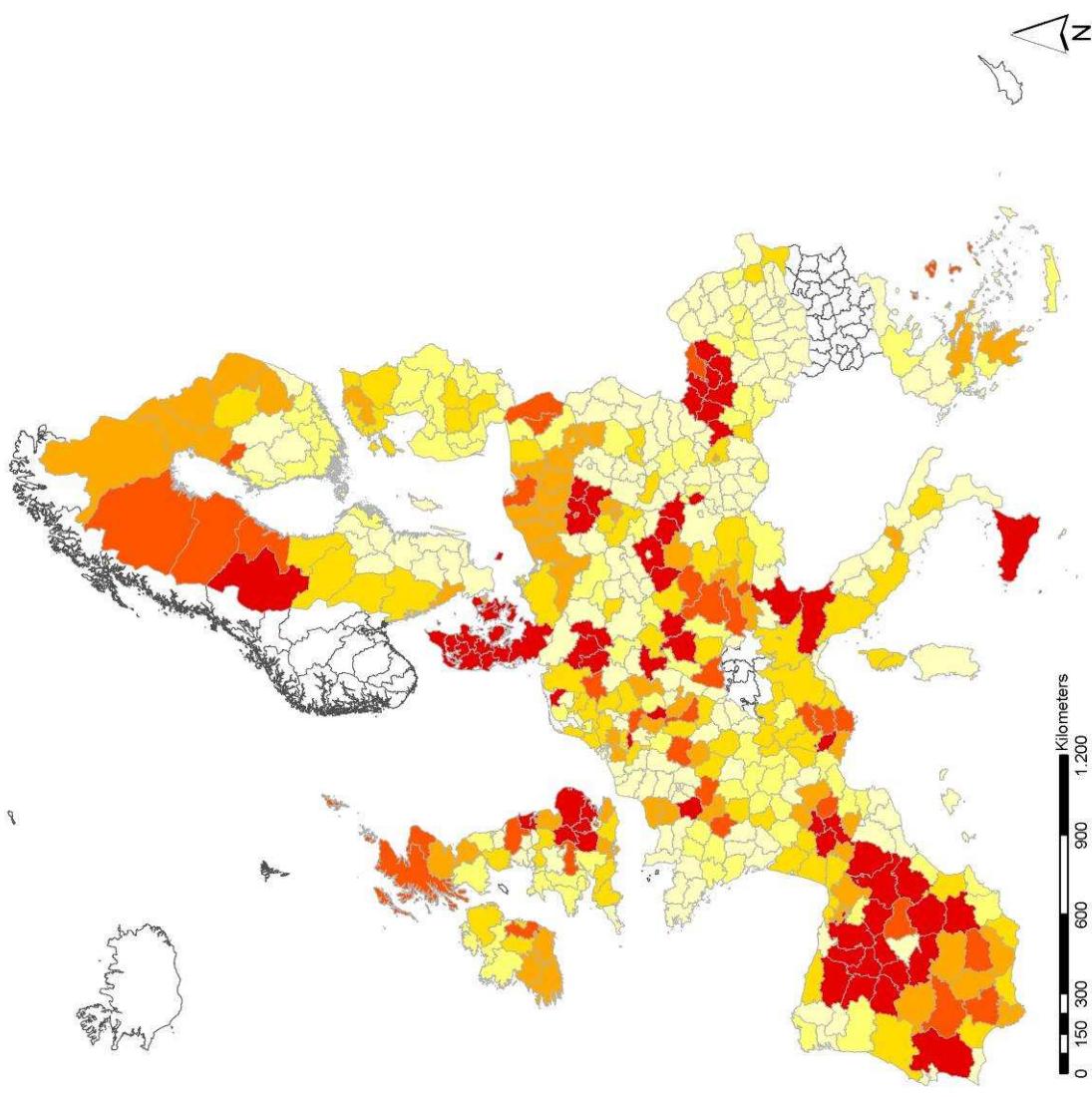


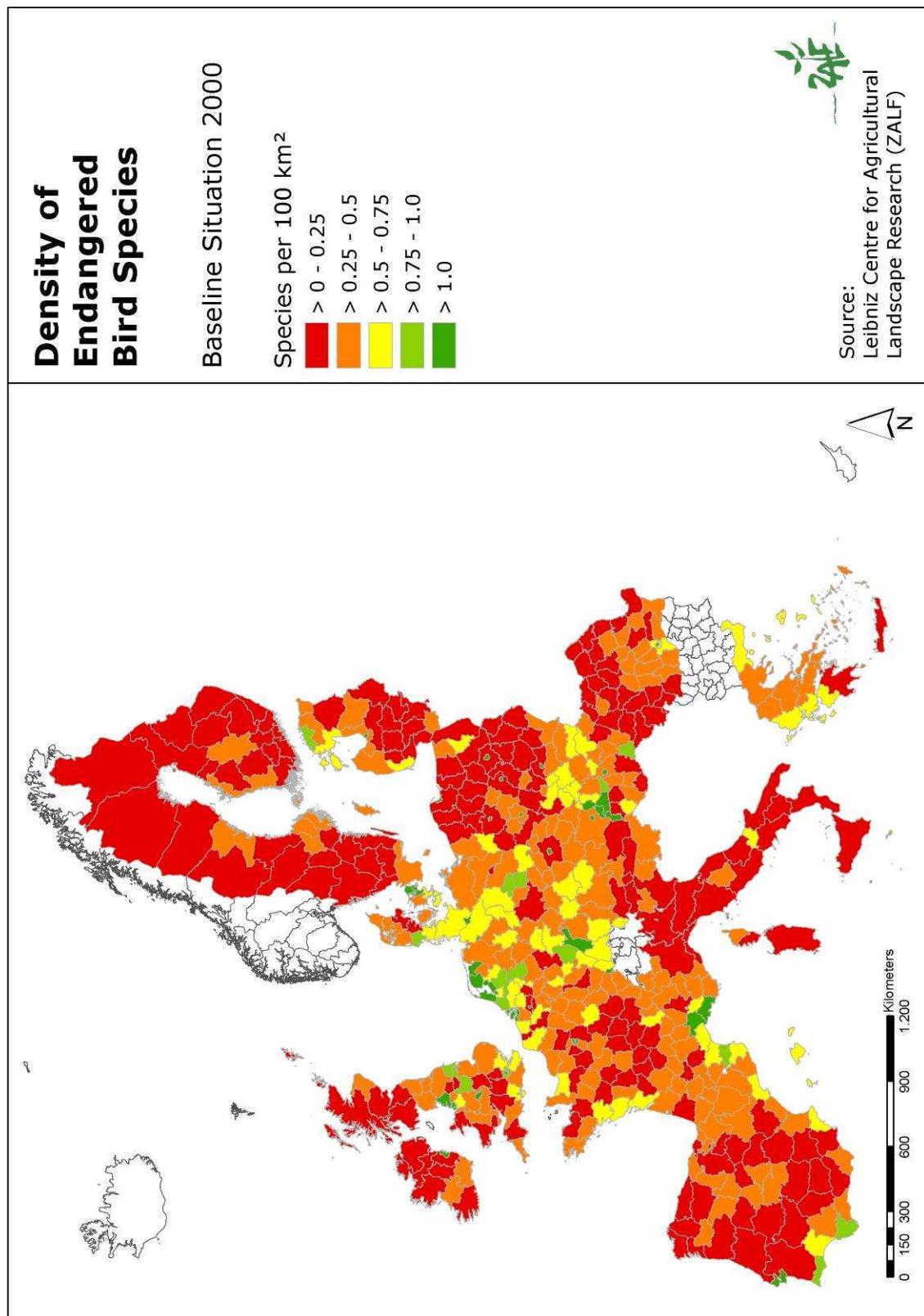
Changes in Density of Natural Habitats

Scenario B2
2000 - 2025



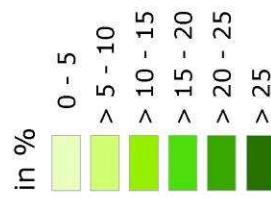
Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)



