

# Resource and energy efficiency indicators: Exploring linkages in CEE

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IN-STREAM Workshop  
'Energy and Resource Efficiency –  
Modelling, Analysis, Indicators'

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## Overview:

1. Background: In-Stream statistical analysis
2. Cross-sectional (In-Stream): EU15+ vs CEE
3. Cross-sectional (Beyond-GDP): EU15+ vs CEE
4. Longitudinal: CEE conversion to EU-15+?
5. Main insights

# 1. Background

Starting point:

- Full set of baseline indicators: 21 indicators included in the In-Stream quantitative analysis
- Selected Beyond-GDP indicators

Task: estimate quantitative relationships:

- between In-Stream indicators and
- between In-Stream and Beyond-GDP indicators

Method: extensive correlation analysis (2 and 3)  
and longitudinal analysis (4)

## 2. Cross-sectional (In-Stream): EU15+ vs CEE

Indicators selected: related to Res & Ene Eff  
vs other relevant In-Stream indicators

Resource & Energy Efficiency:

- Energy intensity (kgoe/1000€GDP)
- Freight transport (2000=100)
- GHG emissions (tCO<sub>2</sub>-eq)
- GERD/capita (pps/person) (indirect)

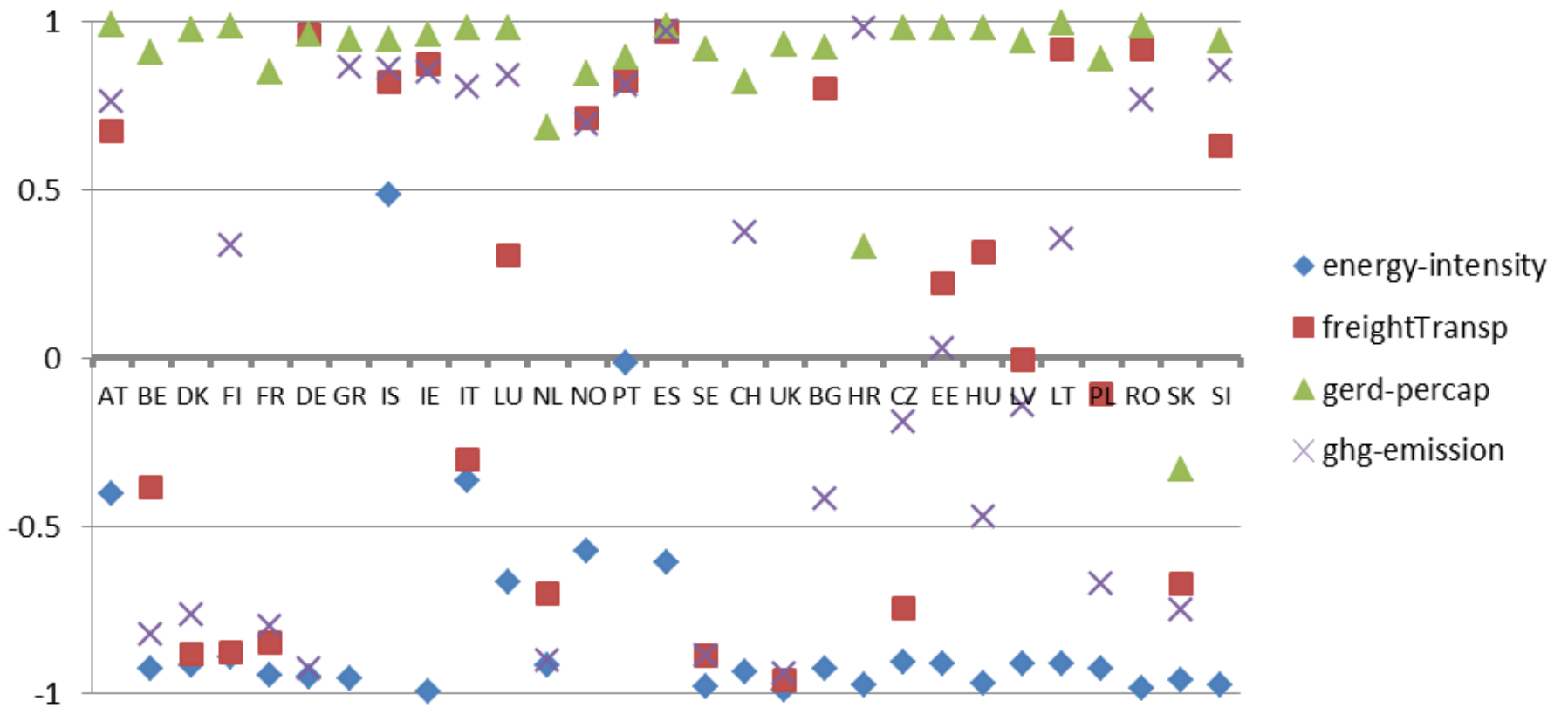
Slides in this section:

vertical axis: correlation coefficients: -1 to +1

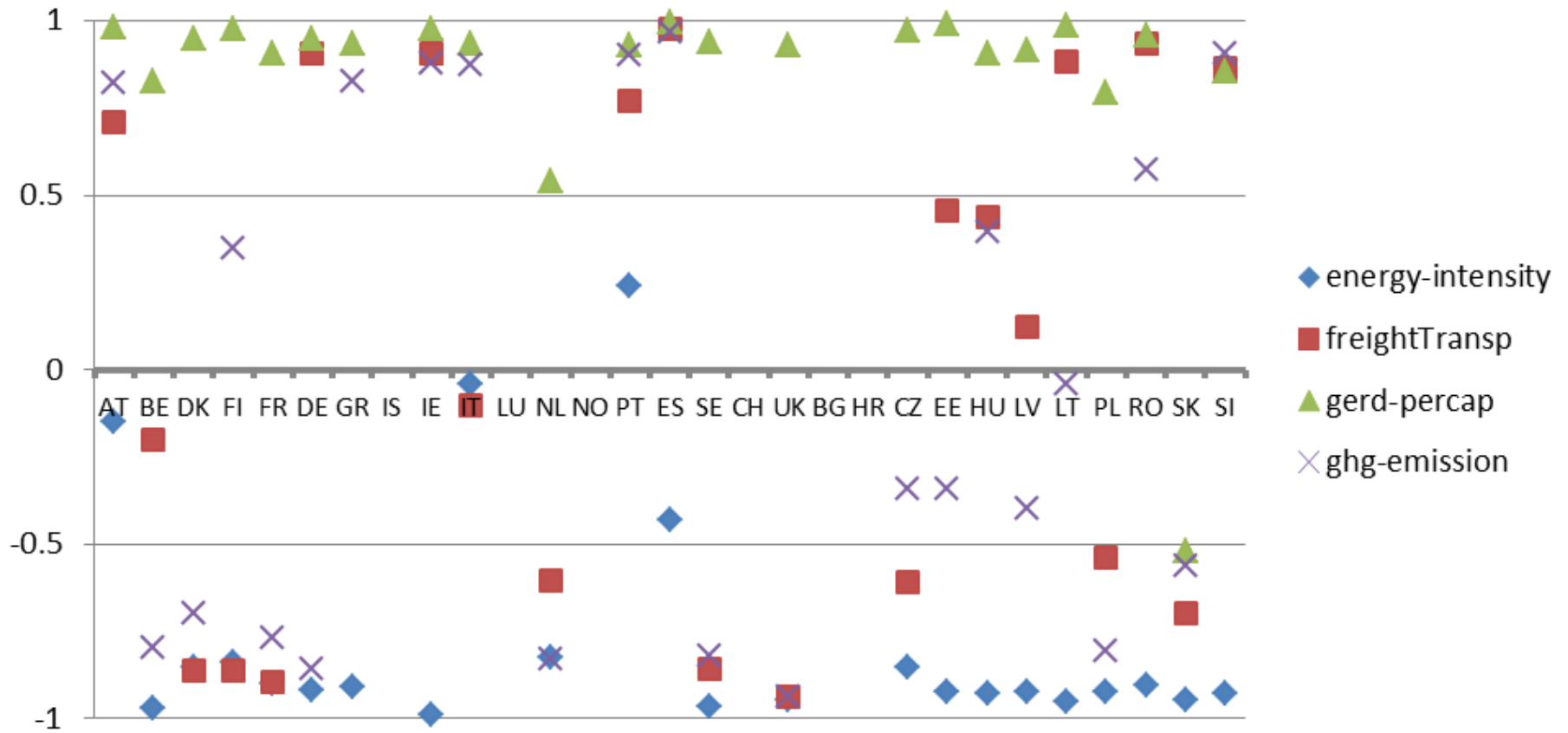
horizontal axis: coefficients for pairs of variables

as spread across - EU-15+ (left side) and CEE  
(right side)

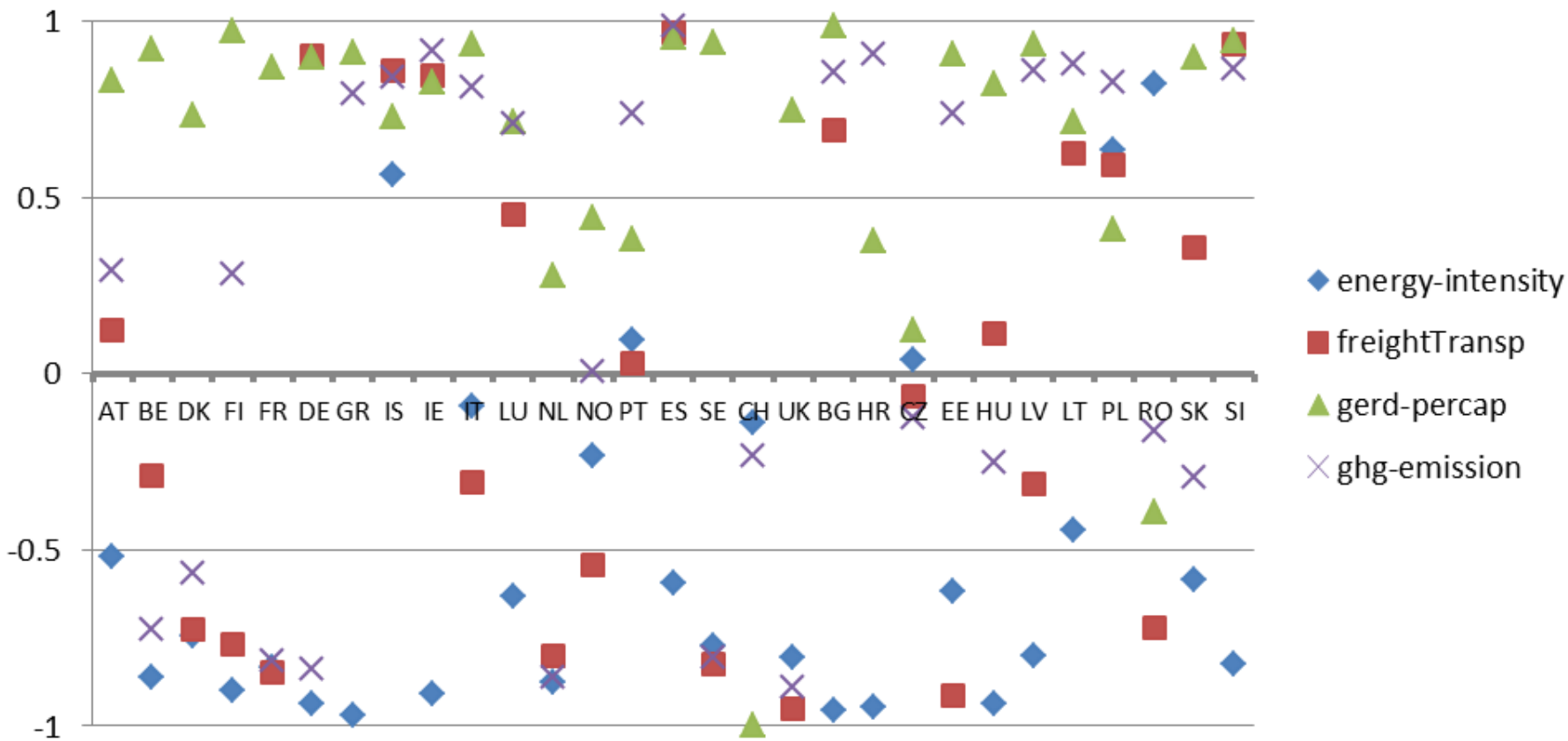
# gdp-ppp-percap



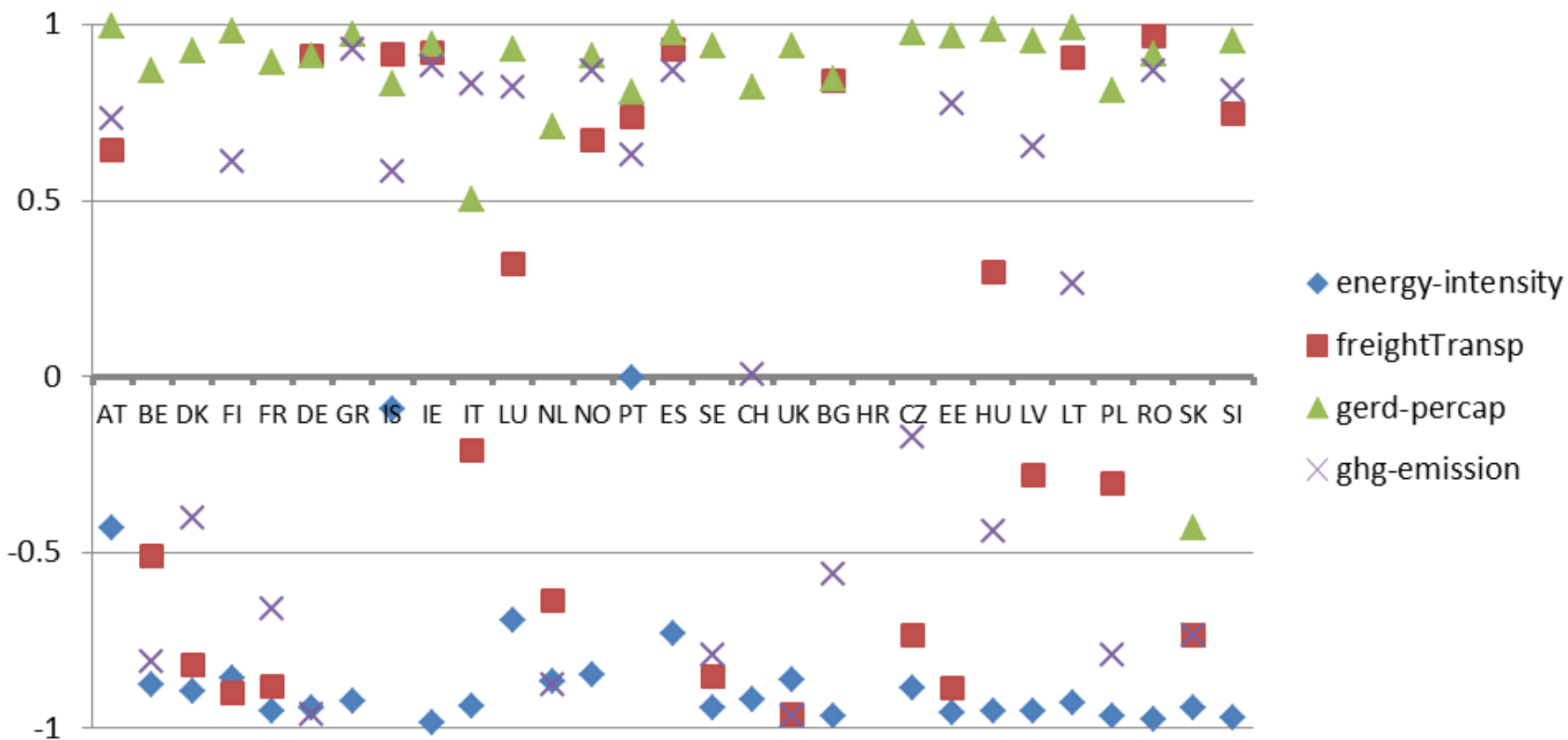
### hhold-income-percap (primary)



