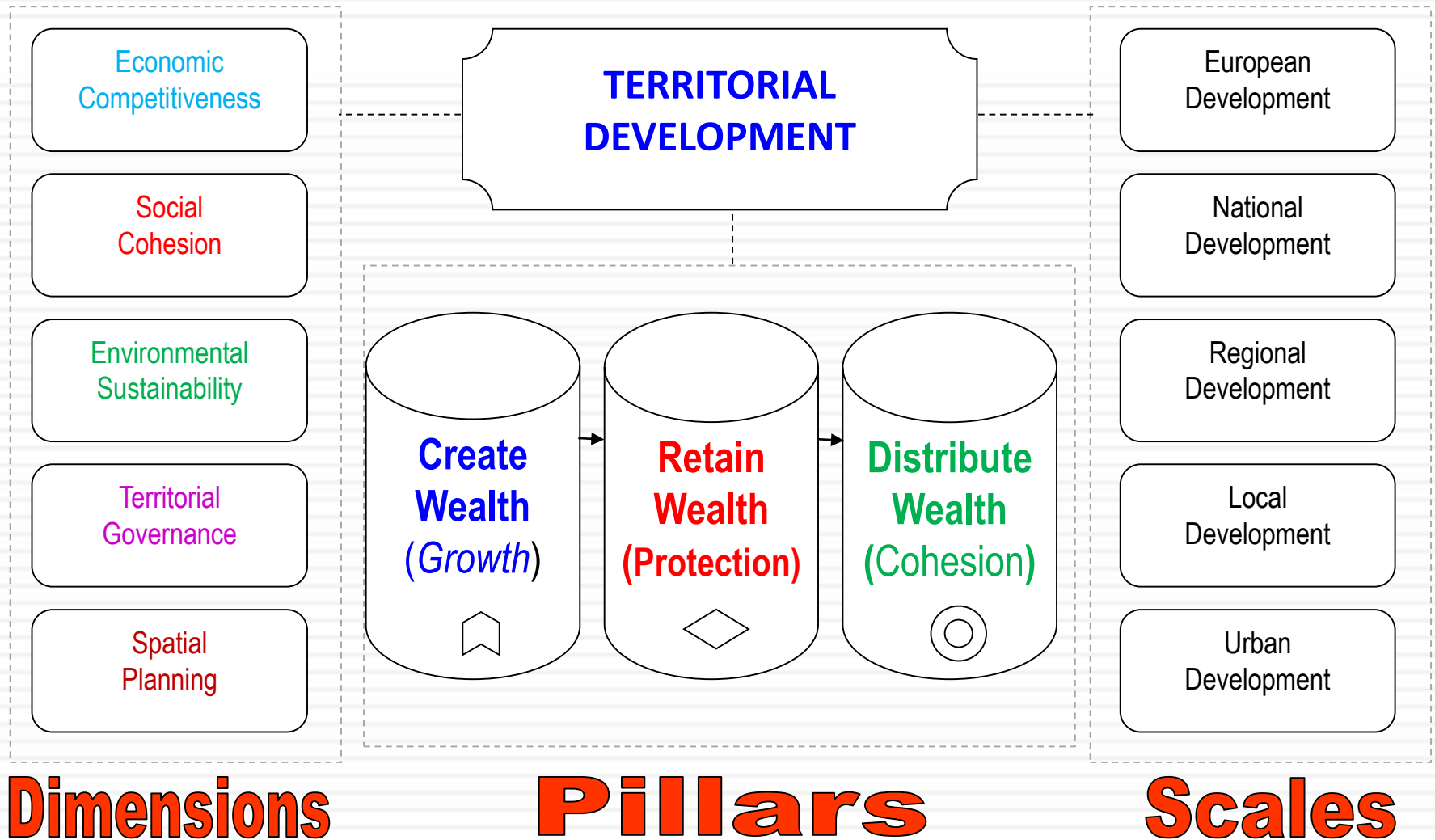
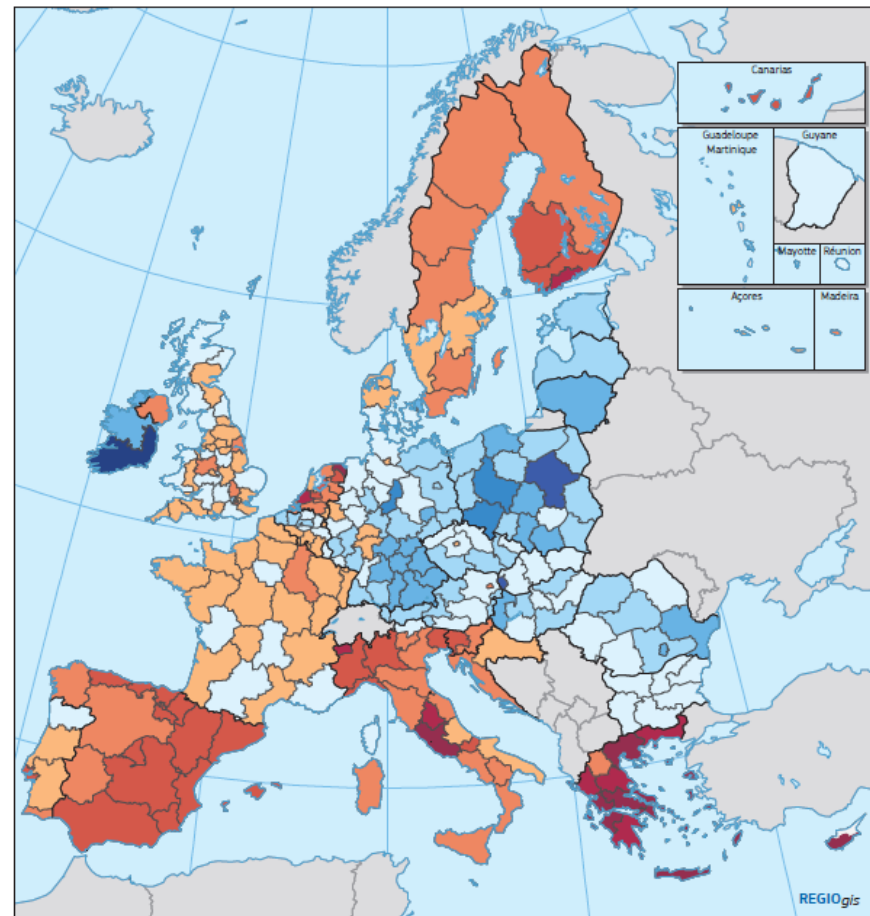


## *How to measure Territorial Cohesion and Cooperation?*

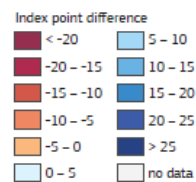
**Brussels: 21 February**

# Growth, Development or Cohesion?





Map 2 Change in GDP per head index, 2008–2015

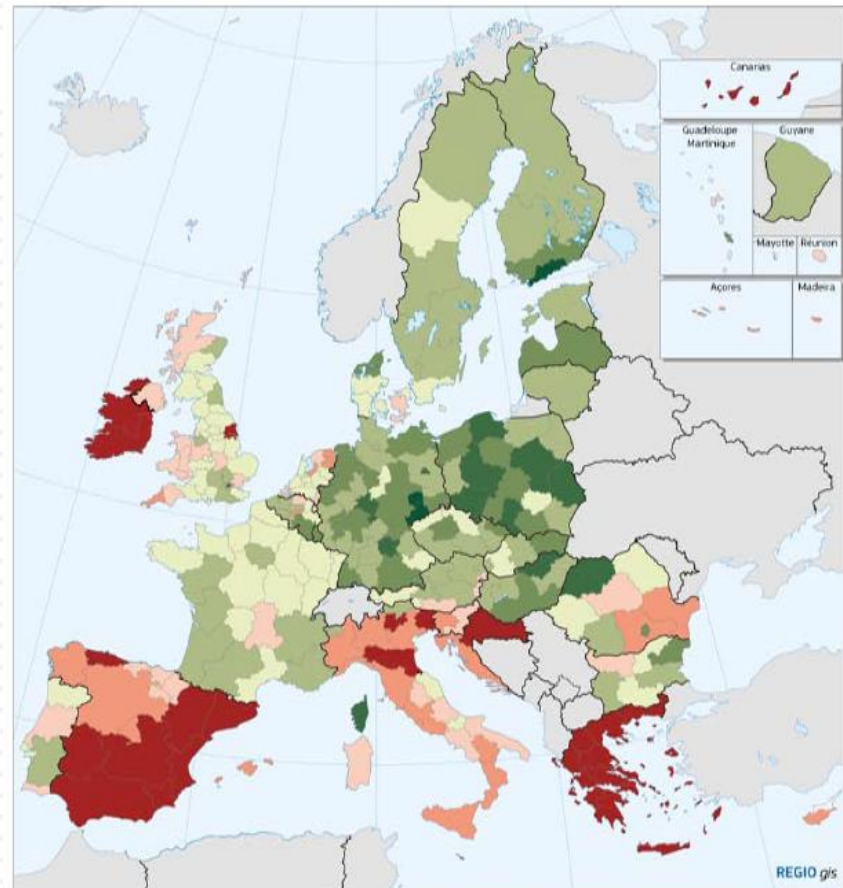


EU-28 = 0  
Source: Eurostat, DG REGIO

0 500 km

© EuroGeographics Association for the administrative boundaries

Source: 7th Cohesion Report



Map 2.30 Change in EU Human Development Index, 2008–2012

Change in index

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

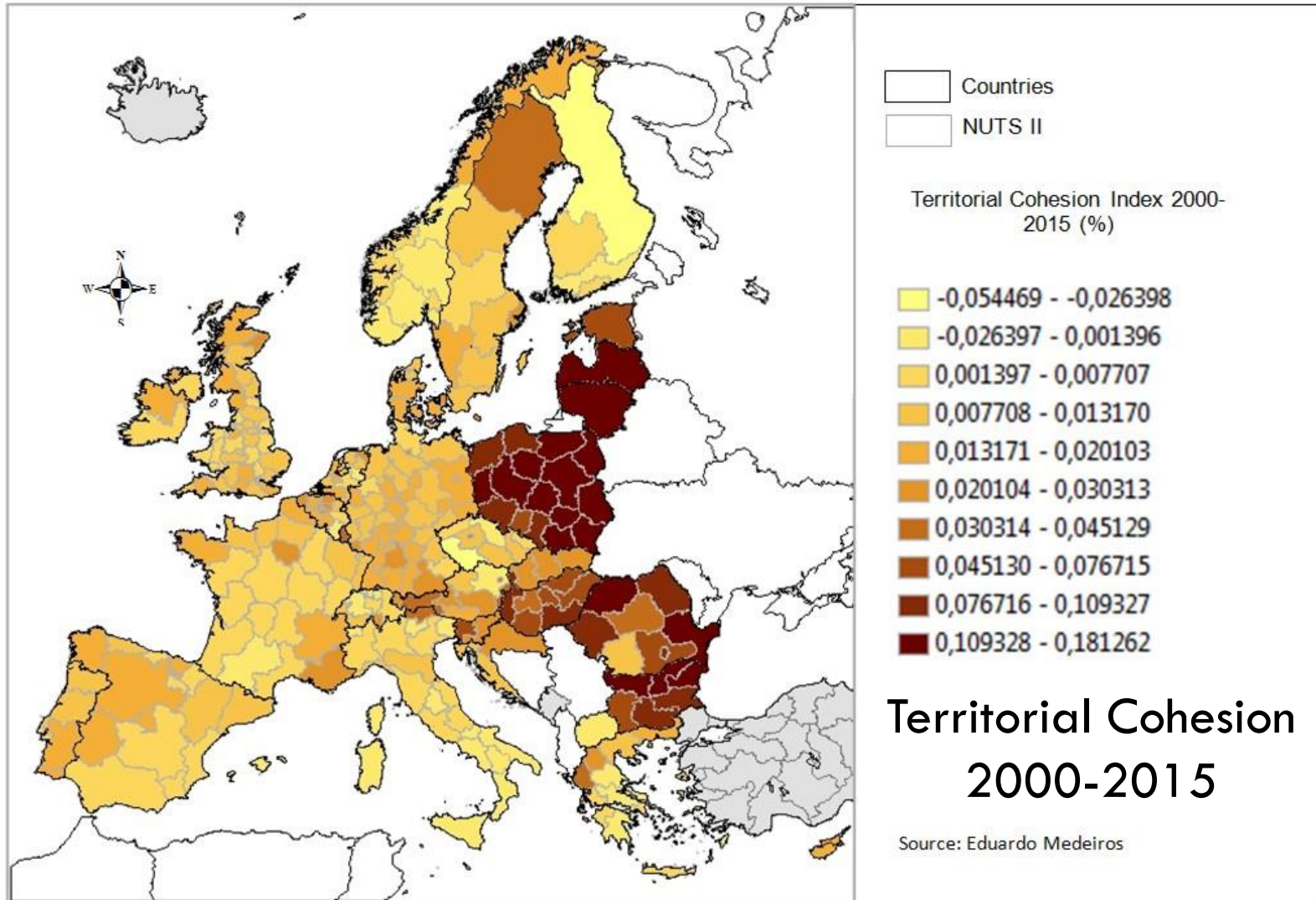
EU-28 = 0.01

Source: Hardeman, S. and Dijkstra, L. (2014)