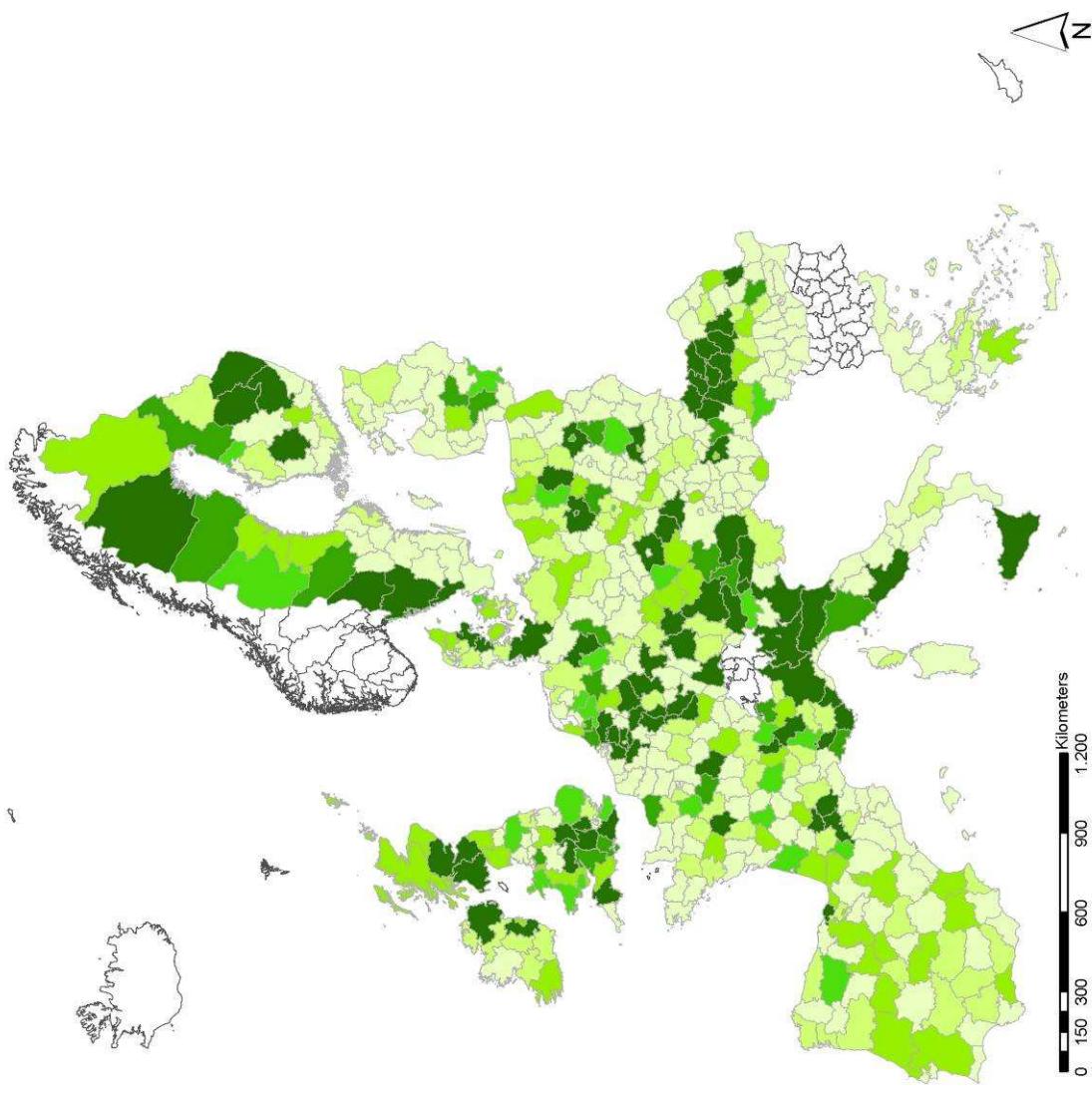


Changes in Density of Endangered Bird Species

Scenario A1
2000 - 2015

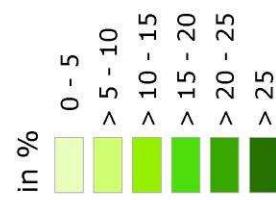


Source:
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Landscape Research (ZALF)

