Regional Higher Educational Institutions as Green Economy Knowledge Hubs in the Northern Territories

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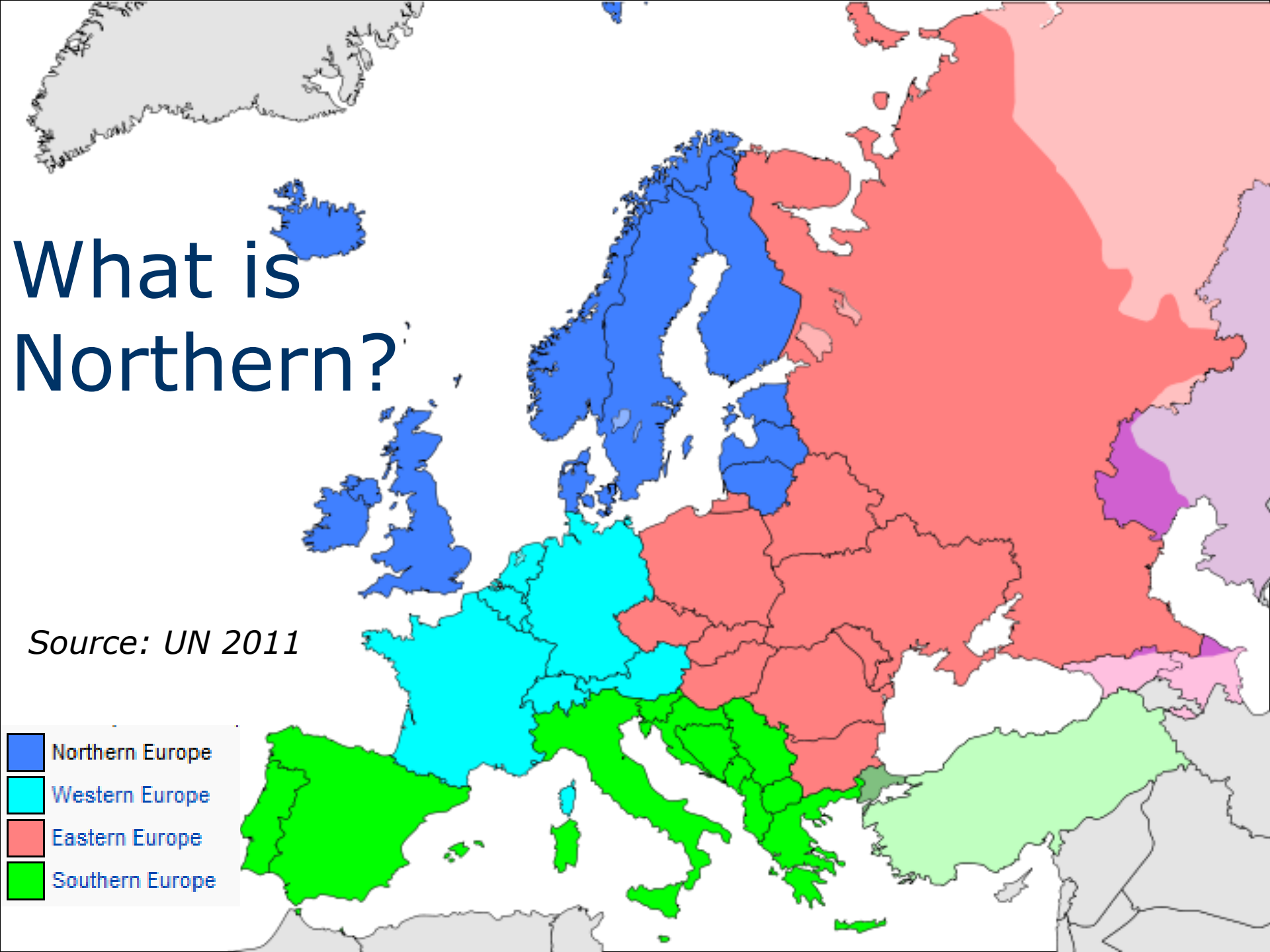
Outline

