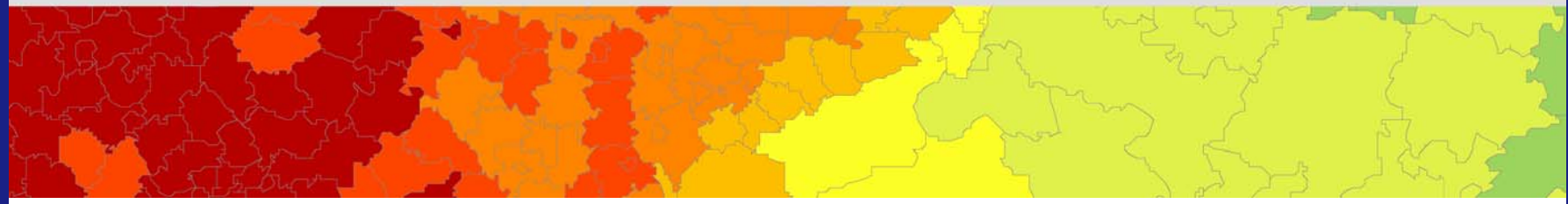


Trends Linked to Potential Accessibility

Klaus Spiekermann
Spiekermann & Wegener
Urban and Regional Research (S&W)

Open Workshop
Use of ESPON by European Institutions and Commission Services
5 May 2009, Brussels, Belgium

EUROPEAN UNION
Part-financed by the European Regional Development Fund
INVESTING IN YOUR FUTURE

Why accessibility?

- "Good accessibility of European regions improve their ***competitive position*** but also the competitiveness of Europe as a whole."

  (European Spatial Development Perspective, 1999)

- "Mobility and accessibility are ***key prerequisites for economic development*** of all regions of the EU."

  (Territorial Agenda of the European Union, 2007)

What is accessibility?

- main ***"product"*** of the transport system
- determines the ***locational advantage*** of an area relative to all areas
- measures the ***benefits*** households and firms enjoy from the existence and use of transport infrastructure

-> accessibility indicators are transformations of transport system characteristics (combined with spatial distributions of opportunities) into ***territorial indicators***

Dimensions of accessibility

- origins
- destinations
- impedance
- constraints
- barriers
- type of transport
- modes
- spatial scale
- equity
- dynamic