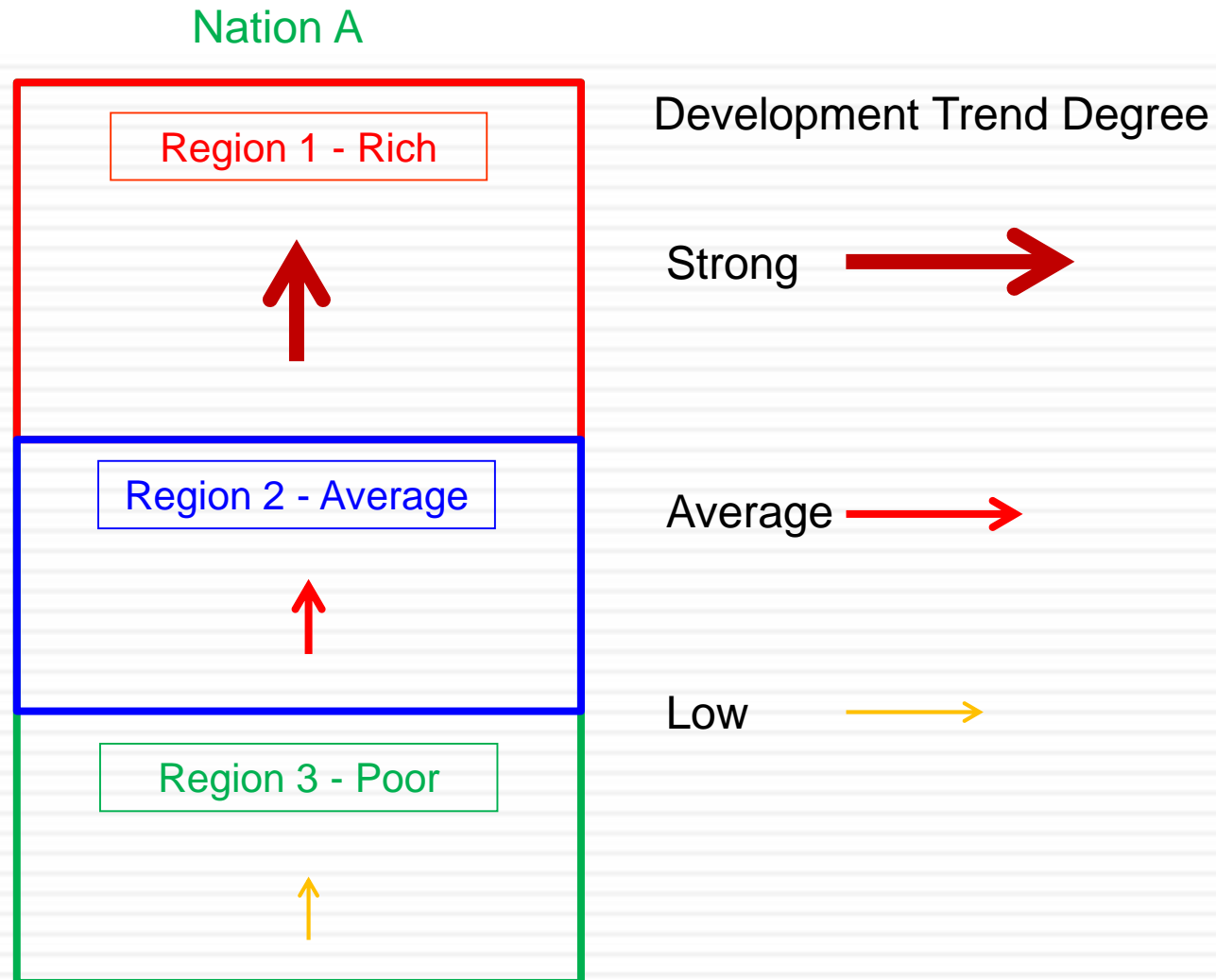
0 500 Km

© EuroGeographics Association for the administrative boundaries

Source: 6th Cohesion Report

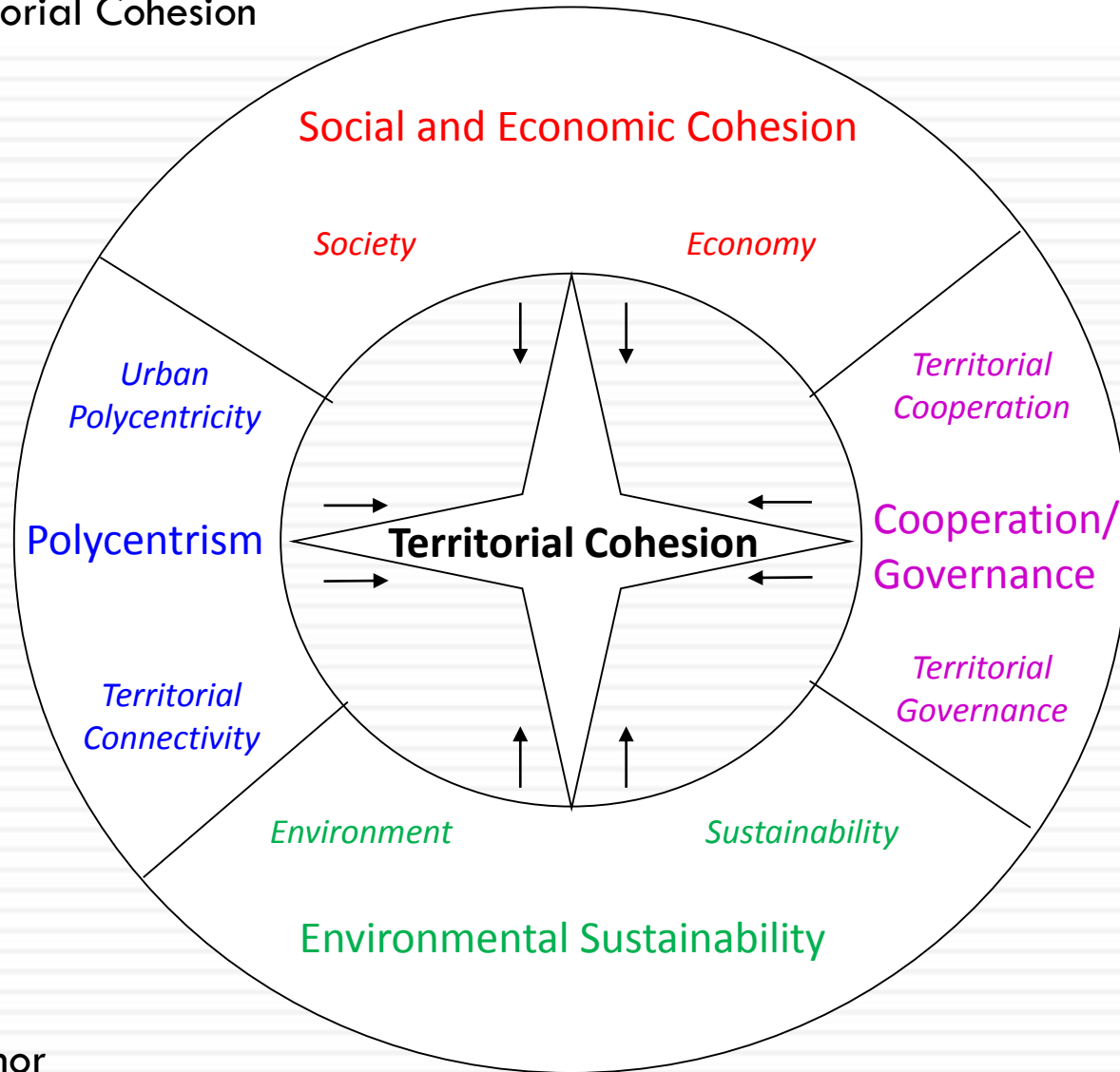


# Development vs Cohesion

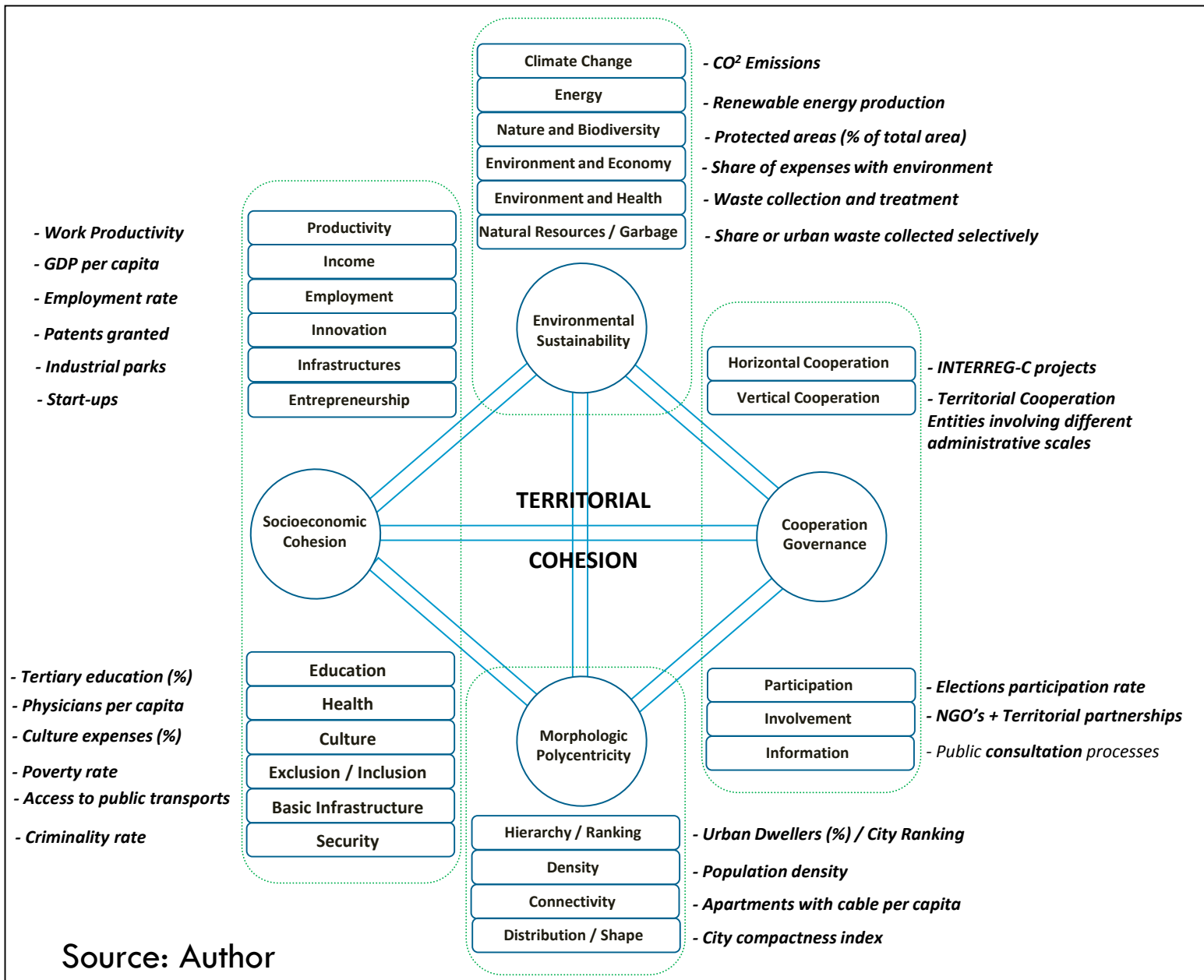


# What is Territorial Cohesion?

## The Star of Territorial Cohesion



# Territorial Cohesion components and indicators



○ Dimension  
 □ Component  
 - indicator

(A)

(B)

# Measuring Territorial Cohesion Techniques

## Territorial Cohesion Aggregated Statistical Index

### 1 – Standardisation Process

$$Sx_i = \frac{x_i - \overline{x_i}}{DP(x_i)}$$

$Sx_i$  : Indicator  $x$  standardized in the territorial unit  $i$

$x_i$  : Value of Indicator  $x$  in the territorial unit  $i$

$\overline{x_i}$  : Distribution average of  $x$  in the territorial unit  $i$

$DP(x_i)$  : Distribution Standard Deviation of  $x$  in the territorial unit  $i$

### 2 – Normalisation Process

#### A – Direct Relation

$$\text{Index} = \frac{\text{Present Value} - \text{Minimum Value}}{\text{Maximum value} - \text{Minimum Value}}$$

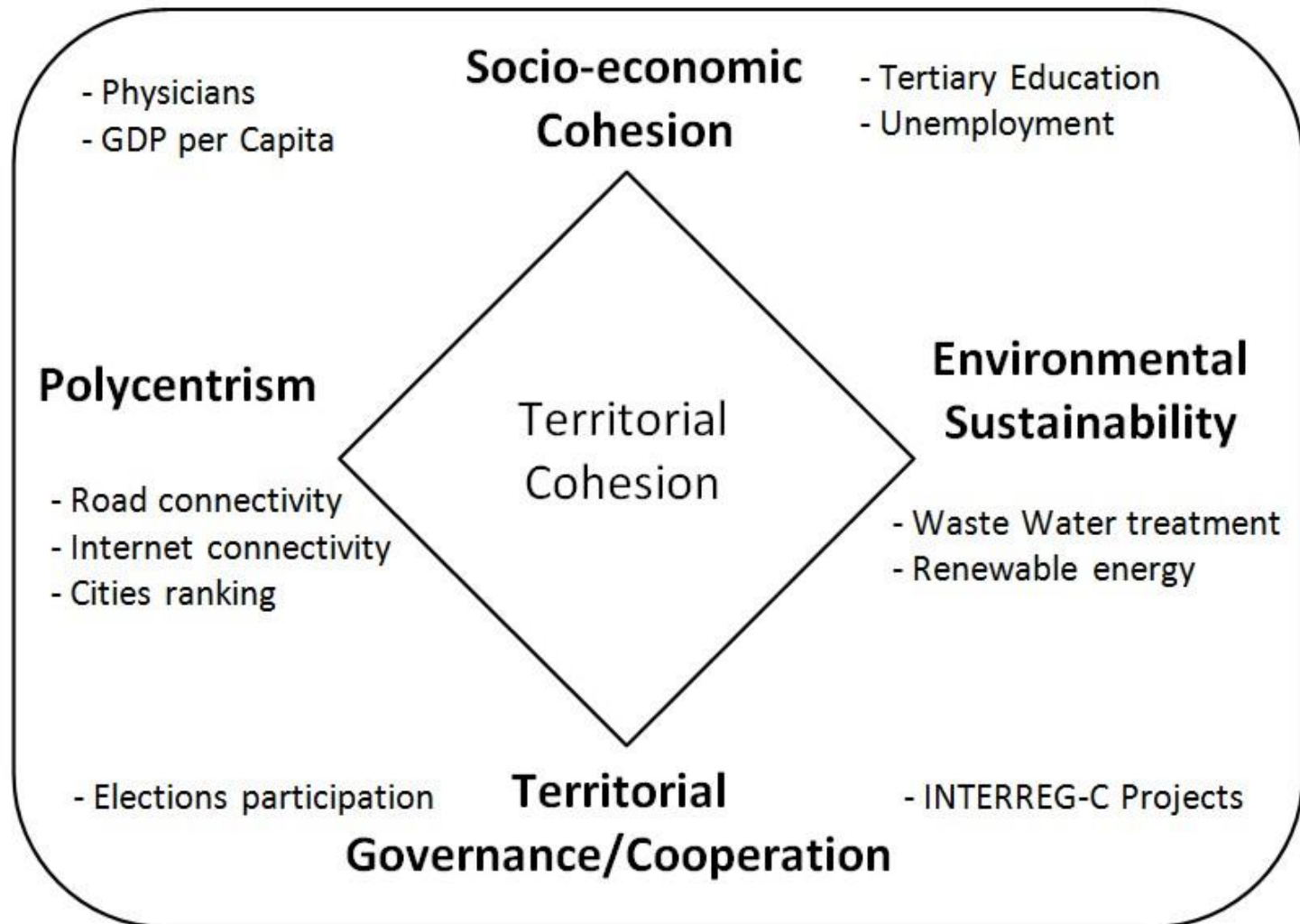
#### B – Indirect Relation

$$\text{Index} = \frac{\text{Maximum value} - \text{Present Value}}{\text{Maximum value} - \text{Minimum Value}}$$

