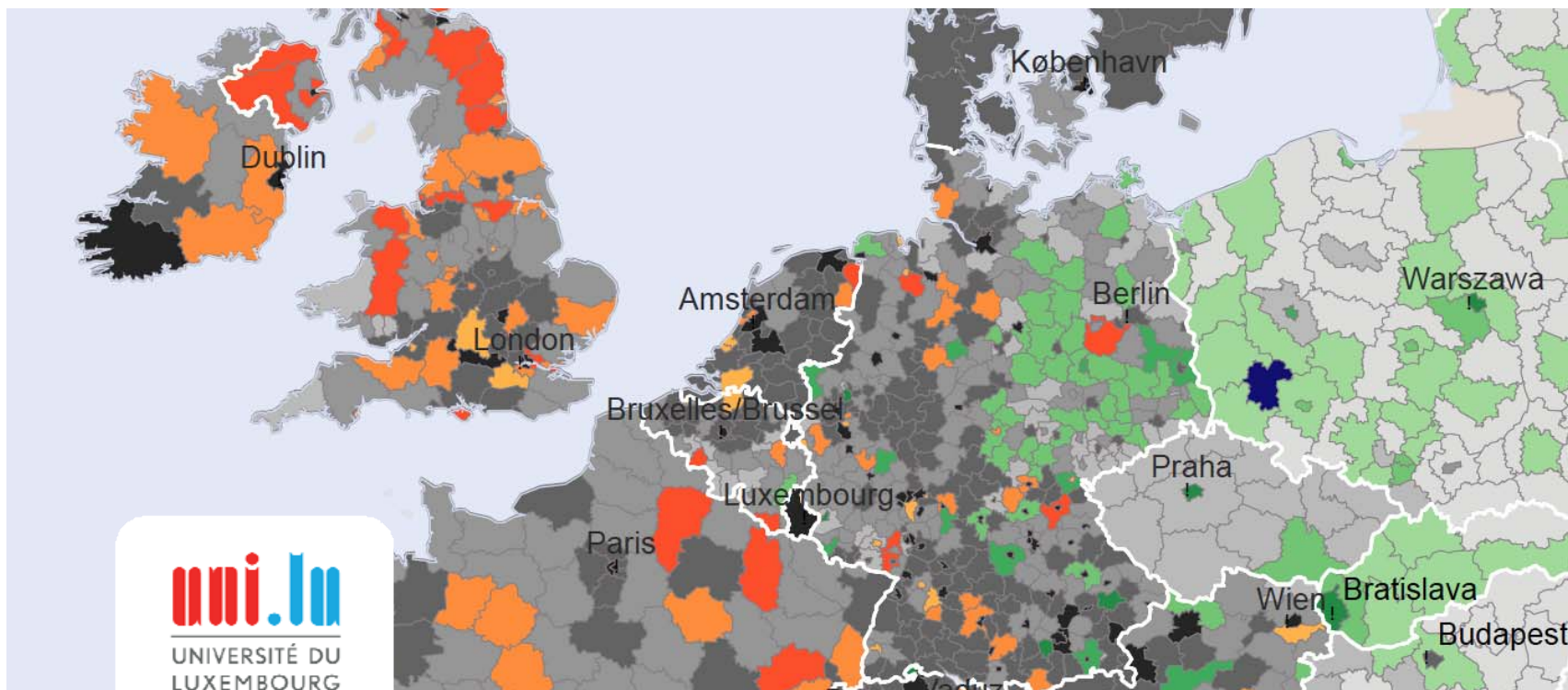


□ FACULTÉ DES LETTRES, DES SCIENCES HUMAINES, DES ARTS ET DES SCIENCES DE L'ÉDUCATION

Territoriale Evidenzen aus ESPON für die Strukturfonds nutzen

25. Oktober 2013, 09h00-12h30 MDDI, Luxembourg-Kirchberg



□ FACULTÉ DES LETTRES, DES SCIENCES HUMAINES, DES ARTS ET DES SCIENCES DE L'ÉDUCATION

"Sustainable growth"

Les derniers résultats ESPON

Christian Schulz, ECP.lu

Le point de vue des praticiens

Ariane König, CSDD

Klaus Sauerborn, TAURUS ECO GmbH

Discussion

« Sustainable growth »: objective of the EU 2020 strategy

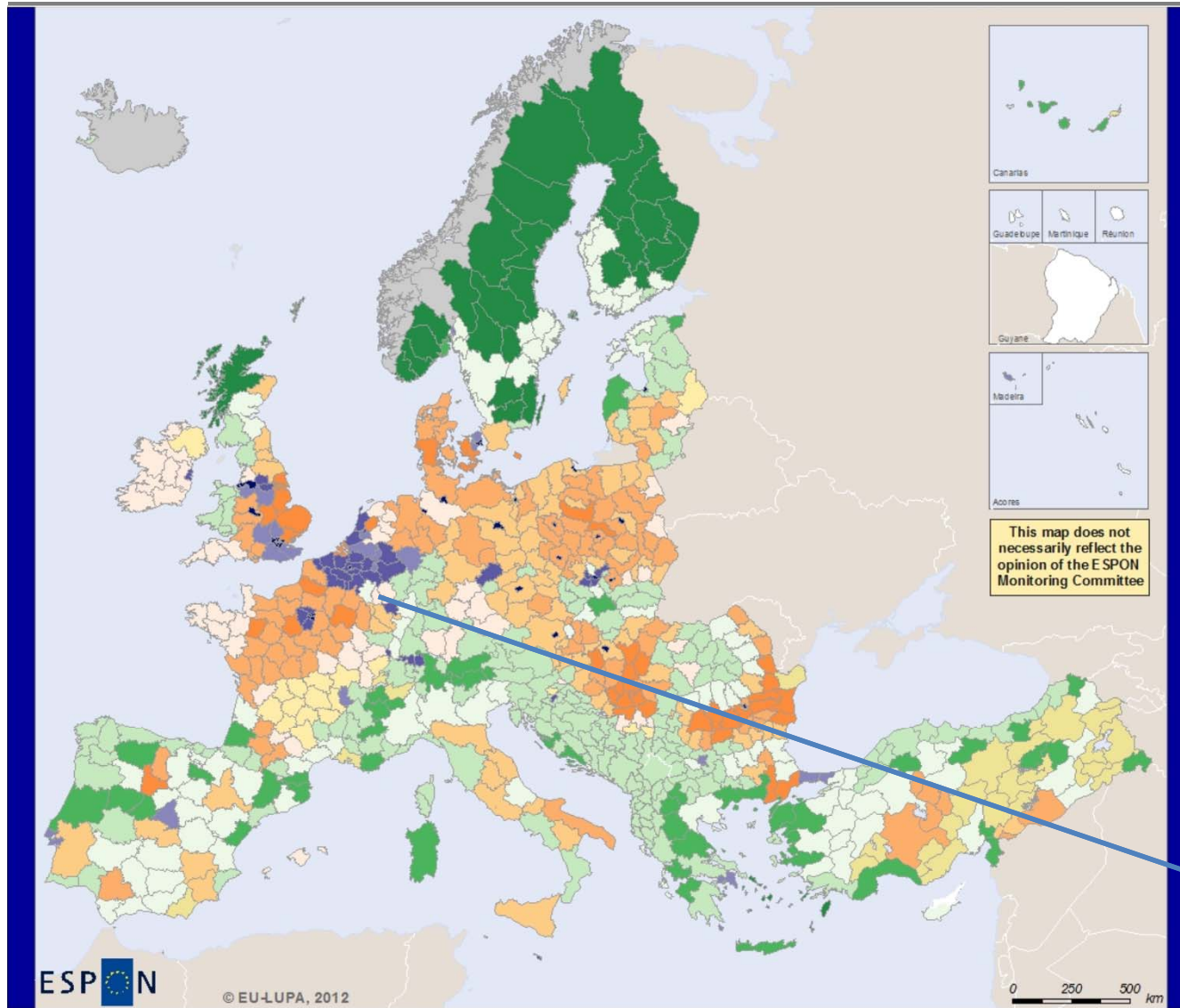
Targets for the EU	Targets for Luxembourg
20.00 % increase in energy efficiency	2010: 156.69 (Gross inland consumption of energy divided by GDP) 2016: 14.06 %
Increase share of renewable energy in total consumption by 20.00 %	2010: 2.80 % of energy consumption 2020: 11.00 % of energy consumption
Reduce CO ₂ emissions by 20.00 %	2005-2009: - 6.90 % of change 2020: - 20.00 % of change

« Sustainable growth »: objective of the EU 2020 strategy

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Prevailing Characteristics of Land Use in Europe (1990-2005)

- This map reflects the diversity of European land use. It is striking to see how the urban and suburban areas are concentrated in the northern part of Benelux and in city capitals
- The Greater Region is relatively diverse (suburban in Saarland, mostly rural mix in Lorraine, RP & Luxembourg)



Regional land use types

- Urban cores and metropolitan areas
- Suburban areas
- Suburban or peri-urban areas
- Arable land in peri-urban and rural areas
- Arable land and pastures in predominantly rural areas
- Rural arable land with permanent crops and some forest
- Rural mix dominated by pastures with some arable land
- Rural pastures and complex cultivation patterns
- Diverse land use in rural areas
- Diverse rural forest coverage with dispersed areas of permanent crops, pastures and arable land
- Arid mixed forest
- Rural forest
- Sparse vegetation with some forest and pasture
- Sparsely vegetated areas
- No Data

