ESPON Contact Point Luxembourg

Welcome to the 3. ECP - Workshop Information and Progress Meeting

14.01.2005

Ministère de l'Intérieur et de l'Aménagement du territoire

19, rue Beaumont, 1219 Luxembourg

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ESPON Workshop Programm

09.30		**Welcome** – Romain Diederich (DATUR)
09.45		**ESPON 2006-Programme** – Peter Mehlbye (ESPON Co-ordination Unit)
10.00		**ESPON Bedeutung für Europa und Luxemburg** Thiemo W. Eser (DATUR)
10.30		**ESPON Contact Points - Aufgaben** Christian Muschwitz (TAURUS)
	10.45	Kaffeepause
11.00		**Entwicklungen der ESPON Kernprojekte** Christian Muschwitz (TAURUS)
	12.30	Mittagspause

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ESPON Workshop Programm

13.30 **Ausgewählte Ergebnisse weiterer Projekte**
Christian Muschwitz / Michaela Gensheimer (TAURUS)

14.30 ——— Kaffeepause ———

14.45 **Ausblick auf die nächsten ESPON Runden**
Christian Muschwitz / Michaela Gensheimer (TAURUS)
Diskussion

16.00 ——— Ende der Veranstaltung ———

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WELCOME

ROMAIN DIEDERICH (DATUR)

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ESPON and Interreg IIIc

PETER MEHLBYE (ESPON DIRECTOR)

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Relevance for Europe and Luxembourg

THIEMO W. ESER (DATUR)

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Contact Points – Tasks and responsibilities

CHRISTIAN MUSCHWITZ (TAURUS)

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Christian Muschwitz

- Spatial Planer
- TAURUS Institute at the University of Trier
- Lecturer at University of Trier

  Chair of Prof. Dr. Heiner Monheim

  Departement of Applied Geography / Spatial Planning

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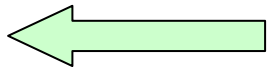
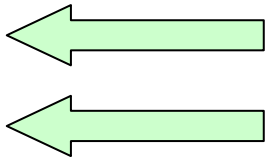
9 Thematic projects

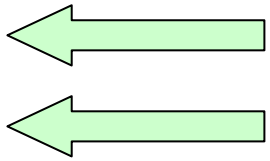
- Project 1.1.1 'Polycentrism'
- Project 1.1.2 'Urban-rural'
- Project 1.1.3 'Enlargement & Polycentrism'
- Project 1.1.4 'Demographic trends'



- Project 1.2.1 'Transport trends'
- Project 1.2.2 'Telecom trends'



- Project 1.3.1 'Natural hazards'
- Project 1.3.2 'Natural heritage'
- Project 1.3.3 'Cultural heritage'



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11 Policy impact projects

- Project 2.1.1 'Transport Policy impact'
- Project 2.1.2 'R&D Policy impact'
- Project 2.1.3 'CAP impact'
- Project 2.1.4 'Energy'
- Project 2.1.5 'Fisheries'

- Project 2.2.1 'Structural Funds impact'
- Project 2.2.2 'Enlargement, Acquis, Pre-Aid, Phare/Tacis'
- Project 2.2.3 'Urban in Structural Funds'

- Project 2.3.1 'ESDP impact'
- Project 2.3.2 'Governance'

- Project 2.4.2 'Zoom in‘

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4 Coordinating + cross thematic projects

- Project 3.1 'Coordination' 
- Project 3.2 'Scenarios'
- Project 3.3 'Lisbon strategy'
- Project 3.4.1 'Europe in the World'

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ESPON – Contents in general

- ESPON Basics...
  - Data Navigator
  - Core Indicators and Data Base
  - Spatial Concepts
  - Cartography, Mapping
  - Typologies
  - Policy Recommendations

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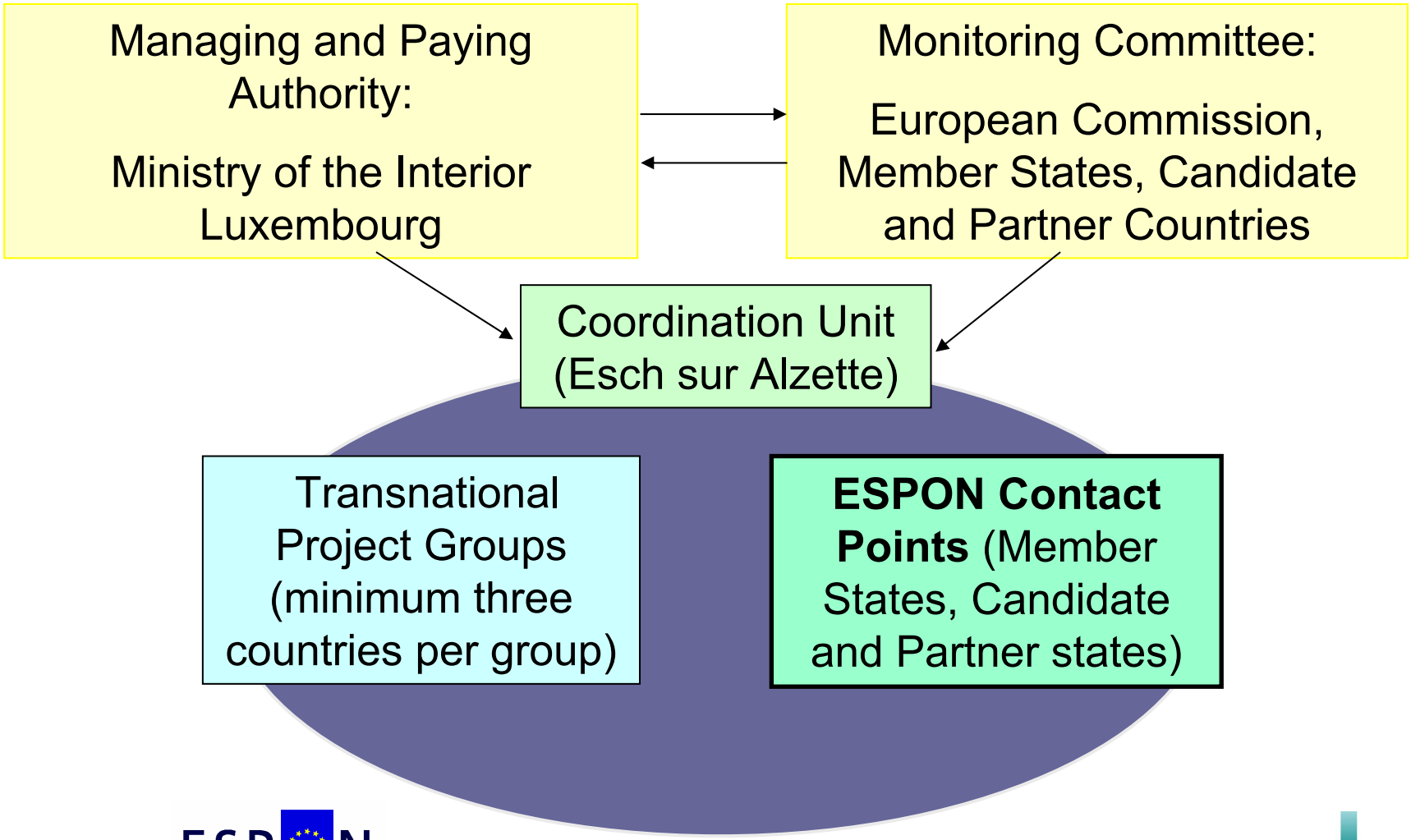
What is an ESPON Contact Point?



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ECP - Network

- All participating countries named Contact Points
- ECPs are located at
  - departments of ministries,
  - official Institutions,
  - departments of universities,
  - private research institutes

- ECPs meet regularly in parallel to the ESPON seminars, which they also attend

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Tasks + responsibilities of Contact Points

- INTERFACE
  - The ESPON Contact Points (ECPs) function as an interface between the ESPON programme and the national spatial research community.
- OBSERVATION
  - Following closely the ESPON progress and results
- COMMENTING
  - Commenting the results of the Programme from a national perspective

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Tasks + responsibilities of Contact Points

- PROMOTING
  - Creating awareness and interest for the ESPON programme within the national scene
- DATA NAVIGATOR
  - Collecting beforehand the information about the existing data and data sources of each country
  - ECP Luxembourg helps projects from the ESPON context with data enquiries
  - Bridging if problems with data access occur

Tasks + responsibilities of Contact Points

ESPON DATA NAVIGATOR

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ESPON Data Navigator (I)

- Inventory of national data collection
  - Regional data, preferably for NUTS 3-regions
  - Geographical scope: EU15 + 12 accession countries + candidate countries + neighbouring countries + Mediterranean bassin = 45 countries
  - To be used as research instrument by ESPON projects in order to improve data collection for the common platform
    - Description of the data sets (e.g. features, structure)
    - References of the data sets (e.g. publications, contact)
  - Outcome – constantly updated – published under www.espon.lu

ESPON Data Navigator (II)

- Themes to be covered
  - Spatial typologies, geography
  - Population developments and movements
  - Employment, unemployment, commuting and labour market
  - Wealth, production, enterprises and investment
  - Transport, telecommunication and information society
  - Research and development
  - Utilities and energy
  - Household oriented infrastructure, e.g. health, education, vocational training, amenities
  - Land use, settlement structure
  - Environment, e.g. water, air, waste
  - Agriculture, forestry and viticulture
  - Social situation, income and expenses
  - Housing, equipment, housing prices and market
  - Cultural sites, e.g. theatres, arts, museums
  - Tourism: demand, infrastructure, performance
  - Public sector and Elections

ESPON Data Navigator (III)

Data Navigator Luxembourg

- Data scope:
  - ~ 400 data sets for regional data in Luxembourg
  - Main contributions by
    - Statec and official statistics,
    - Datur and
    - CEPS
  - Concise and extensive inventory of Luxembourg data collection

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ESPON Data Navigator (IV)

- Data Navigator Luxembourg
  - Data quality:
    - Only little variations in data gathering methods and classifications
    - Variation in regional units, e.g. touristic regions
    - R&D data not fully developed
  - Data availability:
    - Most data refer to NUTS 3-level = national level or NUTS 5-level = municipal level
    - Regional level (NUTS 4) not yet fully established
    - Data gaps mainly concerning the requirement of regional data

    (e.g. on the fields of labour market, business activities, infrastructure, cultural inventories, telecommunication)

ESPON Data Navigator (V)

- Conclusions for the DATA NAVIGATOR
  - Data Navigator is a inventory for ESPON projects
  - But the demand of the ESPON projects goes far beyond: more European-wide harmonised data concerning e.g.
    - Data gathering methods and procedures
    - Definitions of data sets
    - Classifications of data, e.g. ISCED 97
    - Spatial completeness
    - Data storage
  - Long term objective to make proposals for EUROSTAT and NSIs

Tasks + responsibilities of Contact Points

- Conclusions ESPON / ECPs
- ESPON Programme examines all major spatial themes
- The programme sees a clear functional division, ECPs are one important part

- ECPs have a broad variety of tasks to carry out
  - Provide different service and communication functions
  - Inform
  - Serve the transnational project groups
  - Carry the national perspective into the ESPON programme

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Coffee Break – Kaffeepause

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ESPON key projects – selected results

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Key projects

- Key projects of the 1st ESPON round 2002-2004

  - 1.1.1 Polycentrism
  - 1.2.1 Urban –rural relations in Europe
    - Both projects delivered basic typologies for a common frame

  - 3.1 Integrated tools for spatial development
    - Project created a common ground – maping, coordinating
    - Invented some very new tools
    - Invented a new picture of Europe as a whole

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Project 1.1.1

The Role, Specific Situation And Potentials Of Urban Areas As Nodes In A Polycentric Development

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Polycentricity

- Polycentricity
  4 basic dimensions can be distinguished:

  - morphological:
    - settlement patterns, transport networks, urban structures
  - functional socio-economic specialisation:
    - highly specialised small areas can be important nodes in the polycentric system
  - accessibility in terms of transportation and ICT:
    - the possibility to integrate into networks forms an important part of polycentric activities, access to I&C networks seem to be of crucial importance
  - co-operation and interaction:
    - the actual degree and effects of networking has hardly been investigated; local/regional networking as well as transnational networking seem to be important.

Polycentricity

- Polycentricity

  - Ambiguous goal that is opposed to monocentricity as well as to total sprawl.
  - Polycentricity seeks an optimum between (too much) concentration and the absence of concentration (sprawl).
  - Polycentrism can be seen as a „bridging concept“ between „economic growth and efficiency“ and a „balanced development“
  - This makes polycentricity fundamentally ambiguous, esp. when judged on different spatial levels.

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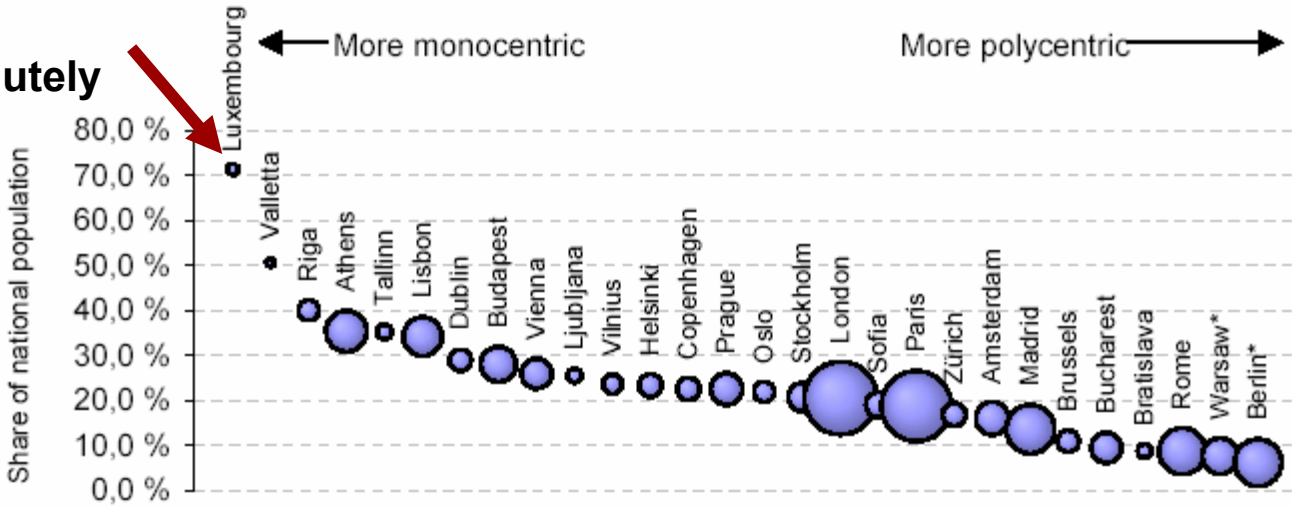
Polycentricity

	Feature / Functions	Measured variable
F1	Population	Population
F2	Industrial functions	Gross value added (sectors C-F)
F3	Tourism functions	Overnight stays in hotels (and similar)
F4	Transport functions	Airport (passengers), ports (container traffic)
F5	Knowledge functions	Location of University, number of students
F6	Decision-making centre	Location of TOP 500 companies
F7	Administrative functions	Administrative status of FUA (three different levels: 1) national capital; 2) province/regional capital; 3) no specific administrative status

On a national scale
Luxembourg is absolutely not polycentristic



Ball size is represents the population of capital urban agglomeration
London 12.2 mill. Amsterdam 2,6 mill. Tallinn 0,5 mill.
(*= not the largest urban agglomeration in the country)

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Polycentricity

- Functional Urban Areas (FUAs)
  - FUAs are commuting catchment areas or relevant counterparts, e.g. Greater London Area or the Ruhr Valley.
  - Their concrete dimensions, specific characteristics and impacts are not very well analysed.
  - There spatial role in the EU is not yet clear, e.g. it is not clear if they cope with the concept of polycentrism or if they hamper it.
  - FUAs can not be ignored, so a vital, fast and soundly analysis is needed.
  - FUAs are building blocks in the analysis of the ESPON project 1.1.1 for potential polycentric urban regions.

Polycentricity

- International level - FUA
  - population (urban region) 5% or more of national population
  - capital functions (administrative)
  - “own” international airport *(urban region not smaller than 500 000 inhabitants + airport more than 1 000 000 passengers 2001)*
- National / transnational FUA
  - population (urban region) more than 200 000 inhabitants / core city population more than 2% of national value *(no less than 100 000 inhabitants)*
  - specific national function (according to experts)
- Regional FUA
  - population 50 000 to 200 000
  - specific regional function (according to experts)

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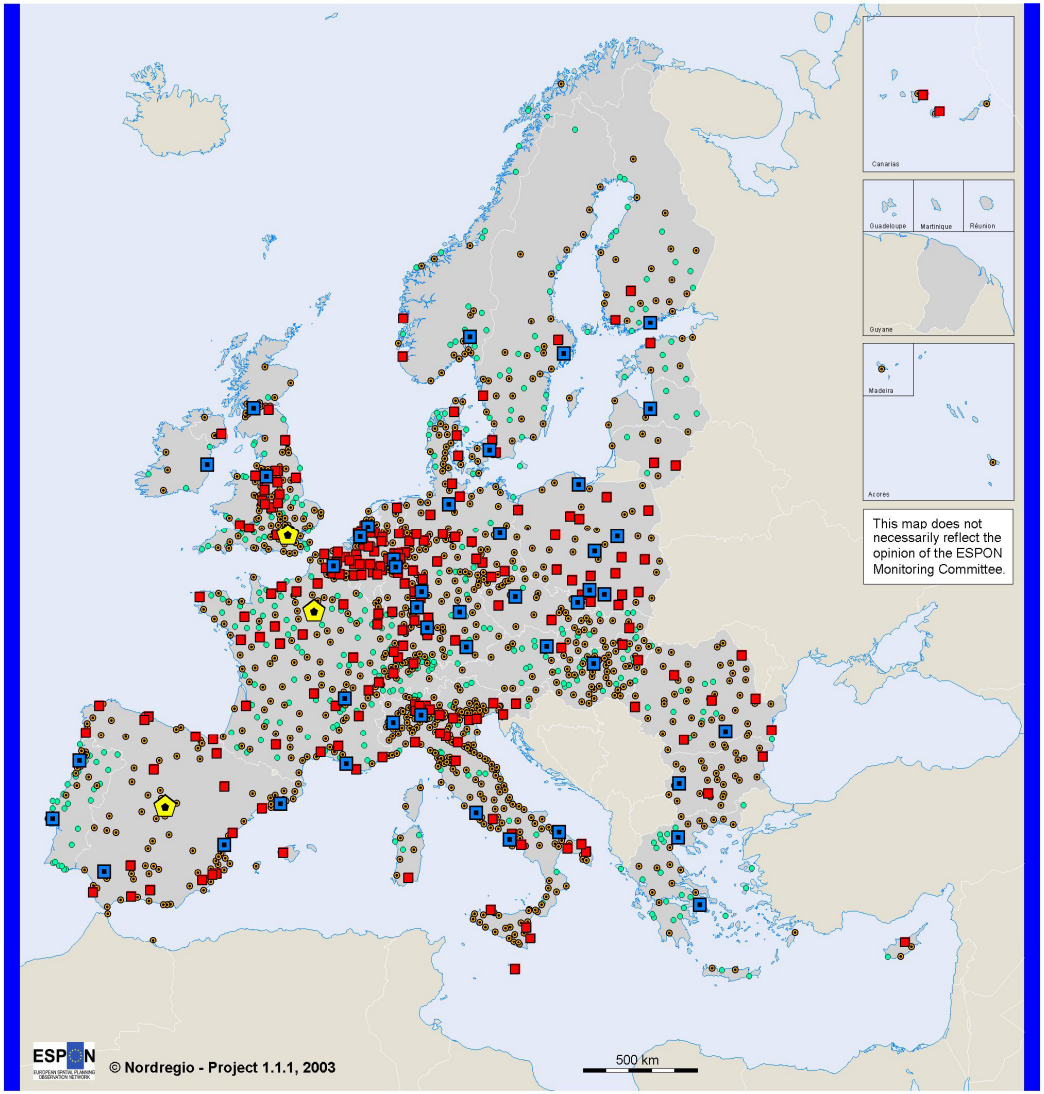
Functional Urban Areas (FUAs)

- FUA population
  - 1,595 FUAs in EU 27+2
  - Two bananas: From England
    - to Italy
    - to Hungary

FUA population (mass function)



Total FUA population in FUAs with more than 20 000 inhabitants 2000-2001

Geographical Base: Eurostat GISCO

- > 5 million inhabitants
- 1-5 million inhabitants
- 250 000-1 million inhabitants
- 50 000-250 000 inhabitants
- < 50 000 inhabitants