- The Territorial Cohesion Index (TCI) value will fit between 0 and 1

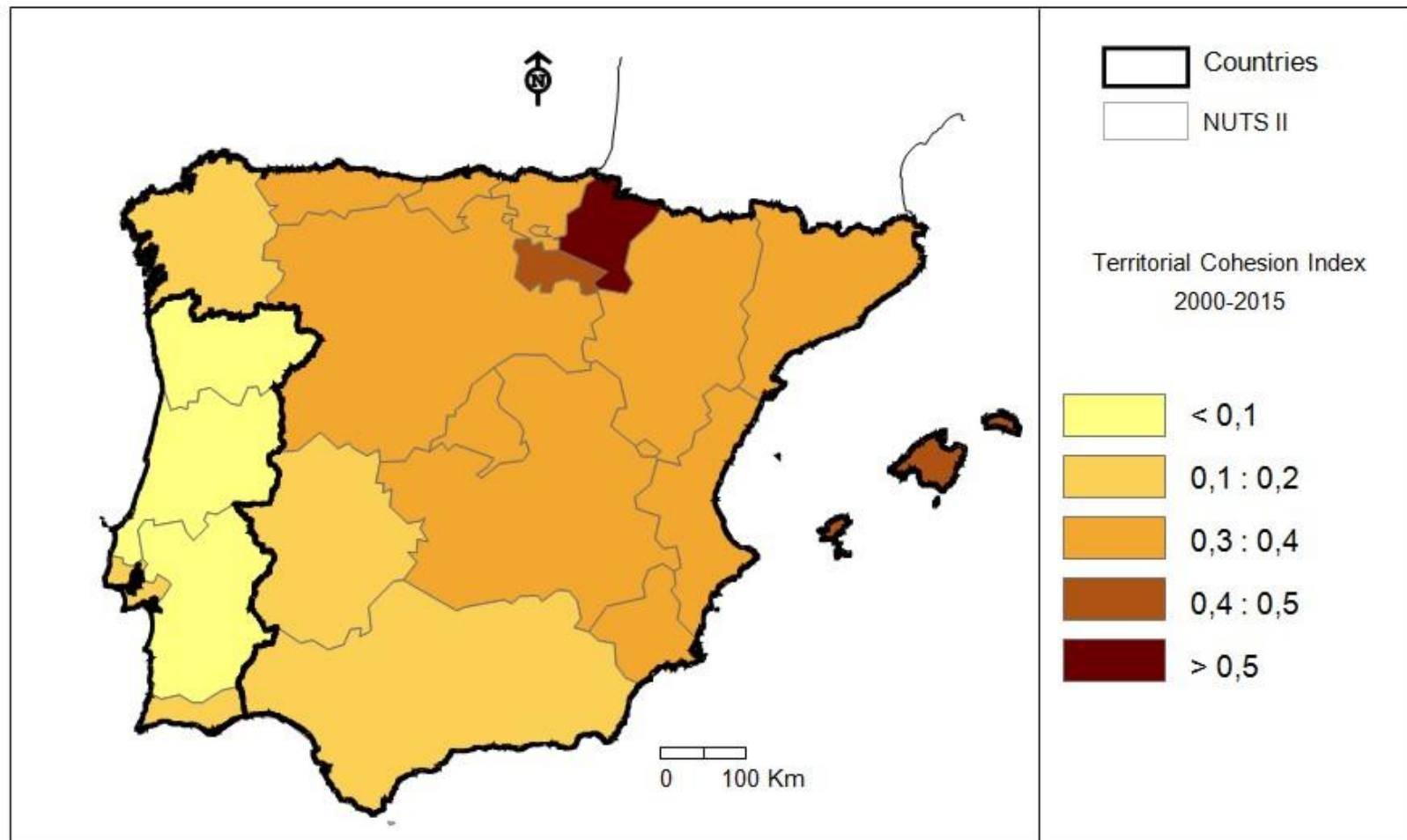
3 – Obtain the Arithmetic Average of the values of each of the four TC dimensions for two selected period of time

4 – Obtain the Arithmetic Average of the four TC dimensions Index to obtain the TCI for two selected period of time. Subtract the one from the latter period with the one from the oldest

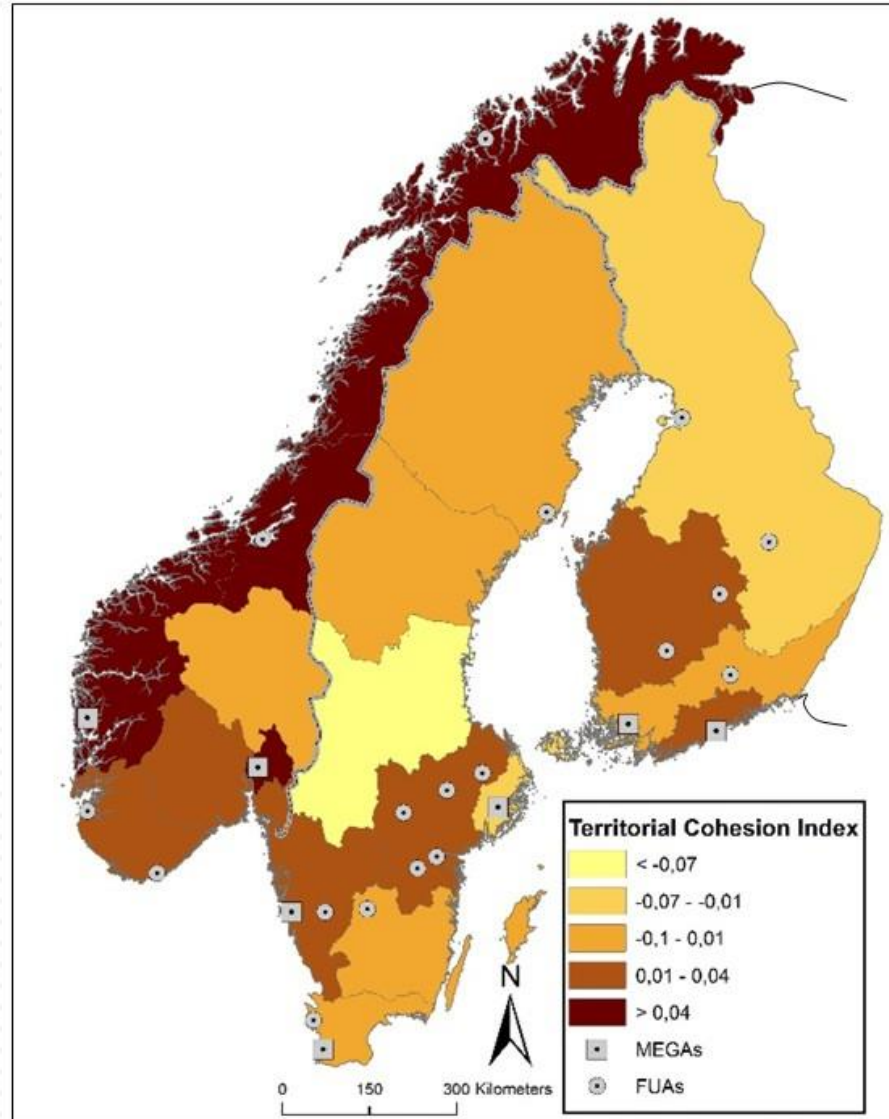


## Territorial Cohesion Indexes for the Iberian Peninsula (2000-2015)

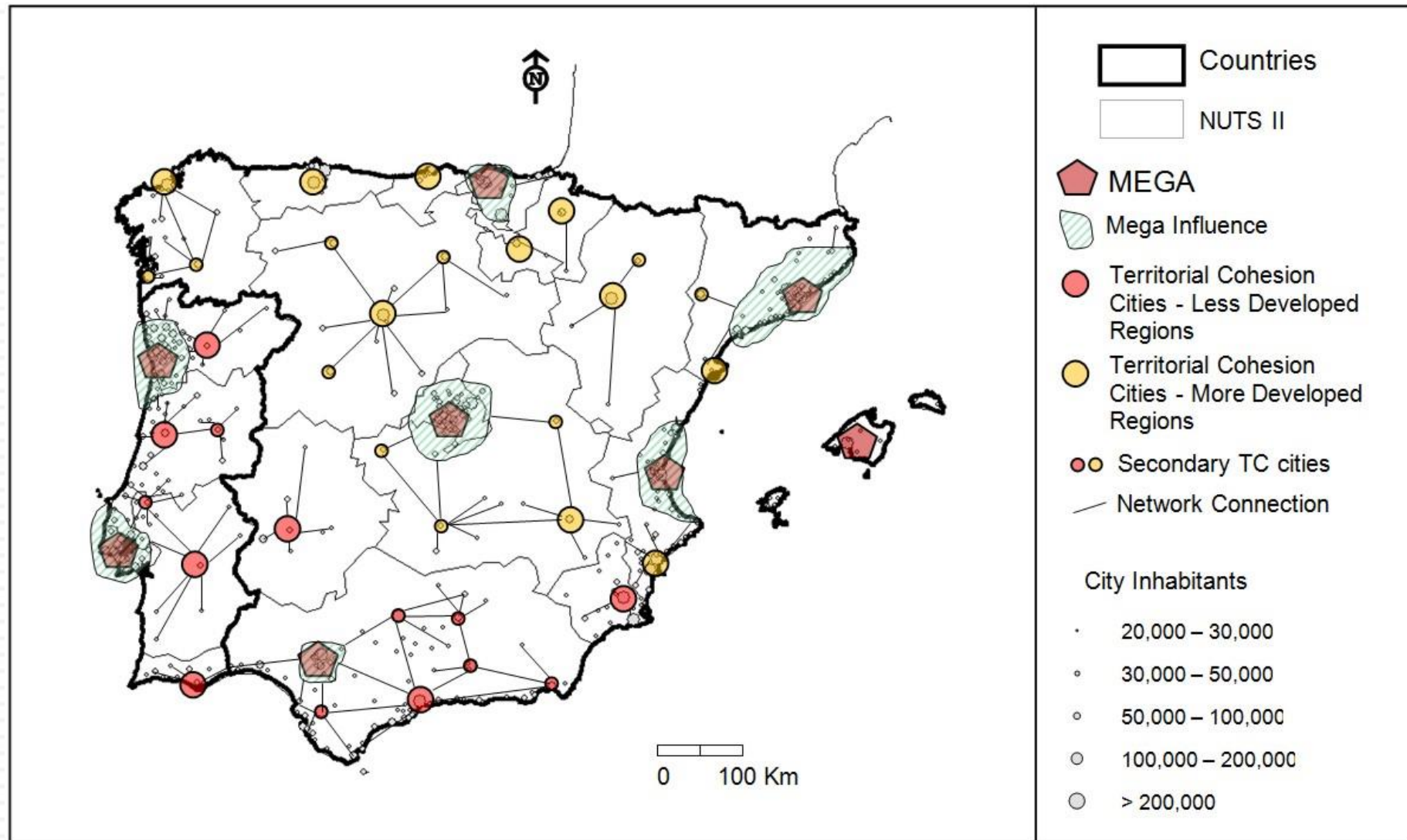
NUTII	TCI 2000	TCI 2015	TCI 2000-2015
Norte	0,09	0,25	0,16
Centro (p)	0,08	0,25	0,17
Lisboa e Vale do Tejo	0,14	0,44	0,30
Alentejo	0,13	0,23	0,10
Algarve	0,10	0,31	0,21
Andalucia	0,11	0,40	0,29
Aragon	0,16	0,55	0,39
Principado de Asturias	0,24	0,54	0,30
Islas Baleares	0,08	0,52	0,44
Canarias	0,11	0,58	0,47
Cantabria	0,20	0,57	0,37
Castilla y Leon	0,23	0,56	0,34
Castilla-La Mancha	0,14	0,45	0,31
Cataluna	0,08	0,44	0,36
Comunidad Valenciana	0,15	0,50	0,36
Extremadura	0,17	0,44	0,27
Galicia	0,25	0,49	0,24
Comunidad de Madrid	0,18	0,54	0,36
Region de Murcia	0,16	0,50	0,34
Comunidad Foral de Navarra	0,14	0,75	0,61
Pais Vasco	0,23	0,57	0,34
La Rioja	0,19	0,64	0,46