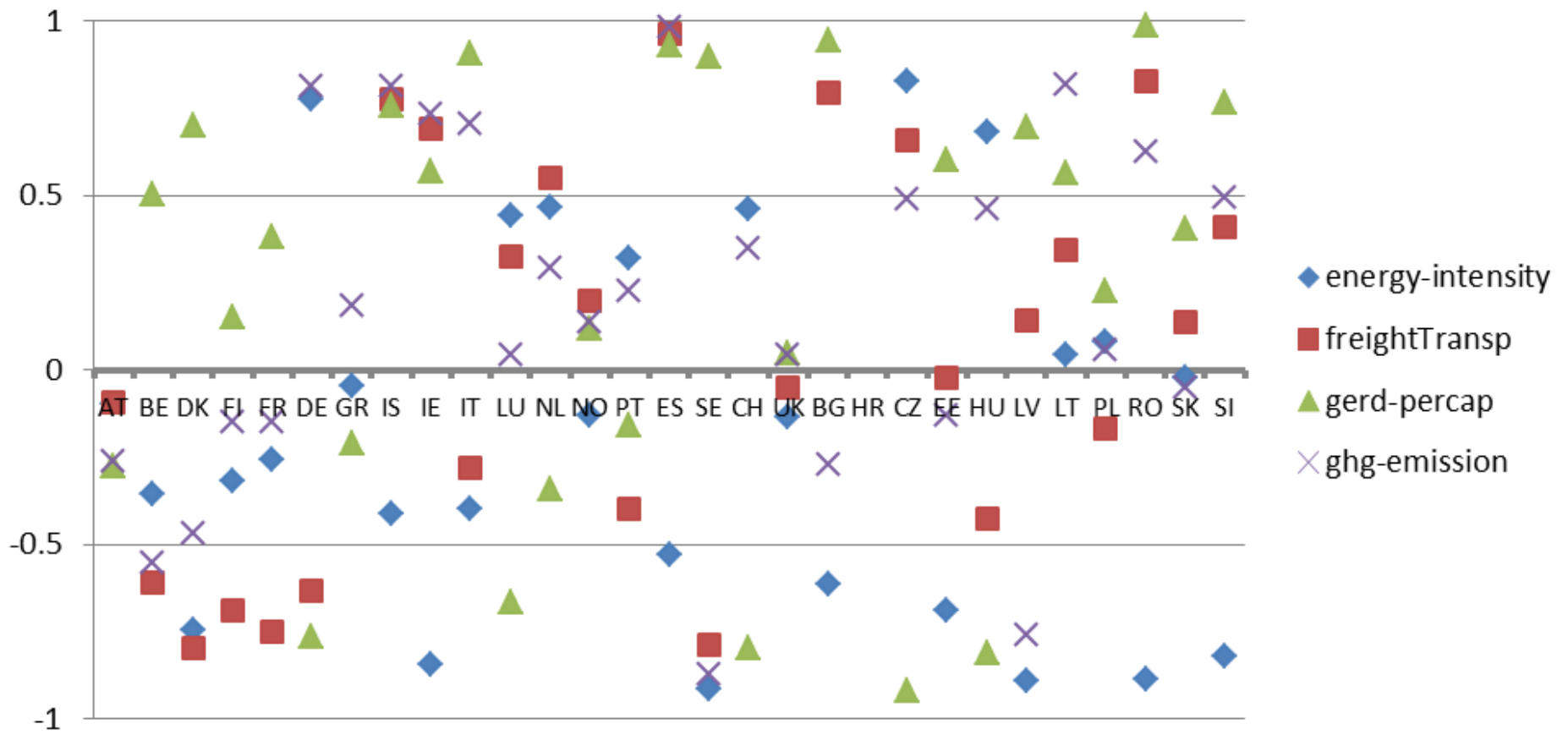
### employm-rate



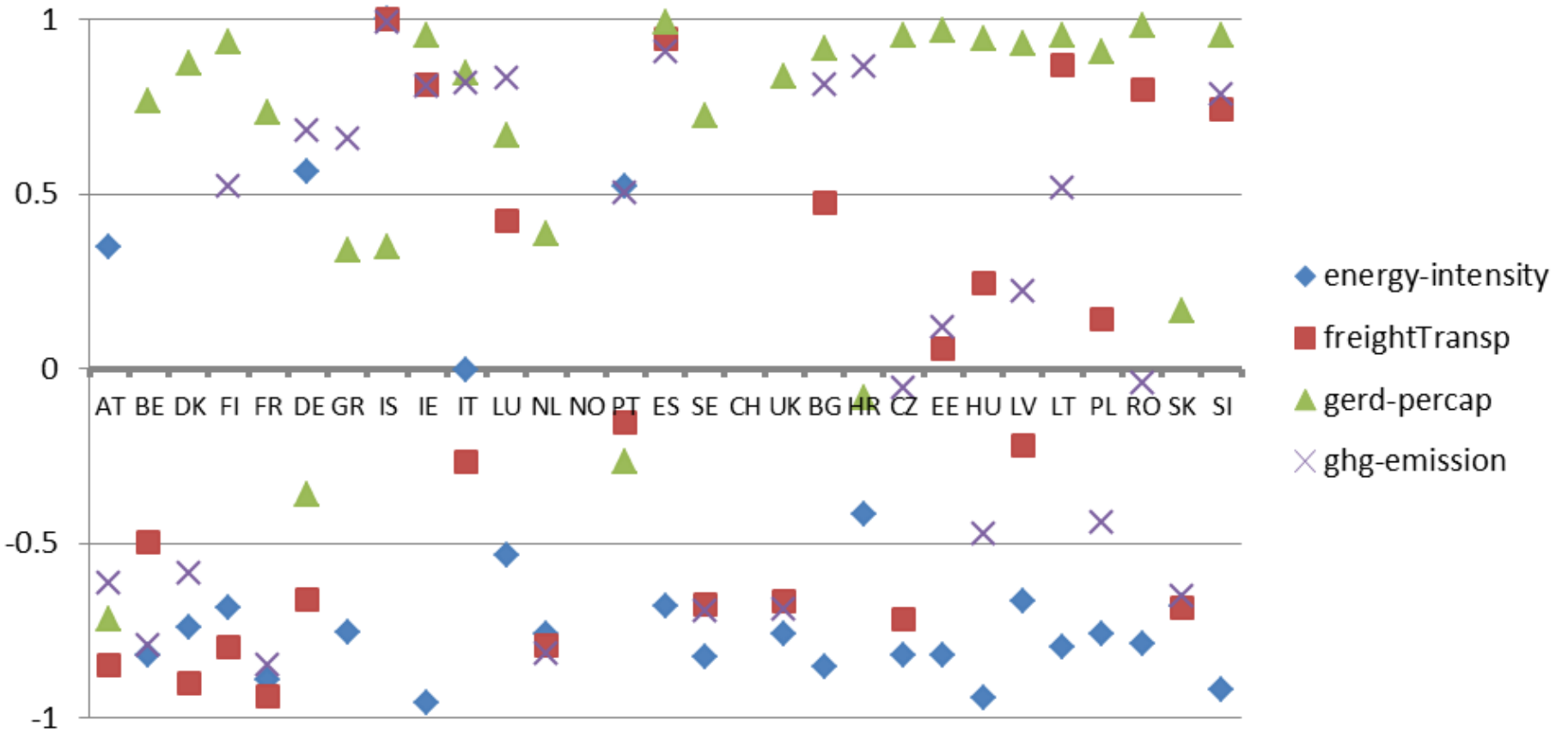
labour-prod per hour \_\_Index



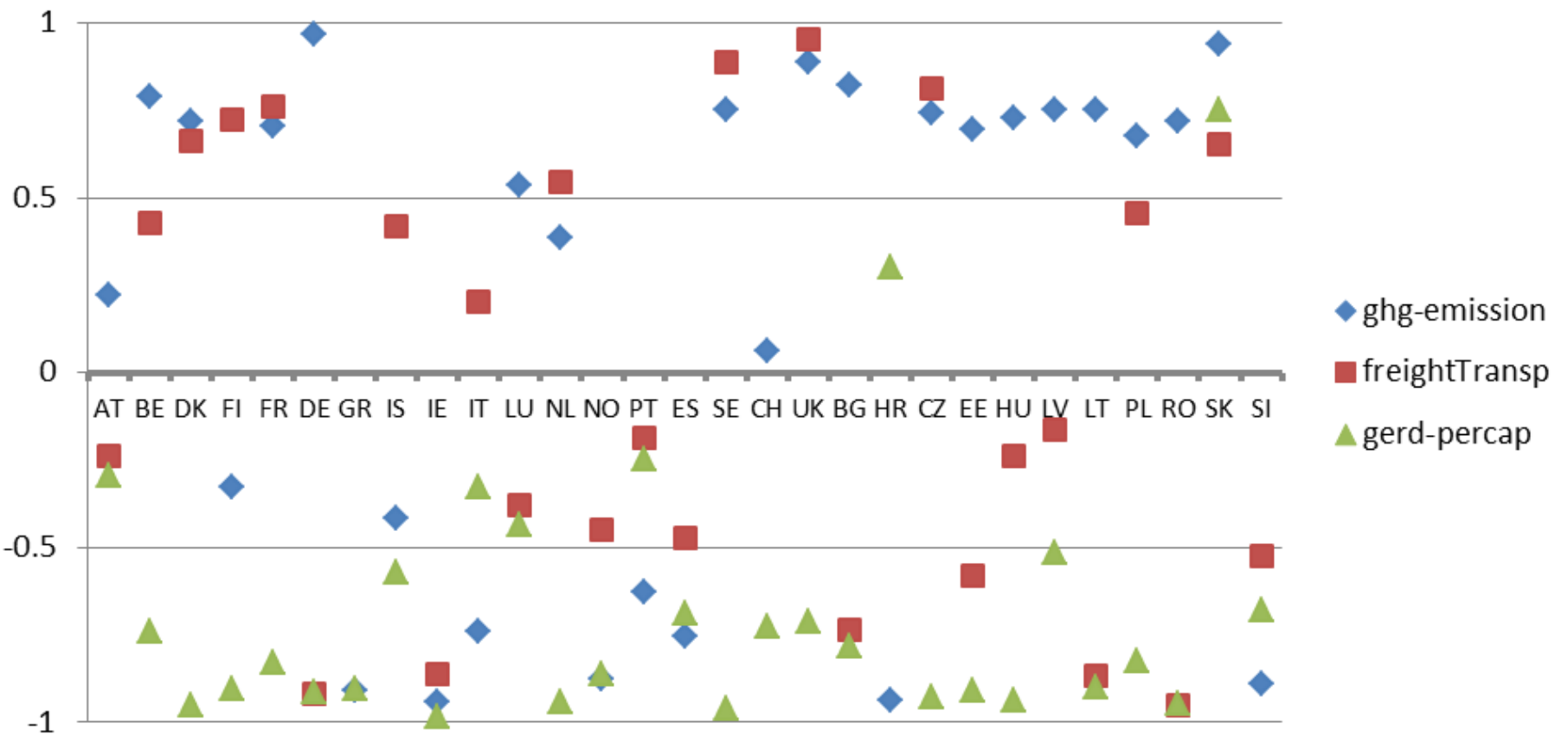
### business-investment es % of GDP

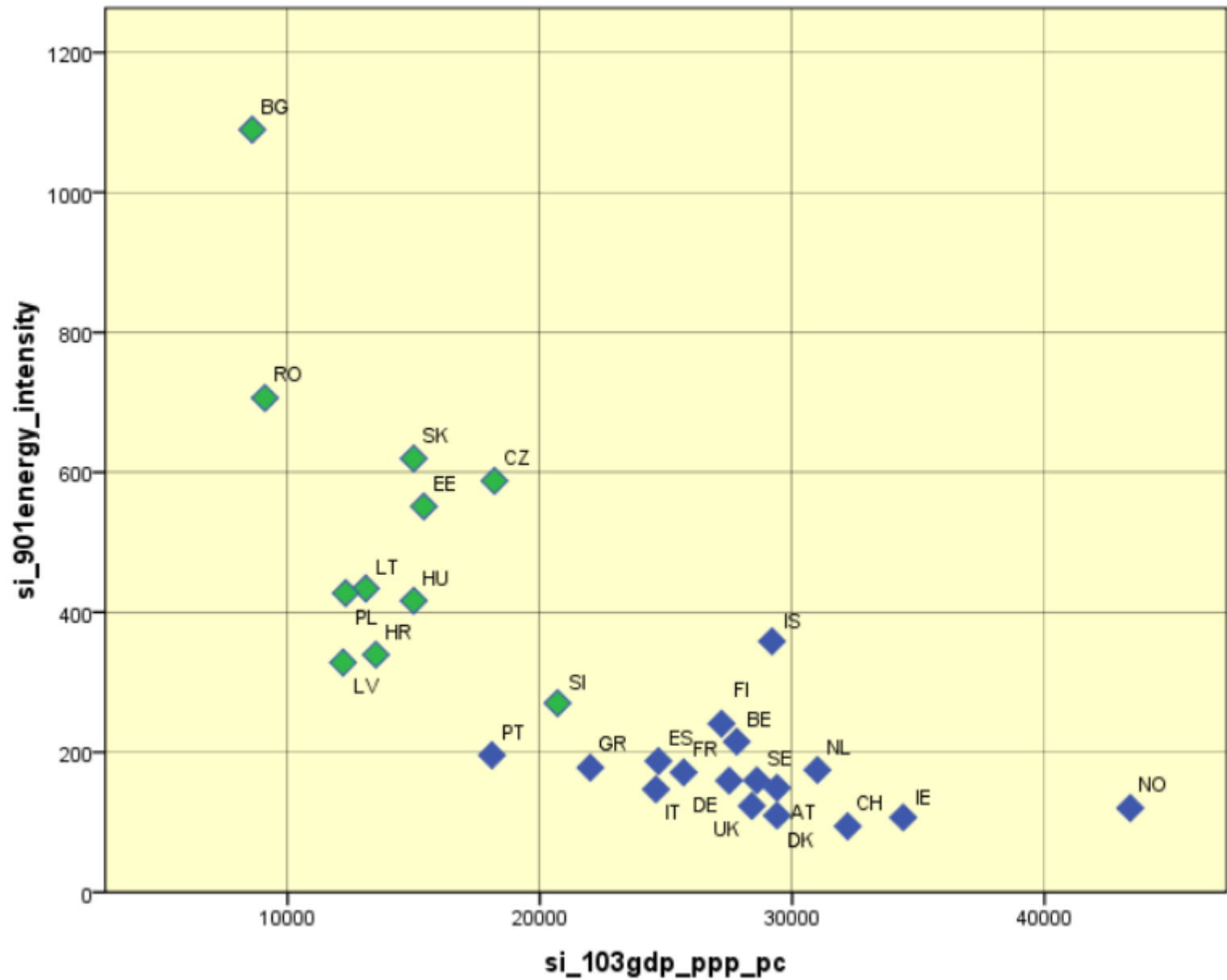


