PLUREL

Land Use Relationships
In Rural-Urban regions

Module 2

August 2010

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

D2.3.11

Scenario maps on population

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SIXTH FRAMEWORK PROGRAMME

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 at NUTSx level
DPSIR framework: Driver, Pressure, State, Impact, Response	Driver
Land use issues covered: Housing, Traffic, Agriculture, Natural area, Water, Tourism/recreation	Social and demographic aspects General allocation of human activities Population – land use relationships
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	Results of the Population related response functions describing effects of land use change on socio-demographic structure Results presented for the peri-urban compartments of the NUTSx regions
Knowledge type: Narrative storylines; Response functions; GIS-based maps; Tables or charts; Handbooks	maps

How many fact sheets will be derived from this deliverable:	**2**

Overview

- The **map-book**
  presents the final outcomes of the response function applications to estimate expected effects on the socio-demographic structure and the expected changes for the years 2015 and 2025 expected for different peri-urbanisation trends as assumed from the 4 PLUREL scenarios .
- The projections are conducted applying (statistical) **response functions** which refer to different input data. The response functions for the demographic estimations are product of statistical analysis, which do not reflect effects of population / human activities on land use, but estimate the spatial distribution of the demographic structure. This is assumed to be released through the land use pattern and the expected changes (e.g. assuming that the urban centres or peri-urban landscapes attract certain groups of people or households, observed by exploring the current age - , household - or education distribution in relation to the distribution of artificial surface (as proxy for urban areas and related infrastructure) and in relation to the regional GDP, affecting lifestyle and demands on floor space, social and other infrastructure or releasing constrains regarding affordability of flats or houses.

- **Input data** for the baseline situation and for carrying out the final response function analysis are:
  - Population for NUTS3 from EUROSTAT, aggregated by AIT to NUTSx disaggregated by AIT to the urban/peri-urban/rural sub-regions,
  - Artificial surface area (as proxy for settlement area (fro m S. Rickenbusch), based on CORINE land cover data disaggregated by AIT to the urban, peri-urban and rural sub-regions
  - GDP data (EUROSTAT) for NUTS2 regions , disaggregated by AIT based on GDP per capita values and NUTS3 population numbers
- **Explanatory data** to estimate the (indirect) effects of peri-urbanisation on socio-demographic structure by response functions are finally:
  - Population totals (V. Skirbekk / IIASA), allocated (by AIT) to the urban, peri-urban and rural sub-regions of each NUTSx based on artificial surface growth and artificial surface : population quotas.
  - Artificial surface area by 1x1km cells (by S. Rickebusch/ Univ. Edinburgh), aggregated by AIT to NUTSx and the urban, peri-urban and rural sub-regions.
  - GDP data for NUTS2 regions from NEMESIS model (by B. Botier/ ERASME-Team) , disaggregated by AIT to NUTSx-regions

PLUREL

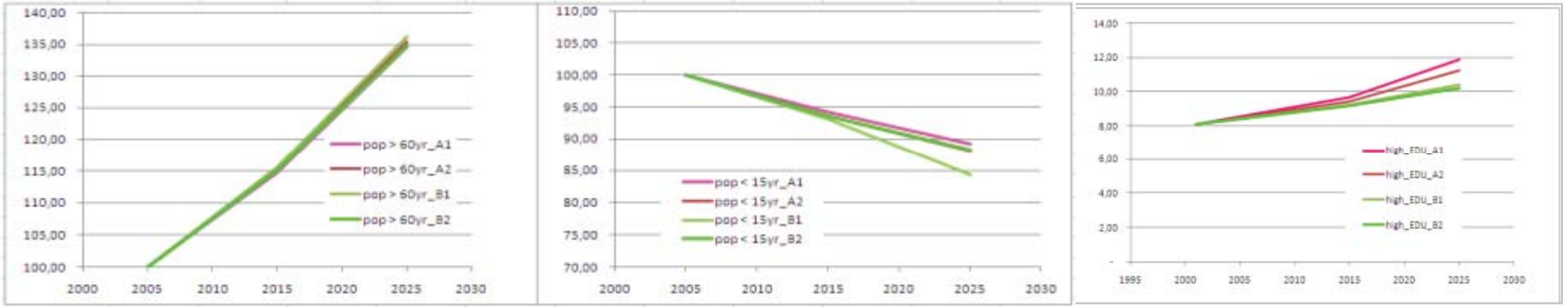
- The **maps** show the spatial distribution of important explanatory data per NUTSx region of the baseline situation and the change as projected for 2025, according to the 4 PLUREL scenarios A1, A2, B1,B2. Only those regions are shown where data are available or could be projected with available input data, no gap-filling has been conducted.
- Some single regions show odd results because of diverse population and artificial area development depending on the input data. A further reason for odd results refers to the region definition: The NUTSx regions are administrative entities, which do not always match the urban influence sphere, covering the entire rural-urban region extent. Some NUTSx regions (e.g.,. around capitals) cover either urban or peri-urban areas which will lead to changes only in one of the sub-regions causing implausible population structure changes in respective NUTSx region.

- Contact: wolfgang.loibl@ait.ac.at /August 2010

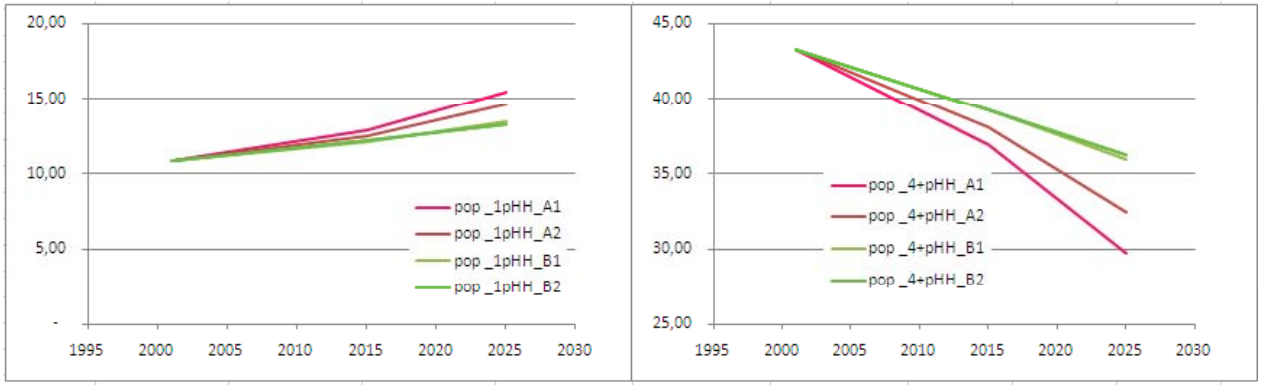
EU-wide trends

Population Change by socio-demographic class - change of the proportions (2001 = index 100)

share of population < 15years; share of population >60 years; share pf academic educated population,



Change of the share of the population living in single and 4+ person households (2001=index 100)



Content

Maps – the baseline maps show the percentage of the current situation,

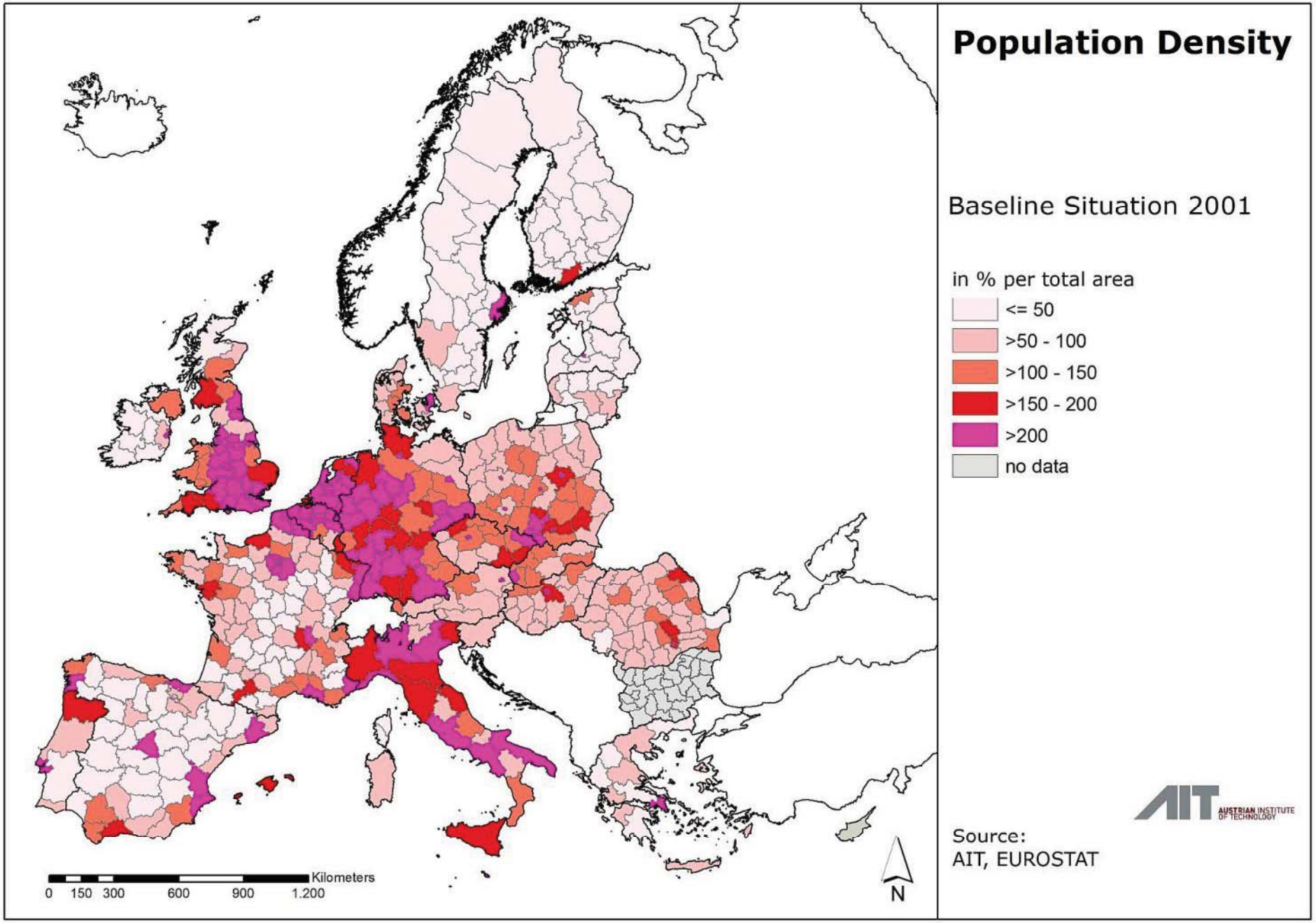
The projections have been

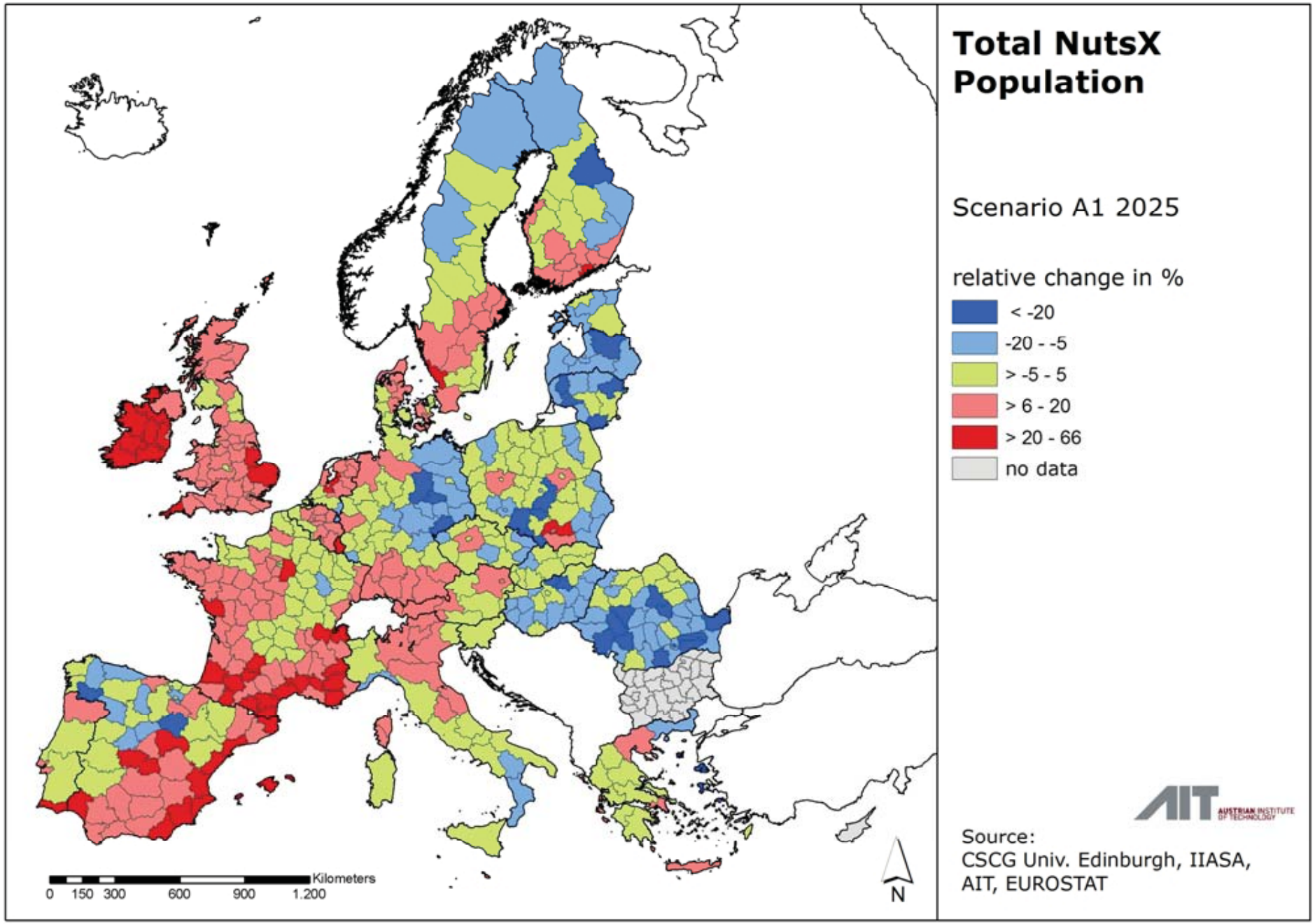
- spatially disaggregated for NUTSx (D),
- spatially allocated to the sub-regions through models(S)
- or - conducted through the response functions (RF).

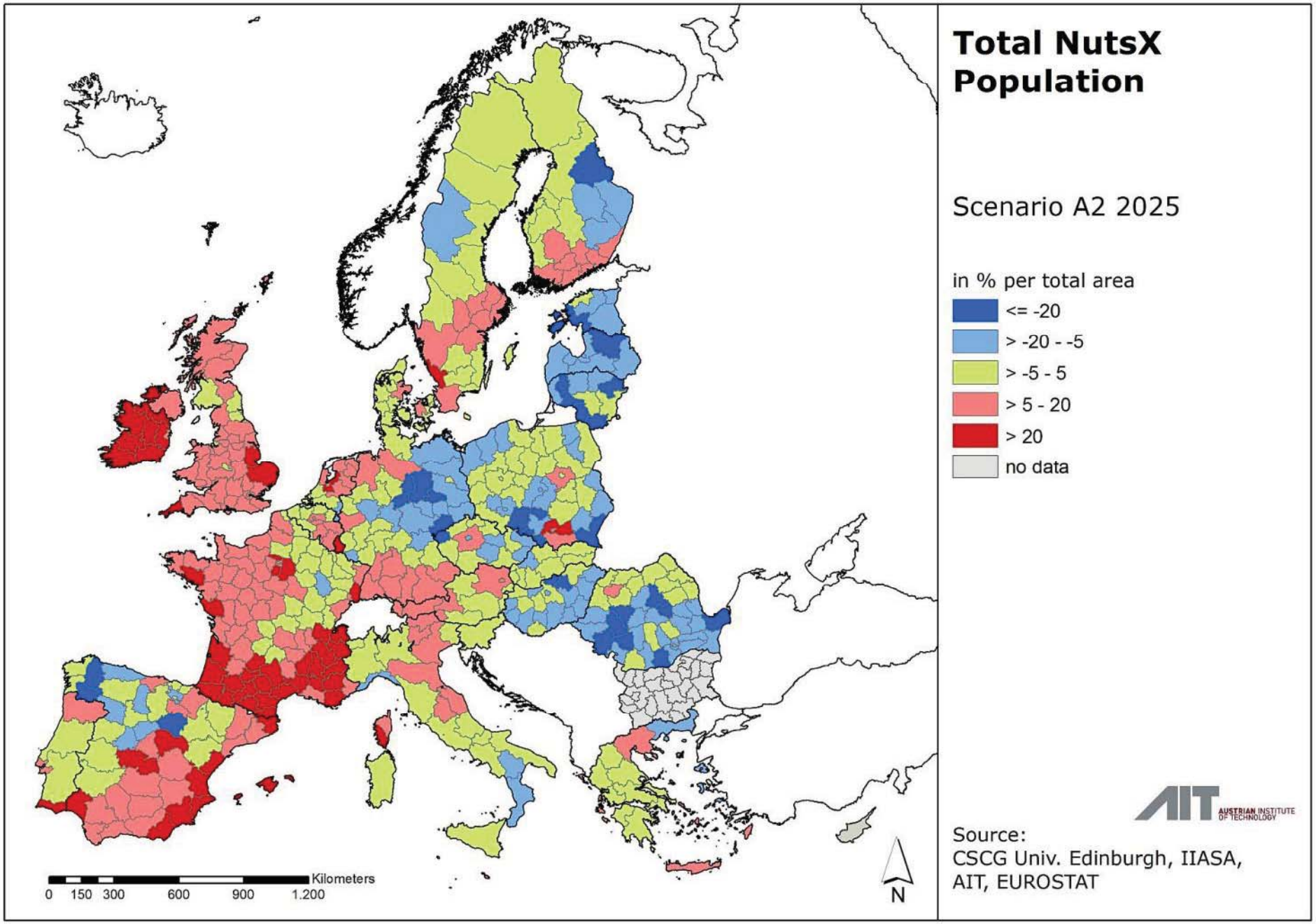
The brackets behind the following map descriptions indicate the data source.

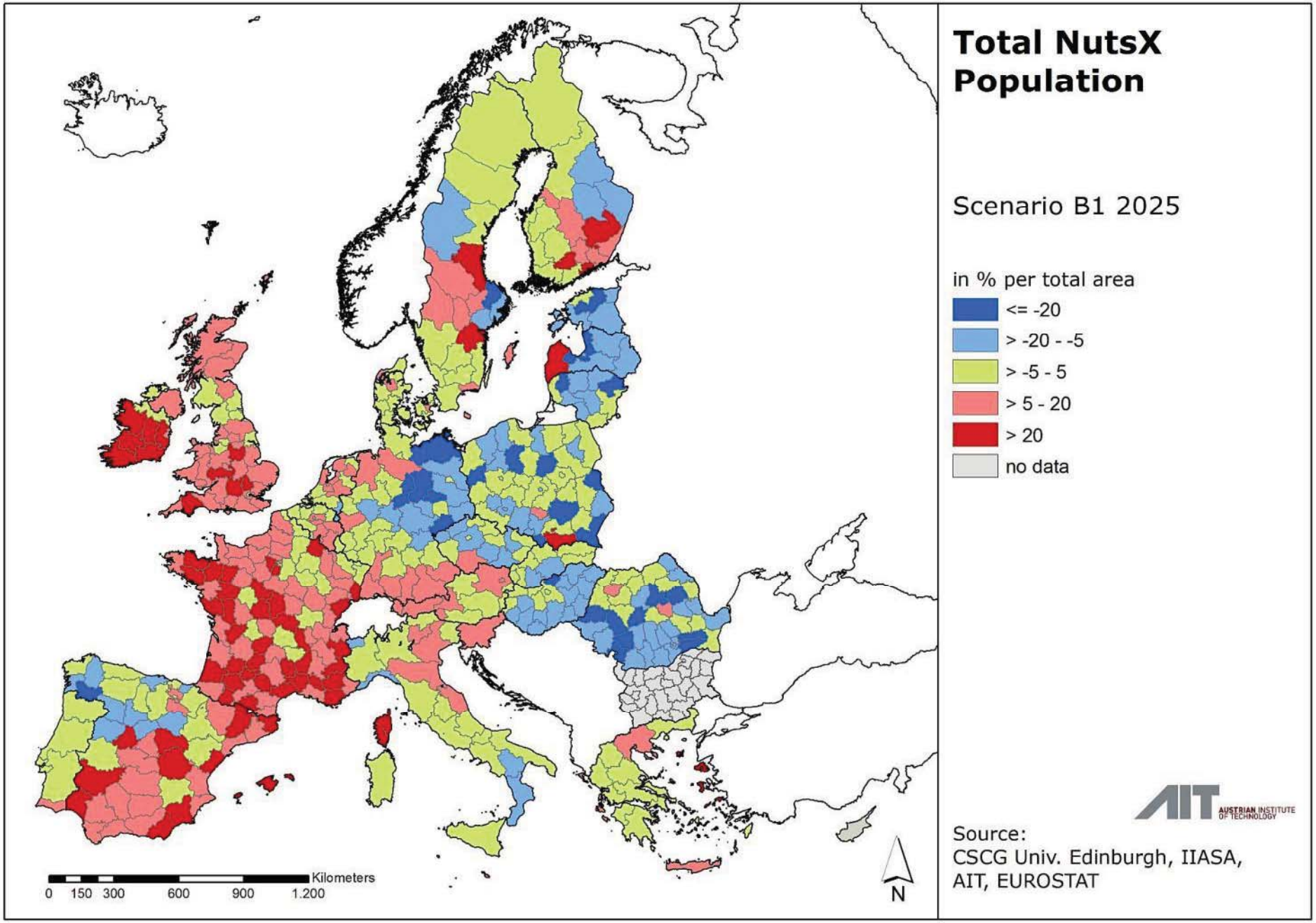
Following map – sets are included:

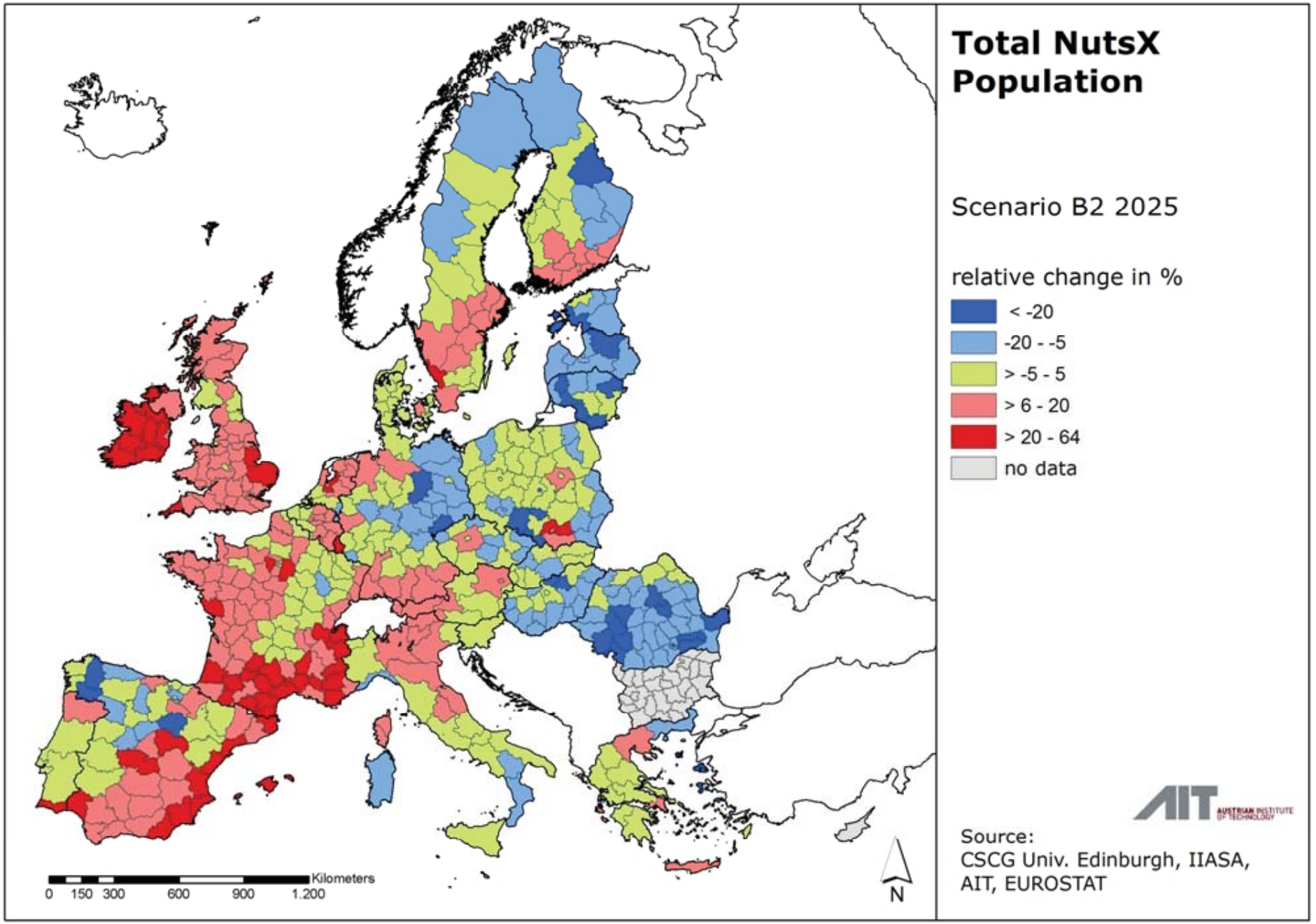
- Total population: baseline (pop-density) projected relative changes of the total population (D)
- Population dynamics: population change 2000-2004/2006 in urban and non-urban sub-regions (M)
- Population in peri-urban sub-regions: baseline, projected relative changes (M)
- Population share living in 1-person households: baseline, projected relative changes (RF)
- Population share living in 4+person households: baseline, projected relative changes (RF)
- Population share of population of age 60 +: baseline, projected relative changes (D)
- Population share of population of age <=15:baseline, projected relative changes (D)
- Population share of population with tertiary education: baseline, projected relative changes (RF)
- RUR sub-region delineation (dividing Rural Urban Regions /NUTSx regions into urban, peri-urban and rural parts) (M)
- Share of peri-urban artificial surface, baseline, projected relative changes (M)
- RUR (Rural Urban Region) morphology types

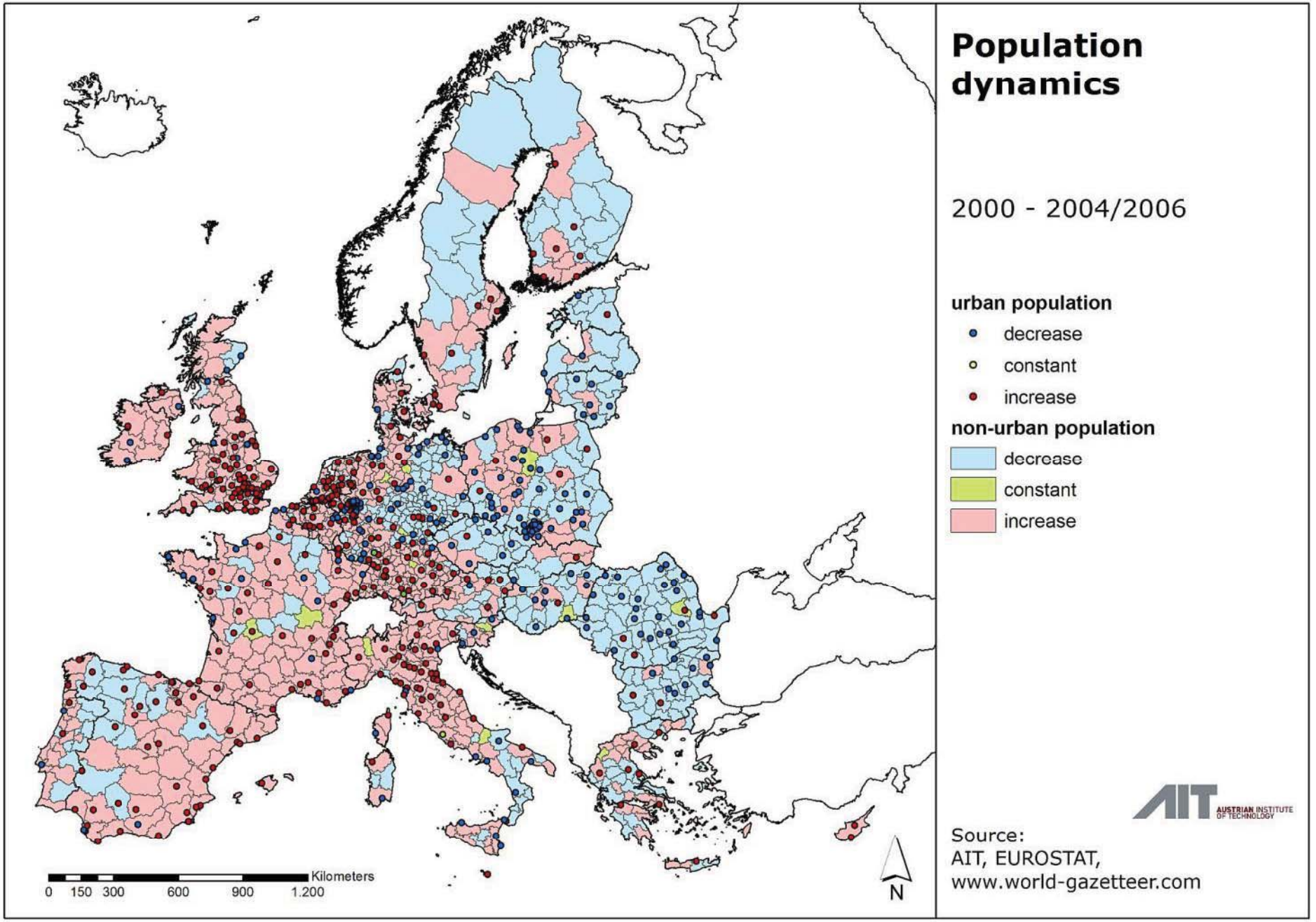

Population Density
Baseline Situation 2001
in % per total area
<= 50
>50 - 100
>100 - 150
>150 - 200
>200
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
AIT, EUROSTAT

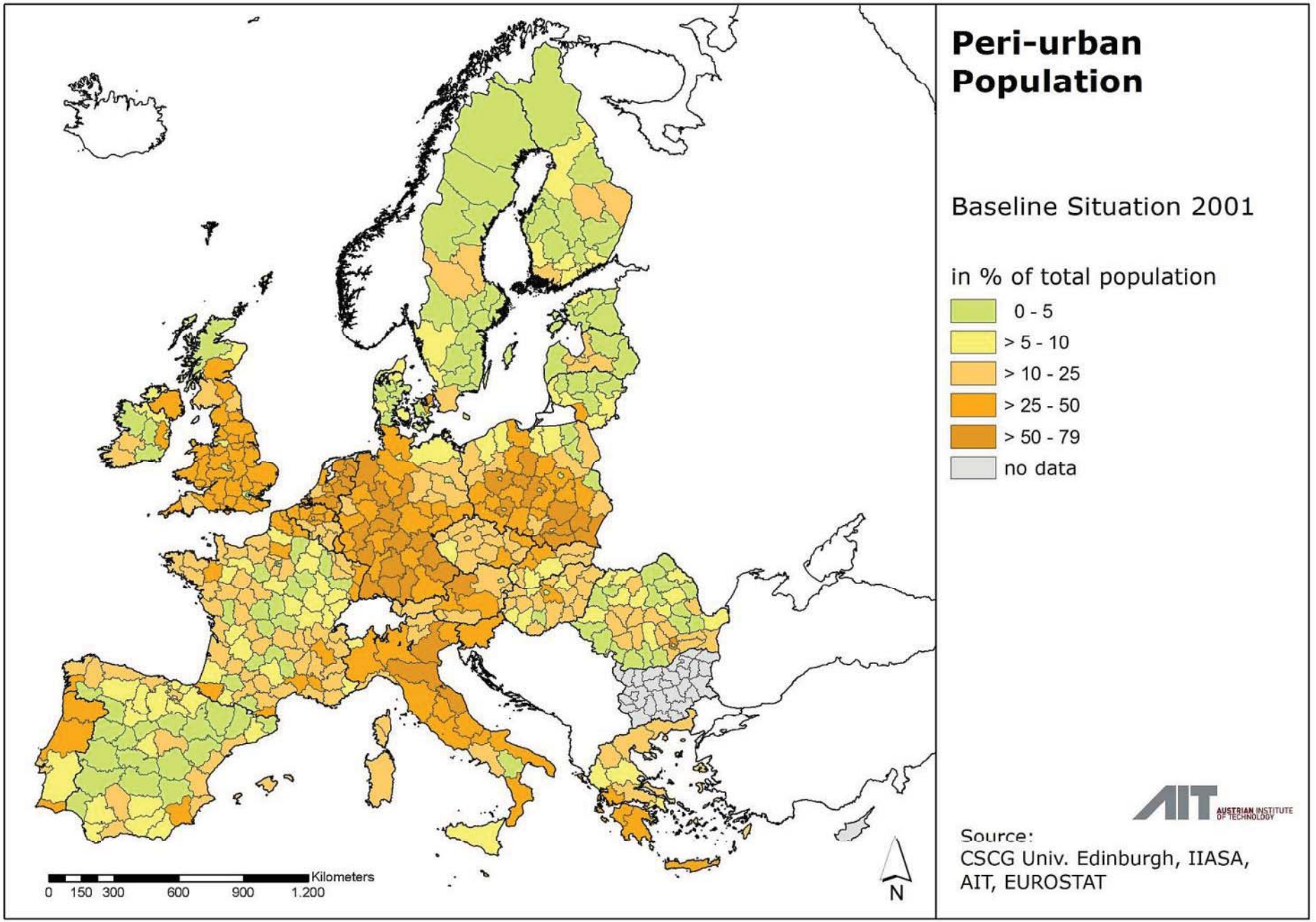

Total NutsX Population
Scenario A1 2025
relative change in %
< -20
-20 - -5
> -5 - 5
> 6 - 20
> 20 - 66
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
CSCG Univ. Edinburgh, IIASA,
AIT, EUROSTAT

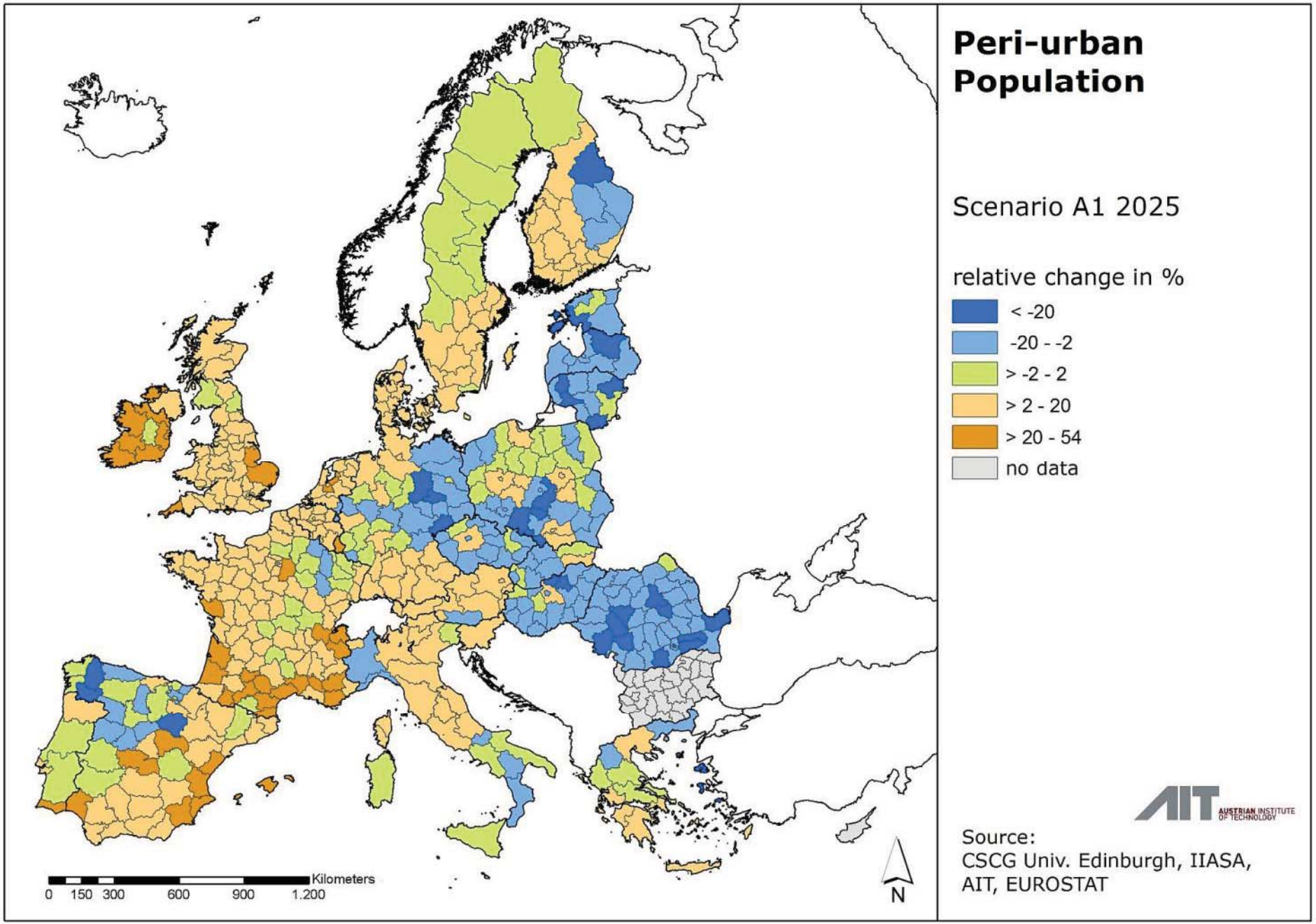

Total NutsX Population
Scenario A2 2025
in % per total area
<= -20
> -20 - -5
> -5 - 5
> 5 - 20
> 20
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
CSCG Univ. Edinburgh, IIASA,
AIT, EUROSTAT


Total NutsX Population
Scenario B1 2025
in % per total area
<= -20
> -20 - -5
> -5 - 5
> 5 - 20
> 20
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
CSCG Univ. Edinburgh, IIASA,
AIT, EUROSTAT


Total NutsX Population
Scenario B2 2025
relative change in %
< -20
-20 - -5
> -5 - 5
> 6 - 20
> 20 - 64
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
CSCG Univ. Edinburgh, IIASA,
AIT, EUROSTAT


Population dynamics
2000 - 2004/2006
urban population
decrease
constant
increase
non-urban population
decrease
constant
increase
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
AIT, EUROSTAT,
www.world-gazetteer.com


Peri-urban Population
Baseline Situation 2001
in % of total population
0 - 5
> 5 - 10
> 10 - 25
> 25 - 50
> 50 - 79
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
CSCG Univ. Edinburgh, IIASA,
AIT, EUROSTAT


Peri-urban Population
Scenario A1 2025
relative change in %
< -20
-20 - -2
> -2 - 2
> 2 - 20
> 20 - 54
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
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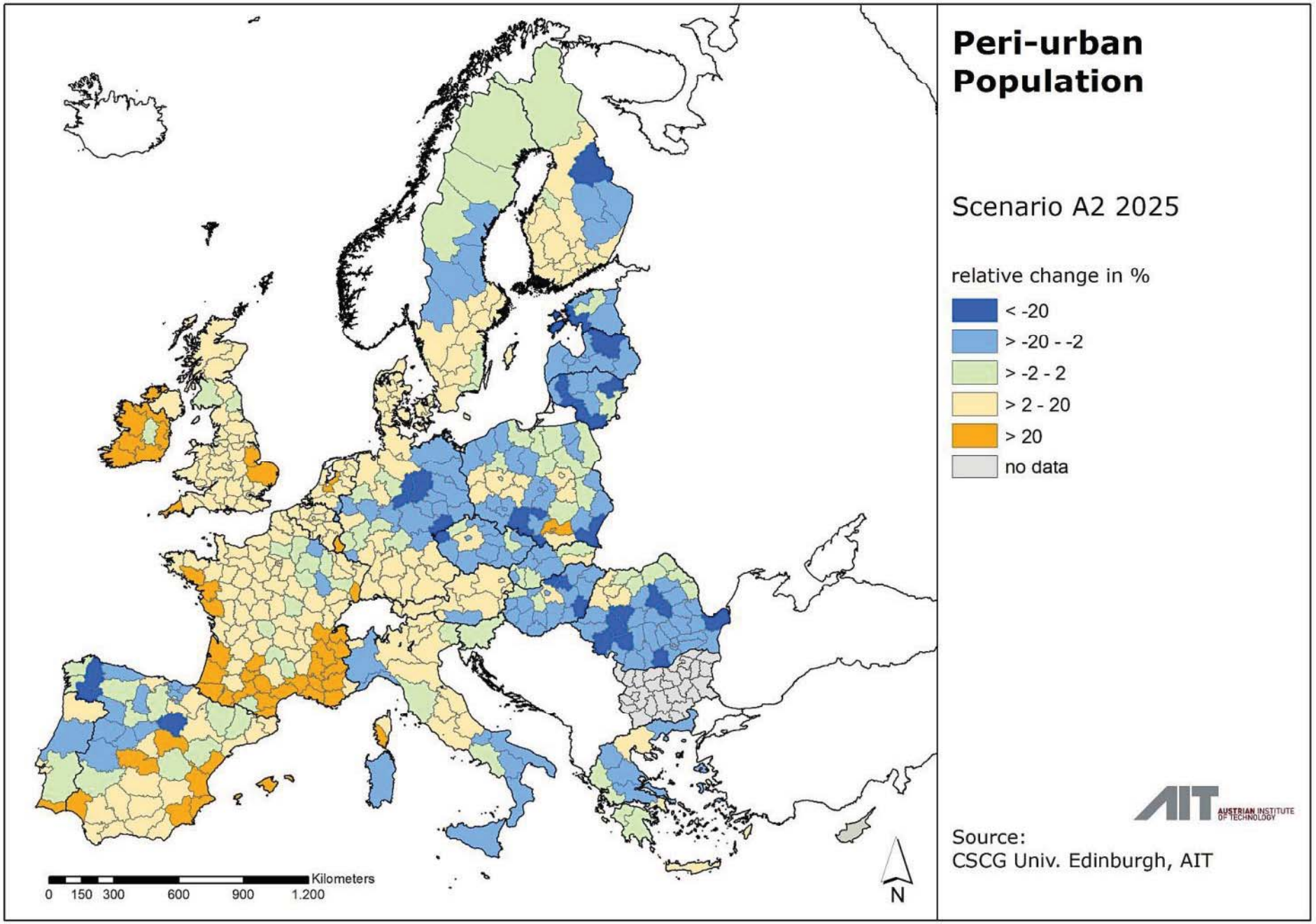
AIT, EUROSTAT