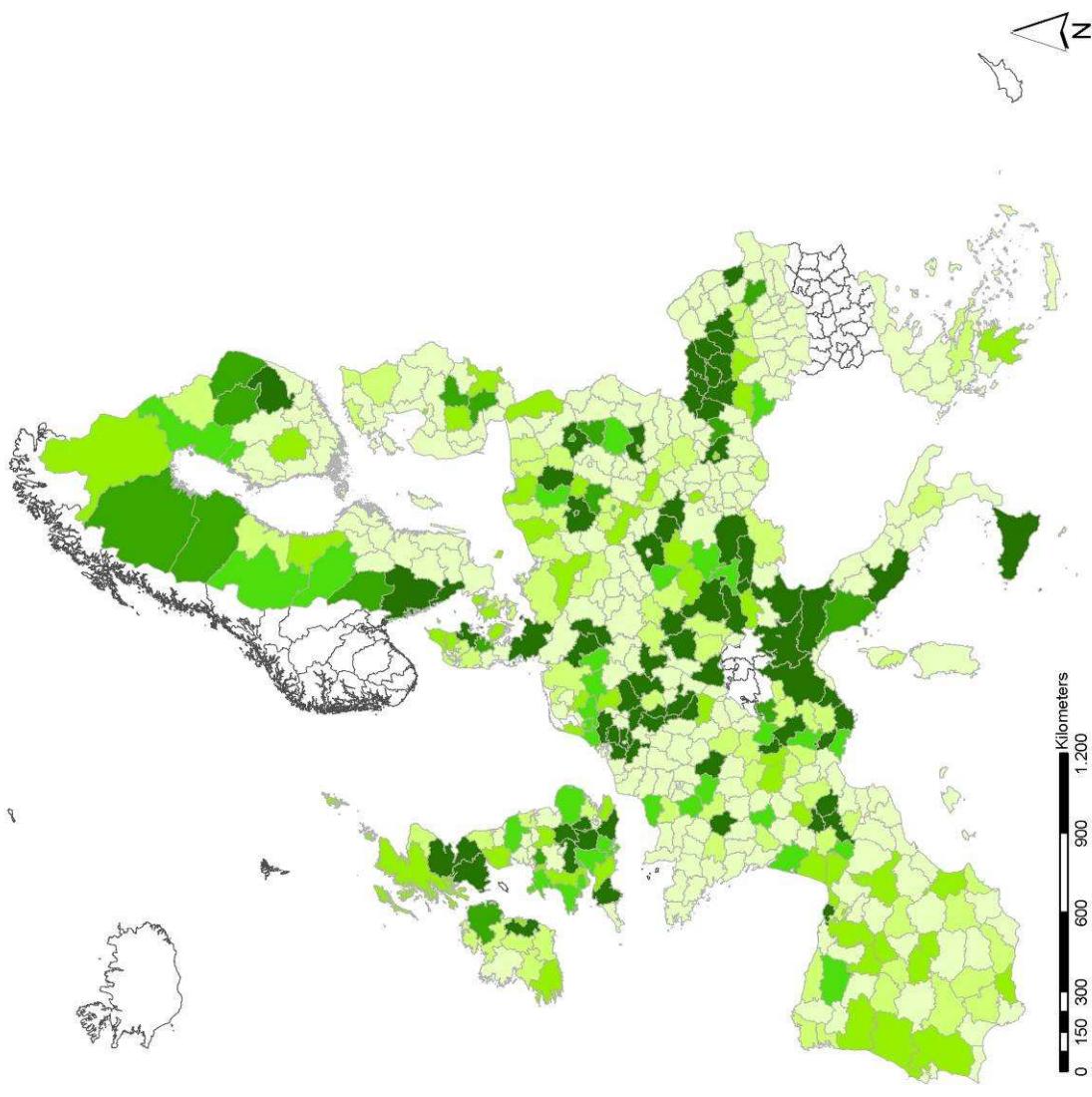


Changes in Density of Endangered Bird Species

Scenario A2
2000 - 2015

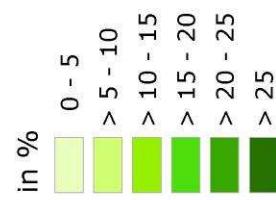


Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)