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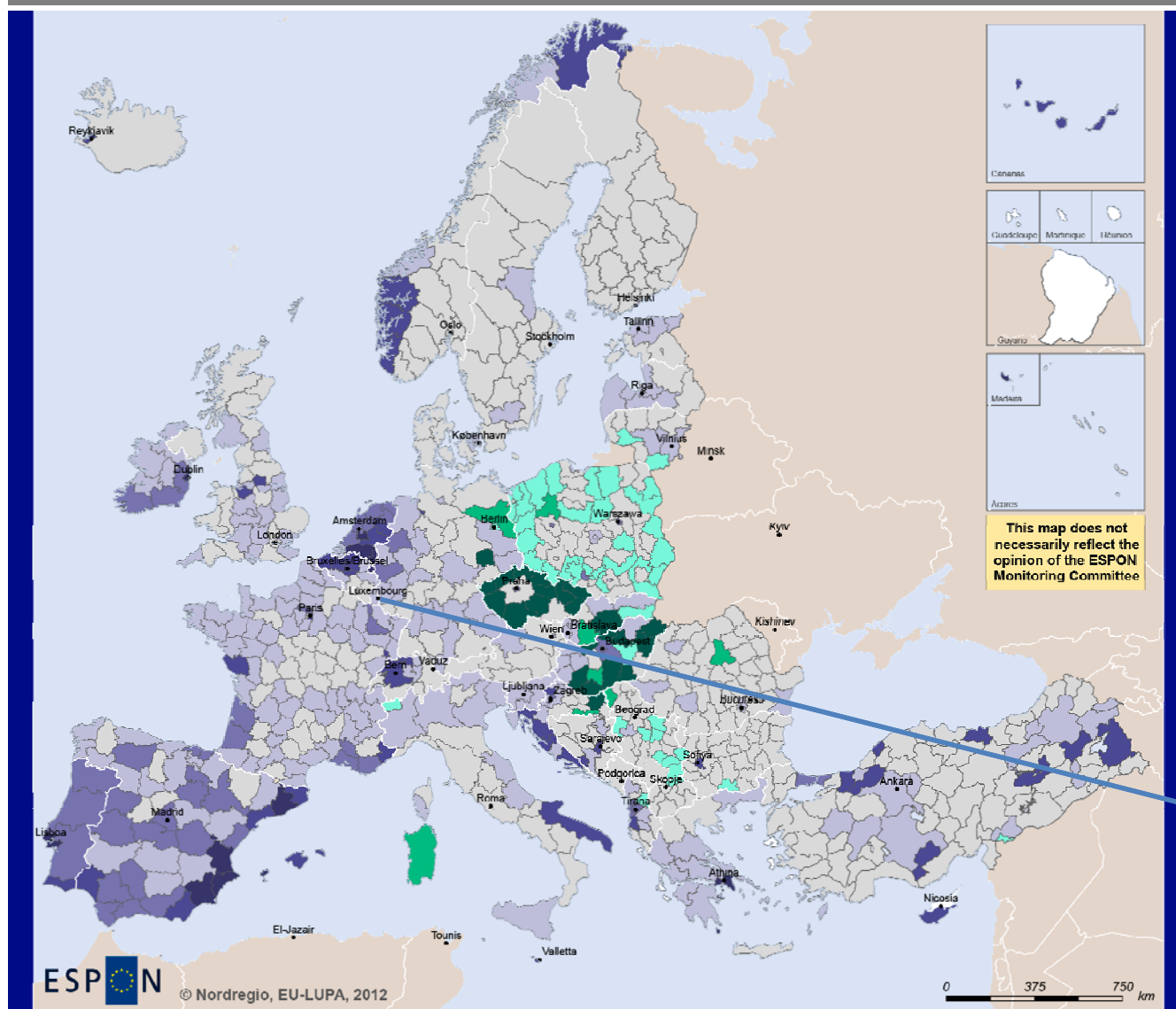
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Regional level: NUTS 2/3.X
Source: Nordregio, 2012
Origin of data: EEA, 2011

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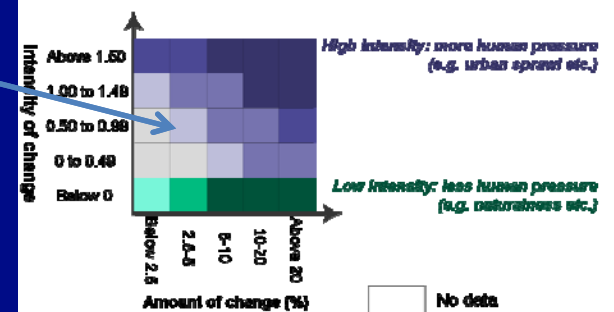
Land change hotspots, 1990-2006

- The map highlights places where the amount and the intensity of land use change was greatest during the period 1990-2006. The darker the shading, the more land use change there has been
- In the Greater Region, there is a relatively intermediate settlement pressure on land. Sustainable development is crucial



This map does not necessarily reflect the opinion of the ESPON Monitoring Committee

Land change hotspots 1990-2006



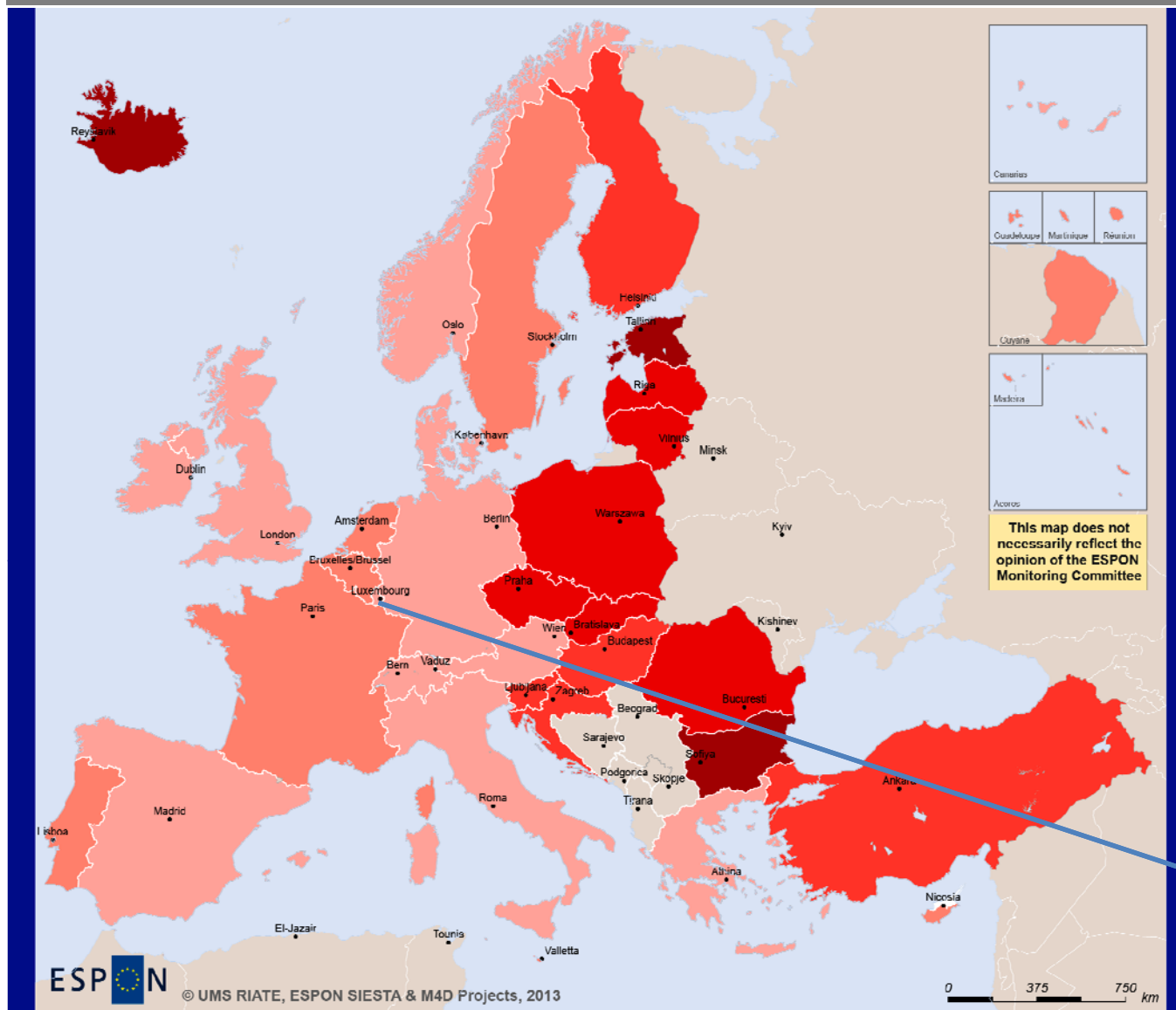
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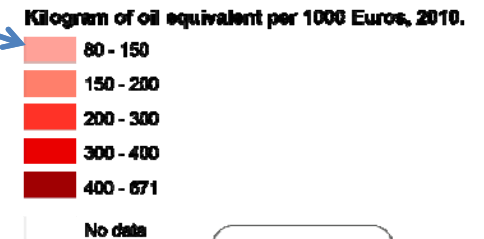
Regional level: NUTS23
 Source: Nordregio, 2012
 Origin of data: EEA, 2011
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National energy intensity: gross inland consumption of energy in relation to GDP, 2010



- **Low energy intensity in the West.** There is a clear divide between Eastern and Western European countries with regard to energy intensity
- Countries with lowest energy intensities are Ireland, Denmark, Switzerland, the UK, Italy and Austria
- The value of Luxembourg is relatively low (importance of the sector of services in the economy)