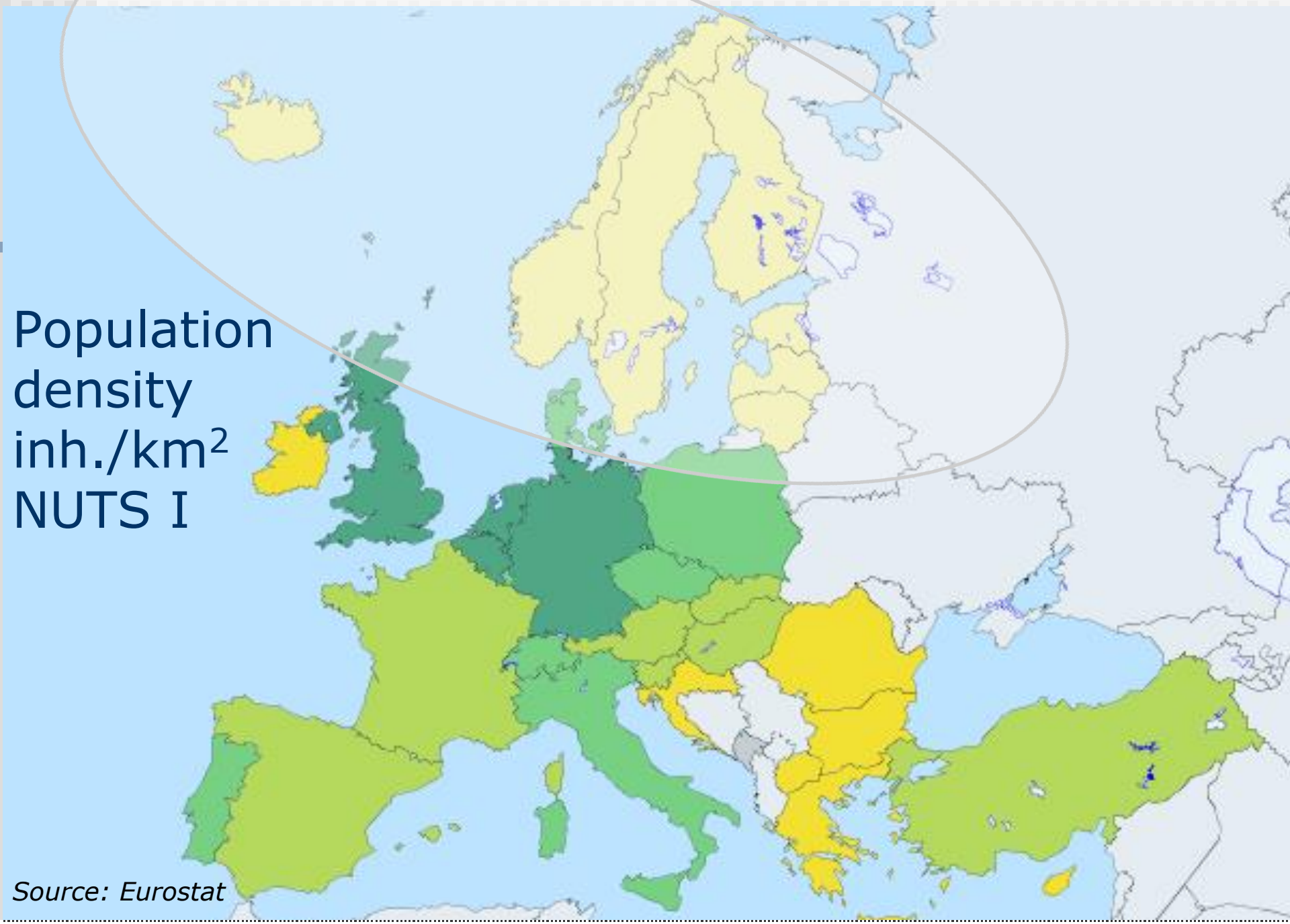
- What is Northern?
- The idea and motivation
- What is a Green Economy (GE)?
- Theories about the ressource based periheries
- What are Regional Higher Educational Institutions (HEI)?
- Regional HEIs – promoters of a green economy in remote areas

What is Northern?