Basic types of accessibility indicators

Accessibility is a construct of two functions

$$A_i = \sum_j g(W_j)\, f(c_{ij})$$

activity function

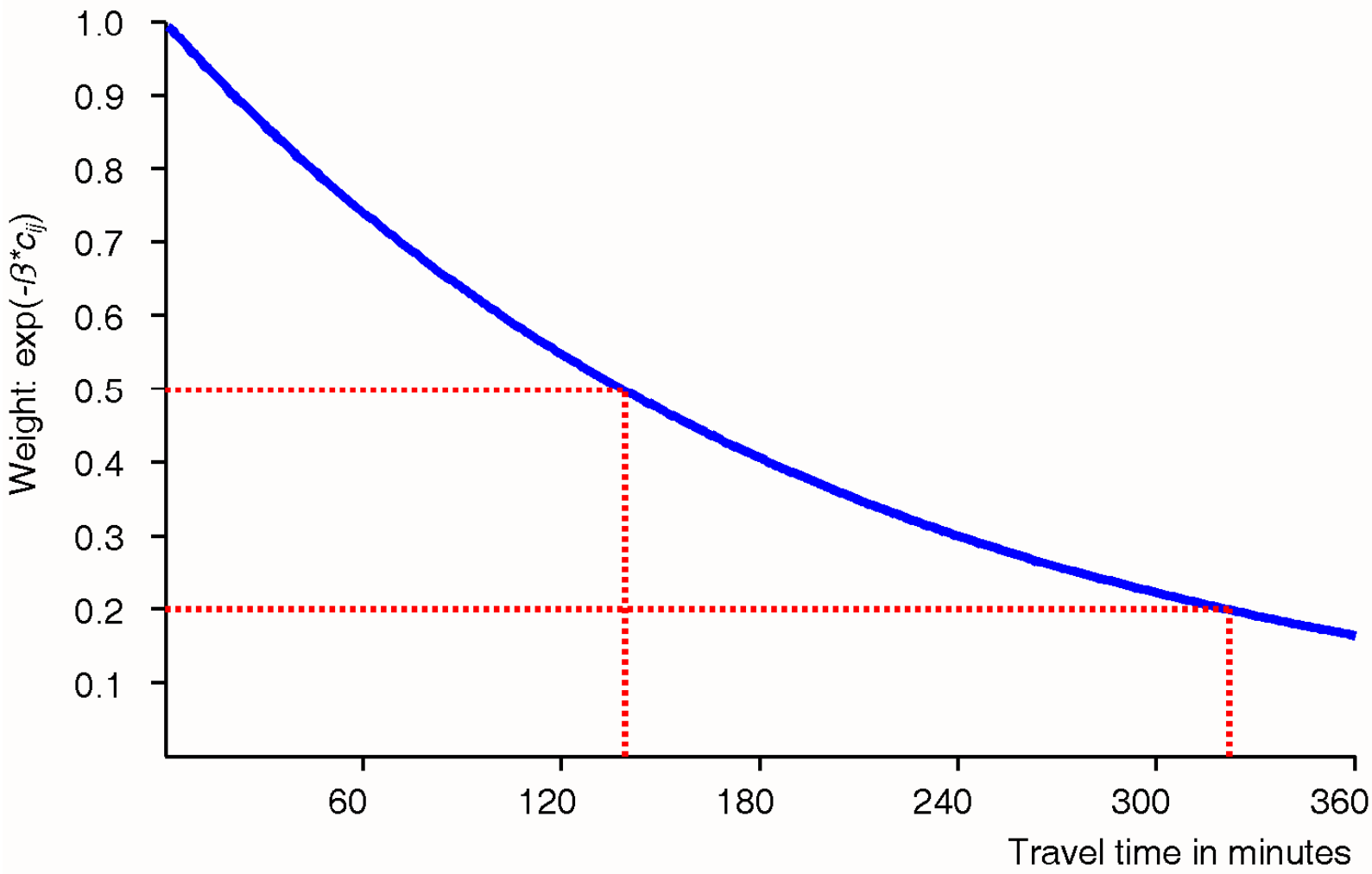
impedance function

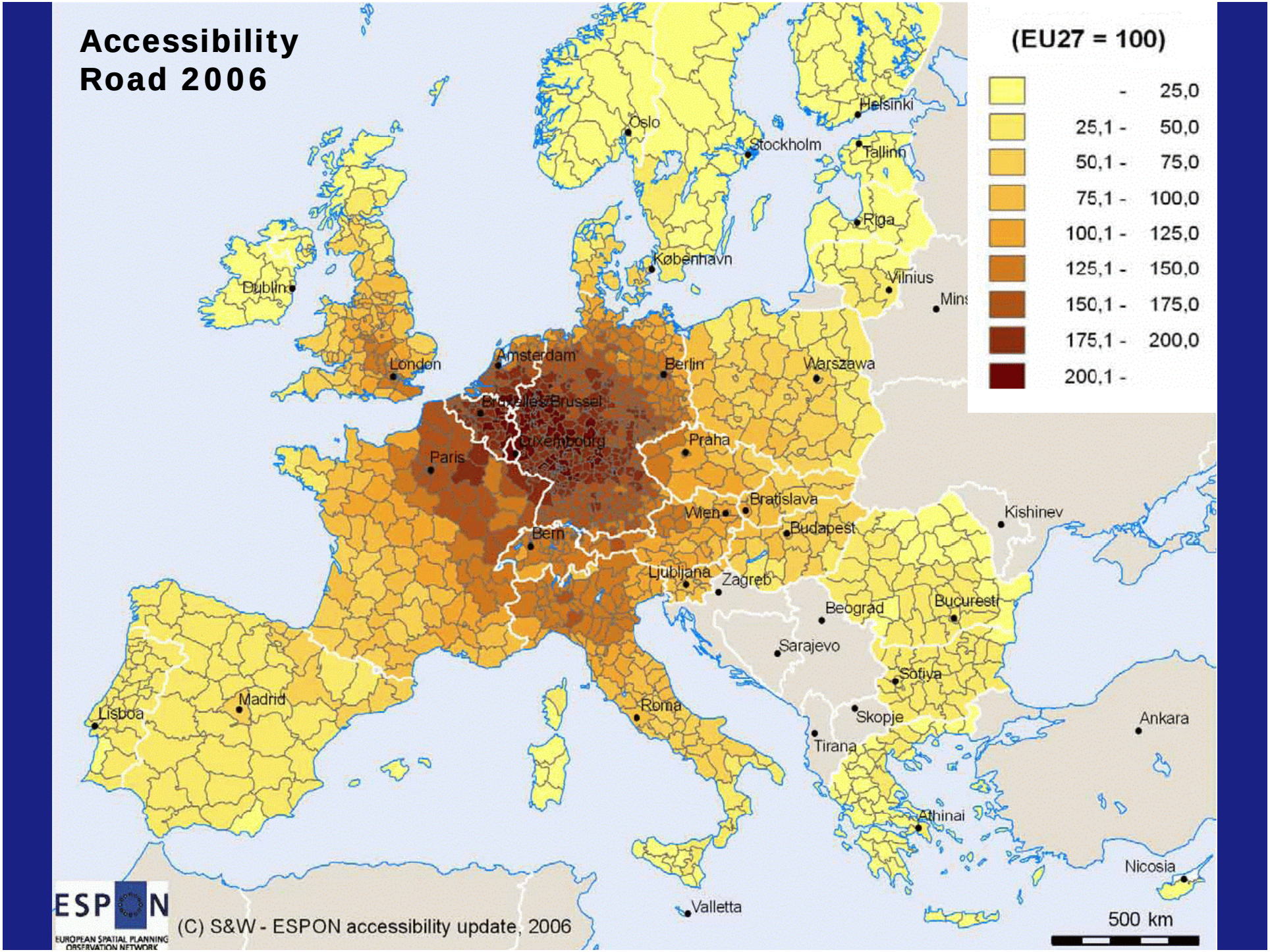
Travel cost: Travel cost to a predefined set of activities

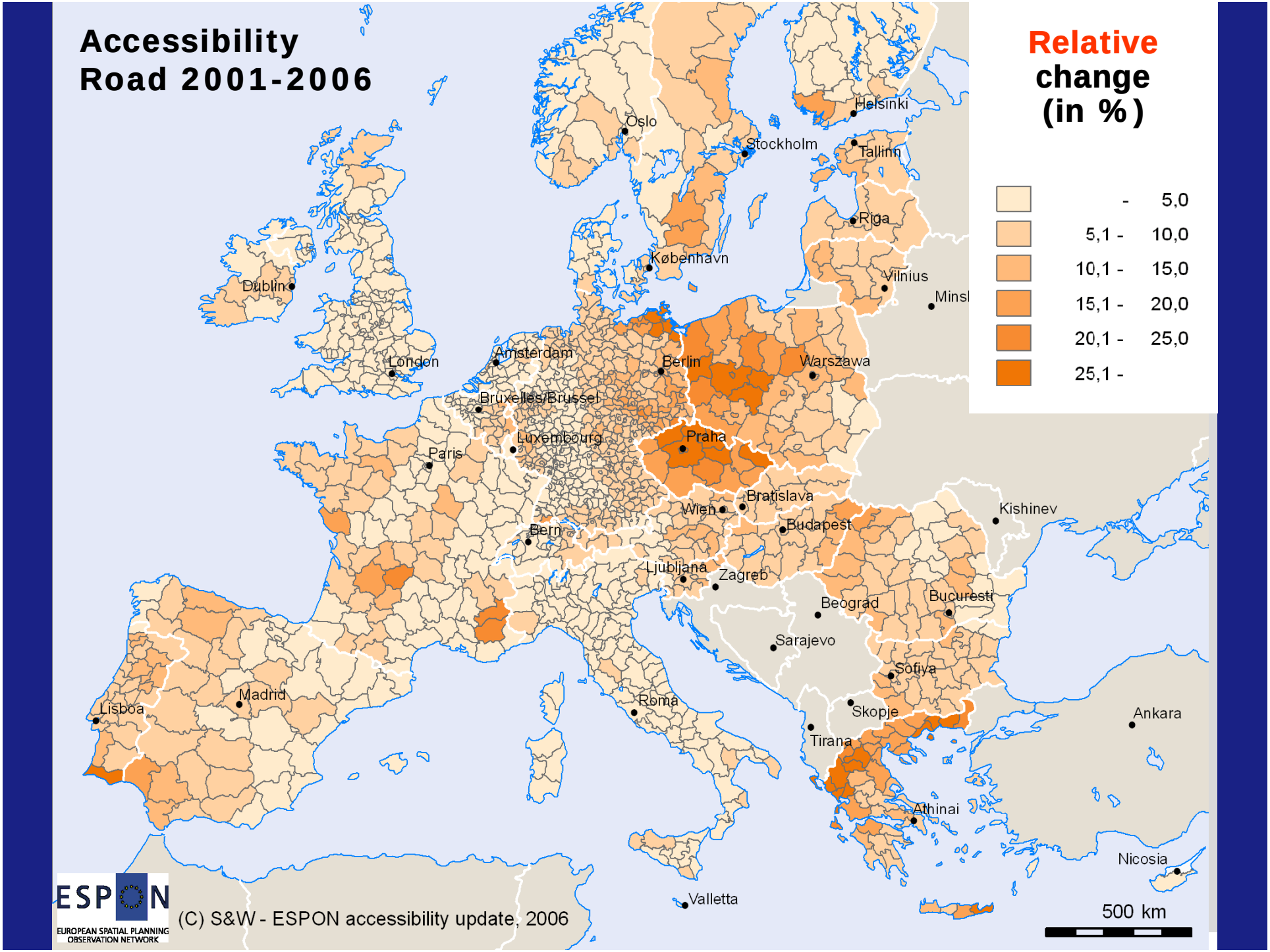
Cummulated opportunities: Activities in a given travel cost

