



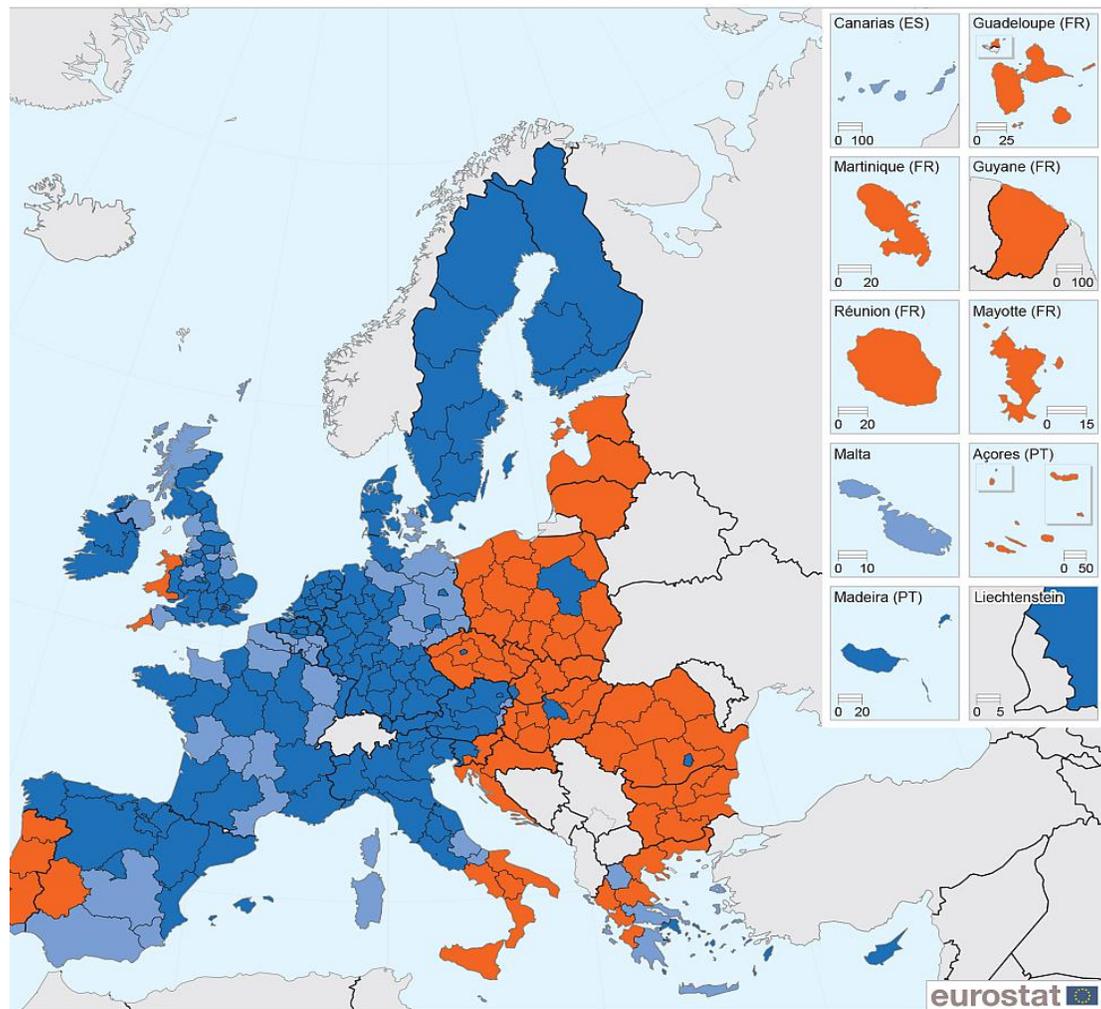
Pathways of energy transition in Central Europe

4th Central European Day of Energy
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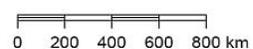
GDP per capita (PPS) in the EU regions and countries