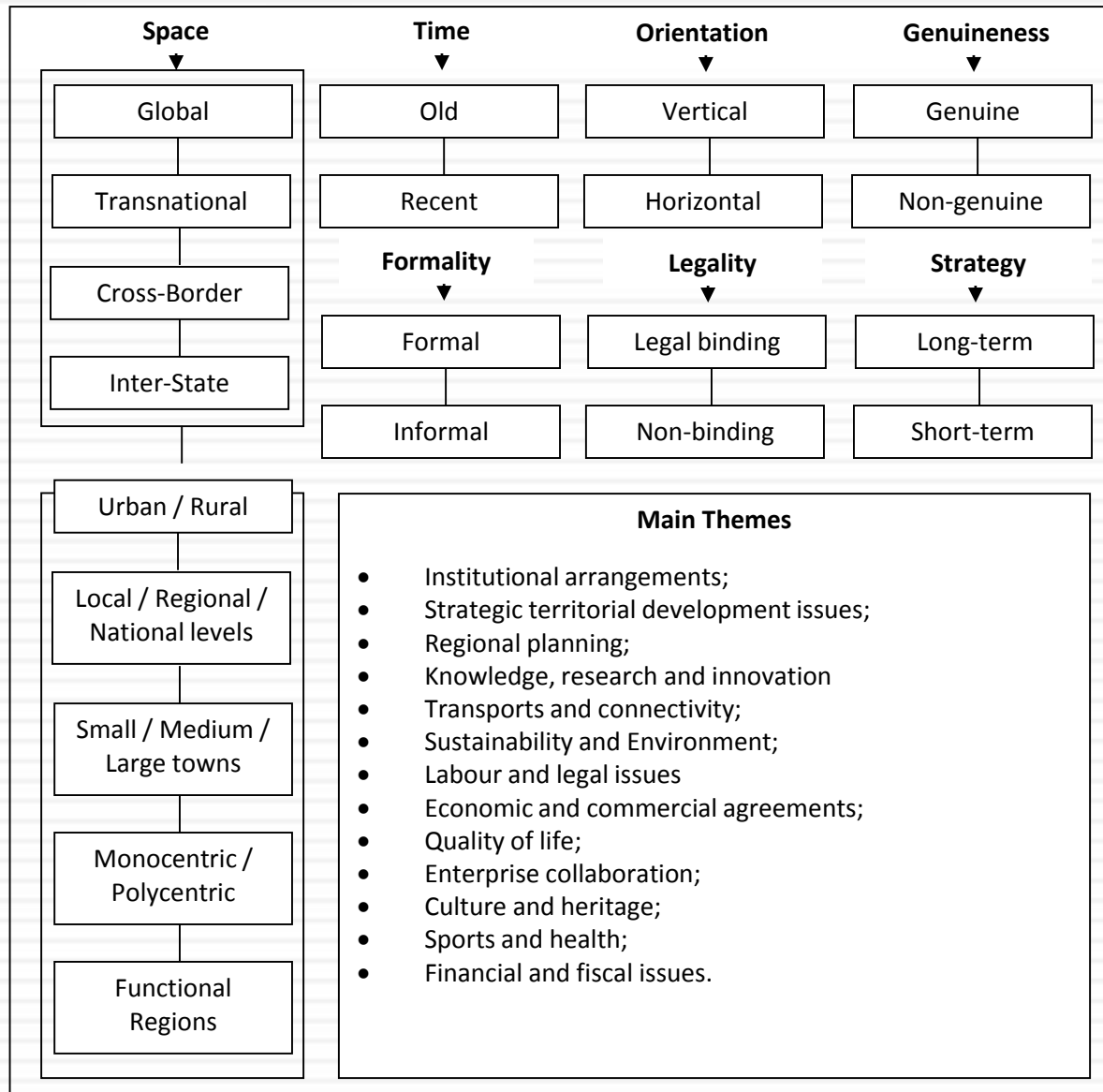
# Territorial Cohesion Index



Source: Daniel Rauhut

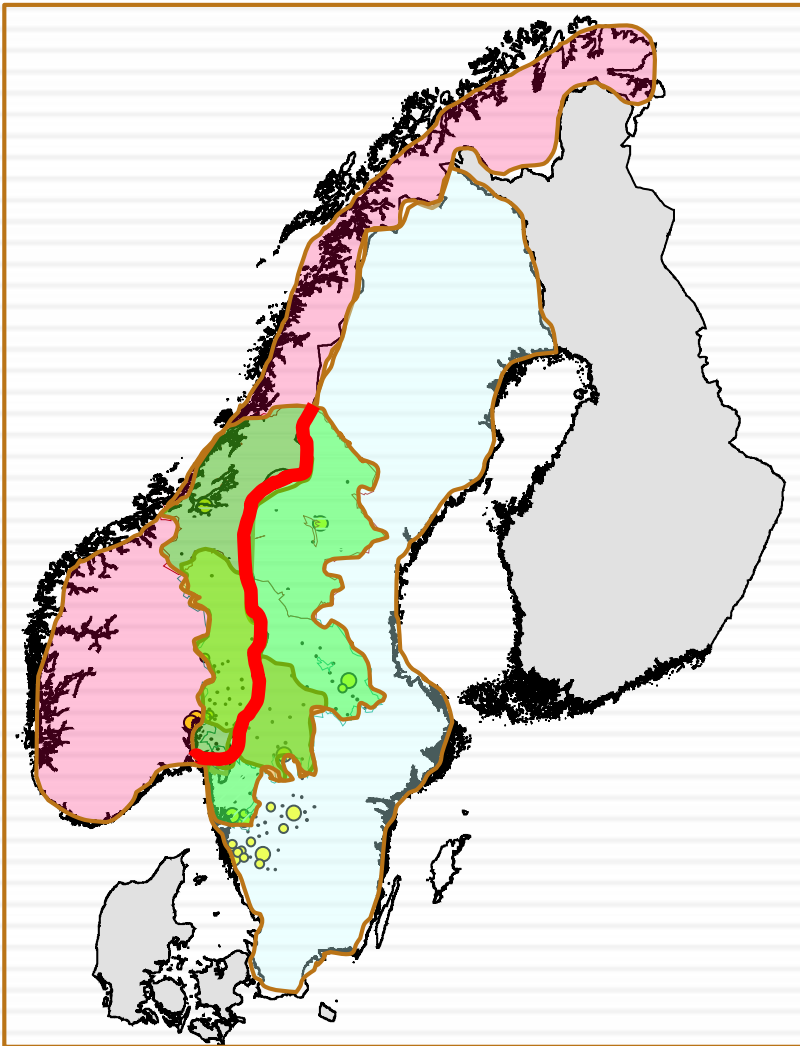


# Territorial Cooperation Dimensions and Themes



- Territorial cooperation, as the name indicates, can be defined as **a process of collaboration between different territories**
- The overarching objective of **European Territorial Cooperation (ETC)** is to promote a **harmonious economic, social and territorial development** of the Union as a whole.
- Interreg is built around three strands of cooperation: **cross-border** (Interreg A), **transnational** (Interreg B) and **interregional** (Interreg C):
- Territorial Cooperation processes can be measured by means of a **Territorial Impact Assessment (TIA)** procedure, which relates the projects investments with territorial changes, taking into account the **regional sensibility** and the **policy intensity** elements

# What is Cross-Border Cooperation



**Not just another regional development programme but has special features and objectives:**

- Specific on reducing the barrier effect along the borderline in all its dimensions: (institutional-legal; economic-technological; social-cultural; environmental-heritage; accessibilities);
- Fundamental in enhancing the border region territorial capital: institutional building; territorial articulation; socioeconomic cohesion; environmental sustainability.

# Territorial Cooperation Indicators

Dimension	Component	Indicators	Source
Territorial Development	Socioeconomic Development	Economic growth / GDP per capita / Disposable income	Literature / EU and national statistics / ESPON / LUISA
		Entrepreneurship	Literature / EU and national statistics / ESPON
		Employment / Unemployment rate	Literature / EU and national statistics / ESPON / LUISA
		Innovation / Patent applications / Mio inhabitants	Literature / EU and national statistics / ESPON / LUISA
		Poverty / Social Exclusion Risk	Literature / EU and national statistics / ESPON / LUISA
		Educational attainment	Literature / EU and national statistics / ESPON / LUISA
	Environmental Sustainability	Pollution levels / Emissions of CO2 per capita	Literature / EU and national statistics / ESPON
		Urban flood risk	Literature / LUISA
		Soil erosion by water	Literature / EU and national statistics / ESPON
		Use of renewable energy	Literature / EU and national statistics
	Institutional Building	Multi-level governance levels	Literature / Interviews
		ONGs per capita	Literature / Interviews
		Subsidiary principle application	Literature / Interviews
	Territorial Articulation	Potential accessibility (road, rail, air)	Literature / EU and national statistics / ESPON
		Average travel distances	Literature / EU and national statistics / LUISA
		Polycentrism index	Literature

Dimension	Component	Indicators	Source
Barrier effect dimension	Cultural - Social	Number of shared social equipment (hospitals, schools)	Literature / Interviews / Regional Authorities
		Number of students receiving border language courses	Literature / Education Ministry
		Number of students in courses supported by cross-border universities' networks	Literature / Education Ministry / Universities
		Number of cross-border culture events	Literature / INTERREG projects
	Institutional - Legal	Number of cross-border entities	Literature (AEBR) / Regional Authorities
		Number of cross-border urban networks	Literature / Interviews / Regional Authorities / Eurostat
		Number of agreements in legal standardization	Literature / Interviews / National Authorities
		Number of cross-border assistance / information posts	Literature / Interviews / Regional Authorities
	Economy - Technology	Number of cross-border commuters	Literature / transport Ministry / National Authorities
		Number of companies from the other side of the border	Literature / National and Regional Authorities
		Value of trading between the border areas	Literature / National and Regional Authorities
		Number of cross-border entrepreneurship courses	Literature / INTERREG projects / Universities
	Environmental – Heritage	Number of agreement between protected areas	Literature / Natural Protected Areas
		Renewable energy production in both sides of the border	Literature / National Statistics / Energy Ministry
		Number of heritage protection agreements	Literature / INTERREG projects / Regional Authorities
	Accessibility	Number of cross-border vehicles	Literature / National and Regional Statistics
		Number of cross-border public transportation carriers (bus, tram and train)	Literature / Public and Private transport companies
		Number of cross-border road and high-ways passages	Literature / Maps
Source : Author			

Territory: Portugal-Spain INTERREG-A Programme - 1990/2013

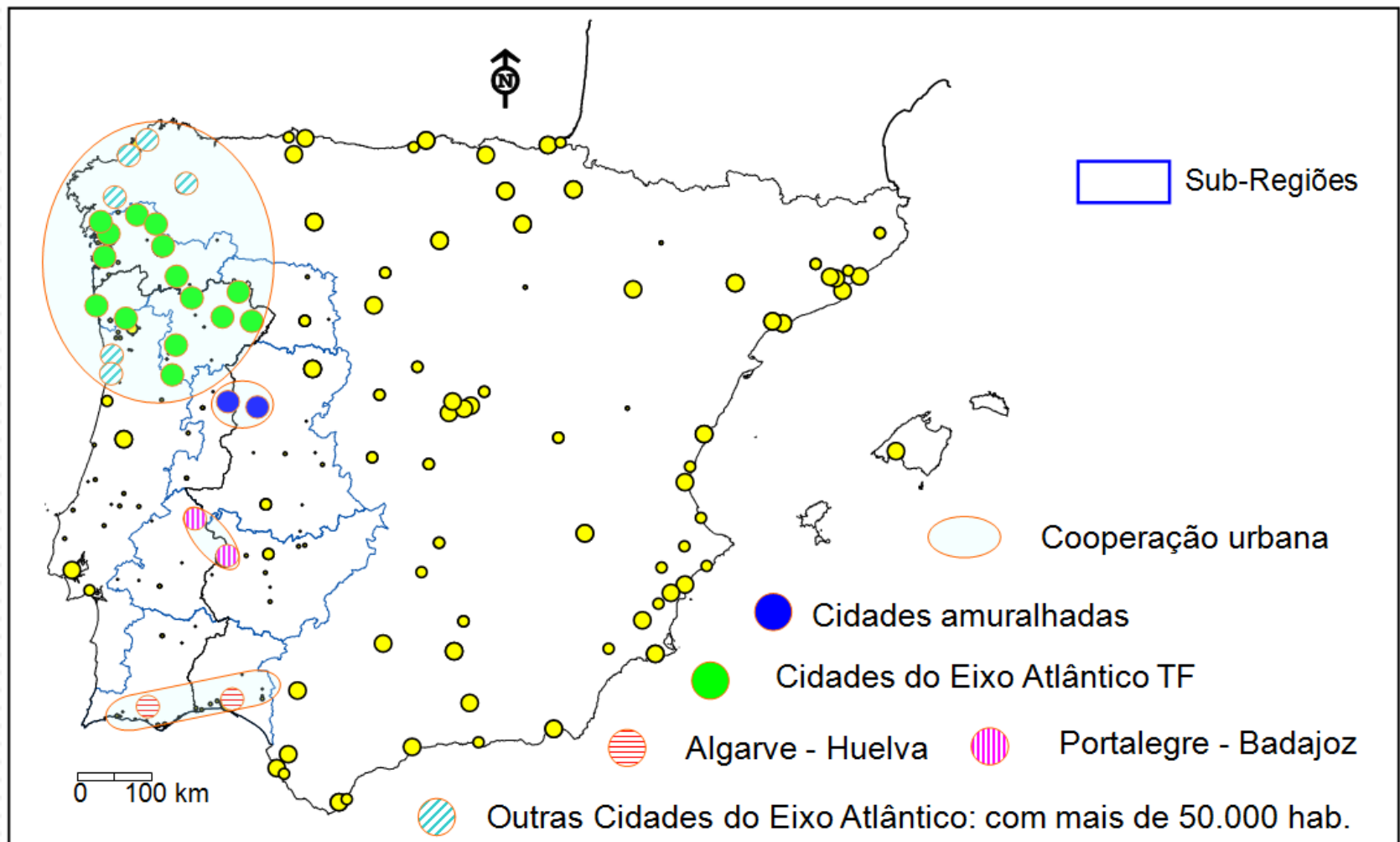
INDEX

Dimension	Component	Type of Impacts (-4 to 4)				Average	0 to 1		INDEX	
		Pos/Neg	End/Exo	Sust/Shor	Mul/Sub		Pol/Int	Sen/Reg	1995	2015
Cultural/Social	Shared social equipment	2	3	3	3	2,75	0,25	0,5	0	0,25
Cultural/Social	Culture events	2	2	1	2	1,75	0,25	0,5	0,25	0,5
Cultural/Social	Language	2	3	3	3	2,75	0,25	0,75	0,25	0,5
Cultural/Social	Education	2	1	2	3	2	0,5	0,75	0,25	0,5
Average		2,00	2,25	2,25	2,75	2,31	0,31	0,63	0,19	0,44
Institutional/Legal	Cross-border structures	3	3	3	3	3	0,25	0,5	0	0,5
Institutional/Legal	Urban networks	2	2	3	2	2,25	0,5	0,5	0	0,5
Institutional/Legal	Multilevel governance	3	2	2	3	2,5	0,5	0,5	0	0,5
Institutional/Legal	Labour market	1	1	1	1	1	0,25	0,25	0,25	0,5
Average		2,25	2,00	2,25	2,25	2,19	0,38	0,44	0,06	0,50
Economy/Technology	Employment	1	2	2	2	1,75	0,75	1	0,25	0,25
Economy/Technology	Innovation	1	2	2	2	1,75	1	1	0,25	0,5
Economy/Technology	Infrastructures	2	2	2	3	2,25	0,25	0,5	0,25	0,75
Economy/Technology	Entrepreneurship	1	1	1	1	1	0,75	1	0,25	0,5
Average		1,25	1,75	1,75	2,00	1,69	0,69	0,88	0,25	0,50
Environmental/Heritage	National Parks Collaboration	2	1	2	2	1,75	0,25	0,5	0	0,25
Environmental/Heritage	Energy	2	3	2	3	2,5	0,75	0,75	0,25	0,5
Environmental/Heritage	Heritage Protection	2	2	1	3	2	0	0	0,25	0,5
Average		2,00	2,00	1,67	2,67	2,08	0,33	0,42	0,17	0,42
Accessibility	Public transports	2	1	2	2	1,75	0,25	0,75	0,25	0,25
Accessibility	Road Connections	4	3	3	3	3,25	0	0,5	0,25	0,75
Accessibility	Rail connections	2	2	2	3	2,25	0,25	0,5	0,25	0,25
Average		2,67	2,00	2,33	2,67	2,42	0,17	0,58	0,25	0,42
General Average		2,03	2,00	2,05	2,47	2,14	0,38	0,59	0,18	0,45