Origin of data: National Statistical Offices, National experts

Source: Nordregio

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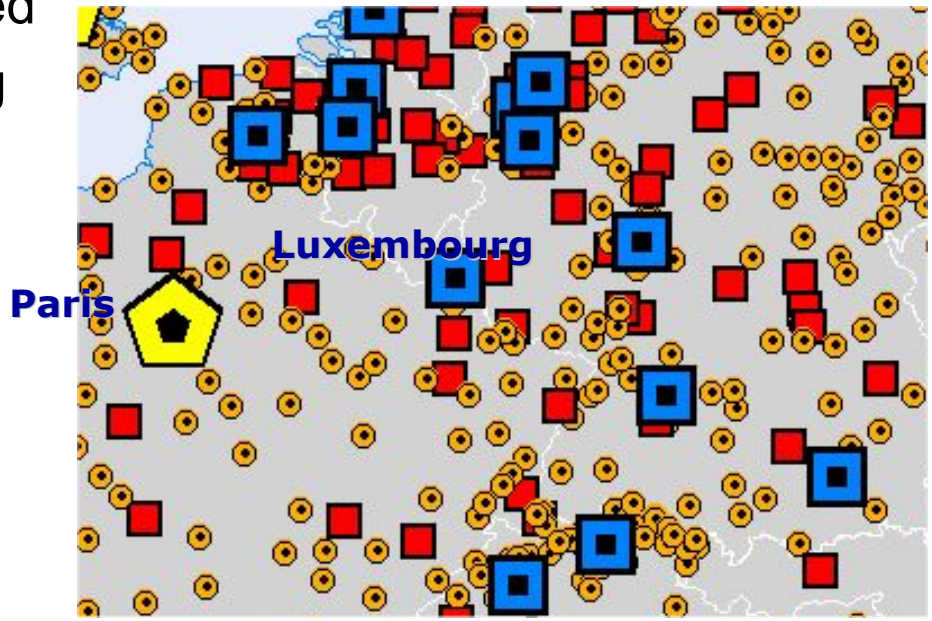
FUAs

- Typology of FUAs
  - In the population based typology, Luxembourg is classified as an European FUA



Typology of Funtional Urban Areas (FUA's)

- Global
- European
- Transnational and national
- Regional and local

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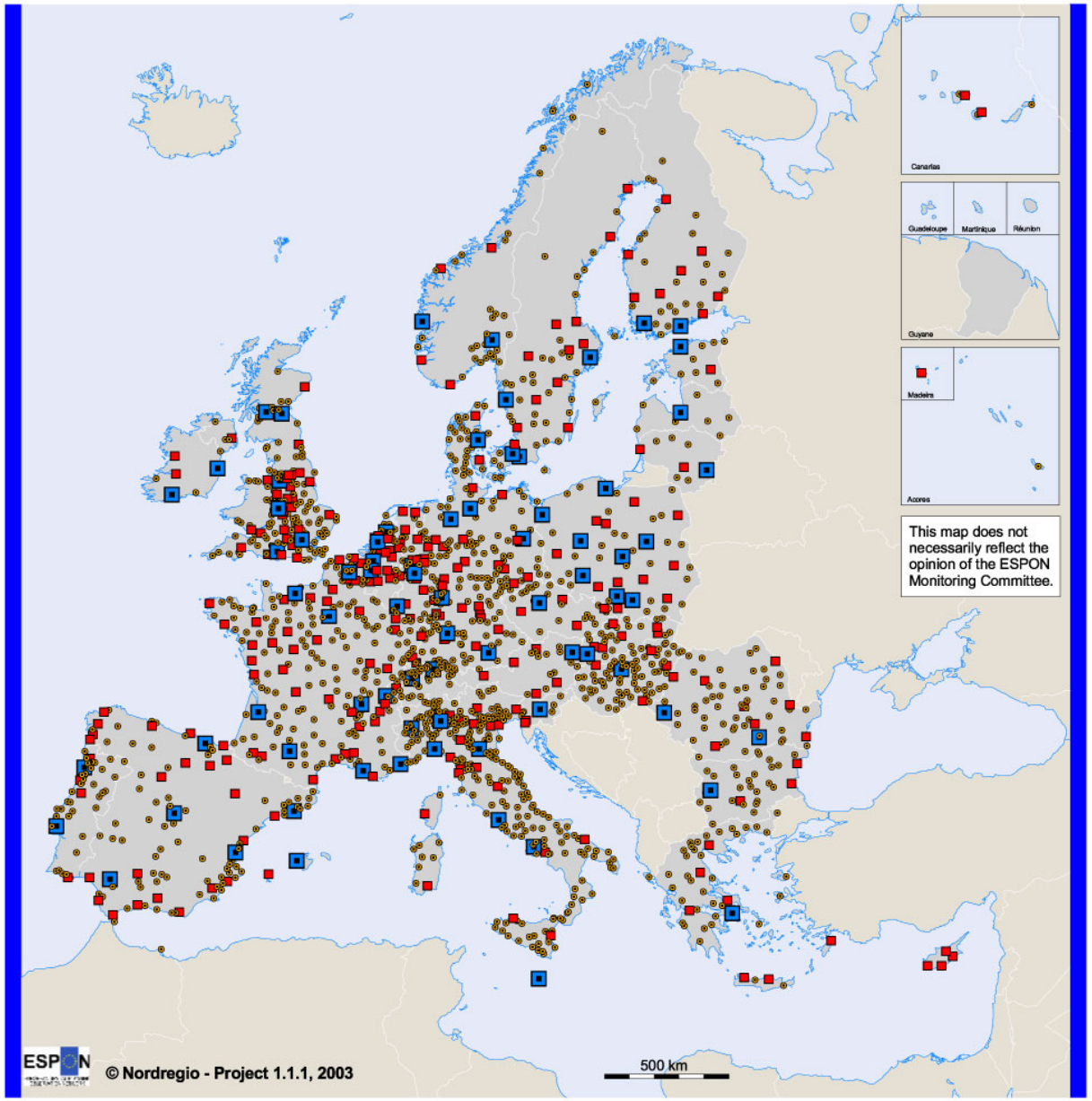
FUAs

- A typology of FUAs, based on 5 functions:
  - population
  - transport
  - manufacturing
  - no of students
  - head offices

  76 MEGAs

Typology of Functional Urban Areas (FUAs)



Geographical Base: Eurostat GISCO

- Metropolitan European Growth Areas (MEGAs)
- Transnational / national FUAs
- Regional / local FUAs

Origin of data: EUROSTAT, National Statistical Offices, National experts

Source: Nordregio

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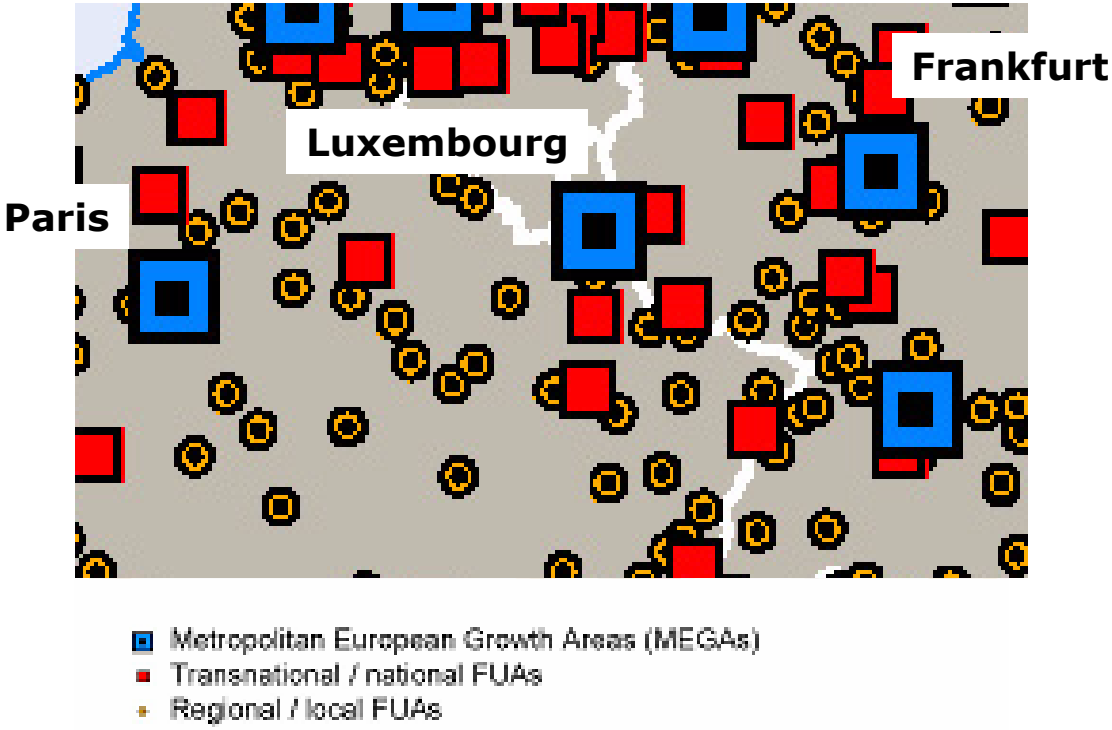
FUAs

- In the functional typology
  - Luxembourg is classified as a MEGA



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Basic results – policy recommendations

- The *micro level*
  - Cities should be encouraged to co-operate and join forces, with the aim of improving their urban ranking in the national urban systems.
  - Governance here, is a key issue when promoting collective action across administrative borders.
  - National governments should to improve the framework for local governance, to create more robust policy frameworks and greater political commitment.
  - Polycentricity at the regional level should be facilitated by structural fund regulations.

Basic results – policy recommendations

- The national and transnational *meso* level
  - Polycentricity is about the balance within the urban system.
  - EU can contribute to a more polycentric urban structure by agenda setting.
  - Spatial strategies primarily target at economic development.
  - Polycentrism is considered in only few countries and regions.
  - Observation of polycentricity of national urban systems is hampered by the differences in national definitions.
  - A pan-European definition of Functional Urban Areas should be developed and data at this territorial level collected.

Basic results – policy recommendations

- The *macro* level (EU)
  - Stimulate the development of *zones of economic global integration* beyond the Pentagon.
  - Polycentricity must build upon functional specialisation, not size.
  - Locate EU institutions in cities outside the Pentagon.
  - Use structural fund regulations to analyse urban structures.
  - Promote networking, develop common strategies covering several cities!
  - A policy for increased polycentristic and spatial balance will strengthen the already strongest urban regions.
  - Consequently, a European level polycentricity must build upon functional specialisation, rather than population size..

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Project 1.1.2

Urban Rural Relations in Europe

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Urban –rural relations

- Urban rural relations
  - Europe is very diverse, national categories of urban and rural do not work for the EU as a whole
  - Rural means something completely different e.g. in Netherlands or in Sweden.
  - A common denominator of all national definitions does also not work.
  - But insight is needed desperately how Europe can be categorized.
  - Relations between urban and rural are not explored yet on a EU level.

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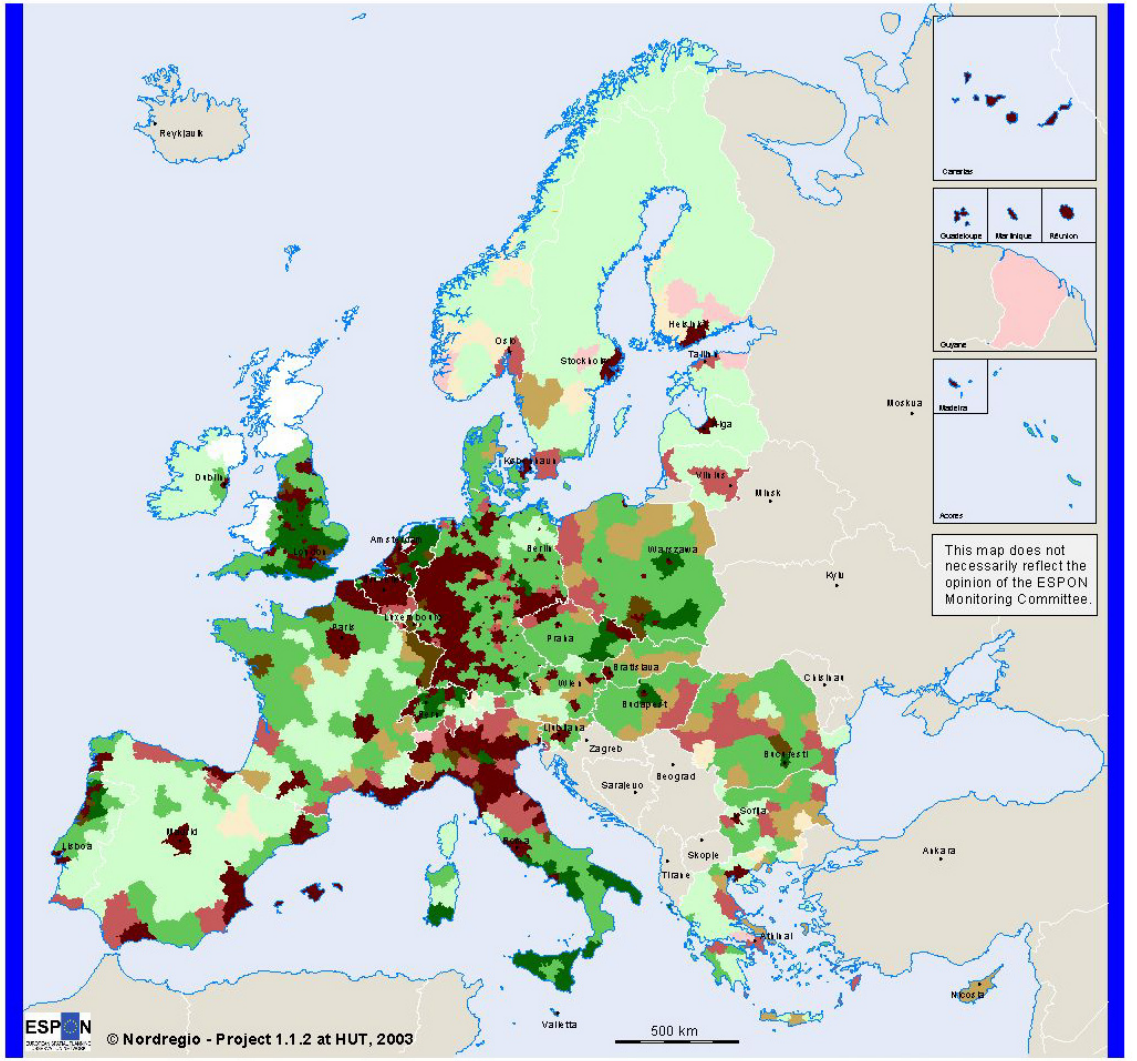
Urban-rural relations

- Urban-rural population by national classifications
- First proposal for typology

Urban - rural population in Europe based on national classifications



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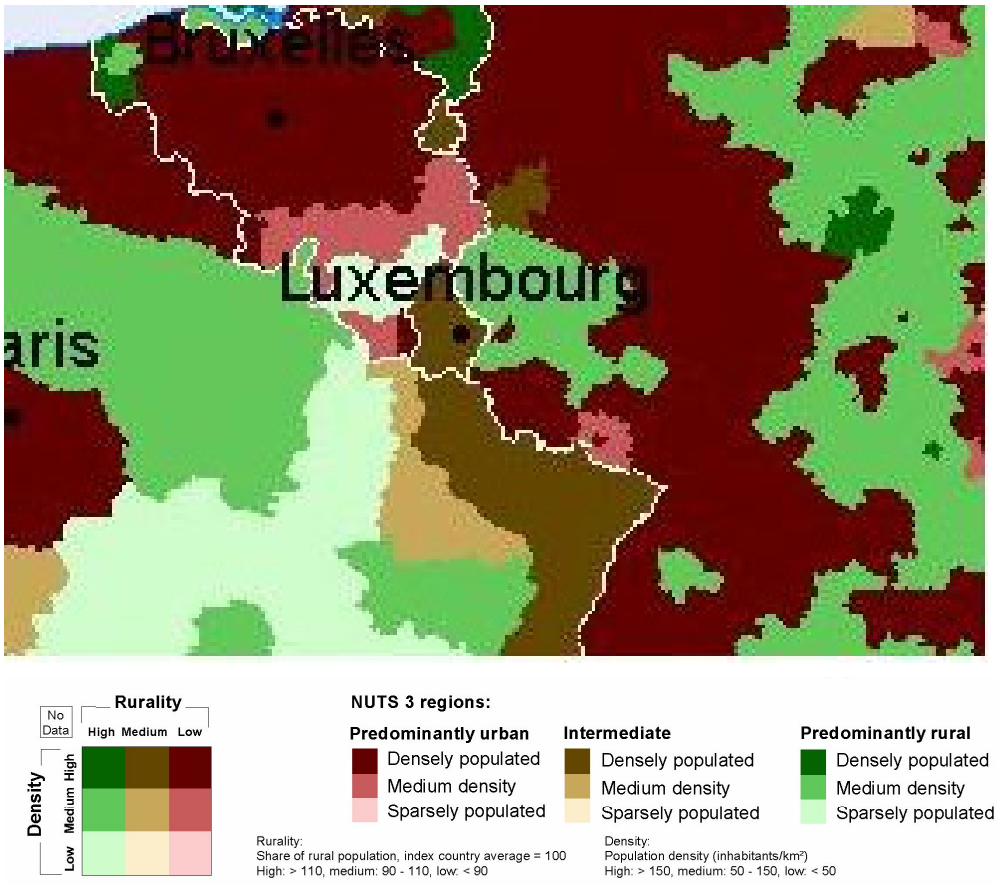
Urban –rural relations

- Luxembourg
  Characterized as rural intermediate, densely populated



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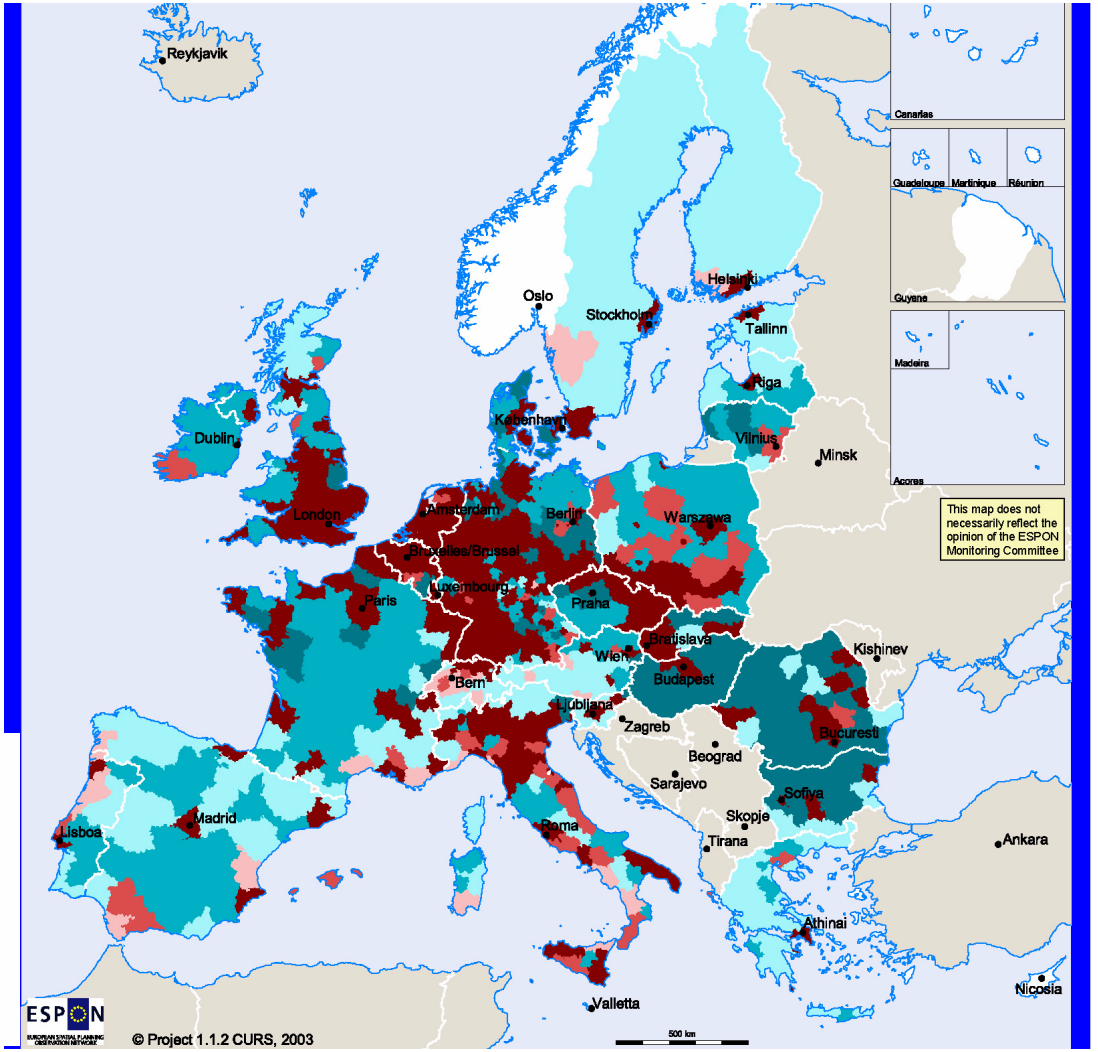
Urban –rural relations