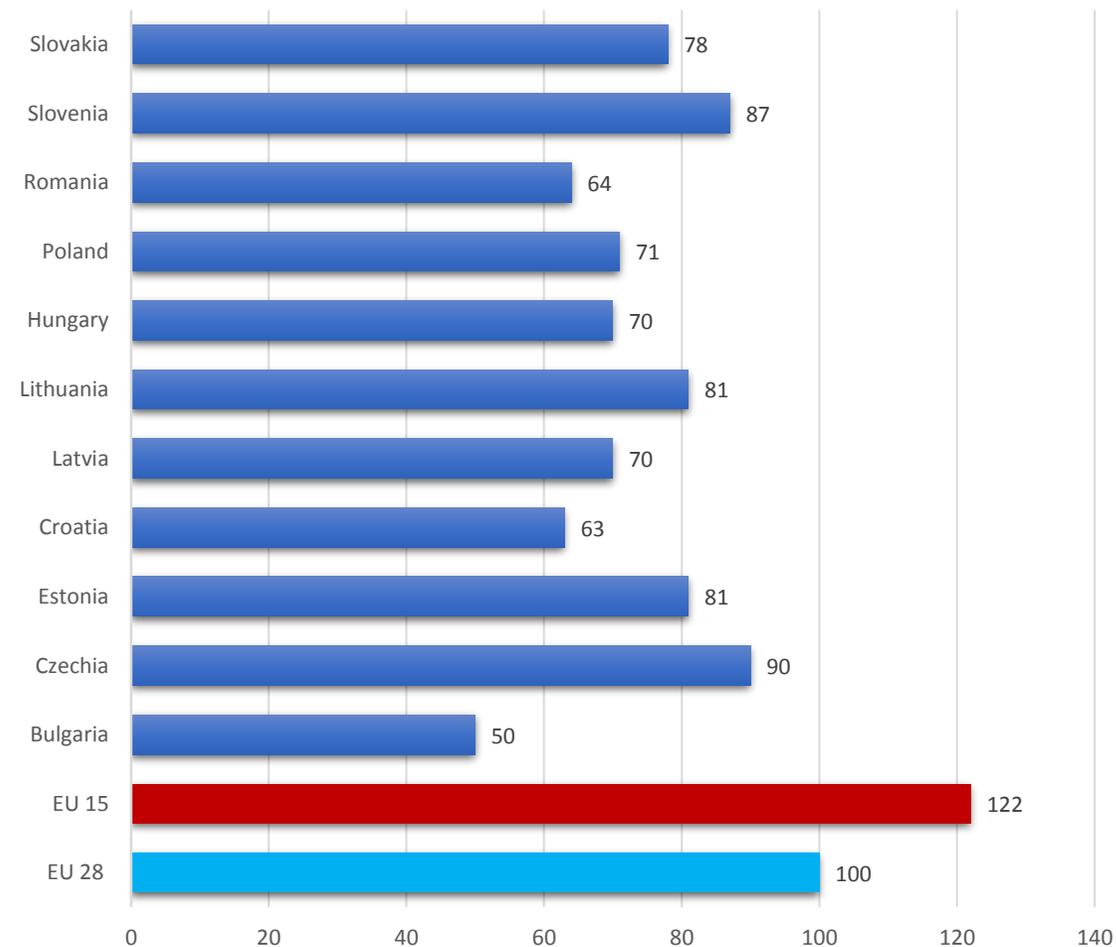
of EU-27 average)

Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat
Cartography: Eurostat — GISCO, 04/2017

- Less developed regions (GDP per inhabitant, < 75)
- Transition regions (GDP per inhabitant, ≥ 75 – < 90)
- More developed regions (GDP per inhabitant, ≥ 90)