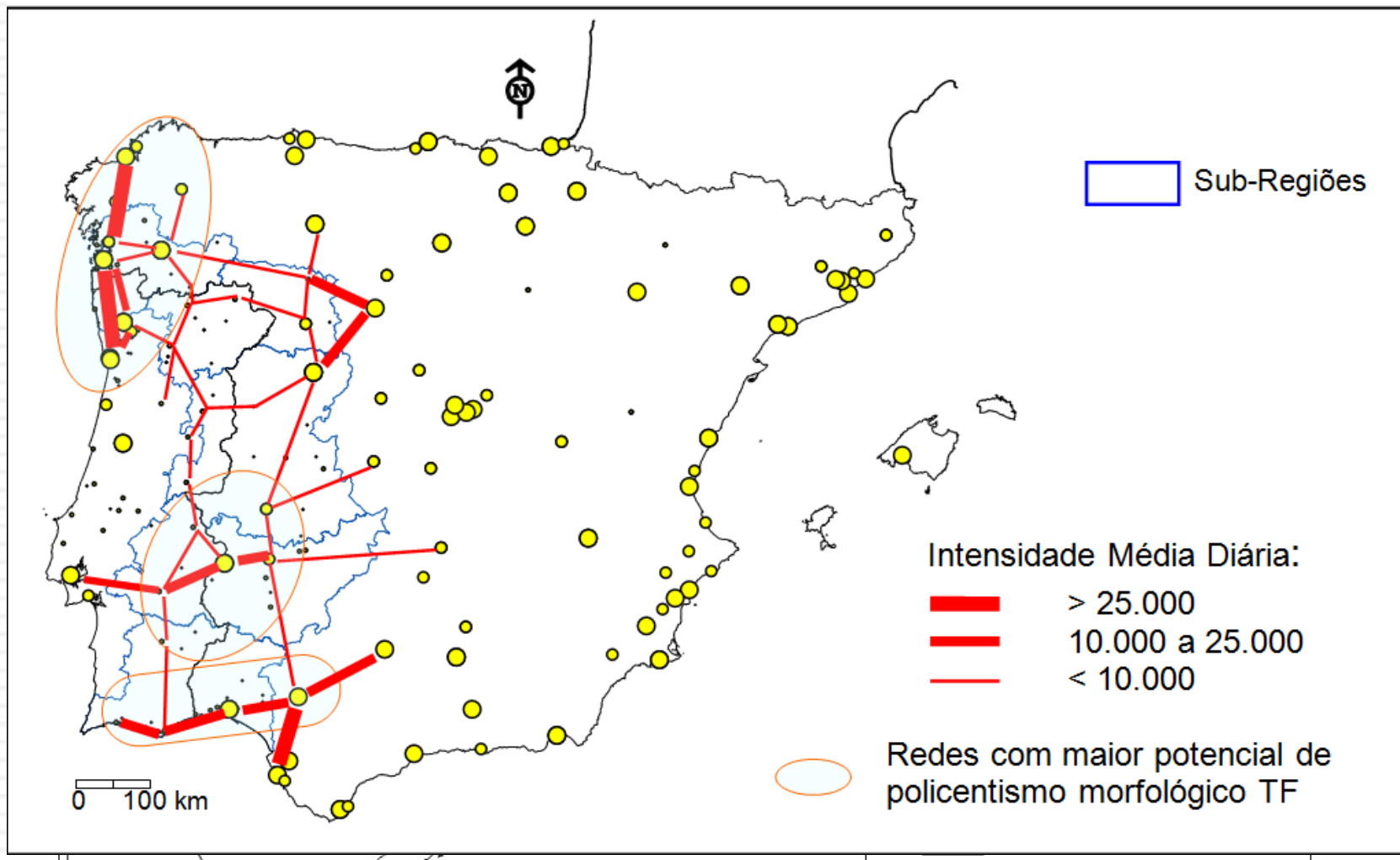
Impact Classification	
4	Very Significant Positive Impacts
3	Significant Positive Impacts
2	Moderate Positive Impacts
1	Low Positive Impacts
0	Null Impacts
-1	Low Negative Impacts
-2	Moderate Negative Impacts
-3	Significant Negative Impacts
-4	Very Significant Negative Impacts

EX POST		General	CUL/SOC	INS/URB	ECO/TEC	ENV/HER	ACESSI	EX-Ante
EIMql = Estimated Qualitative Impacts		2,138	2,313	2,188	1,688	2,083	2,417	
Barrier Effect Index		0,271	0,250	0,438	0,250	0,250	0,167	
EIMqt = Estimated Quantitative Impacts		4,333	4,000	7,000	4,000	4,000	2,667	
EIM = (EIMql * EIMqt) (for each 'd')		3,235	3,156	4,594	2,844	3,042	2,542	
I = Regional Intensity of 'p'		0,375	0,313	0,375	0,688	0,333	0,167	
S = Regional Sensibility to 'p'		0,588	0,625	0,438	0,875	0,417	0,583	
EX POST: $TIMr = (EIMp \cdot Ip) \cdot Sp$		0,713	0,616	0,754	1,711	0,422	0,247	Ex-Post