### fixed-invest-govt



### energy-intensity





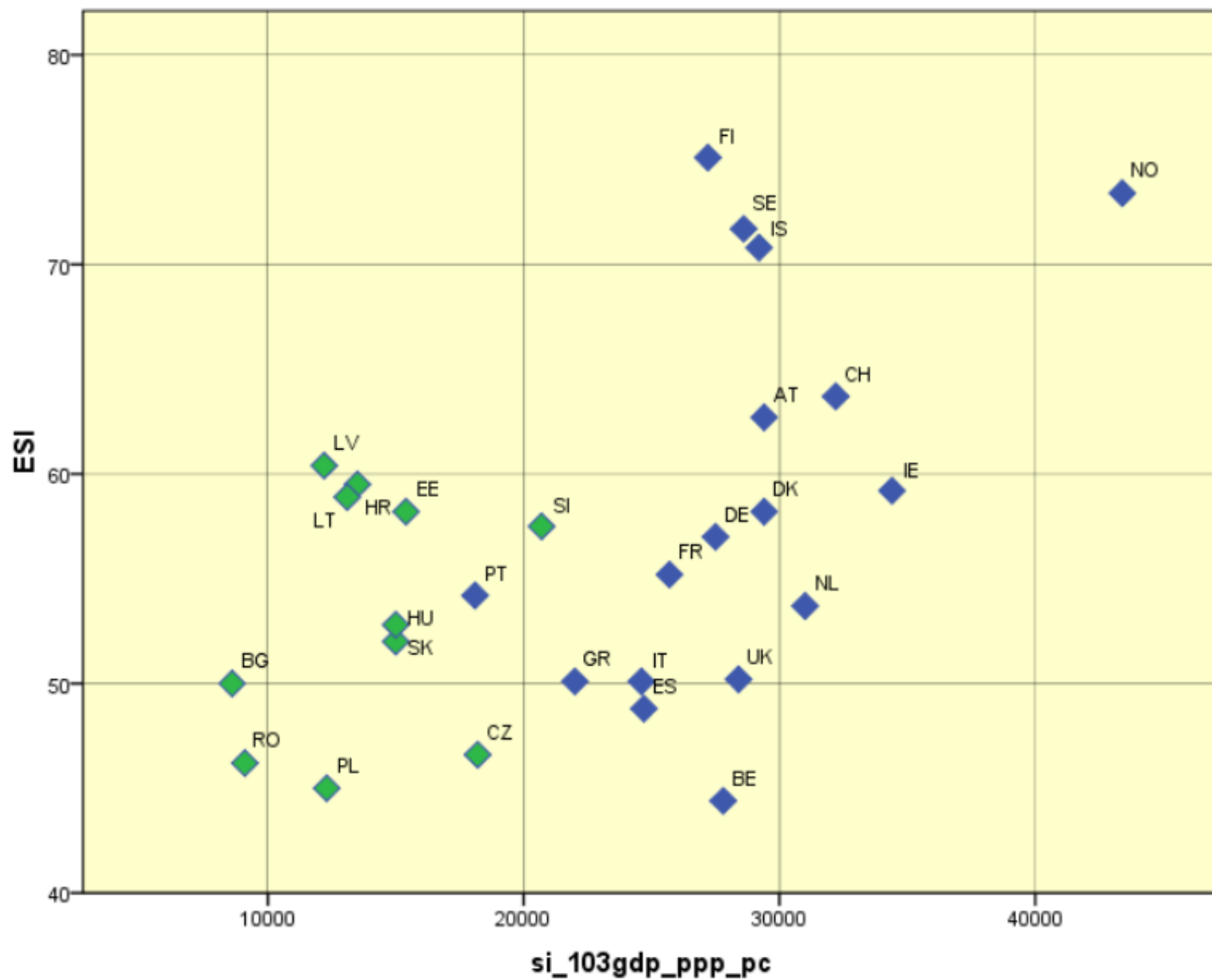
### 3. Cross-sectional (Beyond-GDP): EU15+ vs CEE

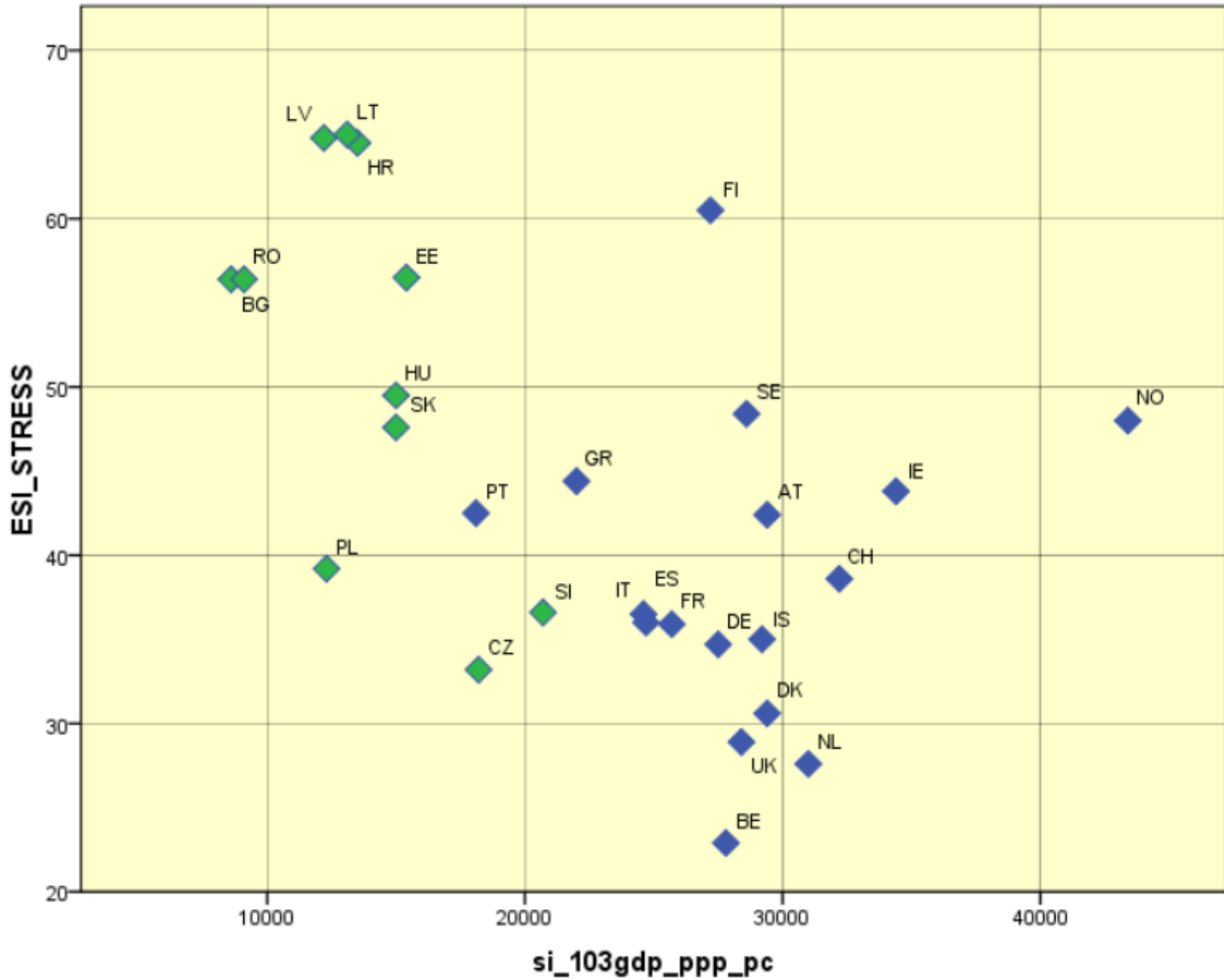
Extended literature review: Beyond GDP indicators

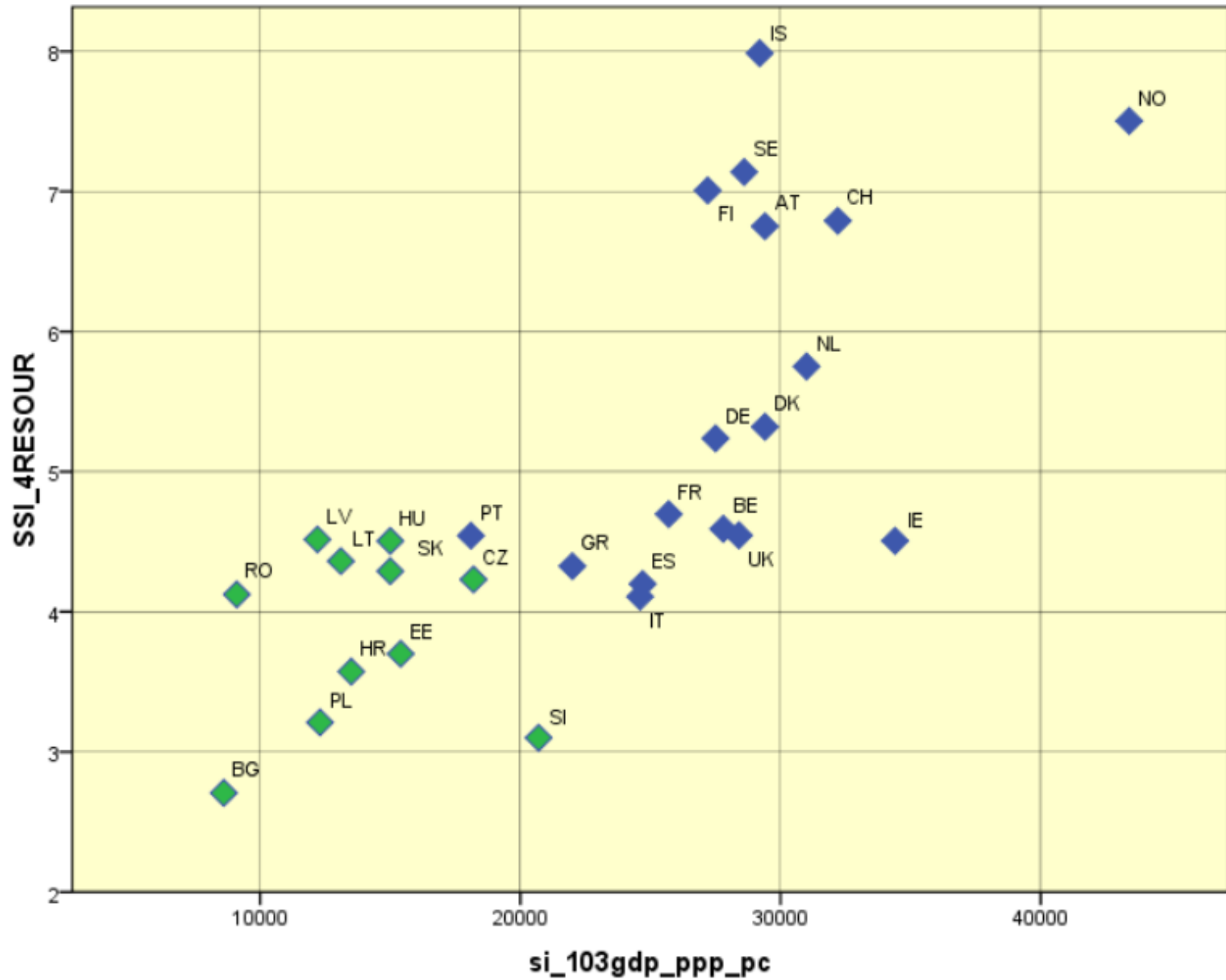
Extended data collection: Data for Beyond GDP indicators

