

**Simple vs. complex**

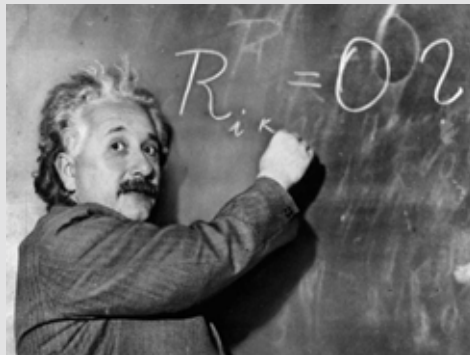
**How to understand Europe –**

**Wie ist Europa zu verstehen?**

*Christian Muschwitz & Thomas Braun*  
*(ECP Luxembourg)*

- 1. Simple? – Too simple!**
- 2. Simple vs. Complex**
- 3. The ESPON way : Doing both –a compromise!**

## 1. Simple? – Too simple!



## Simple? - Too Simple!

- Usually all of us are unable to cope with too much details at one time.
- This often leads to the demand for clear and simple messages.
- Easy to understand and easy to communicate.
- Especially when it comes to the spatial world, we would like to have instruments that reduce the complexity of reality to the minimum!

- Aim of all ESPON projects:

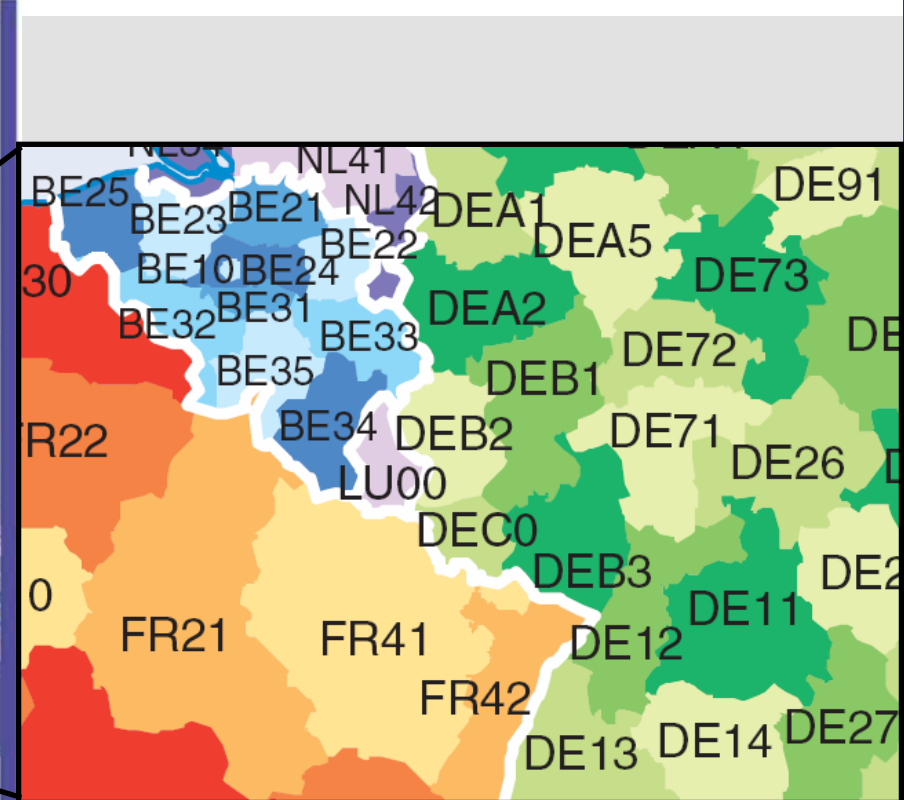
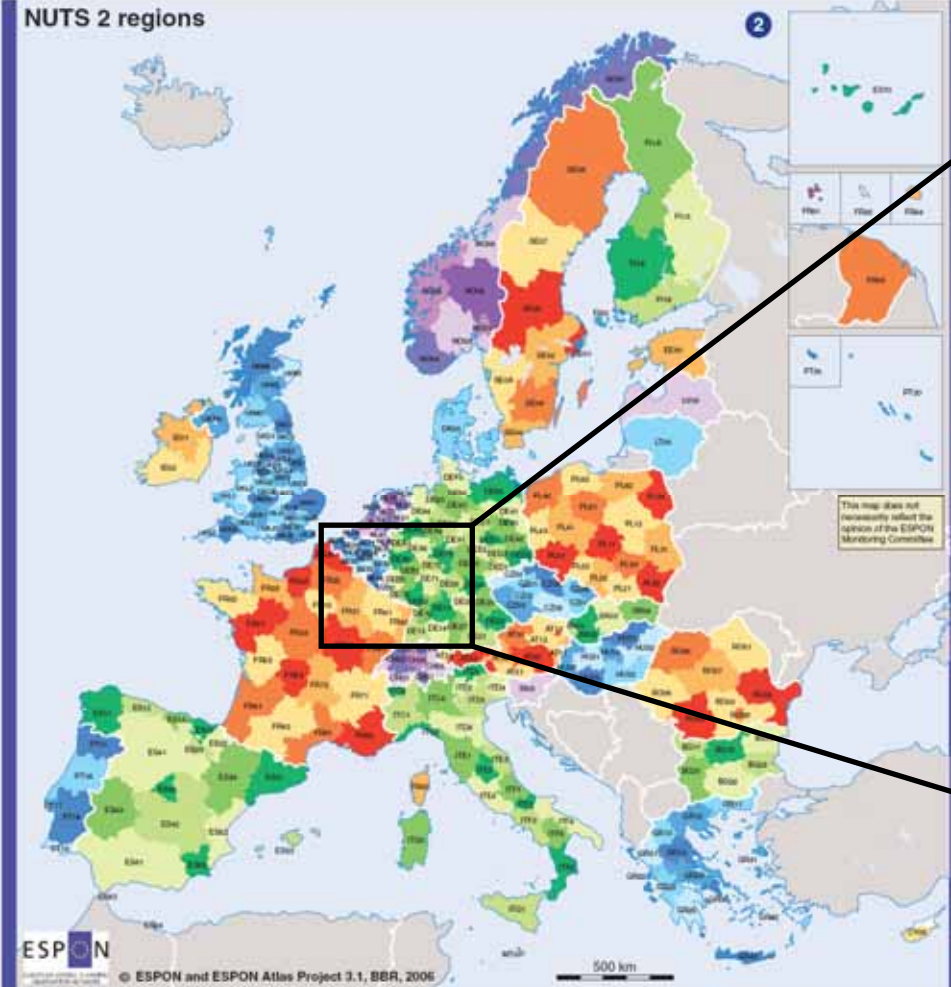
Reduce very complex, scientific information to a simple and easily understandable representation that can be understood for policy making

- Using reliable statistical sources
- Using NUTS
- Using a harmonized cartography

First of all some important notes:

- One of the main target groups or recipients of ESPON are policy makers at the EU level!
- The EU is an entity of 27+2+2 national states.
- To cope with this spatial monster (!) we most often use the so called NUTS levels (*Nomenclature des unités territoriales statistiques*).
  - *NUTS 1*  
*broad level (regions/Länder) = 92 regions EU 25*
  - *NUTS 2*  
*regional level (Provinzen /Bezirke) = 233 regions EU 25*
  - *NUTS 3*  
*subregional level (Arrondissements/Kreise) = 1135 regions EU 25*

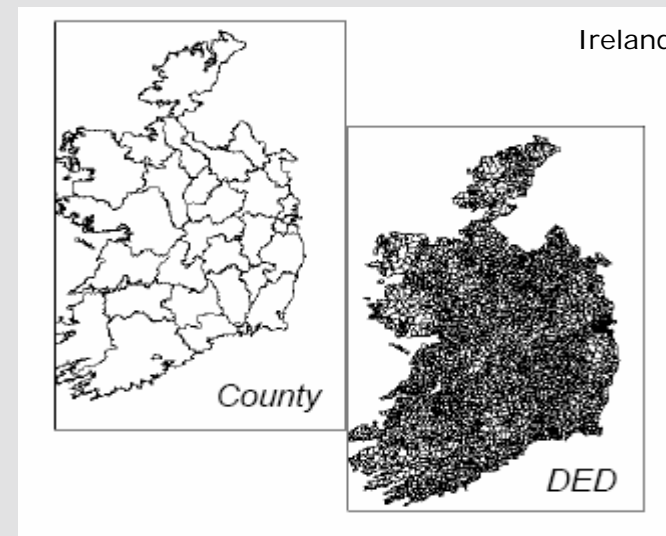
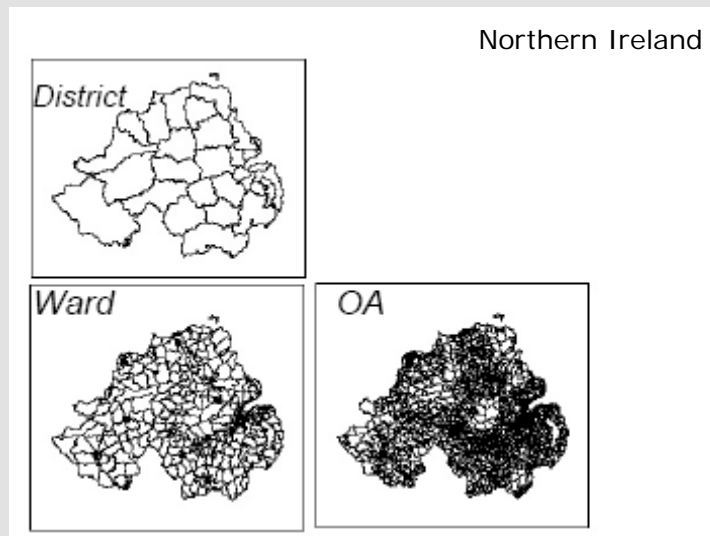
**Simple? - Too Simple!**



## Simple? - Too Simple!

So the spatial level that leads to a good overview on the EU level is not necessarily the one which is best for all purposes:

- Maps on NUTS 3 level or even beyond (LAU 2 / NUTS 5) are often not readable!





- And as this is not problematic enough, we also have difficulties to get statistical information for different levels of spatial detail...