Typology 6 types of regions

Degree of **urban influence**, degree of **human intervention**

- Type 1: ***19***% of the total area, ***60***% of the total population, ***72***% of the total GDP
- Urban types (1-3): ***27***% area, ***69***% pop., ***78***% GDP



Urban-rural typology, based on population density, FUA ranking and land cover

- High urban influence, high human intervention
- High urban influence, medium human intervention
- High urban influence, low human intervention
- Low urban influence, high human intervention
- Low urban influence, medium human intervention
- Low urban influence, low human intervention
- no data

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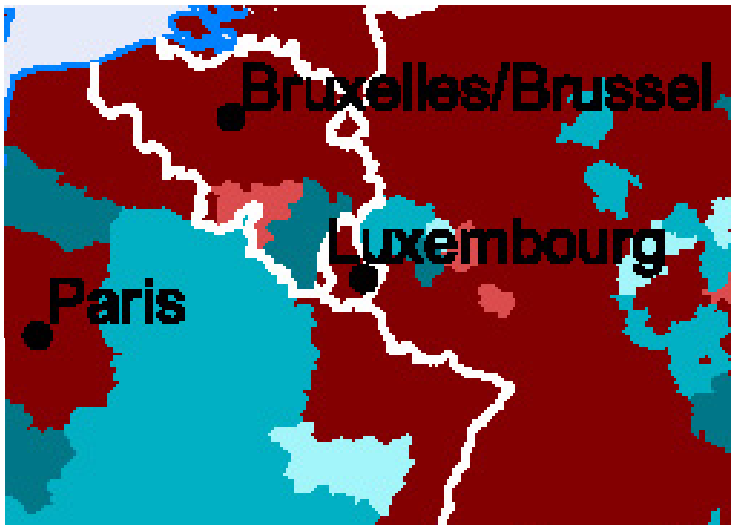
Urban-rural

- Luxembourg is characterized as region of high urban influence + high human intervention



Urban-rural typology, based on population density, FUA ranking and land cover

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Basic results – policy recommendations

- ***Driving forces of urbanisation are….***
  - ***Demographic*** change
  - ***Structural*** change of the economy
  - ***Behavioural*** patterns, life styles, images and ideas
  - ***Differential urbanisation***: cyclical development (polarisation, polarisation reversal)

Basic results – policy recommendations

- **Rural restructuring**
  - The ***post-productive*** countryside:
    - quality food,
    - public recreational space,
    - space for housing,
    - paces of environmental protection

Basic results – policy recommendations

- **Recommendations**
  - The ***structural policies*** of the **EU** need to take into account the issue urban-rural relations
  - The ***sectoral policies*** of the **EU** need to recognise the issue of urban-rural relations
  - The ***functional*** urban-rural relations can and should be improved in a variety of ways by diversifying the economy

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Project 3.1

Integrated Tools For An European Spatial Development

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ESPON 3.1 Integrated tools

- Project functioned as the interface between
  - MC -CU – TPGs – ECPs
- Project turned out to be extremely relevant for all the projects of the 1st ESPON phase...
  - 3.1 cartography.... delivered the common map default
  - 3.1 data base provided the common data default
  - 3.1 gave context orientated guidance
- Turned out to be inventive and even a bit provocative
  - Developed some new tools,
    - HyperAtlas,
    - Web based GIS
  - Developed a Regional classification of Europe RCE

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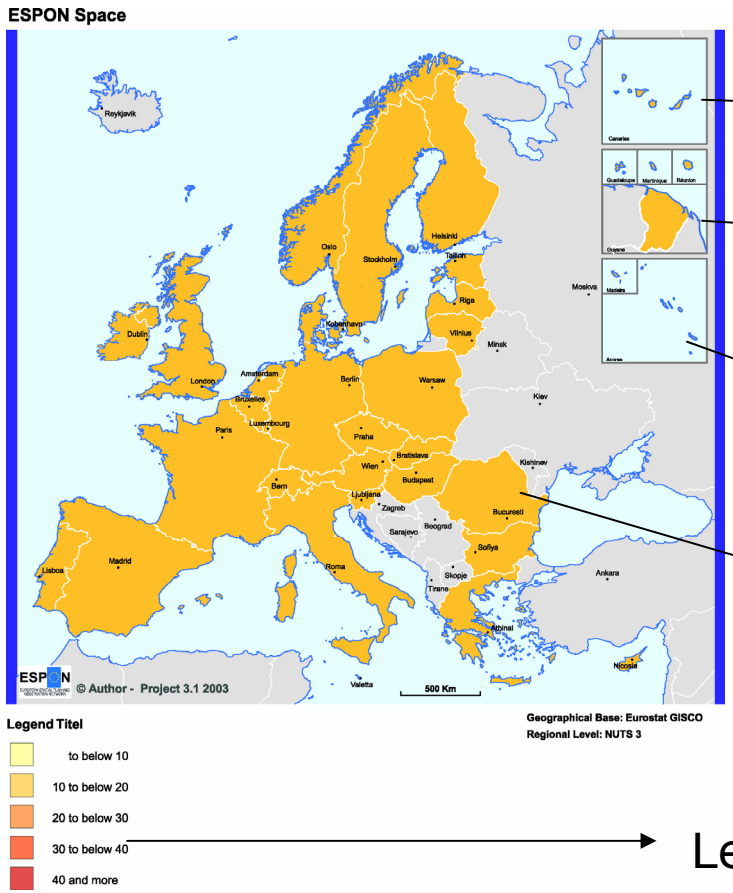
ESPON 3.1 Cartography

- ESPON maps are based on a common map layer, which is used as a default,
- All projects are obliged to match this default.
- But despite of this obligation, the TPGs are free to work with different technologies: map based GIS, stationary GIS tools etc.
- And all projects can decide to use this default only for parts of the EU 27 + perspective, e.g. in case of case study work.

ESPON 3.1 Cartography



Canaries

Guyana, Guadeloupe, Martinique, Reunion,

Acores, Madeira

EU-27 + main space on NUTS 3 level

Legend default

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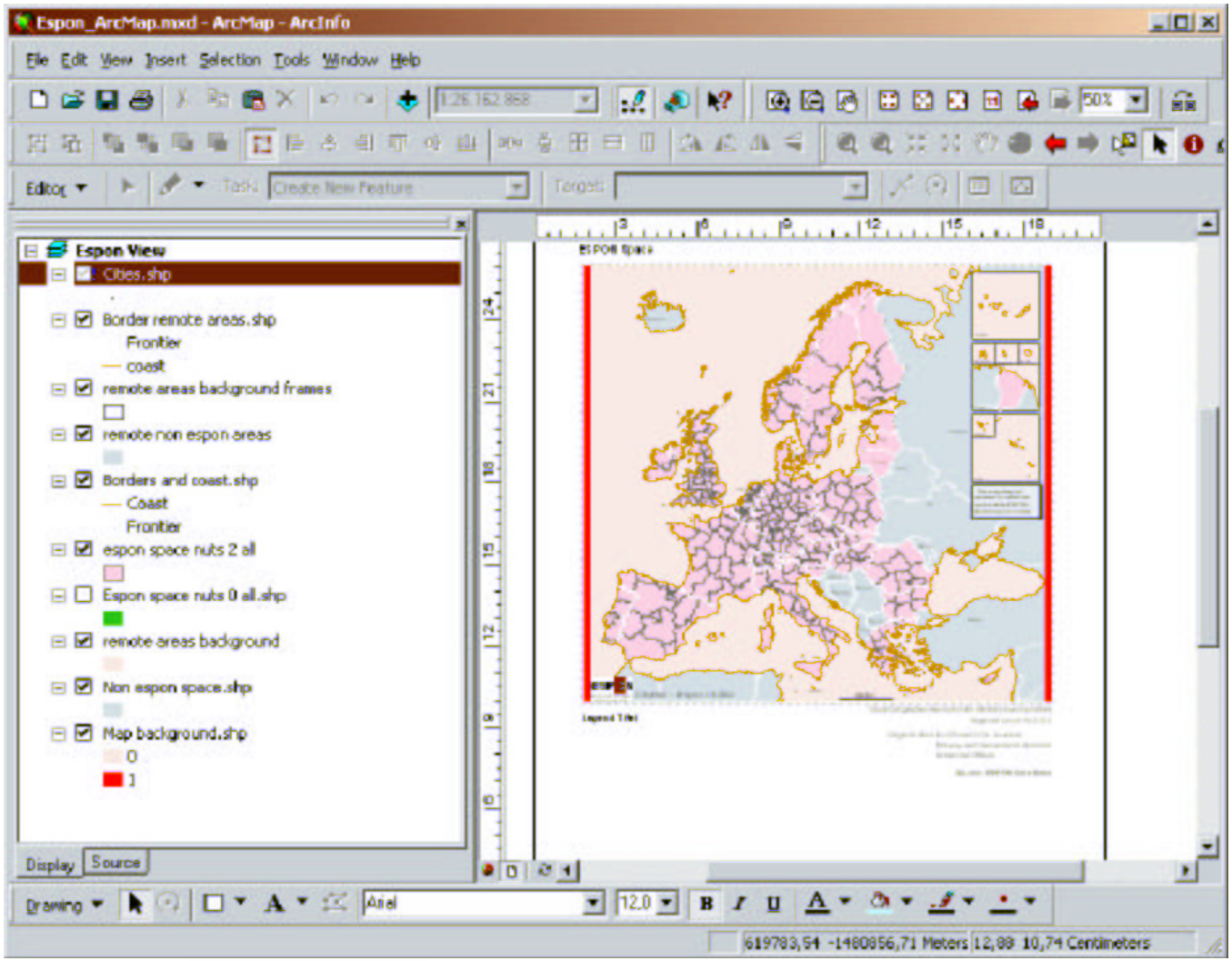
ESPON 3.1 Map Tool



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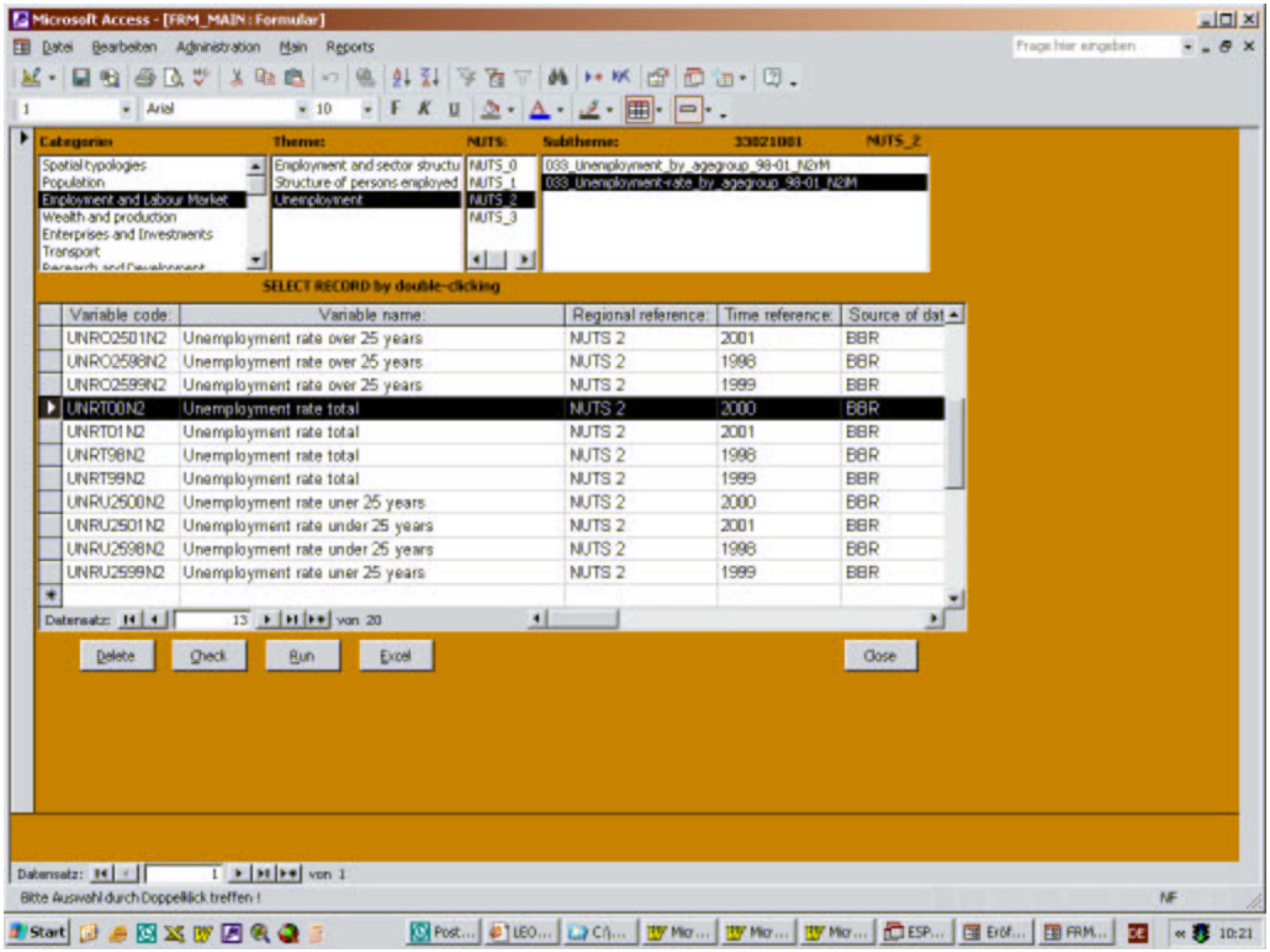
ESPON 3.1 Core Indicators

- ESPON 3.1 –responsible for establishing and compiling the ESPON Core Indicators

- Main features:
  - Number of indicators (103 in 12/2004)
  - Spatial Scope: mostly (90%) EU 27 +
  - Regional level: varies between NUTS 2 - NUTS 5
  - Temporal scope: differs between 2000 (point), 1990-2001
  - Provides a common ground for any kind of spatial analysis
  - Guarantees a common quality standard

ESPON 3.1 Data Base



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ESPON 3.1 (web based) GIS

- Allows to combine a vast number of indicators and themes
- Allows to analyse on different spatial levels
- Allows to combine the different ESPON topics…

- Various mapping and analysis functions

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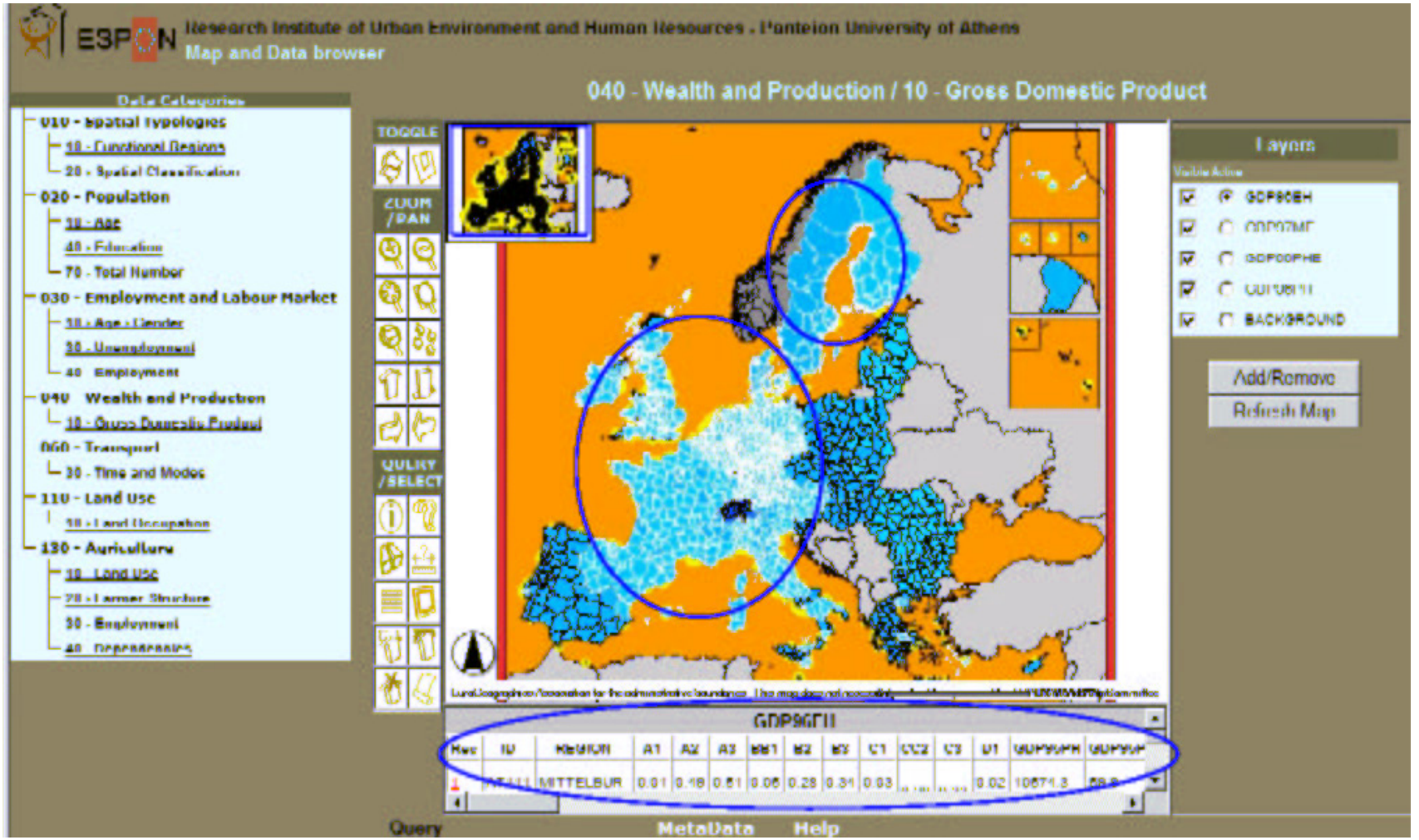
ESPON 3.1 (web based) GIS



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ESPON 3.1 Hyper Atlas

- Spatial Analysis
  - Innovative (new cartographic representations)
  - Interactive (choice between thousands of possible solutions)
  - Operational (generation of complete Atlas for political decision)

- Computer Science
  - Multiplatform (can be used on autonomous PC or on the web)
  - Powerful (can be adapted for large databases – NUTS 5)
  - Open (kernel software is protected by free license)

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HyperCarte - Multiscalar Territorial Analysis

File View Tools Help

Open Workspace | Save Workspace | Build Report

Area and Zoning

Study Area: UE29

Elementary Zoning: Nuts_2

Indicator

Numerator: Unemployed in 2000

Denominator: Active population in 2000

Ratio: Numerator / Denominator

Contexts for the Deviations

Global: UE15 0,083 OK

Medium: Nuts_0

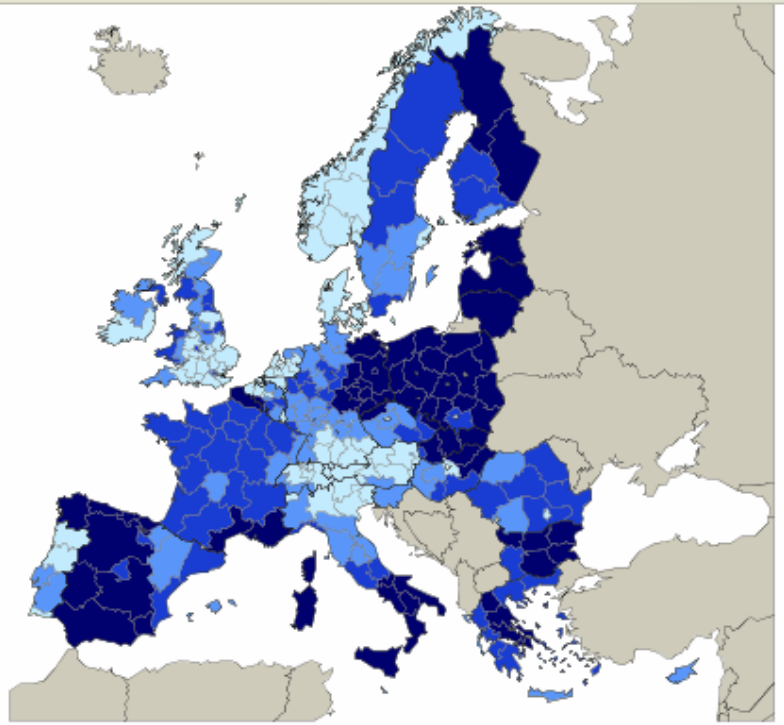
Local: Contiguity

Area and Zoning | Numerator | Denominator | Ratio | Global Deviation | Medium Deviation | Local Deviation | Synthesis