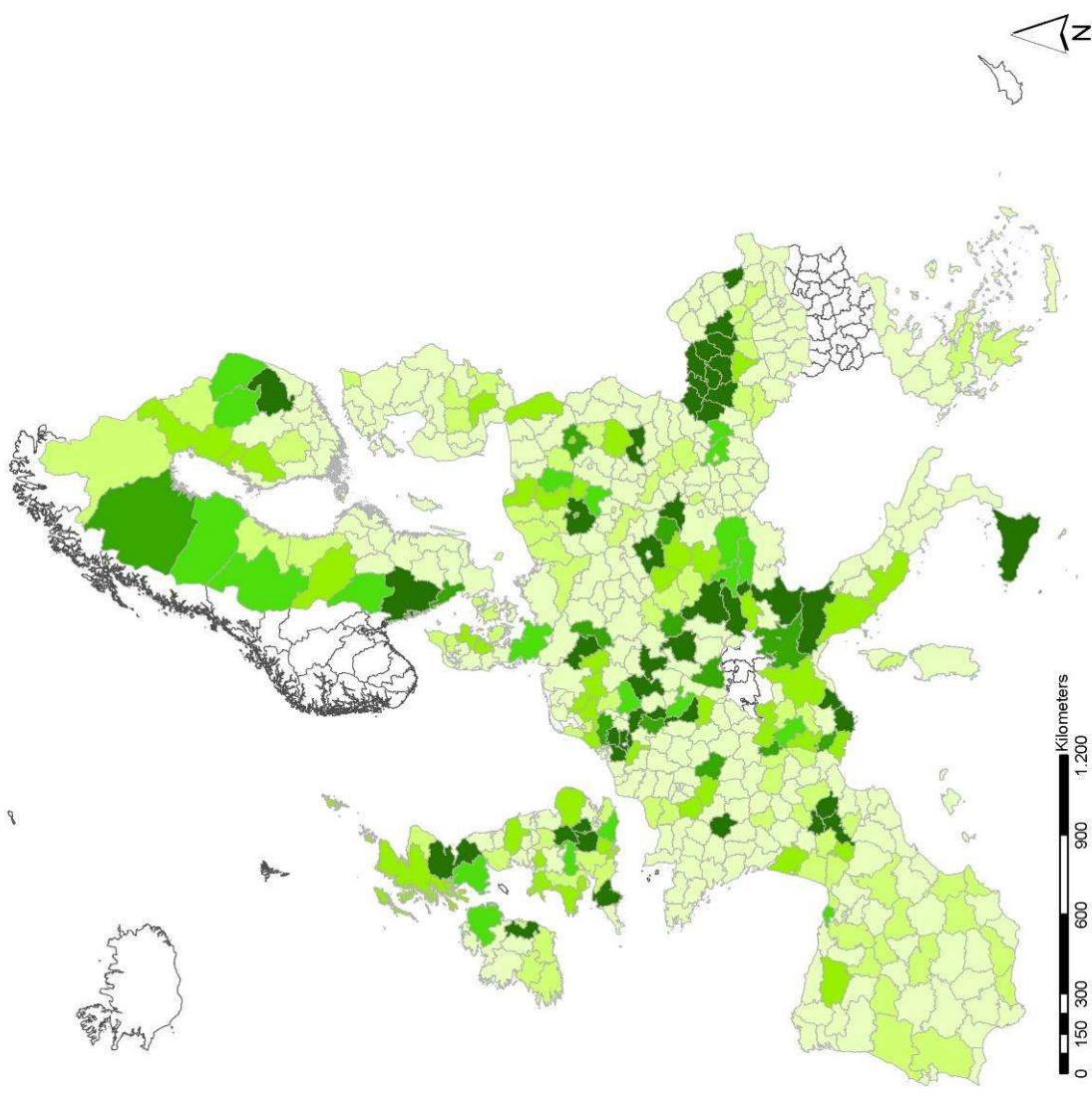


Changes in Density of Endangered Bird Species

Scenario B1
2000 - 2015

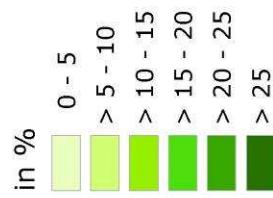


Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)