Source: UN 2011

Population density inh./km^2 NUTS I



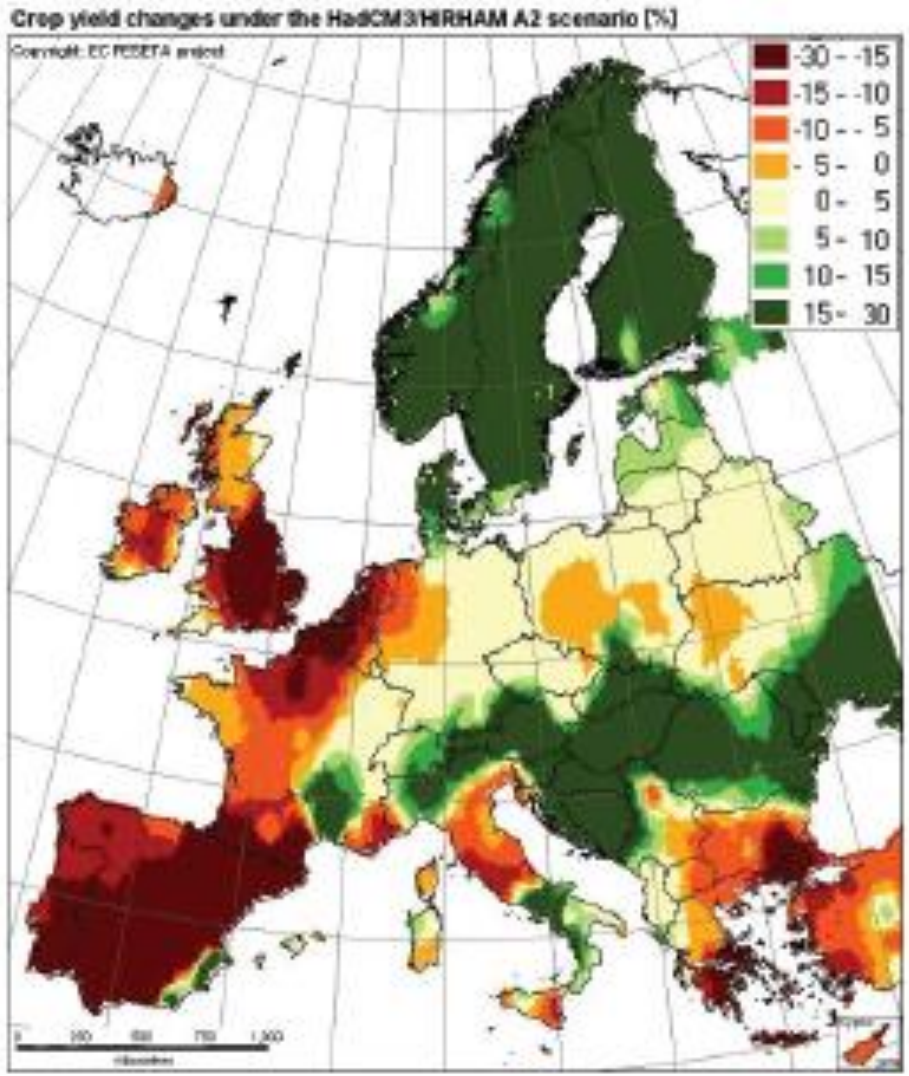
Source: Eurostat

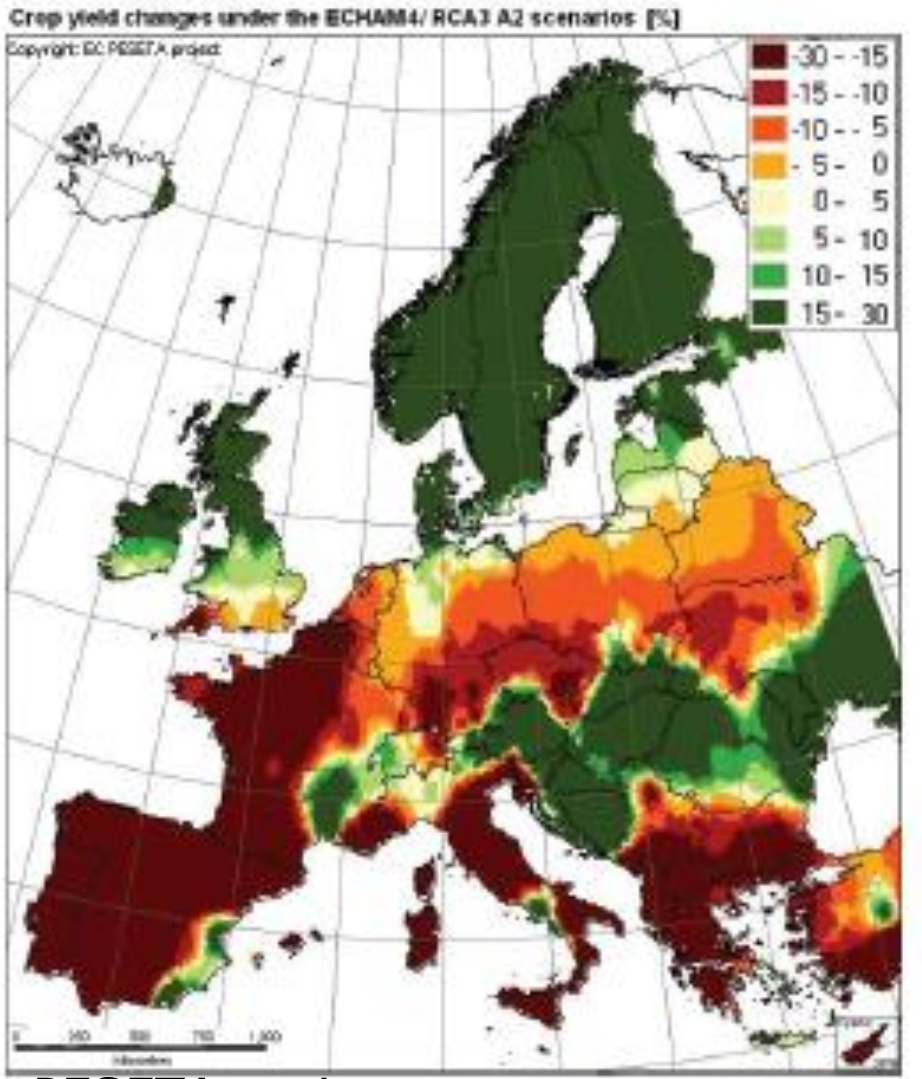
The idea: *climate change and growing energy prices are*

- challenging the Northern peripheries
  - much higher per capita energy consumption due to long distances and much higher housing (construction and heating) costs, but
  - vast territories with a lot's of hydropower, biomass, wind and geothermal resources gives Nordic peripheries
  - great opportunities for energy self-subsistence and exports