Peri-urban Population
Scenario A2 2025
relative change in %
< -20
> -20 - -2
> -2 - 2
> 2 - 20
> 20
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
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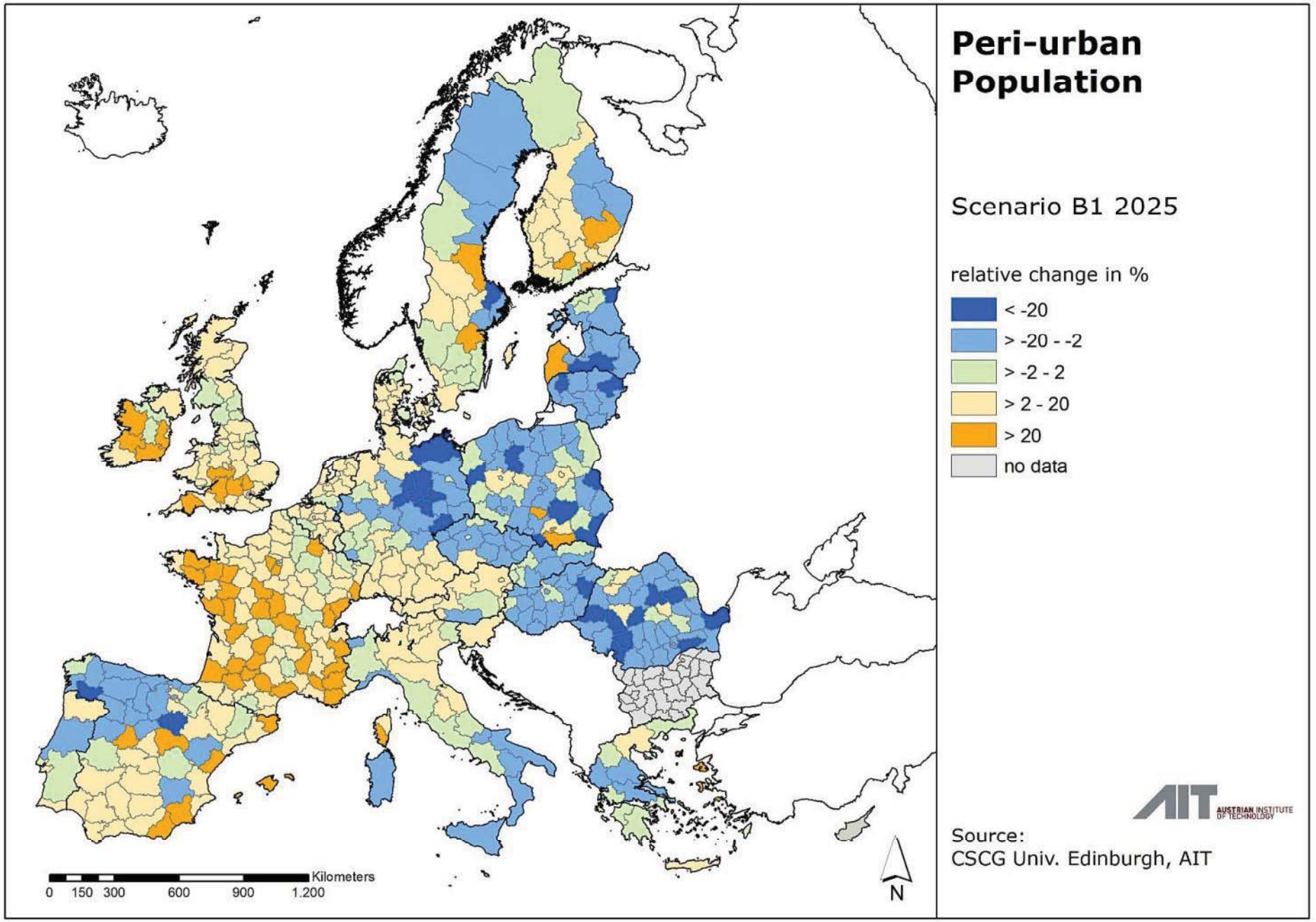
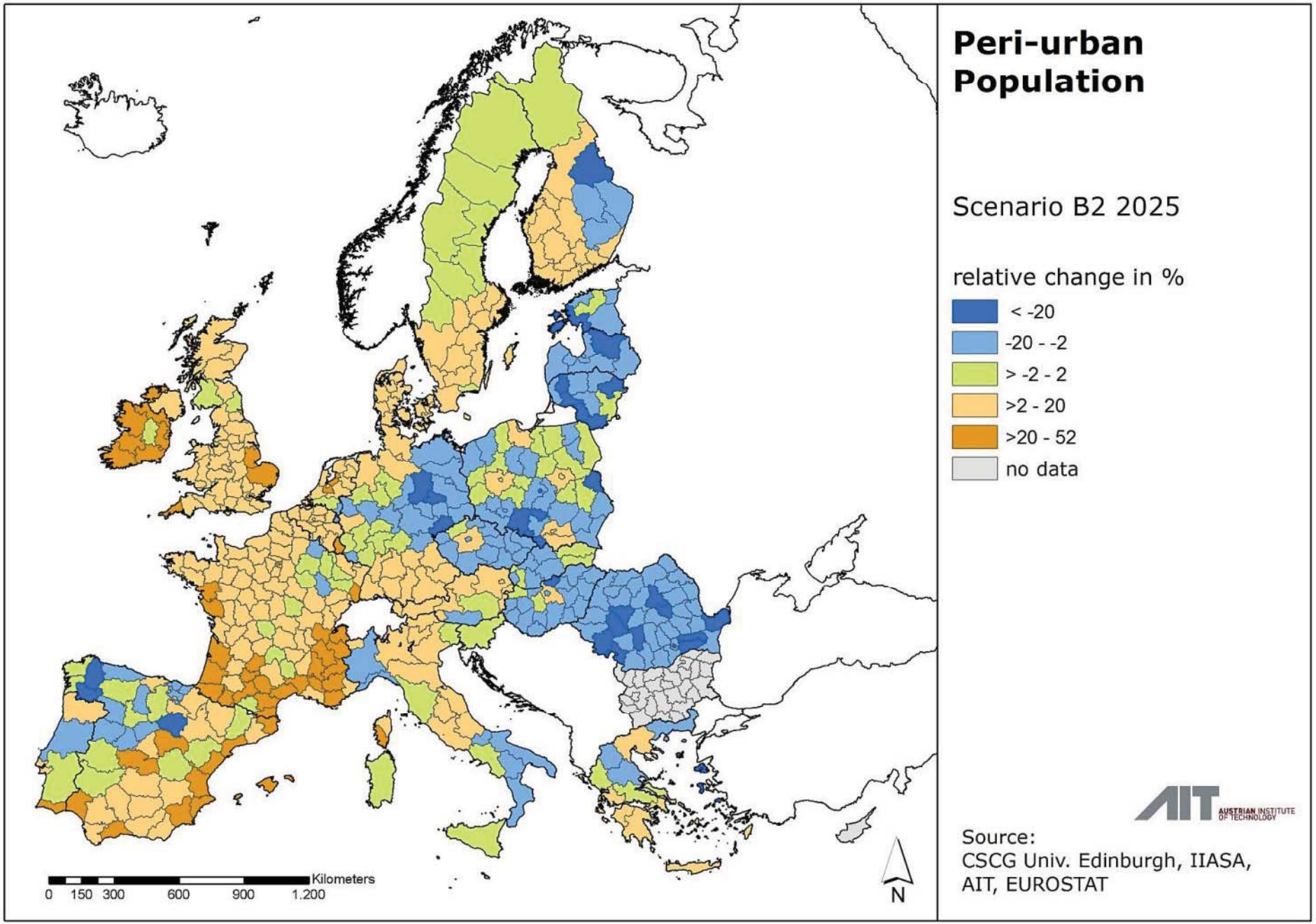
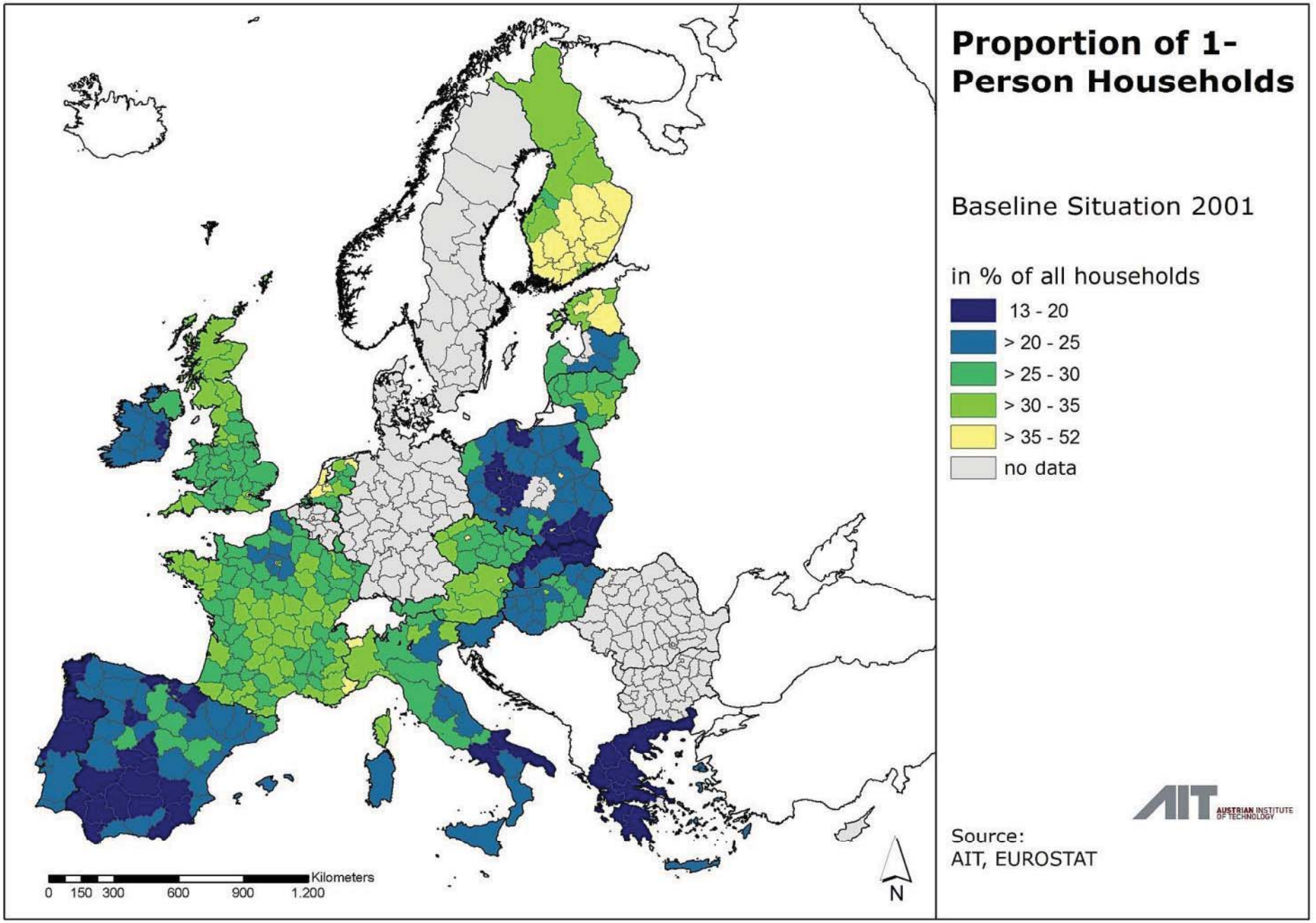
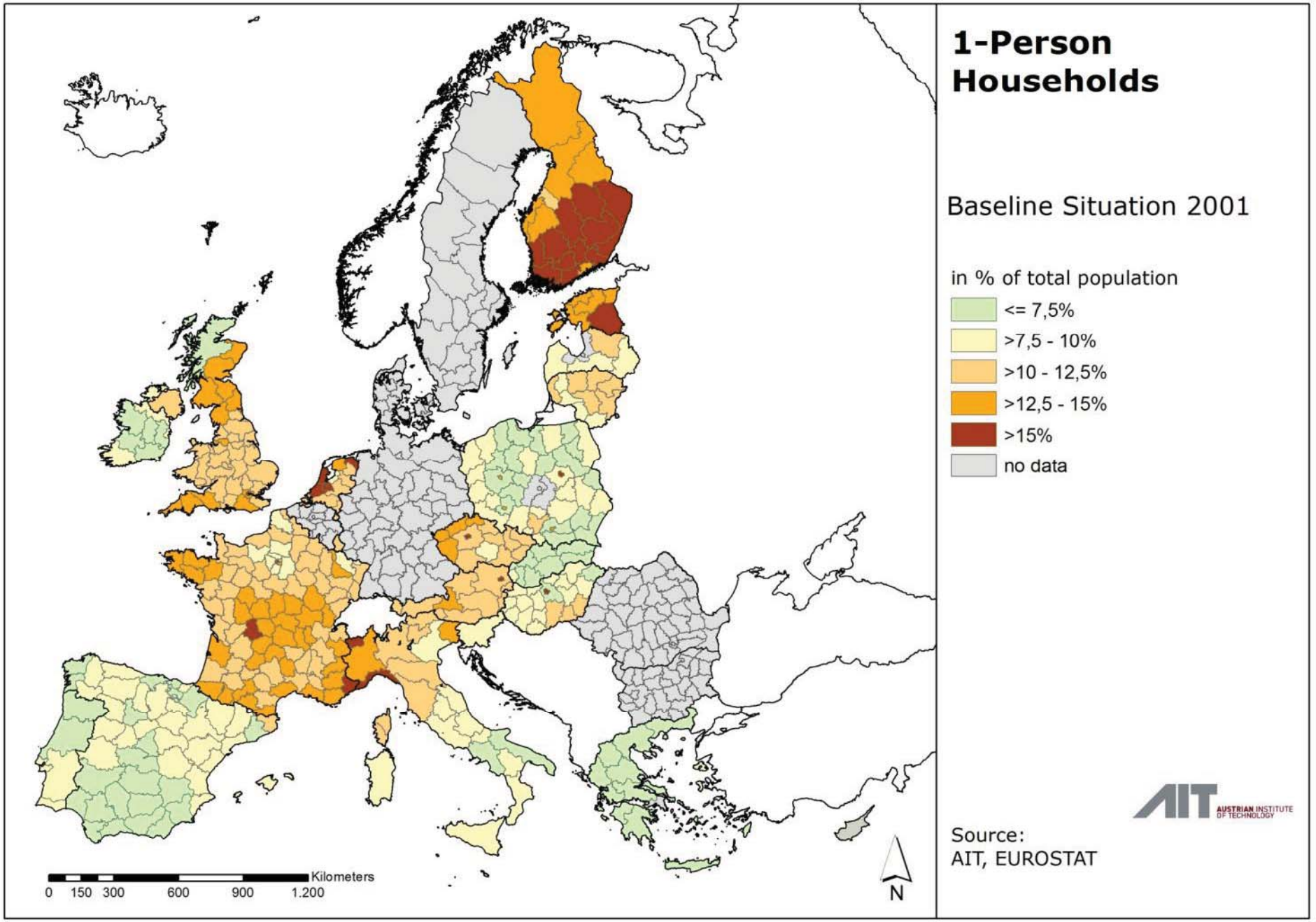
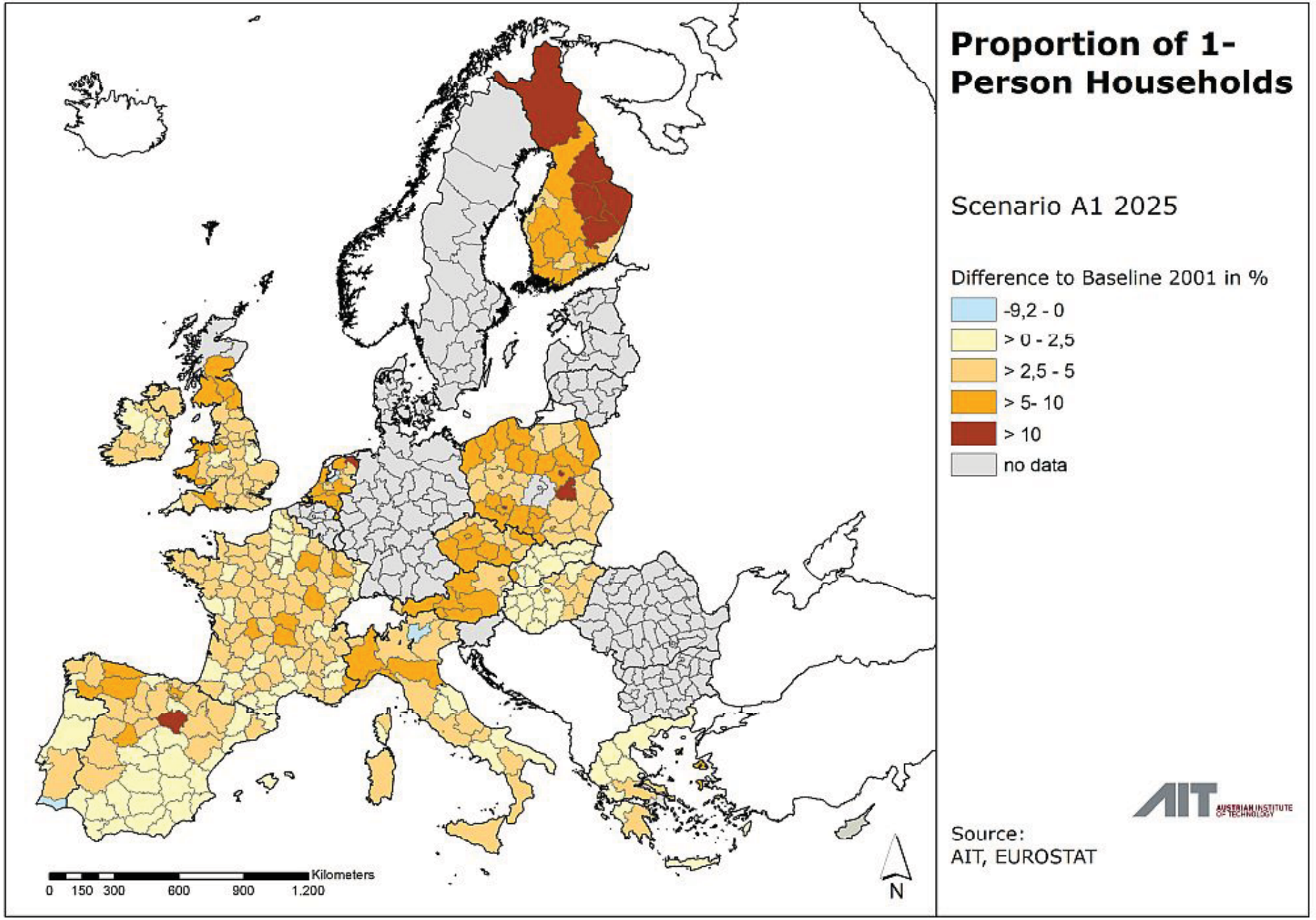
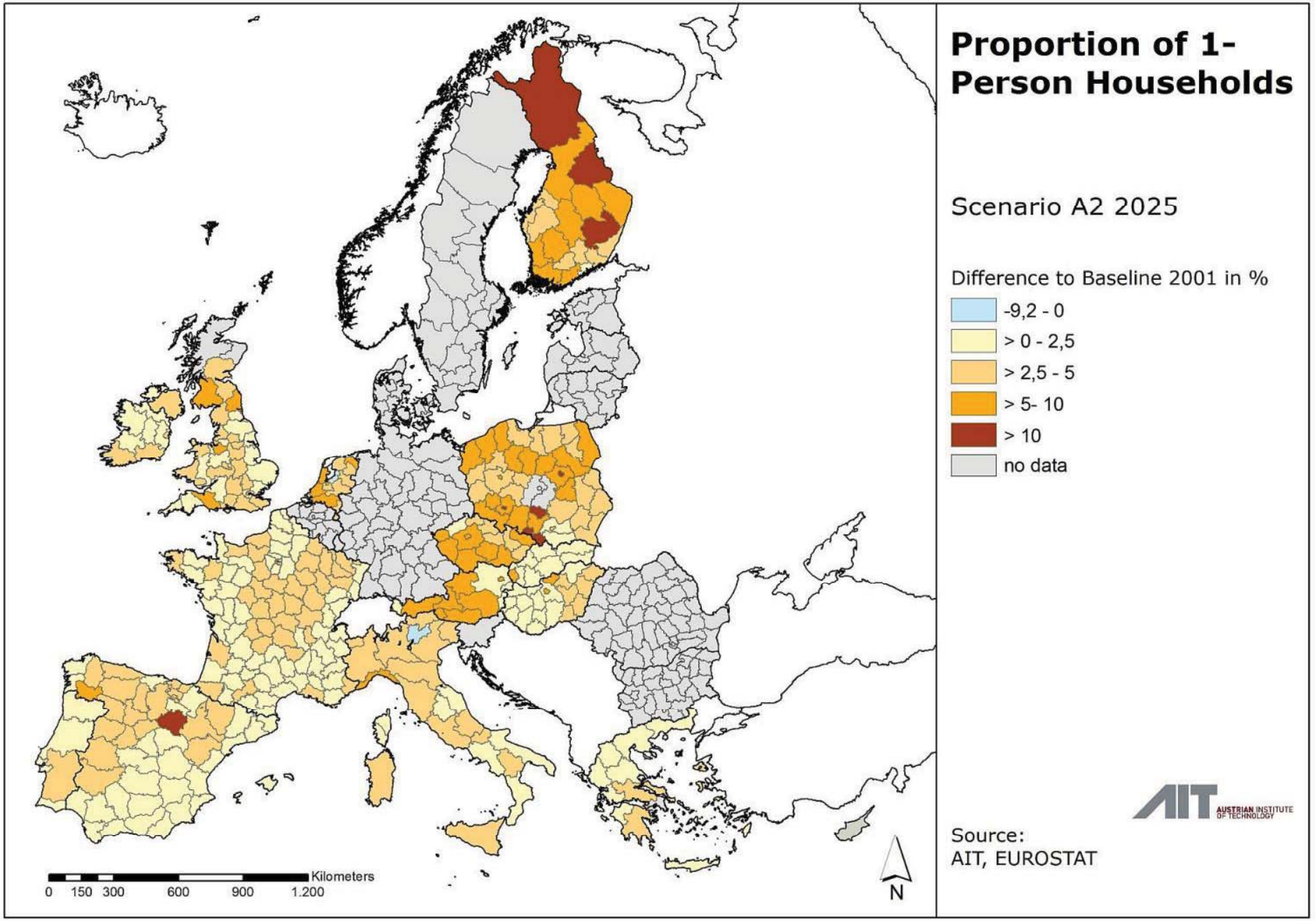

Peri-urban Population
Scenario B1 2025
relative change in %
< -20
> -20 - -2
> -2 - 2
> 2 - 20
> 20
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
CSCG Univ. Edinburgh, AIT

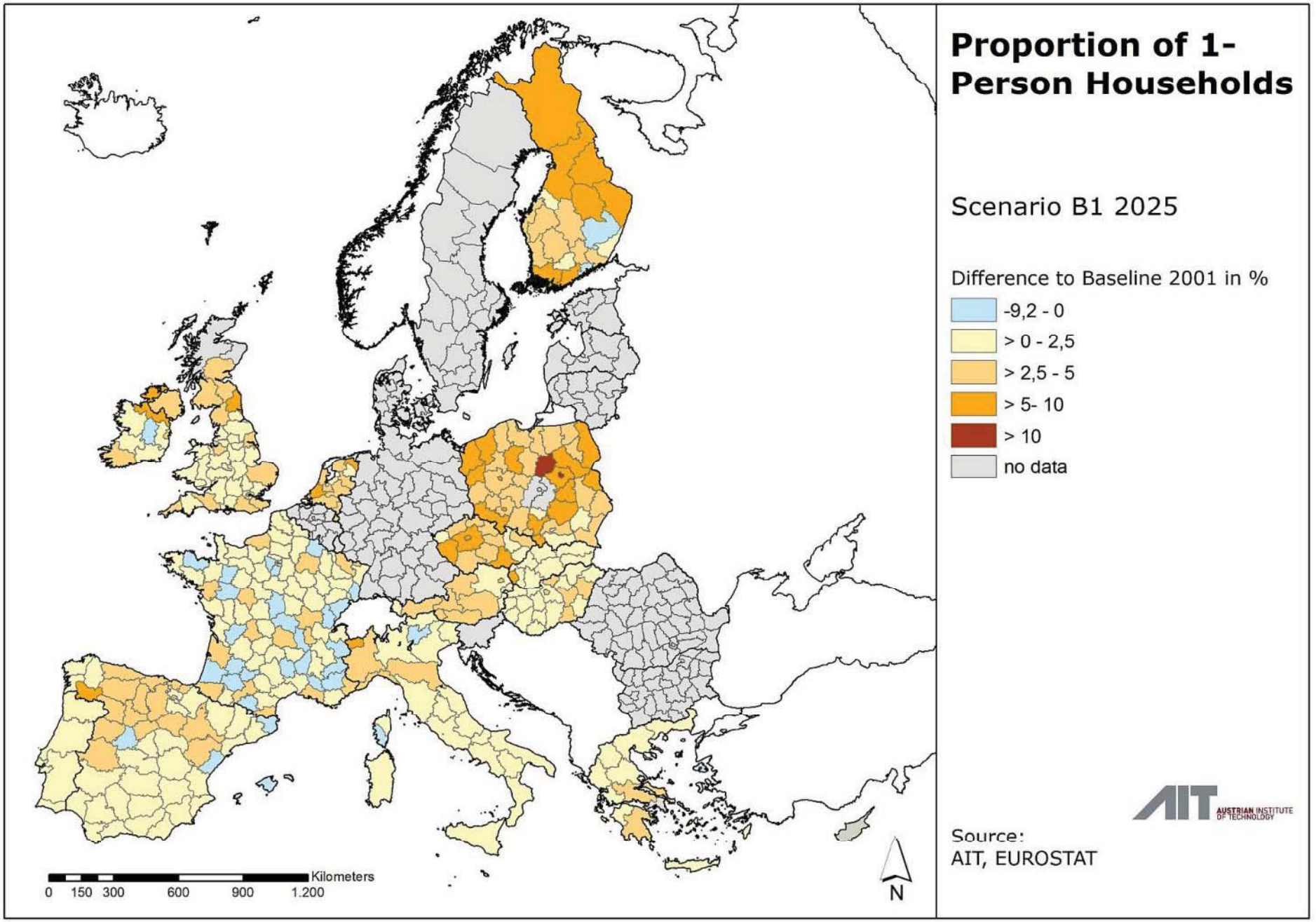

Peri-urban Population
Scenario B2 2025
relative change in %
< -20
-20 - -2
> -2 - 2
>2 - 20
>20 - 52
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
CSCG Univ. Edinburgh, IIASA,
AIT, EUROSTAT