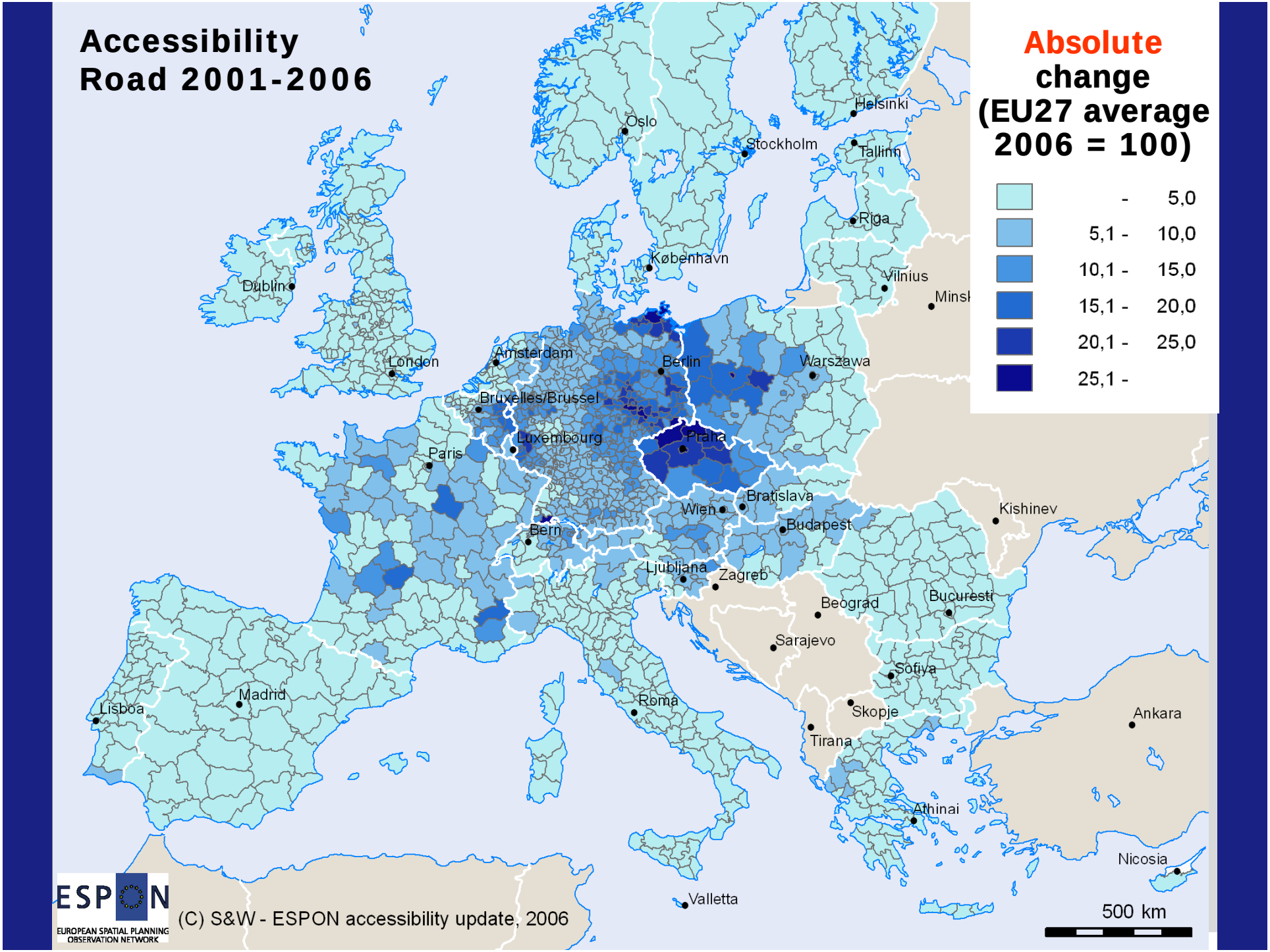
Potential: Activities weighted by a function of travel cost