Legend | Options | Explanation

	(N)
0,310	
0,118	(68)
0,073	(68)
0,045	(68)
0,015	(69)

Unemployed in 2000 / Active population in 2000



0 428 855 km

Details

Unit	RHONE-ALPES
Numerator	210 000
Denominator	2 470 000
Ratio	0,085
Deviation(s)	

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

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ESPON 3.1 RCE – regional classification of Europe

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

Theme and indicators	Description	Polarity
Economy		
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	-
Labour market		
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 km²	+
Internet users	Share of all inhabitants	+
Demography		
Population density	Number of persons per km²	+
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 %	+

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ESPON 3.1 RCE – regional classification of Europe

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

Environment		
Artificial surface	Share of total area (Corine)	-
Natural surface	Share of total area (Corine)	+
Agriculture intensity	Output/input ratio	-
Hazards		
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)	-
Accessibility		
Potential accessibility	By road	+
Potential accessibility	By rail	+
Potential accessibility	By air	+
Potential accessibility	Multimodal	+
Spatial structure		
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	+

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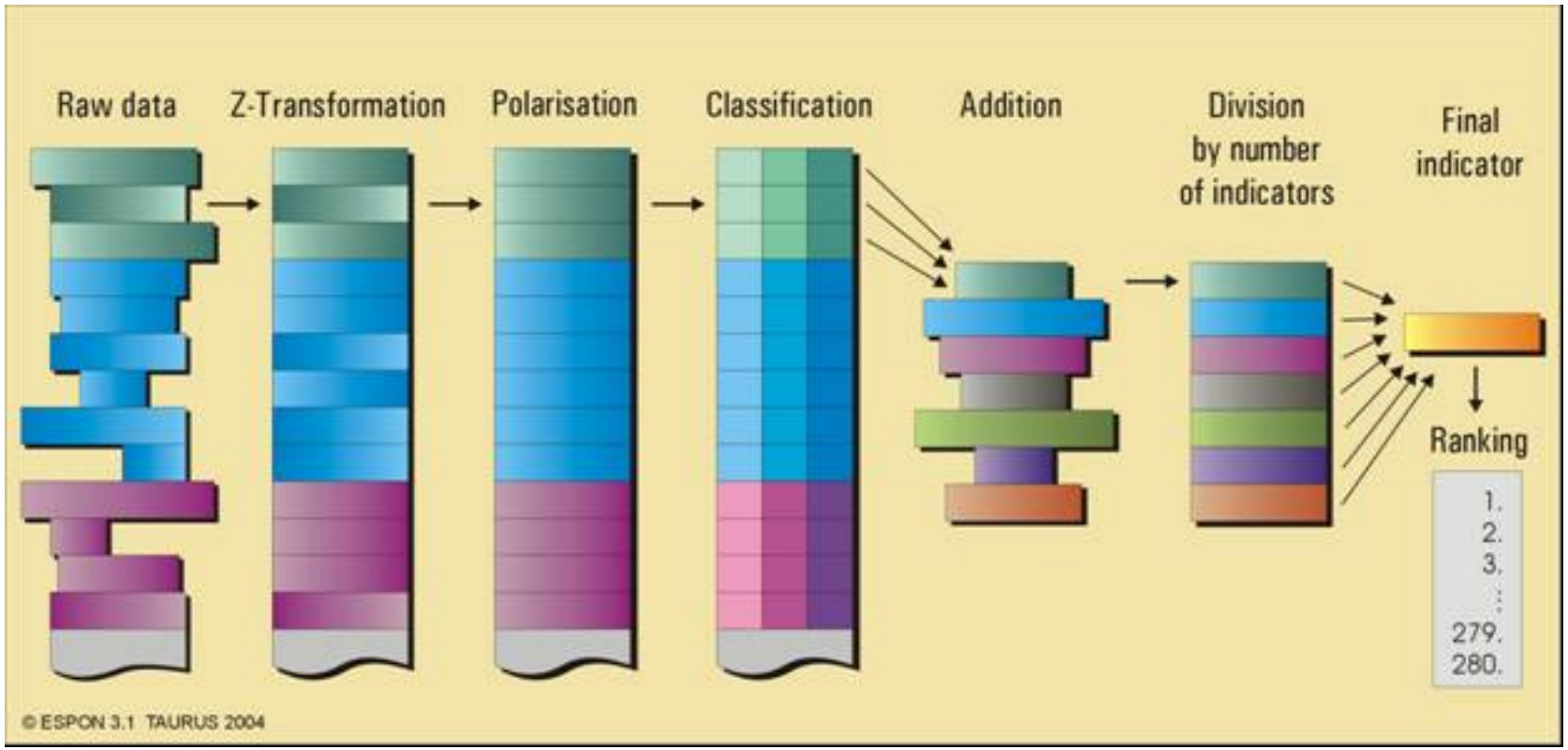
RCE – regional classification of Europe



- The sketch shows the way from data to classification

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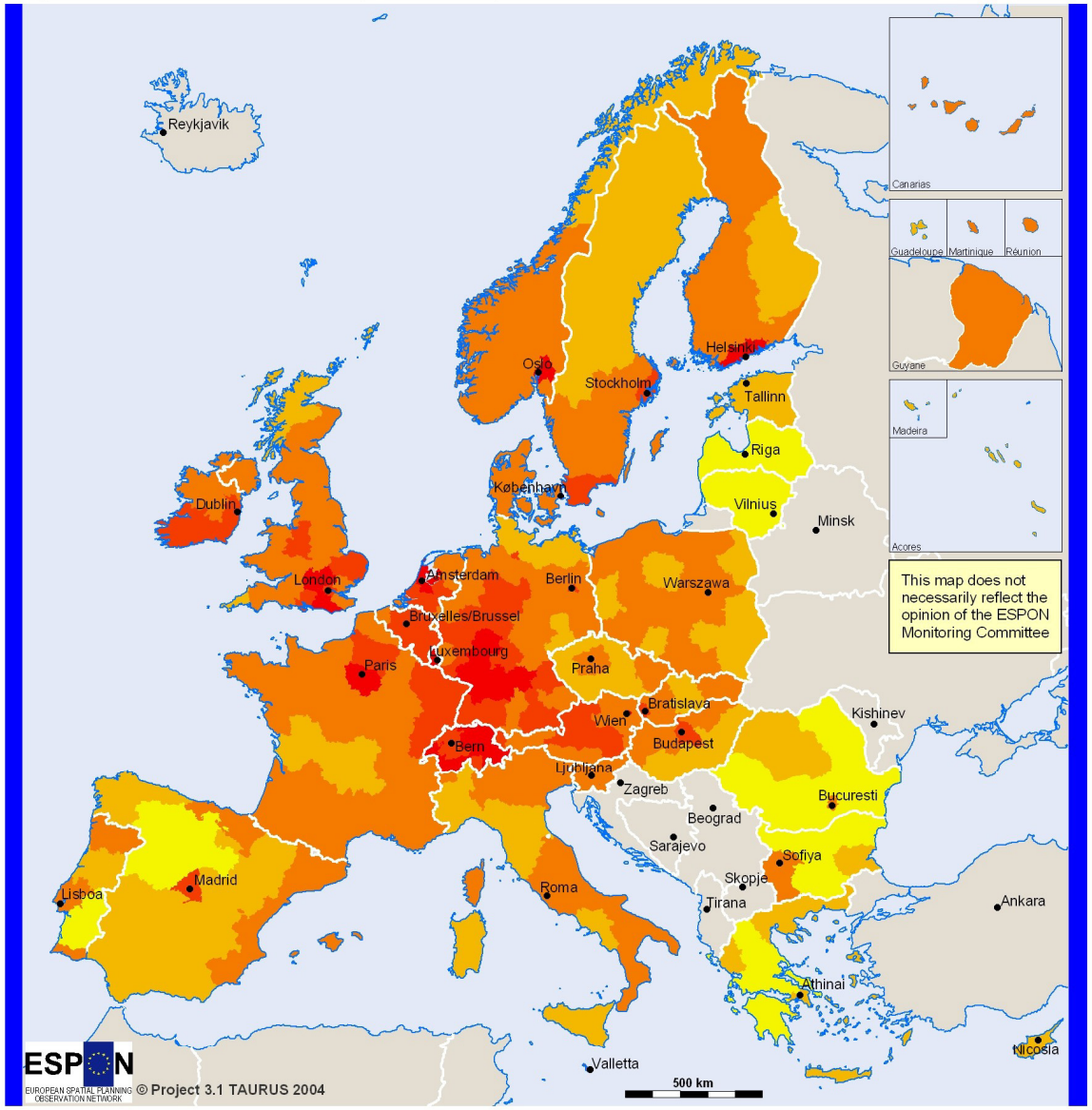
RCE

- **Result…**

  A distinct picture of Europe which shows some familiar aspects as well as some unexpected details

Regional classification of Europe - overall performance



Overall performance

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

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Regional Level: NUTS 2
Origin of data: Eurostat, National Statistical Offices, ESPON 3.1
Source: ESPON Data Base

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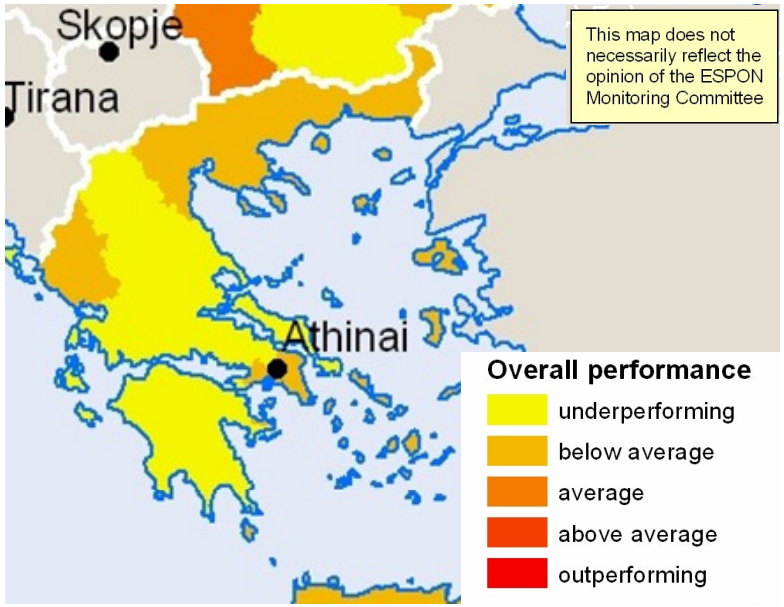
RCE – regional classification of Europe



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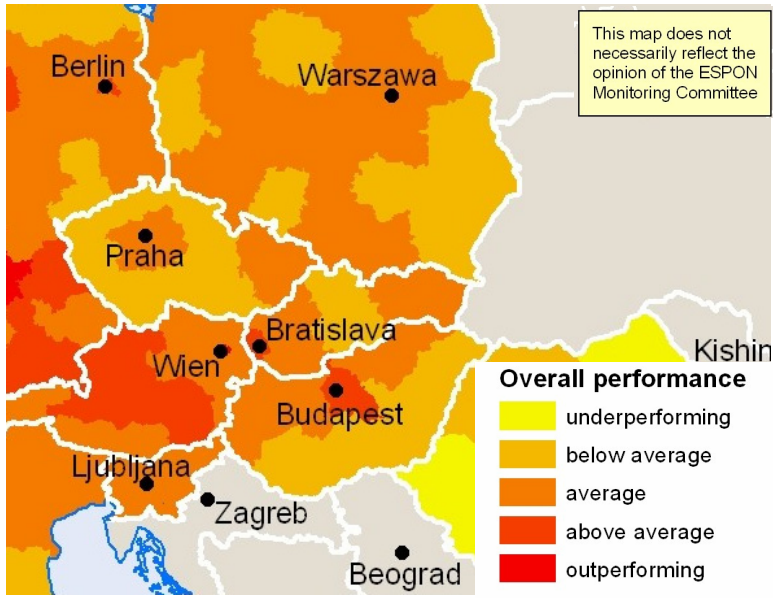
Regional Level: NUTS 2
Origin of data: Eurostat, National Statistical Offices, ESPON 3.1
Source: ESPON Data Base

Zoom-in without scale



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Regional Level: NUTS 2
Origin of data: Eurostat, National Statistical Offices, ESPON 3.1
Source: ESPON Data Base

Zoom-in without scale

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ESPON 3.1 RCE – regional classification of Europe

Rank	Overall ranking RCE	Reporting: Ranking after GDP (PPS) per inhabitant
TOP 25		
1.	**Luxembourg**	**Inner London**
2.	**Berkshire, Bucks and Oxfordshire**	**Région Bruxelles-capitale**
3.	**Inner London**	**Luxembourg**
4.	**Utrecht**	Hamburg
5.	**Darmstadt**	**Oslo Og Akershus**
6.	**Île de France**	**Île de France**
7.	Mittelfranken	Oberbayern
8.	**Suisse Du Nord-Est**	**Zürich**
9.	Bedfordshire, Hertfordshire	**Wien**
10.	**Zürich**	**Darmstadt**
11.	**Stuttgart**	**Uusimaa (suuralue)**
12.	**Uusimaa (suuralue)**	**Utrecht**
13.	Karlsruhe	Bremen
14.	**Wien**	Trentino-Alto Adige
15.	**Oslo Og Akershus**	Åland
16.	Suisse Centrale	Lombardia
17.	Flevoland	**Suisse Du Nord-Est**
18.	**Région Bruxelles-capitale**	**Stockholm**
19.	Surrey, East and West Sussex	**Stuttgart**
20.	Rheinhessen-Pfalz	Emilia-Romagna
21.	**Noord-Holland**	**Noord-Holland**

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Basic results

- Strong guidance for the other projects was provided
- A solid base for spatial planning on an EU level was developed: Data, Mapping defaults etc.
- Some very innovative tools were invented and tested
- Some new and innovative analysis strategies were established

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Lunch break – Mittagspause

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Afternoon project session

- Presentations are shorter
- A selected variety of projects is presented

- Only selected results are highlighted very shortly
- Results for Luxembourg are highlighted

- For a deeper insight, please visit: www.espon.lu

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Project 1.1.4

Spatial Effects Of Demographic Trends And Migration

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Demographic trends

- Main typology
- Population change 1996-1999, six types
- Luxembourg:

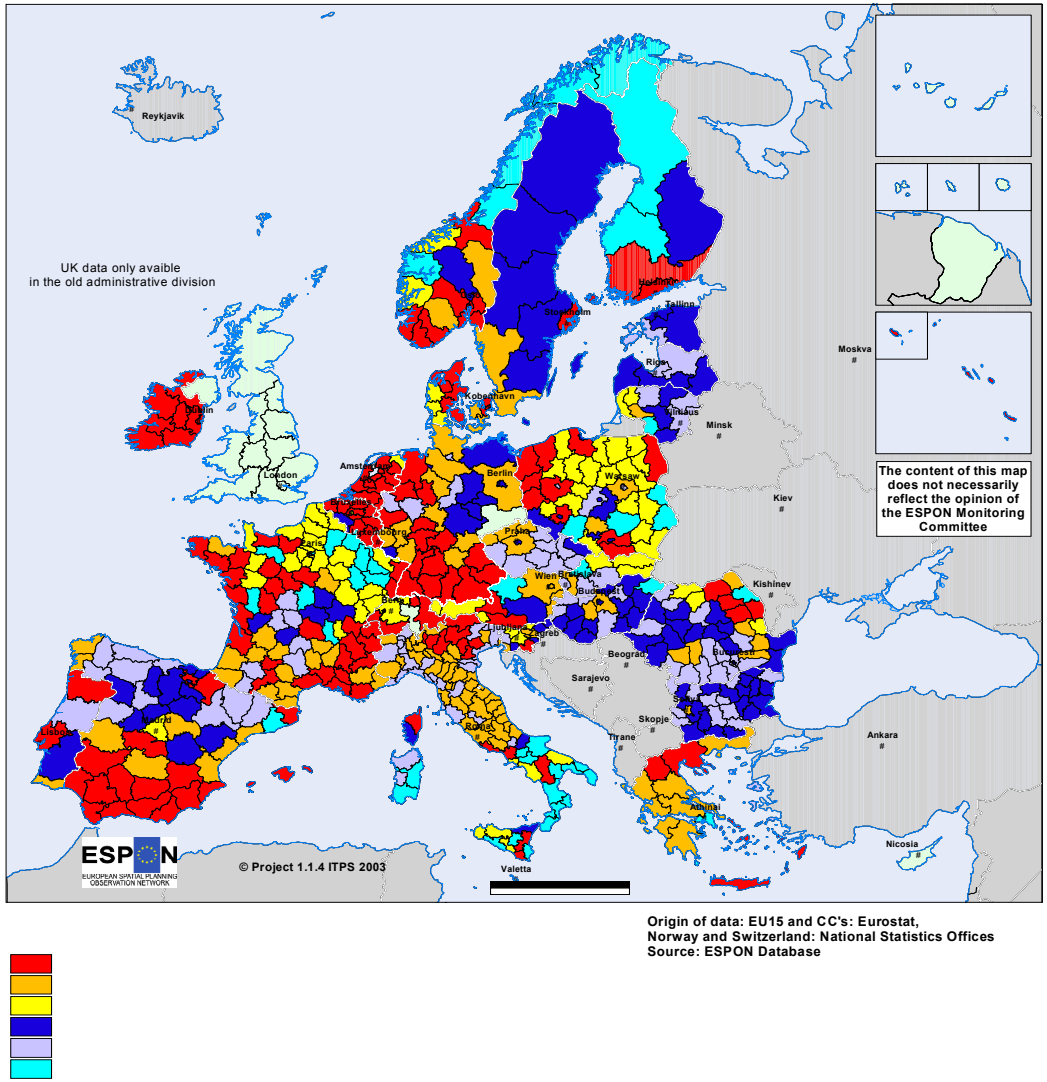
  type 1 red

  total

  evolution >0

  migratory >0

  natural >0



Origin of data: EU15 and CC's: Eurostat,
Norway and Switzerland: National Statistics Offices
Source: ESPON Database

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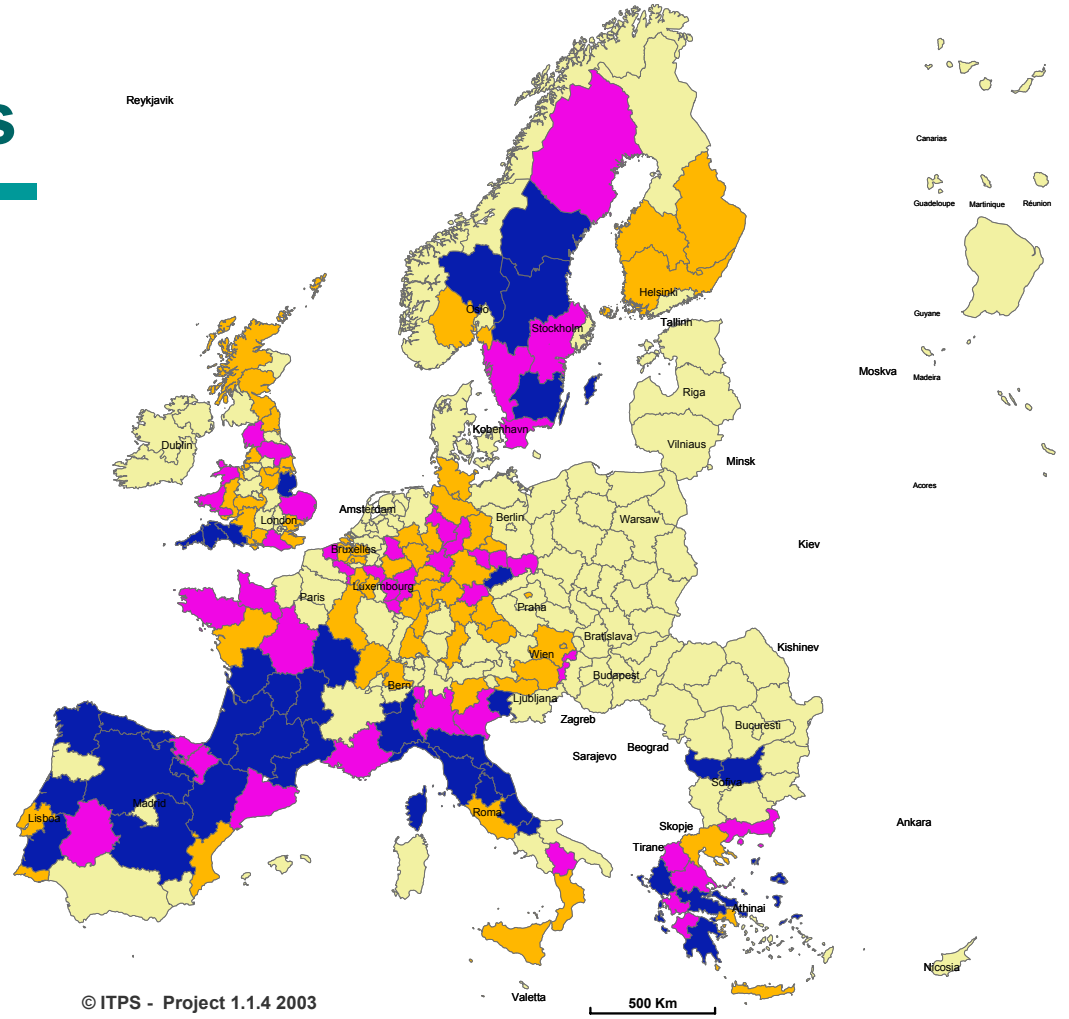
Demographic Trends

- Ageing (65+)
- Luxembourg: type 1 (light brown, Europe 29 average or better)



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Population ageing 2000. Deviation from "Europe 29" average.
Share of persons > 65 years.