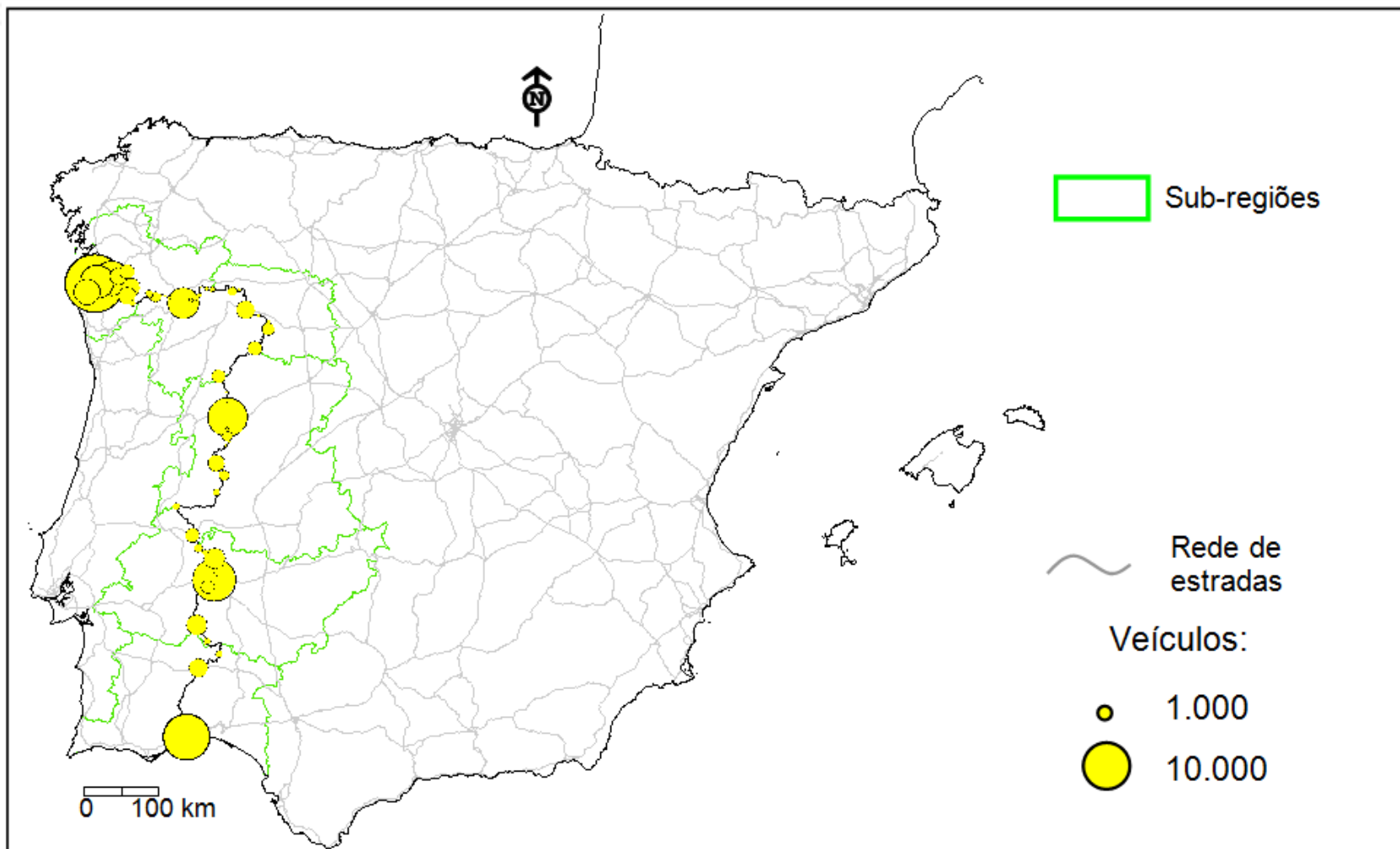
## Urban Cooperation



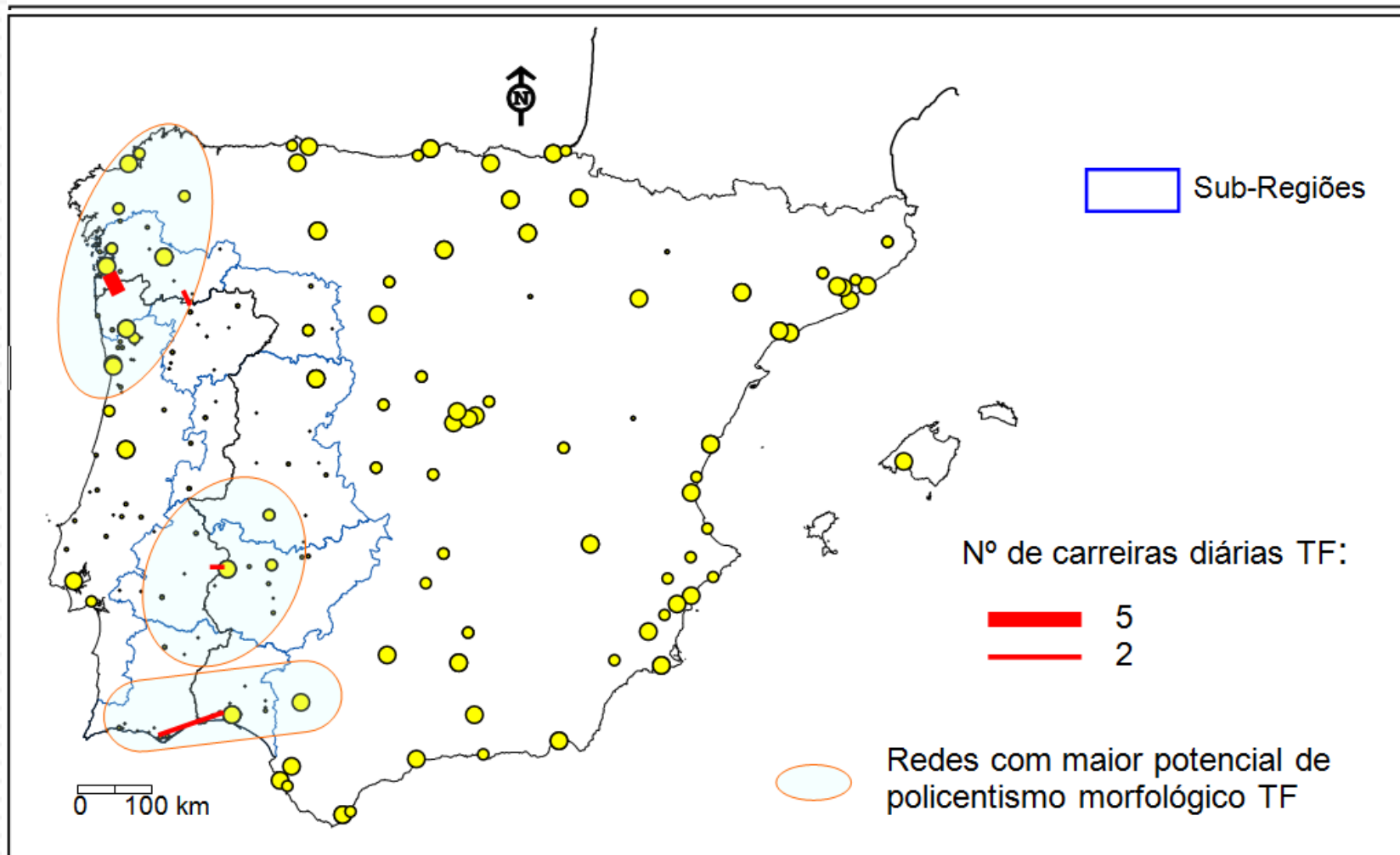
## Road Traffic



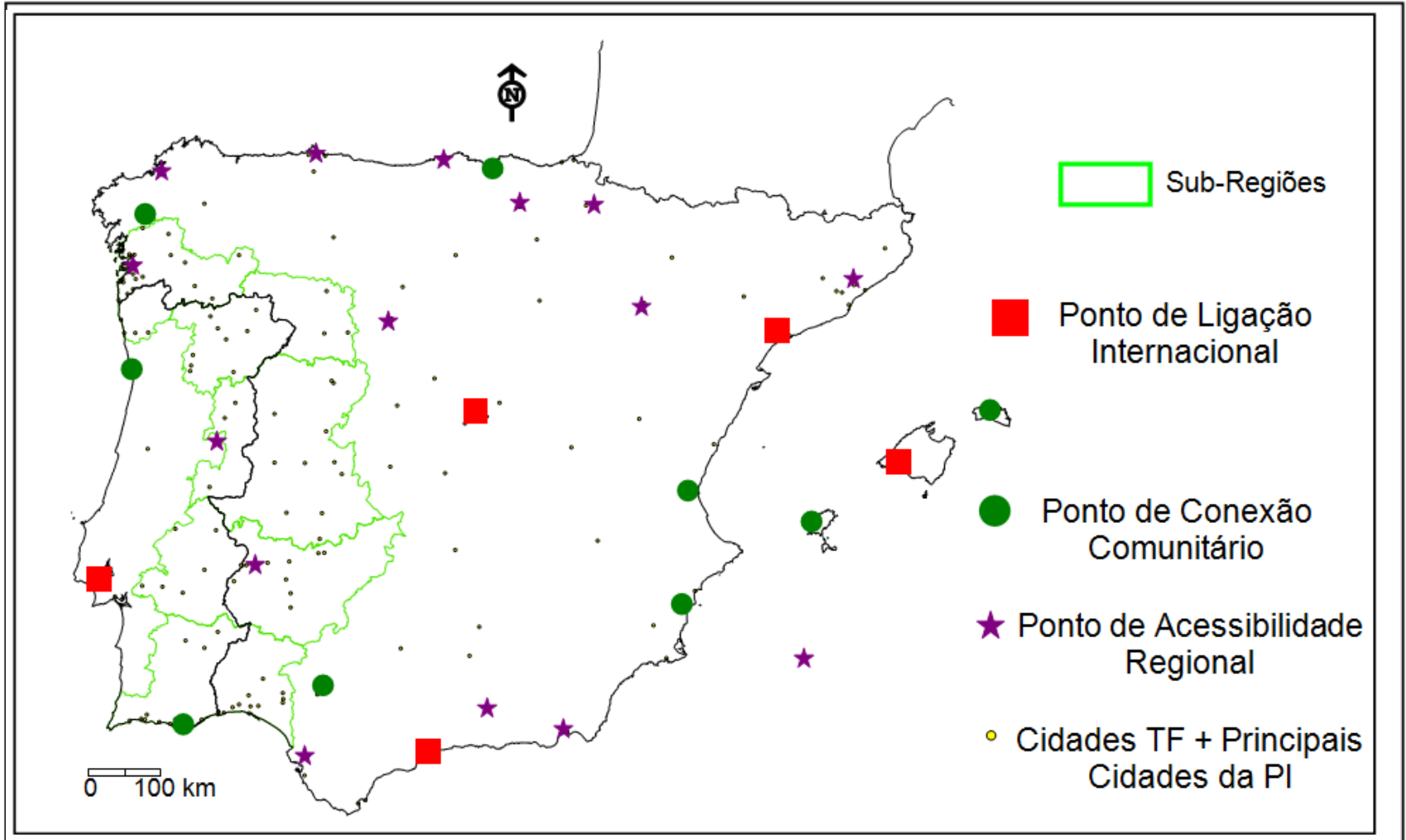
## Average Daily Traffic - 2003



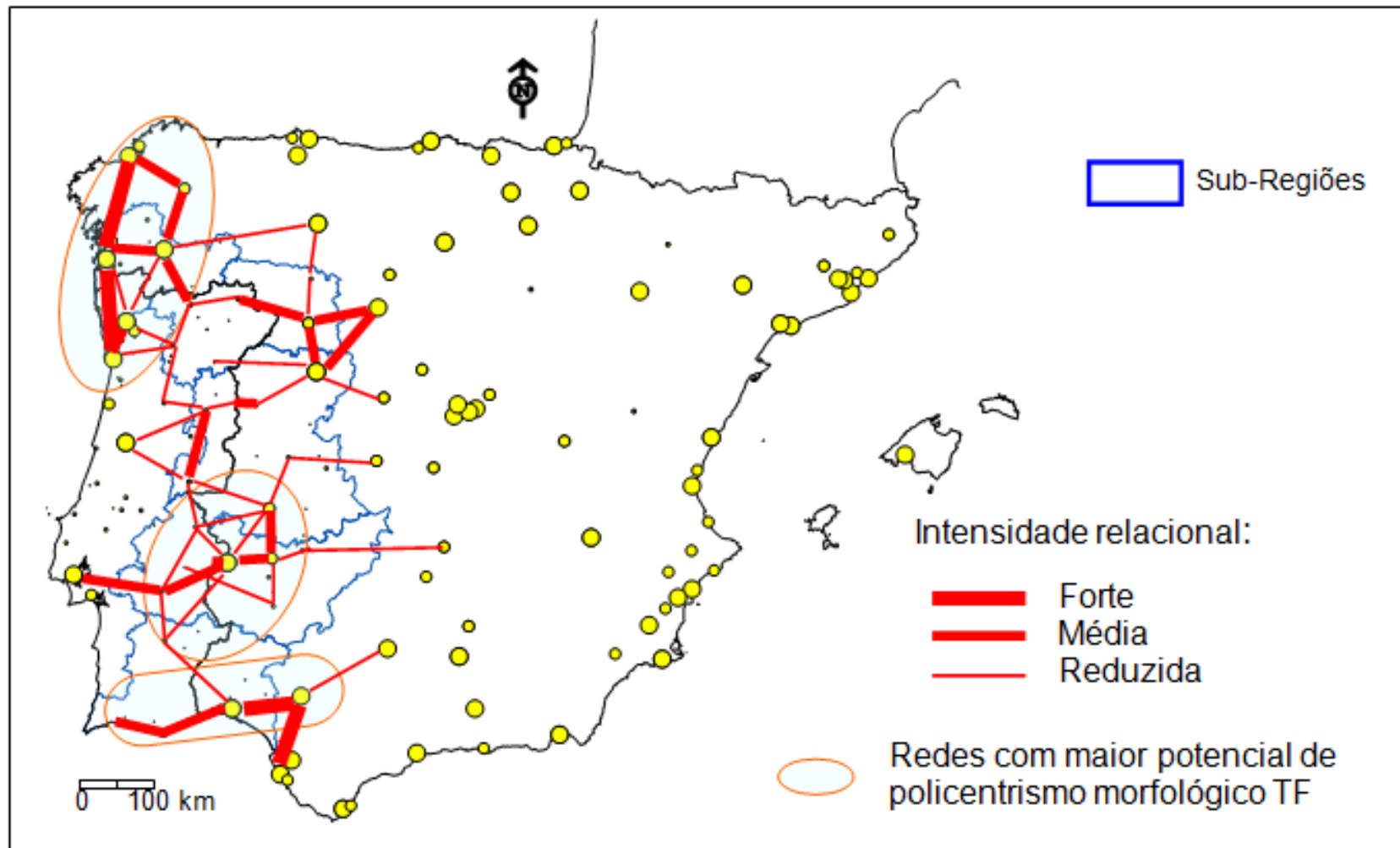
## Bus Public Transportation



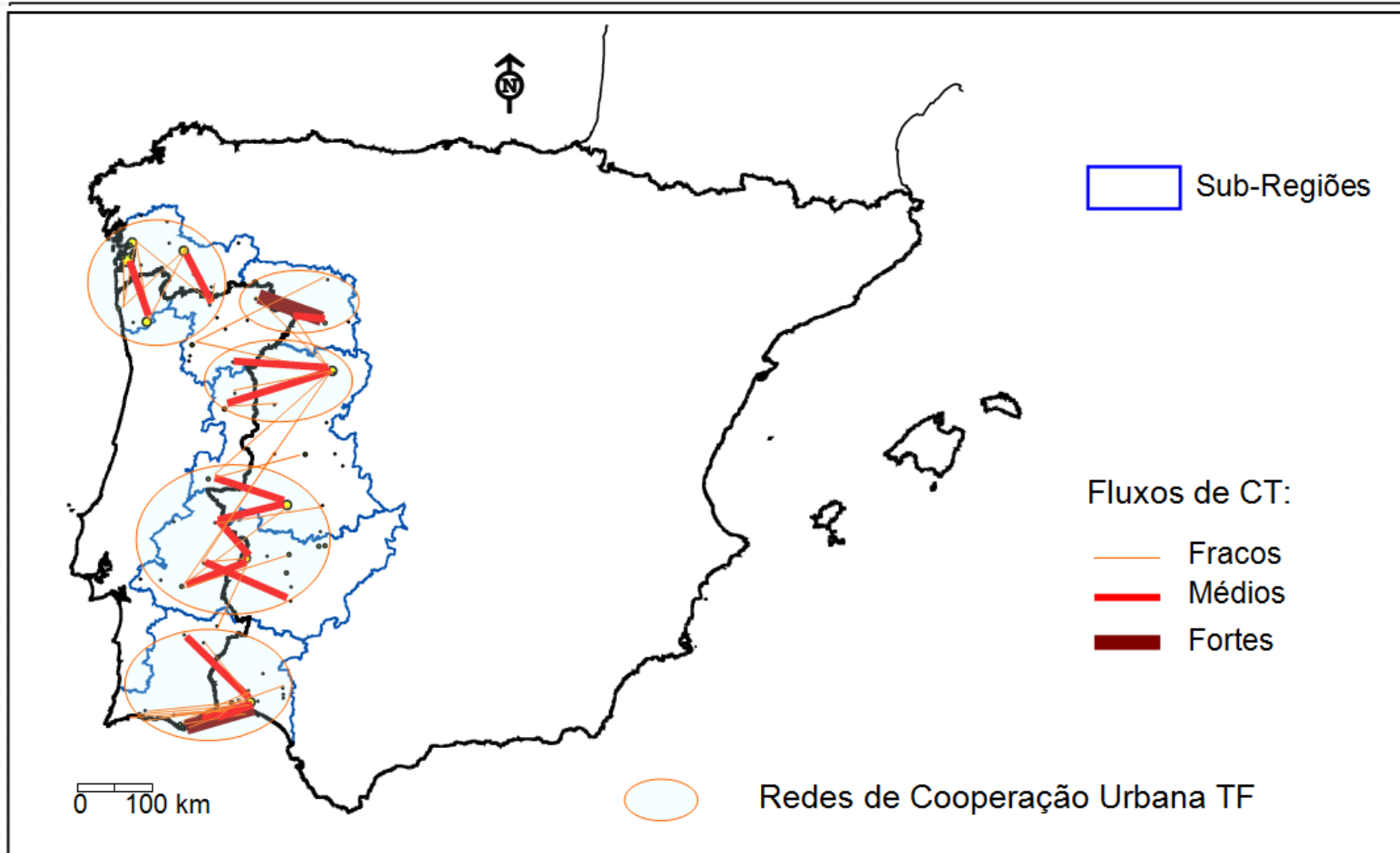
## Airport Infrastructures



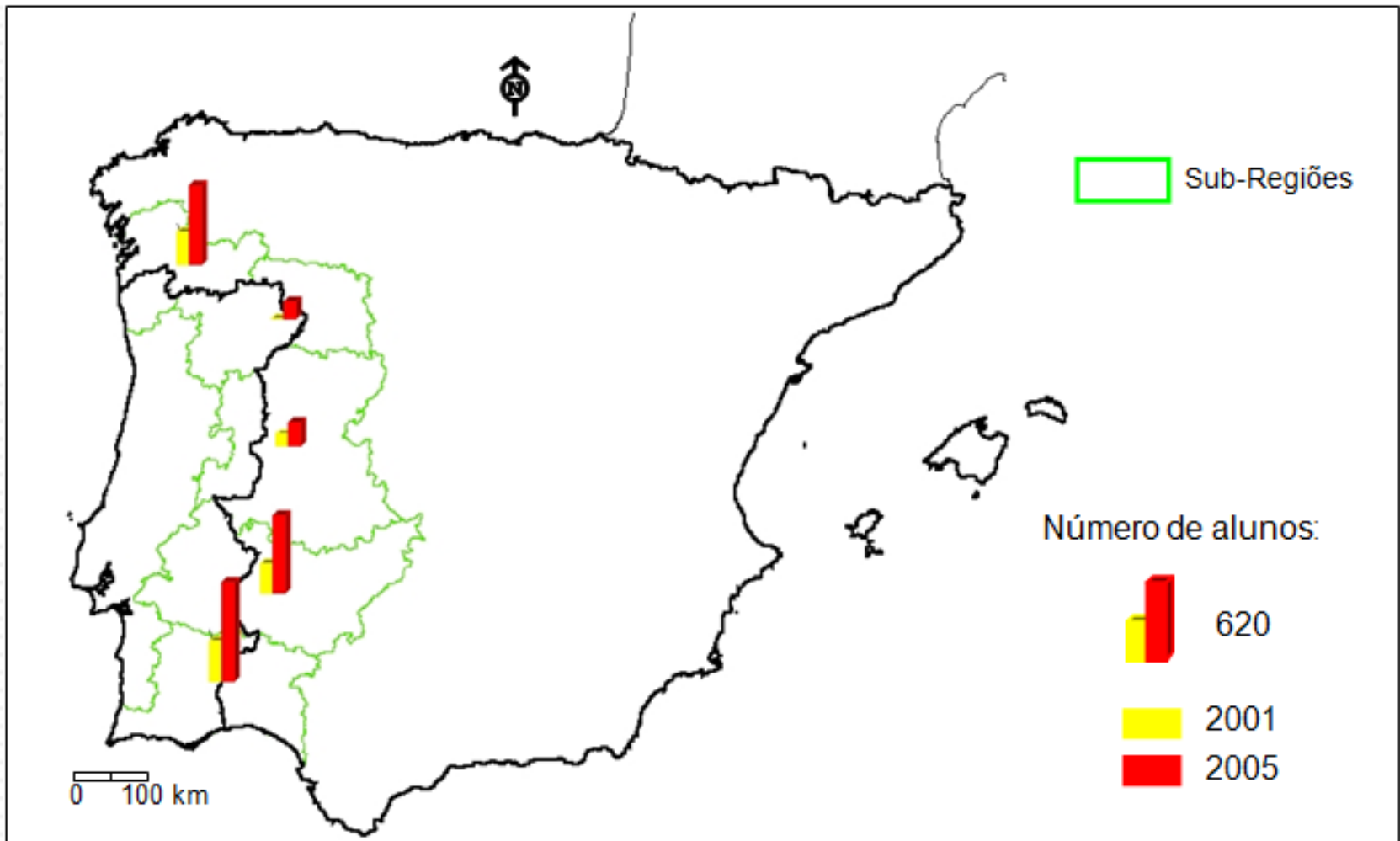