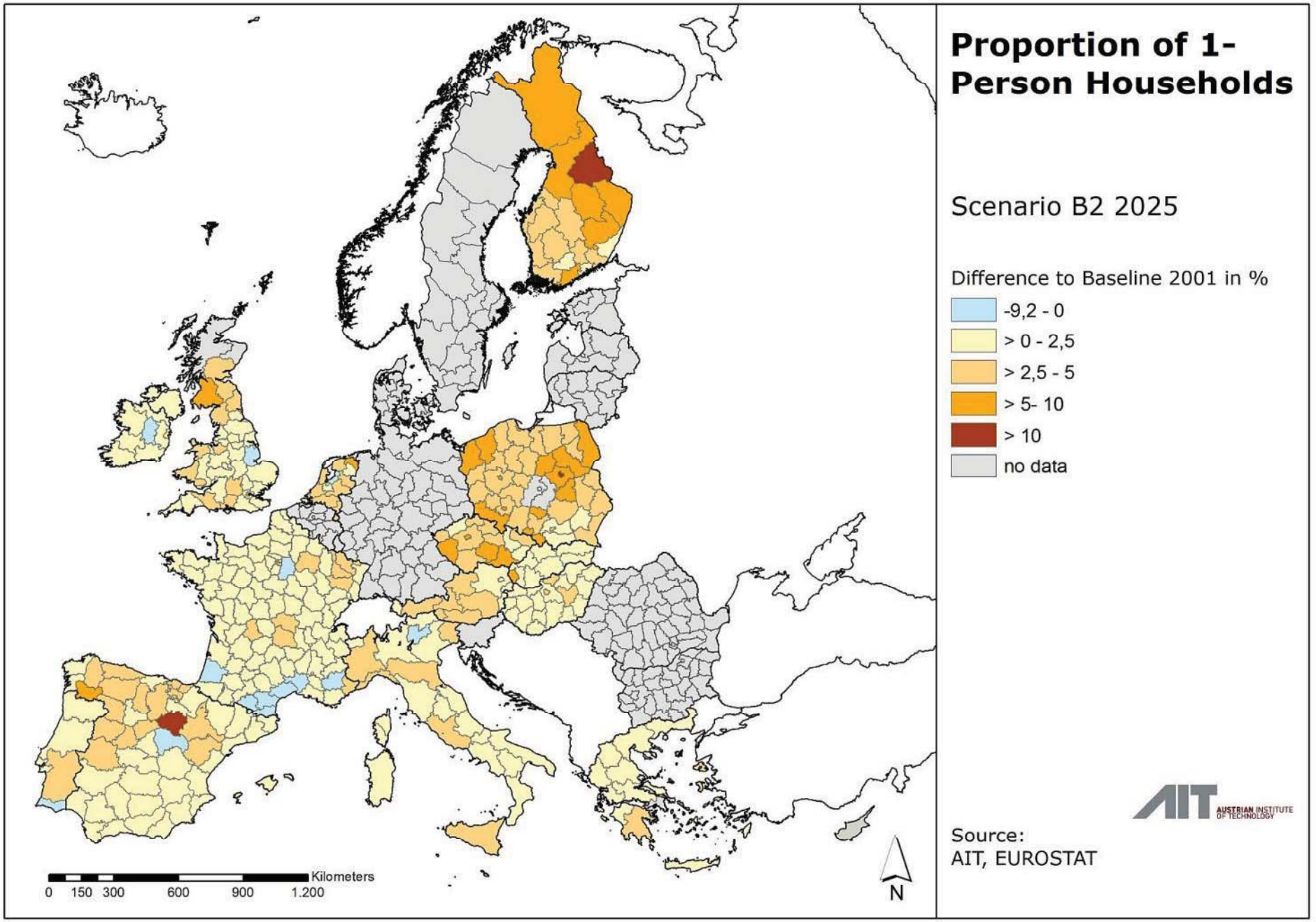

Proportion of 1-Person Households
Baseline Situation 2001
in % of all households
13 - 20
> 20 - 25
> 25 - 30
> 30 - 35
> 35 - 52
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
AIT, EUROSTAT

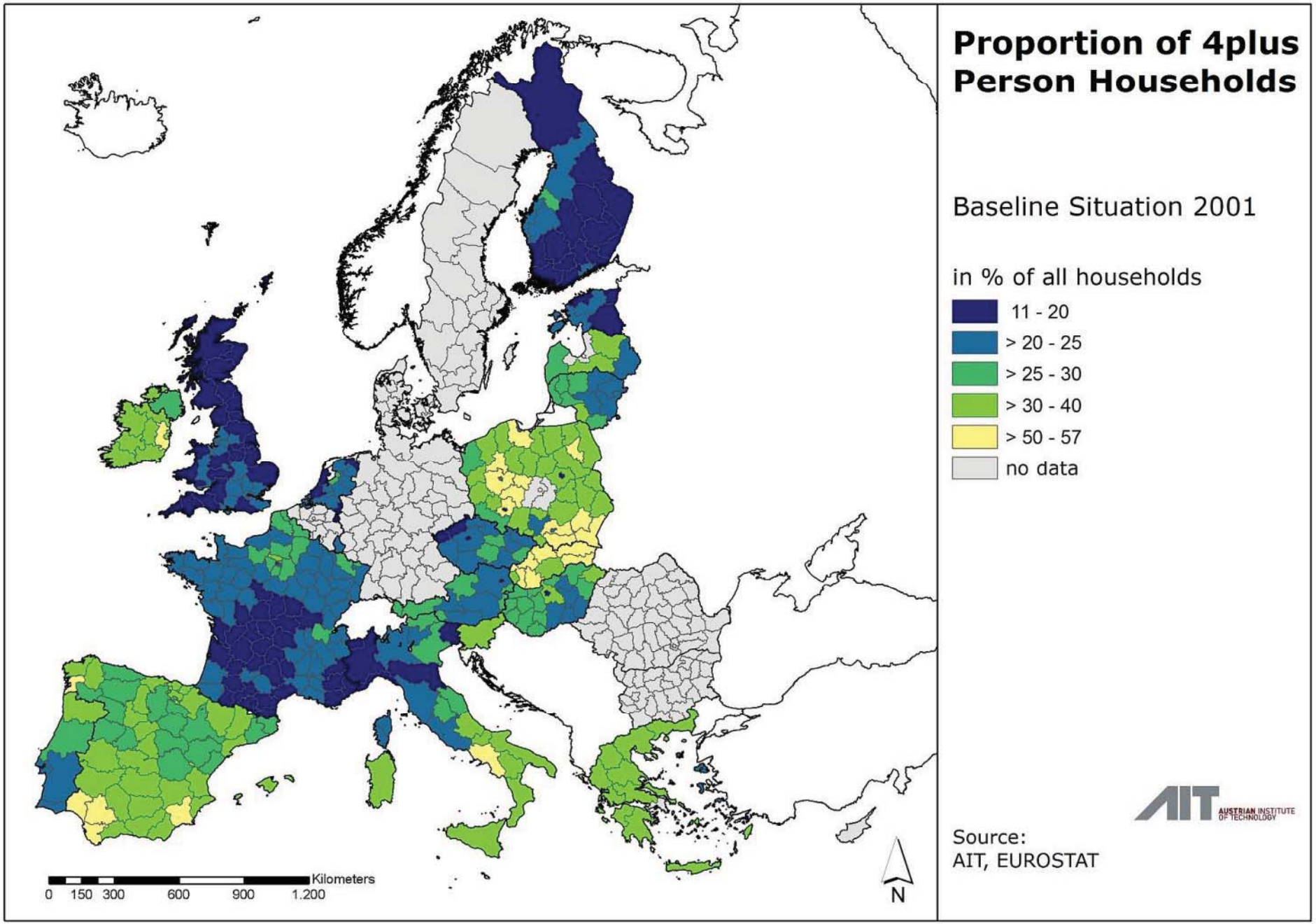

1-Person Households
Baseline Situation 2001
in % of total population
<= 7,5%
>7,5 - 10%
>10 - 12,5%
>12,5 - 15%
>15%
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
AIT, EUROSTAT

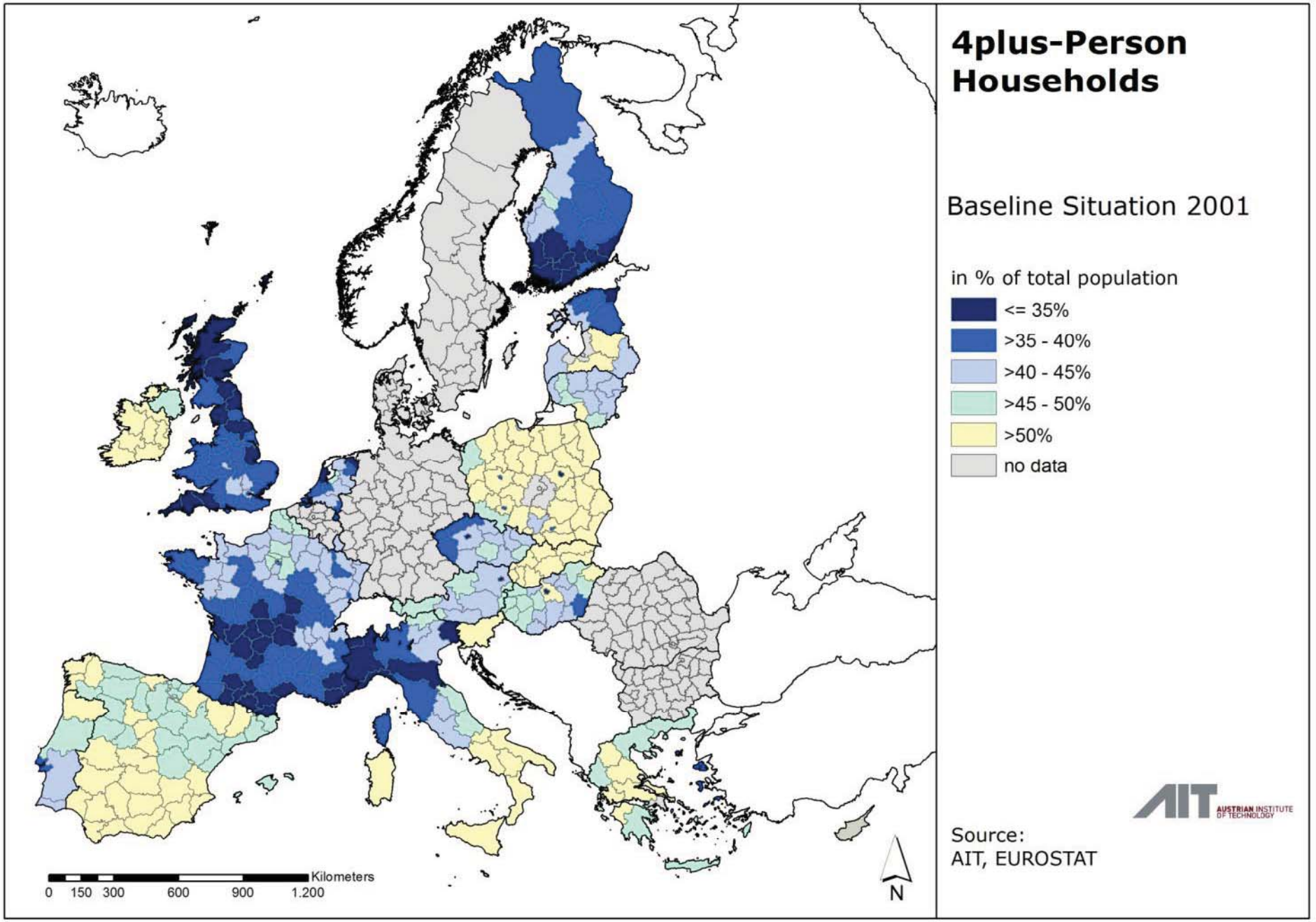

Proportion of 1-Person Households
Scenario A1 2025
Difference to Baseline 2001 in %
-9,2 - 0
> 0 - 2,5
> 2,5 - 5
> 5- 10
> 10
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
AIT, EUROSTAT

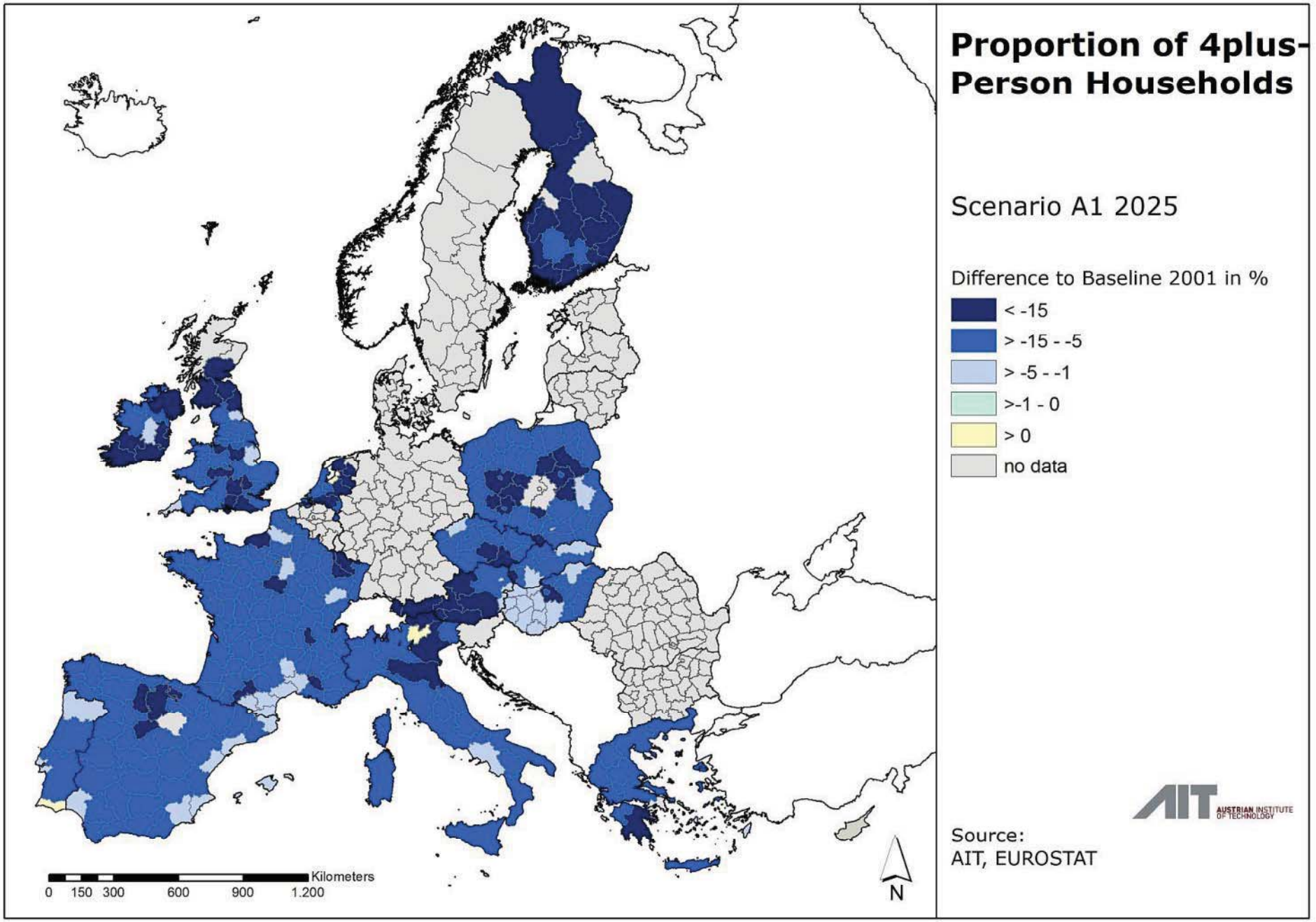

Proportion of 1-Person Households
Scenario A2 2025
Difference to Baseline 2001 in %
-9,2 - 0
> 0 - 2,5
> 2,5 - 5
> 5- 10
> 10
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
AIT, EUROSTAT

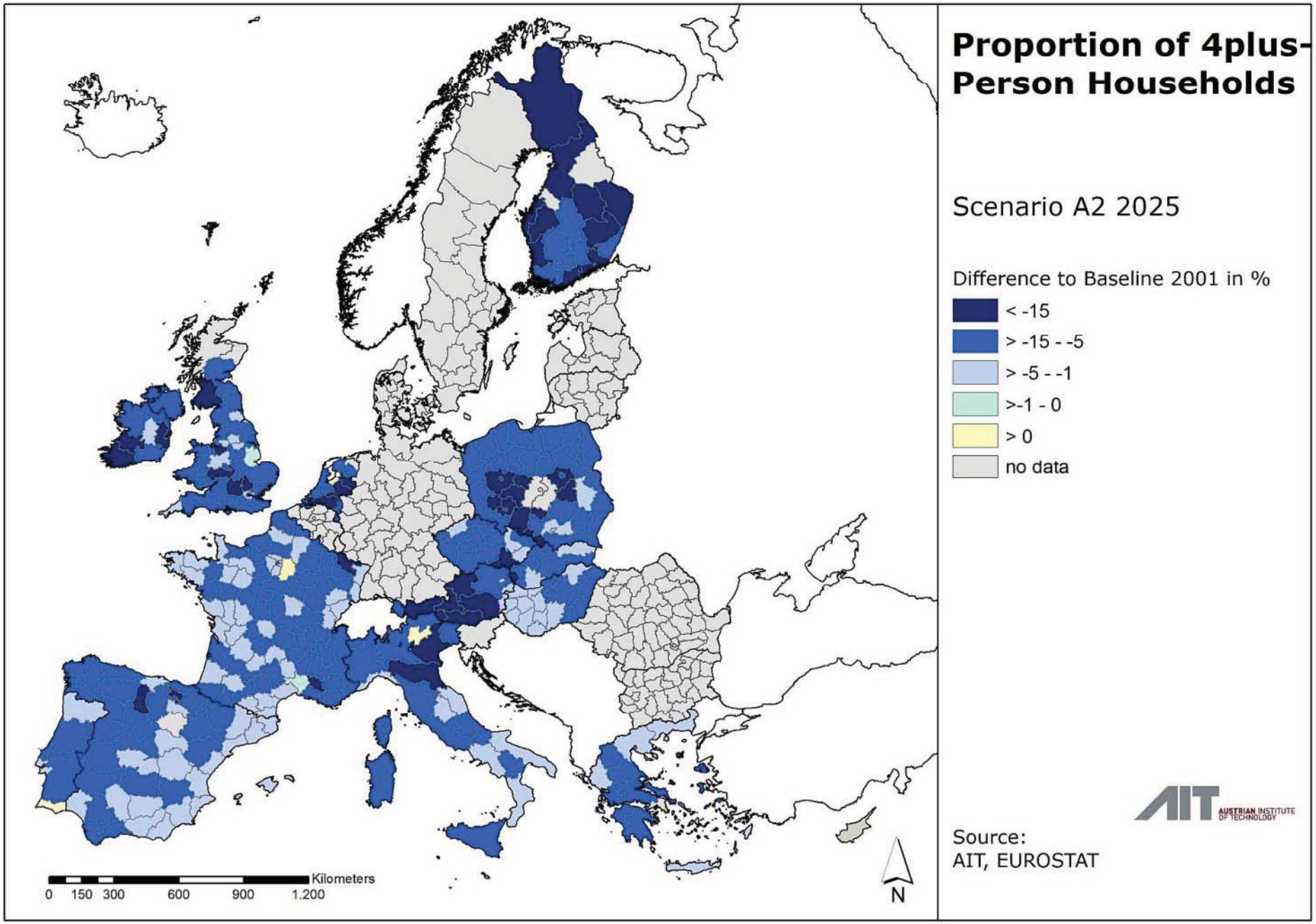

Proportion of 1-Person Households
Scenario B1 2025
Difference to Baseline 2001 in %
-9,2 - 0
> 0 - 2,5
> 2,5 - 5
> 5- 10
> 10
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
AIT, EUROSTAT

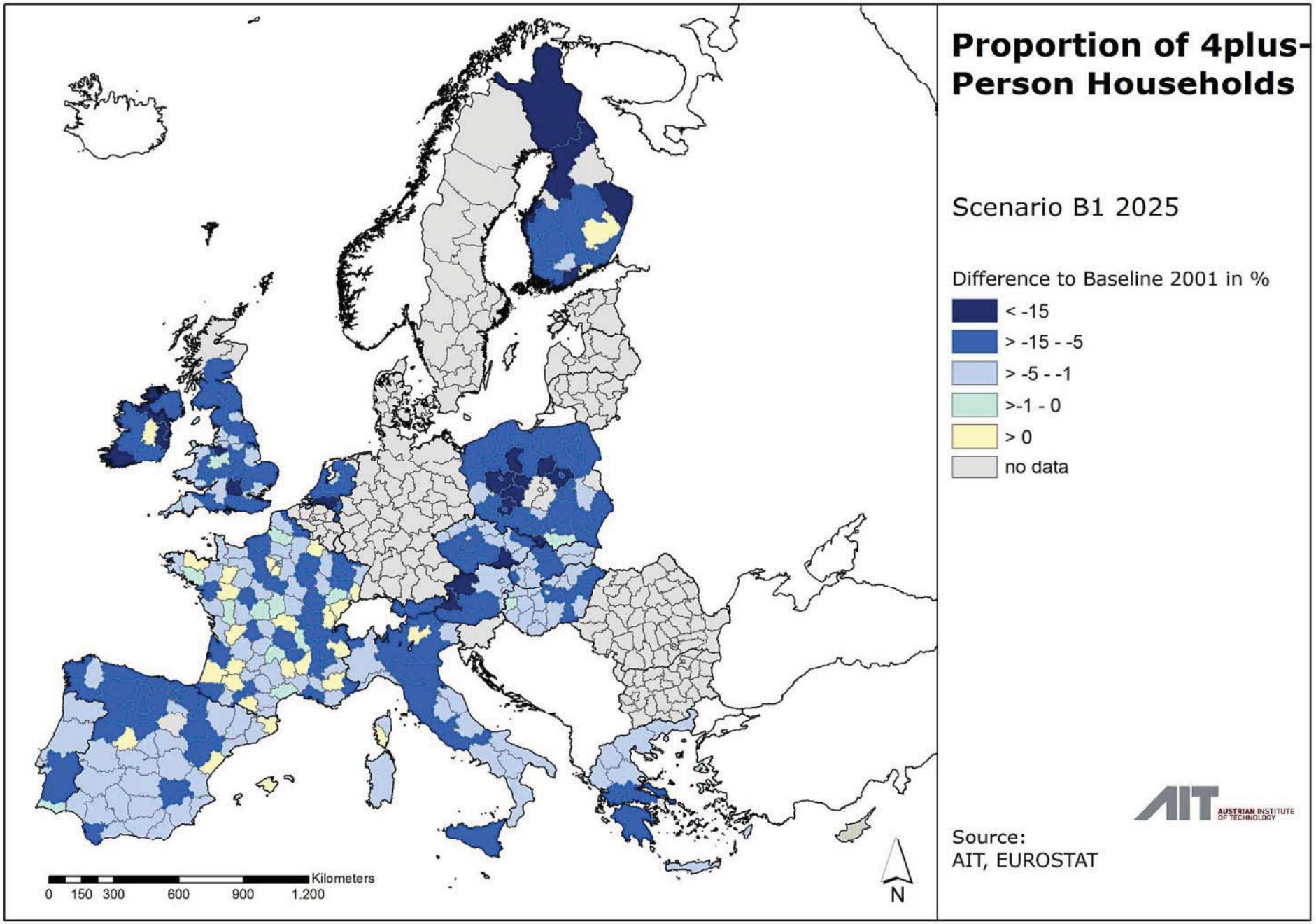

Proportion of 1-Person Households
Scenario B2 2025
Difference to Baseline 2001 in %
-9,2 - 0
> 0 - 2,5
> 2,5 - 5
> 5- 10
> 10
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
AIT, EUROSTAT