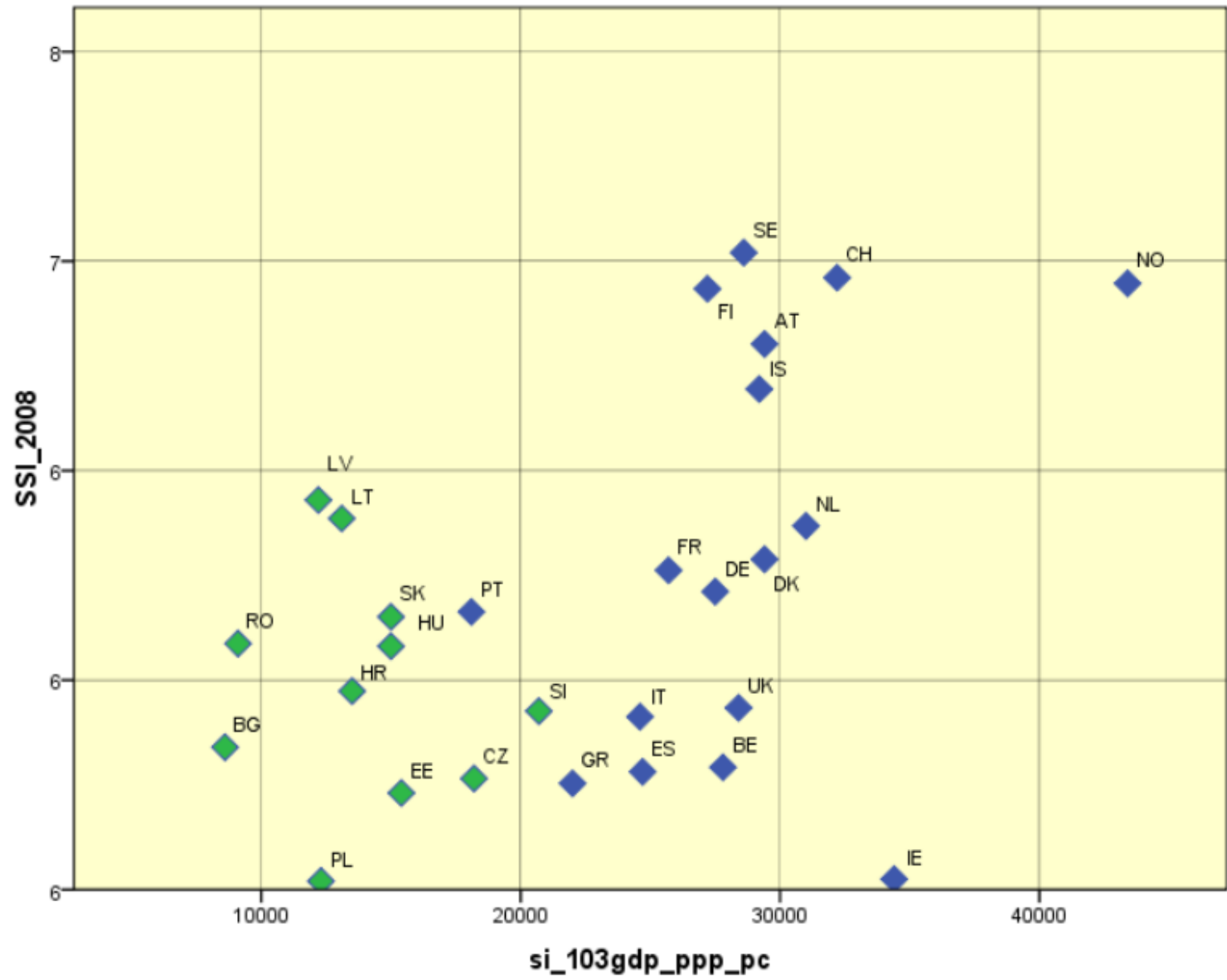
Here: a few examples of relations between GDP per capita (PPP) and

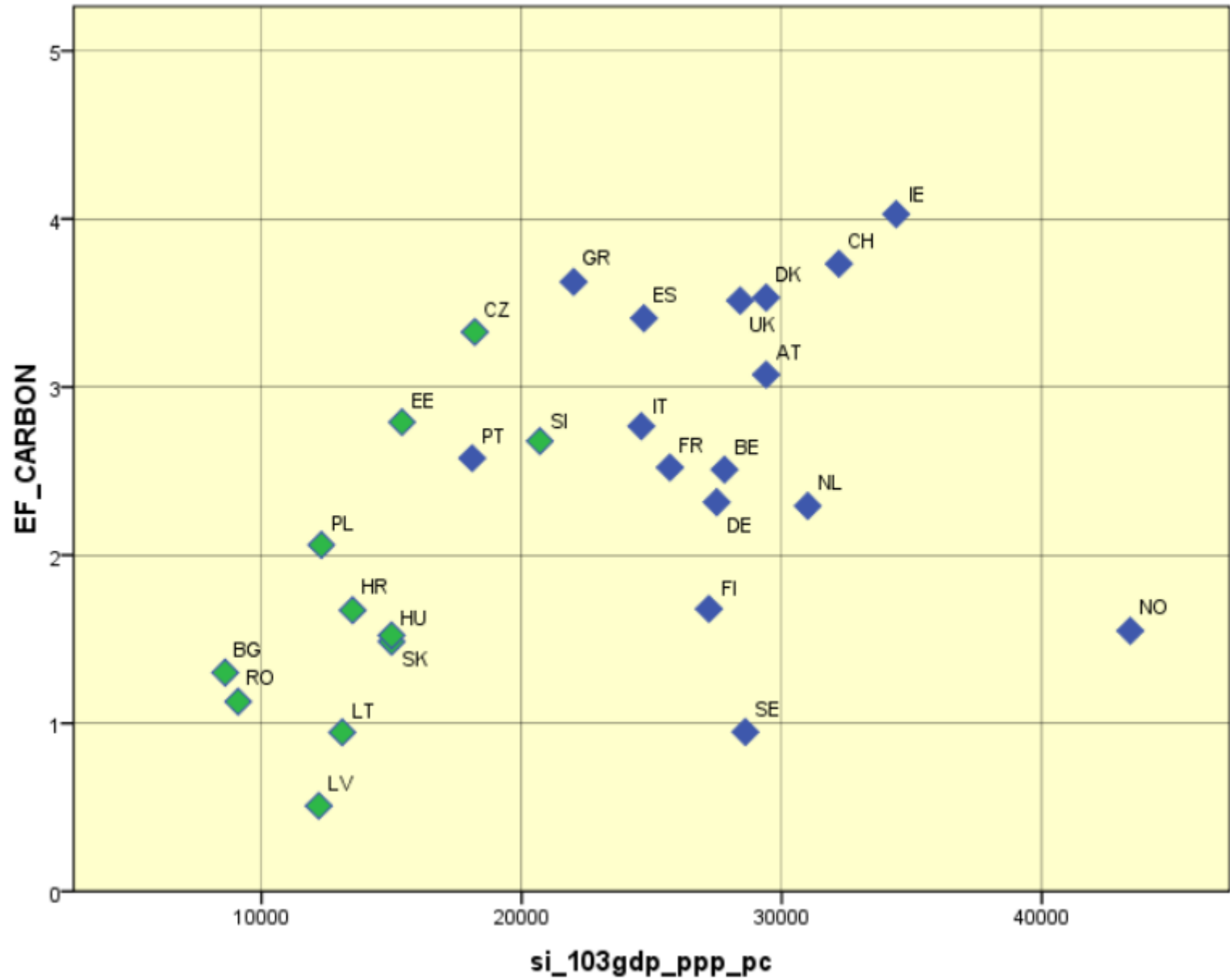
- selected Beyond GDP indexes (and some of their components)
- Beyond GDP indicators