## Territorial Articulation



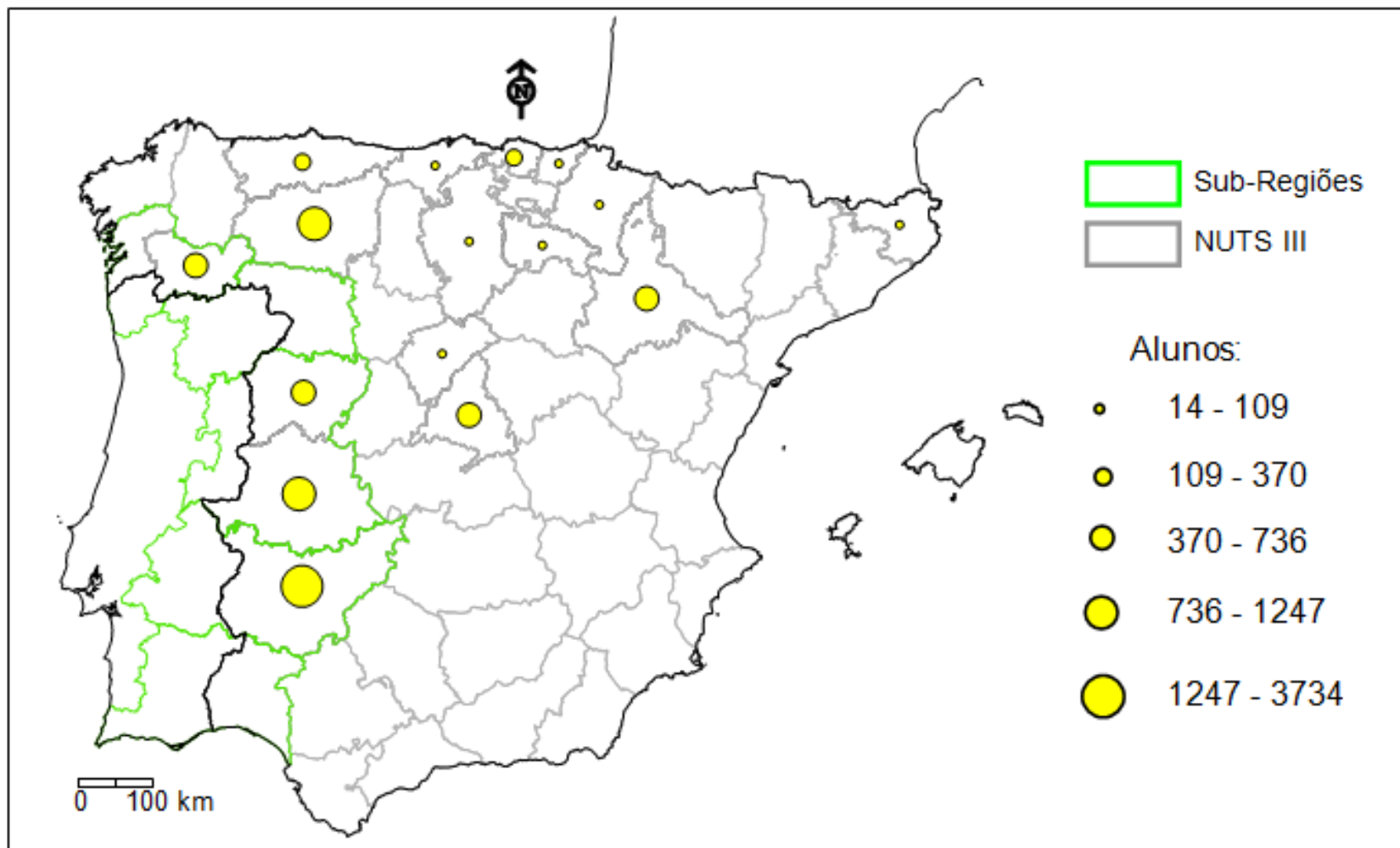
## INTERREG III - A - Cooperation



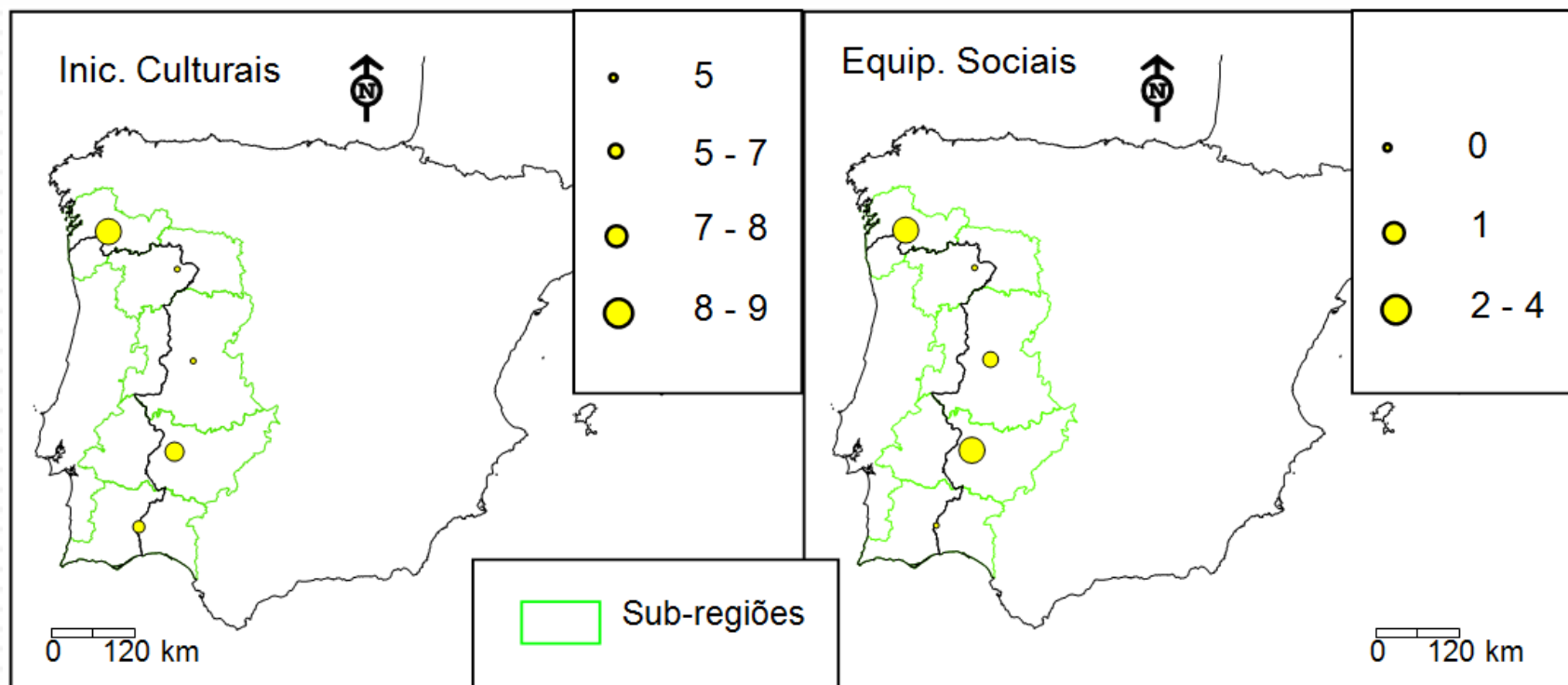
## Students Learning Spanish in Portugal - 2005



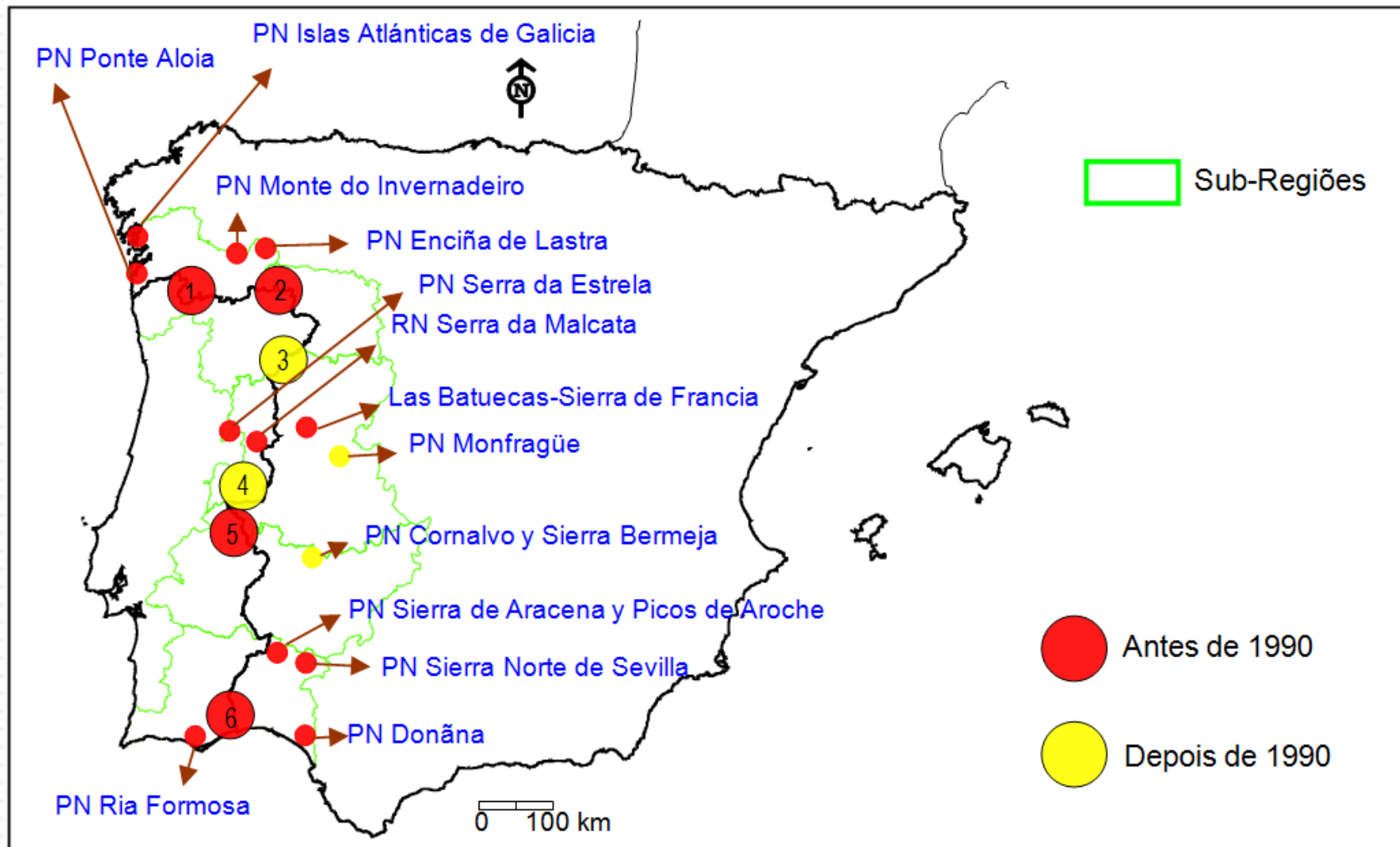
## Students Learning Portuguese in Spain - 2005



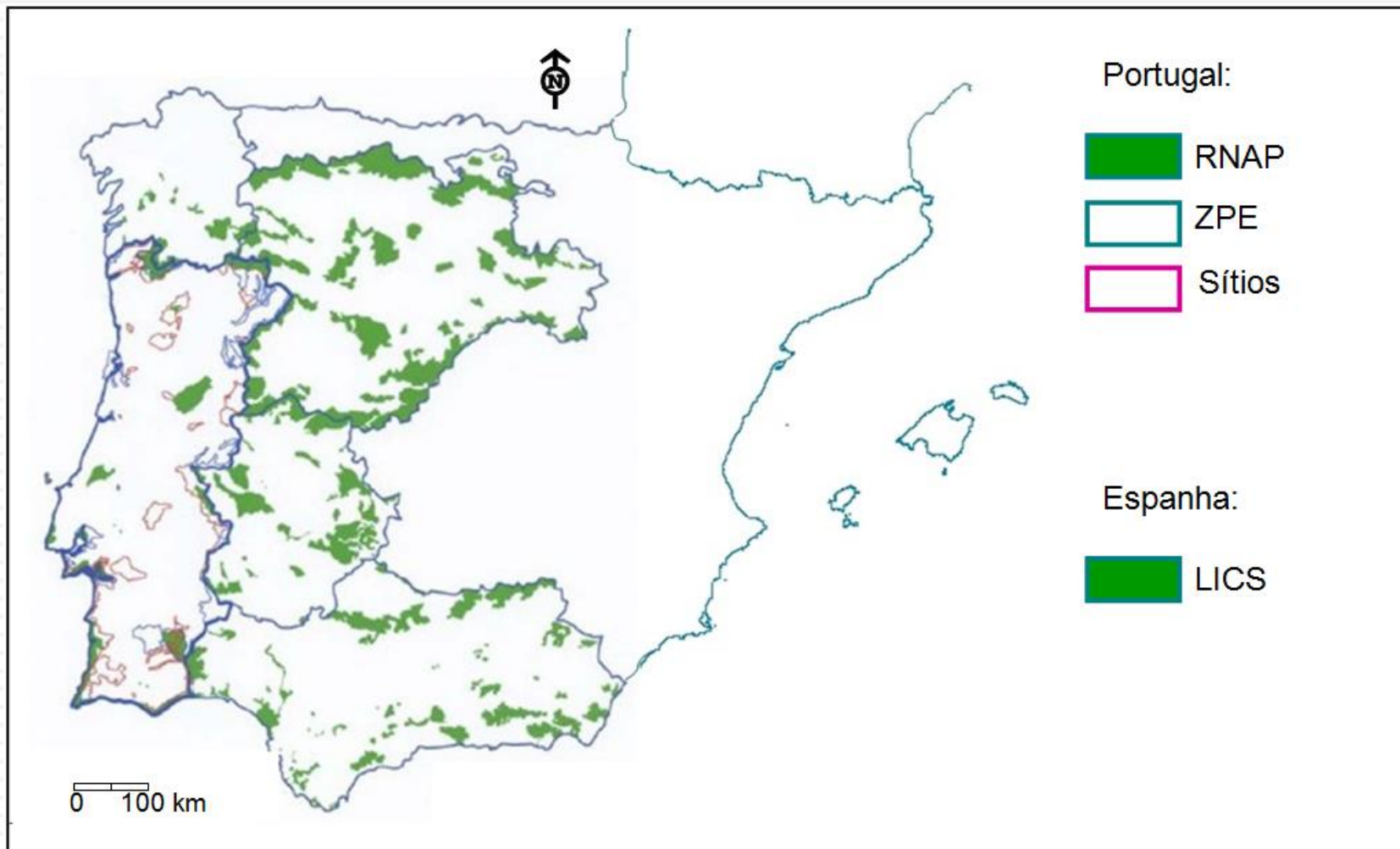
## Cultural Initiatives and Shared Social Equipment