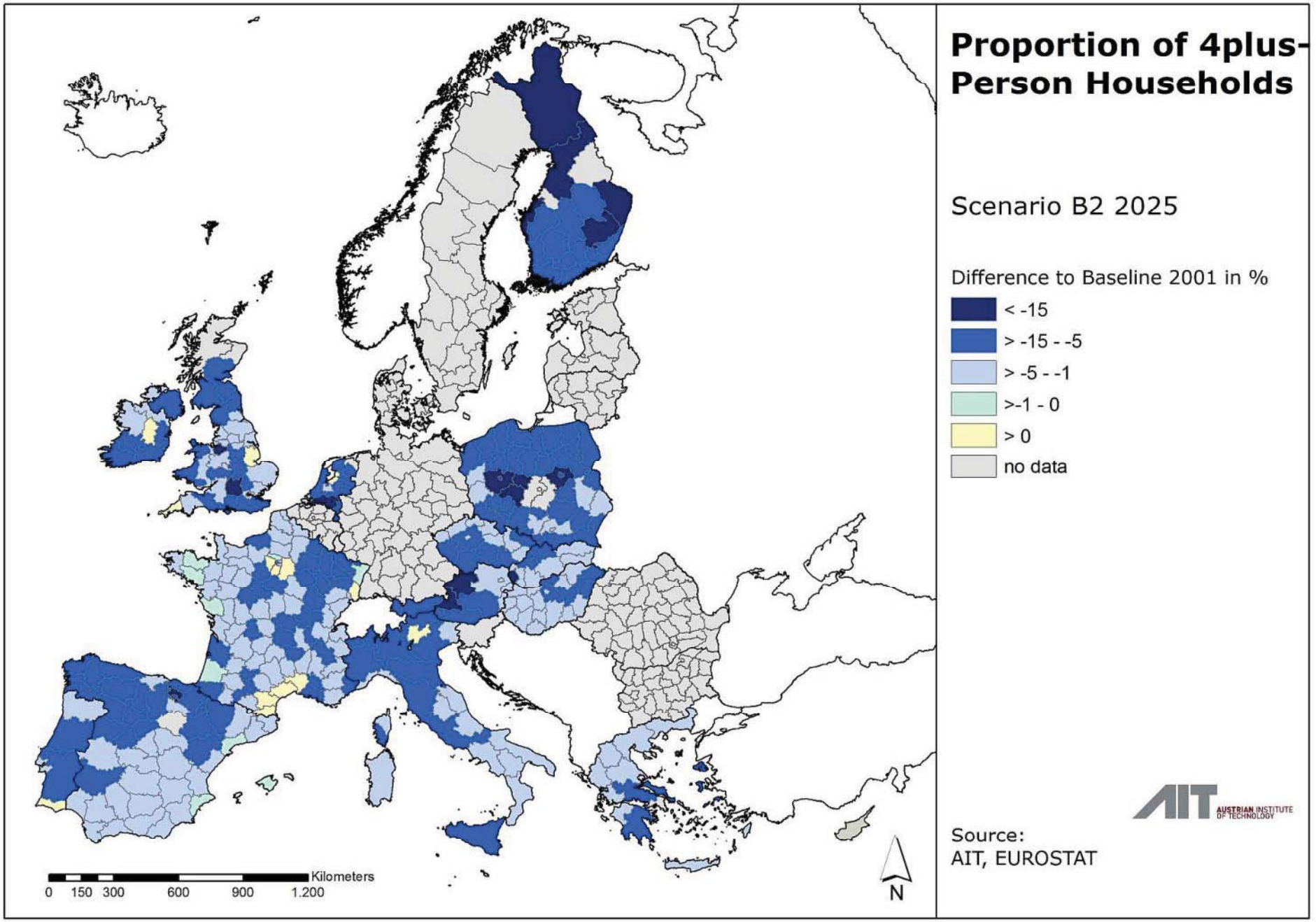

Proportion of 4plus Person Households
Baseline Situation 2001
in % of all households
11 - 20
> 20 - 25
> 25 - 30
> 30 - 40
> 50 - 57
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
AIT, EUROSTAT

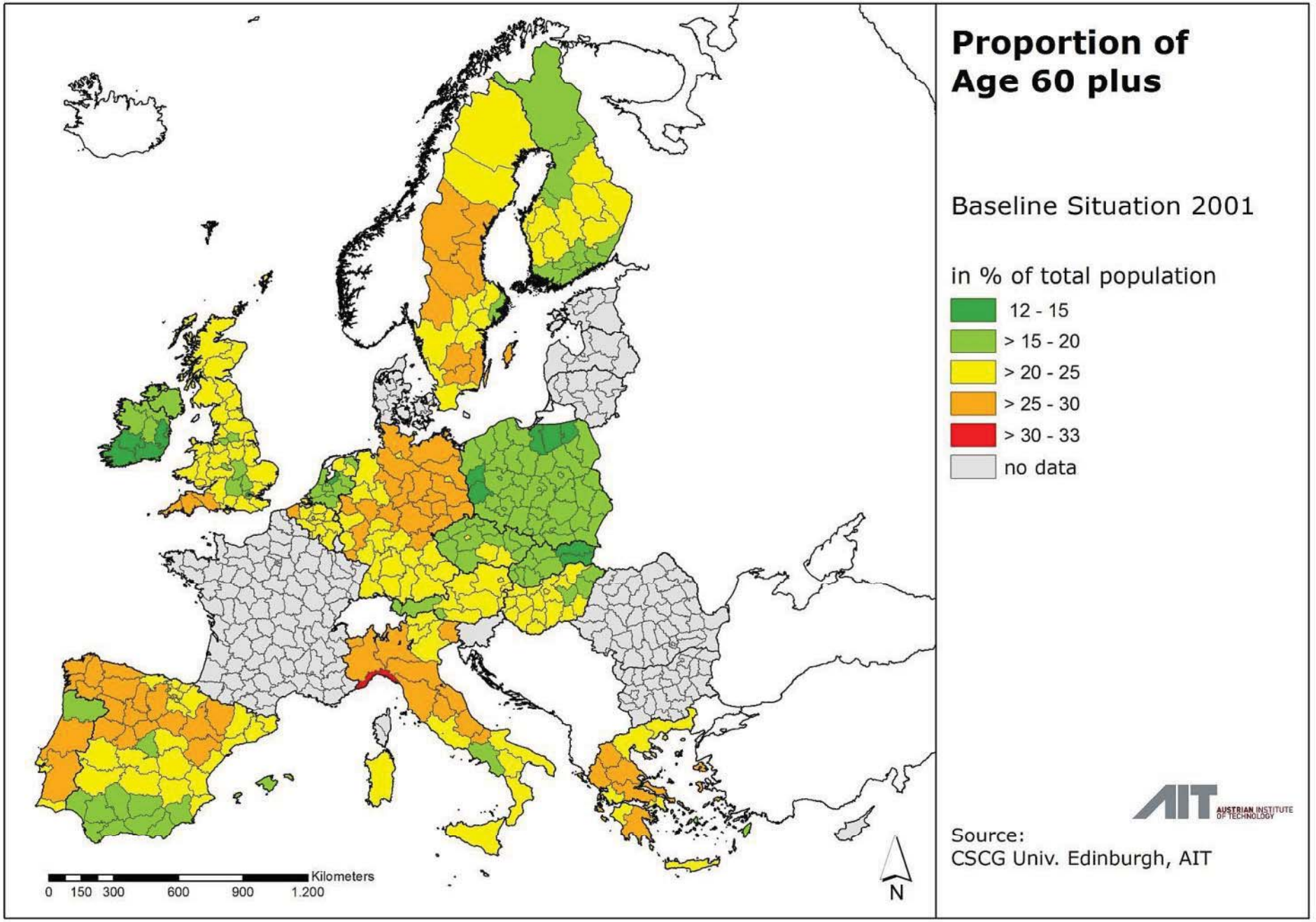

4plus-Person Households
Baseline Situation 2001
in % of total population
<= 35%
>35 - 40%
>40 - 45%
>45 - 50%
>50%
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
AIT, EUROSTAT

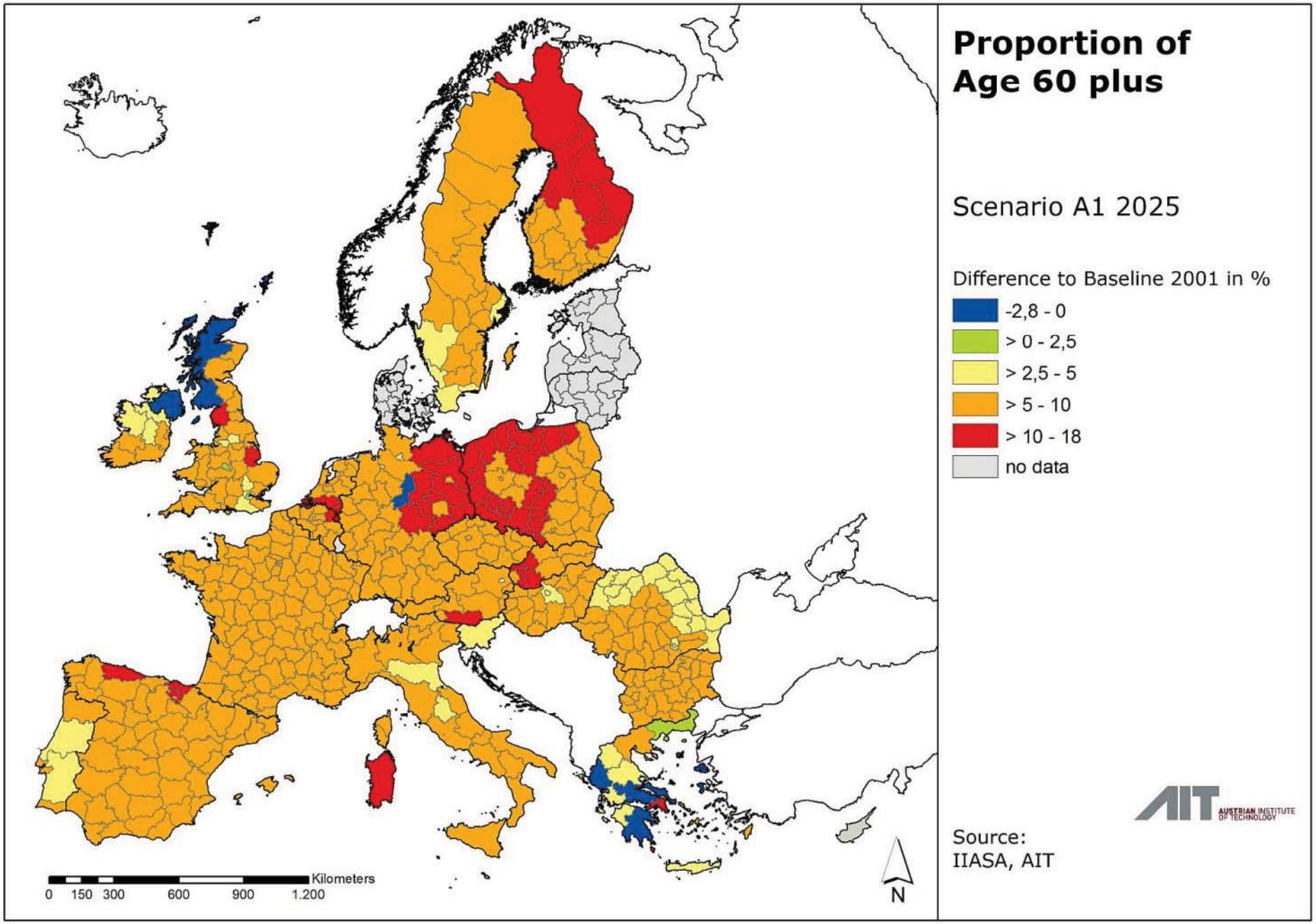

Proportion of 4plus-Person Households
Scenario A1 2025
Difference to Baseline 2001 in %
< -15
> -15 - -5
> -5 - -1
>-1 - 0
> 0
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
AIT, EUROSTAT

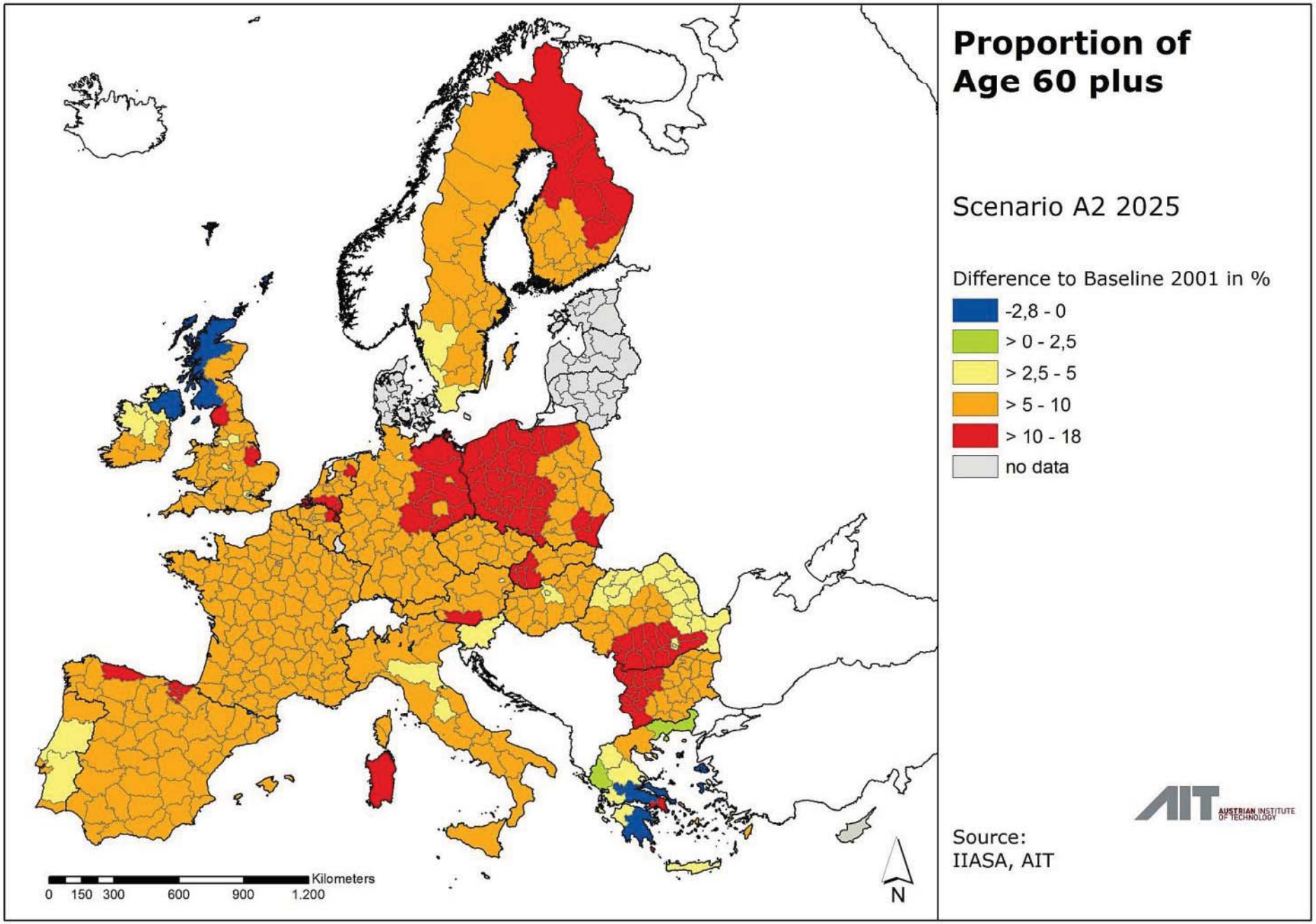

Proportion of 4plus-Person Households
Scenario A2 2025
Difference to Baseline 2001 in %
< -15
> -15 - -5
> -5 - -1
>-1 - 0
> 0
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
AIT, EUROSTAT

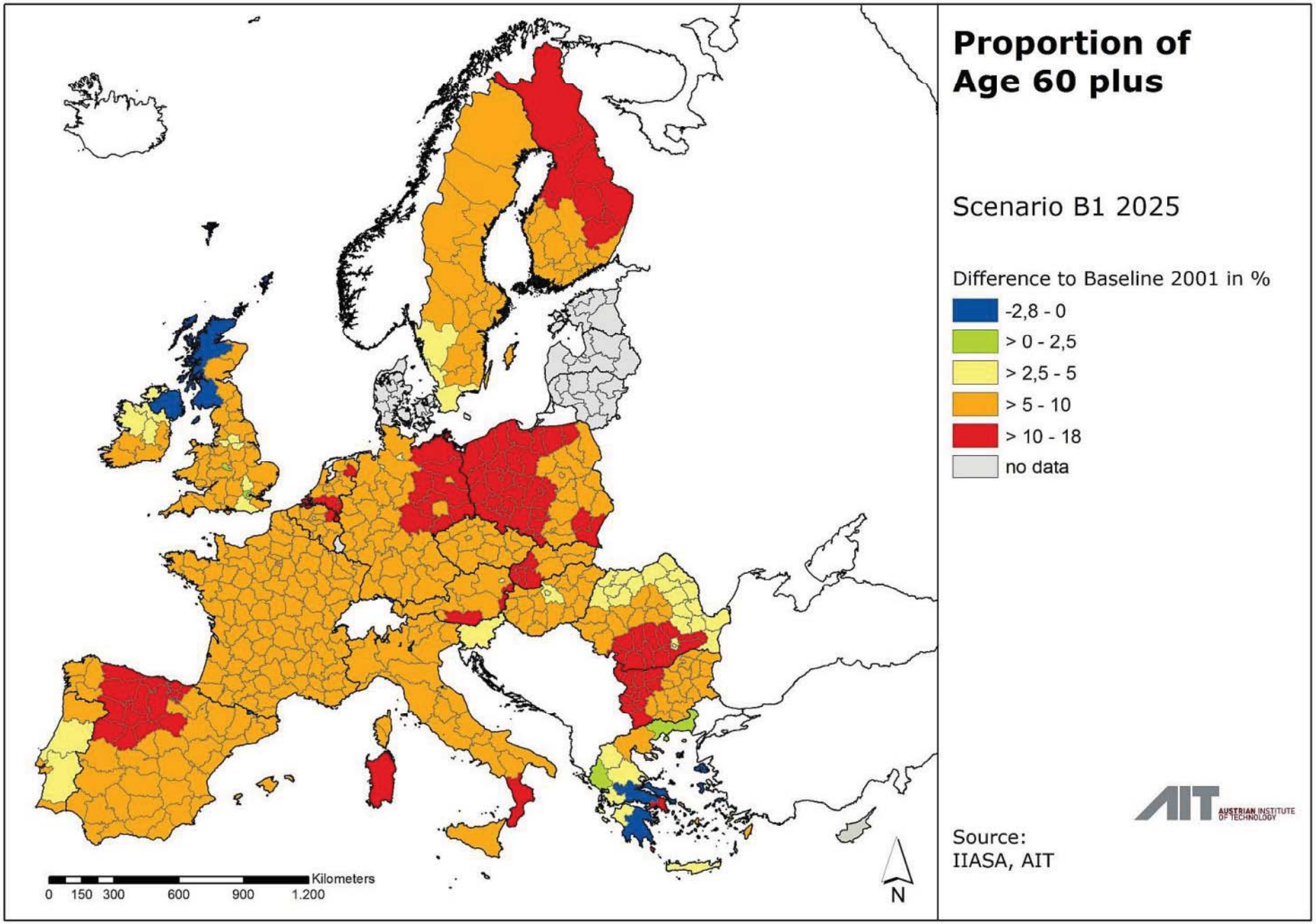

Proportion of 4plus-Person Households
Scenario B1 2025
Difference to Baseline 2001 in %
< -15
> -15 - -5
> -5 - -1
>-1 - 0
> 0
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
AIT, EUROSTAT

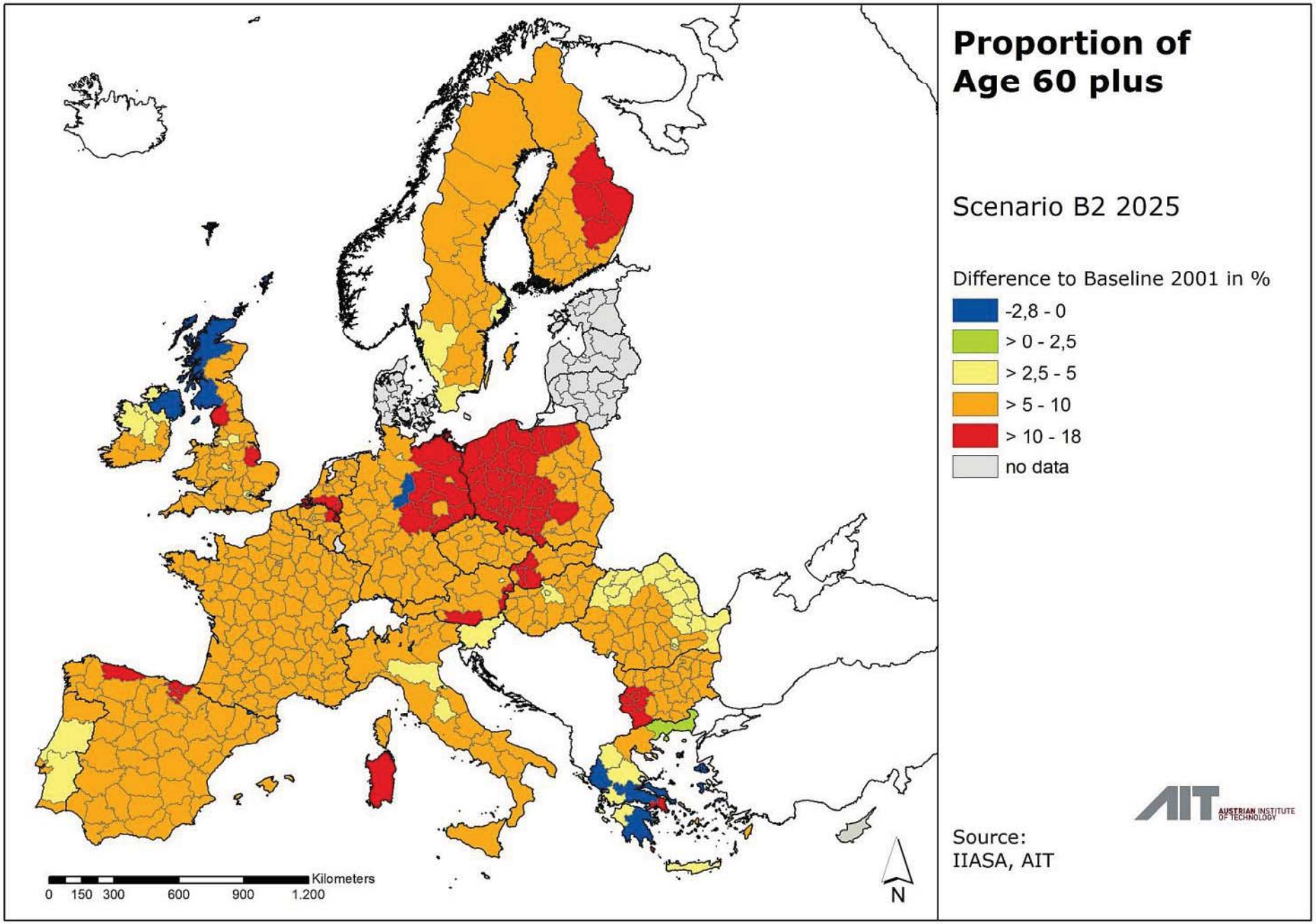

Proportion of 4plus-Person Households
Scenario B2 2025
Difference to Baseline 2001 in %
< -15
> -15 - -5
> -5 - -1
>-1 - 0
> 0
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
AIT, EUROSTAT