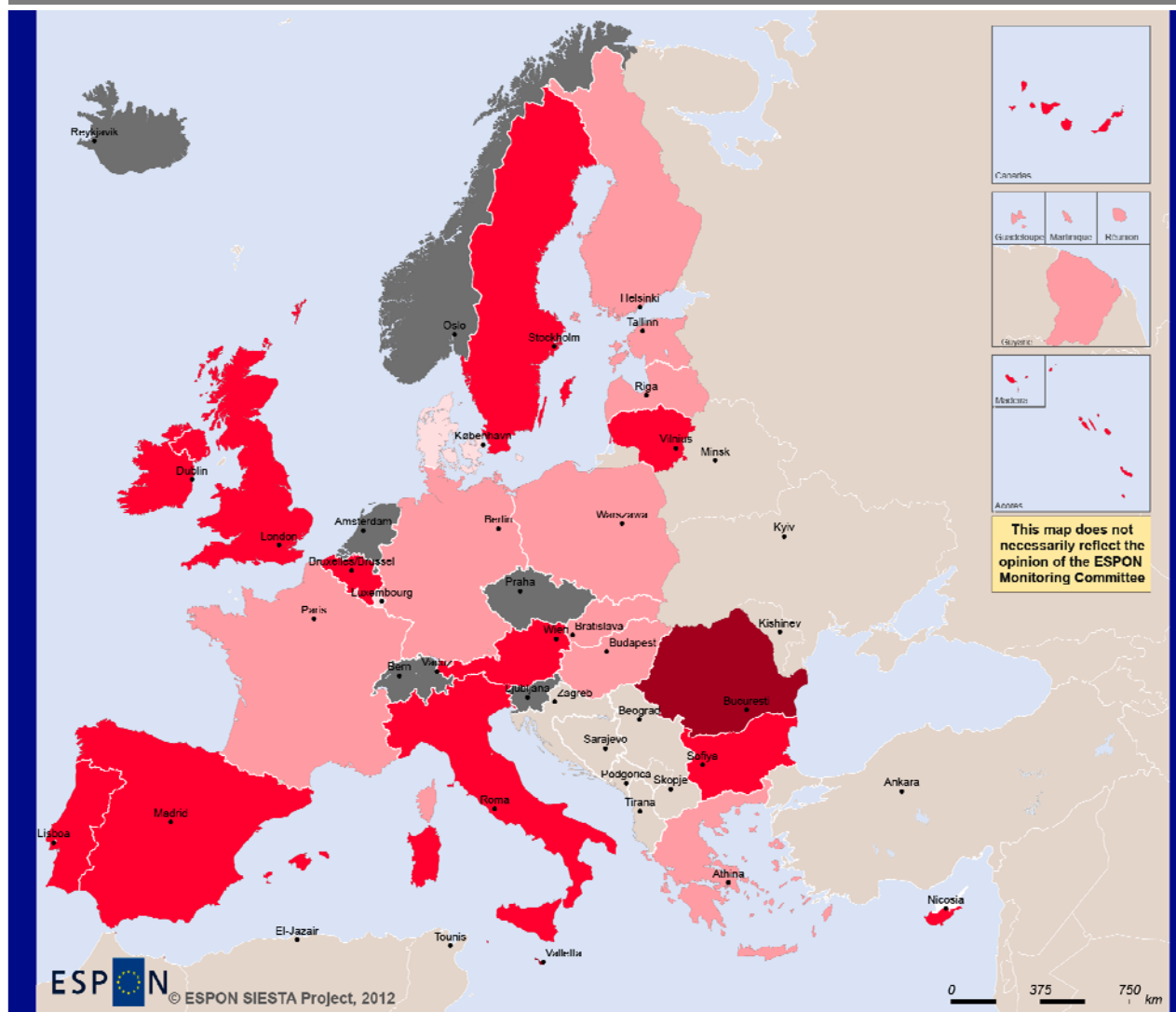


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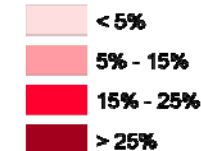
Regional level: NUTSO
Source: ESPON M4D, UMS RIATE
Origin of data: EUROSTAT, OECD, 2013
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Distance to the Europe 2020 national targets of national energy intensity, 2010



- **Five countries across Europe closest to targets:** Luxembourg, Denmark, Slovakia, Greece and Finland
- The Commission puts emphasis on the need for actions embracing investment in several sectors: energy infrastructure, energy transmission networks, renewable energies and energy efficiency of buildings
- In Luxembourg, measures could be concentrated on household energy consumption and transport

% of Mtoe to be reduced from 2010 to 2020.

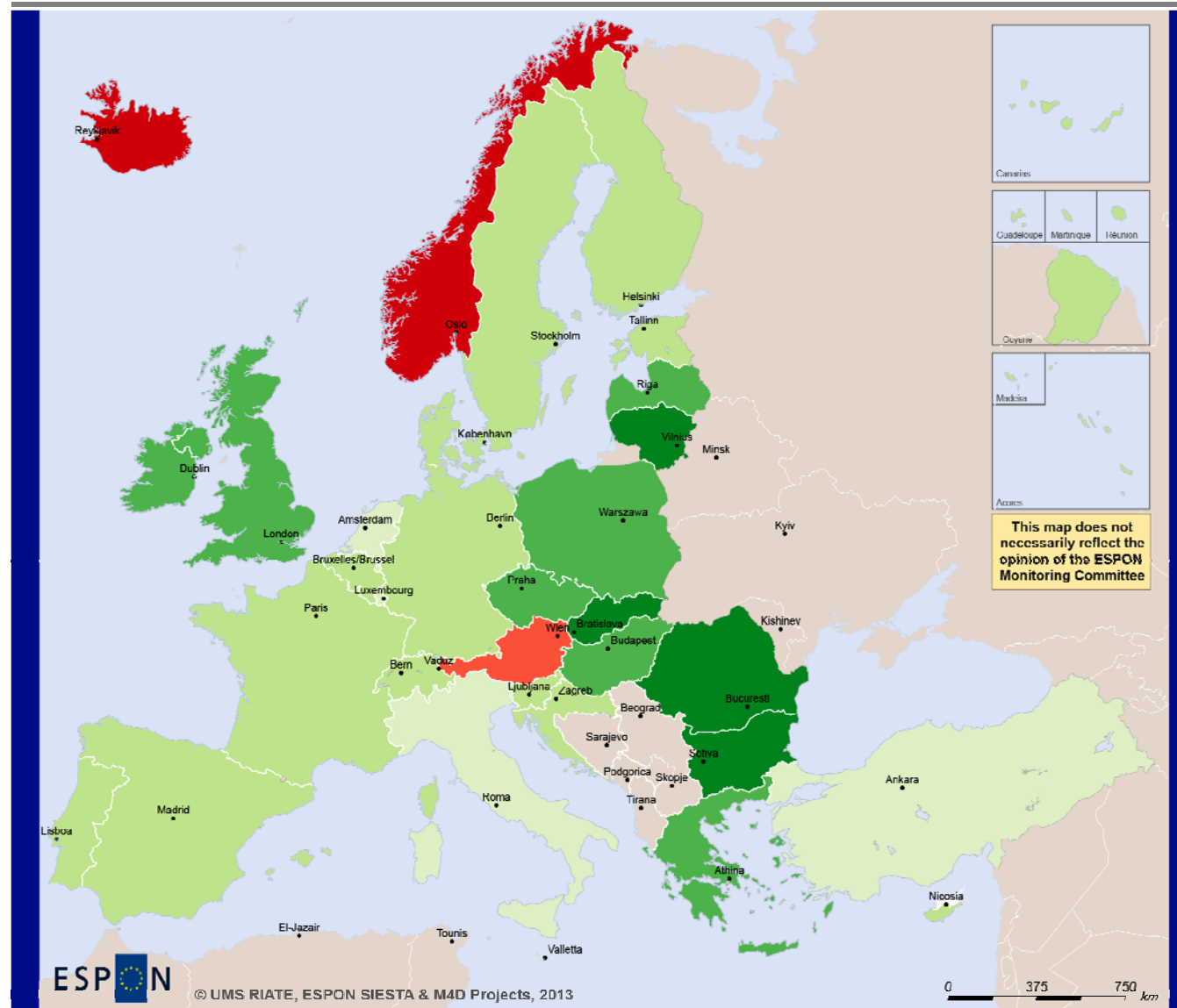


Grey: No National Target defined/Target unknown
White: No data

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Regional level NATIIS
Source: EUROSTAT
Origin of data: EUROSTAT, 2012
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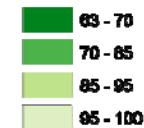
Change in energy intensity of the national economy, 2000-2010



- Europe is progressing in relation to energy intensity, but additional efforts and concrete policy actions will be necessary. From 2000 to 2010 energy intensity improved by less than 20 %
- Slight improvement in Luxembourg. For future improvements, synergies with “smart growth” (research & innovation) might constitute opportunities

Change from 2000 to 2010 (2000=100).