## Simple? - Too Simple!

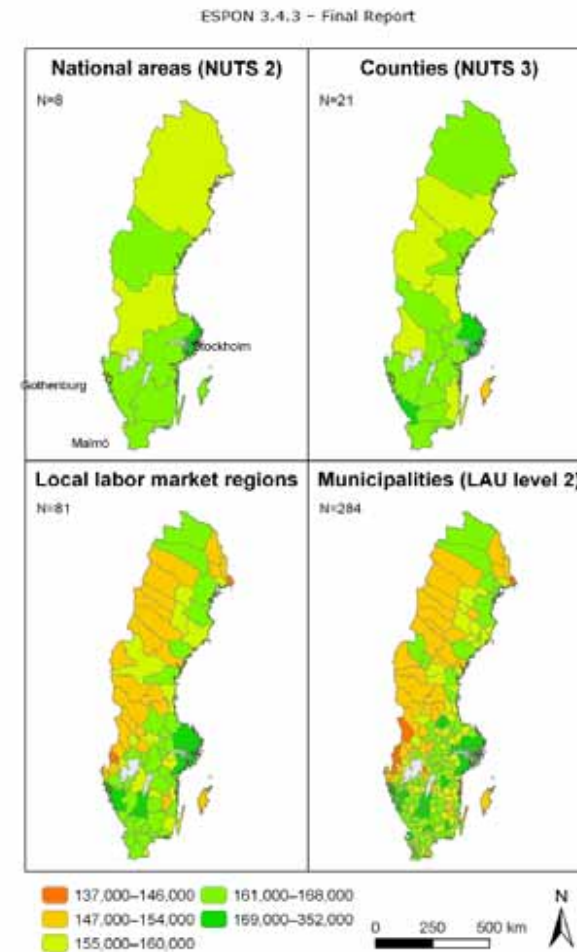
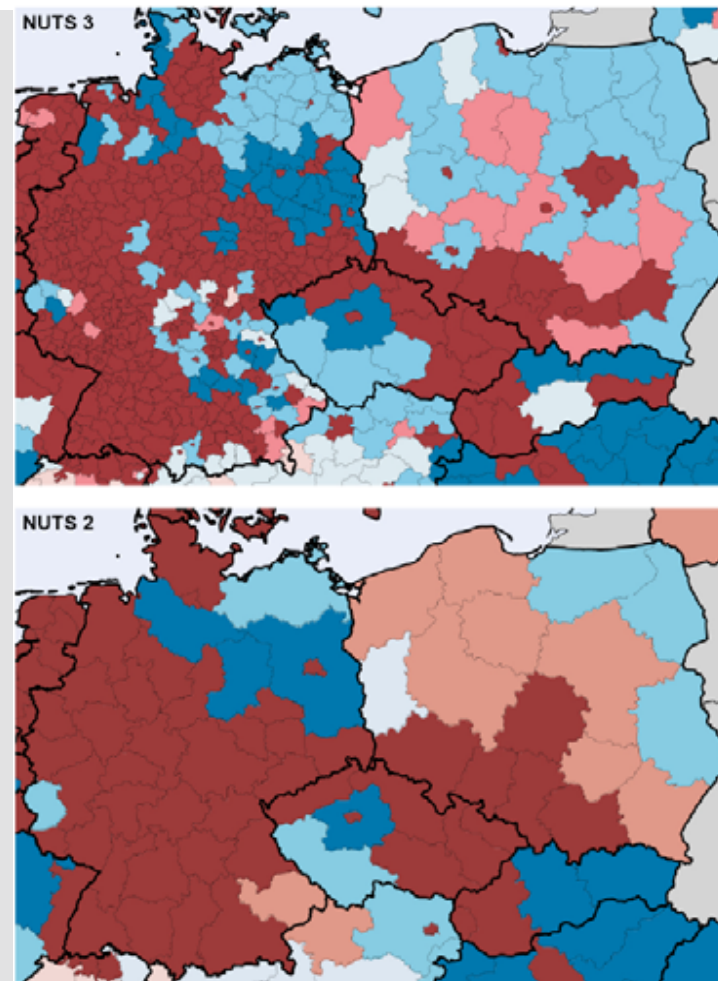


Figure 17 Disposable income (SEK)/inhabitant (20–64 years) (2002) - regions.

## Simple? - Too Simple!

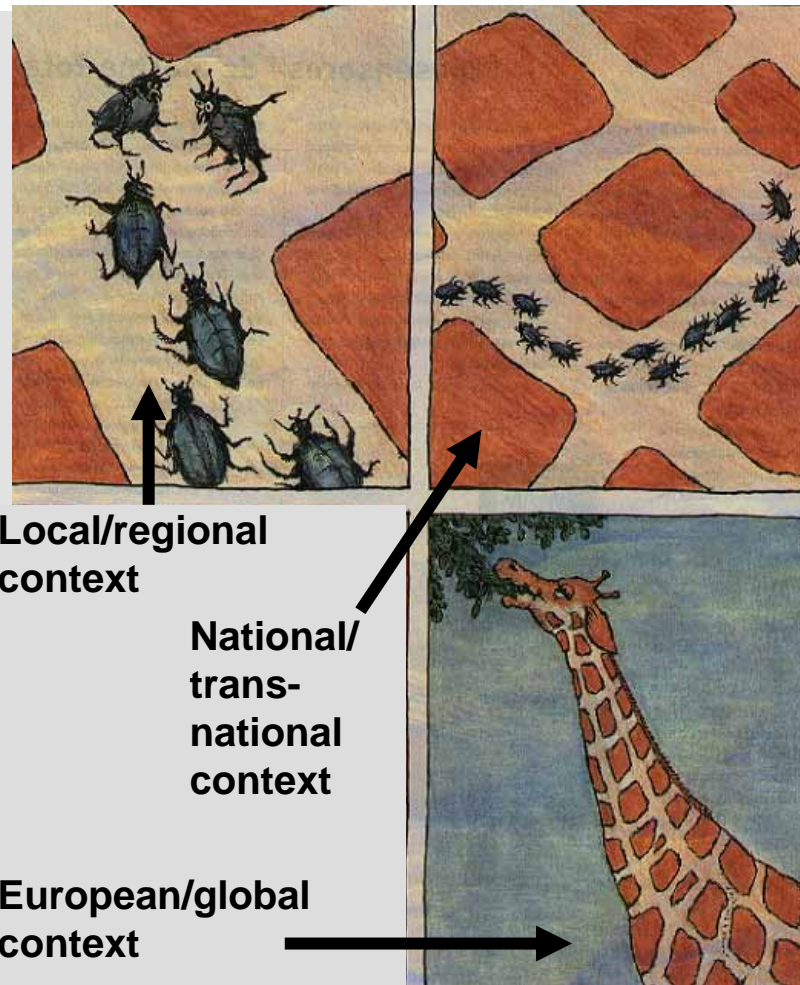
- But by becoming broader it is not only the level of detail that changes....
- By using a broader level of detail the main message of the map can change due to overlapping effects...  
(combining values and forming new averages)



## Simple? - Too Simple!

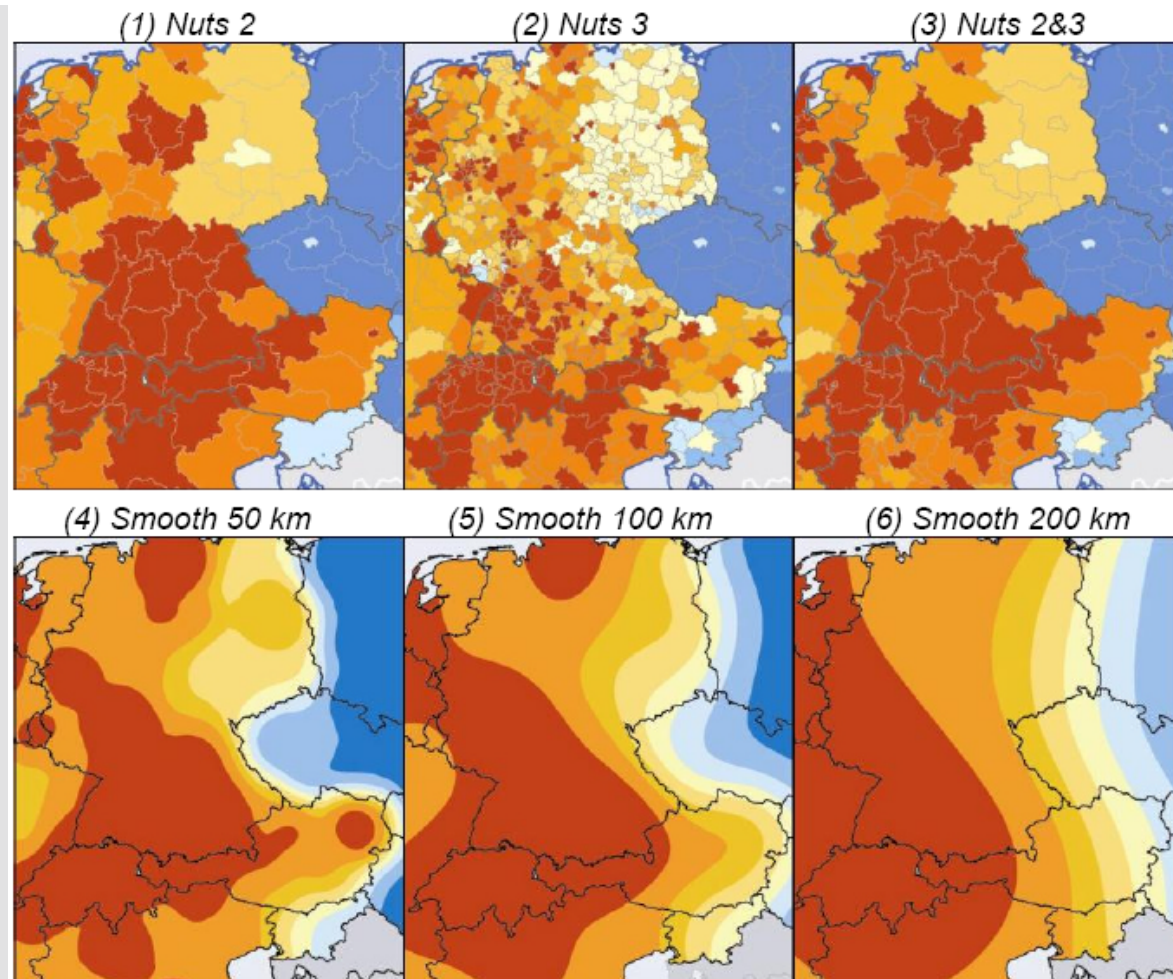
But to be really taken serious and to achieve something...

The challenge is, that: what is needed is a so called 3 level approach!



## Simple? - Too Simple!

- Moreover a spatial scientist is dealing with very fragile truths....
- By using different cartographic methods we can, although using the same data, display different pictures!



So what ESPON and its main target group are seeking as an ideal is:

- an overall projection of all spatial problems of the EU:
  - easy to understand,
  - but scientifically well elaborated and unquestionably correct,
  - which can be fast displayed
  - and which is yet both:
    1. broad and perfect without the unnecessary details but
    2. exact for all regions without leaving any questions open!

In fact we are indeed seeking for...

The all singing and dancing animal. It doesn't make tea!

The all-in-one device suitable for every purpose...