Crop yield changes 2080

compared with 1961-1990 HadCM3/HIRHAM & ECHAM4/RCA3 models

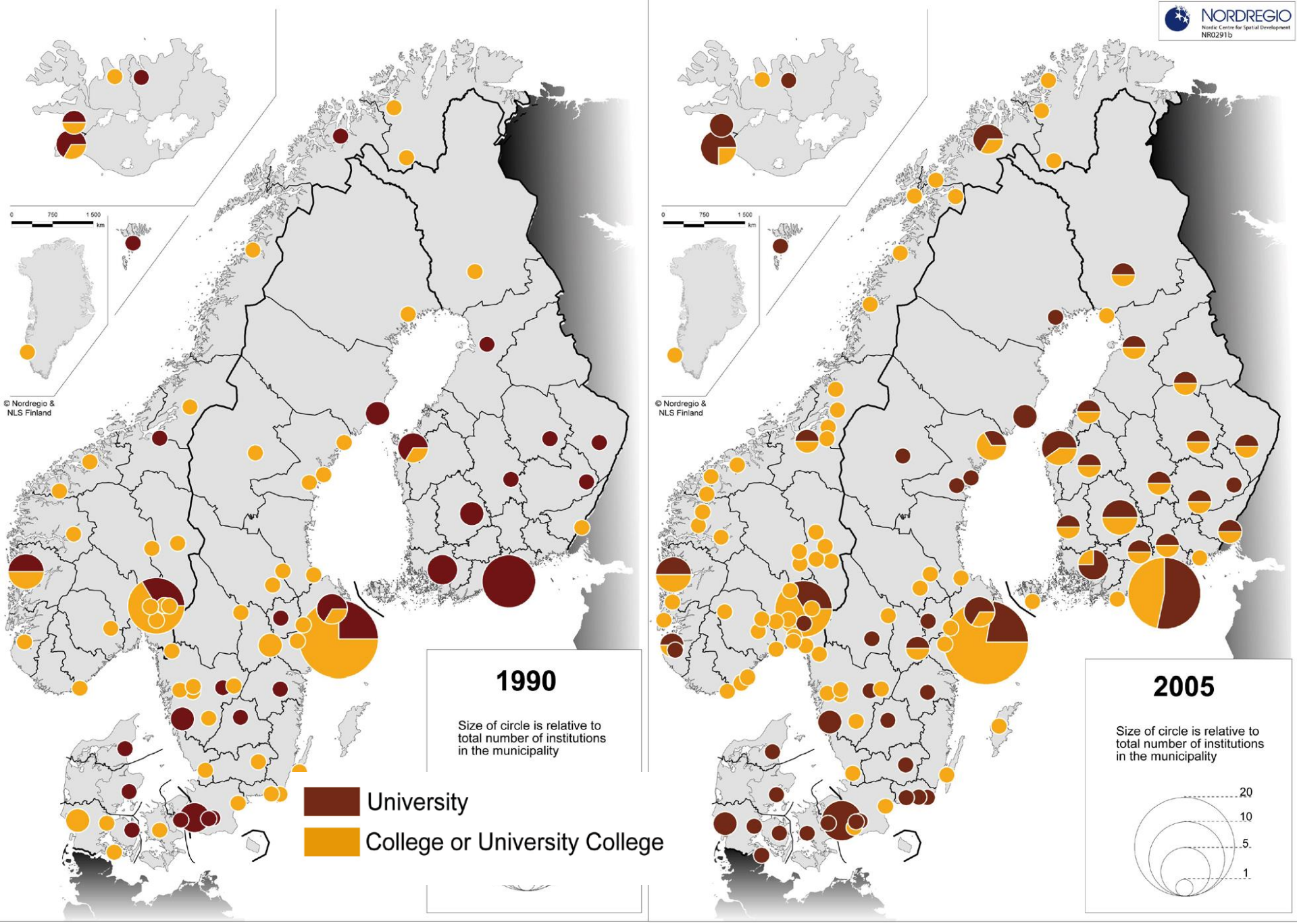




Source: PESETA project

The idea: *lack of human resources and the challenge of green economy growth*

- Nordic peripheries have continuously lost their most active population to national urban cores – **so far**!
- Regional policy creating higher educational institutions (HEI) in order to support and initiate technologically advanced industries has been successful,
  - but often these HEIs & clusters have limited partnership outside and the lack of demand locally (Isaksen and Karlsen 2012)



Historical development of High Education Institutions Campuses in the Nordic Countries: 1990 to 2005

The idea:
regional HEIs at the crossroads

- Academia has been driven to more specialised knowledge production →
  - lack of regional resilience during the crisis
- To be replaced with Jacobian clusters under the green economy (GE) umbrella:
  - Green energy production
  - Heating and insulation systems
  - Smart transport and sewage solutions
- Regional HEIs →**GE knowledge hubs??**

Motivation

- Estonian science & innovation evaluation programme → subtheme 4.5:
- **The role of regional HEIs in local/regional development**
  - to describe the role of non-metropolitan higher educational institutions (HEI) in the framework of the Regional Innovation System (RIS),
  - in parallel with other regional knowledge institutions (KI): R&D units, business advisory services (BAS),
  - and their interaction with local/regional authorities and business organizations

What is a Green Economy (GE)?

Who are involved in GE?

What kind of knowledge should be transferred?

What is a green economy?

- A way to pursue development without degradation of the environment and resources, emissions or loss of biodiversity
- Developing cleaner production, products and energy solutions and reducing waste
- Planning of societies, structural change needed to facilitate transition

NordRegio 2013

What is a green economy?