Improving situation



Deteriorating situation



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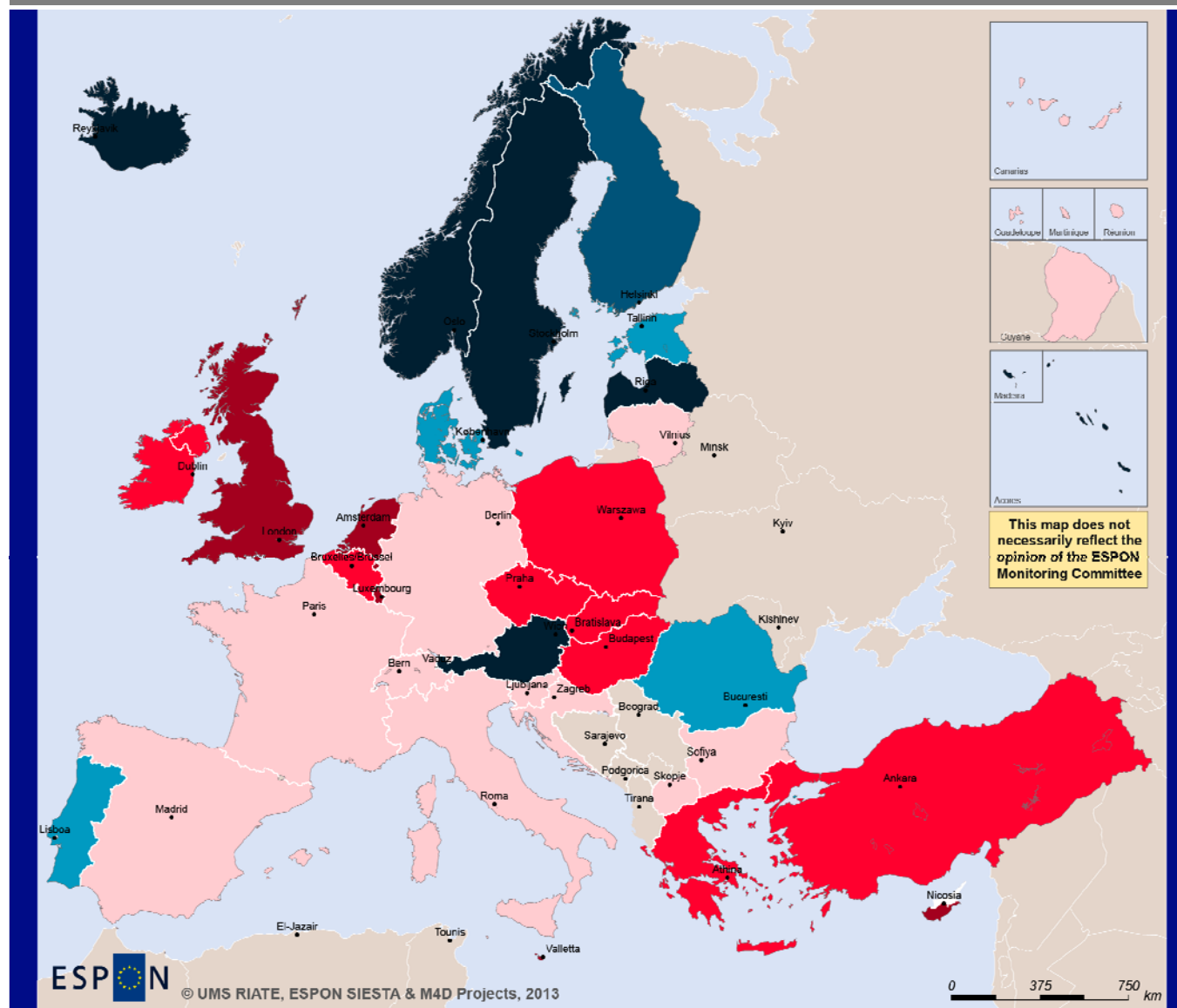
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Regional level: NUTSO
Source: ESPON M4D, UMS RIATE
Origin of data: EUROSTAT, OECD, 2013
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« Sustainable growth »: objective of the EU 2020 strategy

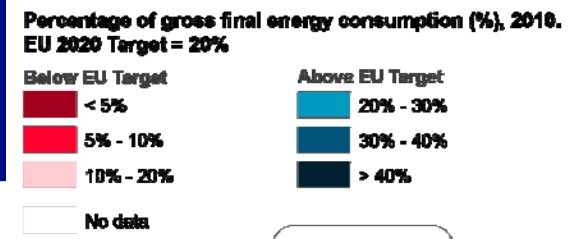
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National share of renewable energy in gross final energy consumption, 2010

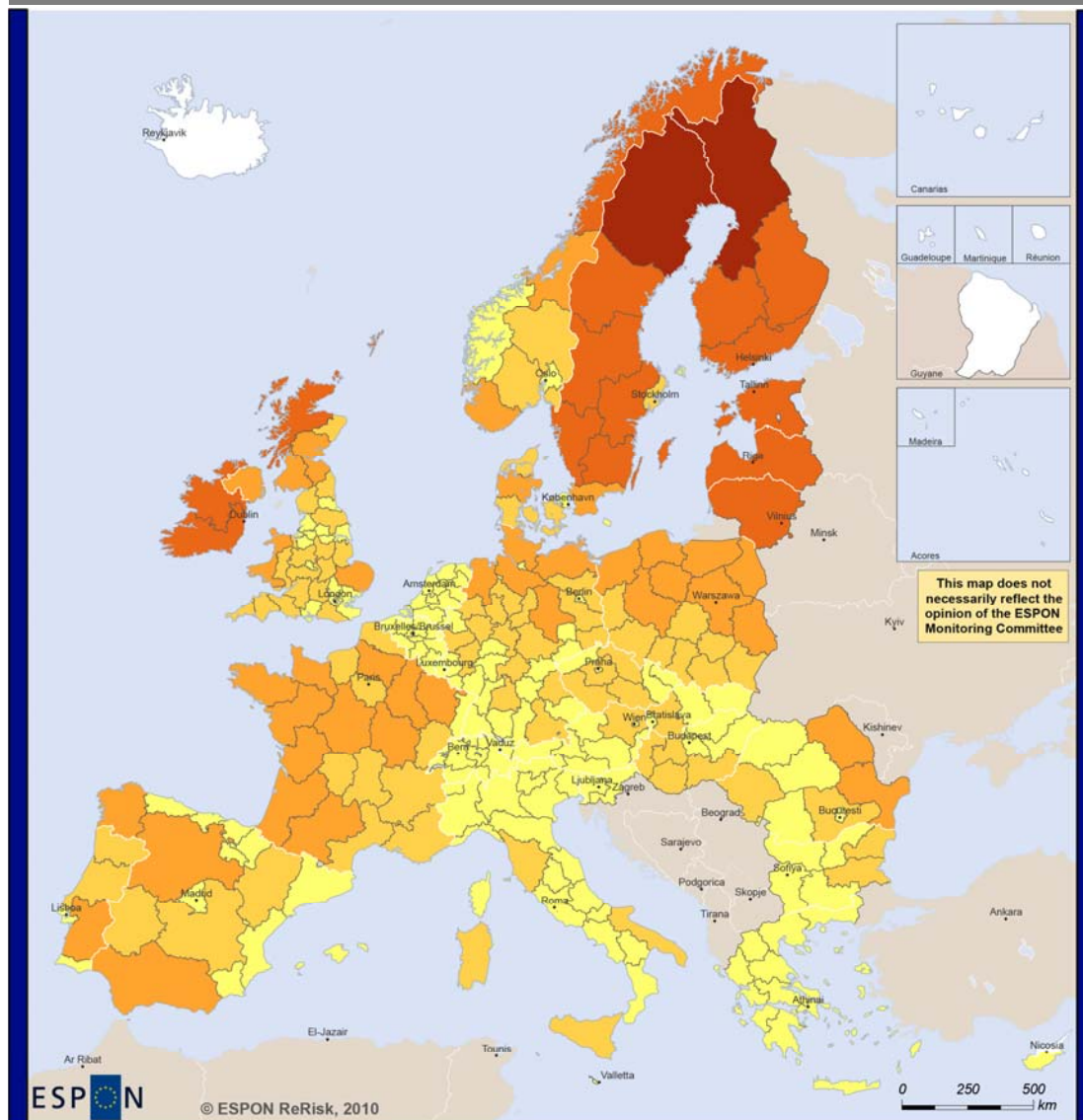


Comoros
 Guadeloupe, Martinique, Réunion
 Guyane
 Madagaskar
 Açores
 This map does not necessarily reflect the opinion of the ESPON Monitoring Committee

- Nordic and Scandinavian countries (+ AT and to a certain extent PT and RO) have a high share of renewable energy in gross final energy consumption (on the contrary to the UK, IE, Benelux)
- Luxembourg is far from the EU target (2nd lowest proportion). Investments & programmes in this field could help improving the situation



Wind power potentials in Europe, 2009



- The map highlights the regions with the greatest on-shore wind power potentials that benefit from high wind speeds and large area size (SE, FI, LT). However, most of these areas are very distant from major urban markets where the demand for electricity is concentrated
- In proportion, Luxembourg has a very limited potential. The promotion of other renewable energies might be important