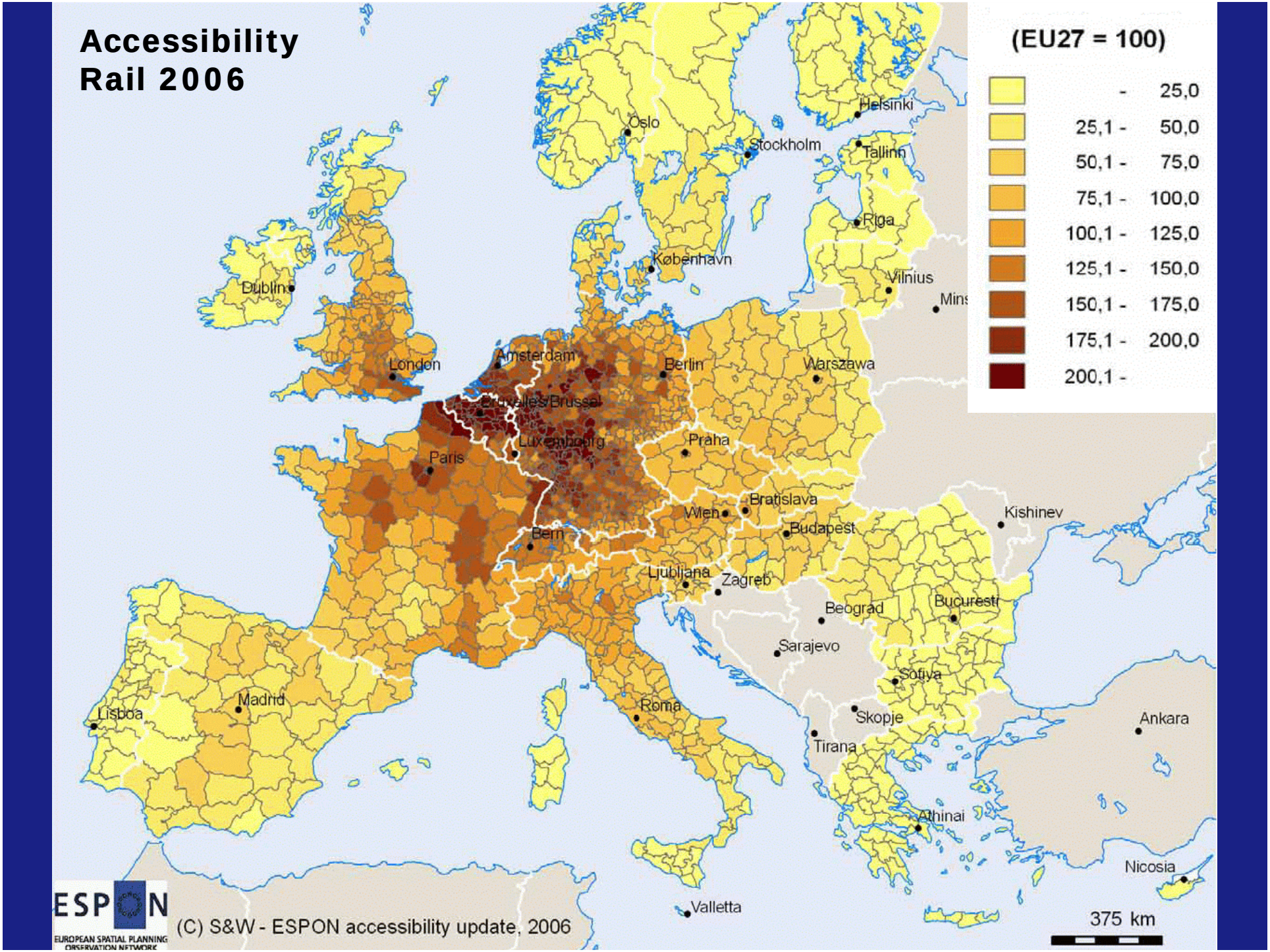
Impedance function

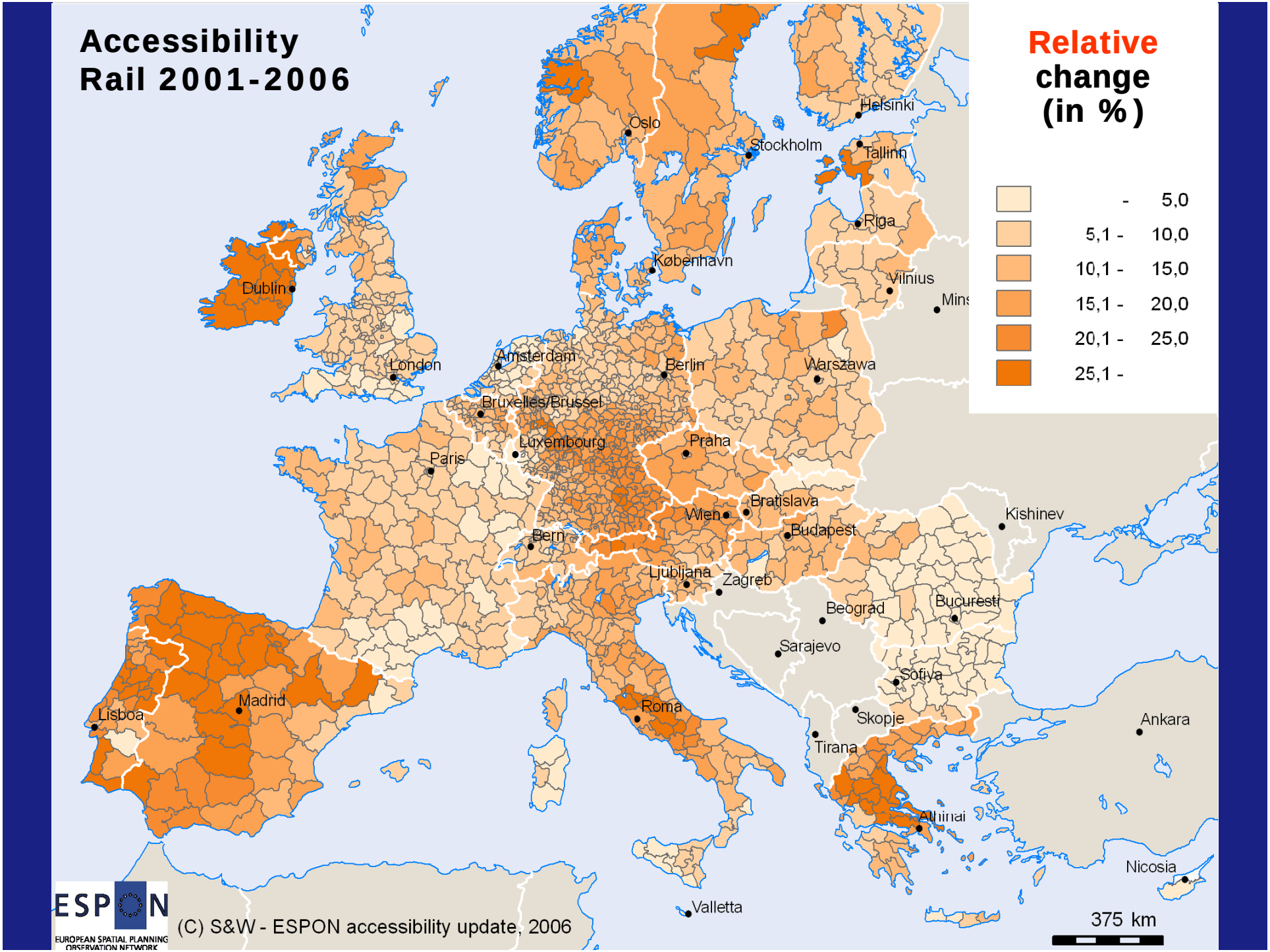



Accessibility
Road 2006
(EU27 = 100)
- 25,0
25,1 - 50,0
50,1 - 75,0
75,1 - 100,0
100,1 - 125,0
125,1 - 150,0
150,1 - 175,0
175,1 - 200,0
200,1 -
Helsinki
Oslo
Stockholm
Tallinn
Riga
København
Vilnius
Dublin
London
Amsterdam
Berlin
Warszawa
Bruxelles/Brussel
Luxemburg
Praha
Paris
Bratislava
Wien
Kishinev
Budapest
Bern
Ljubljana
Zagreb
Beograd
Bucuresti
Sarajevo
Sofiya
Madrid
Lisboa
Roma
Skopje
Ankara
Tirana
Athinai
Nicosia
Valletta
ESPON
EUROPEAN SPATIAL PLANNING OBSERVATION NETWORK
(C) S&W - ESPON accessibility update, 2006
500 km


Accessibility
Road 2001-2006
Relative
change
(in %)
- 5,0
5,1 - 10,0
10,1 - 15,0
15,1 - 20,0
20,1 - 25,0
25,1 -
Helsinki
Oslo
Stockholm
Tallinn
Riga
København
Vilnius
Dublin
London
Amsterdam
Berlin
Warszawa
Bruxelles/Brussel
Luxembourg
Praha
Paris
Bratislava
Wien
Kishinev
Budapest
Bern
Ljubljana
Zagreb
Beograd
București
Sarajevo
Sofiya
Madrid
Lisboa
Roma
Skopje
Ankara
Tirana
Athinai
Nicosia
Valletta
ESPON
EUROPEAN SPATIAL PLANNING OBSERVATION NETWORK
(C) S&W - ESPON accessibility update, 2006
500 km


Accessibility
Road 2001-2006
Absolute
change
(EU27 average
2006 = 100)
- 5,0
5,1 - 10,0
10,1 - 15,0
15,1 - 20,0
20,1 - 25,0
25,1 -
Helsinki
Oslo
Stockholm
Tallinn
Riga
København
Vilnius
Dublin
London
Amsterdam
Berlin
Warszawa
Bruxelles/Brussel
Luxembourg
Praha
Paris
Bratislava
Wien
Kishinev
Budapest
Bern
Ljubljana
Zagreb
Beograd
Bucuresti
Sarajevo
Sofiya
Madrid
Lisboa
Roma
Skopje
Ankara
Tirana
Athinai
Nicosia
Valletta
ESPON
EUROPEAN SPATIAL PLANNING OBSERVATION NETWORK
(C) S&W - ESPON accessibility update, 2006
500 km


Accessibility
Rail 2006
(EU27 = 100)
- 25,0
25,1 - 50,0
50,1 - 75,0
75,1 - 100,0
100,1 - 125,0
125,1 - 150,0
150,1 - 175,0
175,1 - 200,0
200,1 -
Helsinki
Oslo
Stockholm
Tallinn
Riga
København
Vilnius
Dublin
London
Amsterdam
Berlin
Warszawa
Praha
Paris
Luxembourg
Bratislava
Wien
Budapest
Kishinev
Bern
Ljubljana
Zagreb
Beograd
Bucuresti
Sarajevo
Sofiya
Madrid
Lisboa
Roma
Skopje
Tirana
Ankara
Athinai
Nicosia
Valletta
ESPON
EUROPEAN SPATIAL PLANNING OBSERVATION NETWORK
(C) S&W - ESPON accessibility update, 2006
375 km