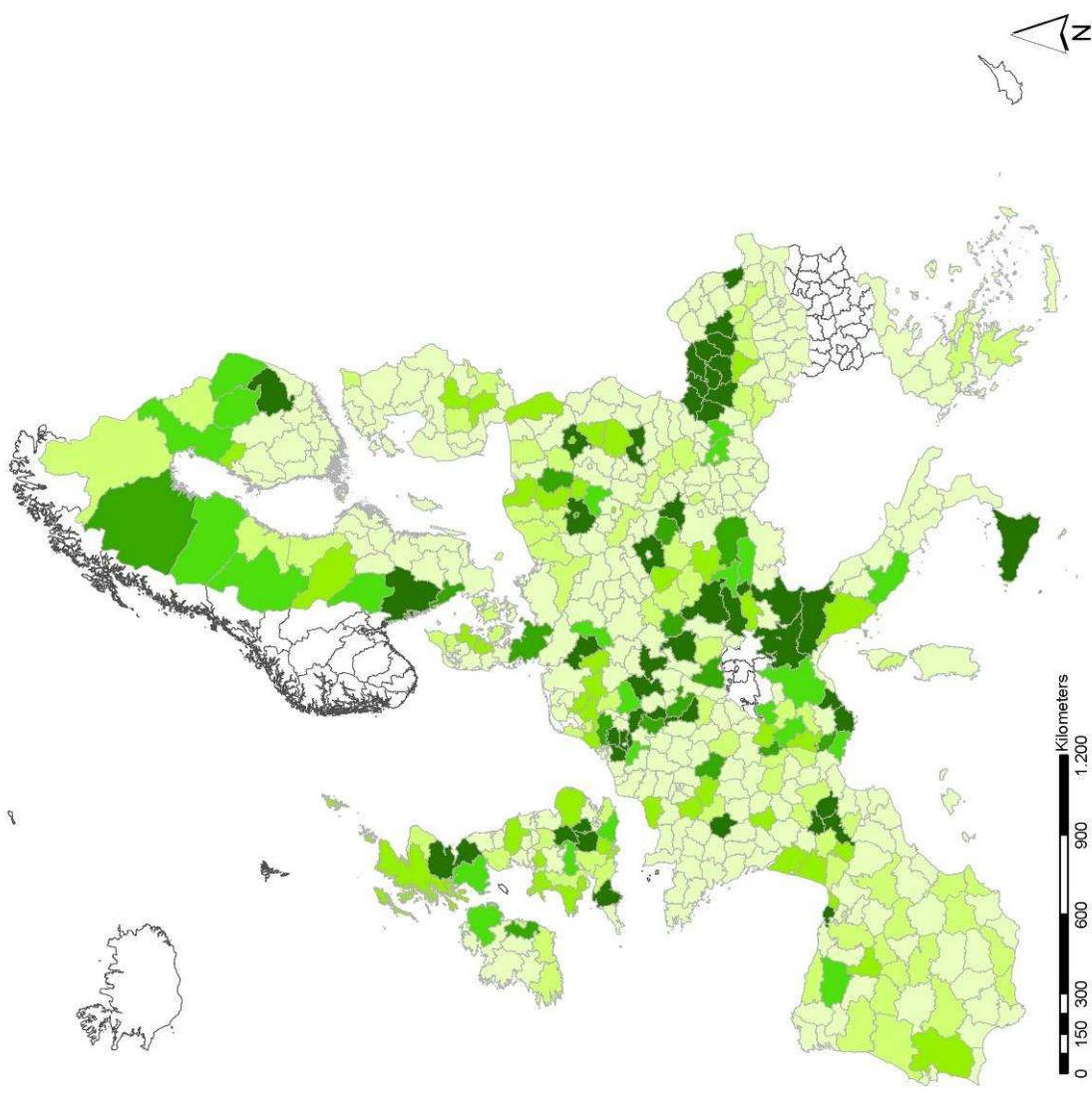


Changes in Density of Endangered Bird Species

Scenario B2
2000 - 2015

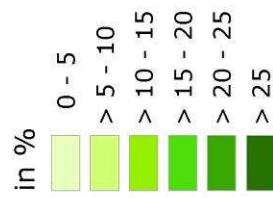


Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)