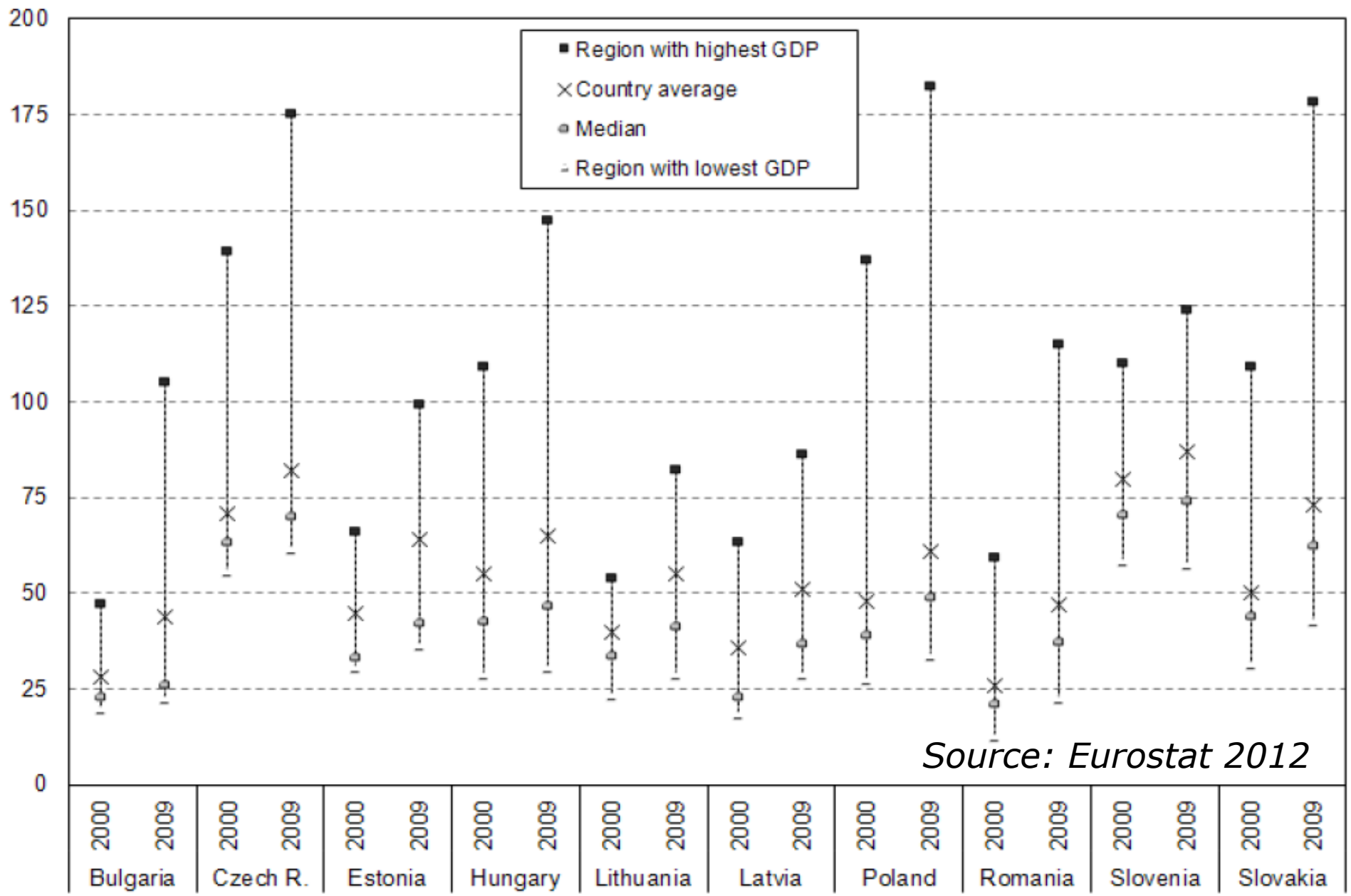
- Green economy is an economy or economic development model based on sustainable development and a knowledge of ecological economics
  - Renewable energy
  - Green buildings
  - Sustainable transport
  - Water management
  - Waste management
  - Land management (Burkart 2009)

Theories about the ressource based periheries

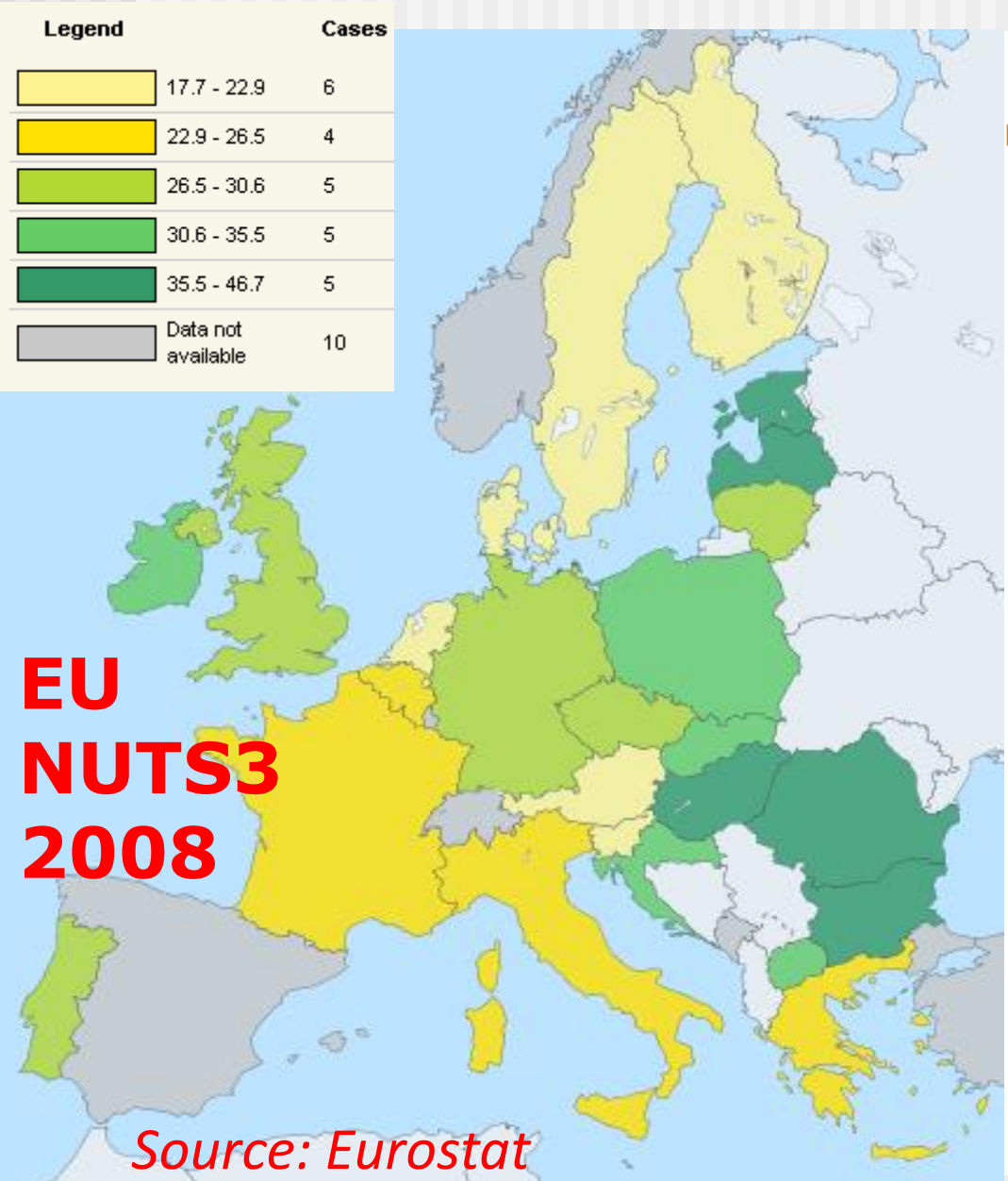
Theories about the ressource based economies