Accessibility
Rail 2001-2006
Relative
change
(in %)
- 5,0
5,1 - 10,0
10,1 - 15,0
15,1 - 20,0
20,1 - 25,0
25,1 -
Helsinki
Oslo
Stockholm
Tallinn
Riga
København
Vilnius
Dublin
London
Amsterdam
Berlin
Warszawa
Bruxelles/Brussel
Luxembourg
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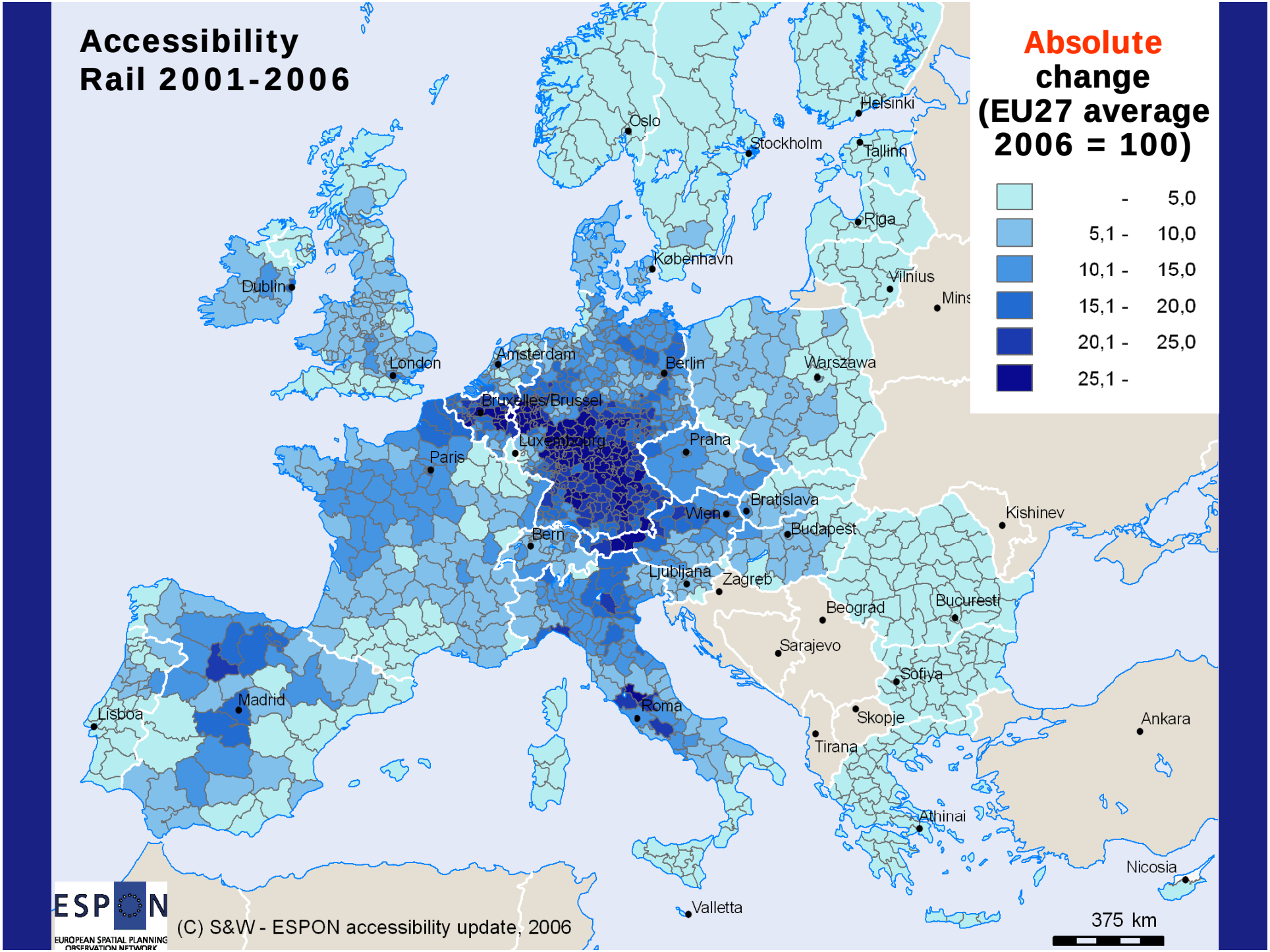
Beograd
Bucuresti
Sarajevo
Sofiya
Madrid
Lisboa
Roma
Skopje
Ankara
Tirana
Nicosia
Valletta
375 km
ESPON
EUROPEAN SPATIAL PLANNING OBSERVATION NETWORK
(C) S&W - ESPON accessibility update, 2006