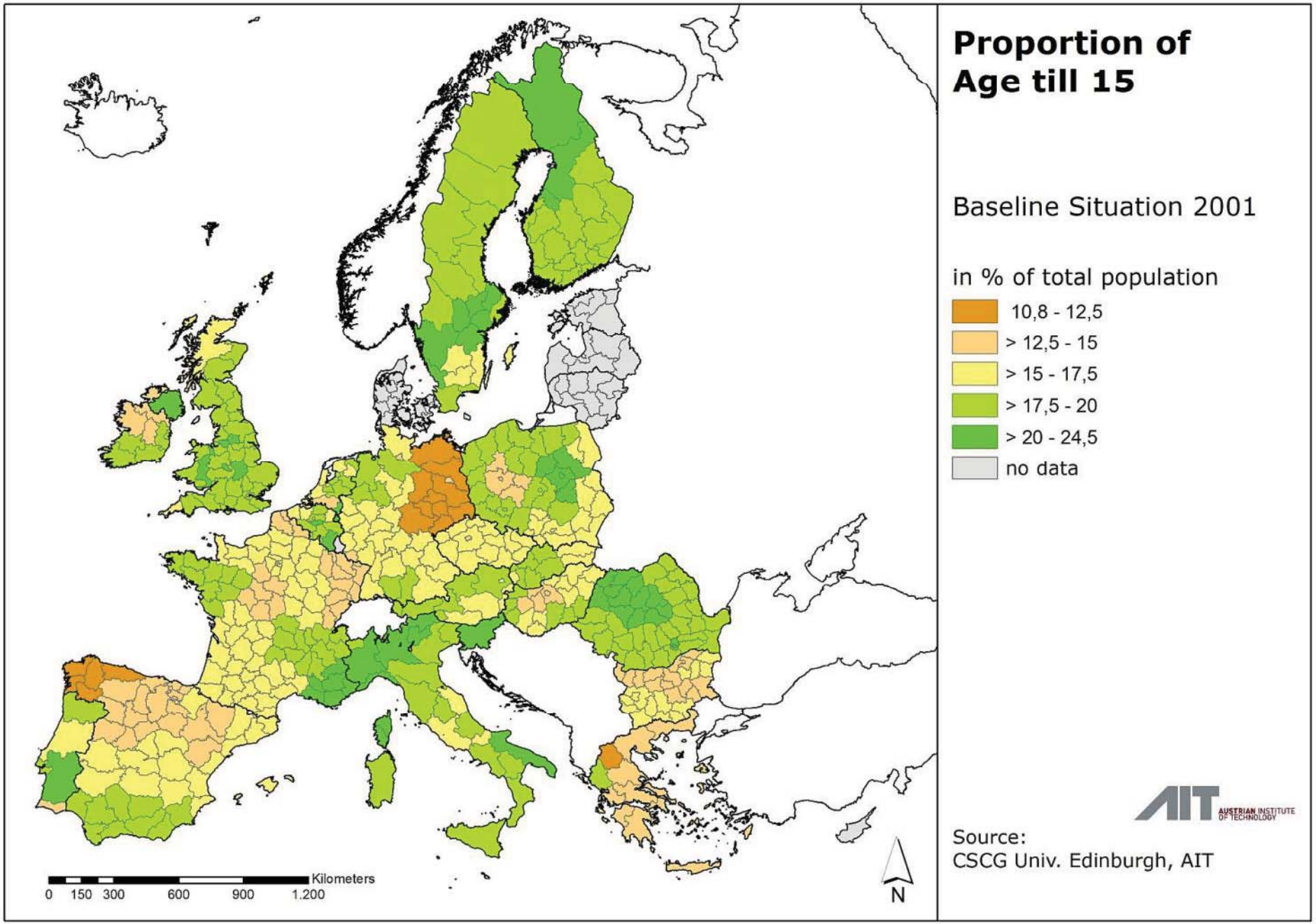

Proportion of Age 60 plus
Baseline Situation 2001
in % of total population
12 - 15
> 15 - 20
> 20 - 25
> 25 - 30
> 30 - 33
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
CSCG Univ. Edinburgh, AIT

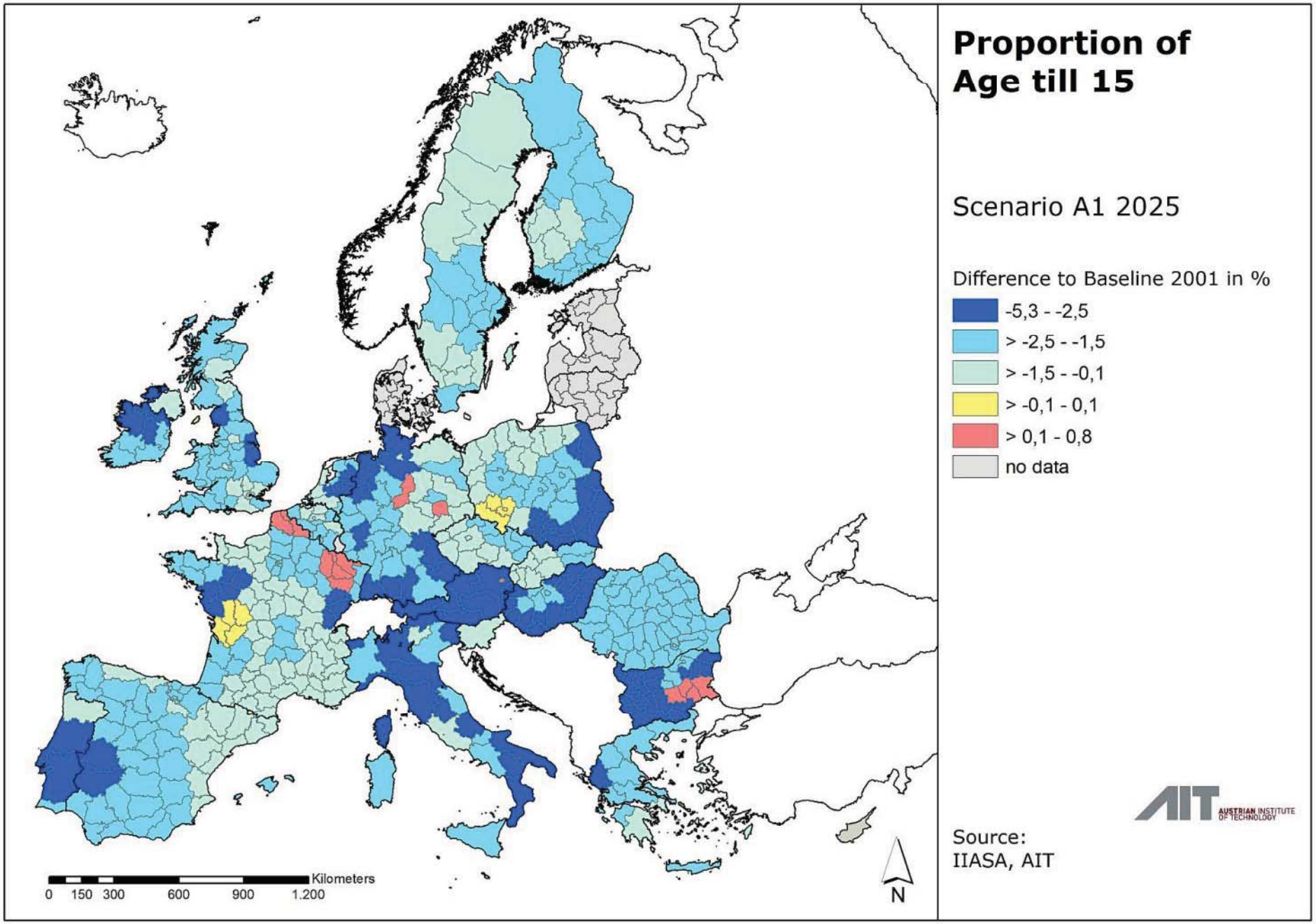

Proportion of Age 60 plus
Scenario A1 2025
Difference to Baseline 2001 in %
-2,8 - 0
> 0 - 2,5
> 2,5 - 5
> 5 - 10
> 10 - 18
no data
Kilometers
0 150 300 600 900 1.200
N
Source:
IIASA, AIT
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY

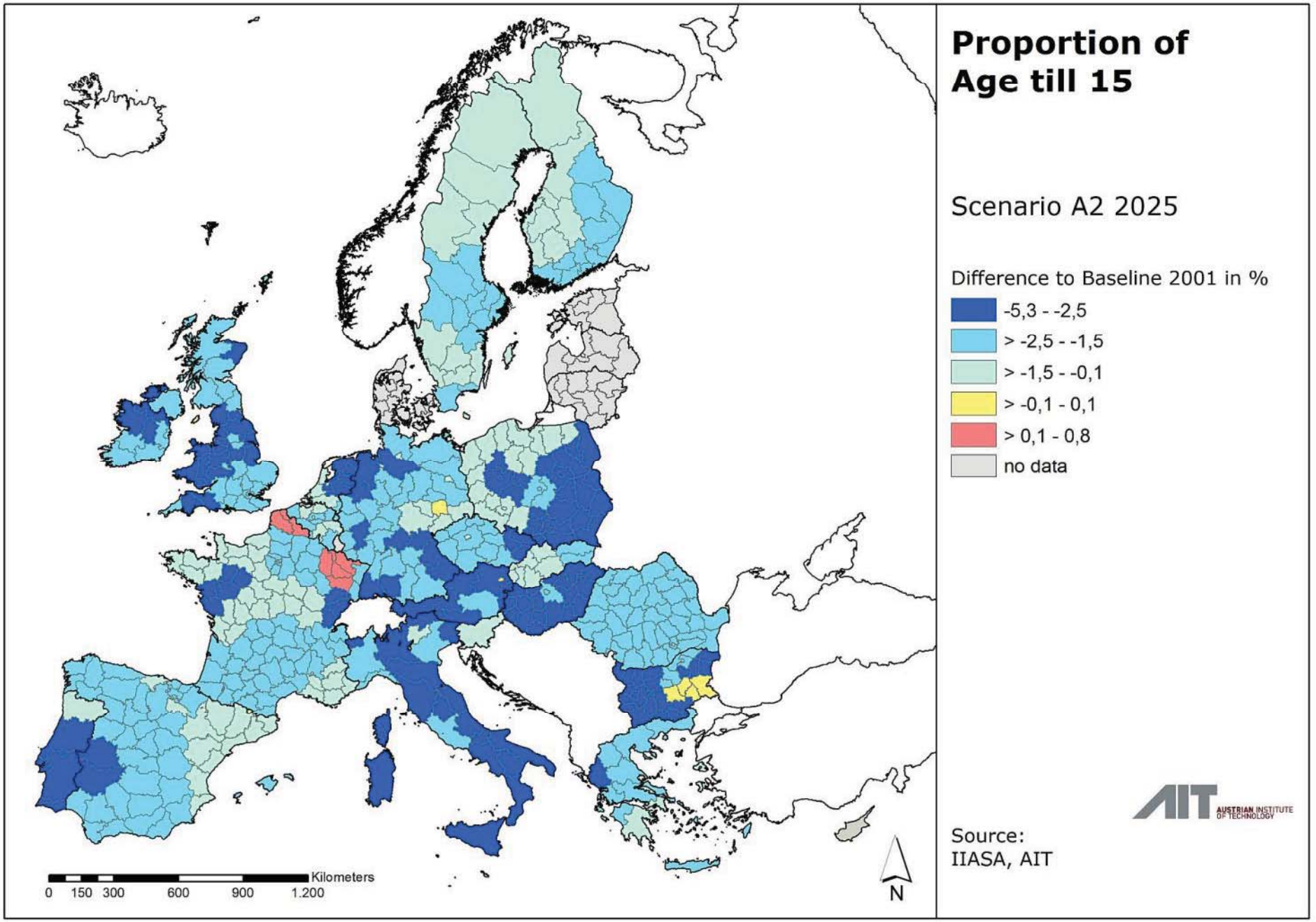

Proportion of Age 60 plus
Scenario A2 2025
Difference to Baseline 2001 in %
-2,8 - 0
> 0 - 2,5
> 2,5 - 5
> 5 - 10
> 10 - 18
no data
Kilometers
0 150 300 600 900 1.200
N
Source:
IIASA, AIT
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY

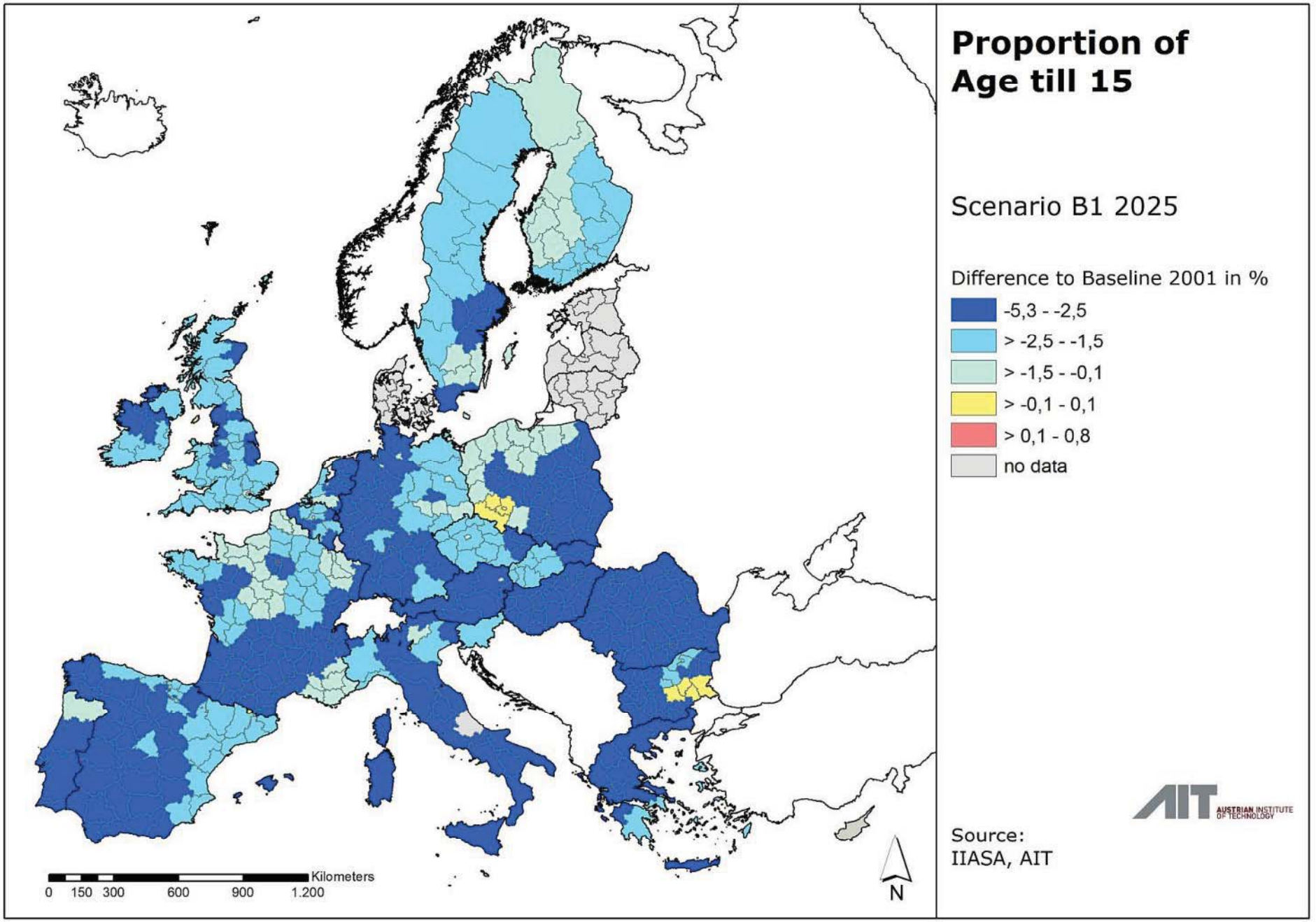

Proportion of Age 60 plus
Scenario B1 2025
Difference to Baseline 2001 in %
-2,8 - 0
> 0 - 2,5
> 2,5 - 5
> 5 - 10
> 10 - 18
no data
Kilometers
0 150 300 600 900 1.200
N
Source:
IIASA, AIT
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY

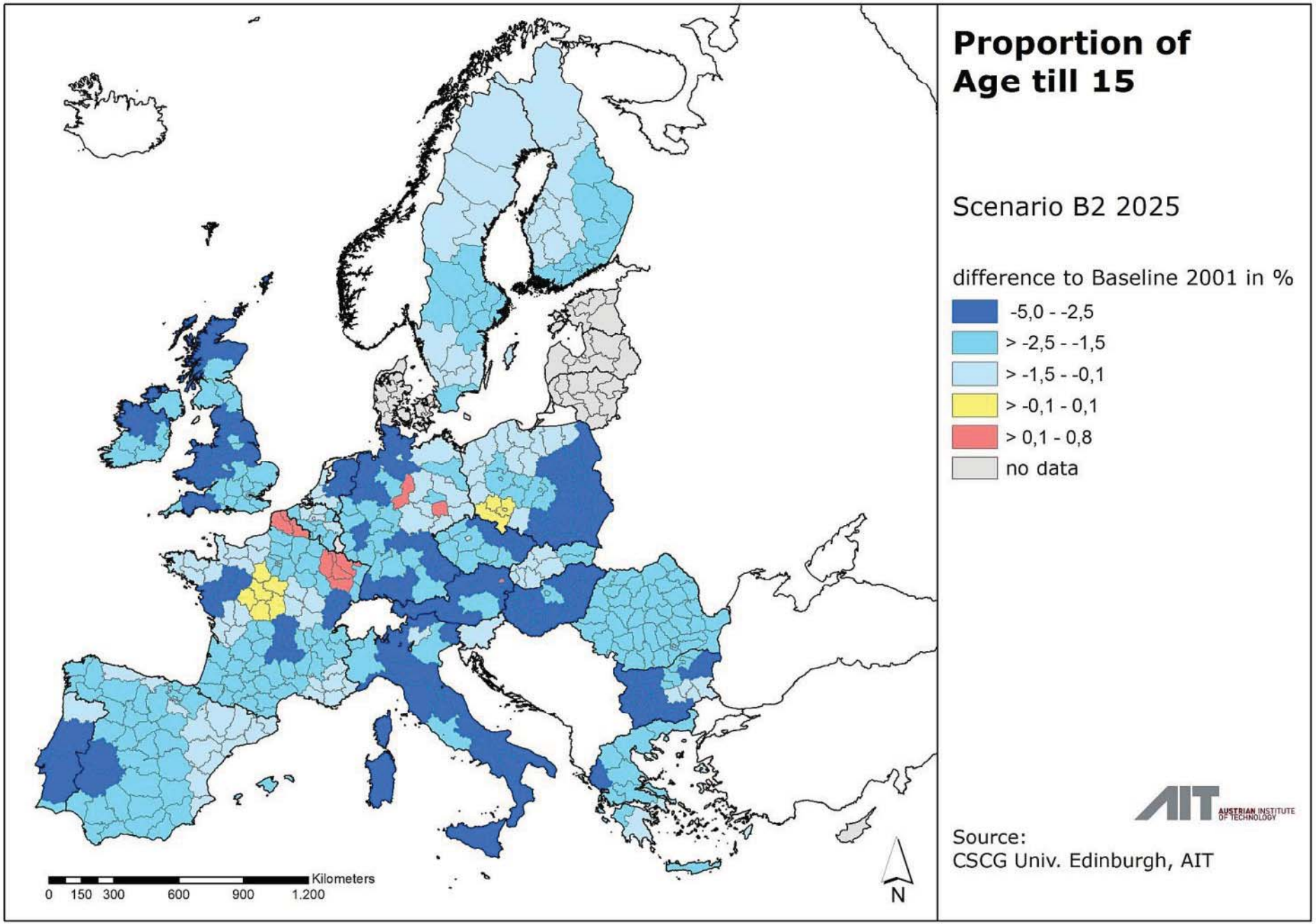

Proportion of Age 60 plus
Scenario B2 2025
Difference to Baseline 2001 in %
-2,8 - 0
> 0 - 2,5
> 2,5 - 5
> 5 - 10
> 10 - 18
no data
Kilometers
0 150 300 600 900 1.200
N
Source:
IIASA, AIT
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY

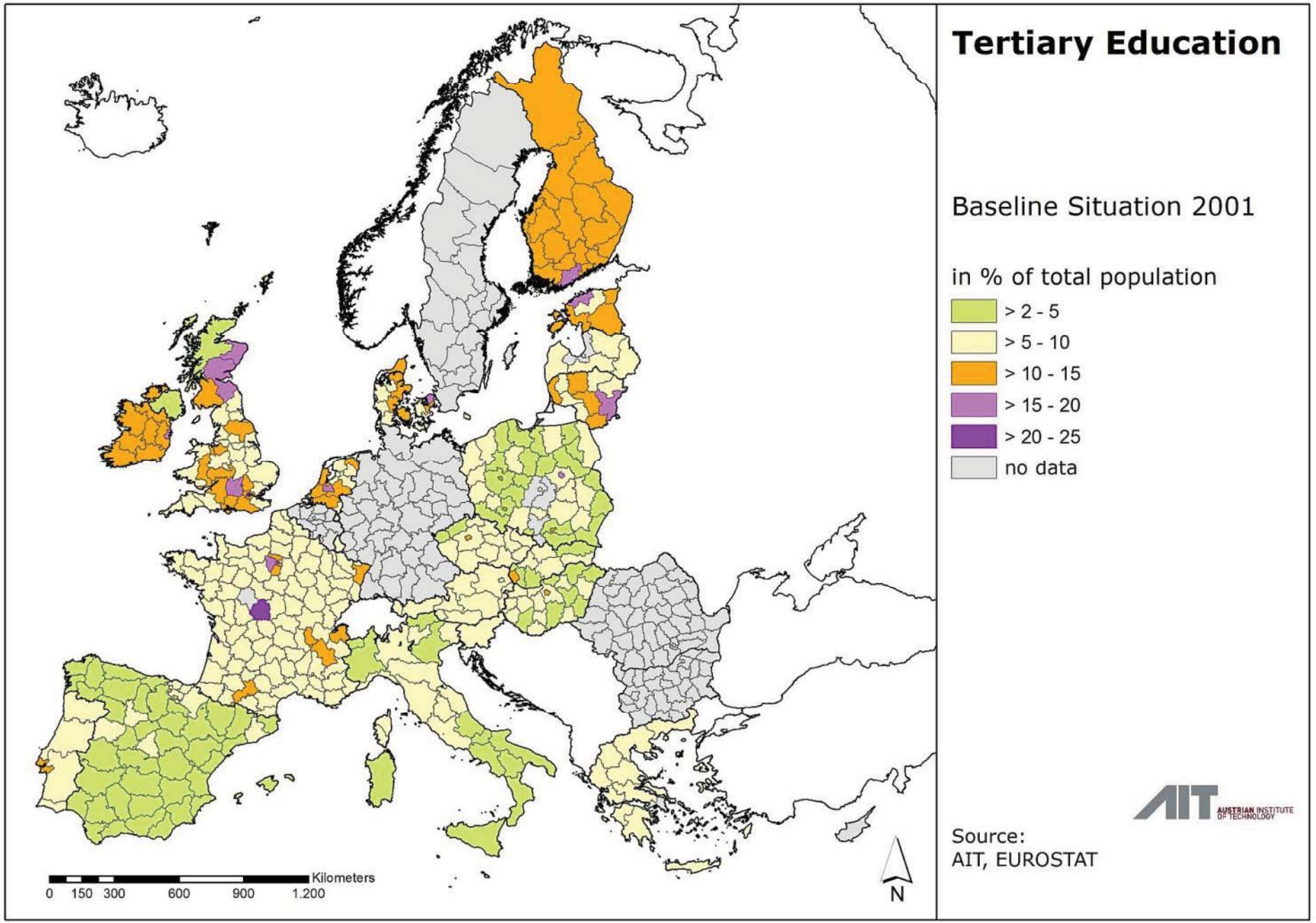

Proportion of Age till 15
Baseline Situation 2001
in % of total population
10,8 - 12,5
> 12,5 - 15
> 15 - 17,5
> 17,5 - 20
> 20 - 24,5
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
CSCG Univ. Edinburgh, AIT