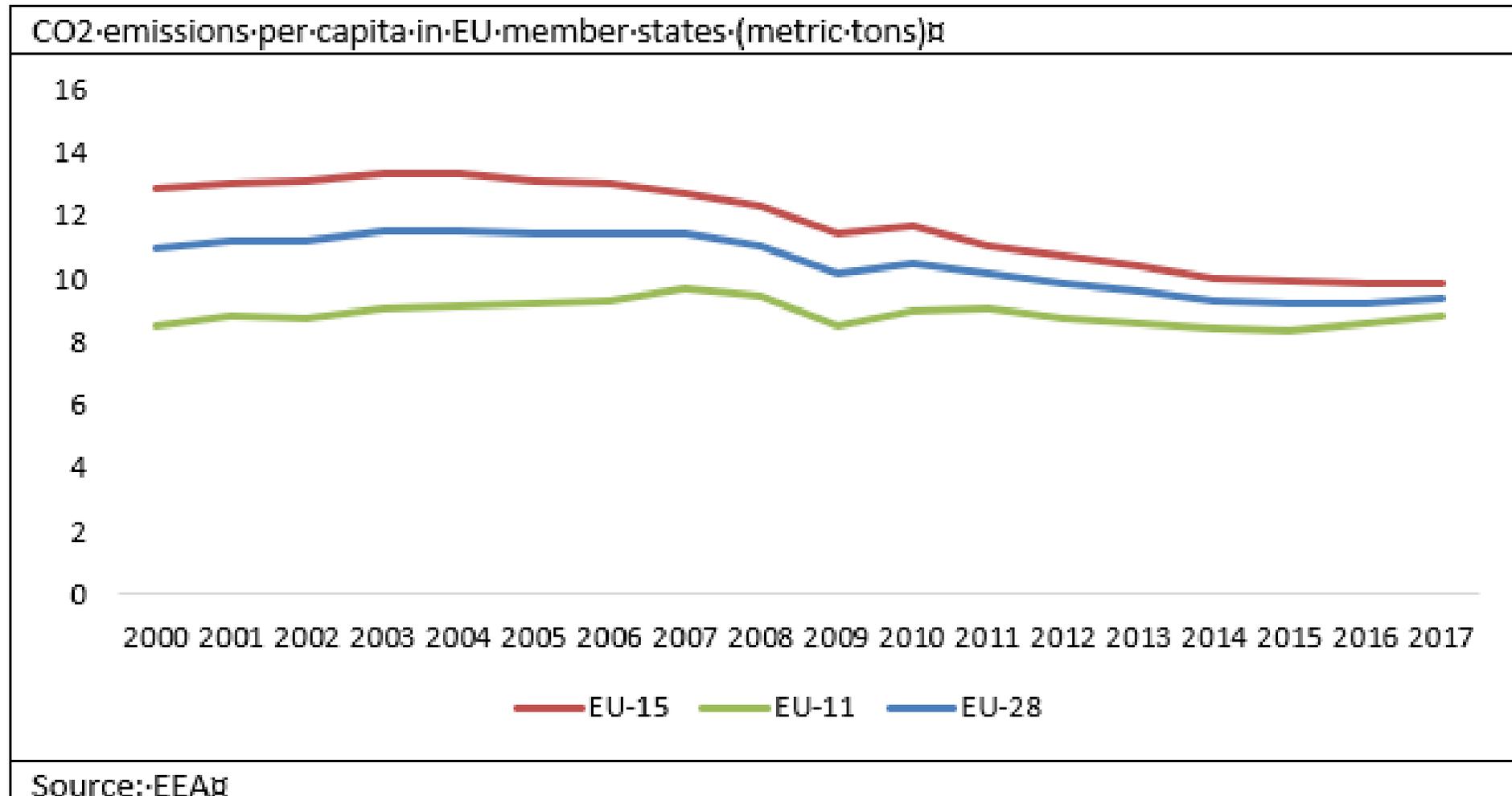


GDP per capita in PPS, 2018



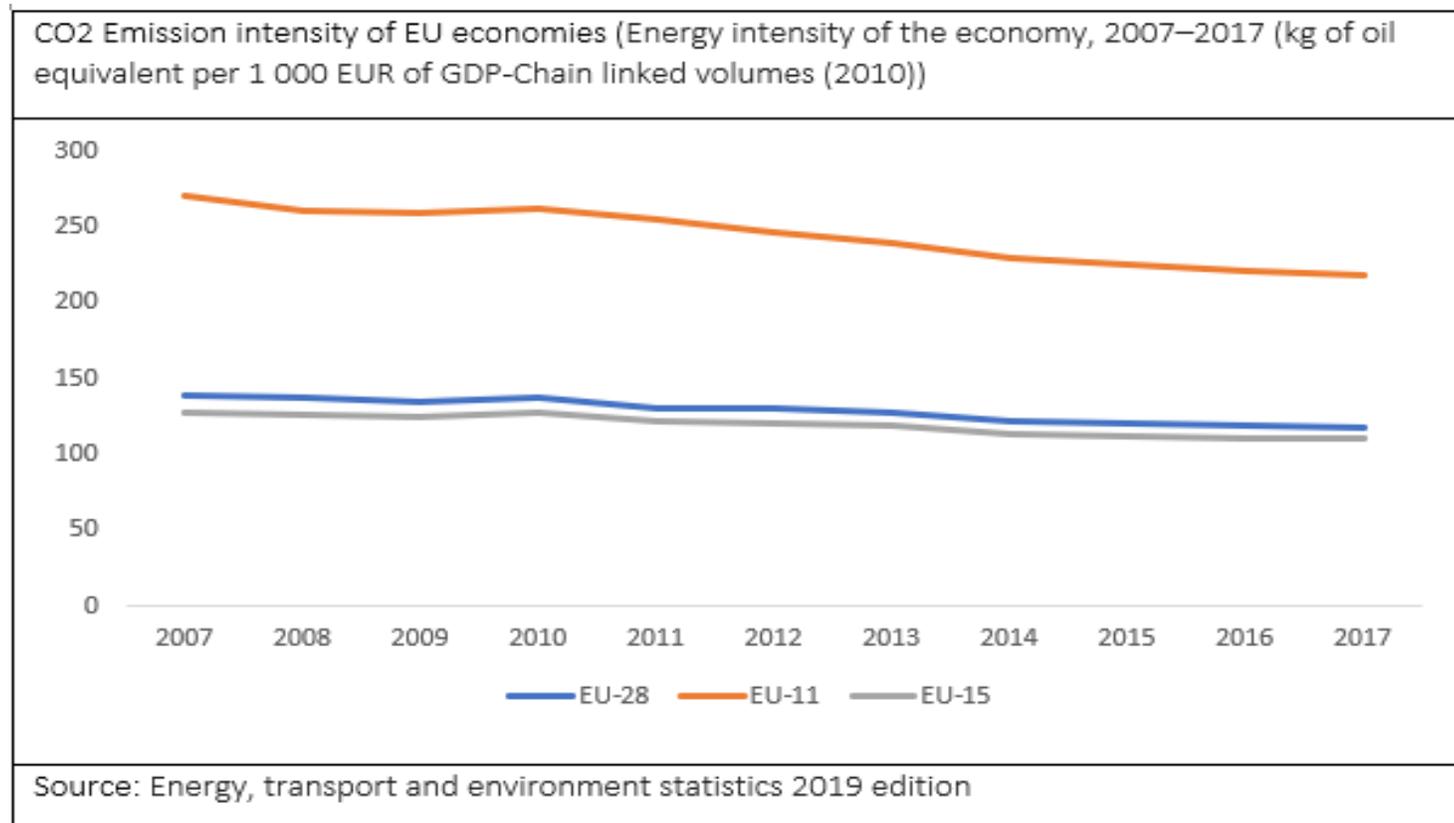
Emissions reductions – status quo

The level of the emission per capita in Central European MS is lower than in the EU-15