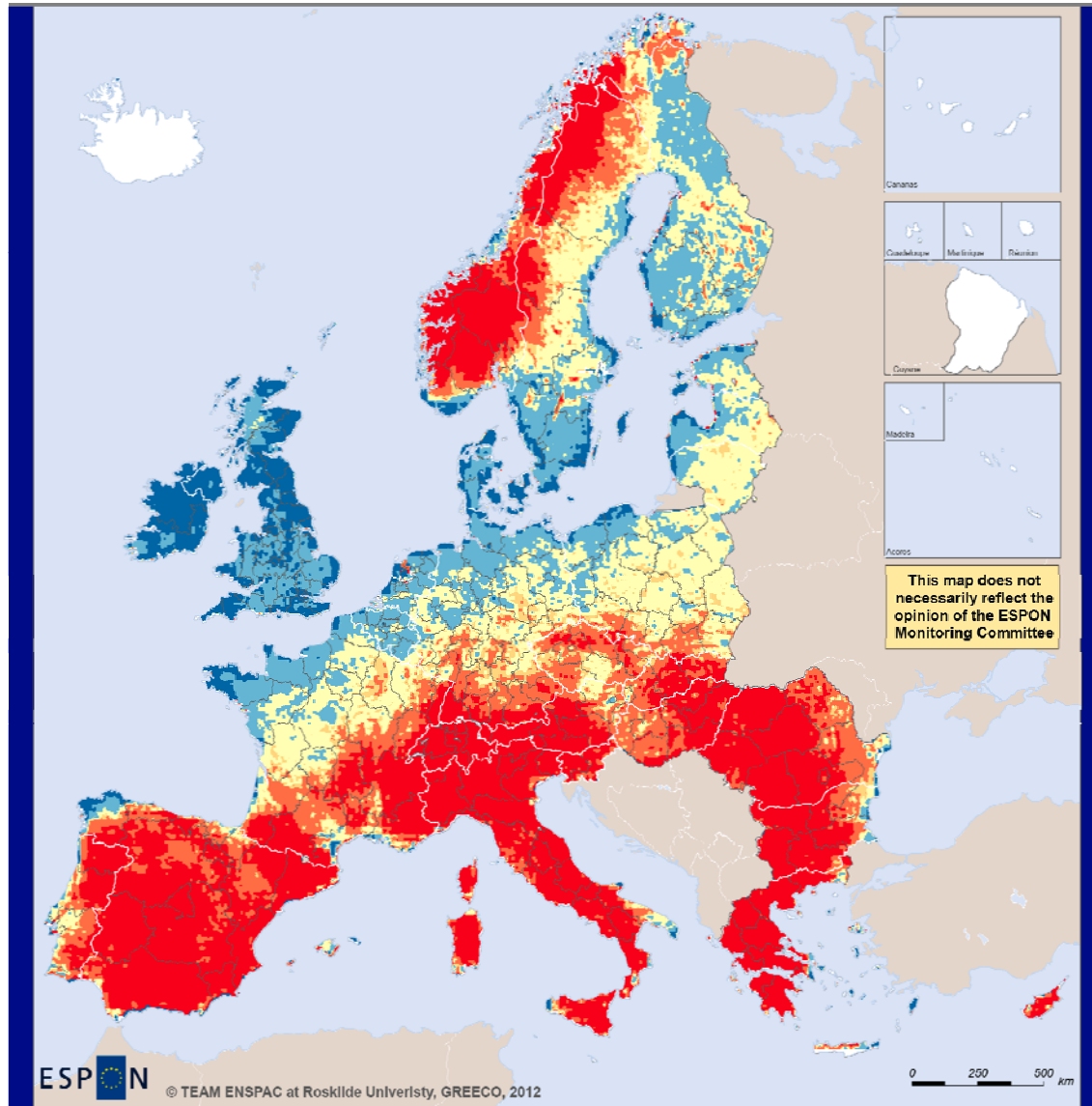
Wind power potentials
(Measured in km/s and considering the area of NUTS2 regions in km²)



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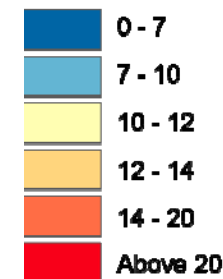
Regional level: NUTS2
Source: ESPON ReRisk, 2010
Origin of data: Own elaboration based on ETC/ACM
data on wind intensity, 2009
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On-shore wind energy costs, 2015-2020



- The map shows the long-term potential costs of producing electricity from on-shore wind farms. The costs are measured in cents per kilowatt hour. The areas shaded in blue are those where it is cheapest to produce energy from wind
- In Luxembourg, costs would be from medium to low. Investments are only worthwhile in efficient locations

On-shore wind energy costs, 2015-2020 (€ cents/kWh)



No data

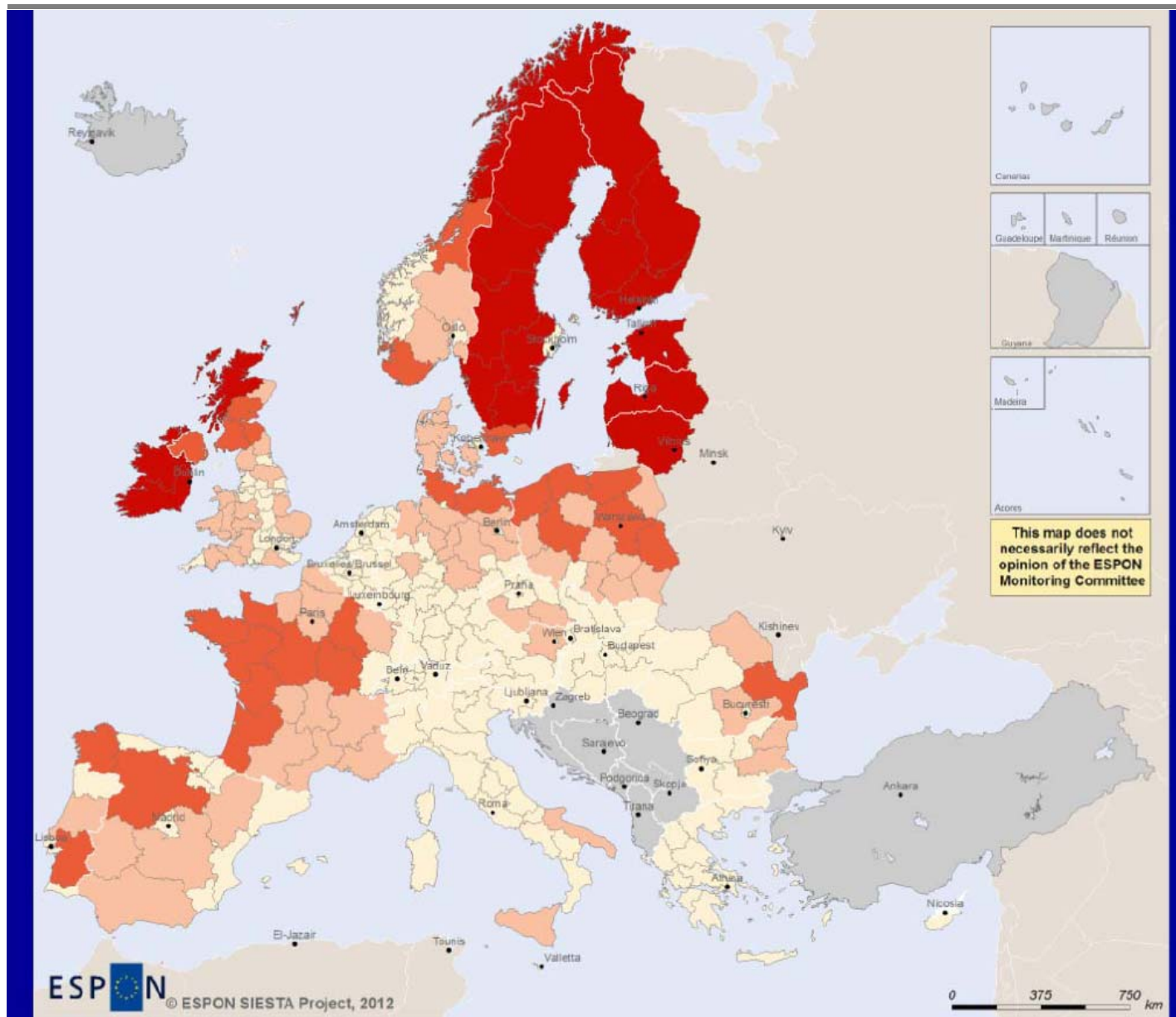
ESPO N © TEAM ENSPAC at Roskilde Universtiy, GREECO, 2012

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Regional level: 6km
Source: ESPON Database, ESPON GREECO Project, Roskilde University, 2012
Origin of data: European Environmental Agency, 2009 and International Energy Agency, 2012
© EuroGeographics Association for administrative boundaries

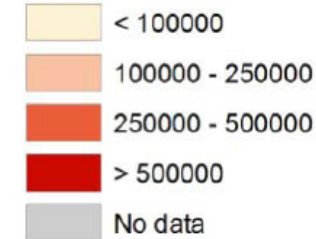
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Potential for electricity production from wind power stations represented in m/s, 2005