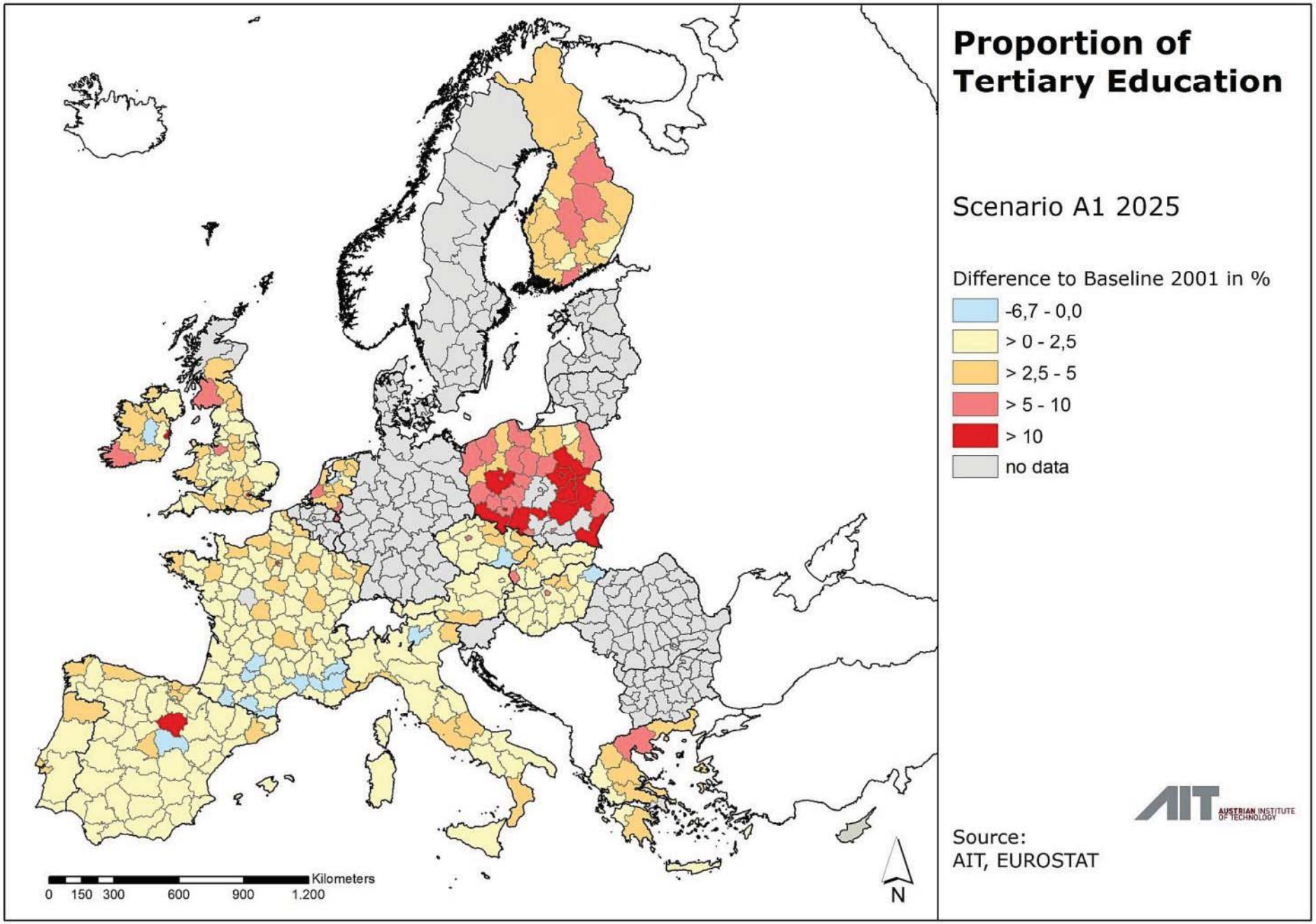

Proportion of Age till 15
Scenario A1 2025
Difference to Baseline 2001 in %
-5,3 - -2,5
> -2,5 - -1,5
> -1,5 - -0,1
> -0,1 - 0,1
> 0,1 - 0,8
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
IIASA, AIT

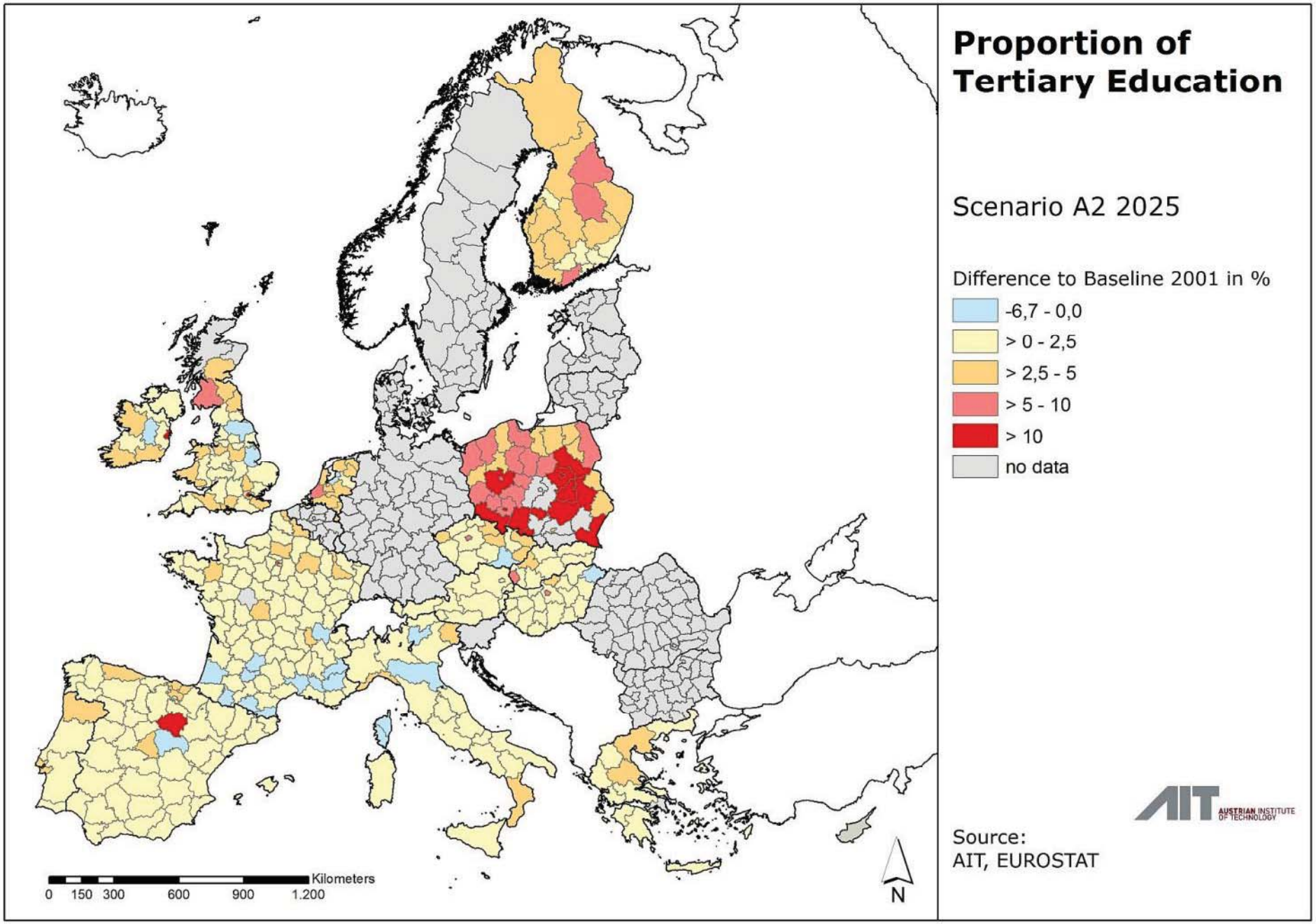

Proportion of Age till 15
Scenario A2 2025
Difference to Baseline 2001 in %
-5,3 - -2,5
> -2,5 - -1,5
> -1,5 - -0,1
> -0,1 - 0,1
> 0,1 - 0,8
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
IIASA, AIT

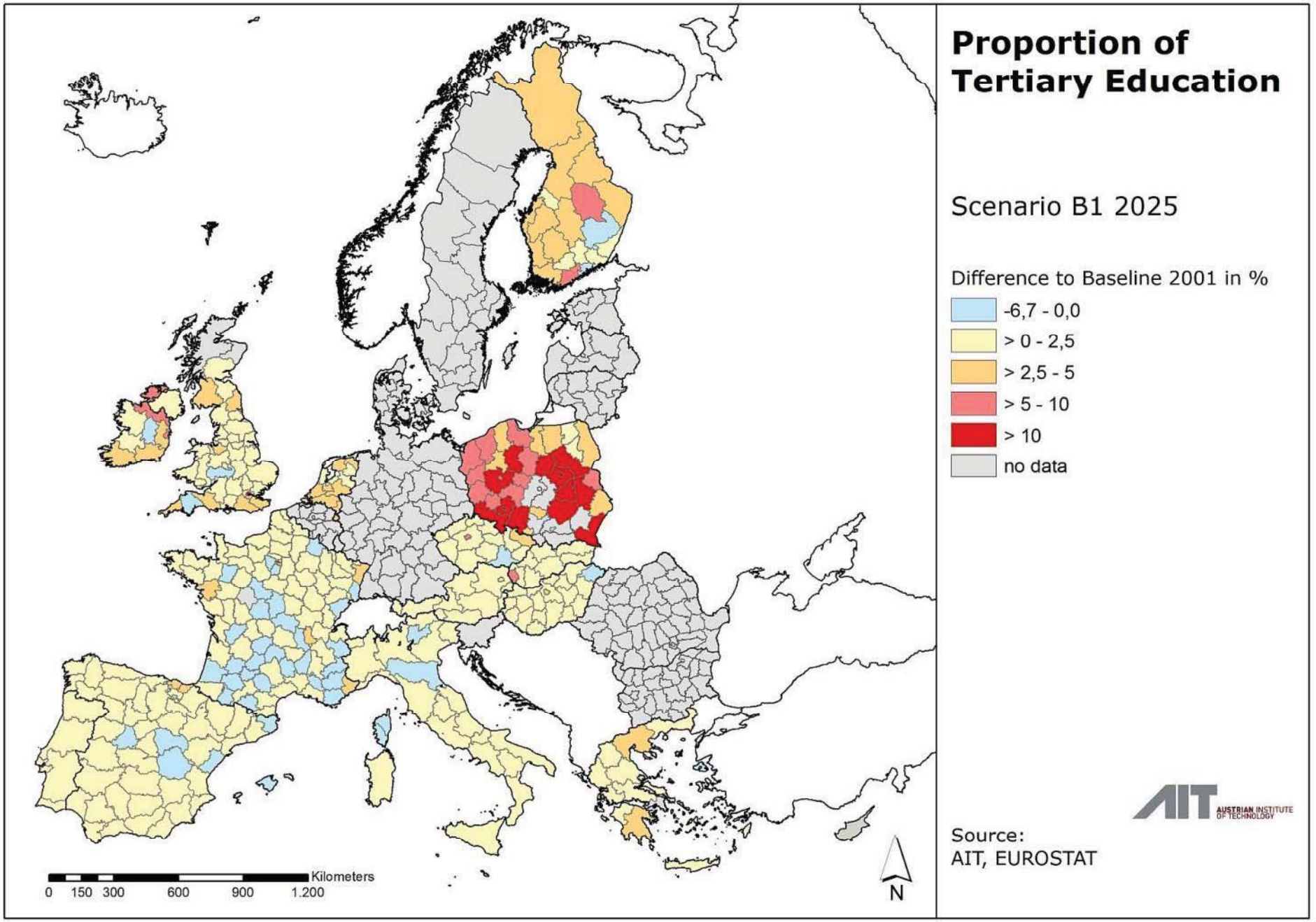

Proportion of Age till 15
Scenario B1 2025
Difference to Baseline 2001 in %
-5,3 - -2,5
> -2,5 - -1,5
> -1,5 - -0,1
> -0,1 - 0,1
> 0,1 - 0,8
no data
Kilometers
0 150 300 600 900 1.200
N
Source:
IIASA, AIT
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY

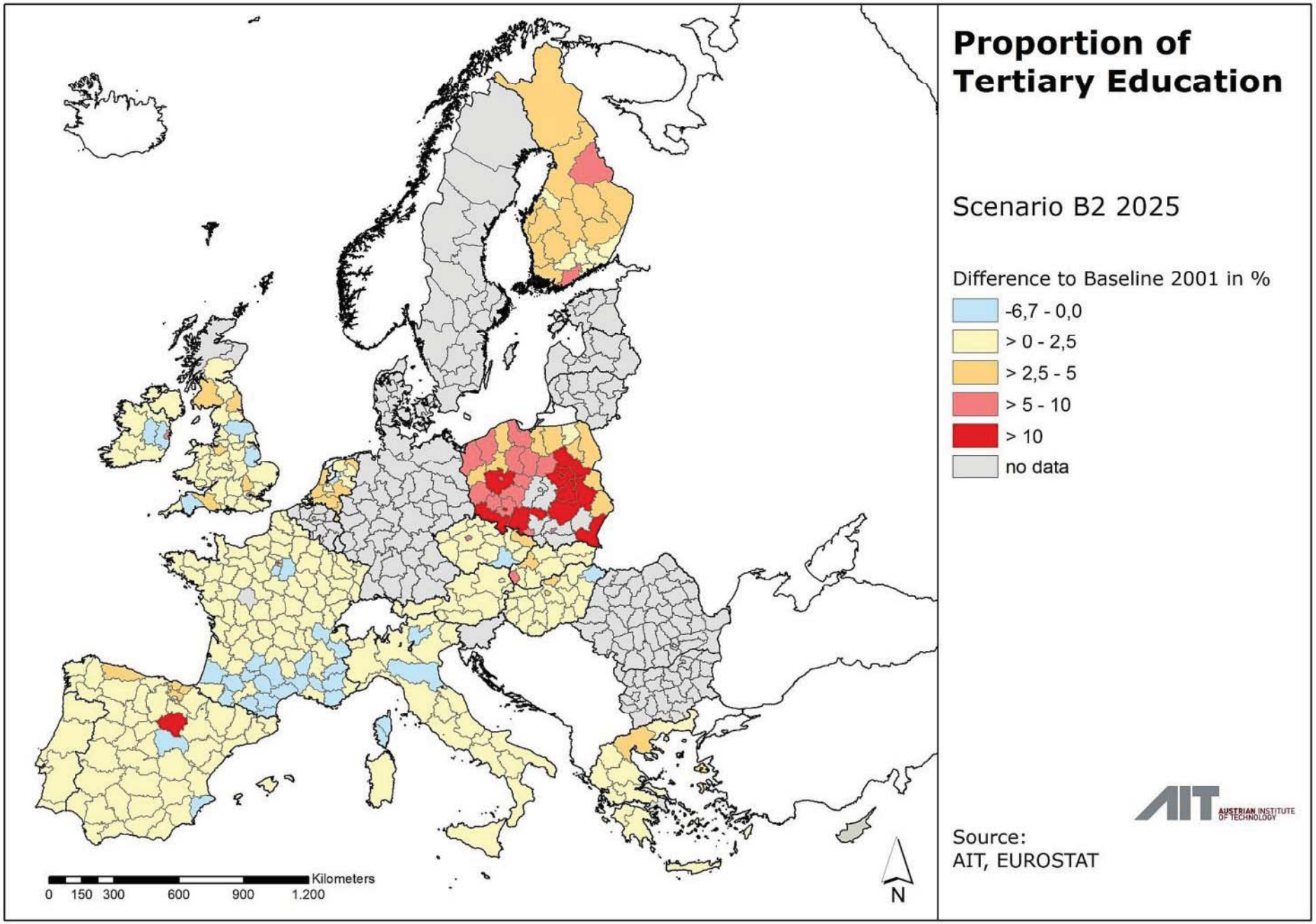

Proportion of Age till 15
Scenario B2 2025
difference to Baseline 2001 in %
-5,0 - -2,5
> -2,5 - -1,5
> -1,5 - -0,1
> -0,1 - 0,1
> 0,1 - 0,8
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
CSCG Univ. Edinburgh, AIT

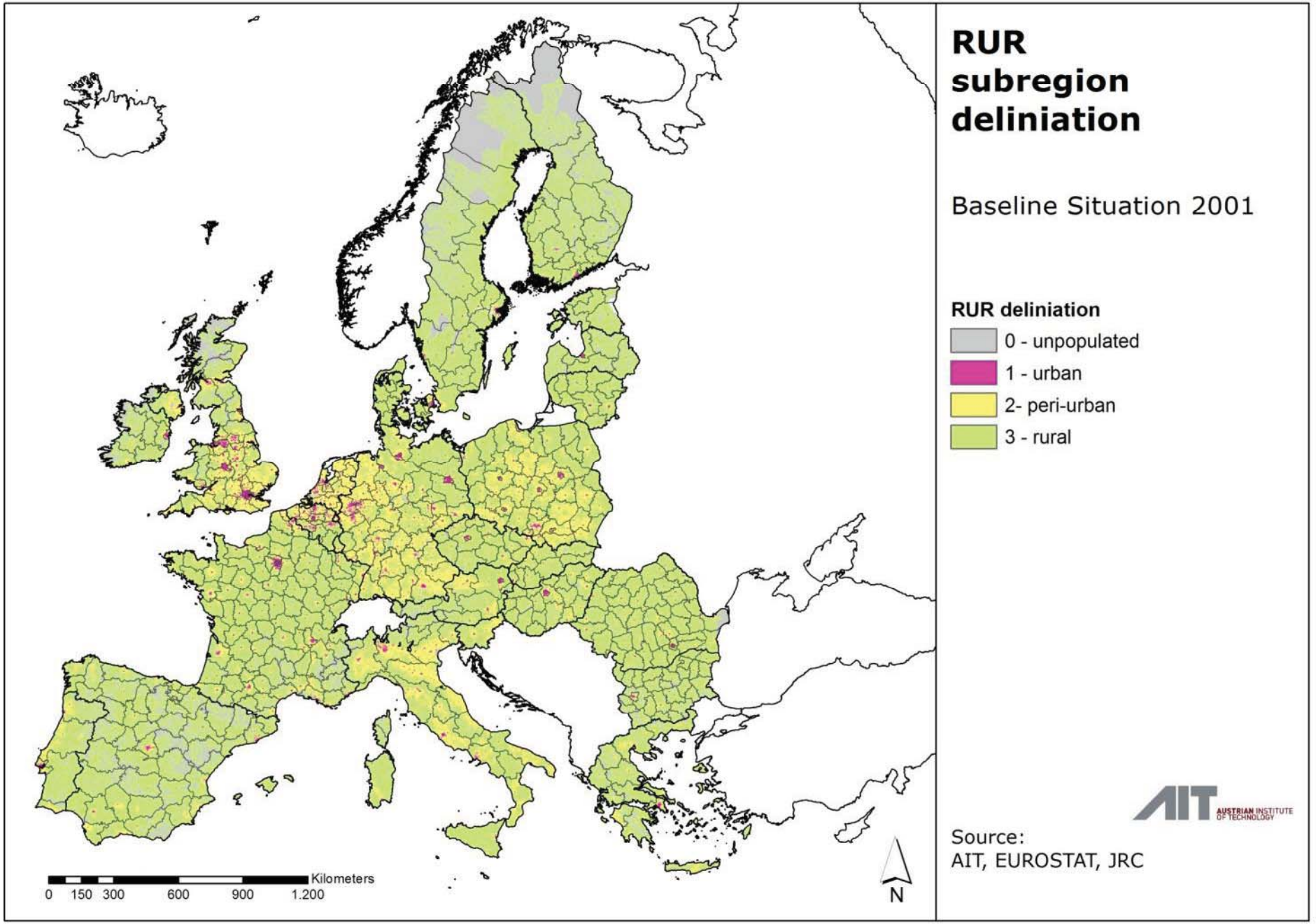

Tertiary Education
Baseline Situation 2001
in % of total population
> 2 - 5
> 5 - 10
> 10 - 15
> 15 - 20
> 20 - 25
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
AIT, EUROSTAT