Accessibility
Rail 2001-2006
Absolute
change
(EU27 average
2006 = 100)
- 5,0
5,1 - 10,0
10,1 - 15,0
15,1 - 20,0
20,1 - 25,0
25,1 -
Helsinki
Oslo
Stockholm
Tallinn
Riga
København
Vilnius
Dublin
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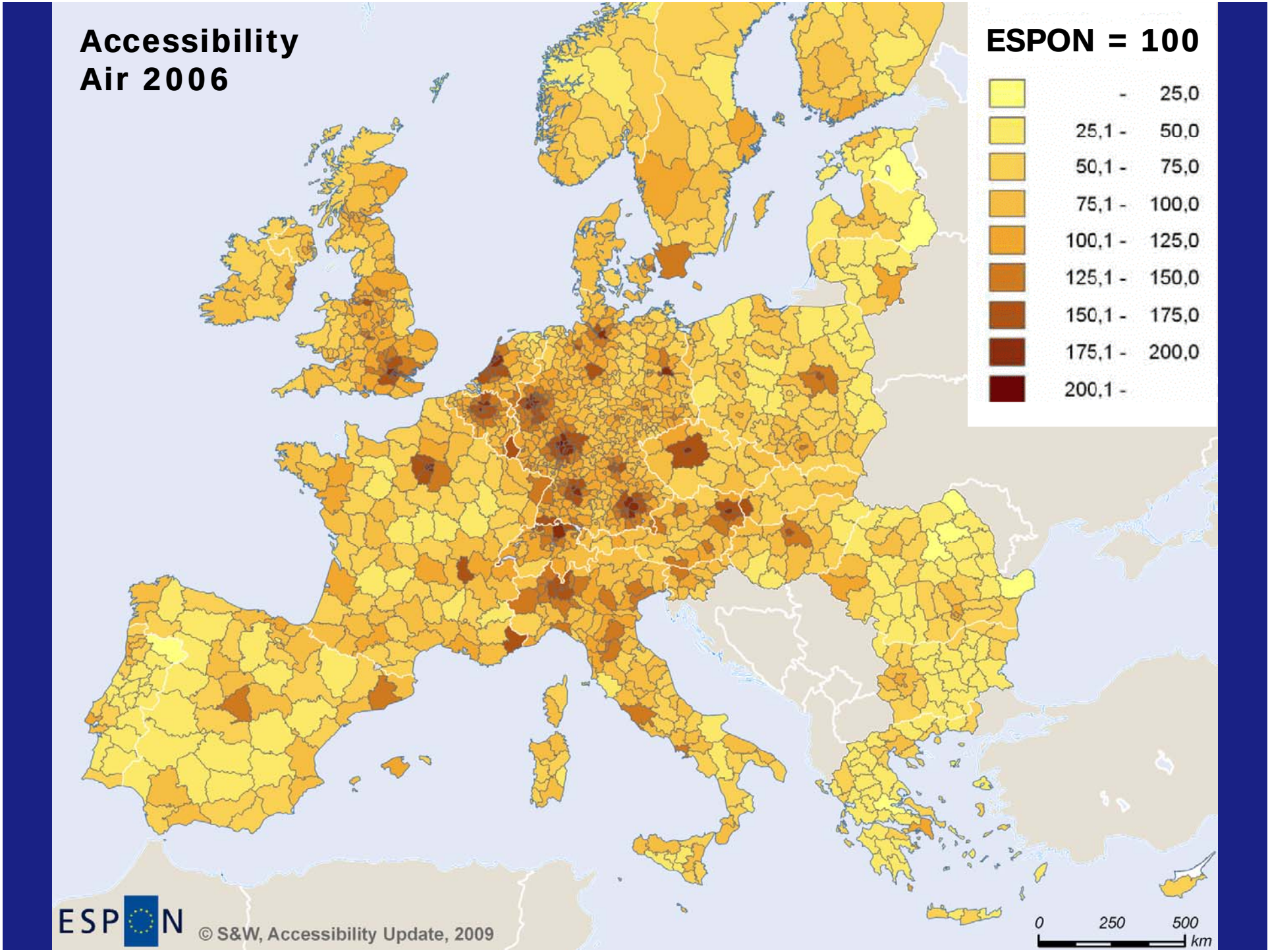