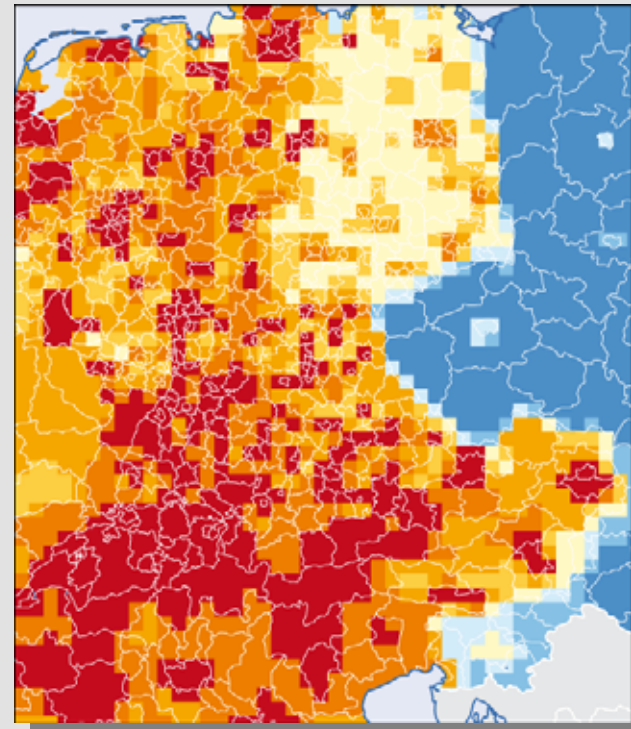
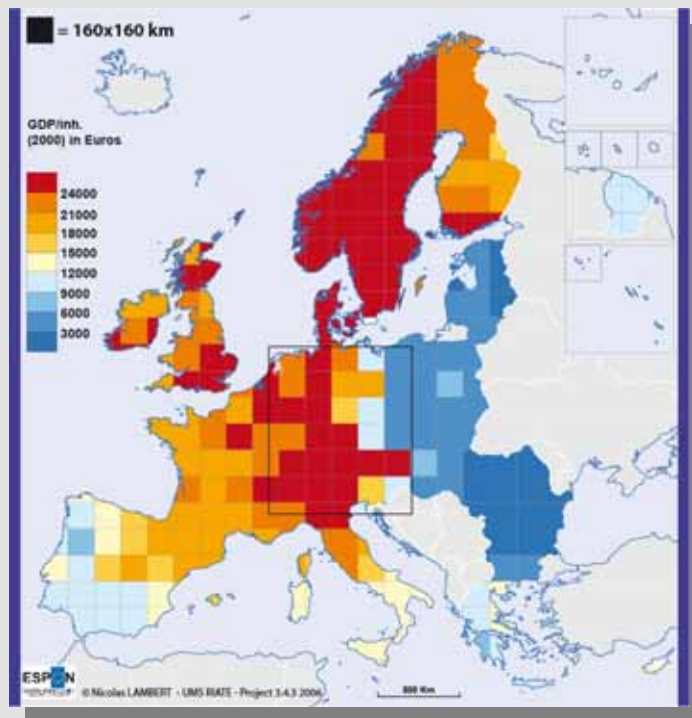
**Die eierlegende Wollmilchsau!**



## Simple? - Too Simple!

- It is obvious that something like that can never be achieved....
- and this means scientists, policy makers and policy advisors on the EU level are always bustling...
  - between simple and complex...
  - between exact and broad...
  - between detailed and banal!
- Some examples!

## 2. Simple vs. Complex





## **ESPON 3.1 RCE – regional classification of Europe**

- ESPON 3.1 wanted to provide an overview of the actual spatial situation in Europe as a whole on NUTS 3 level
- A cross-sectoral analysis that combines all relevant themes
- 3.1 developed a method to combine the themes and indicators from the whole ESPON scope
- This method is called Regional Classification of Europe (RCE)

**RCE – regional classification of Europe**

- From every theme of spatial relevance, core indicators were picked

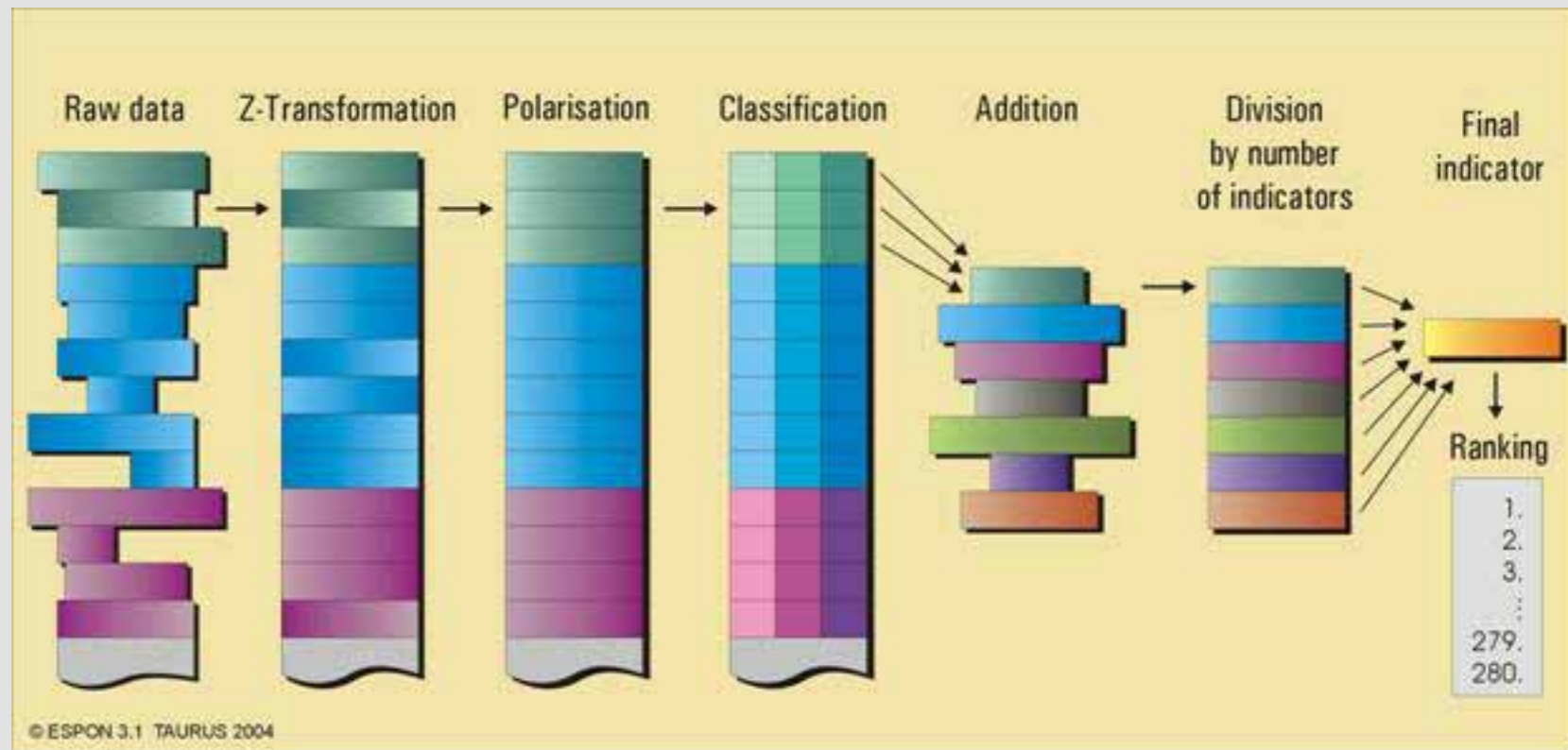
Theme and indicators	Description	Polarity
<b>Economy</b>		
GDP per capita	In PPS	+
Expenditure on R&D	Share of GDP	+
R&D Business Enterprise Sector	BES R&D personnel per 1.000 active person	+
GDP per capita growth	In Euro	+
Firms with own website	Proportion of all firms	+
Employment in tertiary sector	Share of total employment	+
Employment in primary sector	Share of total employment	-
<b>Labour market</b>		
Unemployment	Unemployment rate 2001	-
Development of unemployment	Change 1998-2001 in percent	-
Youth unemployment	Unemployed < 25 years per 1.000 inh. 15-<25 years	-
Labour force replacement ratio	Population ages 10-19 / population ages 55-64	+
R&D personnel	Total R&D personnel per 1.000 active person	+
High educated population	Highly educated population / total educated pop.	+
Employment density	Number of persons employed per km <sup>2</sup>	+
Internet users	Share of all inhabitants	+
<b>Demography</b>		
Population density	Number of persons per km <sup>2</sup>	+
Ageing	Share of population in the ages over 65 in percent	-
Reproduction potential	20-29 years in 2020 per 20-29 years in 2000	+
Population growth	Change 1995-2000 in %	+

**RCE – regional classification of Europe**

- The indicators were discussed with the TPGs and classes and thresholds were defined

<b>Environment</b>		
Artificial surface	Share of total area (Corine)	-
Natural surface	Share of total area (Corine)	+
Agriculture intensity	Output/input ratio	-
<b>Hazards</b>		
Flood events	Regional average number of flood events	-
Winter storms	Probability of having winter storms	-
Risk of radioactive contamination	Distance from nuclear power plants	-
Earthquake hazard potential	Mean value of grid points inside NUTS 2 boundaries	-
Volcanoes	Number of all volcanoes in NUTS 2 area	-
Oil hazards	Average of 3 indicators (harbours, pipeline, refineries)	-
<b>Accessibility</b>		
Potential accessibility	By road	+
Potential accessibility	By rail	+
Potential accessibility	By air	+
Potential accessibility	Multimodal	+
<b>Spatial structure</b>		
Settlement structure	Count of types with population=0	-
Concentration of population	Change of region´s share of EU 27+2 pop. in percent	+
Concentration of GDP	Change of region´s share of EU 27+2 GDP in percent	+
Time to market meso-scale	Accessibility by rail and road, weighted by pop.	-
Time to market macro-scale	Accessibility by rail and road, weighted by pop.	-
Functional Urban Areas	Share of population living in FUA	+