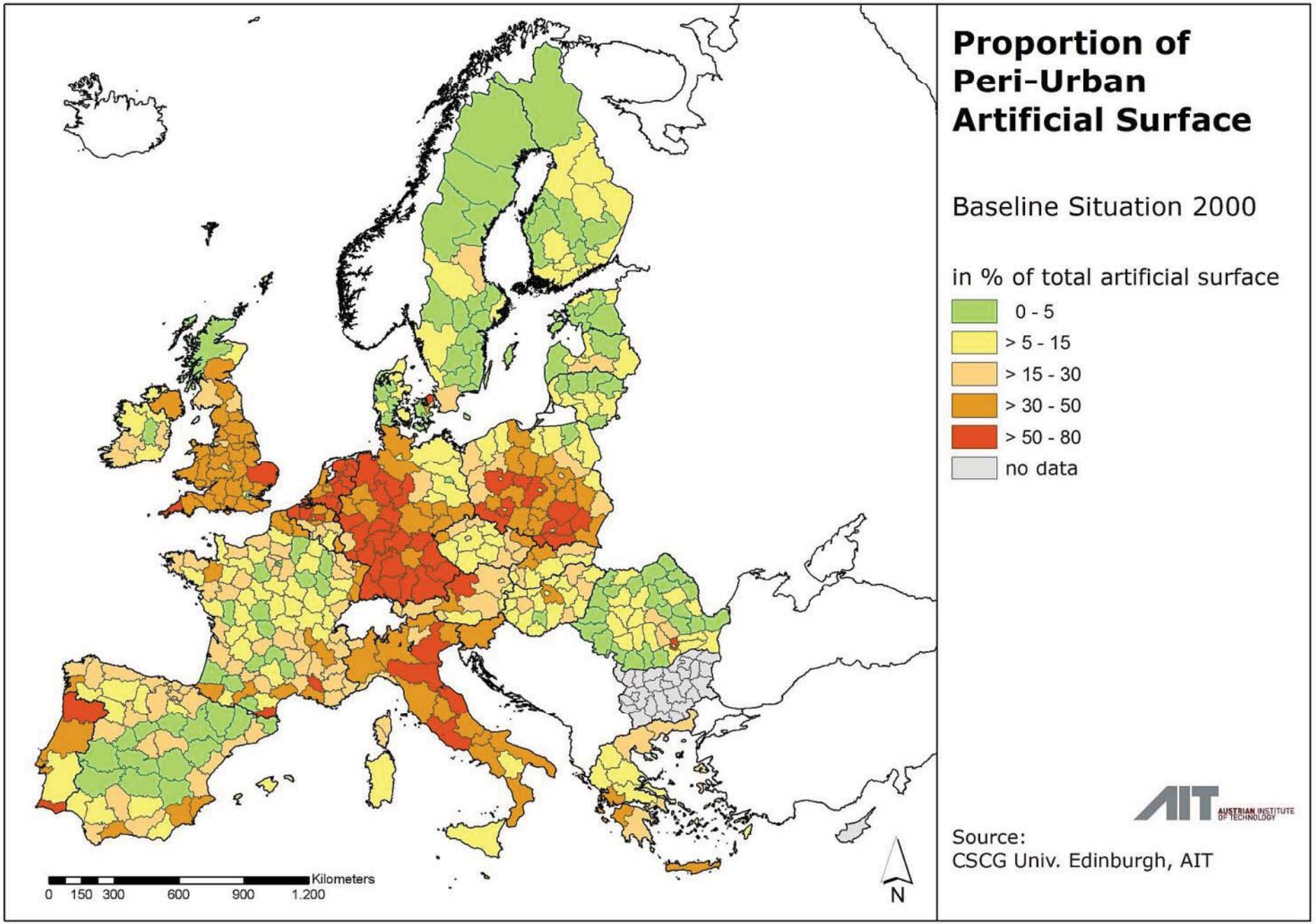

Proportion of Tertiary Education
Scenario A1 2025
Difference to Baseline 2001 in %
-6,7 - 0,0
> 0 - 2,5
> 2,5 - 5
> 5 - 10
> 10
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
AIT, EUROSTAT

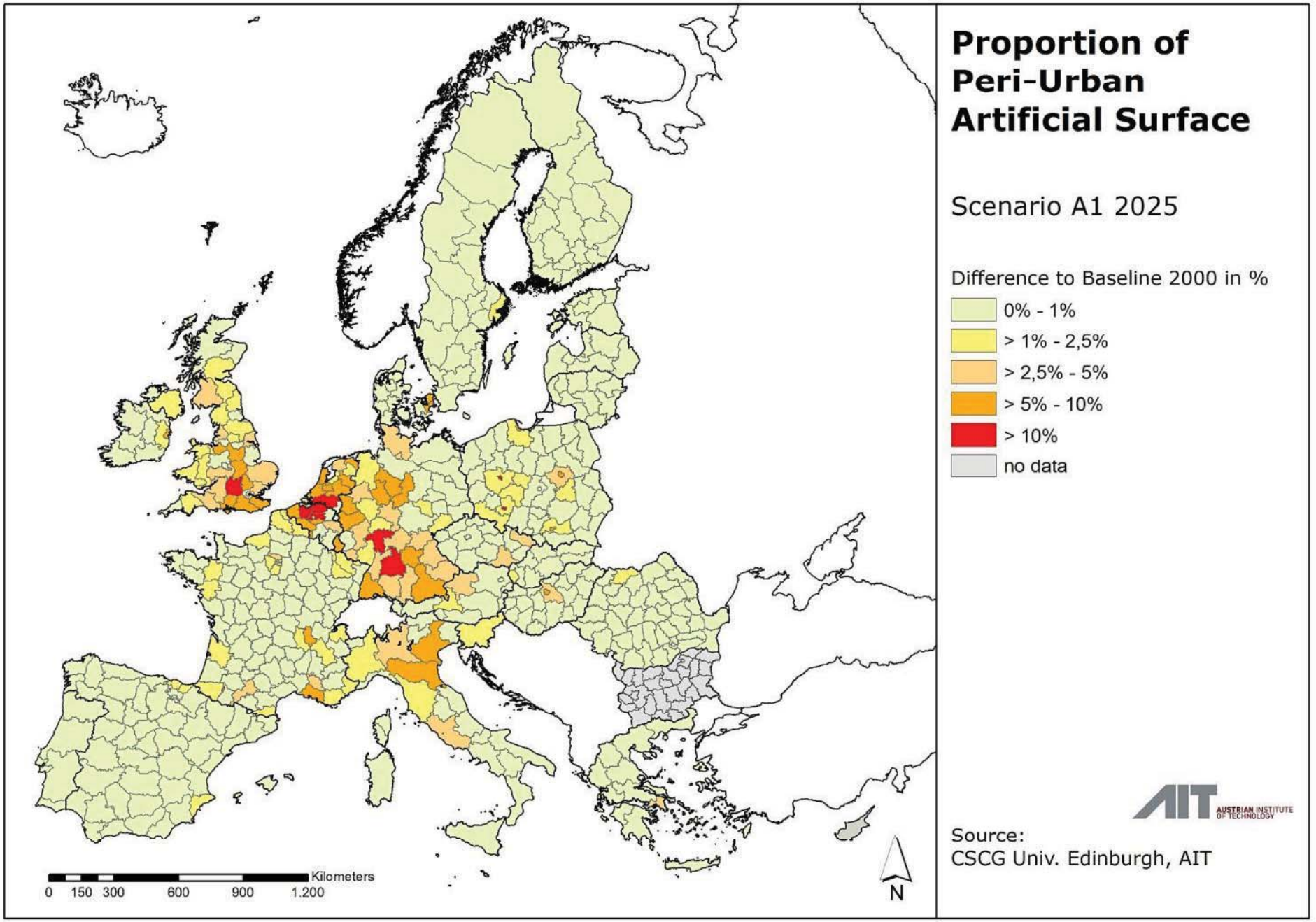

Proportion of Tertiary Education
Scenario A2 2025
Difference to Baseline 2001 in %
-6,7 - 0,0
> 0 - 2,5
> 2,5 - 5
> 5 - 10
> 10
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
AIT, EUROSTAT

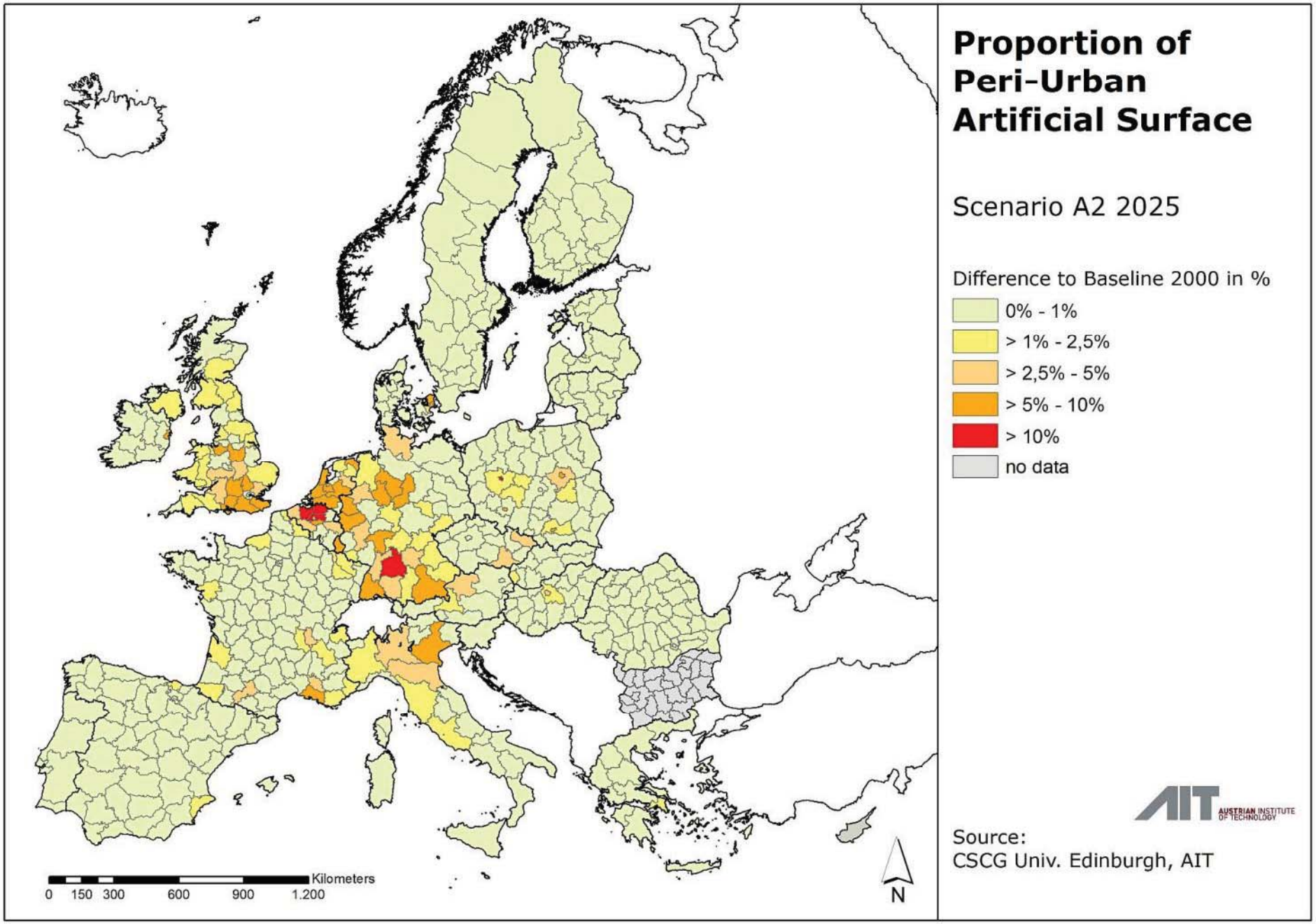

Proportion of Tertiary Education
Scenario B1 2025
Difference to Baseline 2001 in %
-6,7 - 0,0
> 0 - 2,5
> 2,5 - 5
> 5 - 10
> 10
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
AIT, EUROSTAT

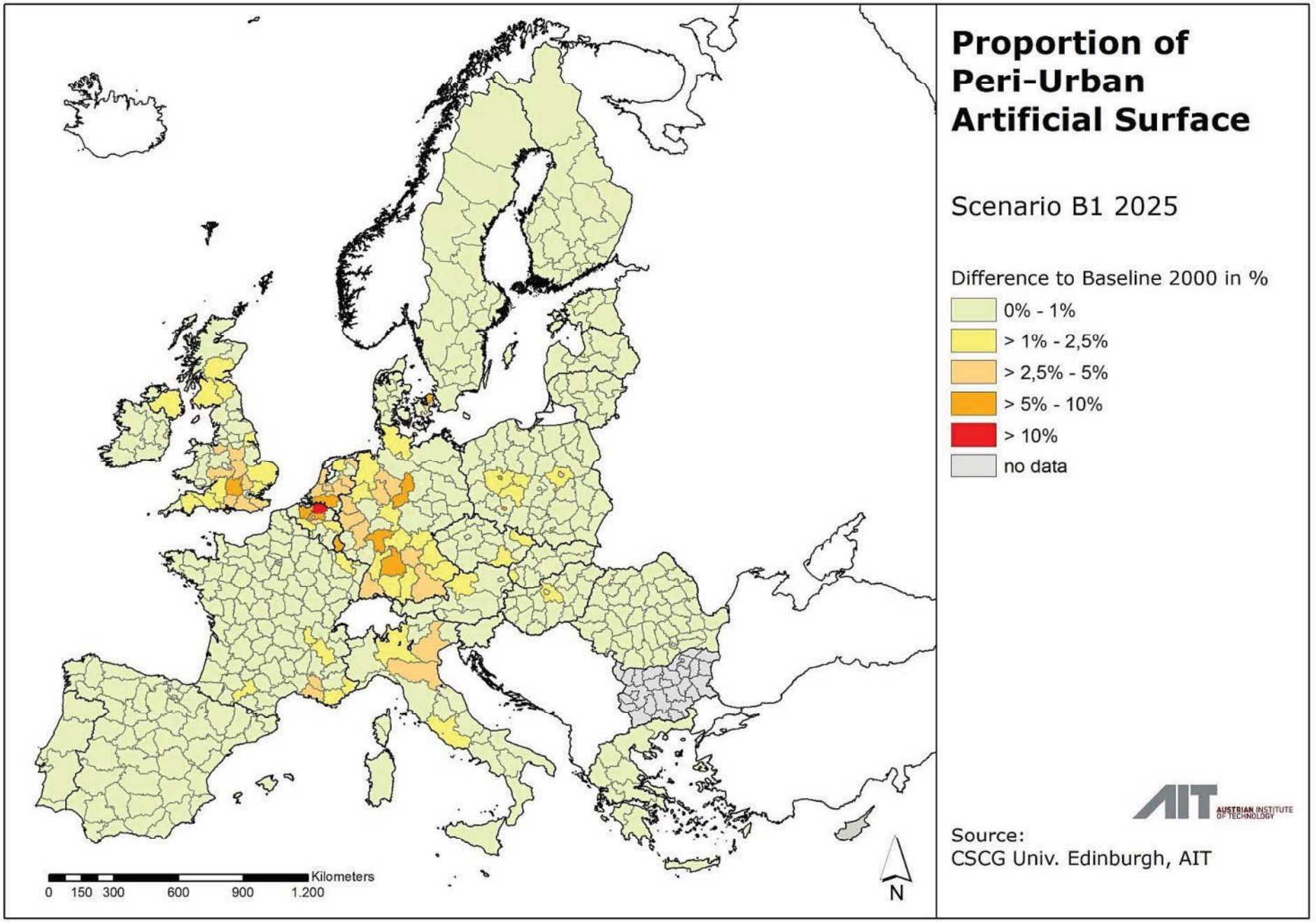

Proportion of Tertiary Education
Scenario B2 2025
Difference to Baseline 2001 in %
-6,7 - 0,0
> 0 - 2,5
> 2,5 - 5
> 5 - 10
> 10
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
AIT, EUROSTAT

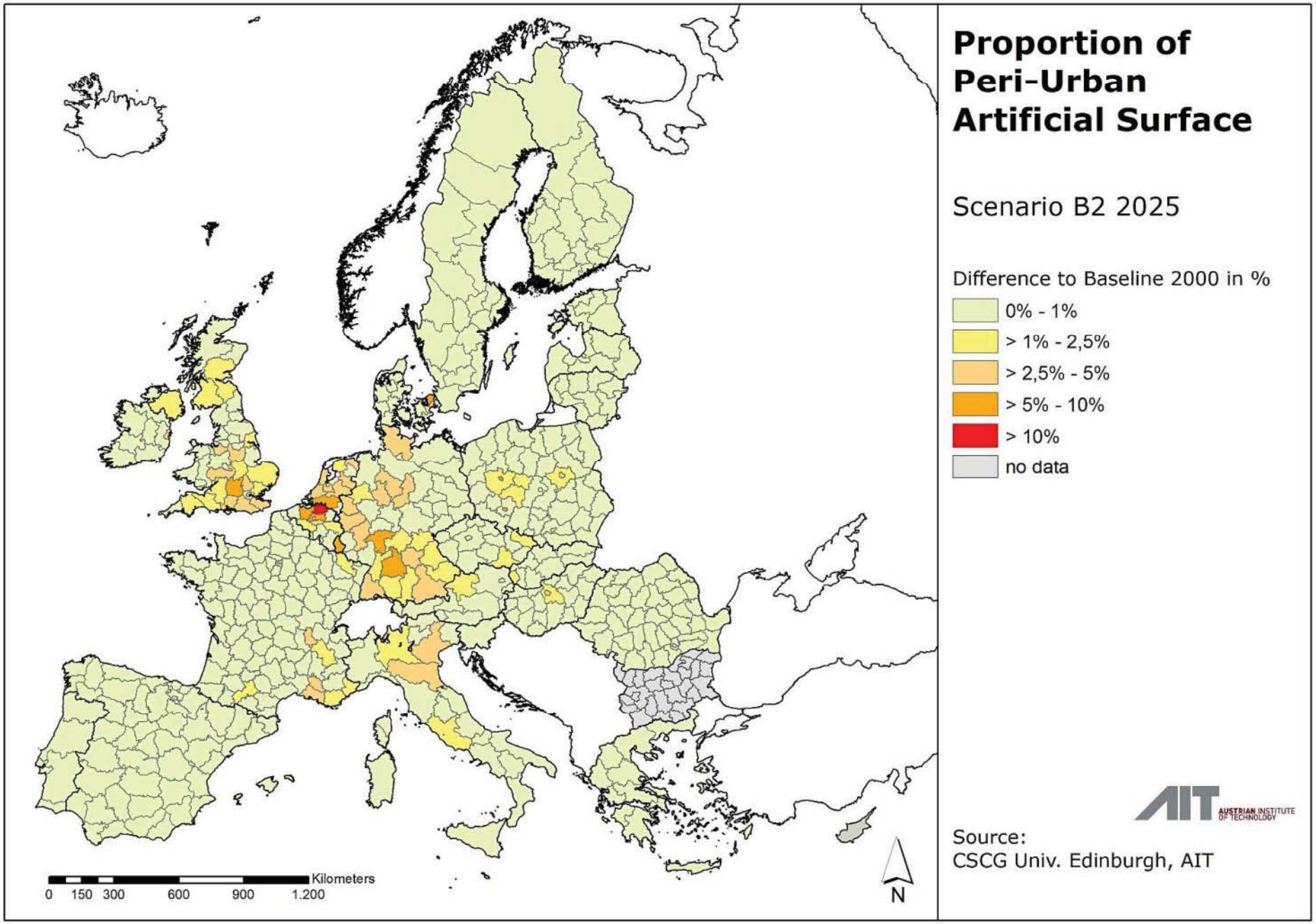

RUR
subregion
deliniation
Baseline Situation 2001
RUR deliniation
0 - unpopulated
1 - urban
2- peri-urban
3 - rural
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
AIT, EUROSTAT, JRC

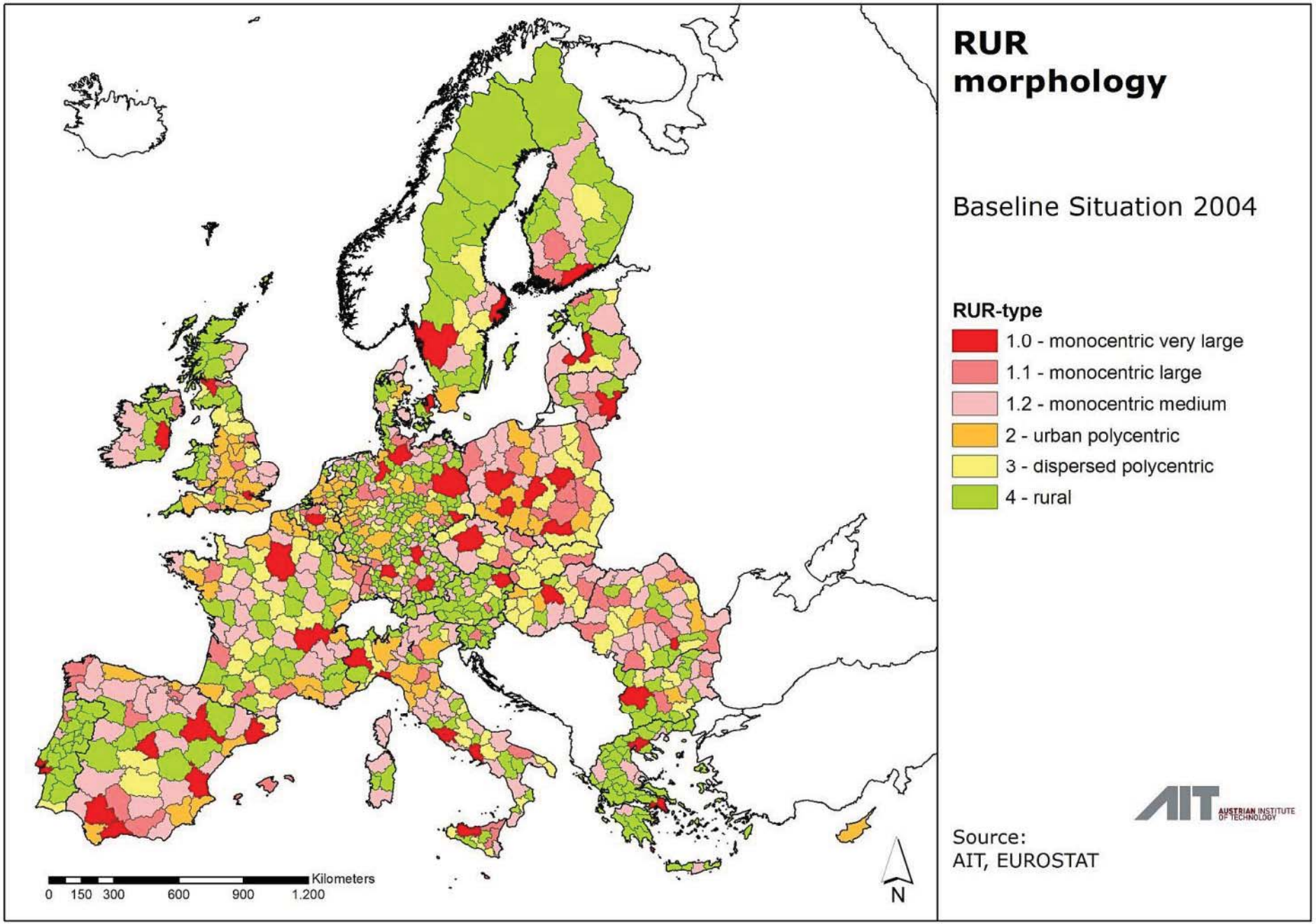

Proportion of Peri-Urban Artificial Surface
Baseline Situation 2000
in % of total artificial surface
0 - 5
> 5 - 15
> 15 - 30
> 30 - 50
> 50 - 80
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
CSCG Univ. Edinburgh, AIT


Proportion of Peri-Urban Artificial Surface
Scenario A1 2025
Difference to Baseline 2000 in %
0% - 1%
> 1% - 2,5%
> 2,5% - 5%
> 5% - 10%
> 10%
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
CSCG Univ. Edinburgh, AIT


Proportion of Peri-Urban Artificial Surface
Scenario A2 2025
Difference to Baseline 2000 in %
0% - 1%
> 1% - 2,5%
> 2,5% - 5%
> 5% - 10%
> 10%
no data
Kilometers
0 150 300 600 900 1.200
N
AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
CSCG Univ. Edinburgh, AIT


Proportion of Peri-Urban Artificial Surface
Scenario B1 2025
Difference to Baseline 2000 in %
0% - 1%
> 1% - 2,5%
> 2,5% - 5%
> 5% - 10%
> 10%
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
CSCG Univ. Edinburgh, AIT


Proportion of Peri-Urban Artificial Surface
Scenario B2 2025
Difference to Baseline 2000 in %
0% - 1%
> 1% - 2,5%
> 2,5% - 5%
> 5% - 10%
> 10%
no data
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
CSCG Univ. Edinburgh, AIT


RUR
morphology
Baseline Situation 2004
RUR-type
1.0 - monocentric very large
1.1 - monocentric large
1.2 - monocentric medium
2 - urban polycentric
3 - dispersed polycentric
4 - rural
Kilometers
0 150 300 600 900 1.200
N
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
Source:
AIT, EUROSTAT