- New Economic Geography -> hopeless…
- Old concepts revisited…
  - Core-periphery theory (Myrdal, Richardson, Friedmann, Williamson…
  - Staples theory (Innis, Mackintosh, Watkins)
- What makes peripheries more vulnerable?
  - raw materials exported to Core areas
  - lack of capital, knowledge and power
  - now very much relevant in Eastern Europe

NUTS3 regional DGP dispersal

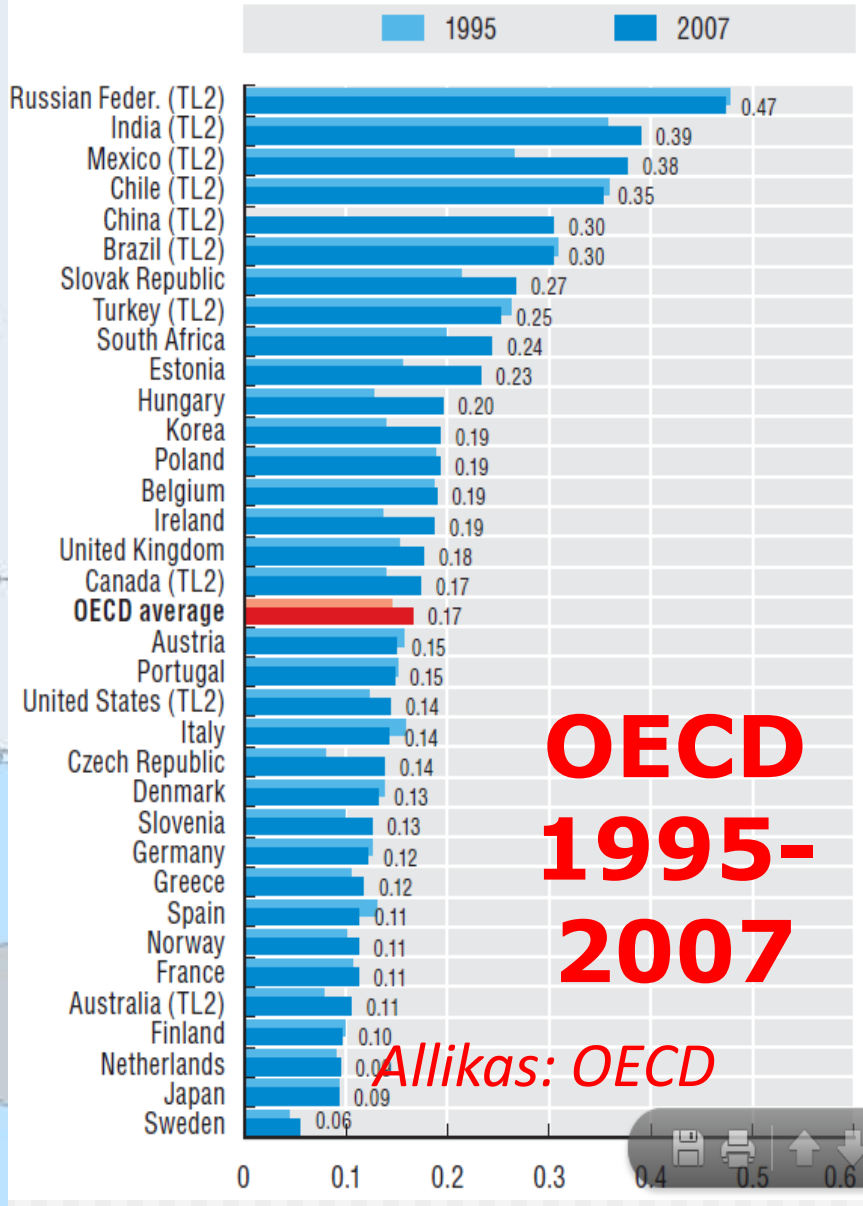


Regional dispersion



EU NUTS3 2008

Source: Eurostat



OECD 1995-2007

Allikas: OECD

How to control resources and reduce dependency?