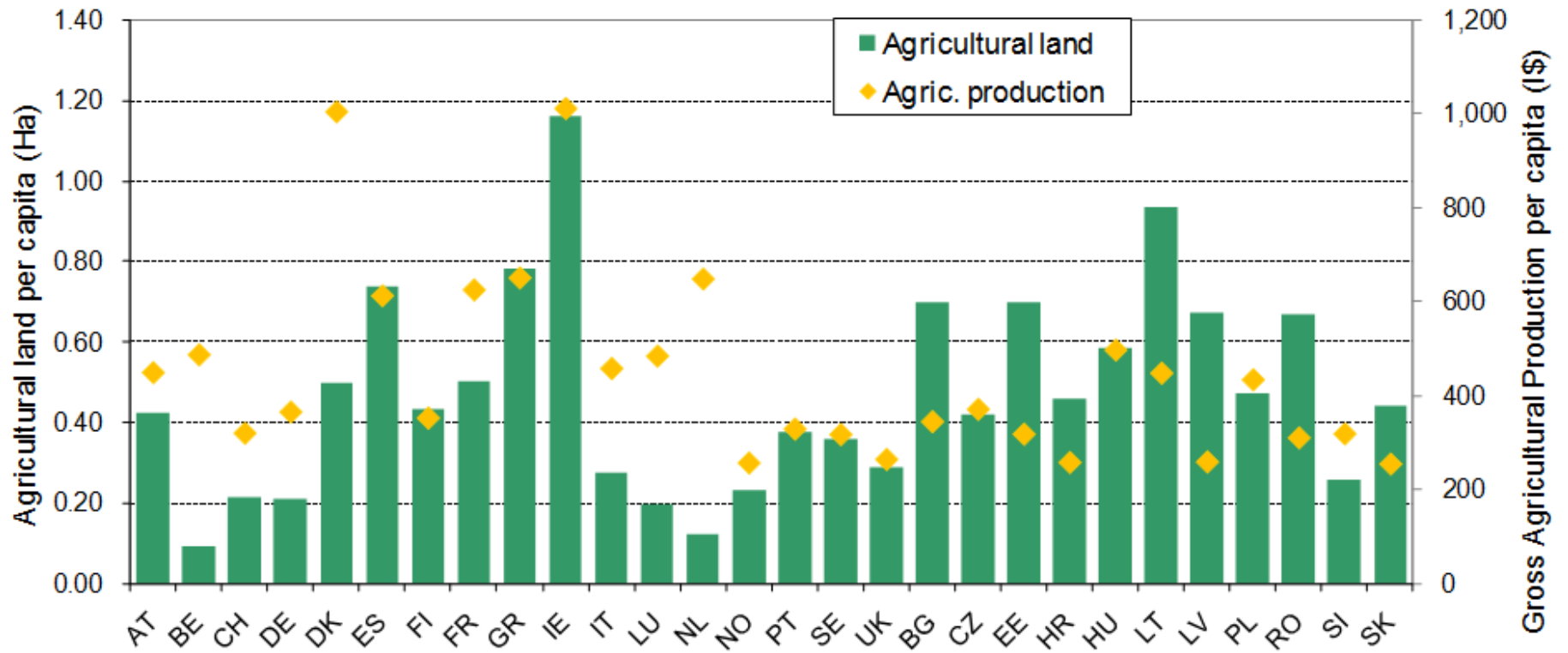


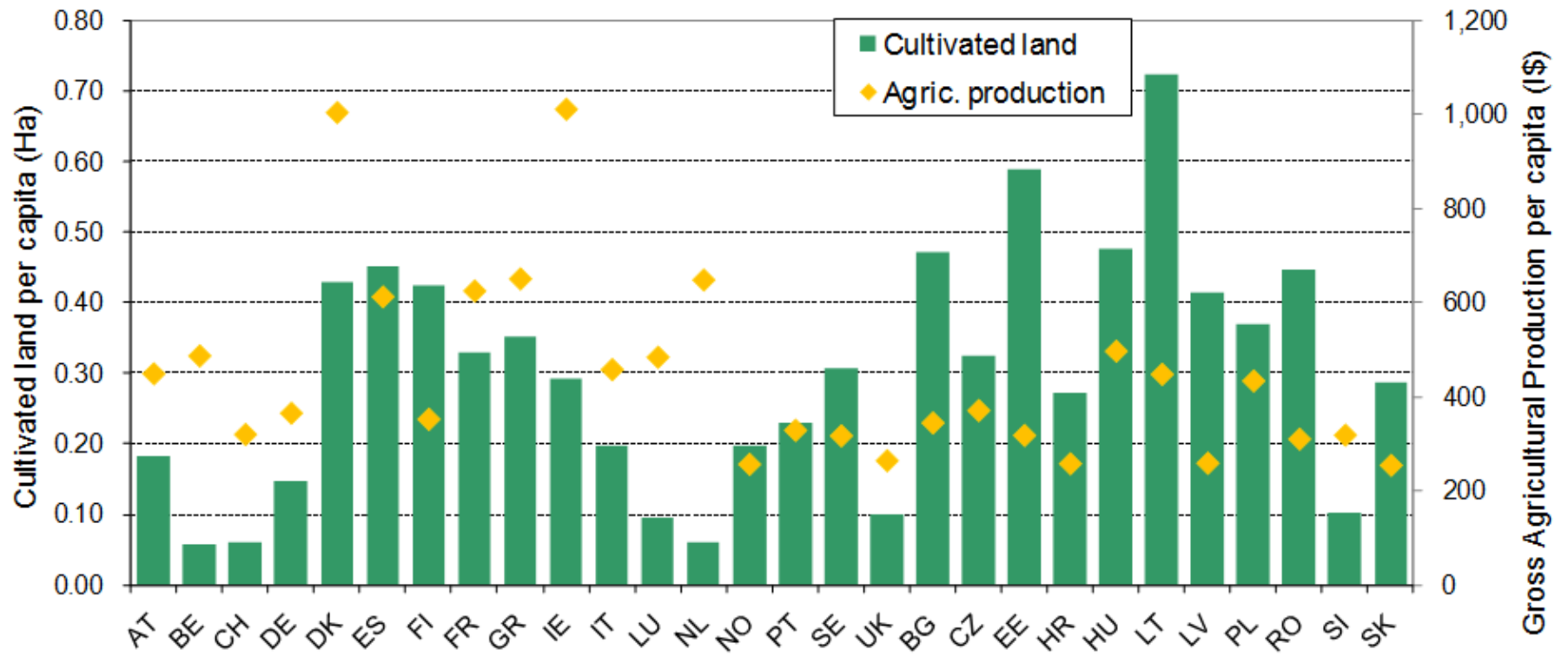


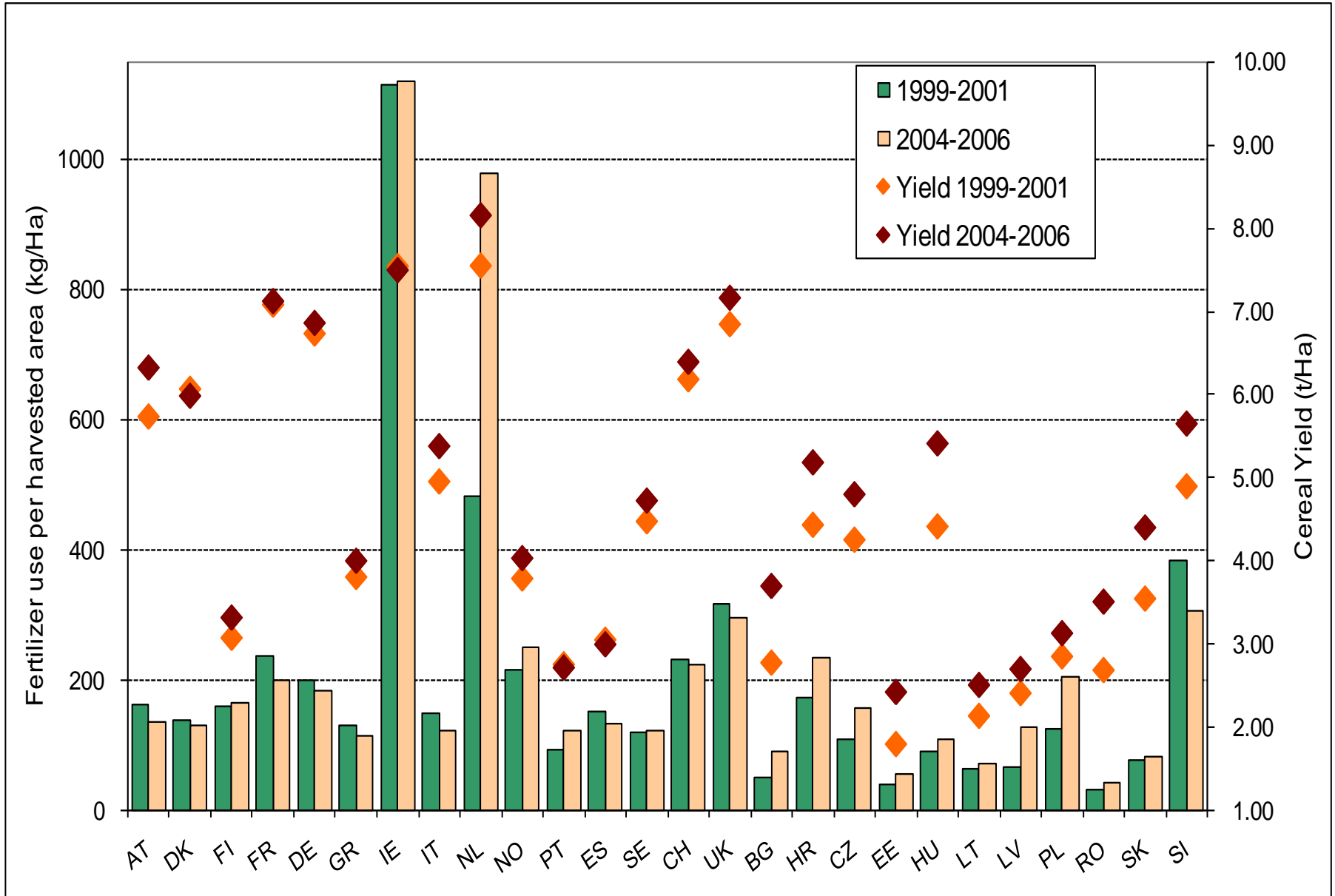


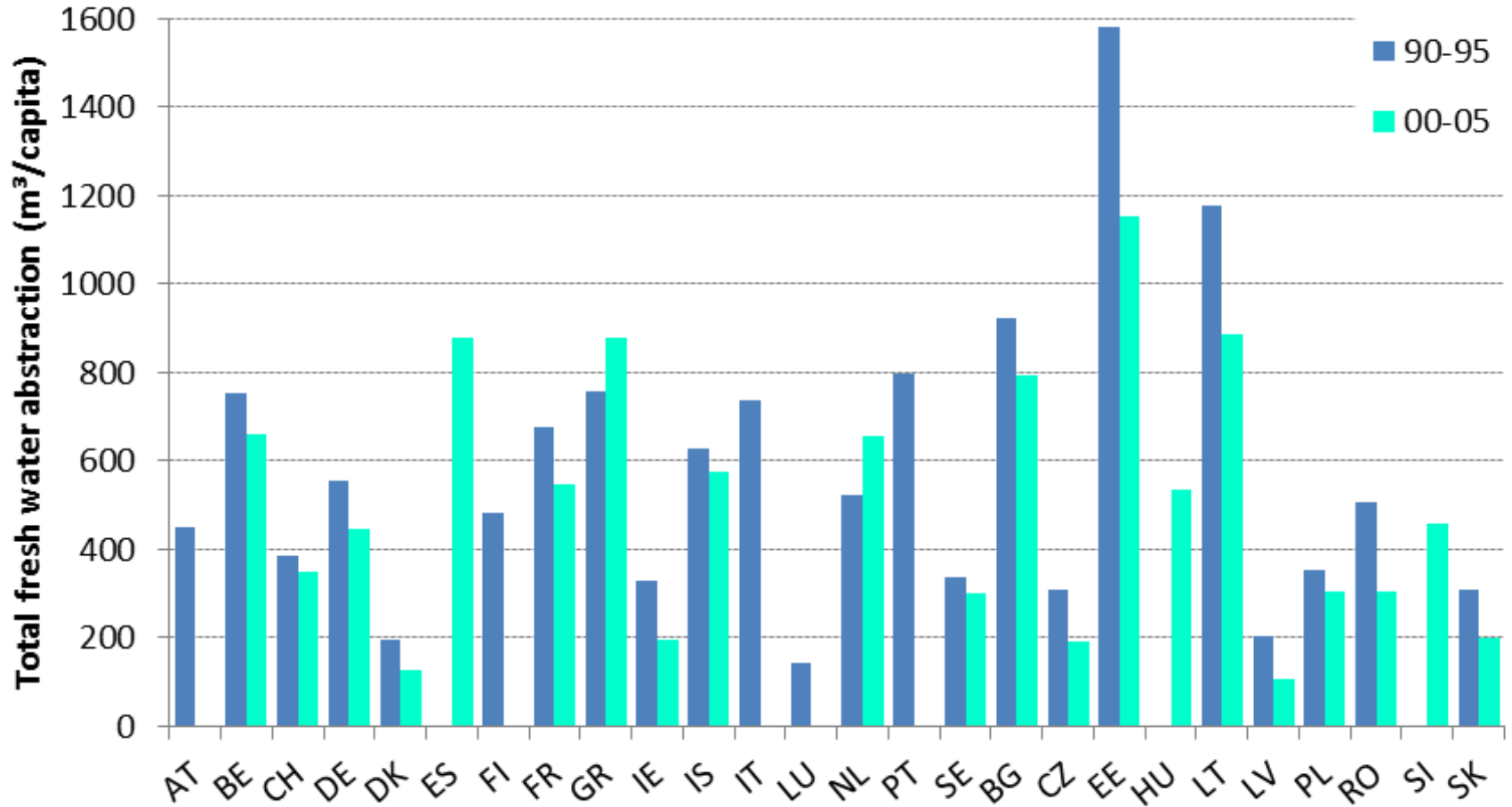
## 4. Longitudinal: CEE conversion to EU-15+?

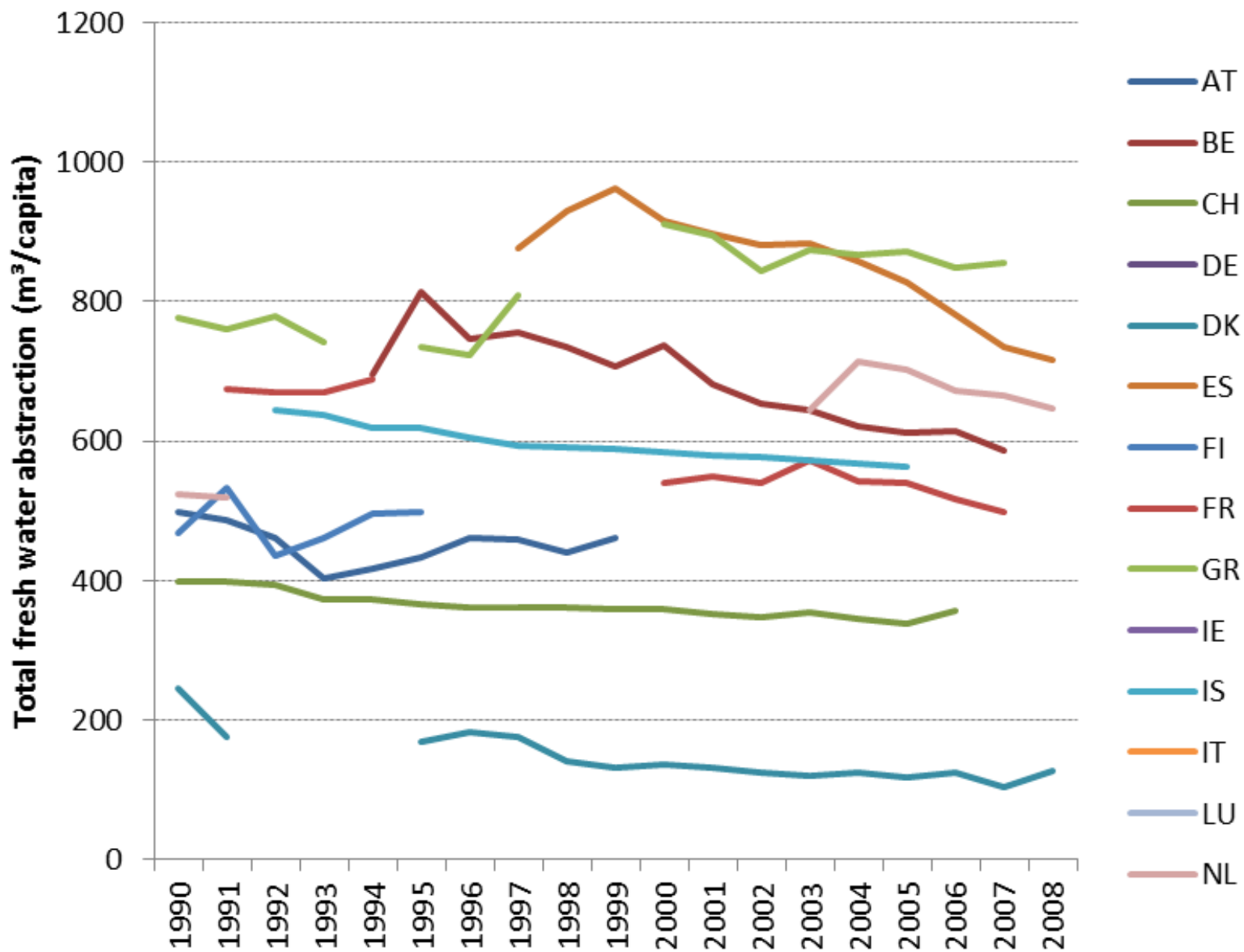
- Land resources
- Water resources
- Energy intensity
- GHG emissions