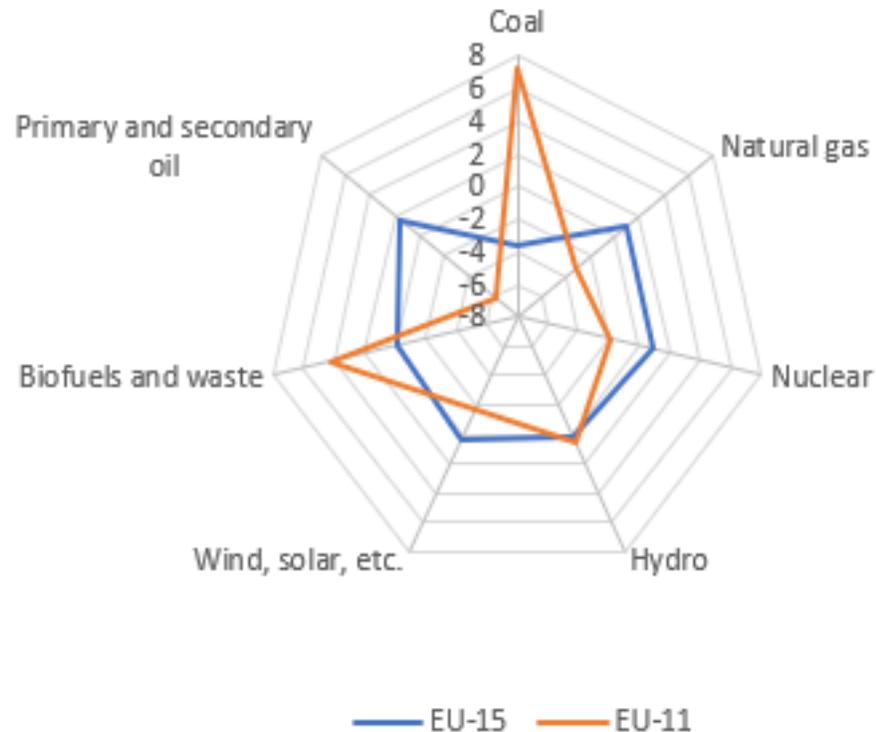


CO2 emission intensity

- The main remaining problem is high emission intensity of the EU-11 economies
- Meeting ambitious targets requires that EU-11 needs to adopt faster the low-emission technologies than the EU-15