- To set up new GE companies
  - New entrepreneurship programs
  - Incubating
- To strengthen local companies, via
  - development of new and better products
  - grasping new markets
  - reduce costs (access finances, inputs)
- To increase capability of local public sector
  - Applying regional innovation strategies
  - Promoting networking and clustering

What are Regional Higher Educational Institutions (HEI)?

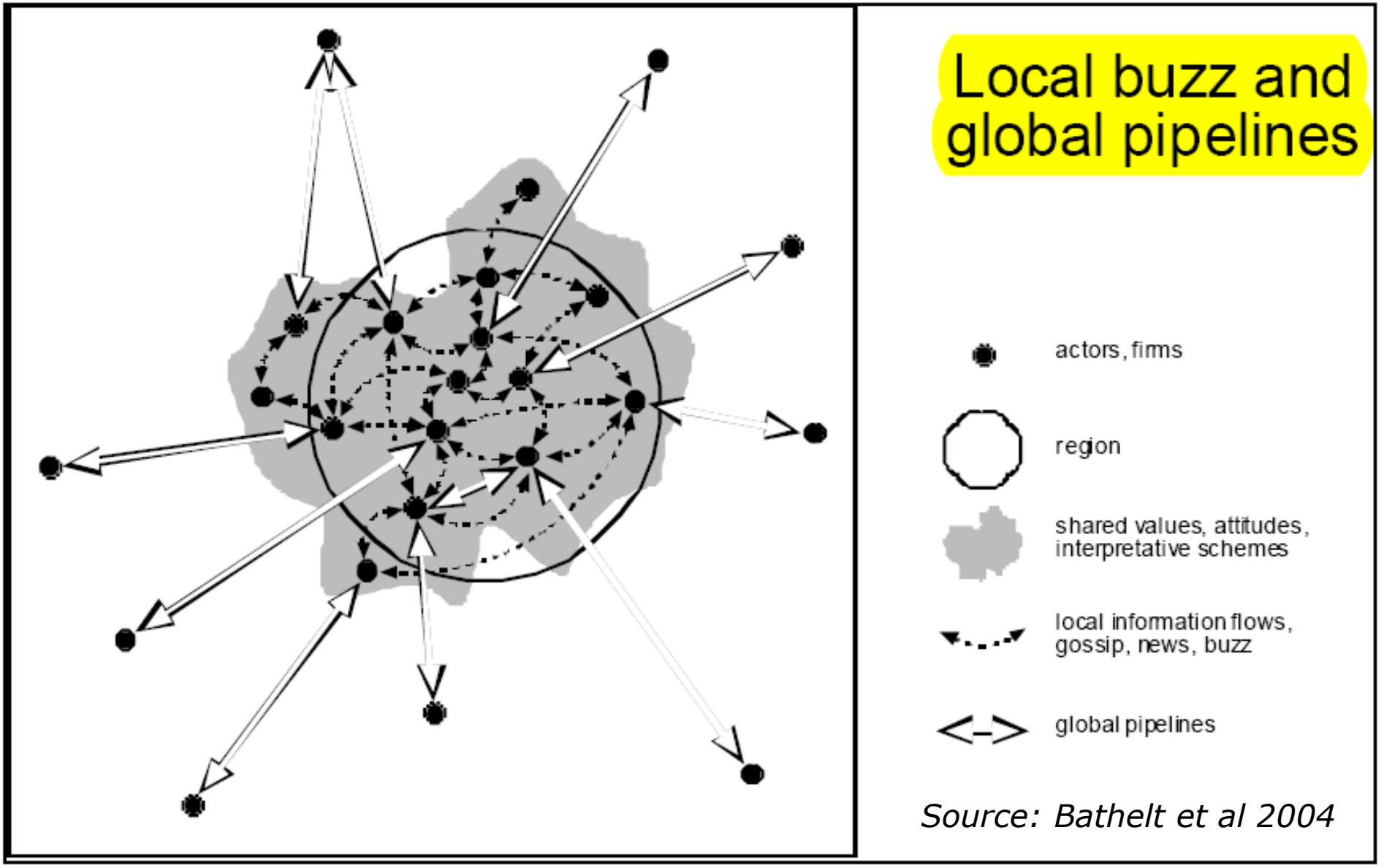
Specialization VS general knowledge and human ressource production?

What are regional HEIs, what tasks they perform?

- *Located outside traditional university centres*
- *Main tasks:*
  - *knowledge transfer*
    - *through education* and human resources development
  - *knowledge creation*
    - through research and technology transfer
    - **innovation**
  - ***cultural and community development***

OECD 2007

The role of regional HEI



Source: Bathelt et al 2004

The dilemma of regional HEIs in policy making

- two controversial opinions about HEIs outside old university centres:
  - wasting resources (ITPS 2004 Deschryvere, 2009)
  - regional economy needs HEIs for economic restructuring (OECD 2007, Nordregio 2009)
- direct effects that universities may have on regional development are difficult to measure or prove (ITPS 2004)
  - → **message to ESPON**

Macro level studies have conflicting results

- resources allocated to universities do not have influence on the specialization of companies. **The relationship between expenses for education and research and knowledge-intensive businesses** is non-existent in regions with less than one million inhabitants (ITPS 2004)
- universities may be important drivers pushing forward regional development, since a **regional centre with a university is better off** in respect of occupational and demographic development than a regional centre that lacks such a facility (Hanell & Neubauer 2006)
- **→ Need to go to the micro level**