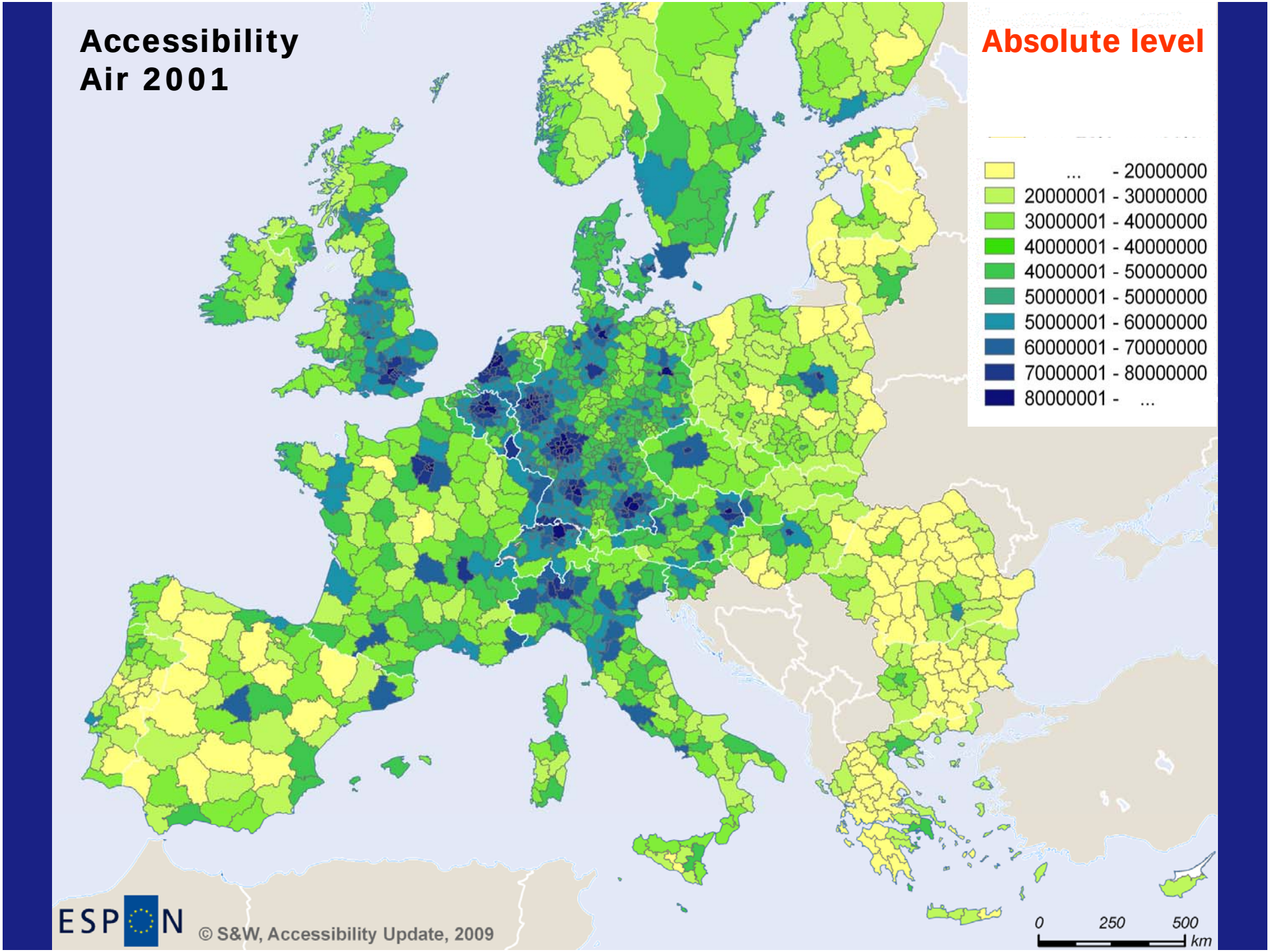
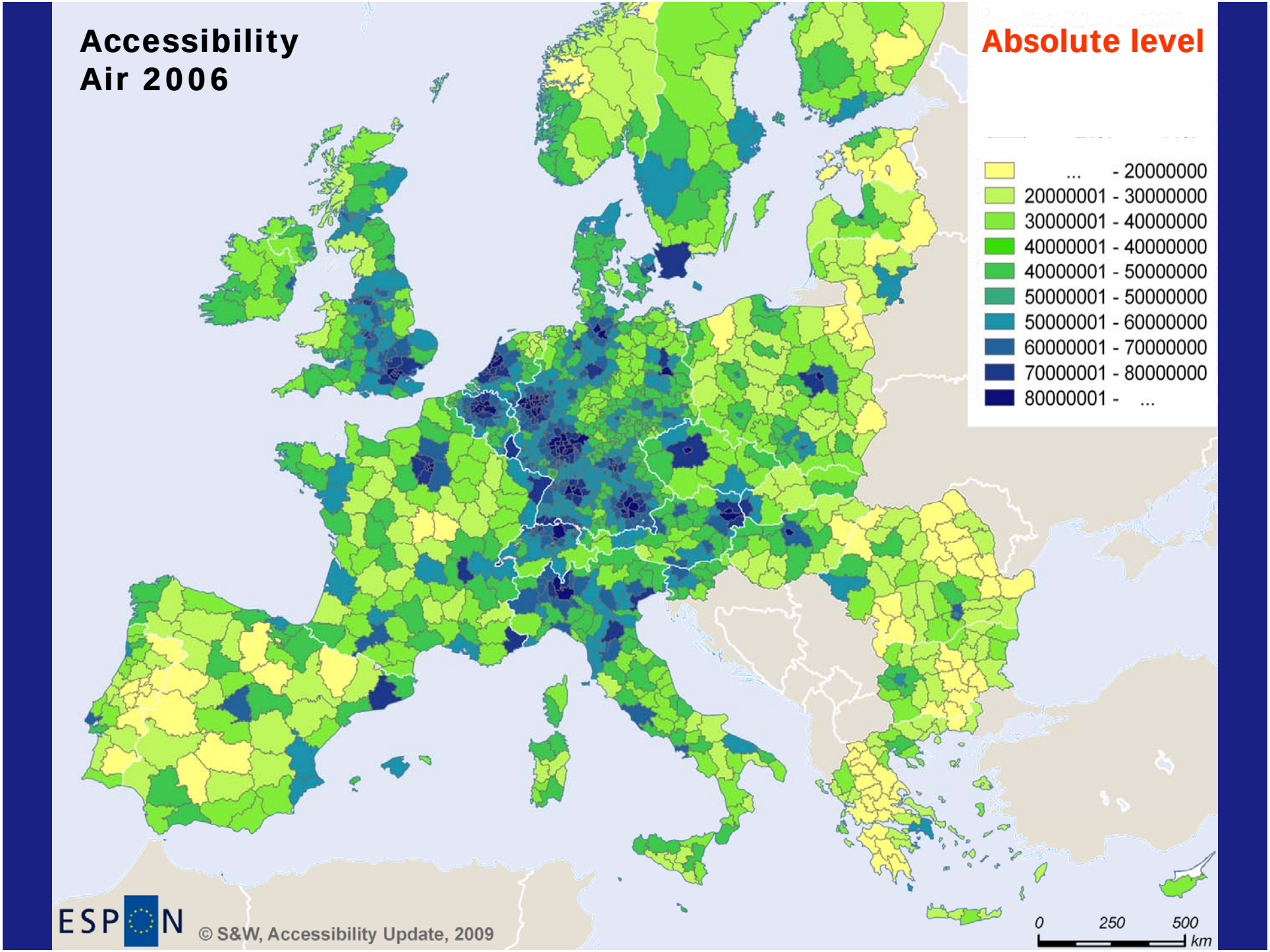
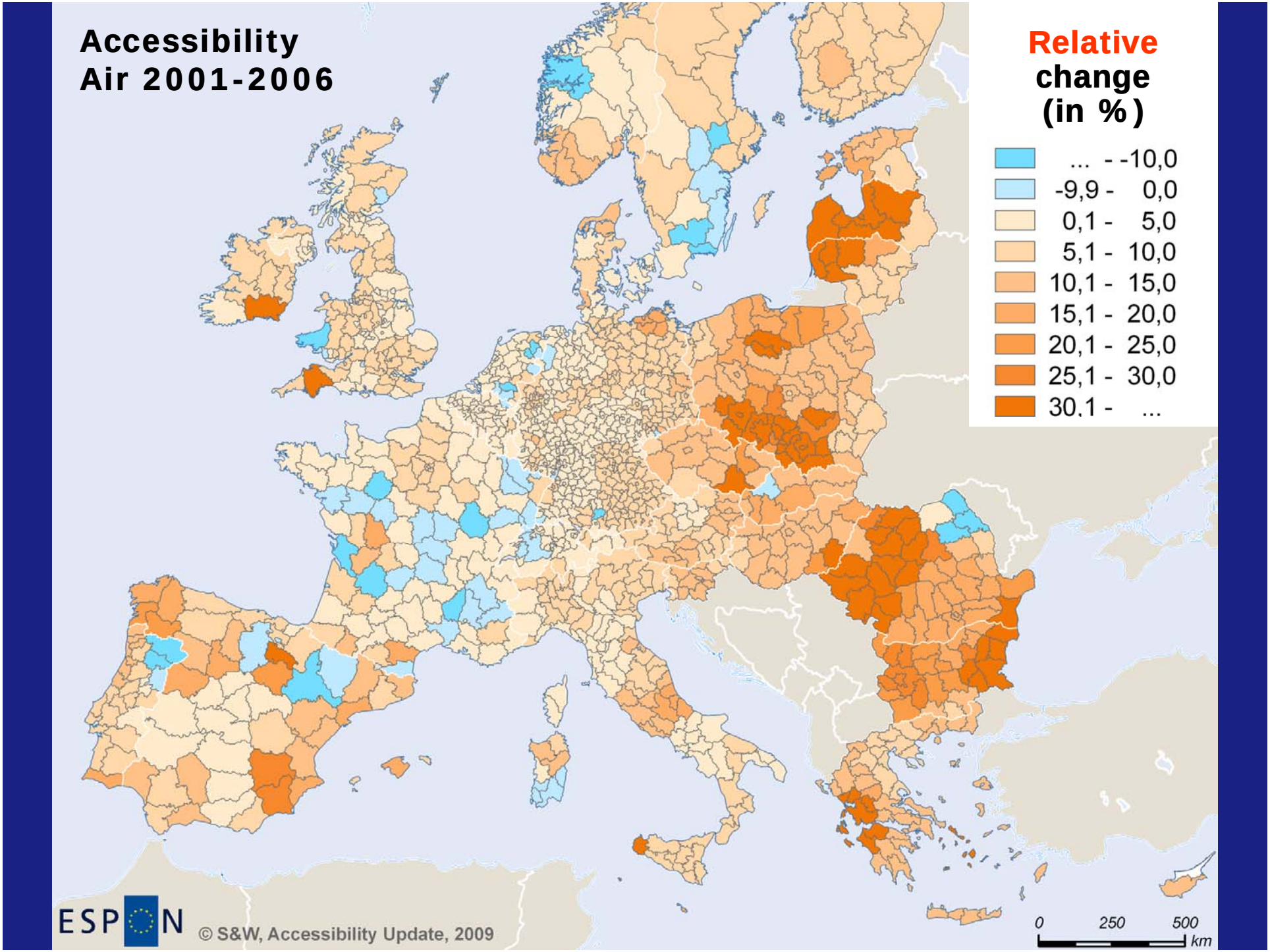
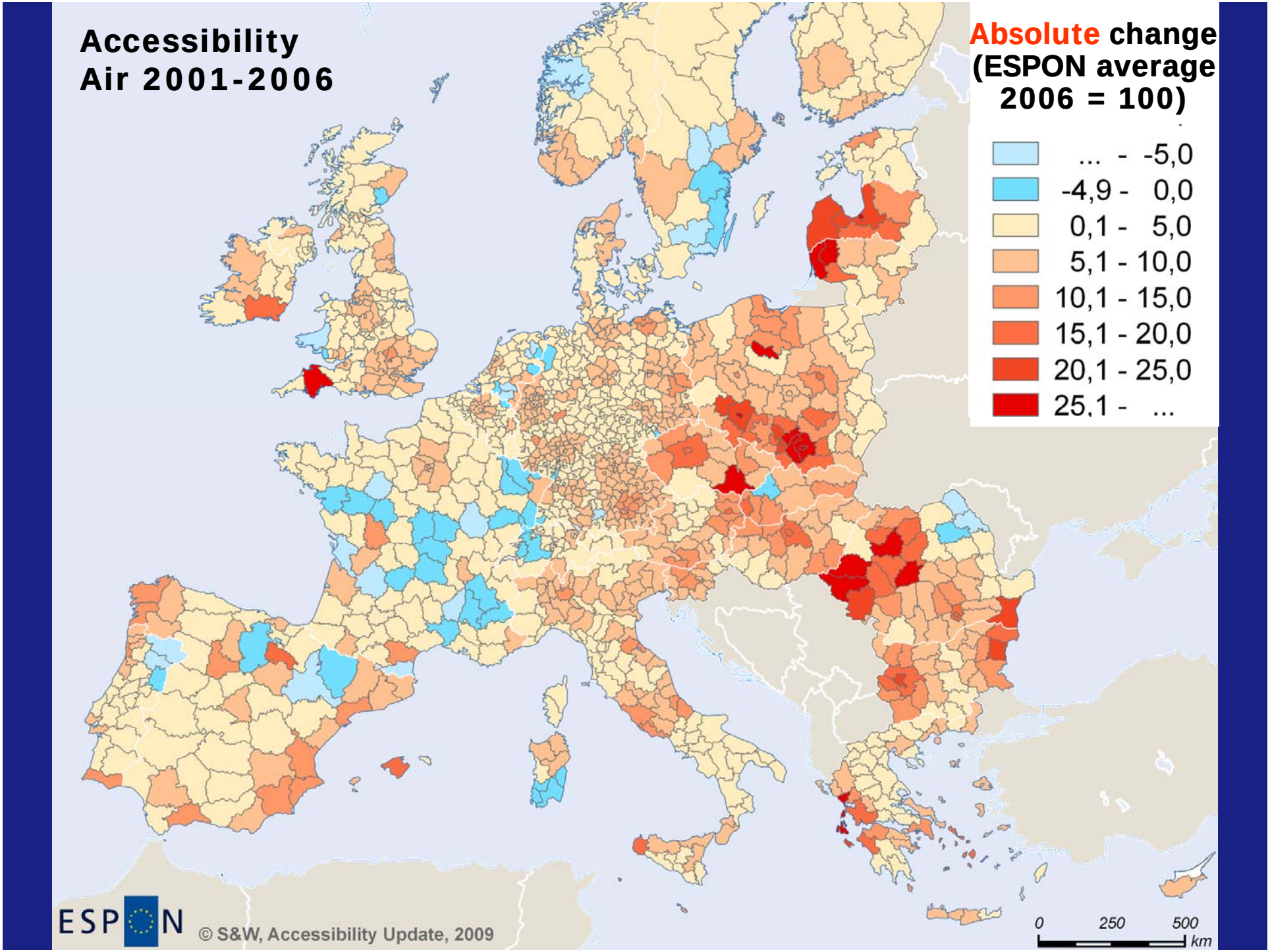
(C) S&W - ESPON accessibility update, 2006
375 km