Share of particular energy sources in total primary energy supply

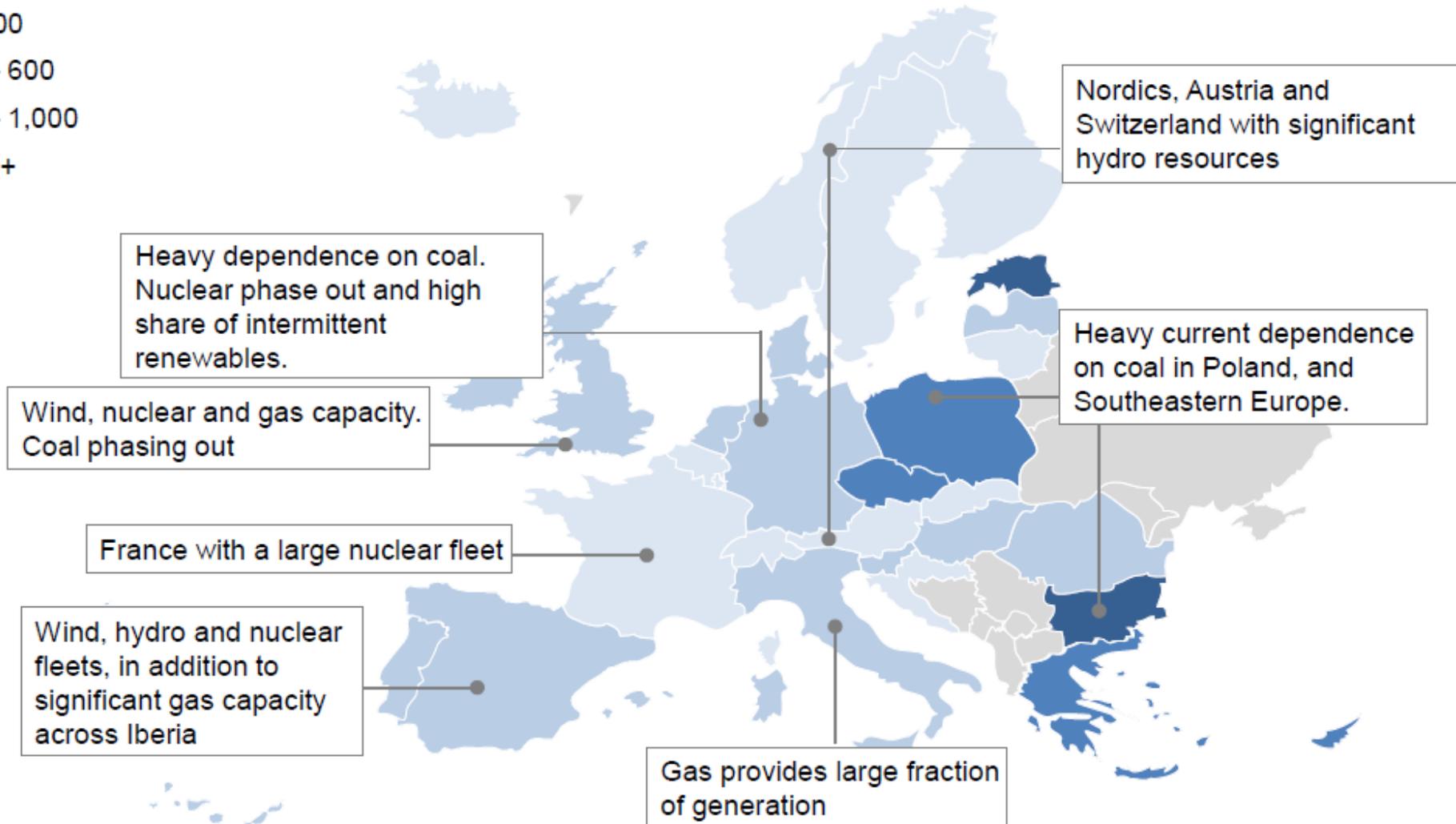
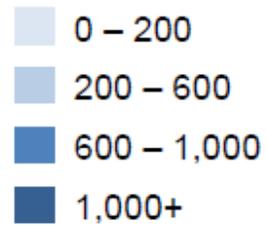


- Higher dependency on fossil fuels, particularly hard coal and lignite, less on gas and oil
- Modernisation, integration and redesigning of energy systems needs more efforts
- The transition needs structural changes from centralised system towards decentralised one
- In order to meet EU targets, EU-11 must transform its generation portfolio relatively faster than EU-15