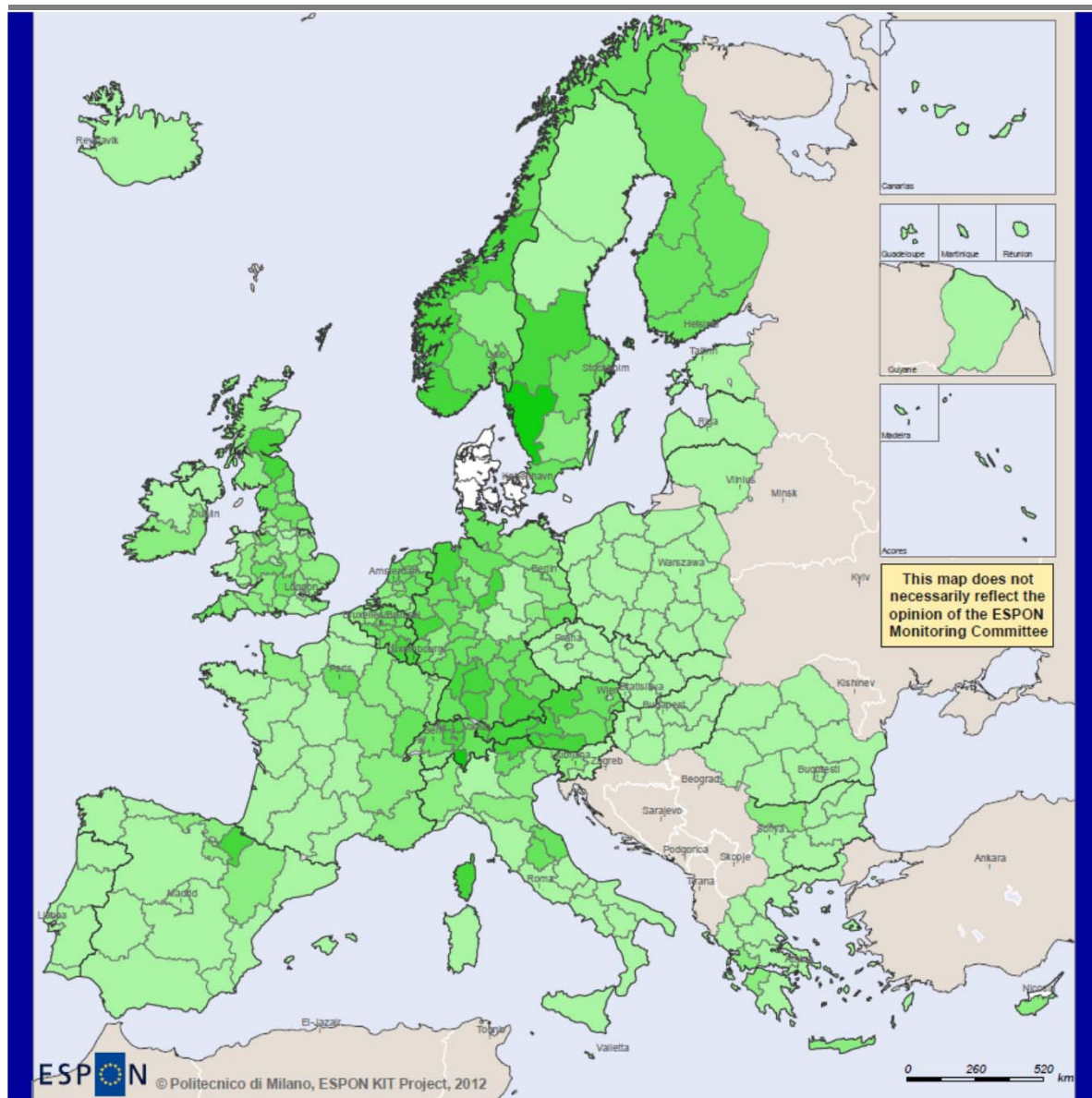


- The map shows the potential for electricity production from wind power stations
- Potential is rather in the periphery (difficulty to export the produced energy)
- Luxembourg has comparatively a rather low potential. Should investments be done in this domain?

Meters/ second (m/s), 2005.

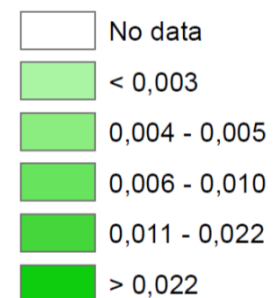


Environmental innovation: green patents per 1,000 pop.



- The environmental innovation is measured as the number of patent applications to the EPO standardized by 1000 inhabitants in technologies like: water and air pollution control, solid waste management, renewable energy
- Eastern/Western pattern in Europe
- In the GR, Luxembourg and the Belgian Province of Luxembourg stand out

Legend



KIT, DFR: 22

« Sustainable growth »: objective of the EU 2020 strategy

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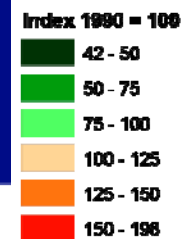
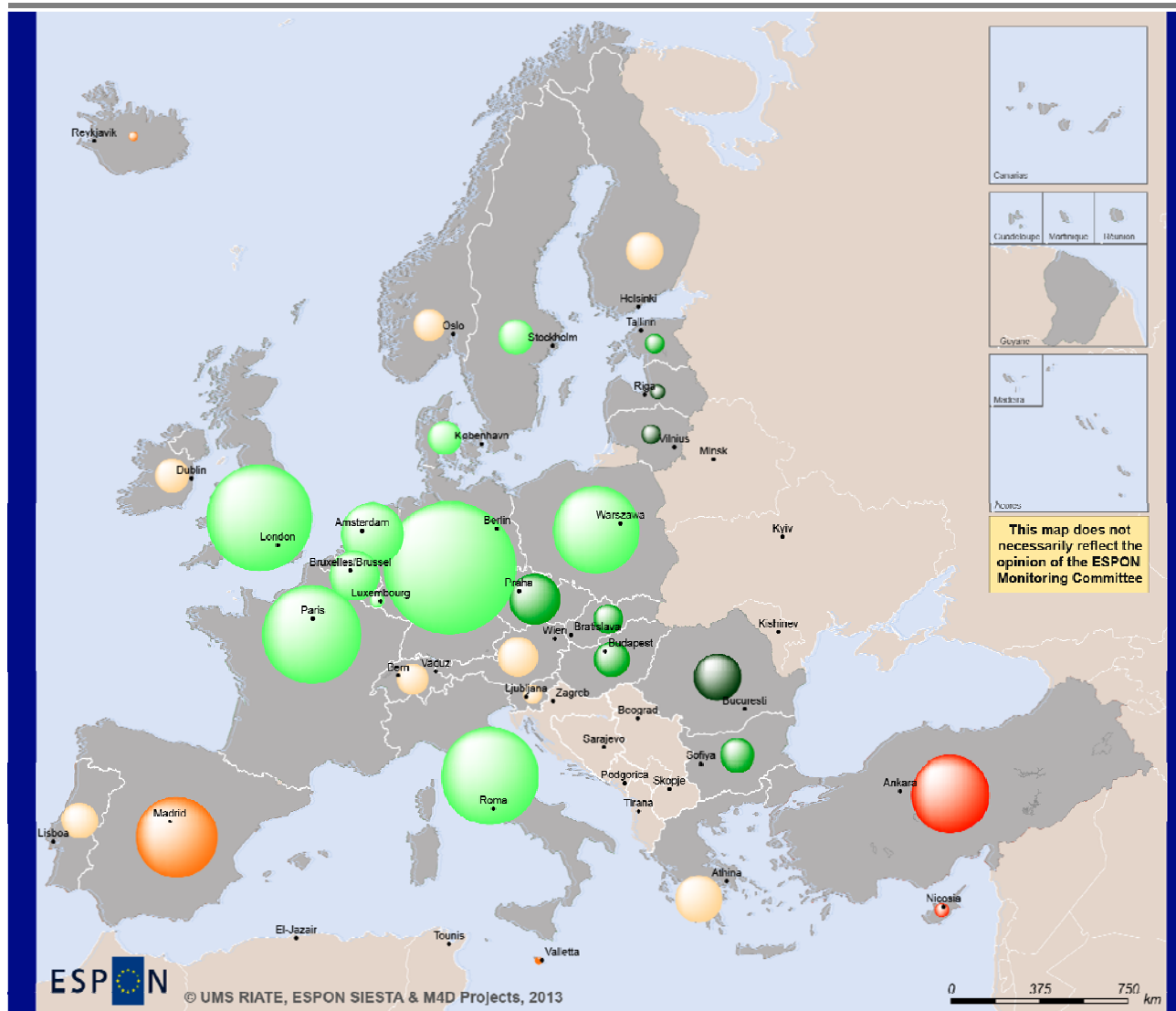
GHG emissions, 2010

	GHG emissions (1,000 t in CO2 equivalent)	GHG emissions per capita (t in CO2 equivalent)
Luxembourg	12.515	24.05
Estonia	20.517	15.31
Iceland	4.542	14.30
Finland	74.556	13.93
Ireland	61.314	13.72
Czech Republic	139.158	13.24
Cyprus	10.838	13.23
Netherlands	210.053	12.67
Belgium	132.459	12.22
Germany	936.544	11.45
Norway	53.896	11.09
Denmark	61.065	11.03
Poland	400.865	10.50
Greece	118.287	10.46
Austria	84.594	10.10
Slovenia	19.522	9.54
UK	590.247	9.52
EU27	4.720.878	9.42
Slovakia	45.982	8.48
Italy	501.318	8.31
Bulgaria	61.427	8.12
France	522.373	8.08
Spain	355.898	7.74
Malta	3.035	7.32
Sweden	66.232	7.09
Switzerland	54.247	6.97
Hungary	67.679	6.76
Portugal	70.599	6.64
Liechtenstein	233	6.49
Lithuania	20.81	6.25
Romania	121.355	5.65
Latvia	12 077	5 37

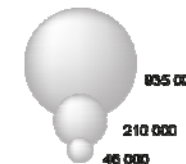
- The target of reducing 20% of greenhouse gas (GHG) emissions by 2020 does not only inhibit environmental and climate objectives, but has also a socio-economic dimension
- Luxembourg: Relatively low GHG emissions, however the highest GHG emissions per capita. This graphic questions the unstainability of the “tourisme à la pompe”