Geographical Base: Eurostat GISC
Regional Level: NUTS 2

- "Europe 29" average or "better"
- Less than 1/2 STD "negative" deviation
- 1/2 to 1 STD "negative" deviation
- 1 STD deviation or "worse"

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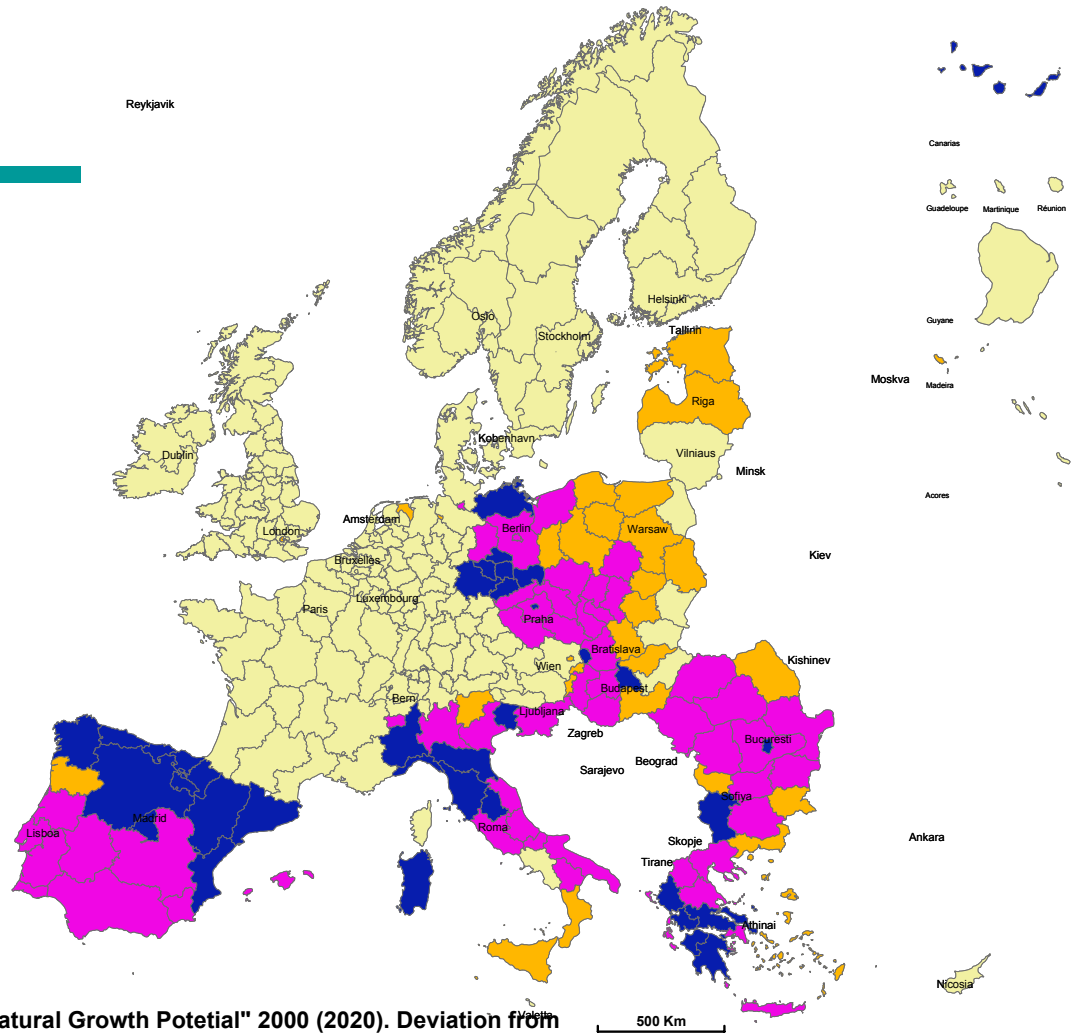
Demographic Trends

- Natural population growth potential 2000/2020
- Luxembourg: type 1 (light brown, Europe 29 average or better)



"Natural Growth Potetial" 2000 (2020). Deviation from "Europe 29" average. Cohort 1991-2000/Cohort 1971-1980 (20-29 in 2020/20-29 in 2000).

- "Europe 29" average or "better"
- Less than 1/2 STD "negative" deviation
- 1/2 to 1 STD "negative" deviation
- 1 STD deviation or "worse"

Geographical Base: Eurostat GISCO
Regional Level: NUTS 2 © ITPS 1.1.4

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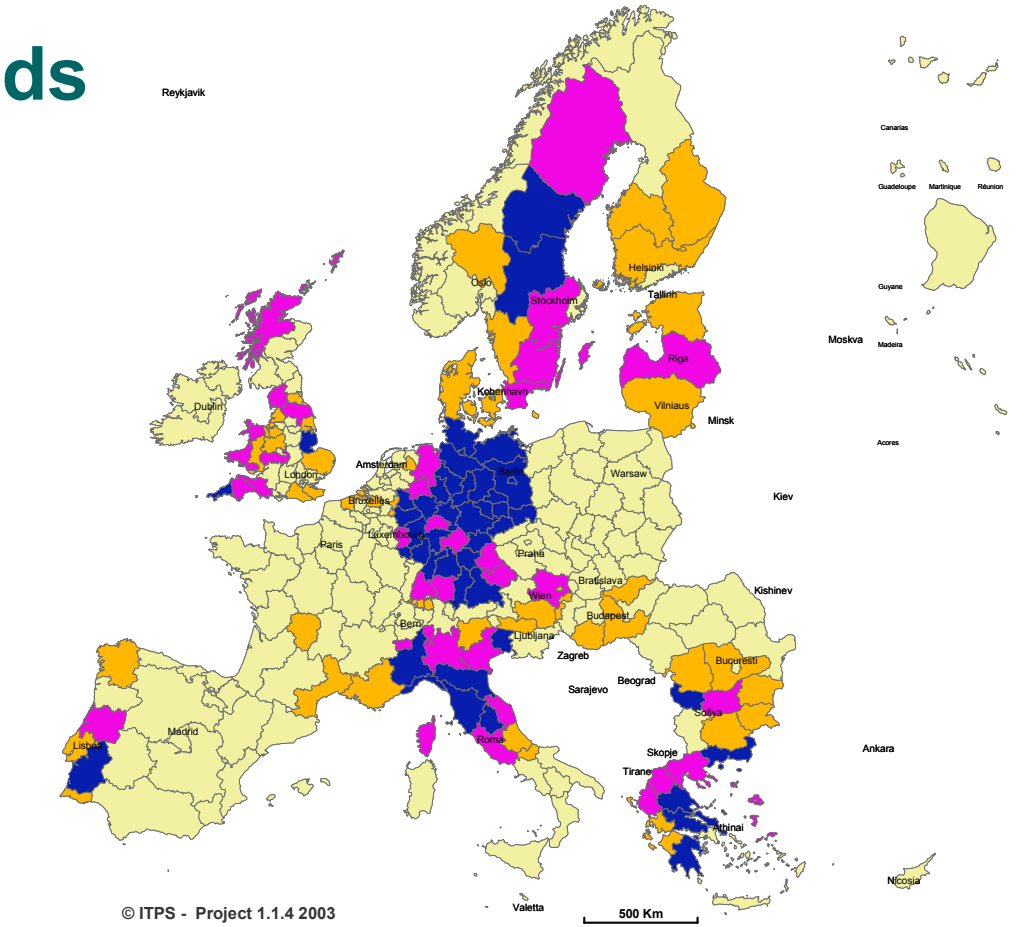
Demographic Trends

- Ageing labour force 2000
- Luxembourg:

  type 1 (light brown, Europe 29 average or better)



Ageing Labour force 2000. Deviation from "Europe 29" average. 55-64/20-64 years.

Geographical Base: Eurostat GISCO
Regional Level: NUTS 2

- "Europe 29" average or "better"
- Less than 1/2 STD "negative" deviation
- 1/2 to 1 STD "negative" deviation
- 1 STD deviation or "worse"

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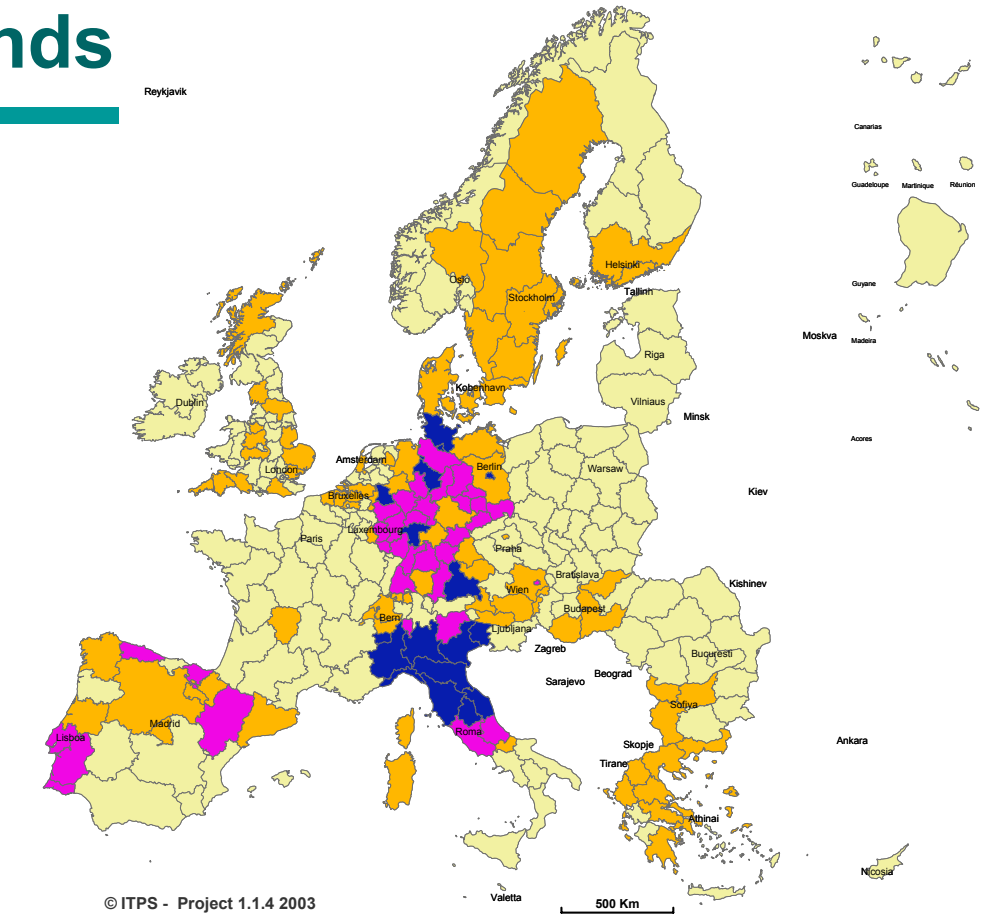
Demographic Trends

- Labour force replacement ratio 2000
- Luxembourg: type 2 (yellow, less than ½ STD „negative“ deviation)



"Labour Force" Replacement Ratio 2000. Deviation from "Europe 29" average. 10-19/55-64 years

Geographical Base: Eurostat GISCO
Regional Level: NUTS 2

- "Europe 29" average or "better"
- Less than 1/2 STD "negative" deviation
- 1/2 to 1 STD "negative" deviation
- 1 STD deviation or "worse"

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Demographic Trends

- First results: Natural population development and ageing
  - Population change – more driven by migration than natural population development
  - Half of the regions have a natural population decrease
  - Ageing – more a function of earlier out-migration than low fertility
  - No connection between ageing and total population change
  - No connection between ageing and net-migration today – exception the Nordic countries
  - In Southern Europe – ageing and low fertility reinforce each other; consequences for the natural population development (reproduction potential)

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Demographic Trends

- First results: Migration
  - Borders – a hampering factor
  - European growth zones – in-migration
  - Economic discrepancy – still a driving force but weaker than before
  - Suburbanisation is vital but…
    - Youngsters to the metro areas (studies, urban life-styles)
    - middle-aged and elderly people to the “periphery” (environmental factors)
  - Rural exodus still important
    - In the Nordic countries and Eastern Europe – movements from peripheral areas to metropolitan areas are still of great importance
  - “Monocentric” development at the European level – “polycentric” development at the regional level

Demographic Trends

- First results: fertility, migration and depopulation
  - Most negative development:
    - most sparsely populated areas in France, Spain and Portugal
    - northern and southern parts of eastern Europe
    - peripheral regions of Sweden and Finland
  - Very strong depopulation is found in:
    - Territories in countries with very low fertility rates and out-migration
  - Analyses and maps based on both direct and indirect depopulation indicators

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Demographic Trends

- Policy recommendations
  - Close the gap in living conditions (in a wider sense) between regions and nations
  - Stimulate regional enlargement – larger local labour markets
  - Better accessibility
  - To get rid of the labour shortage – stimulate higher female labour force participation
  - Stimulate child care – higher birth rates
  - Don't hamper mobility – mobility is a lubricant in economic development and transformation

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Project 1.3.1

Spatial Effects And Management Of Natural And Technological Hazards In General And In Relation To Climate Change

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Natural and technological hazards

- Fields of research and analysis (sample)
  - Natural hazards
    - Floods
    - Landslides/avalanches
    - Forest fires
    - Extreme precipitation
    - Extreme temperatures
  - Technological hazards
    - Nuclear power plants
    - Production plants of hazardous goods
    - Hazardous waste deposits
- Not all fields can be elaborated due to lack or unaccessibility of data

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Natural and technological hazards

- Development of indicators – the case of the flood events

Natural and technological hazards	Driving forces Indicators of influence factors on hazards and damage potentials	Pressure Indicators of hazards and damage potentials	State Indicators of spatial risk / spatial security	Impact Indicators of disaster	Response Indicators of disaster response / risk management (indicators of prevention, mitigation, preparedness, response, recovery)
Floods	• Growth of population and GDP in areas that have been flooded • Increase of factors that influence floods (e.g. settlement extension, climate change)	• Areas that have been flooded • Population density/GDP (in areas that potentially can be flooded)	• Combined indicator of Population density/GDP and flooded areas according to flood frequency since 1985	• Clasification of flooded areas according to flood frequency since 1985	• E.g. Building restrictions (retention areas) / safety measures in flooded areas

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Natural and technological hazards

- Dimensions of vulnerability
  - Economic
  - Social
  - Ecological

- Indicators for messuring the damage potential
  - Population density
  - GDP per capita
  - Dependency ratio
  - Education rate

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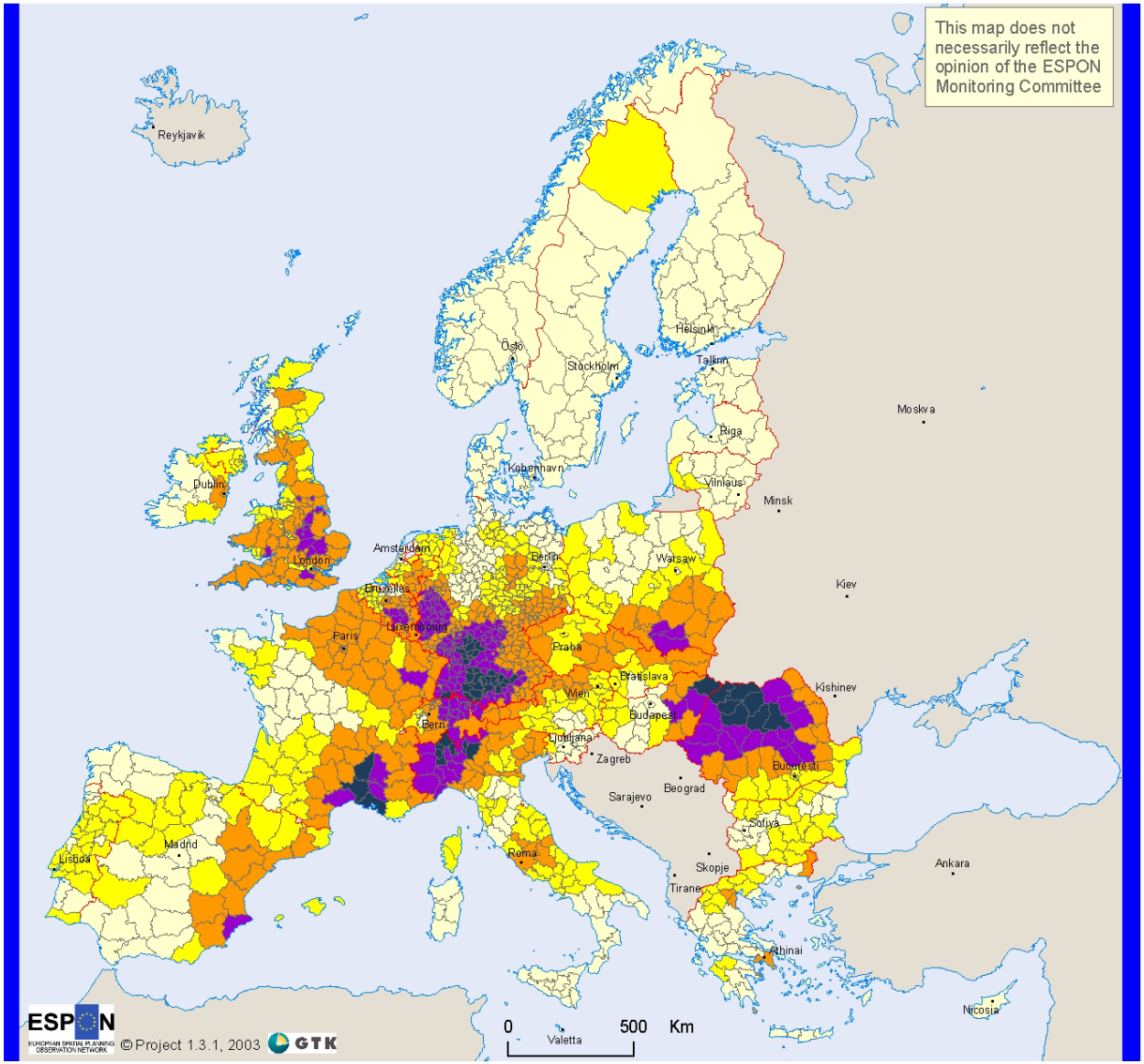
Natural and technological hazards

Large river flood hazards in Europe (NUTS 3)

Luxembourg: Moderate flood hazard intensity

Large river flood hazard in Europe (NUTS 3)



Origin of the data: © EuroGeographics Association for the administrative boundaries
Large flood areas © Dartmouth Flood Observatory
Flood areas © ESA - Earth observation- Earth online

Source: ESPON Data Base

Flood hazard intensity

- Very low
- Low
- Moderate
- High
- Very high
- Non ESPON space

This map shows the hazard intensity based on average number of large flood events on NUTS 3 level during 1987-2002. Each NUTS3 region has been given an average of the large flood event that fall inside it. To the first class "Very low hazard intensity" only the regions without large flood events are included.