**RCE – regional classification of Europe**

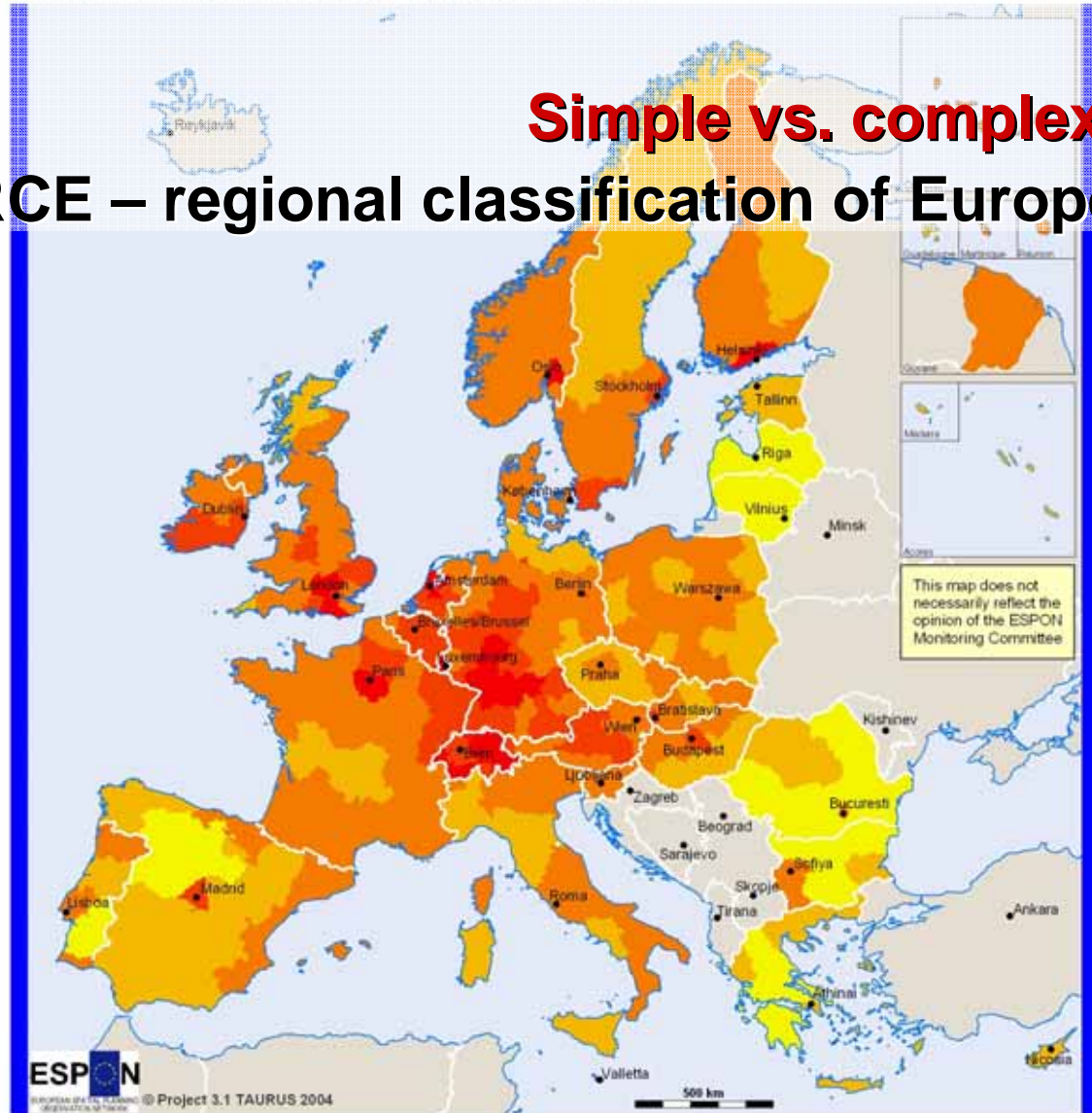


- The sketch shows the way from data to classification

- **Result...**  
A distinct picture of Europe which shows some familiar aspects as well as some unexpected details

Regional classification of Europe - overall performance

## Simple vs. complex! RCE – regional classification of Europe



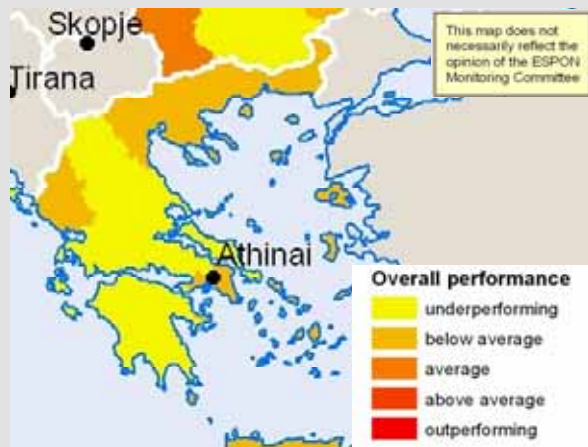
**Overall performance**

- underperforming
- below average
- average
- above average
- outperforming

© EuroGeographics Association for administrative boundaries  
Regional Level: NUTS 2  
Origin of data: Eurostat, National Statistical Offices, ESPON 3.1  
Source: ESPON Data Base

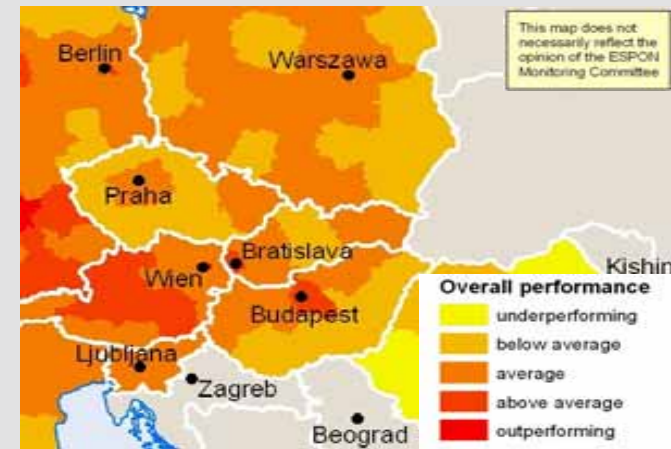
**RCE – regional classification of Europe**

- But the ambitions were too high... although the map and the method were quite good to understand... its main contents were too difficult to transport for the policy makers... a case of "too complex?" or a case of "too uncomfortable"?



© EuroGeographics Association for administrative boundaries  
 Regional Level: NUTS 2  
 Origin of data: Eurostat, National Statistical Offices, ESPON 3.1  
 Source: ESPON Data Base

Zoom-in without scale



© EuroGeographics Association for administrative boundaries  
 Regional Level: NUTS 2  
 Origin of data: Eurostat, National Statistical Offices, ESPON 3.1  
 Source: ESPON Data Base

Zoom-in without scale

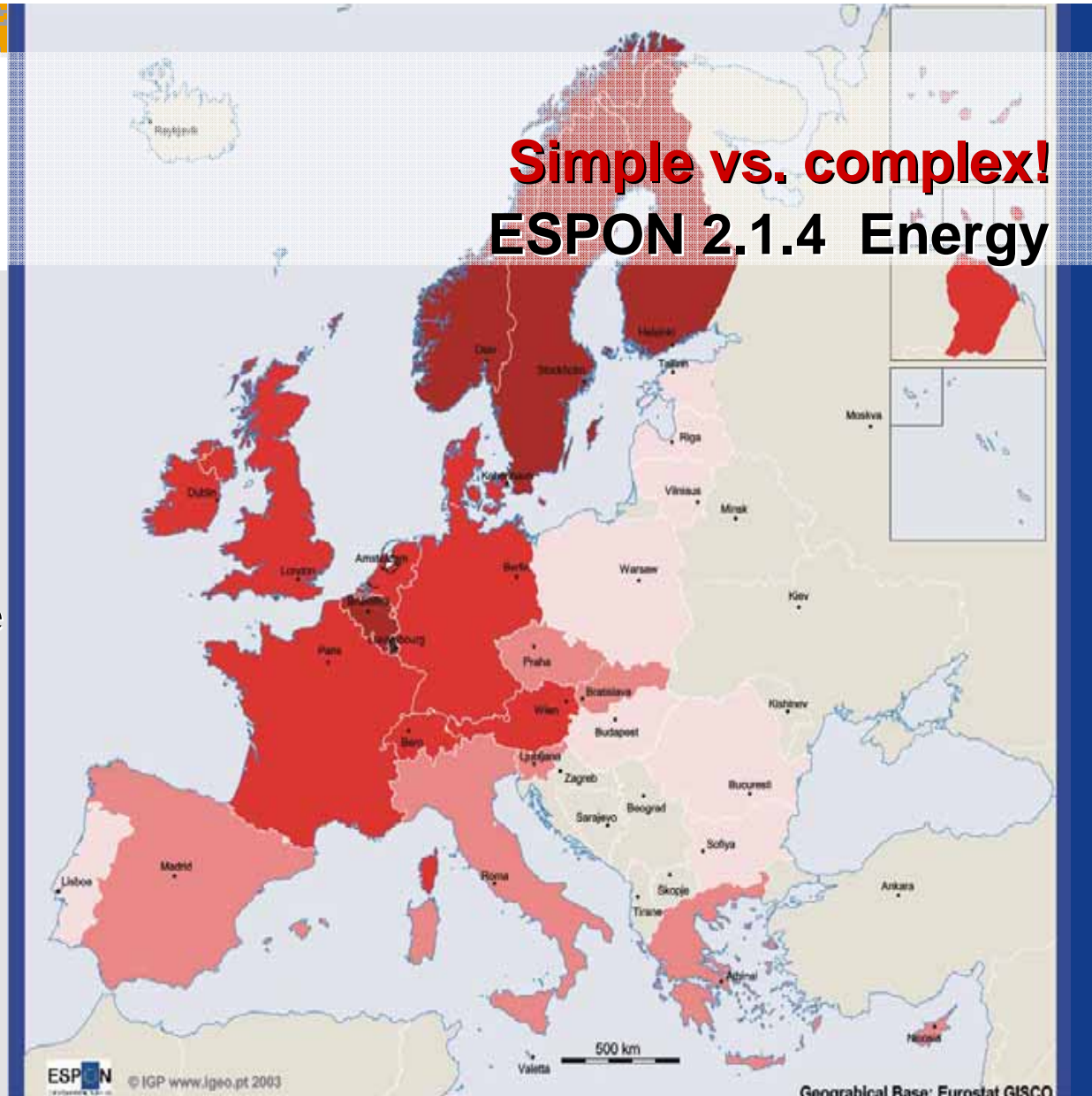
## RCE – regional classification of Europe

- Nevertheless, the main methodology survived and is stronger than ever.
- A complete new ESPON project used this method extensively to examine the European territory by sector!
- It is likely that in a new ESPON context this method will of course be used once more.

The map Final Energy Consumption/GDP (2000)

Due to the lack of detail, the map is more or less without a clear relevance...