## Protected Natural Areas



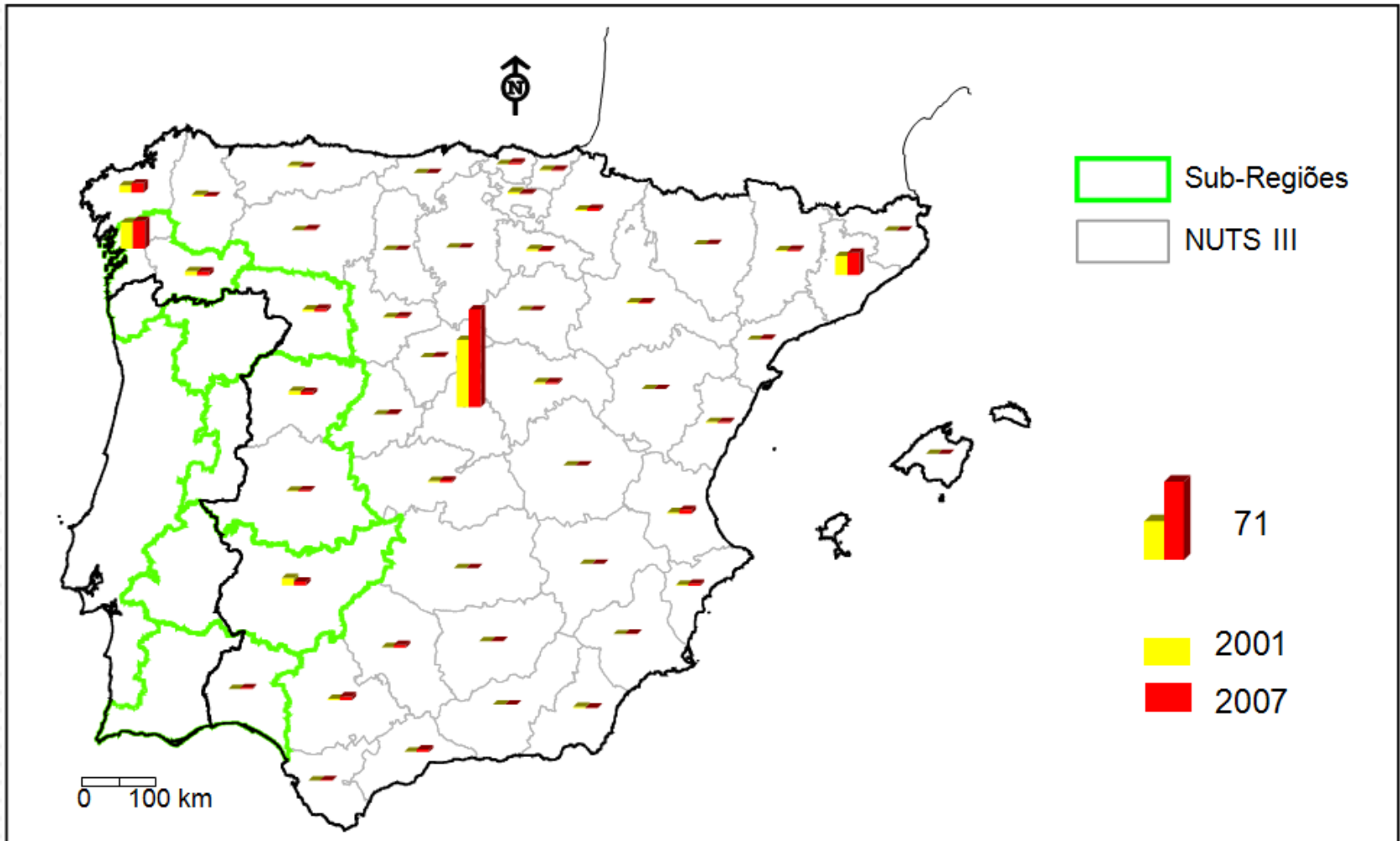
## Protected Natural Areas



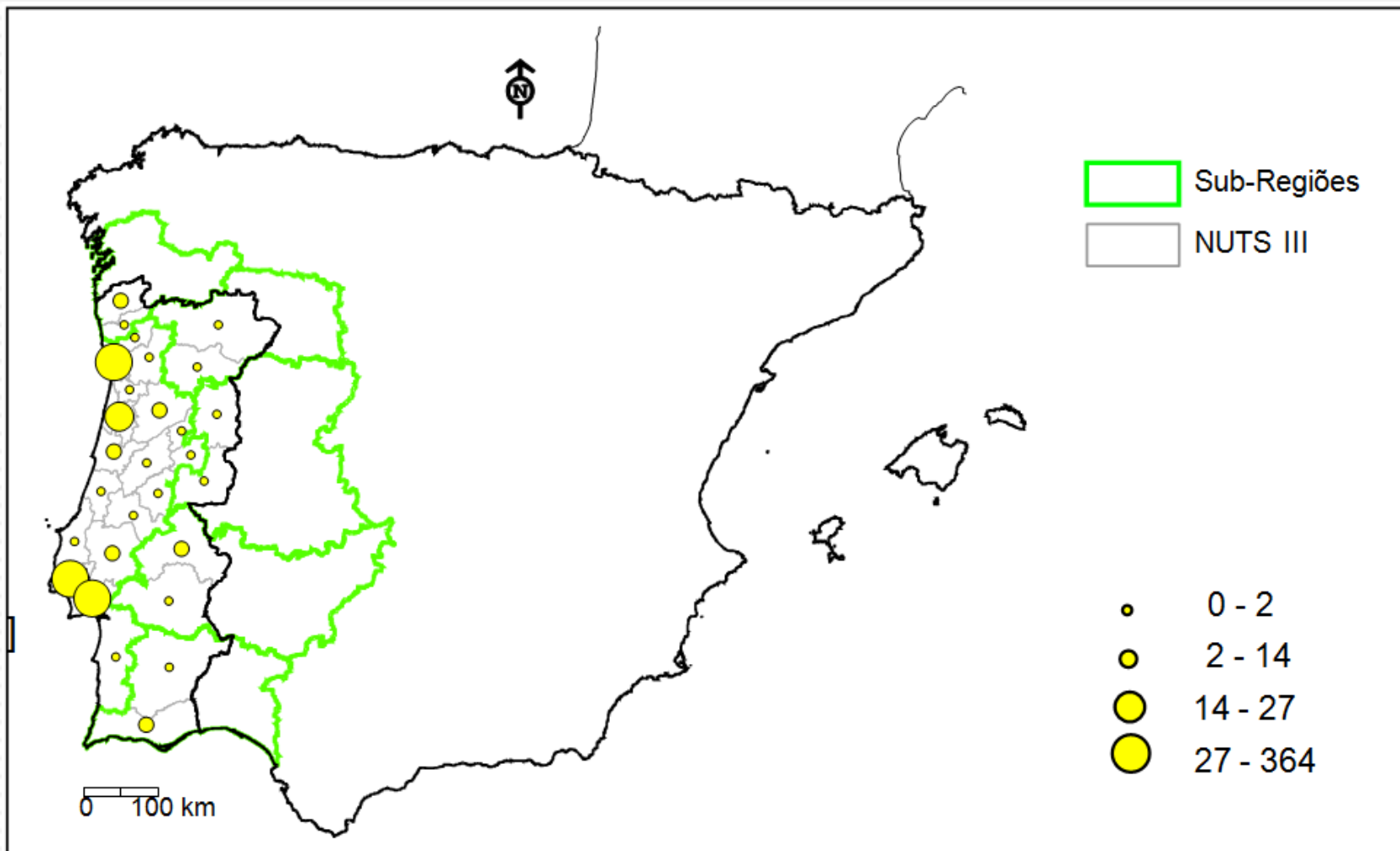
## UNESCO SITES



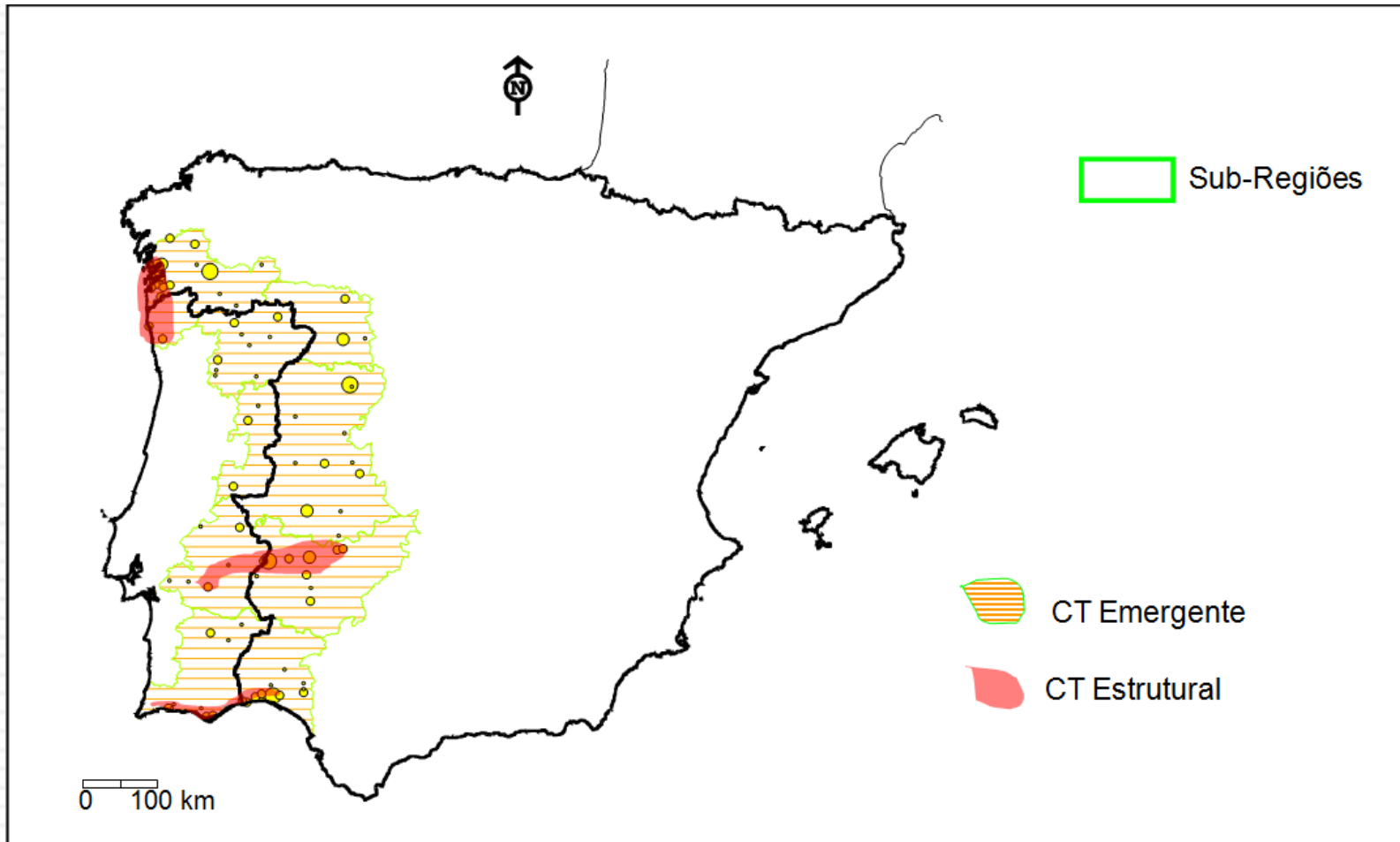
## Portuguese Companies in Spain



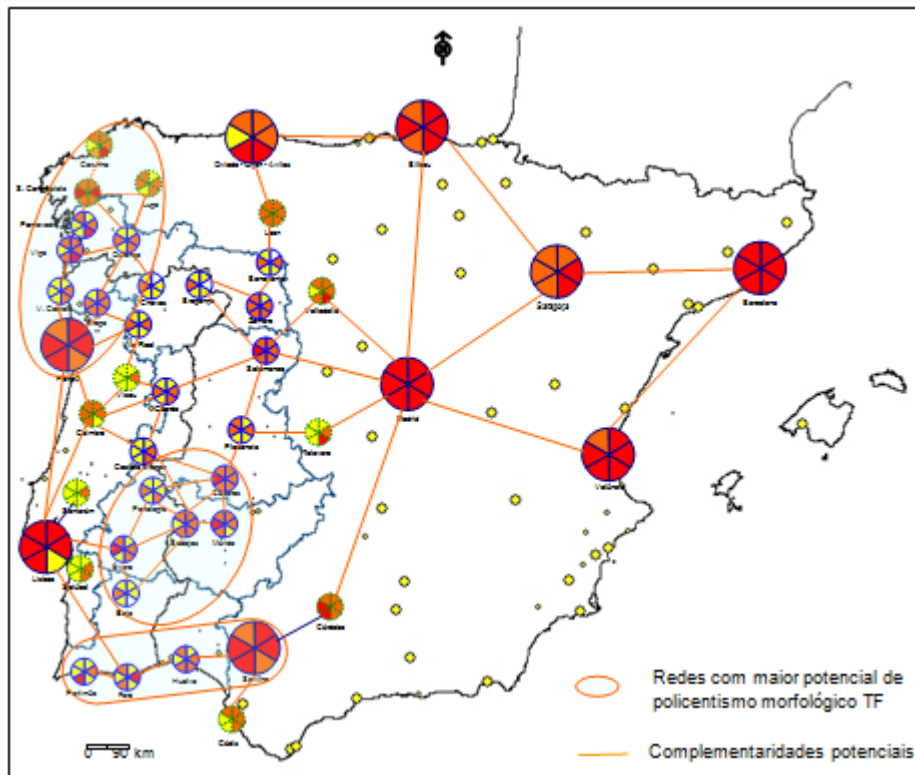
## Spanish Companies in Portugal - 2005



## Cross-Border Intensity

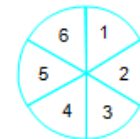


## Territorial Complementarities



### Funções:

- 1 - Conhecimento
- 2 - Transportes
- 3 - Indústria
- 4 - Turismo
- 5 - Ambiente-Património
- 6 - Instituições-Decisão



### Cidades TF:

- Cidades Âncora TF
- Cidades com Influência TF
- Cidades Âncora da PI

### Intensidade da Função:

- Forte
- Média
- Fraca
- Residual



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