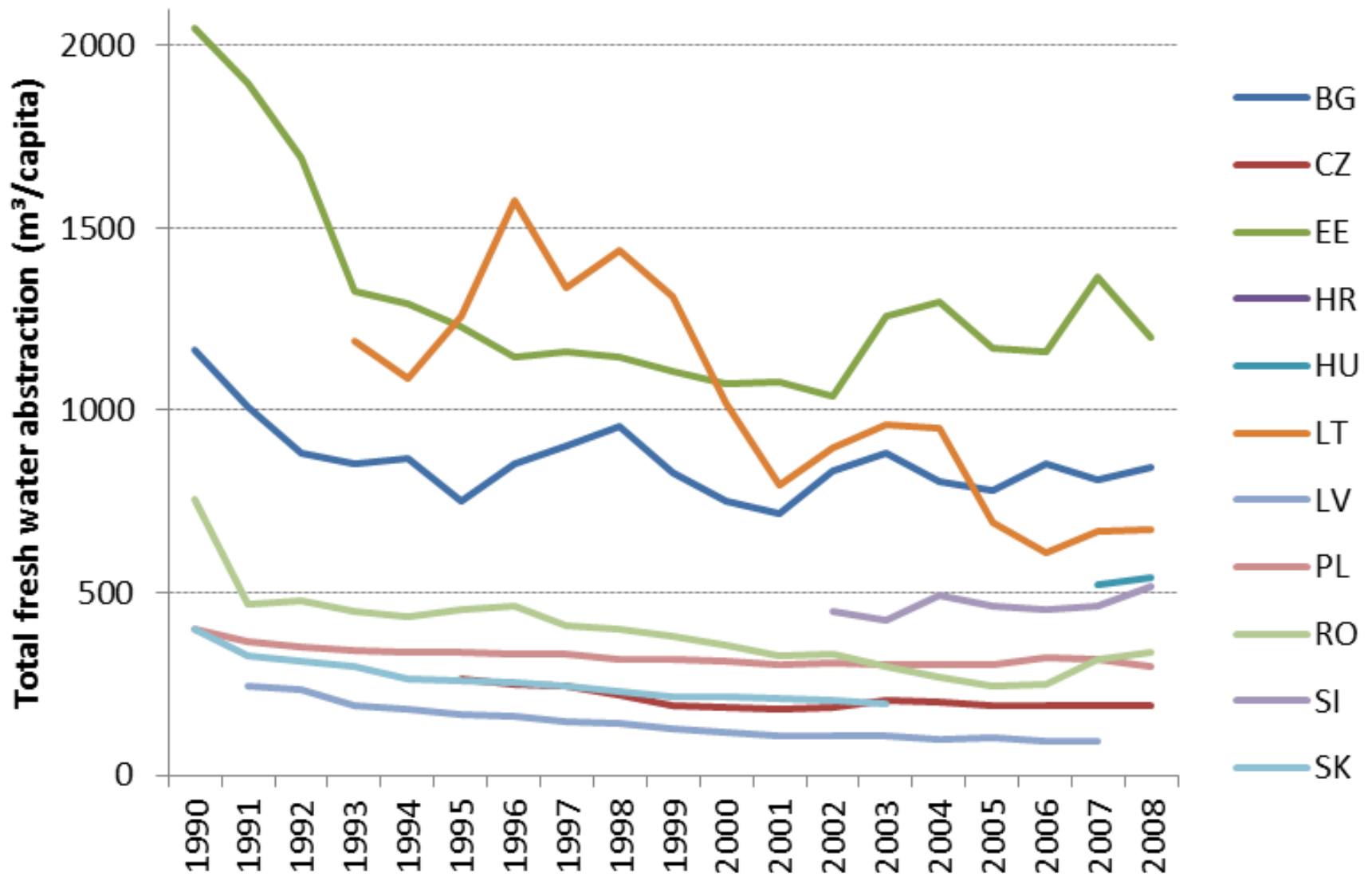




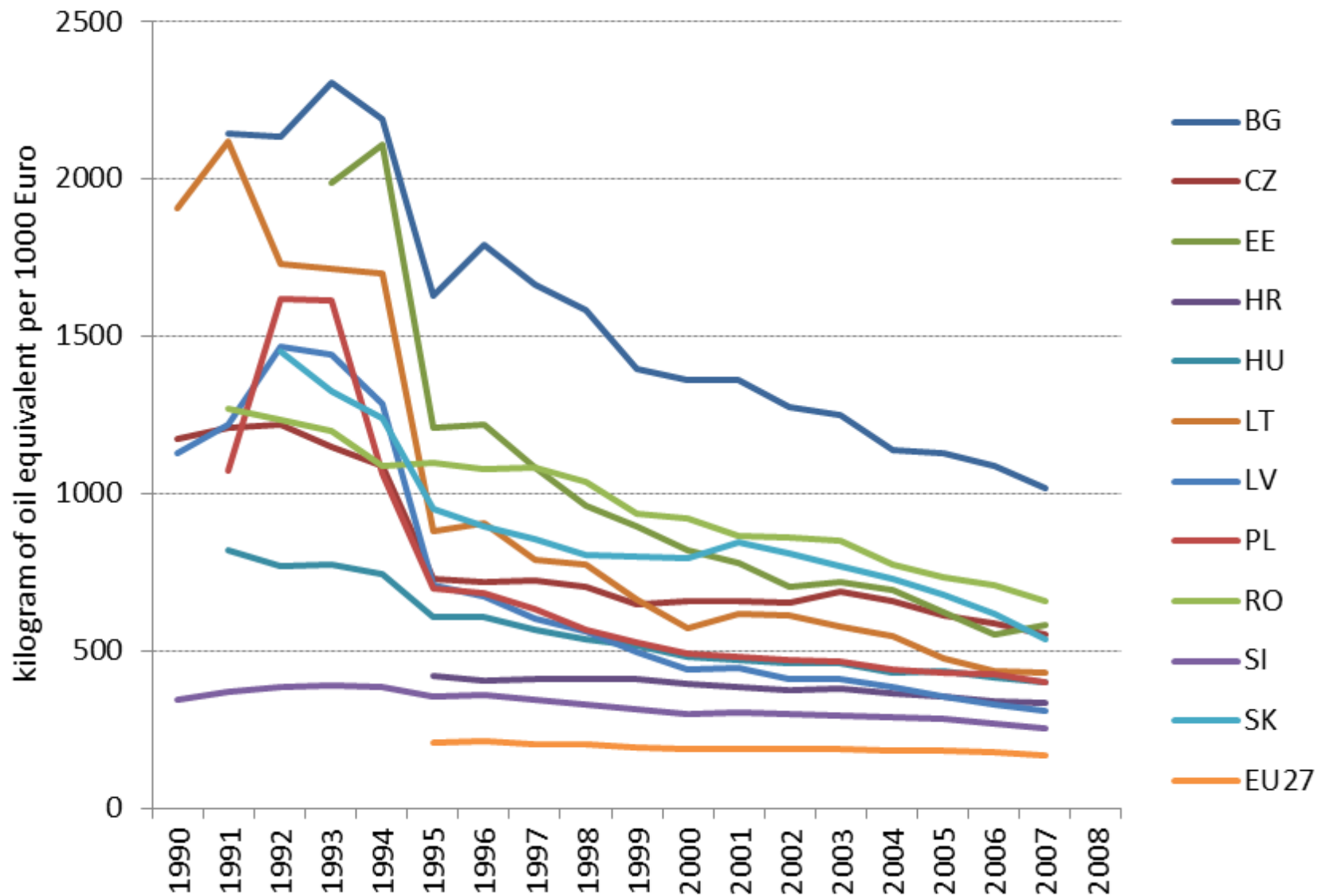


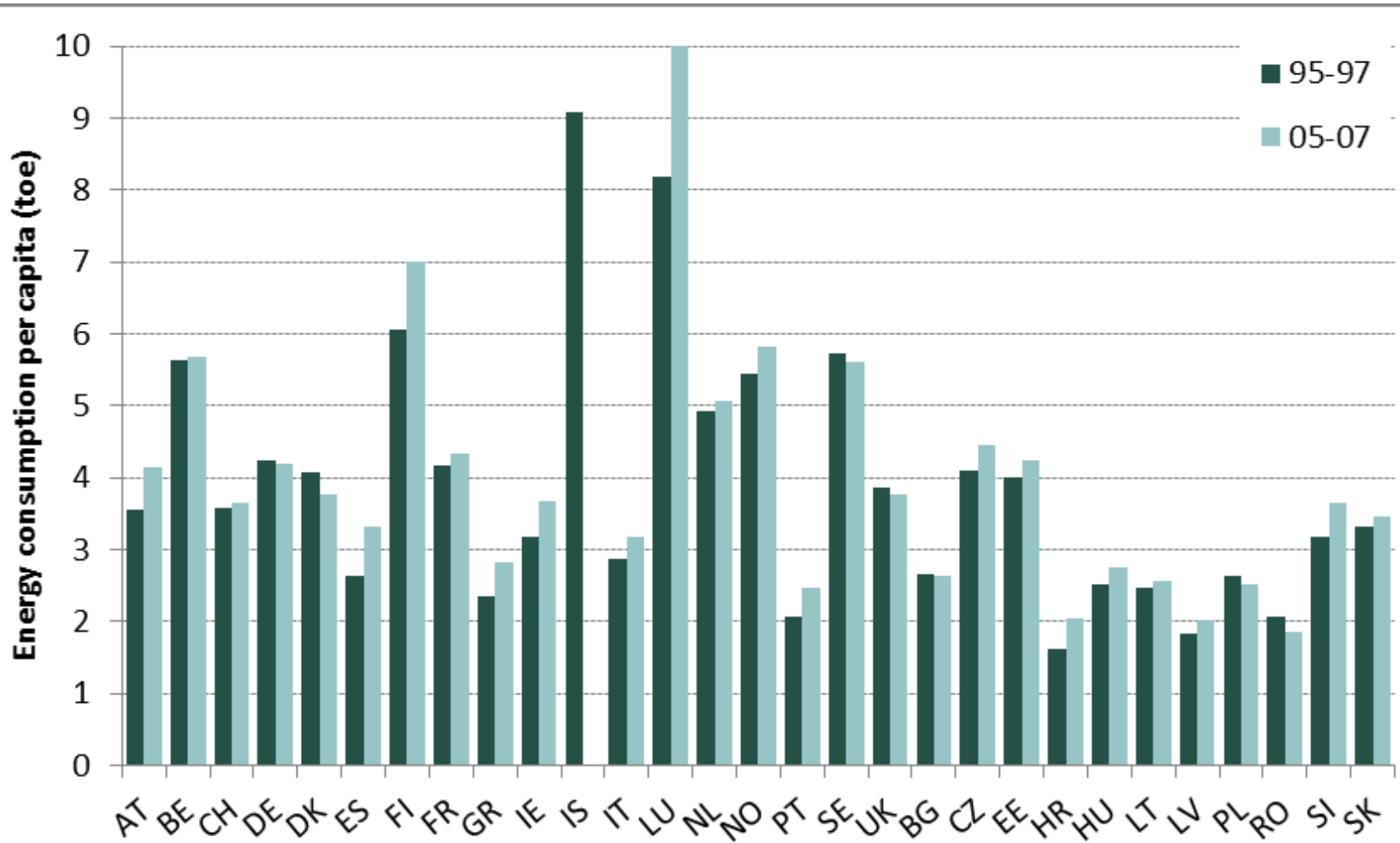


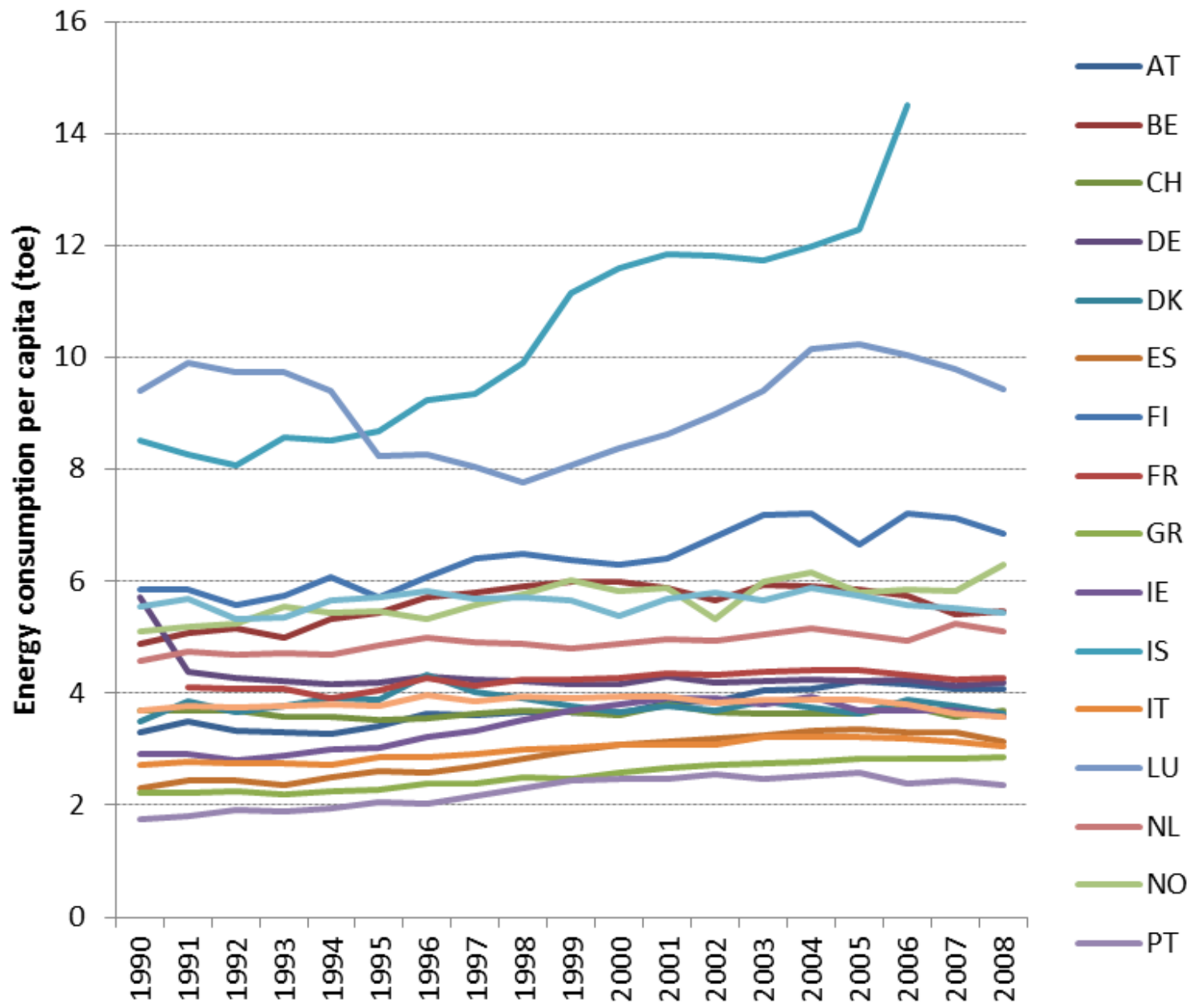


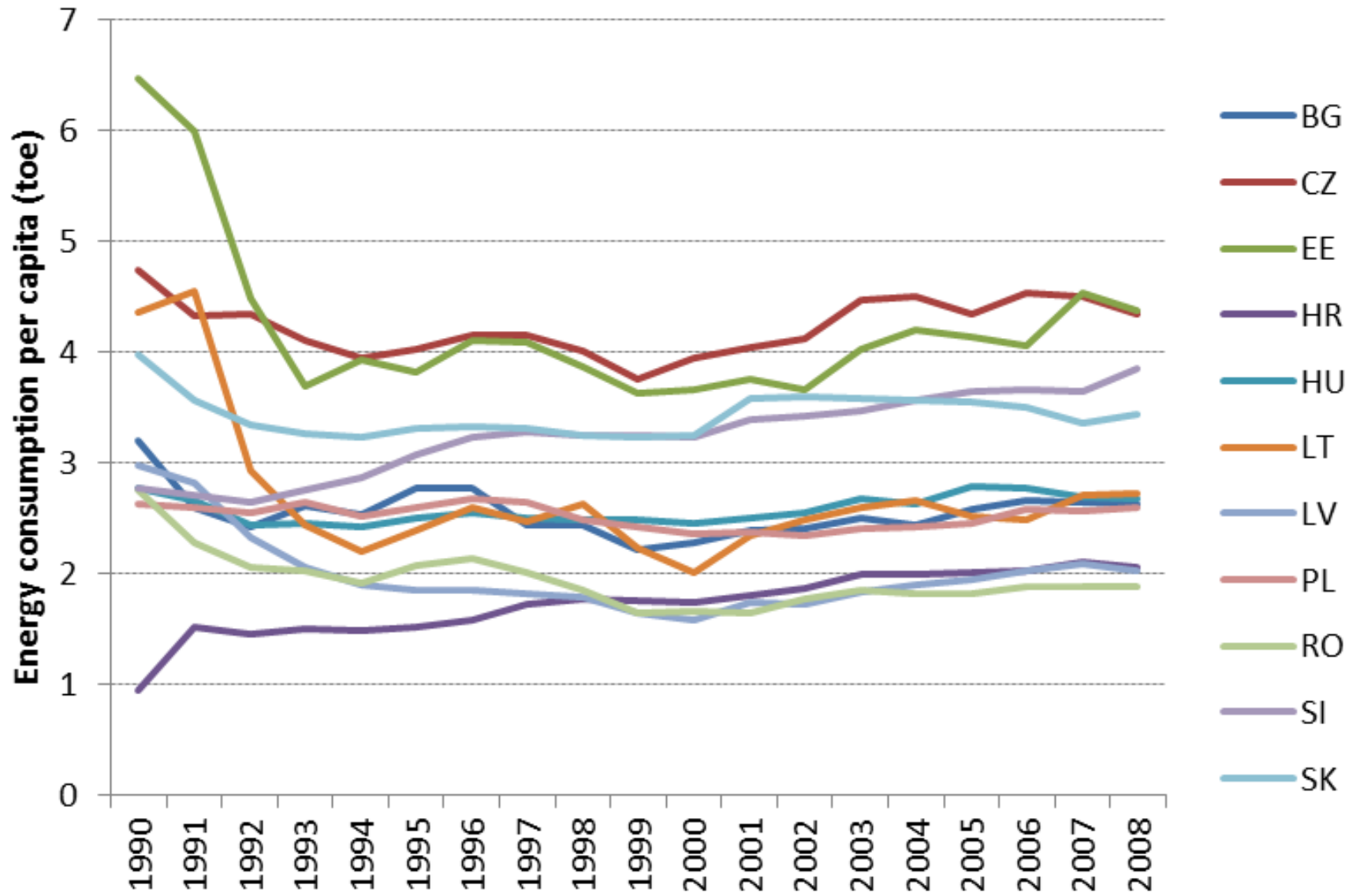


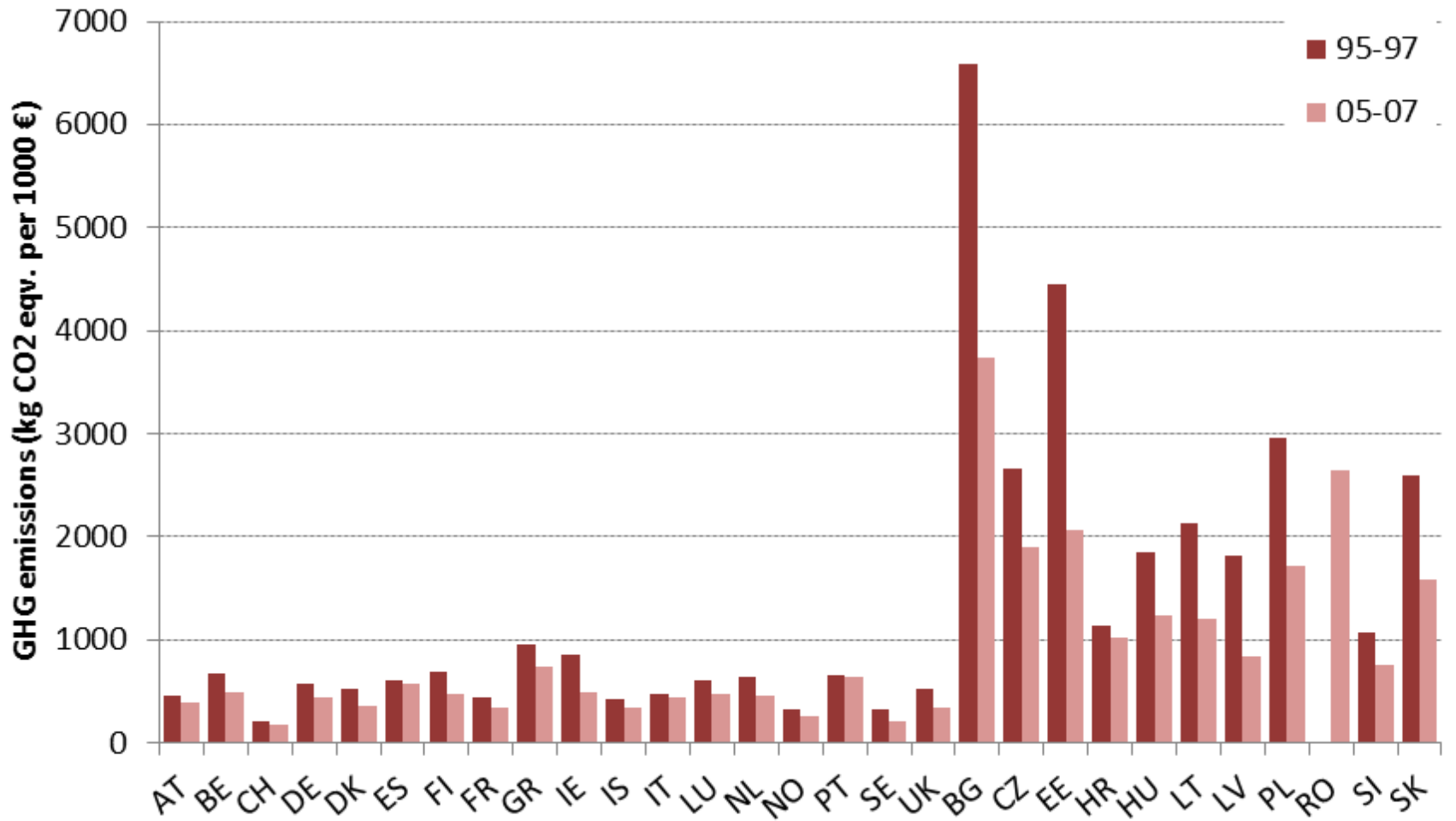
## Energy intensity

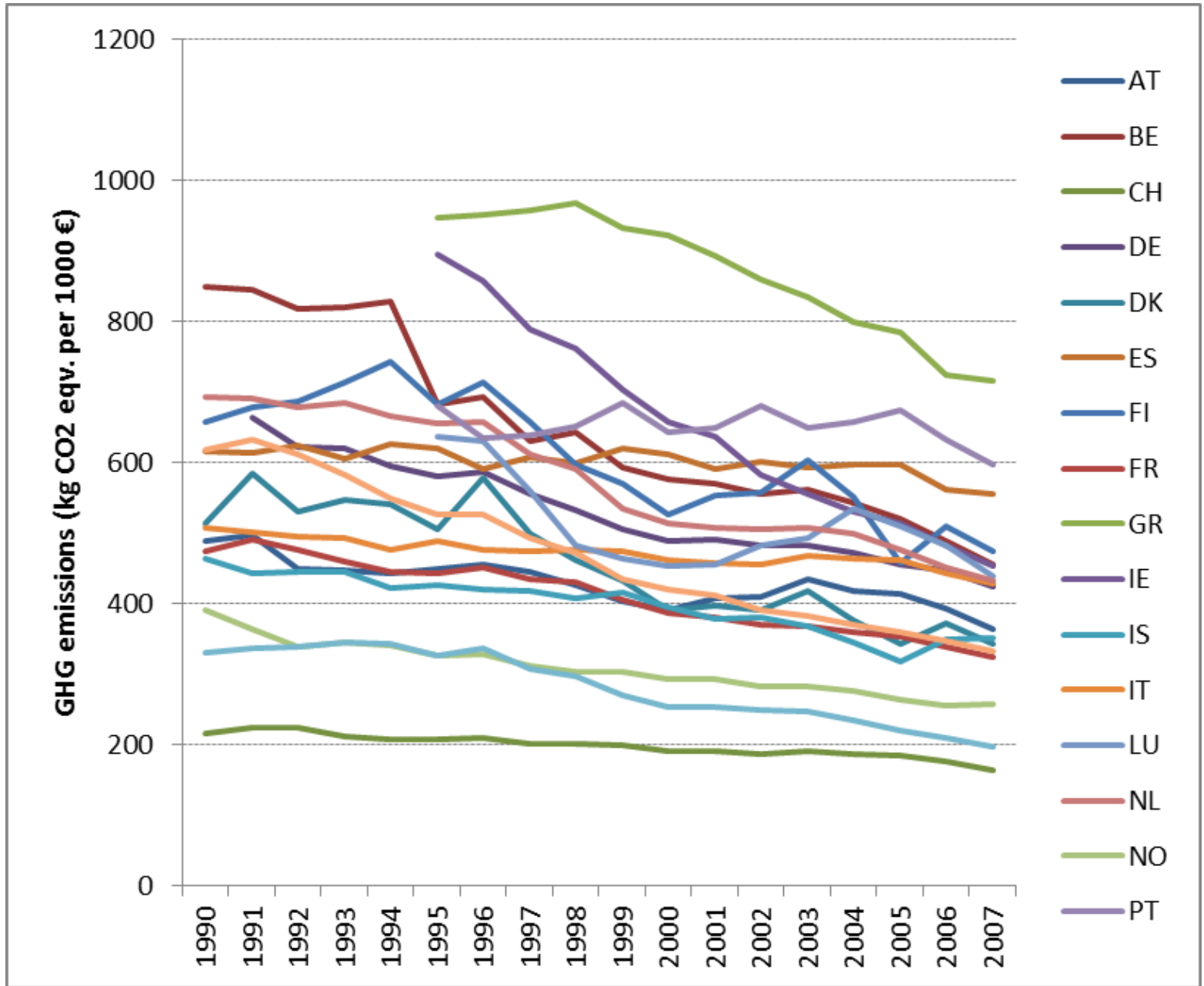


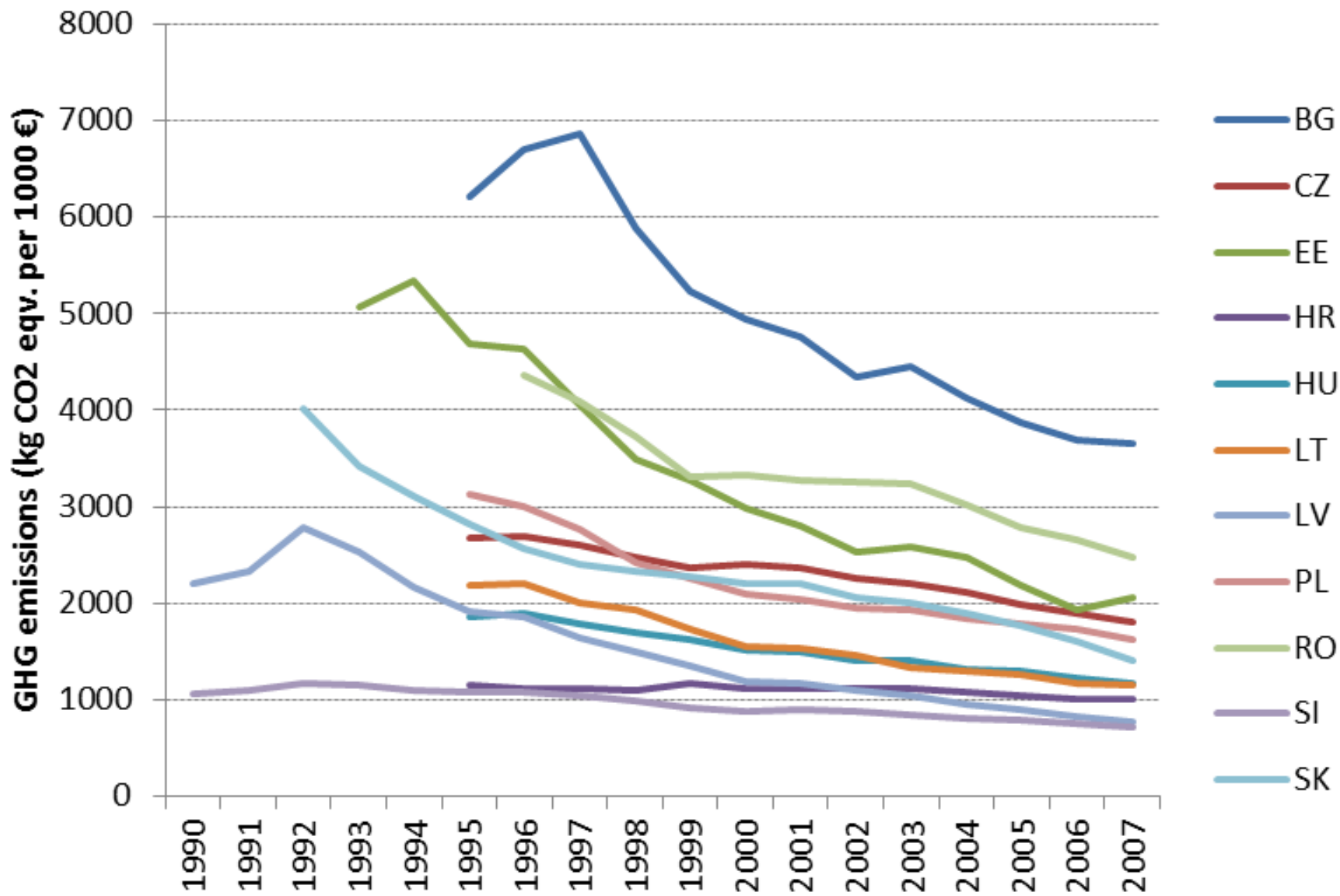


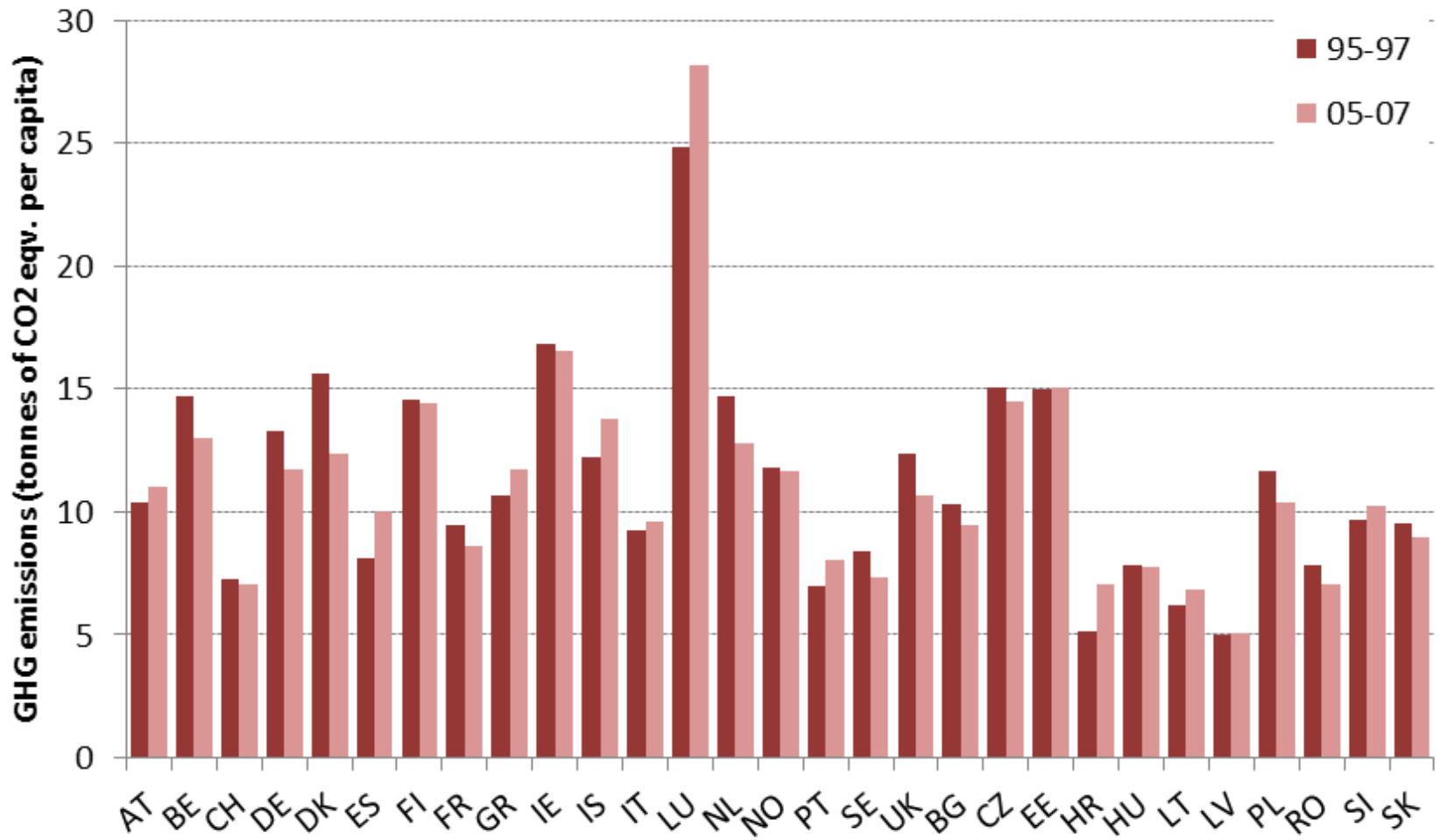


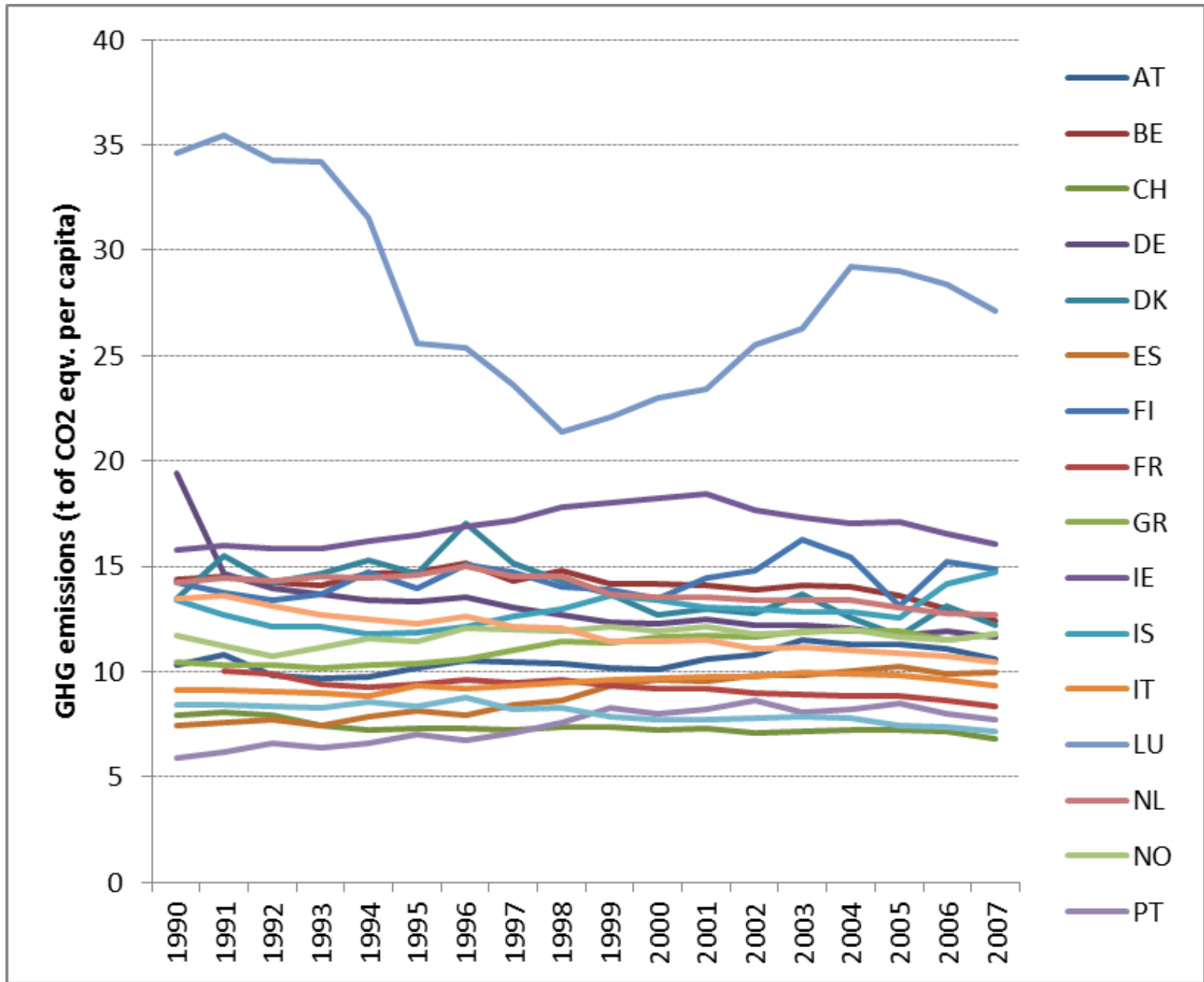


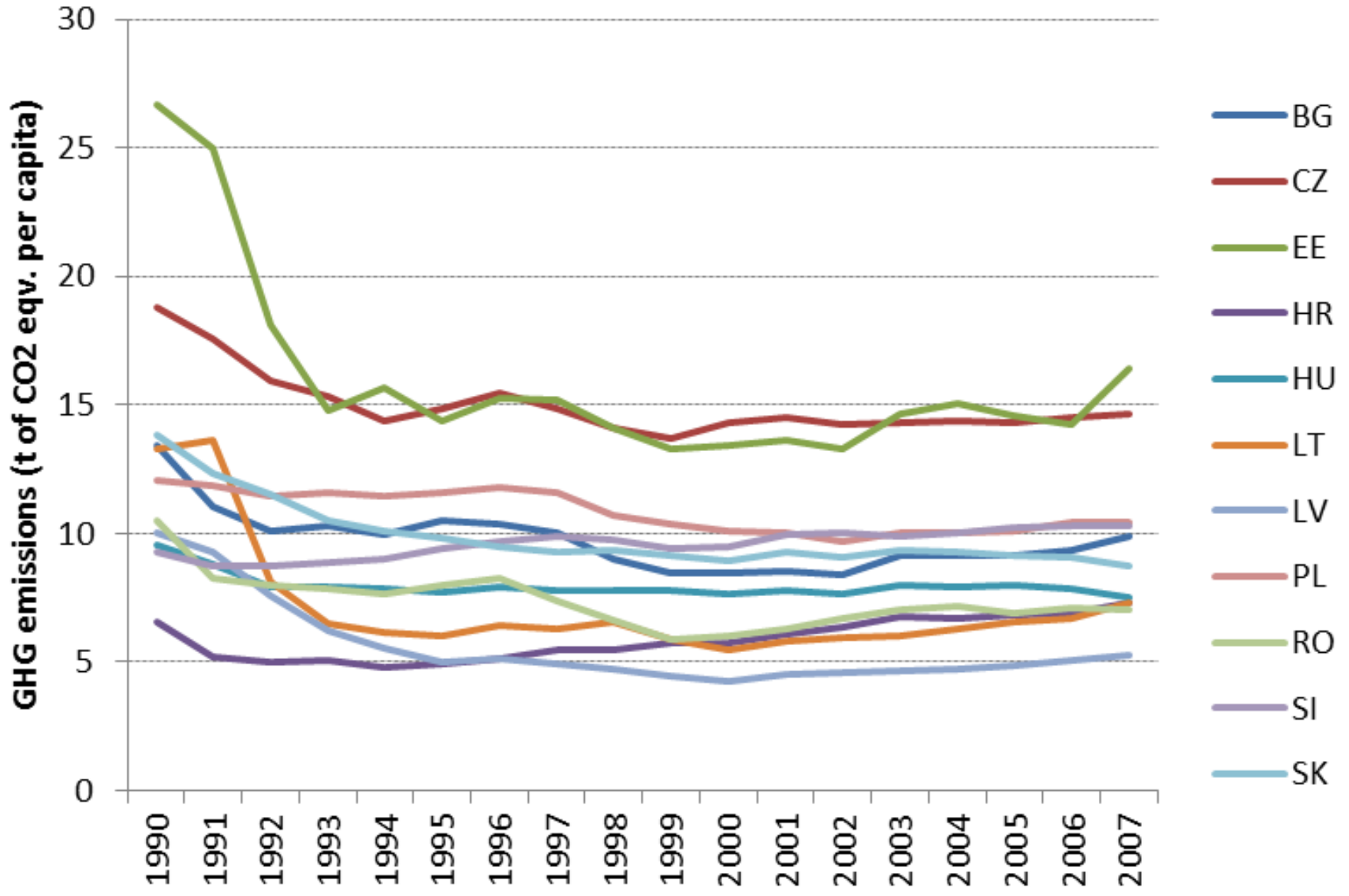