**Simple vs. complex!**  
**ESPON 2.1.4 Energy**





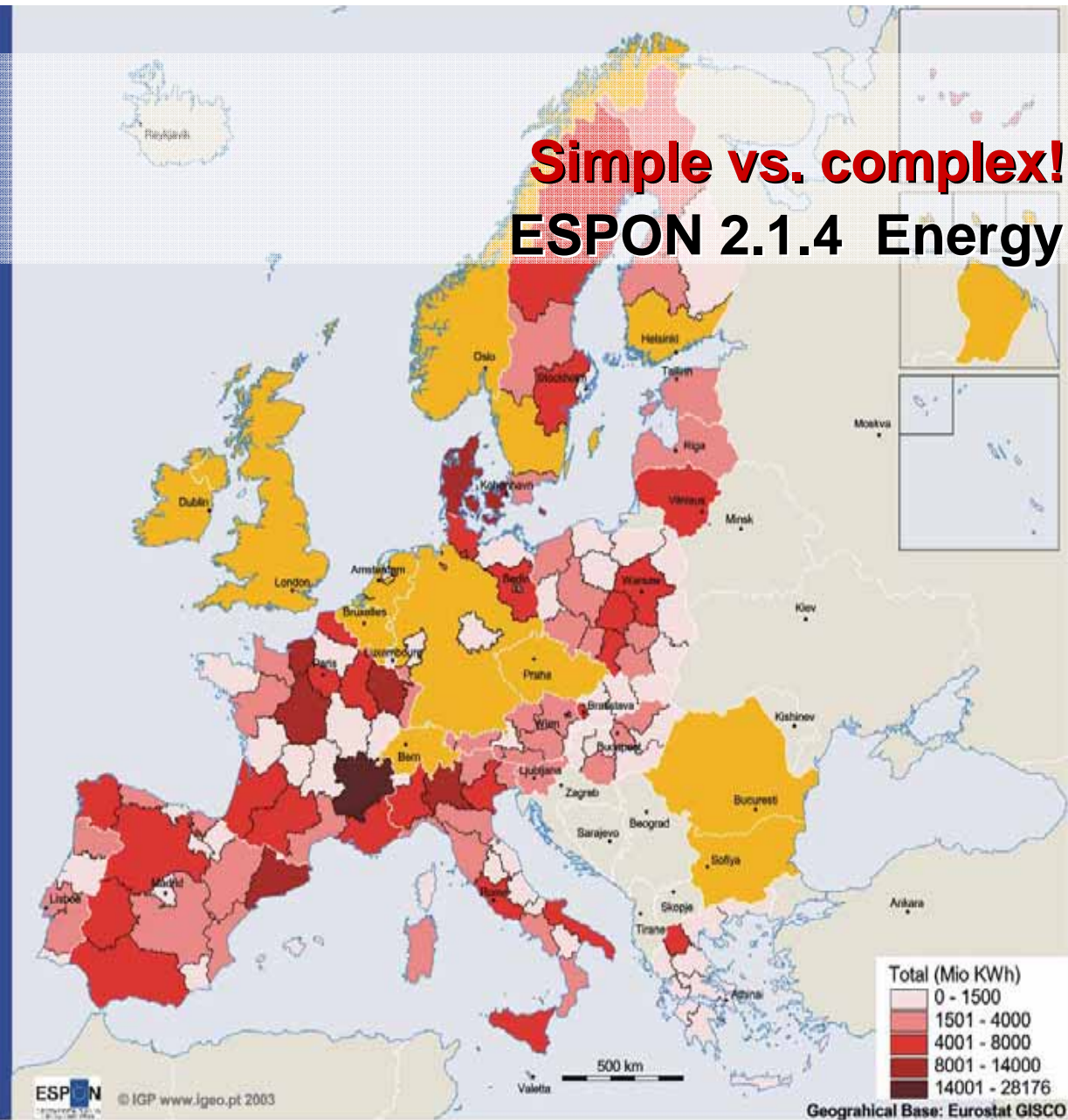


EUROPEAN SPATIAL PLANNING  
OBSERVATION NETWORK

Total Electricity  
production by  
NUTS 2 (1997)

Although a bit more  
detailed, still the  
map appears quite  
uninspired...


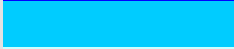
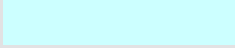
## Simple vs. complex! ESPON 2.1.4 Energy



**Policy recommendations?**

The impact assessment of energy main policies is now being carried out. Case studies can be of great help...

Policy headlines	Impact carriers		
	Investment	Prices	Income transfer
Security of energy supply	Relevant impacts expected	Some impacts expected	Difuse impacts expected
Internal market in energy	Difuse impacts expected	Relevant impacts expected	Difuse impacts expected
Energy and sustainable development	Some impacts expected	Relevant impacts expected	Relevant impacts expected
Energy efficiency	Difuse impacts expected	Difuse impacts expected	Difuse impacts expected
Renewable energy development	Relevant impacts expected	Difuse impacts expected	Relevant impacts expected
Taxation of energy products	Difuse impacts expected	Relevant impacts expected	Relevant impacts expected
Trans-european networks	Relevant impacts expected	Some impacts expected	Some impacts expected

-  - relevant impacts expected
-  - some impacts expected
-  - difuse impacts expected

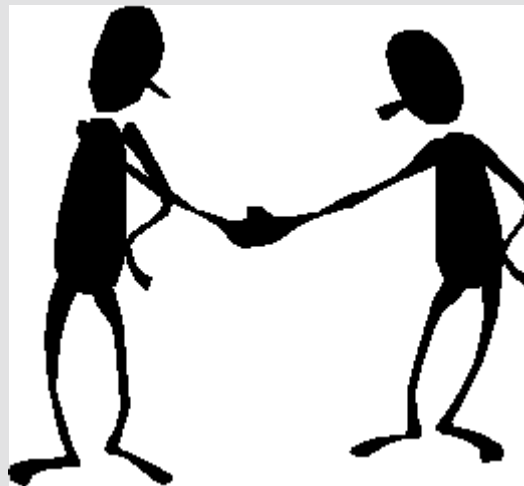
## Policy recommendations?

- Energy intensity shows a clearly decreasing trend. Transport shows the most significant growth of energy consumption between 1995 and 2000
  - *Policy recommendation?*
- Most countries have reduced their dependence on fossil fuels since 1995. Oil is the most significant energy source in EU 15, while in the Candidate Countries the energy consumption is more differentiated among sources.
  - *Impact on local development? Policy recommendation*

- The project was a victim of the circumstances. They had little data and they searched not really for the “hotspots” (such as concentration processes, cartels in the Energy business), nor did they make use of some ambitious methodologies.
- Last but not least their policy recommendations were not very daring!
- ...a case of “too simple” or just “too uninspired?”

- So simple vs. complex - this fight can not be won by easy answers.
- On the one hand too simplified approaches are most likely to fail, so do too complex ideas.
- Within the ESPON 2006 programme both strands were tested and it has turned out, that both, simple and complex ways are needed, but it depends on the way it is done.
- It is maybe extremely complex to display spatial reality in a simple but acceptable manner!

### **3. The ESPON way: Doing both - a compromise!**



## Doing both - a compromise!

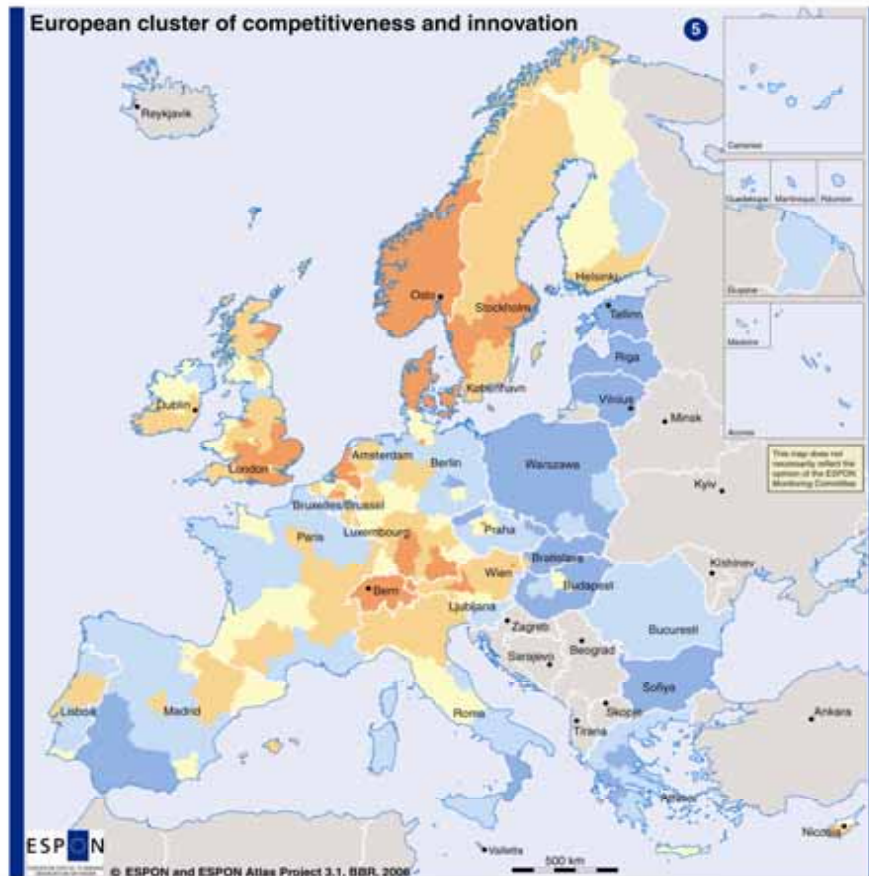
- The ESPON 2006 programme produced both:
- simple maps and cartographics, models and methods as well as extremely highly aggregated maps and methodologies
- The main issue is: it has to be of interest for the target group and should not display results that can not be transported!

**3. The ESPON way:  
Doing both - a compromise!**

***Example: the ESPON ATLAS***

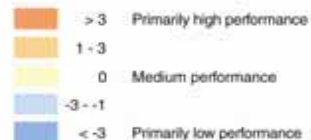




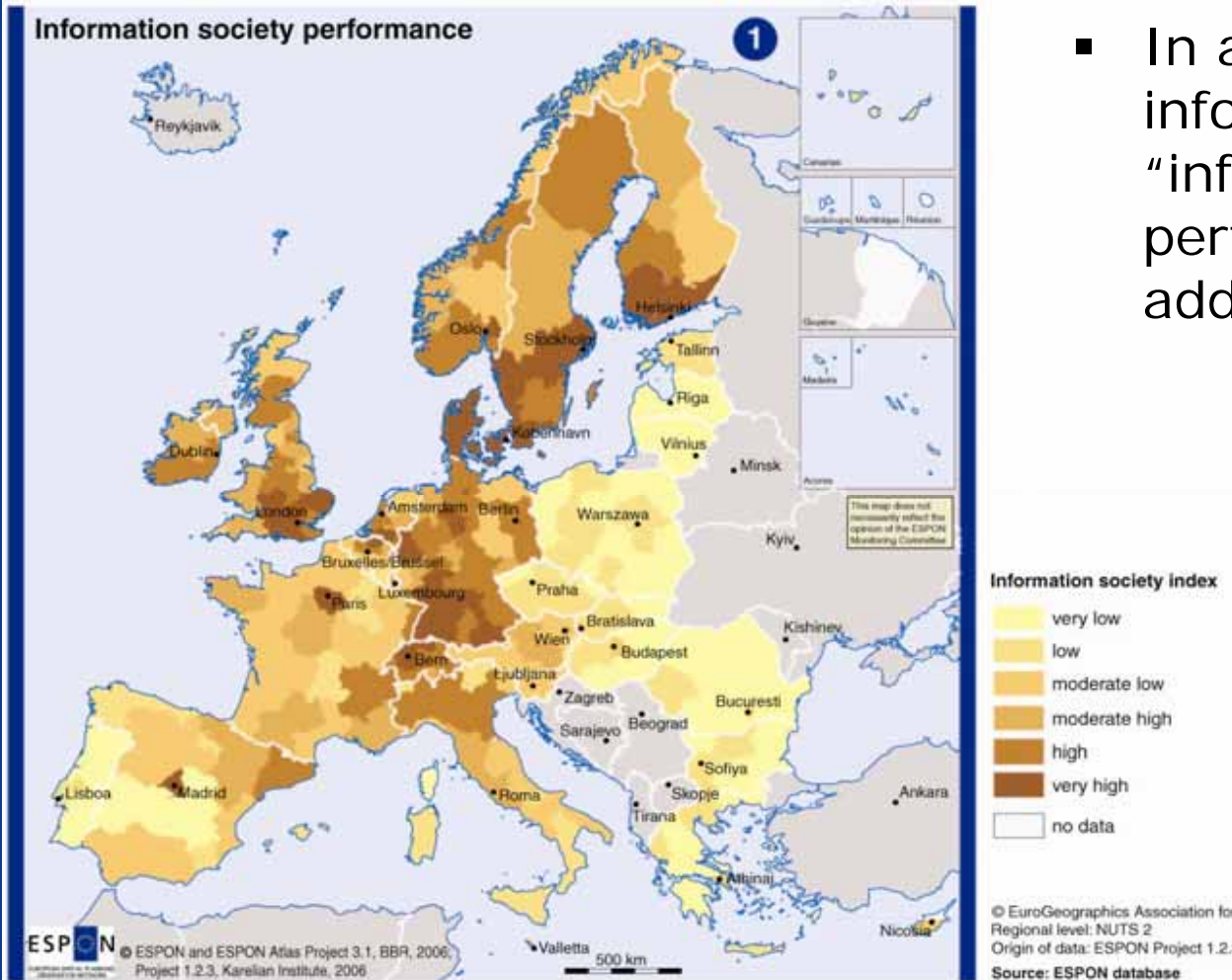


### Economic Lisbon Indicators\*

Number of indicators in the upper quartile minus  
number of indicators in the lower quartile