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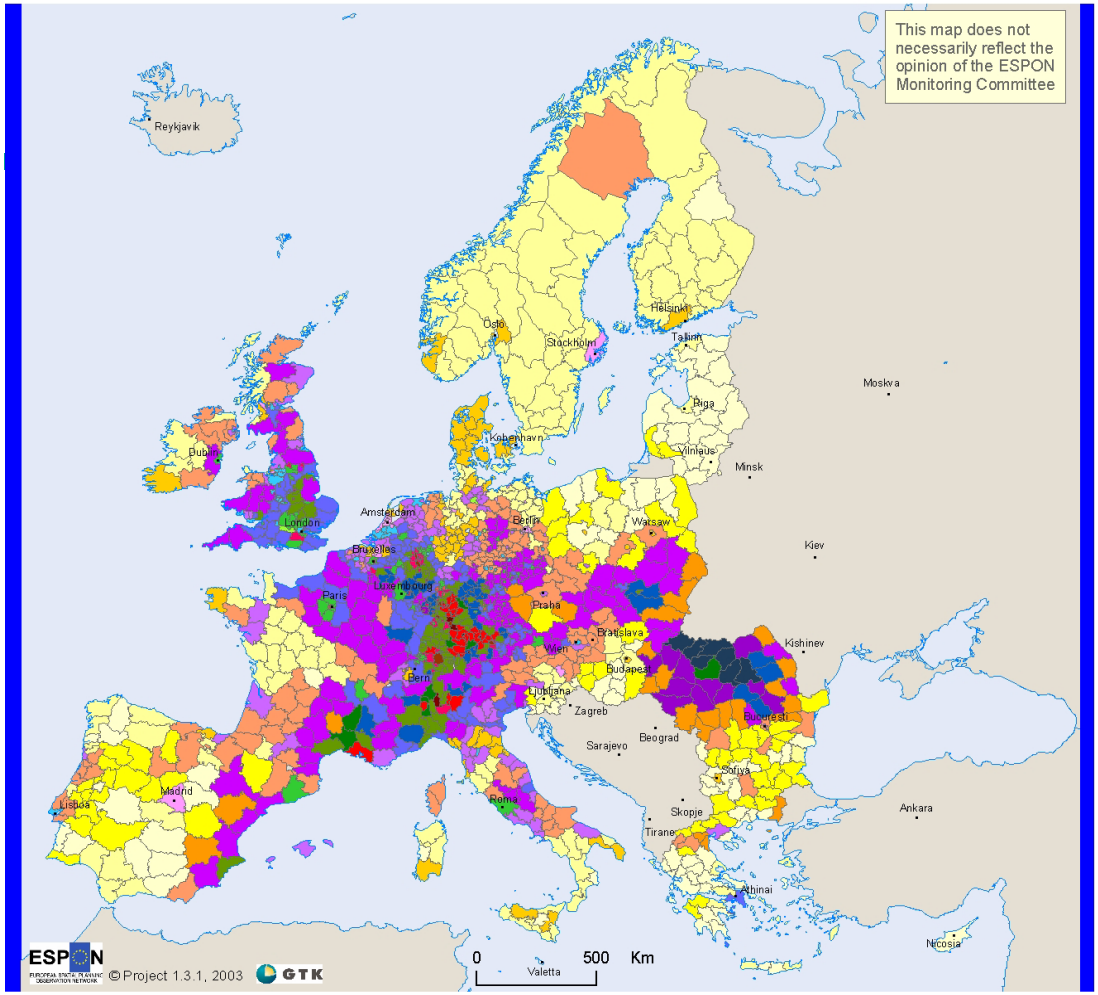
Natural and technological hazards

Flood risk in Europe (NUTS 3)

Luxembourg: Relatively high flood risk, belonging to category 7.

Large river flood risk in Europe 1987-2002 (NUTS 3)



Origin of the data: © EuroGeographics Association for the administrative boundaries
Large flood areas © Dartmouth Flood Observatory
Flood areas © ESA - Earth observation- Earth online

Source: ESPON Data Base

Typology of the regions

Legend of risk maps	Degree of vulnerability				
Intensity of river floods	1	2	3	4	5
1	2	3	4	5	6
2	3	4	5	6	7
3	4	5	6	7	8
4	5	6	7	8	9
5	6	7	8	9	10

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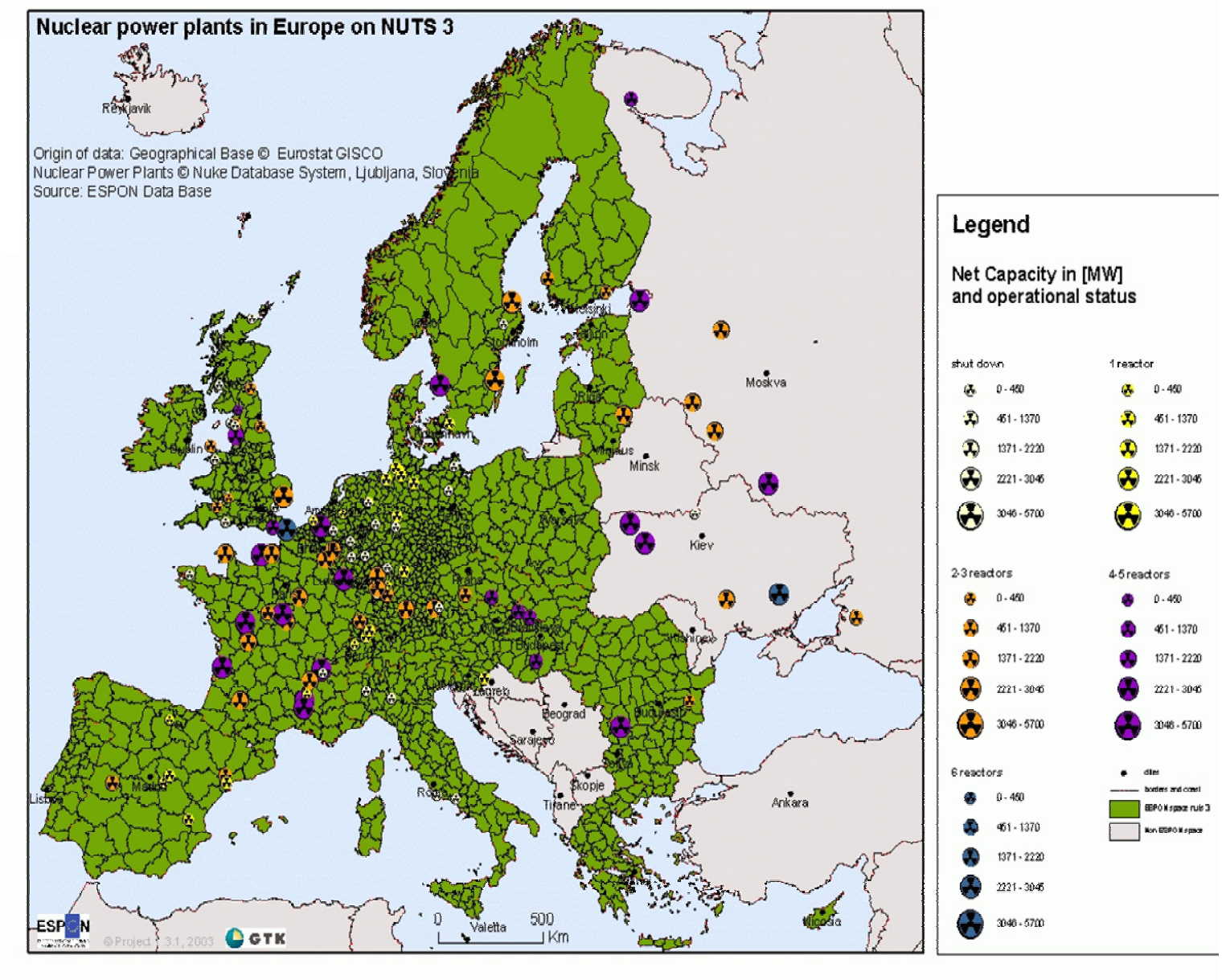
Natural and technological hazards

Nuclear power plants in Europe (NUTS 3)

Luxembourg: 4-5 reactors



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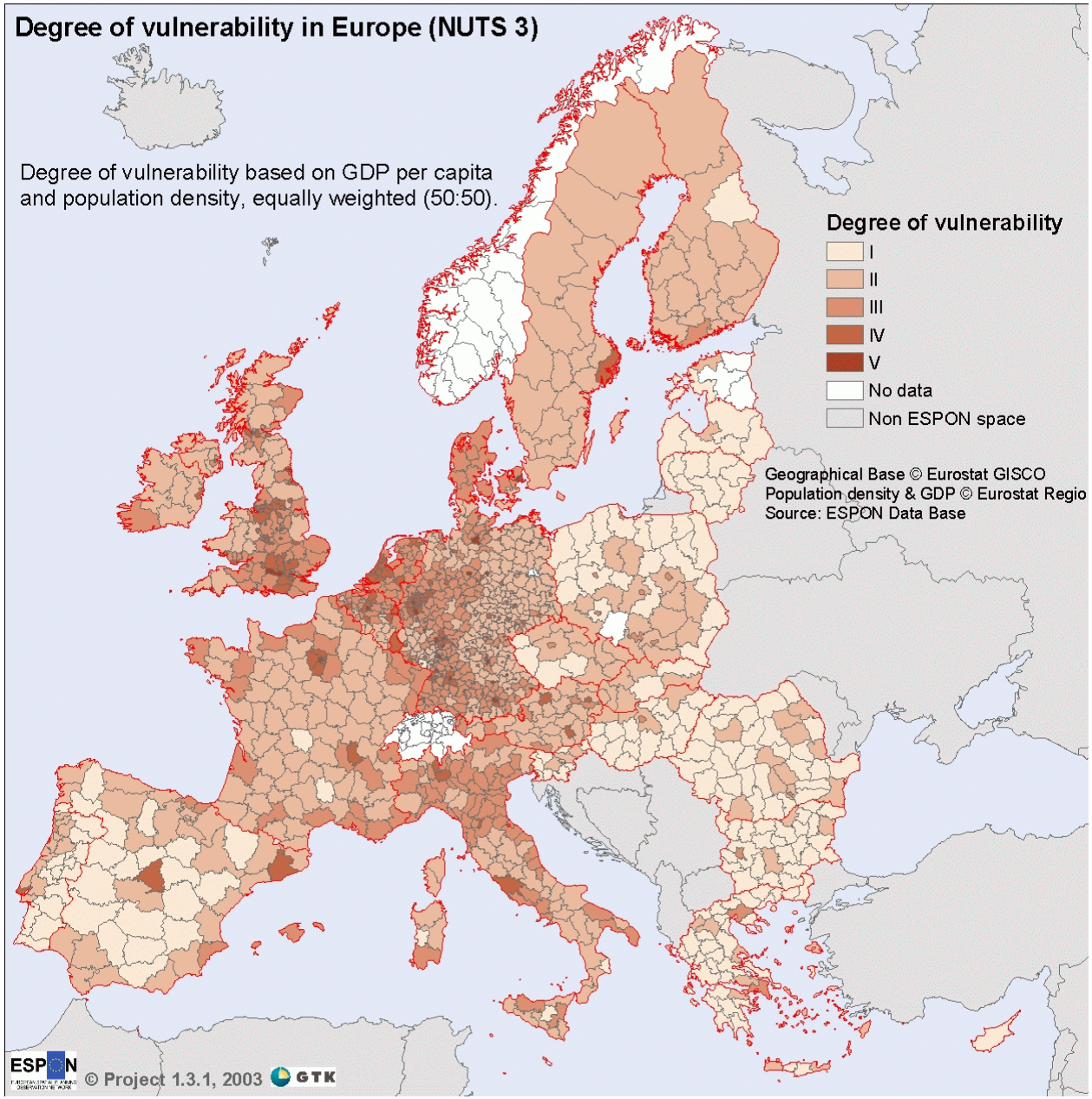
Natural and technological hazards

Luxembourg:
relatively high degree of vulnerability, belonging to category IV.



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Natural and technological hazards

- Outcome of the project:
  Risk mitigation planning guide (sample)

  - To minimize the impacts of hazards effects
  - To review the hazards of the respective area (region, municipality)
  - To establish goals and objectives
  - To review possible approaches to reduce risk
  - To provide a background document (on the regional level) for local action

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Natural and technological hazards

- Policy recommendations (EU level)
  - Better inclusion of risks related to natural and technological hazards in EU policies.
  - More emphasis on prevention and vulnerability reduction through spatial planning.
  - Deliberate use of Stuctural Funds for risk management
  - Establish a European Emergency Management Agency (EEMA) for coordinating European risk management efforts.

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Natural and technological hazards

- Policy recommendations (national, INTERREG)
  - Implementation of the Strategic Environmental Assessment directive (2001/42/EC) should be ensured by member states.
  - Creation of governance networks to address risk management in regions with special environmental characteristics and related challenges.
  - Improve integration and co-operation between spatial planning experts and civil protection authorities.
  - Transnational INTERREG areas with common ecological denominators should be used as ‘breeding and testing’ grounds for meso-level risk management programmes.

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Natural and technological hazards

- Policy recommendations (regional level)
  - Adopt and implement regional mitigation plans, allowing for “subsidiarity”.
  - Adopt measures in the new Thematic Strategy on the Urban Environment.
  - Enhance horizontal co-operation between regions and urban areas (e.g. through networks such as Interreg initiatives, EUROCITIES, URBACT etc.) in the fields risk management and civil protection.
  - Enhance public awareness of hazards and public participation in risk reduction efforts.

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Project 1.3.2

Territorial Trends Of The Management Of The Natural Heritage

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Natural heritage

- Central question: What is the influence of the managment of natural heritage on spatial development?
  - Diagnosis of the principal territorial trends of natural heritage at EU scale
  - Cartographic picture of spatial and historic trends
  - Development of territorial indicators
- Methodology: DPSIR model = Driving Forces, Pressures, States, Impacts, Reponses
  - Fields of research: agriculture, socio economic and territorial development, infrastructure

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Natural heritage

- Findings in D&P: Agriculture – Nature
  - MACRO:
    - EU policy stimulated land take for intensive use; decreased semi-natural area and biodiversity;
    - CAP reform stimulates rural development: turn of process;
  - MESO:
    - National agr. policy strongly dependent from EU policy
  - MICRO:
    - International and national agr. policy affect local/regional natural heritage.

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Natural heritage

- Findings in D&P: Socio economic and territorial development – Nature
  - MACRO:
    - No European spatial planning, except first attempt of ESDP.
  - MESO:
    - Few coherent national plans.
  - MICRO:
    - Concentrated in local and regional initiatives.

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Natural heritage

- Findings in D&P: Infrastructure – Nature
  - MACRO:
    - Wide spread accessibility as prerequisite for economic development resulting in ongoing fragmentation.
  - MESO:
    - Facilities for mobility follow urbanisation and enhance further suburbanisation, causing pressure on valuable landscapes.
  - MICRO:
    - Main infrastructure causes fragmentation of semi-natural areas.
    - Improved accessibility at the cost of natural values.

Natural heritage

- Findings in States:
  - Natural heritage consists of remains of nature.

- Findings in Impacts:
  - During ages a constant decrease of species has taken place.
  - The natural heritage is very fragmented.

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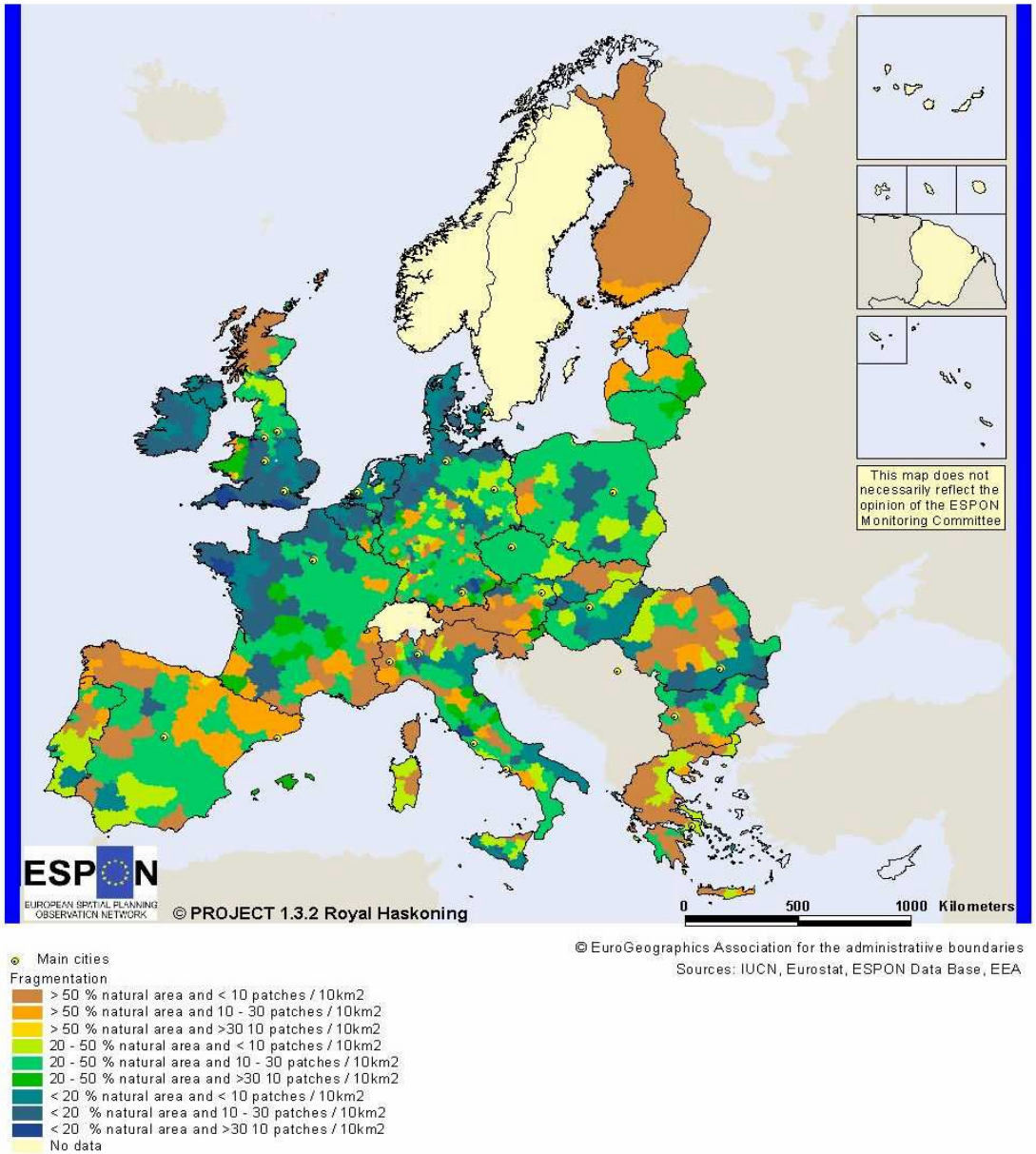
Natural heritage

Fragmentation index for NUTS 3

Luxembourg:

20 – 50% of natural area is fragmented.



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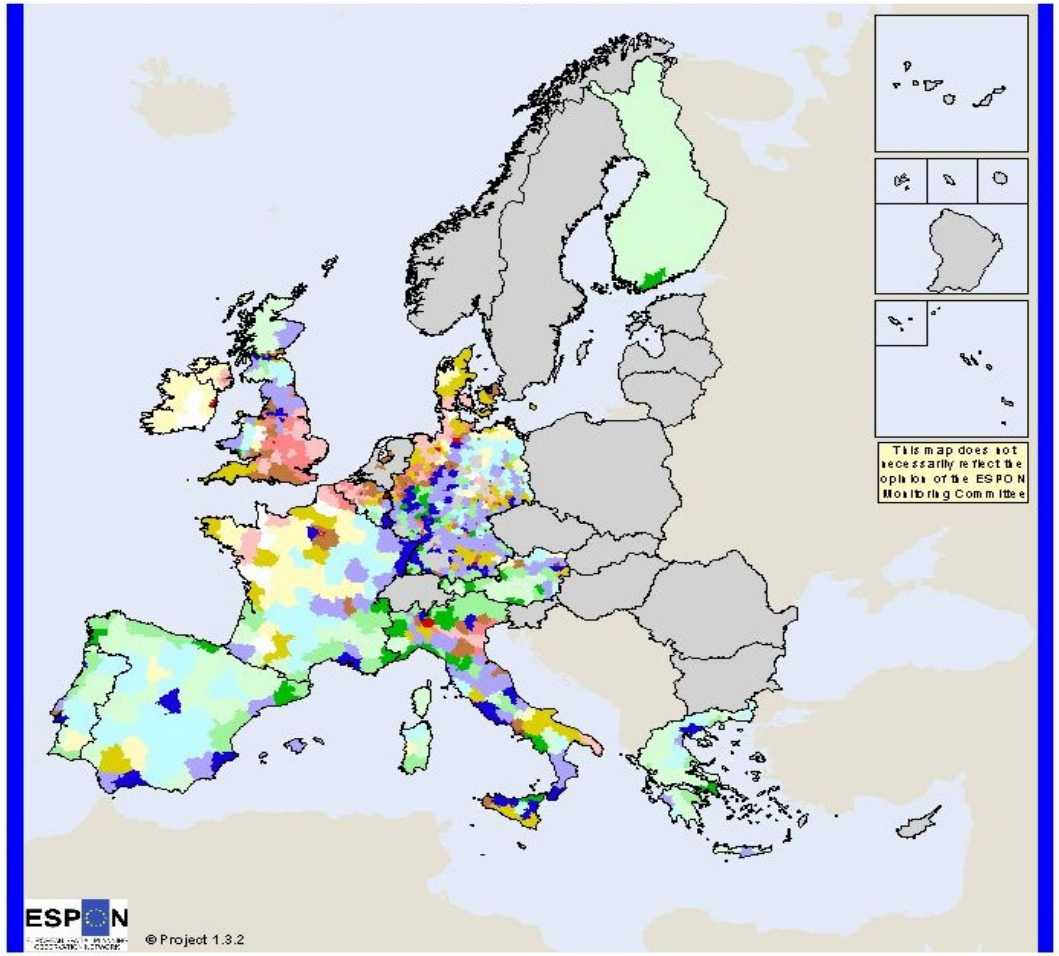
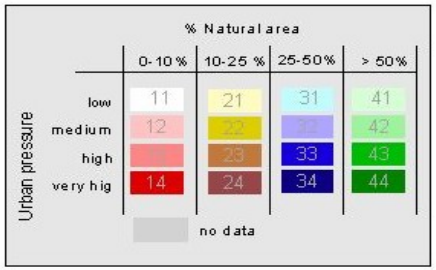
Natural heritage

Percentage semi-natural area compared to urban pressure

Luxembourg:

High urban pressure on relatively high % of natural area cover mainly consisting of agricultural areas and forests.