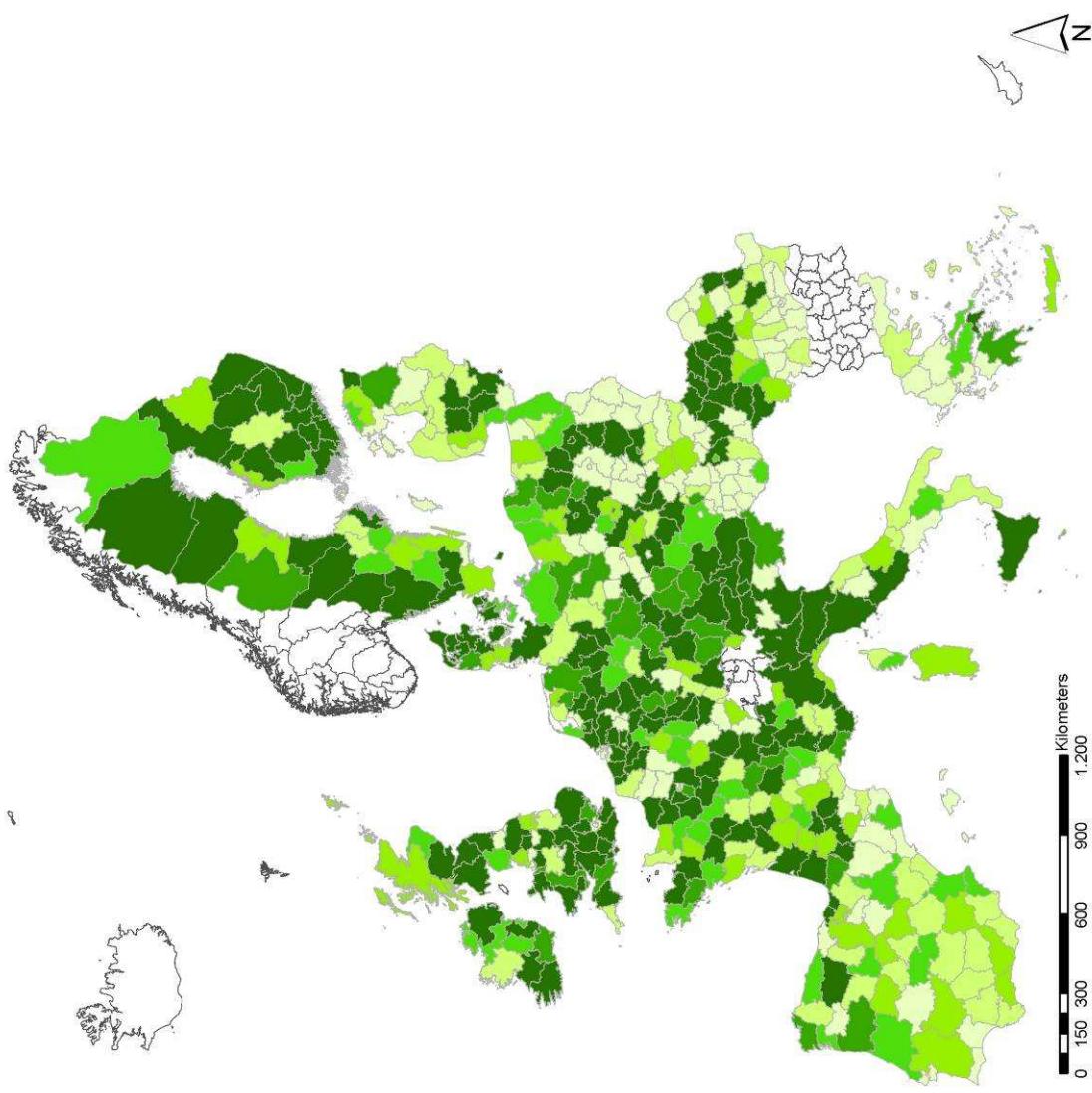


Changes in Density of Endangered Bird Species

Scenario A1
2000 - 2025

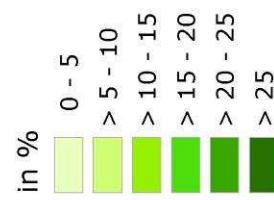


Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)