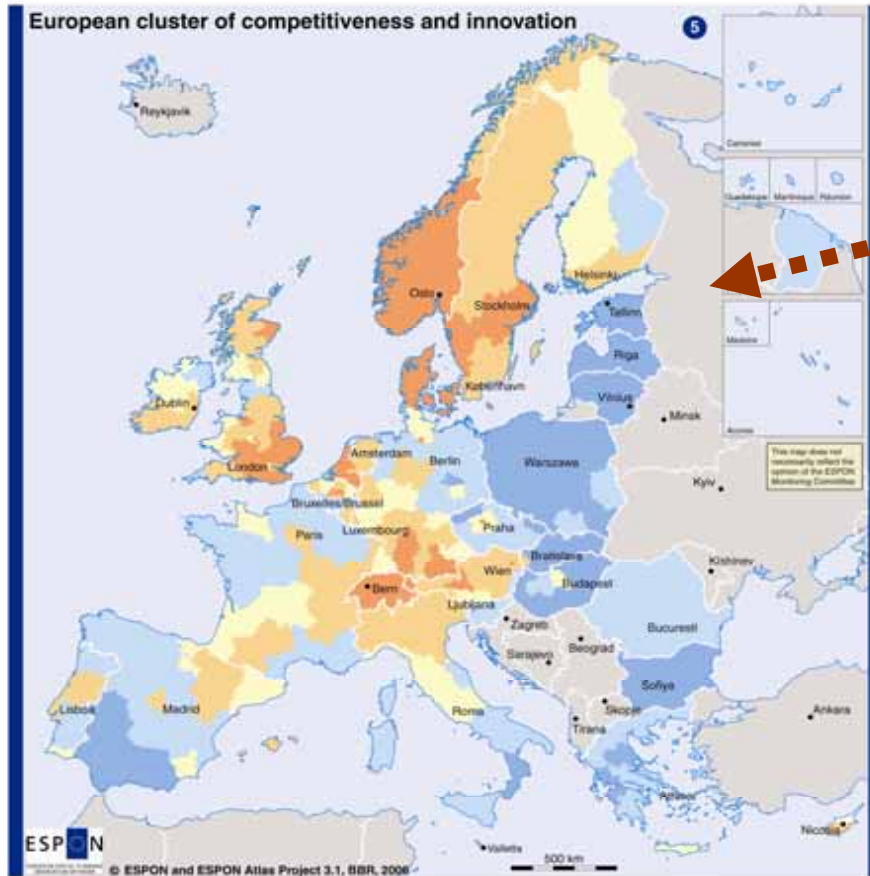


- The ESPON Atlas goes from simple to complex...
- both methodologically...
- and cartographically...
- In this example it starts by using the clusters of competitiveness and innovation map...



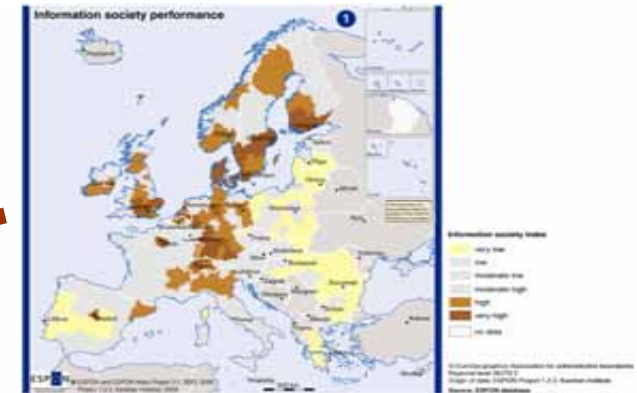
- In a second step the information from the “information society performance” map is added...

## Doing both - a compromise! The ESPON Atlas Competitiveness & Innovation



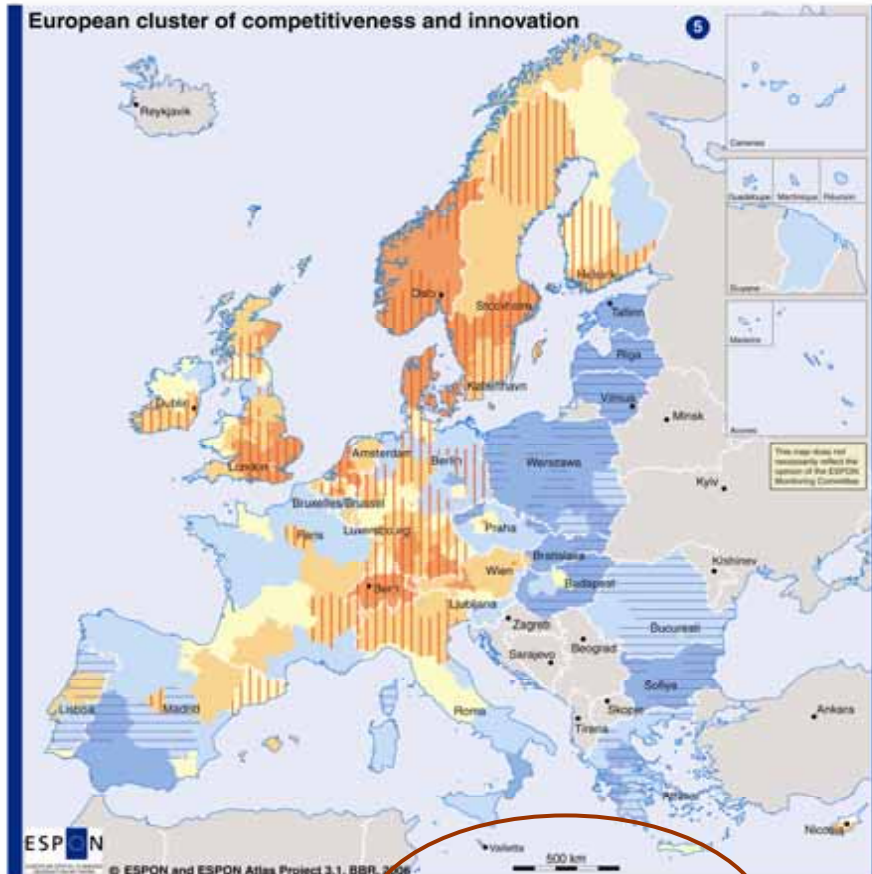
**Economic Lisbon Indicators\***  
Number of indicators in the upper quartile minus number of indicators in the lower quartile

Orange	> 3	Primarily high performance
Light Orange	1 - 3	
Yellow	0	Medium performance
Light Blue	-3 - -1	
Dark Blue	< -3	Primarily low performance



- The information is added to the map by the use of cross hatches ...

## Doing both - a compromise! The ESPON Atlas Competitiveness & Innovation



**Economic Lisbon indicators\***  
Number of indicators in the upper quartile minus number of indicators in the lower quartile

- > 3 Primarily high performance
- 1 - 3
- 0 Medium performance
- 3 - -1
- < -3 Primarily low performance

**Information society index**

- very low
- high and very high



Information society index

- very low
- low
- moderate low
- moderate high
- high
- very high
- not rated

© ESPON and ESPON Atlas Project 3.1, BBR, 2006

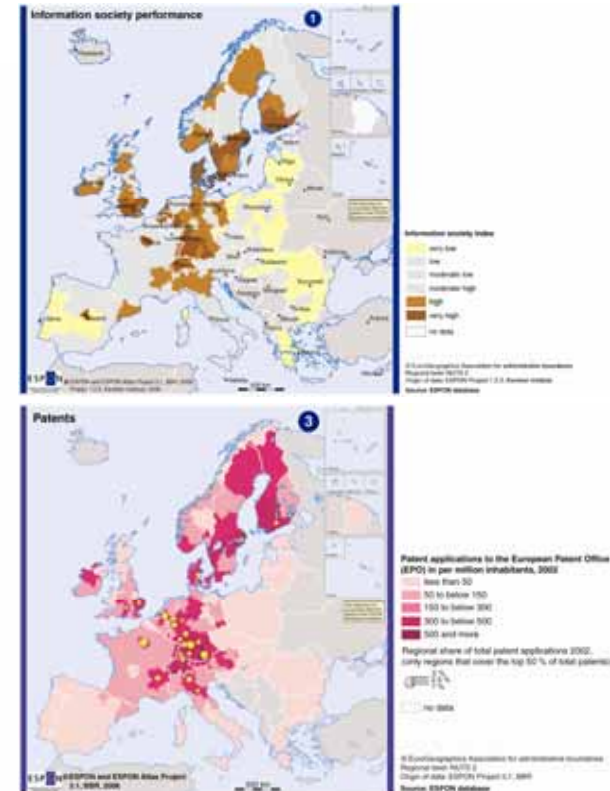
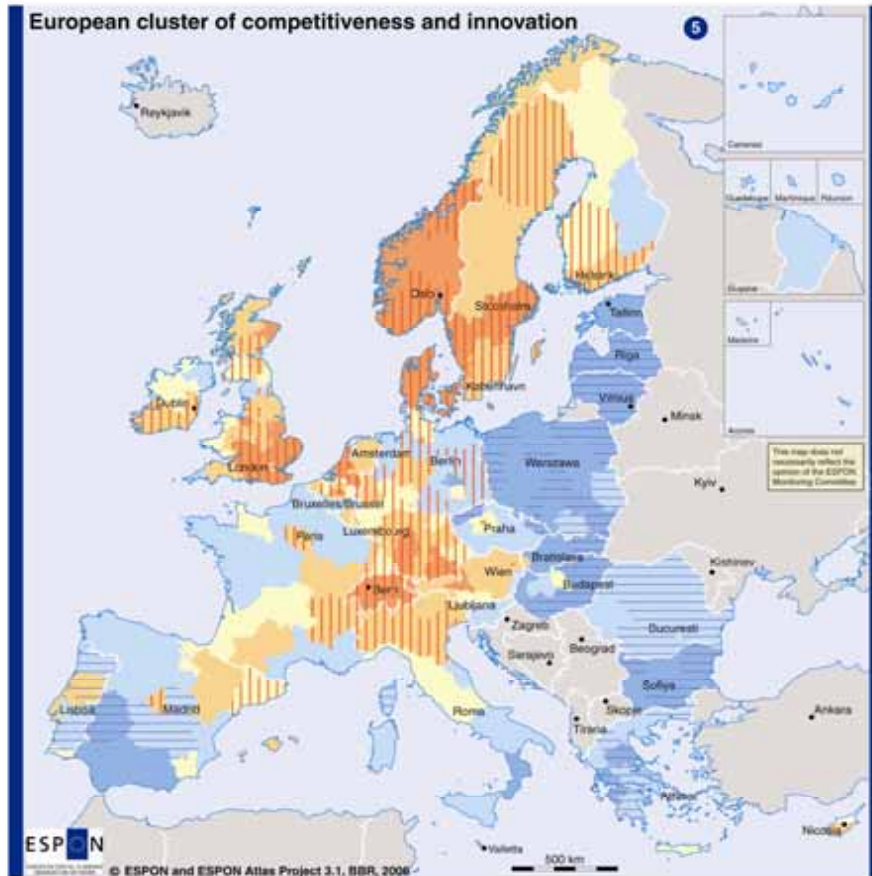
\* ESPON and ESPON Atlas Project 3.1, BBR, 2006