National GHG emissions in 2010 compared to 1990

- Luxembourg: Slight decrease in national GHG emissions in 2010 compared to 1990



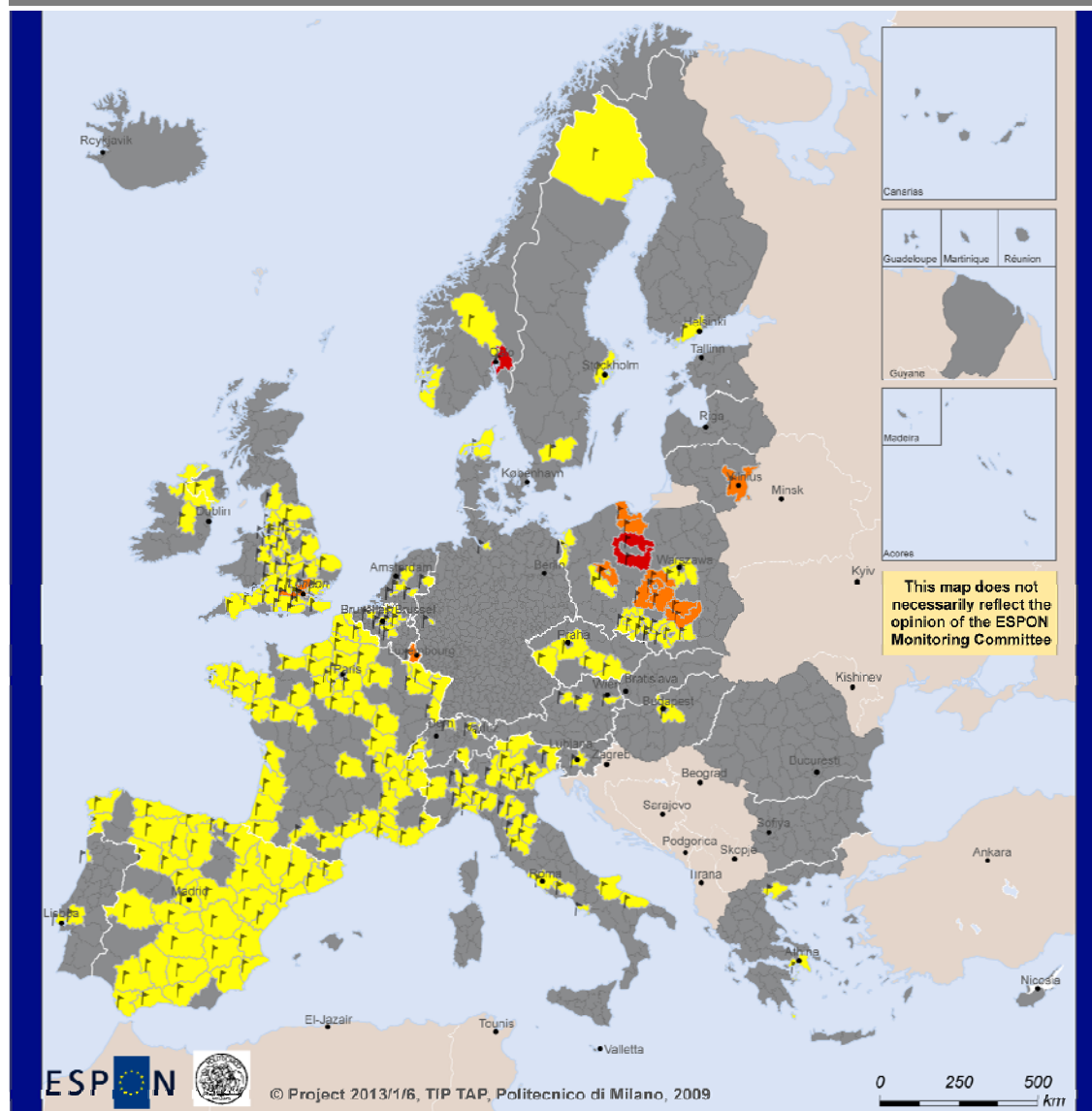
Greenhouse gas emissions, 2010
In thousands tons of CO₂ equivalent



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Regional level: NUTSO
Source: EEA
Origin of data: EEA, 2013
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Territorial impact of transport emissions



- The map shows where the EU transport policies by 2030 will lead to increasing emissions from transport. Baseline scenario for 2030

Emissions level 2005 > EU average and increase in emissions 2005-2030 >0 Scenario A (baseline)

- Over the threshold (some risk) ⬆ Flagged Regions
- More than 50% (high risk)
- More than 100% (very high risk)

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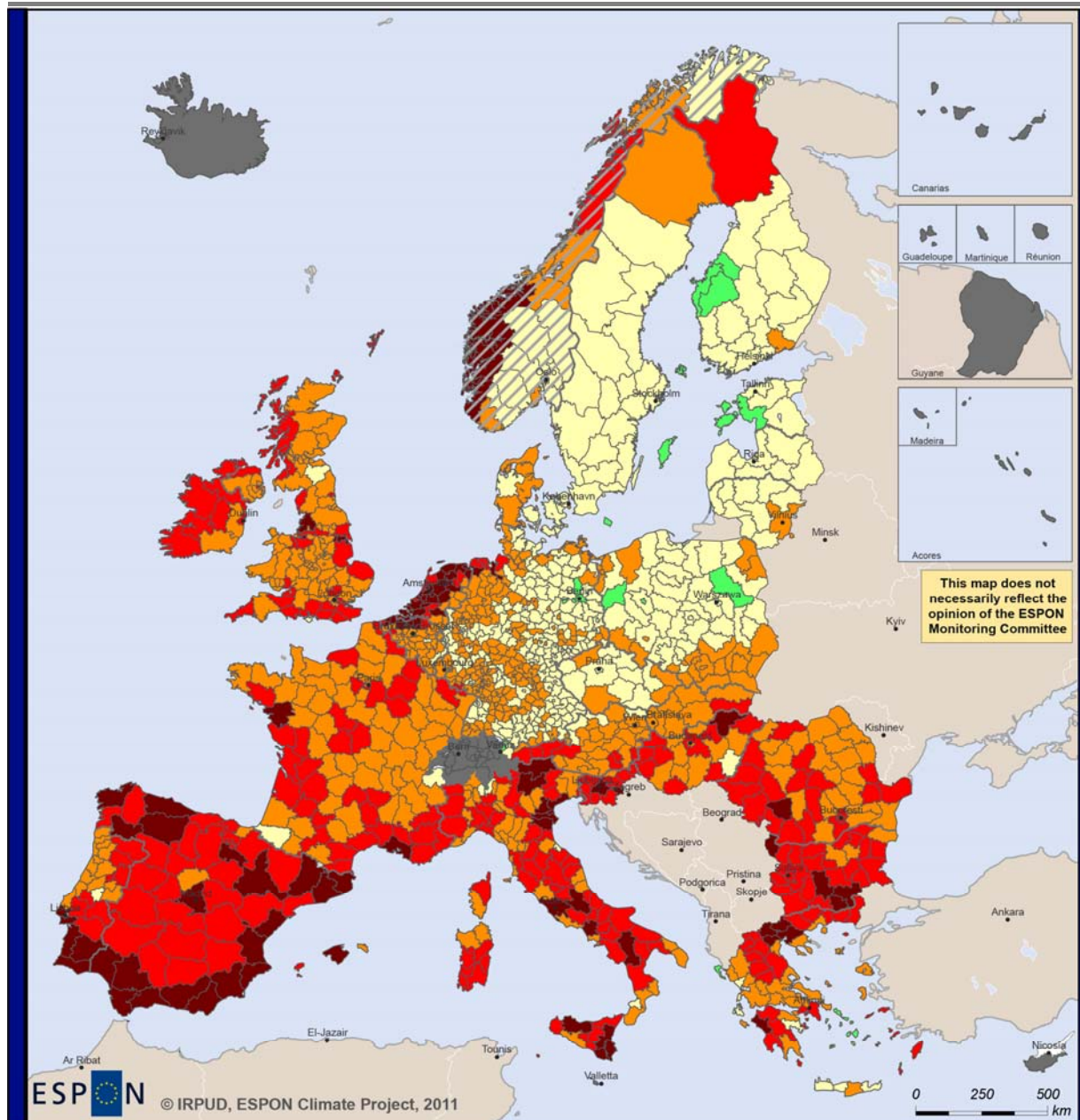
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Regional level: NUTS (2006)
Source: EUROSTAT, ESPON database
Origin of data: own calculation
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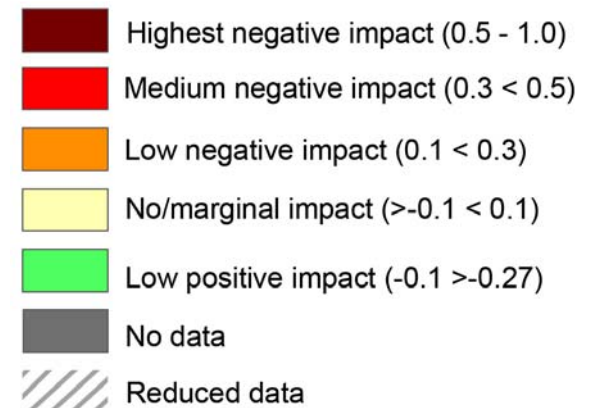
First ESPON 2013 Synthesis Report (Mapfinder)