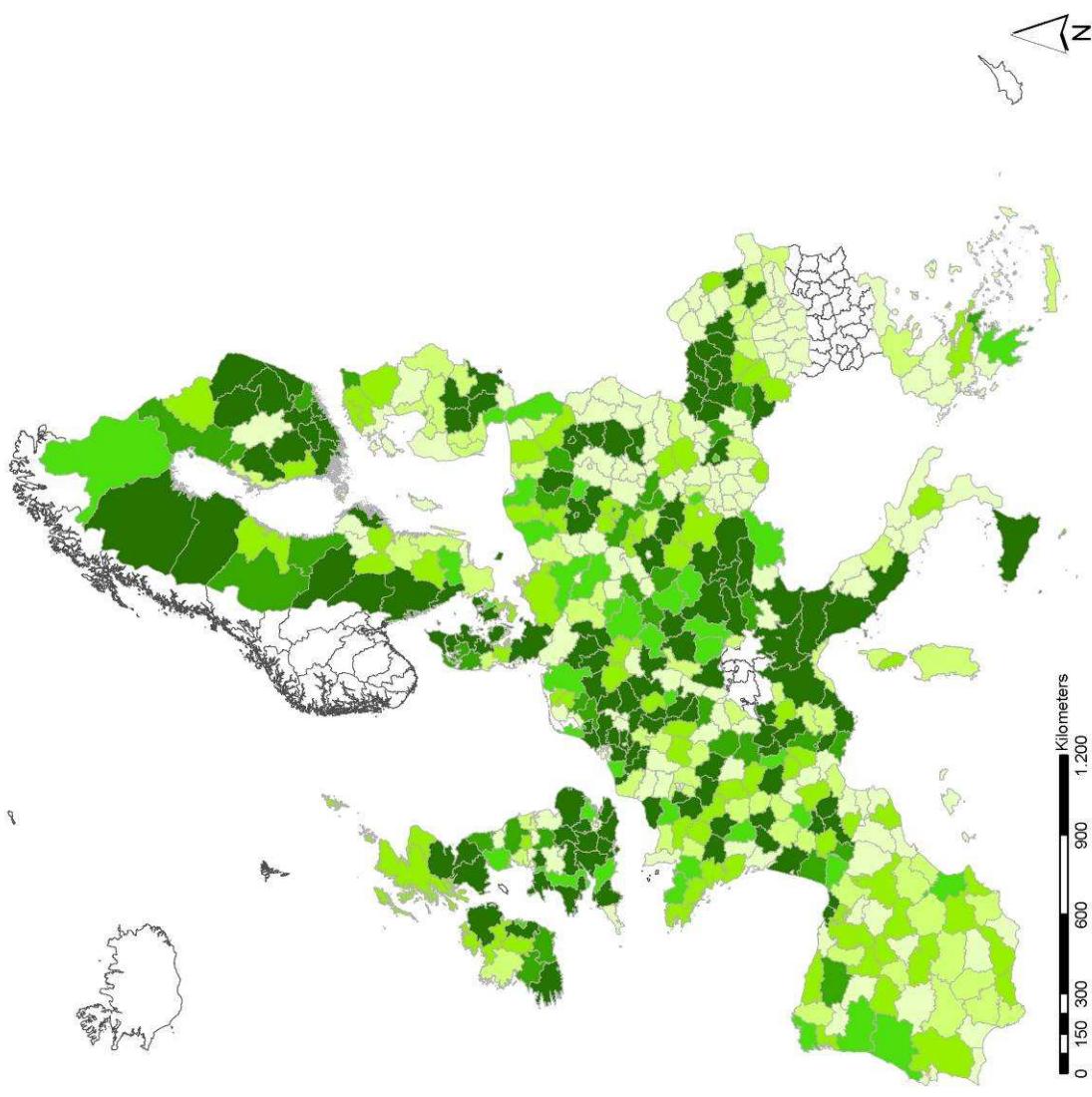


Changes in Density of Endangered Bird Species

Scenario A2
2000 - 2025

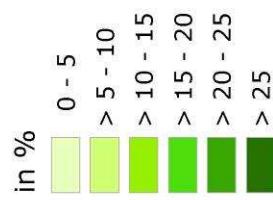


Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)