Theoretical foundations
Knowledge & space

- evolutionary economic geography
- path dependency (Nelson & Winter 1982)
- national innovation systems (Lundvall 1992)
- social networks (Camagni 1995)
- lock-ins (Liebowitz et al. 1995)
- learning region (Morgan 1997)
- triple helix (Etzkowitz 1997)
- RIS (Cooke et al 1998)
- knowledge spillovers (Jaffe 1989)
- co-evolution (Murmann 2003)

Cont…→**towards the micro-level**

- local 'sticky' and global 'ubiquitous' knowledge (Asheim & Isaksen 2002)
- local buzz & global pipeline (Bathelt, Malmberg and Maskell 2004)
- organizational proximity (Boschma 2005)
- related variety (Frenken et al 2007)
- cluster life cycles (Bergman 2007)
- regional resilience (Martin, Pendall … 2010)
- institutional environment (Hassink 2010)
- geographical proximity (Graf 2010)
- smart specialisation (Foray, McCann 2011)
- learning in space (Hassink ja Klaerding 2013)

R&D ≠ Innovation

- High investment to the R&D does not guarantee innovation and development of the regions (Capella 2011)
  - Tartu case: bioscience versus software
- Geography matters: knowledge and new values take roots in close interaction of PEOPLE not between institutions
  - The importance of CLOSE life long learning
  - Where is the reasonable dividing line on the geographical scale? → Granularity problem

R&D versus broadly based innovation policy

'One size does not fit all!'

Tödtling & Tripple 2005

***STI** (Science, Technology, Innovation)*

- high-tech / science push / supply driven
- → "Big science" & Transnational corporations

***DUI** (Doing, Using, Interacting)*

- Competence building / organisational innovations / social innovations / market - demand - user driven
- Broadly based innovation policy
  - → **Regional HEIs** *Lorenz & Lundvall 2006*

NEW MANTRA from the EC
Smart specialisation (SS)…

- *is expected to create more diversity among regions (David, Foray, Hall 2009)*
- *should promote the **generation, exploitation, and dissemination of local ideas and knowledge***
- *Maximising both intra- and inter-regional **knowledge spillovers** in the relevant scale domains (embeddedness + relatedness) (McCann 2011)*
- *facilitates the emergence and early **growth of new activities and spillovers**, diversifying the regional systems, generating critical mass*
- *implementation is not trivial: requires **strong capabilities at regional level and good institutions** (Foray 2012)*

Conclusions from ESPON for a ‘smart specialisation’

- The geography of innovation is much more complex than a core-periphery model
- The preconditions for knowledge creation, for turning knowledge into innovation, and for turning innovation into growth are all **embedded in the territorial culture of each region**
- This means that each region follows its own path in performing the different abstract phases of the innovation process, depending on the context conditions: its **own ‘pattern of innovation**

(Source: ESPON/KIT, Capella 2012)

Who needs Regional HEIs?

- Main customers of Regional HEIs are:
  - SMEs: training, techonoligy transfer, incubation
  - Local people: training
  - Local authorities
    - Participation in local development programmes
  - State agencies? → Policy support actions
- Big companies usually do not need specific knowledge of regional HEIs but
  - They need human resources

The dilemma of a regional HEI: „Specialised or ubiquitous?“

- To specialize on some narrow nishe
  - As a part of national or EU research scheme
  - Criterion – academic excellence
- To meet needs of a regional innovation system
  - Aplication an innovation policy
    - Technology transfer
    - Hosting incubation services
    - Training
      - Eg. IT and entrepreneurial skills

Regional HEIs – green economy knowledge hubs in remote areas?

What fields of actions are appropriate?

What are the most adequate target groups?

Fields of action of HEIs in promoting Green Growth

- Human resource development
- Enterprise development
- Technology transfer (innovation)
- Social innovation/overall awareness
- Policy innovation

Human resource development in GE field

- Full BA ja MA curriculums related to GE
- Enriching existing curriculums with GE cources
- Continuos education cources, incl. taylor-made
- Participating in educational projects
  - Iviting teachers and experts from outside

GE enterprise development

- Running enterpreneruship programmes with incl. those with GE focus
- Incubating new start-ups
- Collaborating with local enterprises, brokering relations, technologies…
- Participation

GE technology transfer

- HEI in a national innovation system
  - Providing assistance in the field of specialisation
  - Upgrading overall technological competence
    - Eg. IT usage, using smart phones in GE etc.
- HEI in a regional innovation system
  - Generating business ideas for local SMEs
  - Collaborating with local business centre
  - Codifying and sharing local knowledge

Social innovation

- Overall environmental training, additional to secondary school
  - Public university
- Further education courses about new technologies applicable for wider public
  - Targeted cources and workshops
- HEI as a meeting place for local associations
- Initiating public debates

GE policy innovation

- Participating in regional development policy design/strategy making
  - formally
  - as experts
- HEI personnel participating in decision making
  - Membership in enterprise boards
  - Membership in local councils
- Initiating public debates on policy matter

Conclusion
Green Economy as …

- … opportunity for energy rich peripheries,
- which have to cut through vicious dependency circle due to
  - new and restructuring enterprises and raising
  - capability their local/regional institutions for introducing new GE-based strategies
- **Regional HEIs** have a challenge: either
  - to specialize narrowly in some research or
  - to stake on local/regional GE-growth