UNIVERSITÉ DU LUXEMBOURG

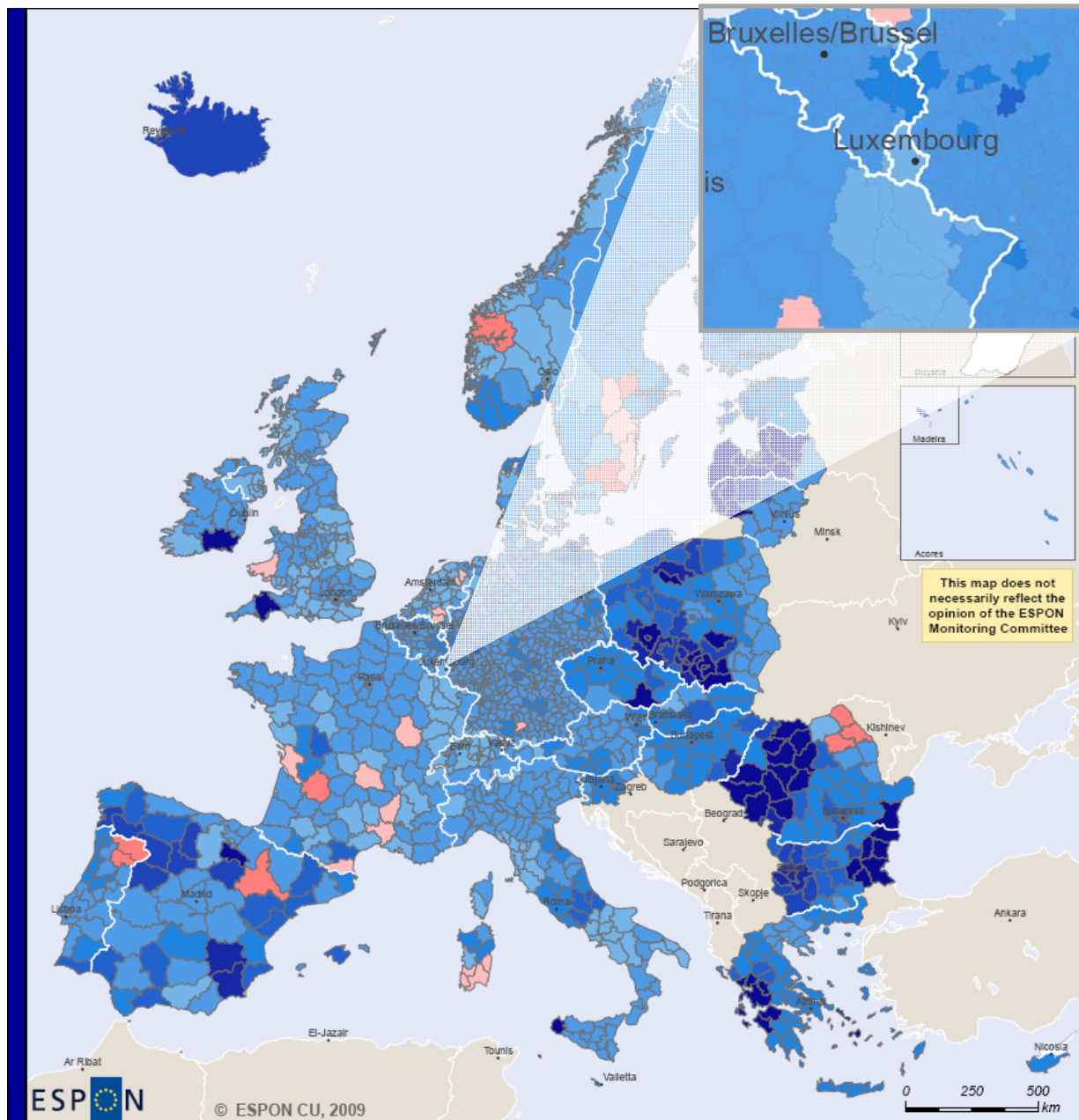
Aggregate potential impact of climate change, 2009



- Impacts of climate change (will) vary across Europe and take different expressions in different regions. The map reveals that the projected impacts of climate change will most strongly affect southern Europe regions
- Luxembourg: Expected slightly negative impact of climate change

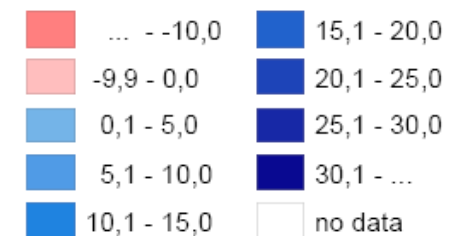


Multimodal potential accessibility, relative change 2001-2006

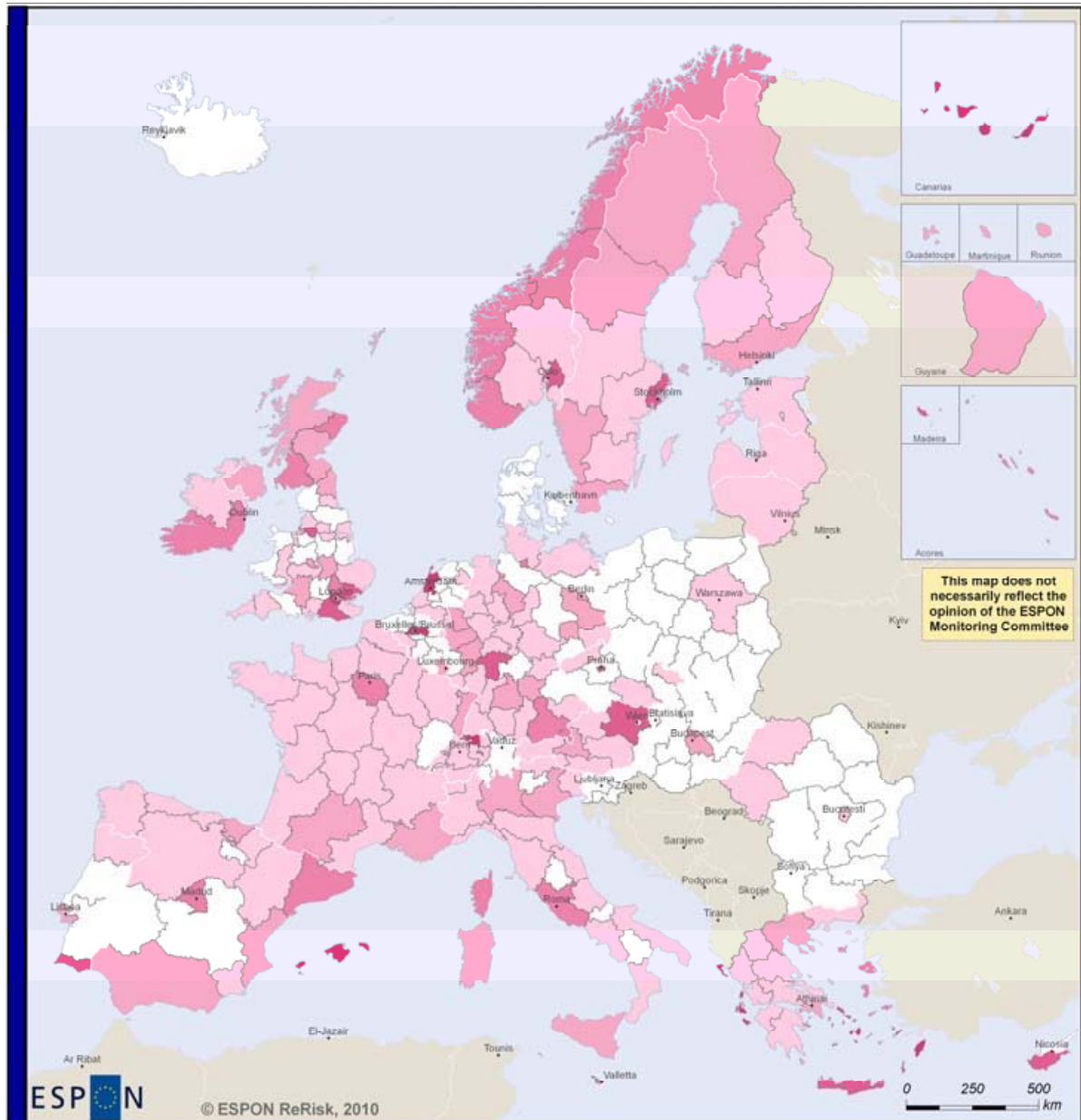


- This map reflects on the increase accessibility of EU regions. Regions in the Eastern countries stand out (as a results of EU support)
 - Relatively slight improvement in the Greater Region
- ⇒ How to implement a sustainable improvement of accessibility?

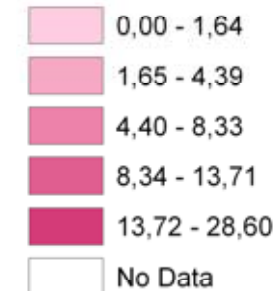
Potential accessibility, multimodal (2001-2006, relative change in %)



Intensity of Air Travel in the EU Regions (passengers embarked/total population, NUTS II, 2005)



Intensity of Air Travel



ReRisk Regions at Risk of Energy Poverty, 2010: 211

EU & Luxembourg targets

- Increase energy efficiency
- Increase share of renewable energy in total consumption
- Reduce CO₂ emissions

Reflections outstanding from ESPON results

- Luxembourg's economy relies mainly on services (no need for measures targeting the industry sectors). Efforts could be concentrated on:
 - Household energy consumption
 - Transports
- Measures could be:
 - Support SMEs involved in green energy
 - Support RDI in this domain
- Strong cross-border interdependencies (cross-border labour market)
 - Consider cross-border strategies to extent the benefit of the measures (challenge for the governance)