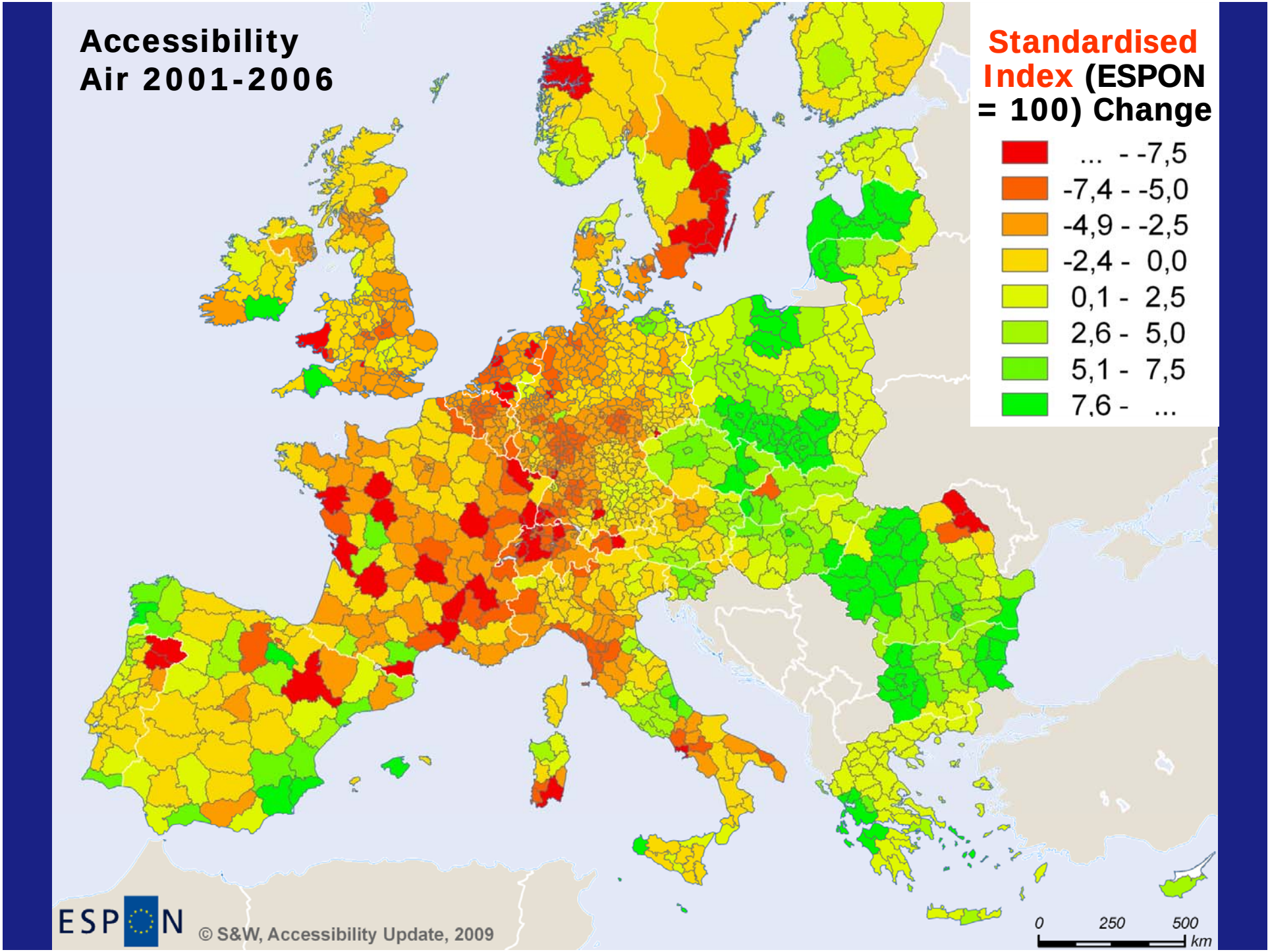

Accessibility
Air 2006
ESPON = 100
- 25,0
25,1 - 50,0
50,1 - 75,0
75,1 - 100,0
100,1 - 125,0
125,1 - 150,0
150,1 - 175,0
175,1 - 200,0
200,1 -
ESPON
© S&W, Accessibility Update, 2009
0 250 500
km


Accessibility
Air 2001
Absolute level
... - 20000000
20000001 - 30000000
30000001 - 40000000
40000001 - 40000000
40000001 - 50000000
50000001 - 50000000
50000001 - 60000000
60000001 - 70000000
70000001 - 80000000
80000001 - ...
ESPON
© S&W, Accessibility Update, 2009
0
250
500
km


Accessibility
Air 2006
Absolute level
... - 20000000
20000001 - 30000000
30000001 - 40000000
40000001 - 40000000
40000001 - 50000000
50000001 - 50000000
50000001 - 60000000
60000001 - 70000000
70000001 - 80000000
80000001 - ...
ESPON
© S&W, Accessibility Update, 2009
0
250
500
km


Accessibility
Air 2001-2006
Relative
change
(in %)
... - -10,0
-9,9 - 0,0
0,1 - 5,0
5,1 - 10,0
10,1 - 15,0
15,1 - 20,0
20,1 - 25,0
25,1 - 30,0
30.1 - ...
ESPON
© S&W, Accessibility Update, 2009
0
250
500
km


Accessibility
Air 2001-2006
Absolute change
(ESPON average
2006 = 100)
... - -5,0
-4,9 - 0,0
0,1 - 5,0
5,1 - 10,0
10,1 - 15,0
15,1 - 20,0
20,1 - 25,0
25.1 - ...
ESPON
© S&W, Accessibility Update, 2009
0
250
500
km


Accessibility
Air 2001-2006
Standardised Index (ESPON = 100) Change
... - -7,5
-7,4 - -5,0
-4,9 - -2,5
-2,4 - 0,0
0,1 - 2,5
2,6 - 5,0
5,1 - 7,5
7,6 - ...
ESPON
© S&W, Accessibility Update, 2009
0
250
500
km

Conclusions (1)

- Different transport modes have ***very different spatial patterns*** of accessibility in Europe.
  -> ranging from traditional core-periphery pattern to new forms of core-periphery pattern
- ***Spatial disparities*** of accessibility continue to exist for all modes of transport
  -> transport infrastructure and service development was not able to change the overall European pattern
  -> road and rail investments of the past was in absolute terms in favour of core regions

Conclusions (2)

- However, transport infrastructure projects and improved transport services can have ***substantial impacts*** on potential accessibility of ***individual regions***.

  -> In particular, new ***high-speed rail*** and ***flight services*** are able to ***reshape*** the European continent in terms of accessibility by bringing high accessibility to regions outside the European core

- Process of ***EU enlargement*** had clear impact on accessibility in the new member states***:***

  -> ***road*** infrastructure development and reduced border waiting times

  -> improved ***flight services***

Conclusions (3)

- Accessibility by air is ***most dynamic,*** however, also in a negative manner.
  -> Air carrier ***react within relatively short time*** on changing market conditions.
  -> In terms of accessibility, only the large international airports seem to have a ***sustainable position***.
  -> ***Regional strategies*** based on the development of regional airports to improve accessibility ***might be risky*** as they are dependent on one or a few air carriers that are following different objectives.

Further Information

- www.espon.eu
  - Project 1.2.1 *Transport Trends, Services and Networks*
  - ESPON *Accessibility Update Studies*
- www.spiekermann-wegener.de
- ks@spiekermann-wegener.de