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Origin of data: EEA, Eurostat, IUCN
Source: ESPON Database

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Natural heritage

- Findings in Policy responses
  - MACRO:
    - Environmental legislation;
    - Birds/Habitat directive, Natura 2000, ESDP;
  - MESO:
    - Few integral national spatial plans;
    - Growing acknowledgement of importance of integrated plans;
  - MICRO:
    - Growing need for integrated regional strategic co-ordination.

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Natural heritage

- Policy recommendations (sample):
  - Balanced development in corridors
  - Polycentric development in nodes
  - Selective accessibility
  - Priority to old industrial areas
  - International co-ordination
  - Regional development vision
  - Natural values as an asset
  - Etc.

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Natural heritage

- Further research issues
  - Complete dataset for trend analyses.
  - Completion and further improvement of used indicators.
  - Identification of potential conflict areas, urban development – ecological network.
  - Nature as an asset for attracting economic activities.

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Project 1.2.2

Telecommunication Services and Networks: Territorial Trends and Basic Supply Of Infrastructure For Territorial Cohesion

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Telecommunication Services and Networks

- Main task:
  - Uncover, draw together and analyse the data on the supply of and demand for telecommunications.
  - Focus of the study is on the *infrastructure* of the information society.

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Telecommunication Services and Networks

- Methodology:
  - Collecting and analysing quantitative data which was or could be made comparable at various territorial levels.
  - Main data source: study of the household penetration of telecommunications in EU15 at the sub-national level.
  - Reanalysis of the data using socio-economic-geographic categories in order to try and better understand the factors behind differential patterns of telecoms penetration (EU15): Comparison of the uptake levels of regions for telecommunication with
    - their developmental status (Objective 1 and non-Objective 1),
    - their level of GDP,
    - their population density and
    - their degree of urbanisation, and core-periphery location (Pentagon vs non-Pentagon).

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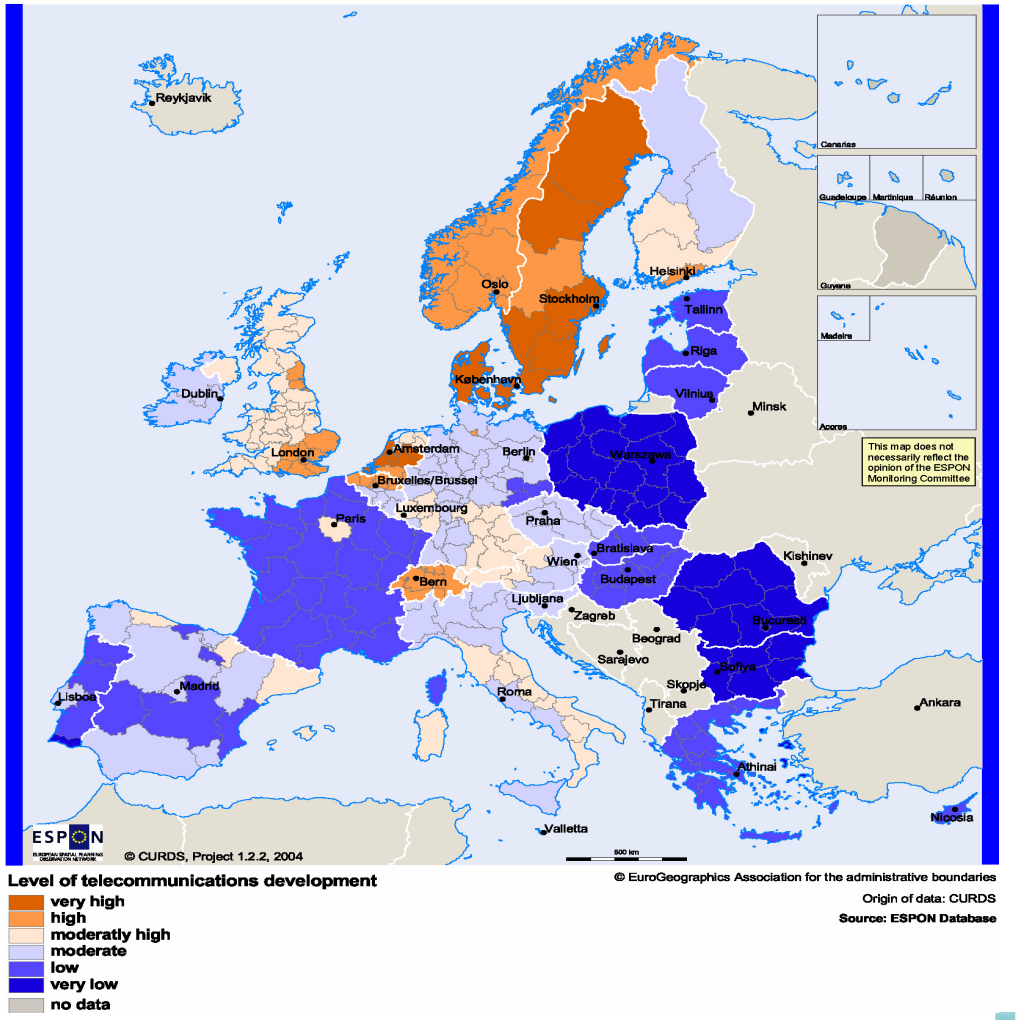
Telecommunication Services and Networks

- Results at macro level:
  - North-south divide (strength of the Nordic countries which lead the way in the uptake of almost all technologies)
  - West-east divide
  - The European ‘core-periphery’ distinction (which is apparent across many socio-economic indicators) does not hold for telecommunications.
    - Strength of the ‘Nordic periphery’,
    - In mobile telephony, the ‘Mediterranean’ periphery outpaces the ‘core’
    - Core only leads is in access to Internet backbone networks for large corporate users and Internet Service Providers.

Telecommunication Services and Networks

Luxembourg:
The level of telecommunications development is moderately high.

Typology of levels of households telecommunications uptake



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Telecommunication Services and Networks

- Results for Luxembourg:
  - Very high penetration rates for
    - fixed (land) lines
    - cell phones
    - number of PCs
    - internet connections
    - broadband availability
  - Luxembourg is the only central European country with such high rates.

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Telecommunication Services and Networks

- Results for Luxembourg:
  - High broadband availability but low broadband usage (BE and NL show high broadband uptake)

*Table 5.11: LUXEMBOURG: Extent of 'spread' of regional differences in telecommunications uptake**

	Category 1 (high)	Category 2	Category 3	Category 4	Category 5	Category 6 (low)
Fixed line	■					
Mobile		■				
PC		■				
Internet		■				
Broadband					■	

*Luxembourg is national level at NUTS 2
Source: CURDS; based on data drawn from INRA (2004)

Telecommunication Services and Networks

- Policy Issues (*focus on infrastructure*):

Table 6.1: Outline of national government supply-side strategies to increase coverage of broadband in under-served areas through infrastructure investment in EU15

Country	*Specific supply-side strategy? Yes (✓) No (X)*	*Nature of supply-side intervention strategy for under-served areas*	*Examples of funding and implementation mechanisms*
Luxembourg	✓	Government is looking at ways of extending connectivity to 6-8% of households which do not have possibility of connecting to broadband	Exploring satellite and UMTS. Use of SF possible

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Territorial Impact Of EU Transport And TEN Policies

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Transport Trends

- Three main questions:
  - How may the transport network constitute a key factor of a more balanced, more polycentric, more sustainable spatial development?
  - How to develop the accessibility to basic services and to knowledge in order to increase the territorial cohesion?
  - What will be the consequences of enlargement on the preceding objectives?

- Methodology :
  - combination of state-of-the-art and newly developed methodologies

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Transport Trends

- General results:
  - transport is facilitating social and economic relations
  - transport is generating environmental externalities that reduce and constrain the capability of a given region to attract new activities, as well as to some extent the productivity of the already existing activities
  - accessibility: the classical centre-periphery scheme could not be denied
  - the areas presenting a good accessibility seem to be those which suffer the most from transport externalities

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Transport Trends

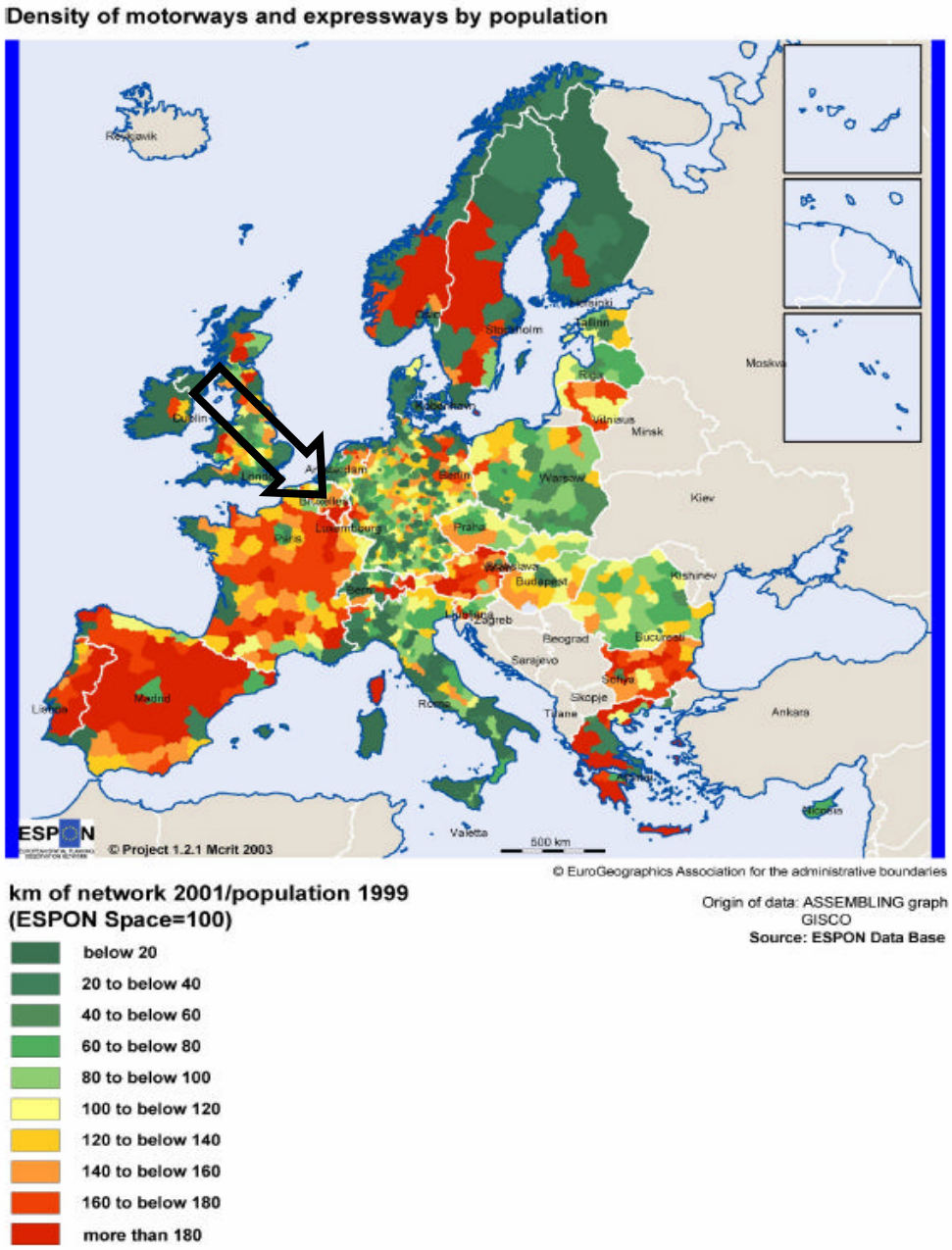
- Results for Luxembourg:
  - Luxembourg is one of the most accessible regions of Europe, regarding multimodal accessibility it belongs to the above average accessible regions.
  - While motorway density is one of the highest, railway density is of medium value.
  - Luxembourg is situated at one of the main corridors for freight traffic both on road and on rail, but it has no maritime outlet.

Transport Trends

Density of motorways and expressways by population

Luxembourg:

shows sufficient motorway and expressway network infrastructure according to its inhabitants.



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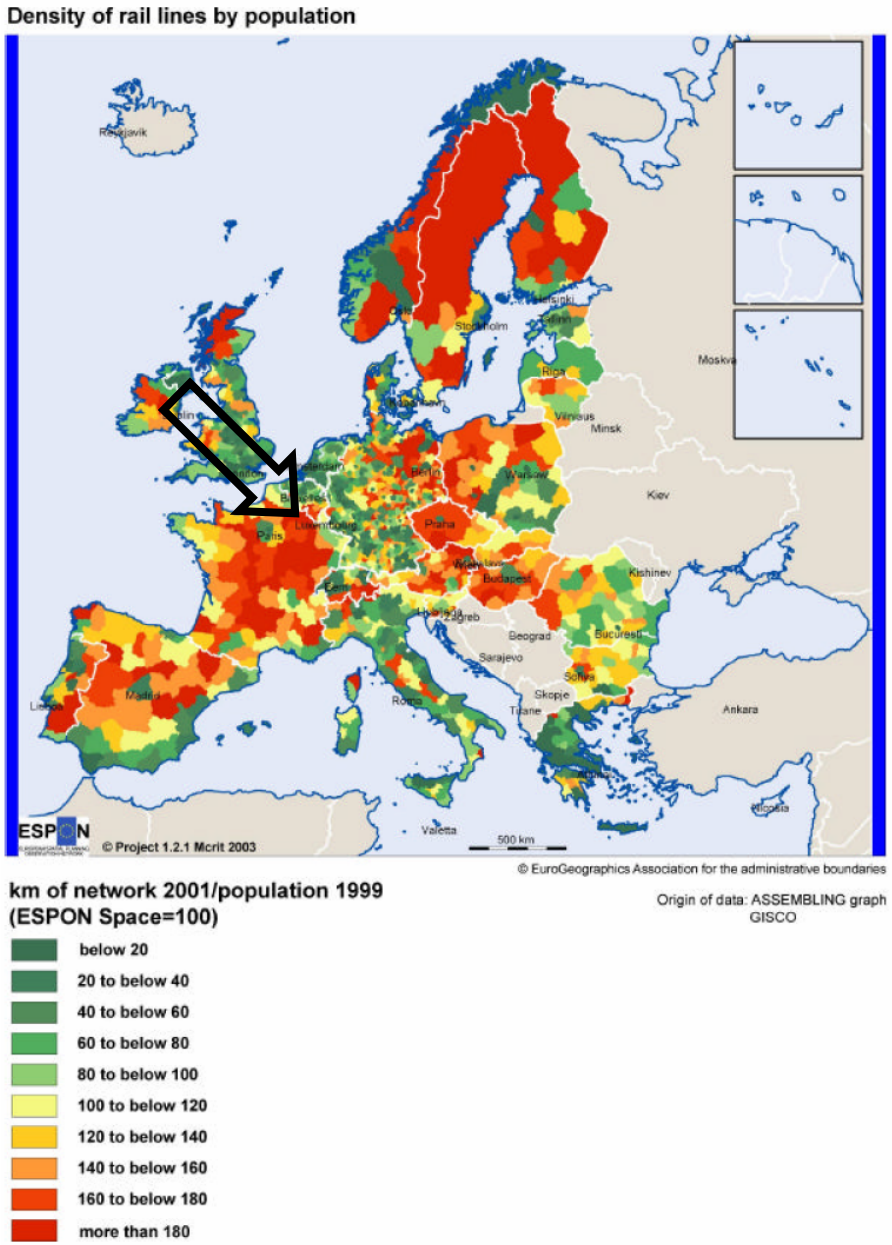
Transport Trends

Rail density

Luxembourg:
The density of rail lines by population is of medium value.



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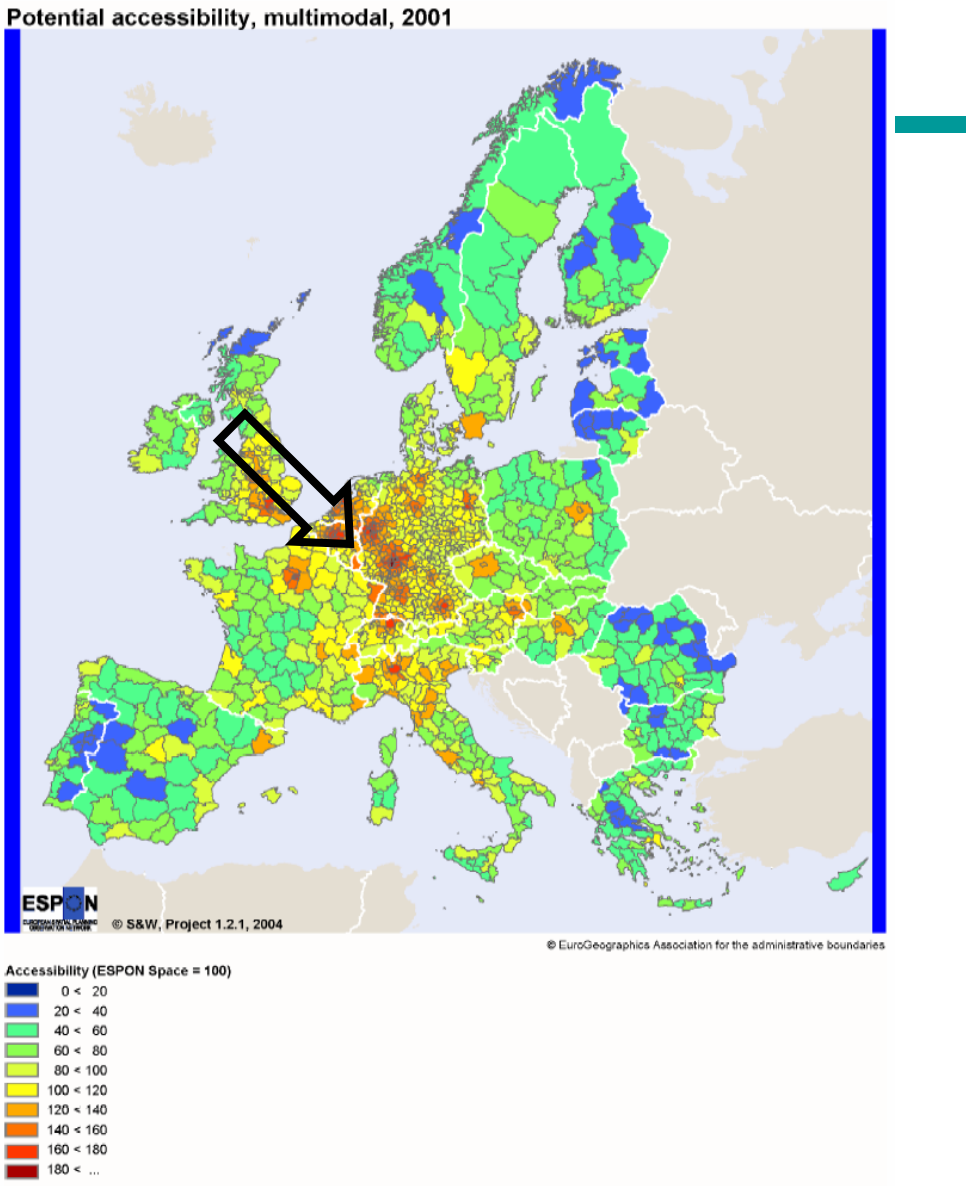
Transport Trends

Potential accessibility, multimodal

Luxembourg belongs to the regions with clearly above average accessibility.