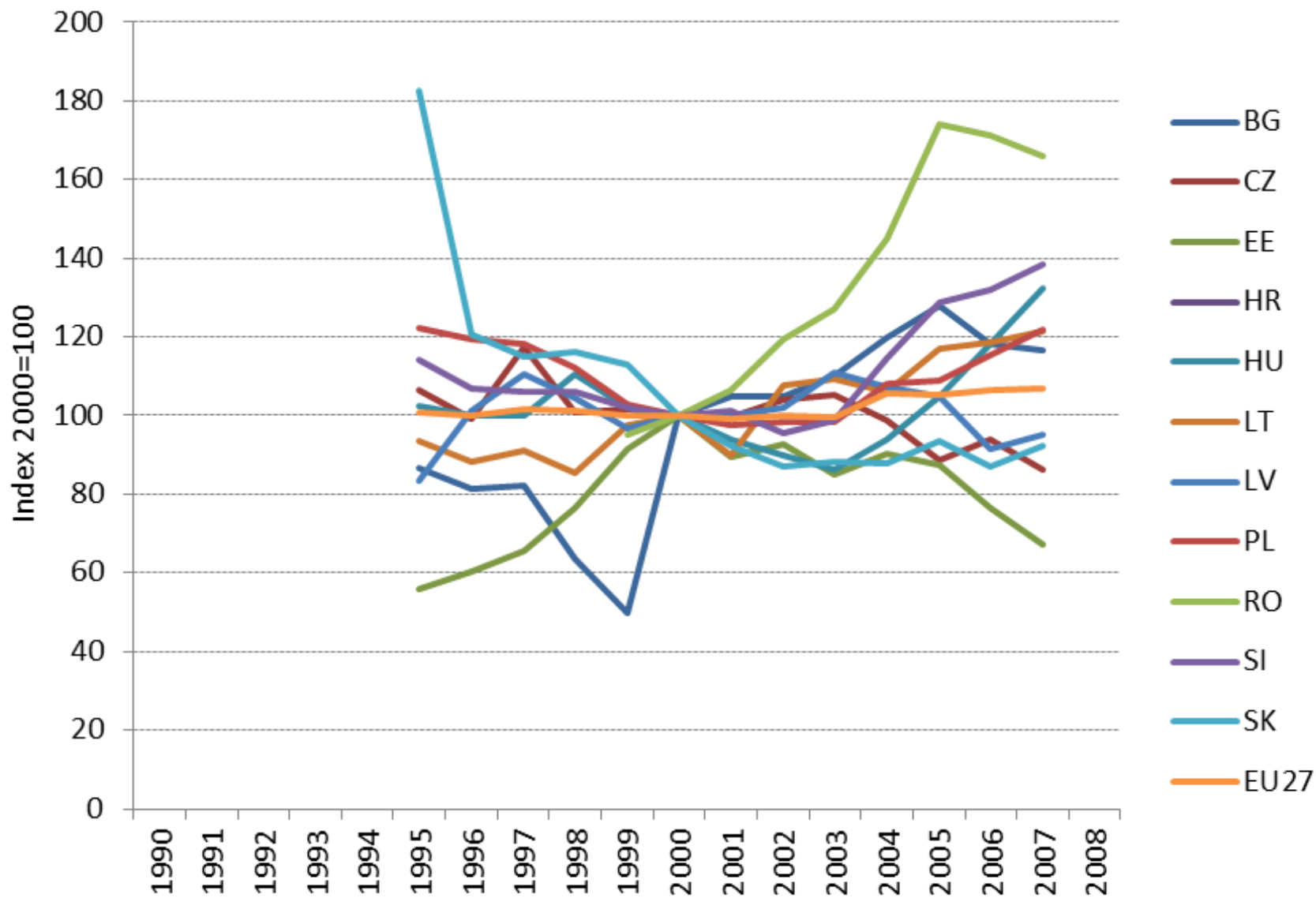




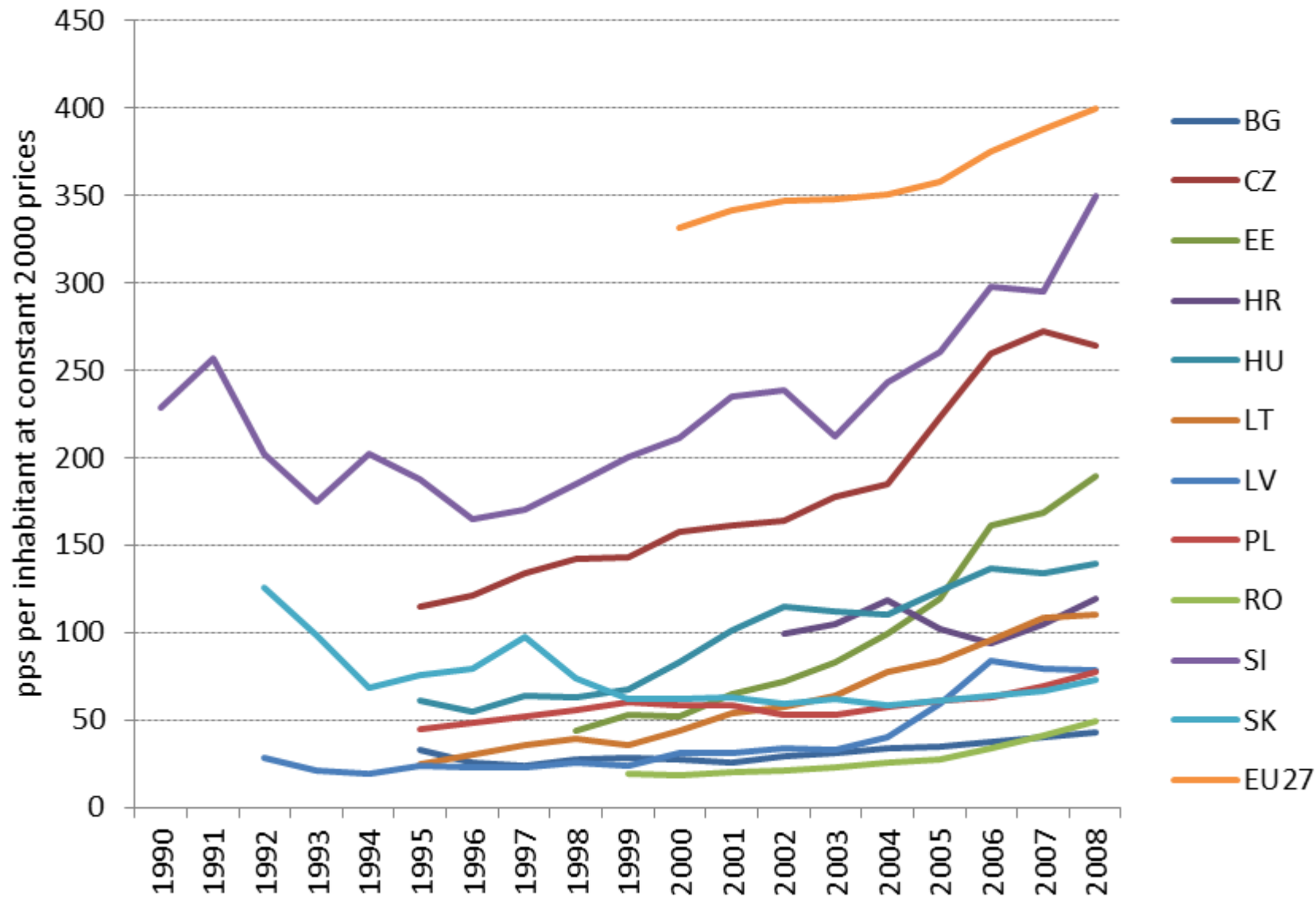




## Freight transport



## GERD per capita



## 5. Main insights

Statistical analyses:

Confirm many obvious and well-known relations:

- Res. efficiency: richer – more efficient – richer
- Res. use: richer – more use – richer?

Challenge: rate of Res effic  $\gg$  rate of Res use

Reveal some interesting cases, less well-known:

- Res. use effic CEE  $\ll$  EU-15
- Res. use per capita  $\ll$  EU-15

Challenge: techn.dev.path to increase effic but avoid increasing Res use per capita

## Main-Stream – Beyond GDP indicators:

- GDP is an important component of many BGDP indicators
- Consolidating indicators of Res and Env bads into indexes: difficult and controversial
- Beyond GDP Res&Env indicators reflect difference between EU15+ and CEE countries
- Relations confirm expectations: many Beyond-GDP resource and some environmental indicators/indices correlate with GDP, at least to some extent

Thank you.