© ESPON and ESPON Atlas Project 3.1, BBR, 2006

Report on the ESPON Atlas Project 3.1, Annex 10

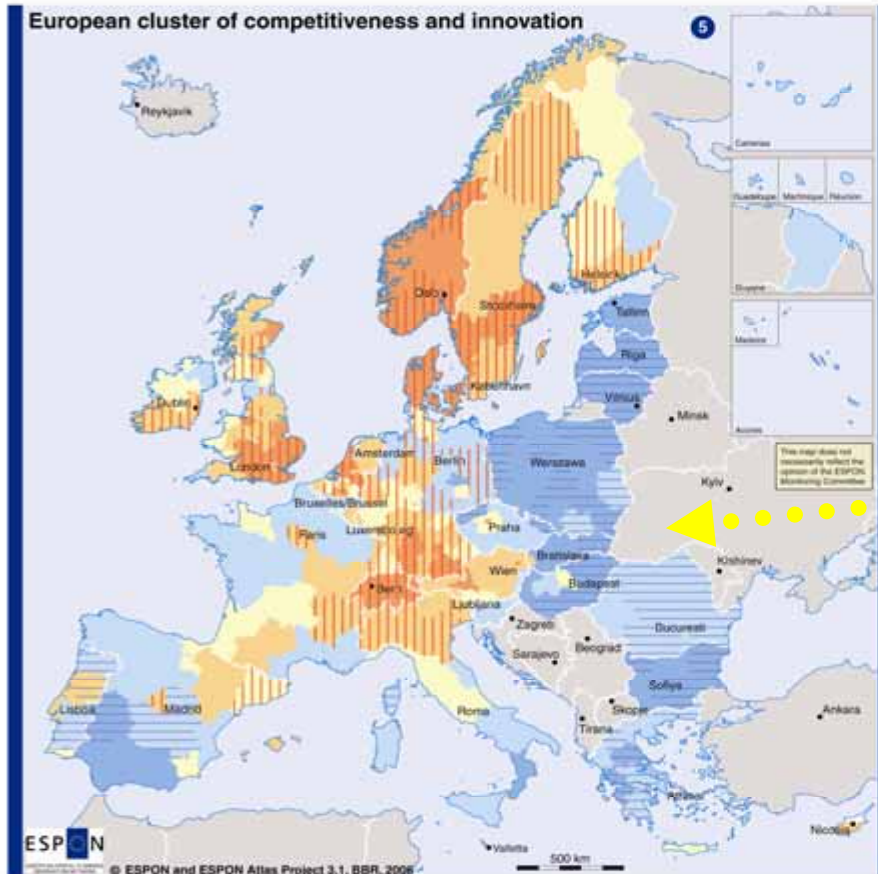
Source: ESPON studies

## Doing both - a compromise! The ESPON Atlas Competitiveness & Innovation



- In a third step the same is done for patents...

## Doing both - a compromise! The ESPON Atlas Competitiveness & Innovation

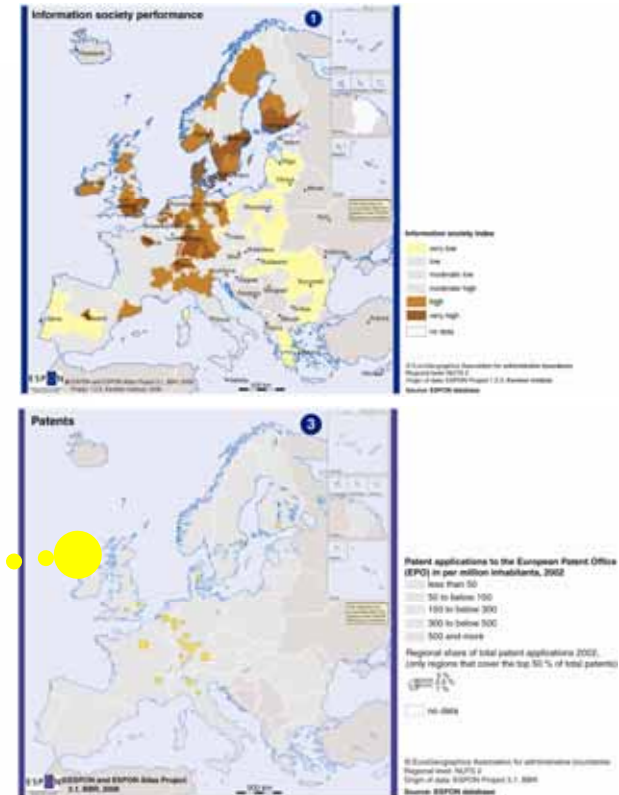


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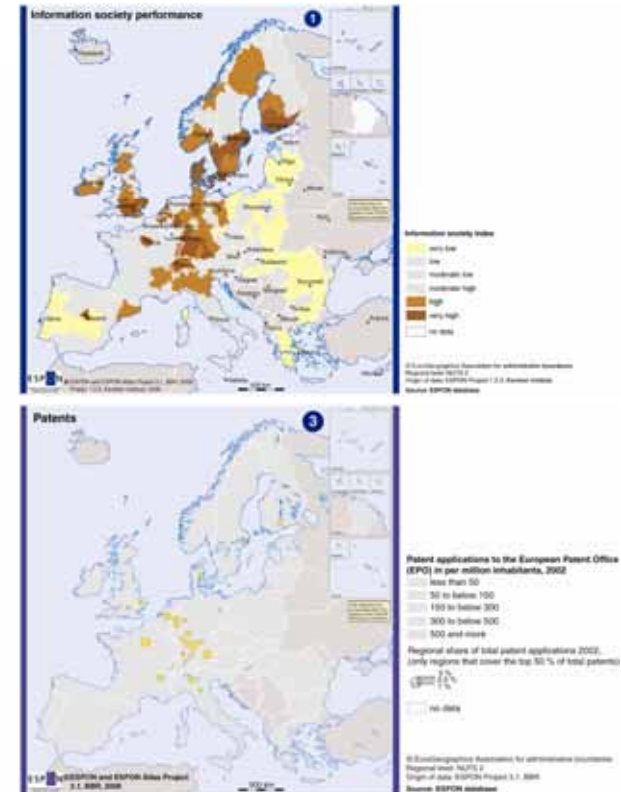
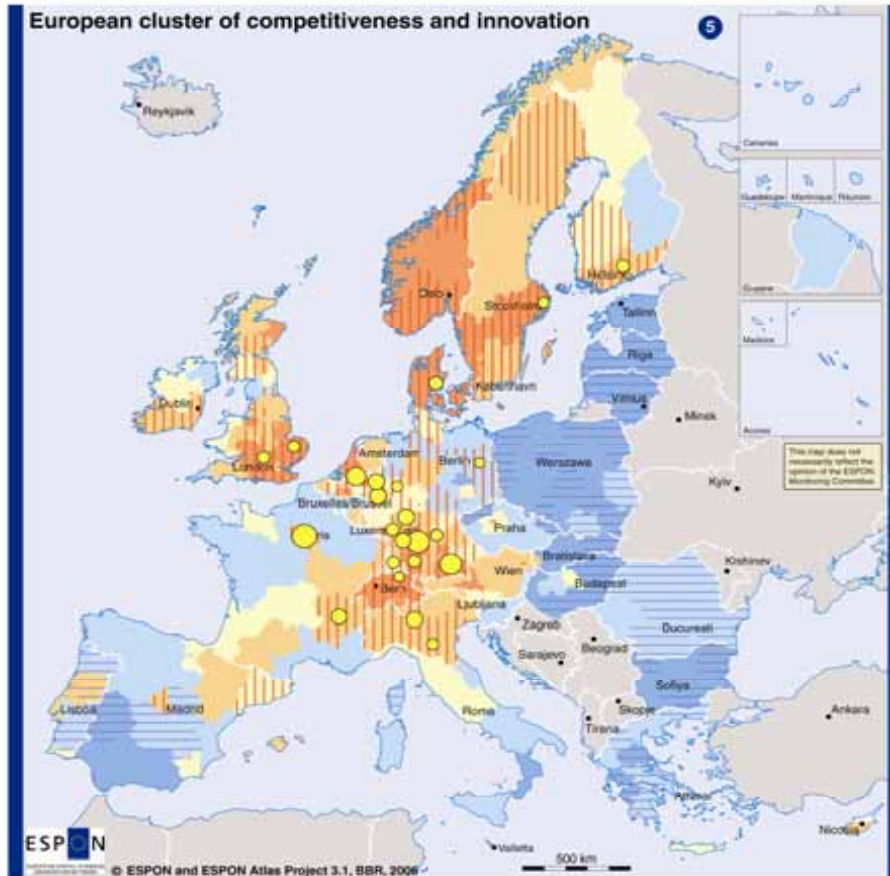
**Information society index**

Light blue	very low
Vertical lines	high and very high



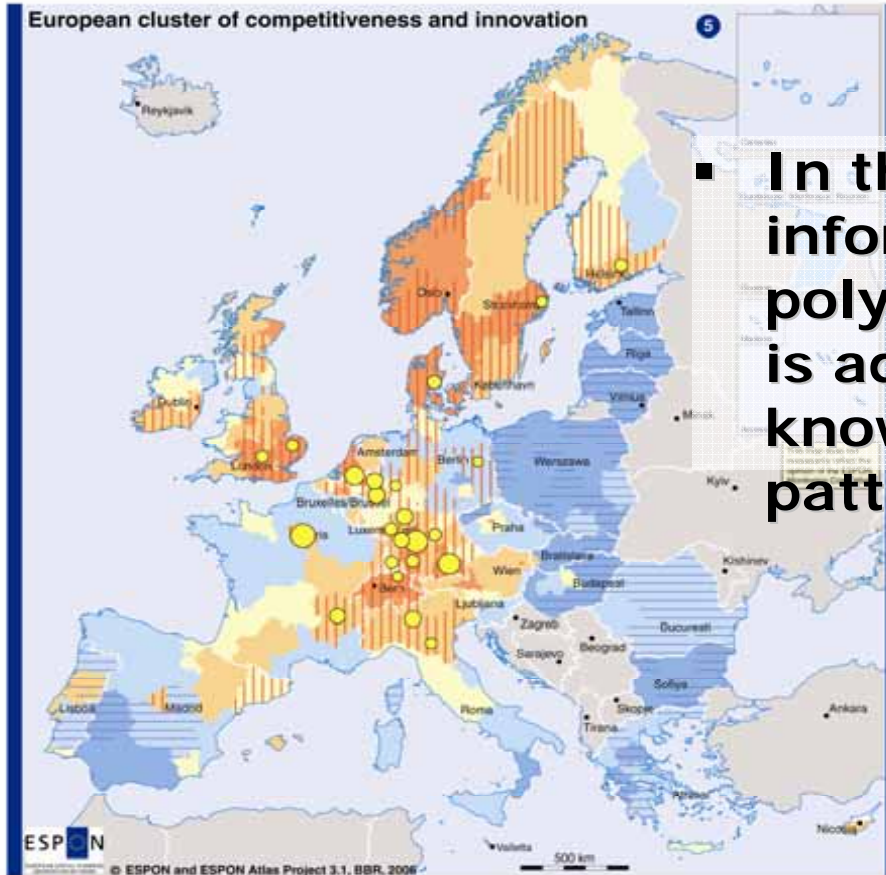
- Not all of the information is added, just the most important facts...