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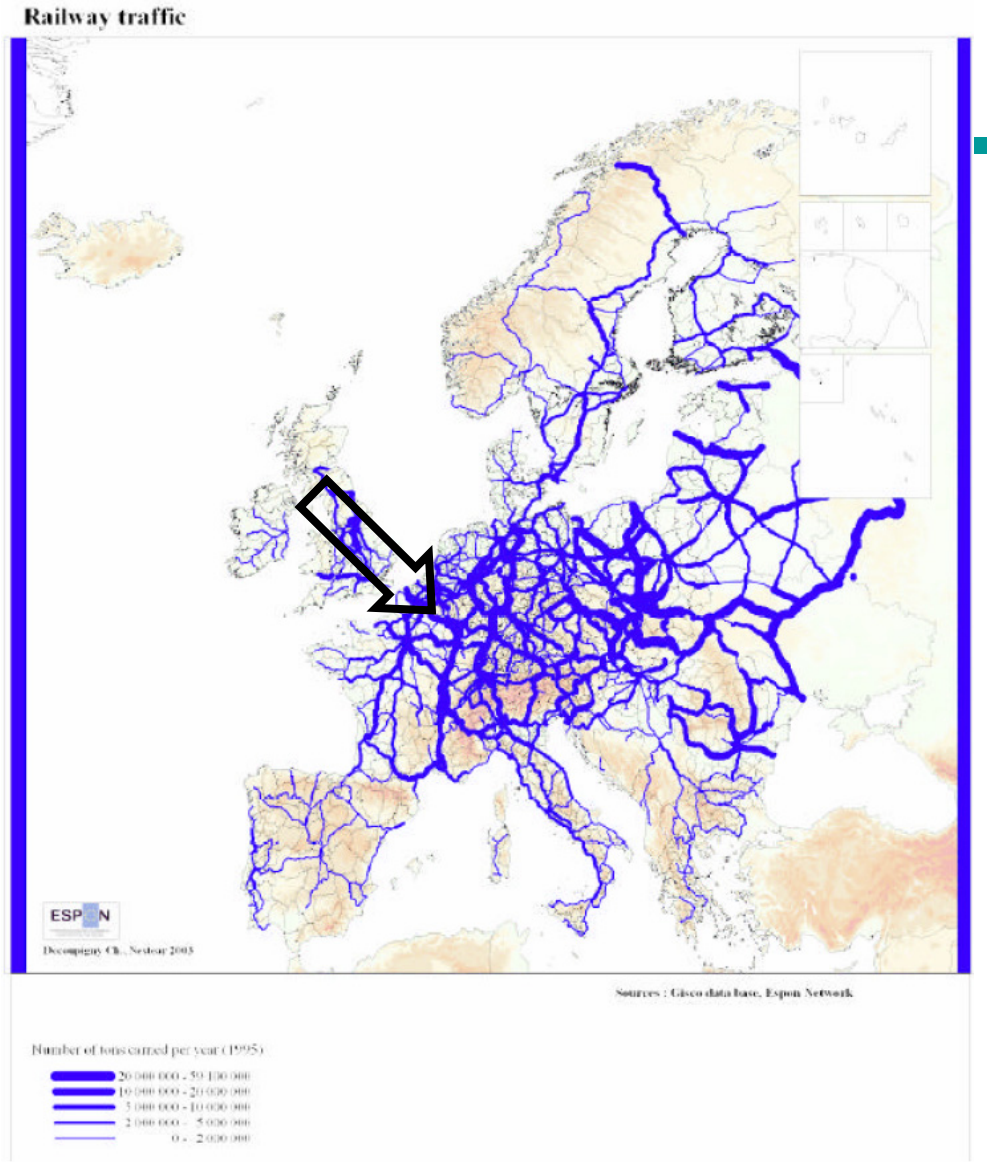
Transport Trends

Freight traffic

Luxembourg is situated at one of the main corridors for freight traffic both on road and on rail.



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Transport Trends

- Policy recommendations
  - **correction of imbalances**
  - develop short and medium-term policies to adapt the system to transport and infrastructure demand
  - reduce emissions
  - increase of intermodality to facilitate a modal shift
  - speed limit on roads
  - transformation of classical railways into freight-dedicated lines

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Transport Trends

- Policy recommendations for macro-regions:

  Central Area / The Pentagon

  - ***Enable modal shift***

    The central area is suffering from road transport to a very high degree.

  - ***Enable European integration***

    The central area is an important territory in the ongoing EU enlargement and integration process.

Transport Trends

- Comment:
  - The Integrative Transport and Development Concept (Integratives Verkehrs- und Entwicklungskonzept – IVL, 2004) of Luxembourg is one of the current national planning documents regarding transport, infrastructure and trends.
  - Some of the aspects mentioned by project 1.2.1 concerning Luxembourg are already included in the concept.

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Project 2.1.4

Territorial Trends of Energy Services and Networks and Territorial Impact of the EU Policy

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Energy Policy

- Main tasks:
  - Analyse the territorial trends of energy supply & demand and their spatial pattern,
  - Design and carry out a territory impact analysis of the energy policy, seeking to quantify impacts from energy-related spatial development
  - Define a typology of regions in terms of infrastructures and energy services, with reference to the database and processing techniques.
  - Identify options relevant to the energy policy and submit proposals to make them operational and ensure their territorial diversification.

Energy Policy

- Results:
  - 5 types of energy territorial impacts
    - Direct employment and GDP
    - Location and competitiveness factor
    - Income Transfer
    - Households behaviour and quality of life
    - Environment
  - Inverse relation between development and the intensity of economic uses of energy. Higher levels of development mean a higher proportion of services and higher energy efficiency. This is not the case in Norway, Finland and Luxembourg!

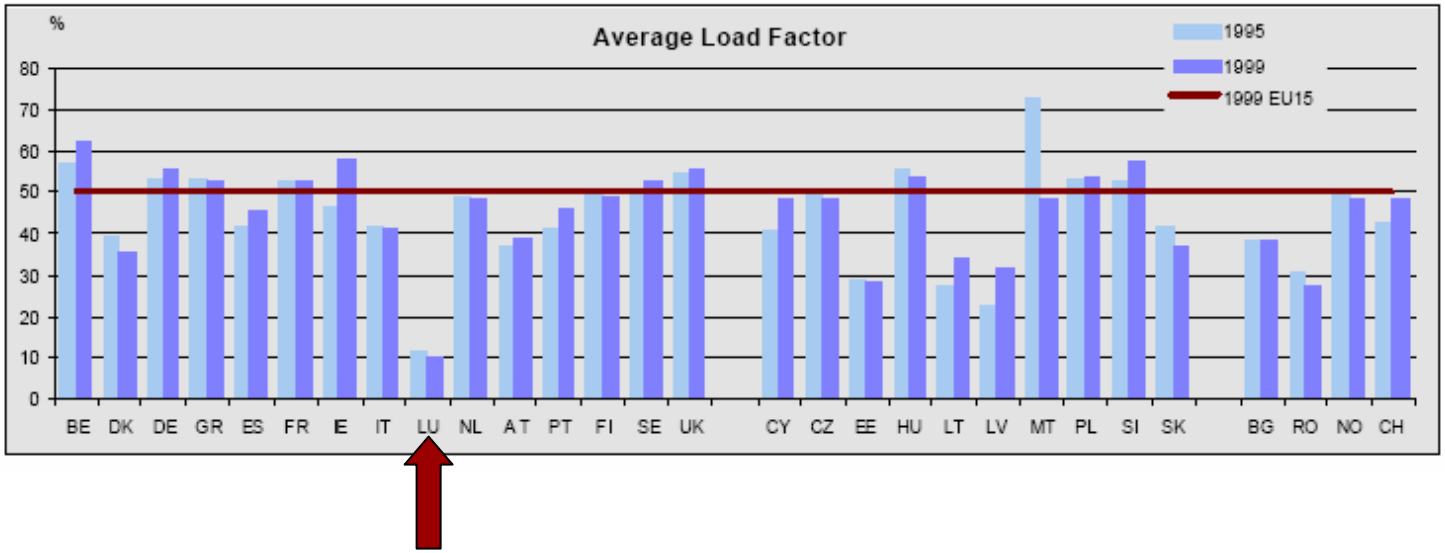
Energy Policy

- Results:
  - In 2000 the EU15 *average energy supply per inhabitant* was 3.97 toe. Countries such as Luxembourg, Finland, Sweden and Belgium are way above that average, due mainly to their small population (especially Luxembourg) and their extreme climatic conditions. Additionally the industry in Luxembourg is electricity intensive.
  - *Final energy consumption per capita* reflects the structure of the economy and the energetic efficiency of the industrial equipment and buildings. In 2000 the Scandinavian countries, as well as Luxembourg, have the highest per capita energy consumptions the project's country sample.

Energy Policy

- Results:
  - Reliable supplies of energy: Average load factor
    - = average percentage of generating capacity used
    - Luxembourg is an exceptional case with a low value for this indicator.

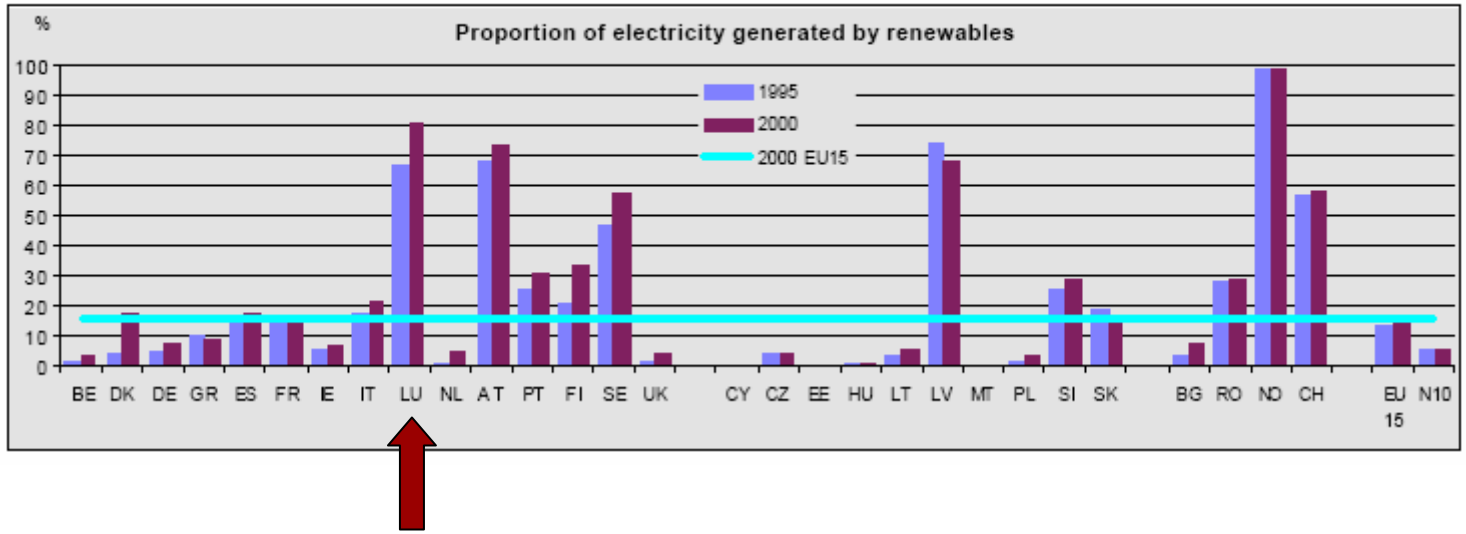
Figure 40 - (B1) Average load factor in 1995 and 1999



Energy Policy

- Results:
  - High proportion of electricity generated by renewables

Figure 44 - (B2) Proportion of electricity generated by renewable in 1995 and 2000



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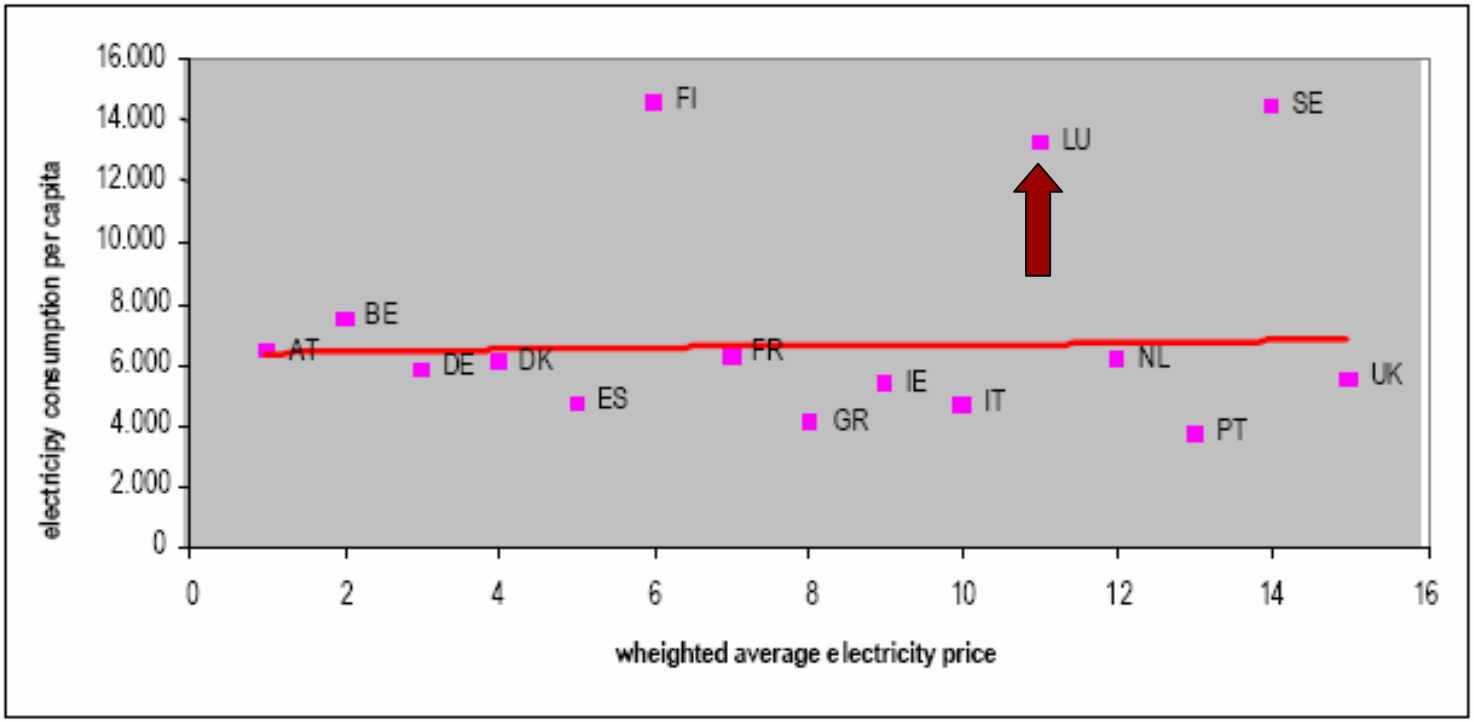
Energy Policy

- Results:
  - Electricity consumption and electricity prices

Figure 61 - Electricity consumption and electricity prices in EU countries in 1999



Source: Eurostat.

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Energy Policy

- Country Energy Policy Guidelines (Luxembourg):
  - Luxembourg is one of the smallest EU-25 countries.
  - Energy consumption per inhabitant is high because of country's iron and steel industry, the large sales of transport fuel and the overall wealth of the country.
  - Domestic energy resources are limited to renewable energies and the country has a dependence of over 99% on imported energy.
  - Luxembourg's energy markets are greatly influenced by the energy policies and energy markets of surrounding countries.
  - The Kyoto target is of 28% reduction in greenhouse gases emissions to Luxembourg, to 1990 levels by 2008-2012.

Energy Policy

- Specific Features:
  - Some municipalities are directly engaged in electricity and natural gas distribution activities.
  - Energy efficiency has been seriously taken since 1993 supported by a series of decrees and energy taxes.
  - The restructuring of iron and steel industry led to a sharp reduction in CO_2 emissions and other pollutant emissions in Luxemburg.

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Energy Policy

- Policy Recommendations for Luxembourg:
  - Continue to cooperate with neighbouring countries on energy issues namely in electricity and gas liberalization.
  - Follow closely the programmes on promotion of energy efficiency in buildings.
  - Develop and implement a concrete climate change mitigation plan towards Kyoto Commitments.
  - Continue to seek solutions in regional level (with neighbouring countries) to reduce energy consumption in the transport sector.

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Kaffeepause - Coffeebreak

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Outlook Next ESPON Rounds

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Outlook – next ESPON rounds

- ESPON Project 3.4.1 EUROPE IN THE WORLD (2004-06)
  - Comparisons of Europe with other world regions:
    - Europe's importance (weight) in the world (key indicators on population, GDP, etc.), Population structure and migration, Spatial structures and developments, Economic structures and performance, Environment
  - Analyses of linkages, exchanges and networks between Europe and other parts of the world along the following dimensions:
    - Trade relation, Migration, Connections and passengers in air transport, Foreign direct investments, Foreign owned enterprises; Of special importance is the embedding of Europe into the geographical neighbourhood (Neighbours to the east, North Africa, Middle East)
  - Identification of functional influence areas (states/towns which are more connected to Europe according to flows than others)

Outlook – next ESPON rounds

- Project 1.2.3 IDENTIFICATION OF SPATIALLY RELEVANT ASPECTS OF THE INFORMATION SOCIETY (2005-06)
  - State, trends and spatial impacts of the information society
  - Explore effects on the development of rural and peripheral areas (mountain areas, islands and sparsely populated areas)
  - Identification of correlations between ICTs development and Functional Urban Areas (FUA's)
  - Identification of the contribution of the Information Society to the relocation of economic activities (industry and services) and households, as well as, to reduce transport demand and traffic congestion
  - Examination of territorial typologies with reference to the possible positive and negative territorial effects of the information society

Outlook – next ESPON rounds

- Project 3.4.2 TERRITORIAL IMPACTS OF EU ECONOMIC POLICIES AND LOCATION OF ECONOMIC ACTIVITIES (2005-06)
  - Measuring regional economic development as an aggregate, including economic potentials, regional competitiveness, territorial capital, services of general interest, trade flows
  - Identifying the spatial pattern of company/investment locations
  - Identifying economic potentials of different types of regions
  - Identifying key policy measures that have impact on these patterns .
  - Market and Competition Policies and the conditions created by national, regional and local actors in order to attract companies/investments to a particular location
  - Integration of the results on territorial effects of both economic trends and policy impacts to characterise the territorial diversity and dynamics in Europe

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Basic results

- Strong guidance for the other projects was provided
- A solid base for spatial planning on an EU level was developed: Data, Mapping defaults etc.
- Some very innovative tools were invented and tested
- Some new and innovative analysis strategies were established

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Thank you for your attention!

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ESPON Spatial Concepts (I)

- Spatial concepts relevant for ESPON:
  - Territorial Cohesion
  - Economic and Social Cohesion
  - Polycentrism
  - Functional Urban Areas
  - Global Integration Zones
  - Accessibility
  - Rural-urban (relations)
  - Environment

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ESPON Spatial Concepts (II)

- Territorial Cohesion
- Strong relation to:
  - equity and balance, reducing disparities, supporting the weaker parts of the European territory
  - support for geographically handicapped regions (e.g. islands, mountain areas etc.)
  - strengthen regional integration and communication, exchange, cooperation and flows between territories

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ESPON Spatial Concepts (III)

- Economic, social (and territorial) cohesion aim at reducing structural disparities between regions and promoting equal opportunities for all individuals.
- The focuses are different:
  - **economic cohesion** targets the intermediate level of economic actors (e.g. enterprises) and institutional settings (e.g. competition rules)
  - **social cohesion** targets the individual level of persons and households and the avoidance of poverty, unemployment etc.
  - **territorial cohesion** refers to the regional aggregate and regional context of social and economic cohesion. Territory is a crucial context for individual behaviour and decisions.

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ESPON Spatial Concepts (VII)

- Global Integration Zones
- „Centres of Europe“: location, wealth, function
  - Pentagon
  - EU15+2 vs. AC10+2
  - enlarged Pentagon
  - additional global economic integration zones (GEIZ) (outside the Pentagon or the enlarged Pentagon?)
    - Spain, South Italy, Central Eastern Europe
    - development axe Pentagon -> Black Sea
  - transport hubs (centres in networks)
    - air ports (London, Paris, Frankfurt, Madrid, Lisbon)
    - sea ports (Rotterdam)
  - favourable regions (e.g. coastal zones)
  - pockets of good performance (e.g. „R&D regions”)
  - capital and metropolitan areas
  - hierarchical roll-out patterns (e.g. ASDL)

ESPON Spatial Concepts (VIII)

- Accessibility
- New corridors and regional enlargement
  - regional enlargement and new development corridors are seen as chances but also have some severe problems:
  - regional enlargement will create new transport corridors and increase private car use with the effect of rurbanisation and environmental and cultural losses
  - land use („share of artificial surface / GDP“) already now very high in AC12; will further increase and effect urban sprawl, rurbanisation and environmental problems
  - traffic loads in some corridors are 10x higher than in others
  - significant traffic growth in DE, AU, (NE-)IT
  - transport flows 2000-2020: +43%