Changes in Density of Endangered Bird Species

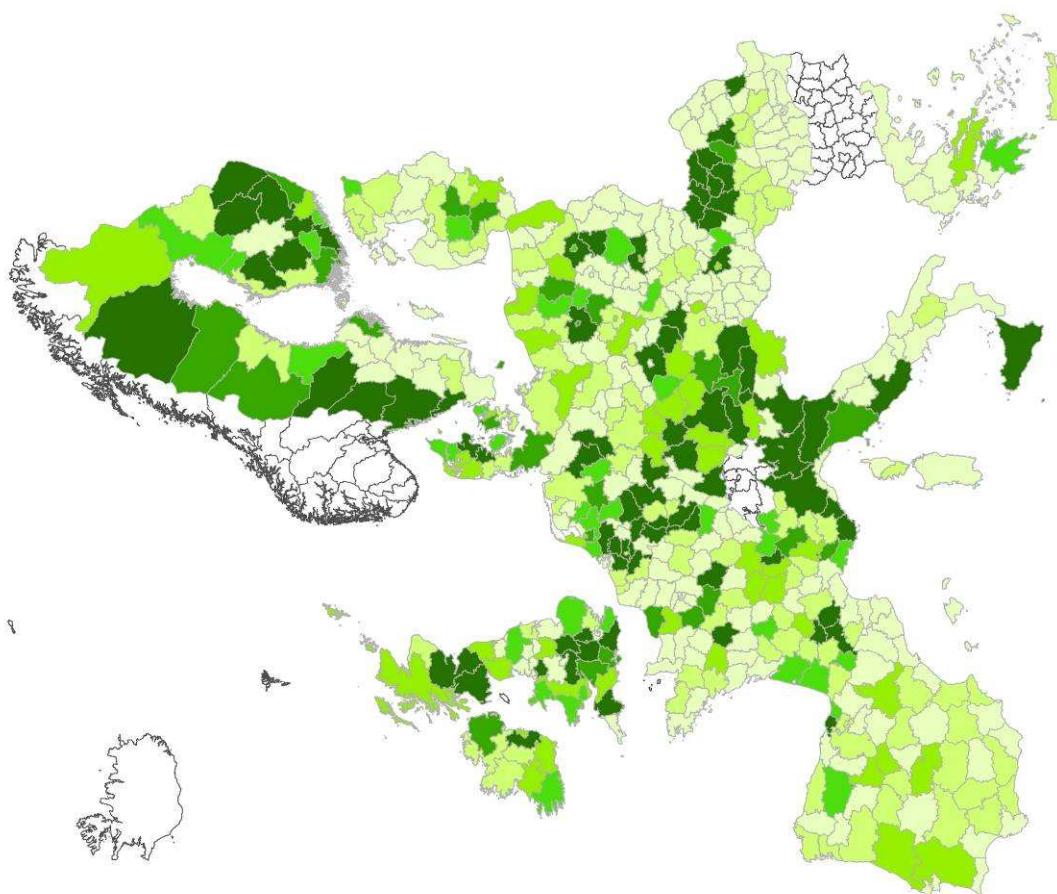
Scenario B1
2000 - 2025



Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)

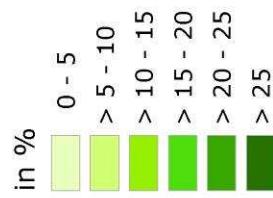


0 150 300 600 900 1.200 Kilometers

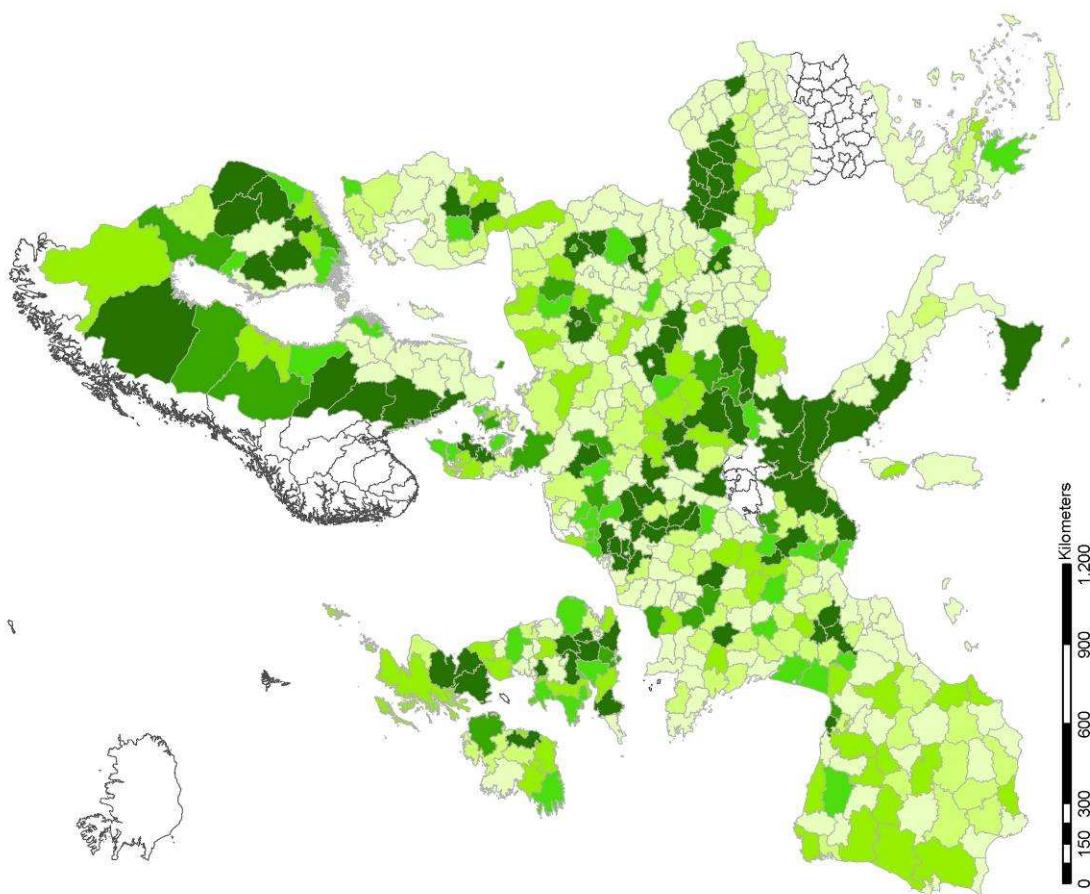


Changes in Density of Endangered Bird Species

Scenario B2
2000 - 2025

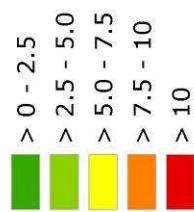


Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)



Heavy Metal Emission Index

Baseline Situation 2000



Source:
Leibniz Centre for Agricultural
Landscape Research (ZALF)



0 150 300 600 900 1.200 Kilometers