## Doing both - a compromise! The ESPON Atlas Competitiveness & Innovation



- This time dots are used to mark the patent hot spots...

## Doing both - a compromise! The ESPON Atlas Competitiveness & Innovation



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**Information society index**

- very low
- high and very high

**Patents**  
Regional share of total patent applications 2002, (only regions that cover the top 50 % of total patents)

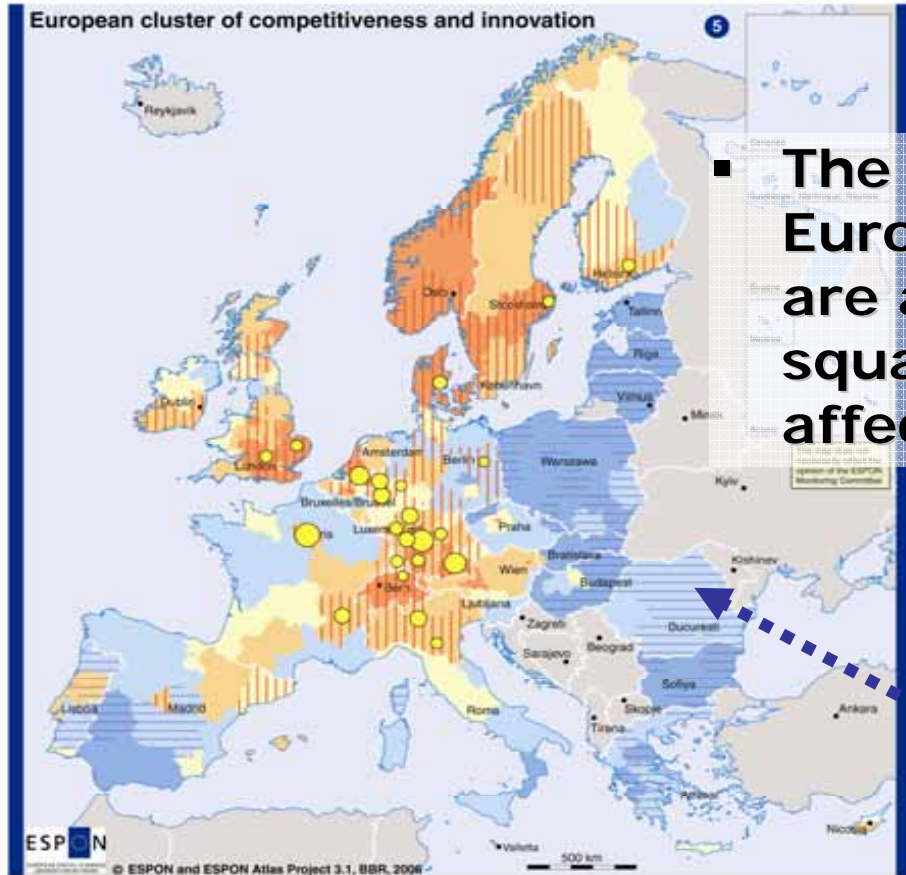
- 5 %
- 2,5 %

In the last step an information from the polycentrism project is added, the knowledge function pattern...





## Doing both - a compromise! The ESPON Atlas Competitiveness & Innovation



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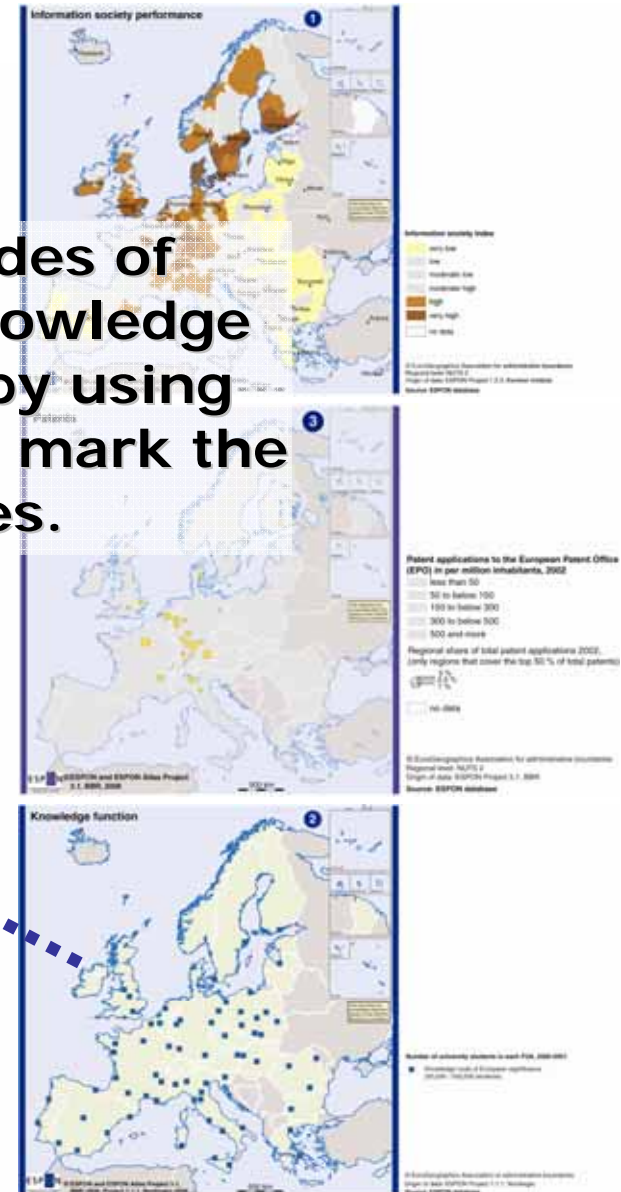
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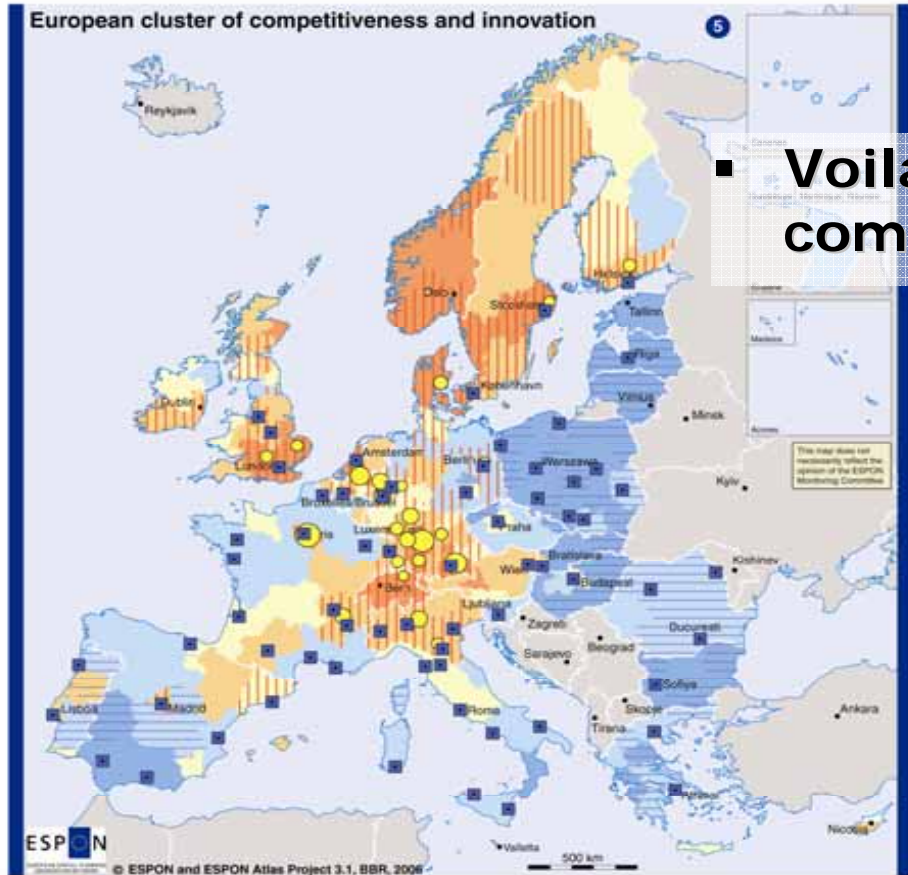
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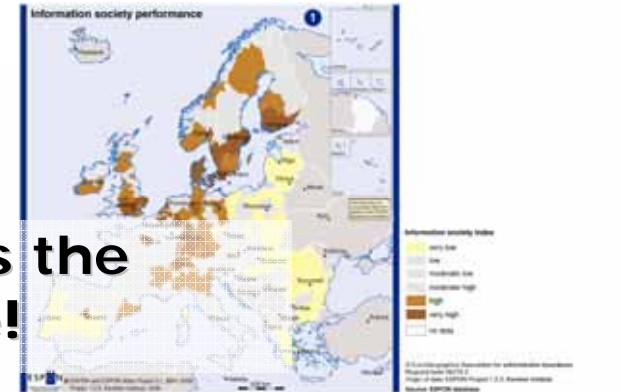
- The main nodes of European knowledge are added...by using squares that mark the affected cities.



## Doing both - a compromise! The ESPON Atlas Competitiveness & Innovation



Voila, here is the complex one!



- In the end it was proven that especially the high class researchers often delivered very detailed examples of positivistic research work, but they did not comply with the needs of the ESPON target group.
- Moreover they often dared to give real policy recommendations...
- On the opposite mere advisers often went too quickly through the research and gave brilliant advice with little background.
- There is a clear need for a compromise also between these two extremes!