Source: IEA

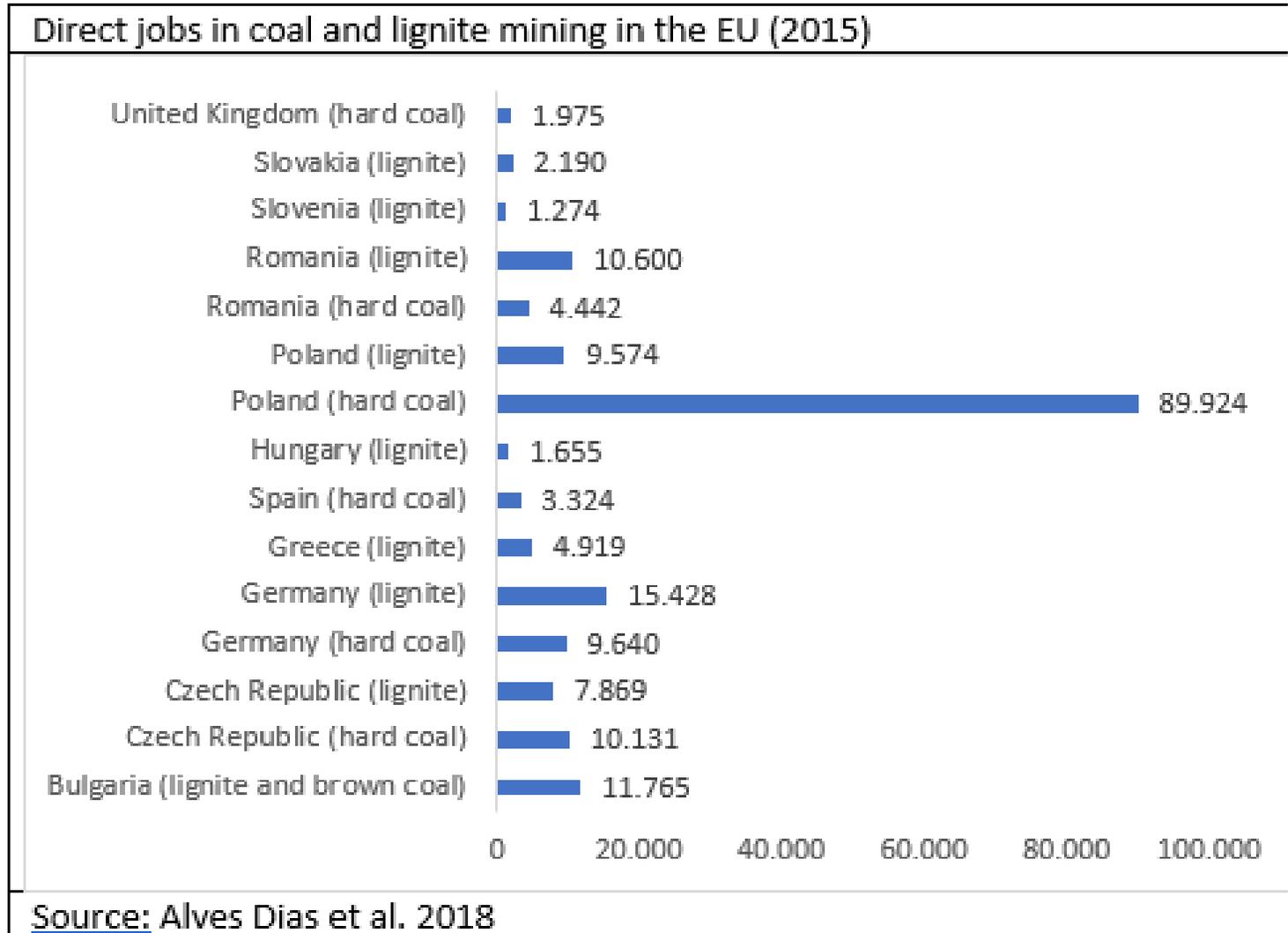
Different starting point for the transition

2015 carbon intensity of electricity¹, kg CO₂/MWh



Coal dependent regions

- Most jobs in coal and lignite mining sector falls on the EU-11
- In 2015, from 185.000 jobs in the sector almost 150.000 were in EU-11
- Coal regions in EU-11 are dependent both on production and consumption of coal
- Coal regions in EU-15, except for some German and Spanish regions, are no longer producing coal
- Additionally, employment in coal fired power plants in the EU amounts 52.600 of jobs.
- Almost half of this jobs (25.000) are in EU-11.



Costs of energy transition

- Costs of the transition differs depend on the assumed models but still figures are staggering
- Study by ITRE committee indicates that an annual cost of transition between 2021 and 2050 will be between **95 and 145 bn EUR annually**
- The impact assessments of the Clean Energy legislation estimate that the delivery of the Union's 2030 energy targets will require **additional investments of 177 bn EUR annually** in the period 2021-2030.
- Study by eurelectric indicates, that the cumulative capital investment cost of energy transition between 2020 and 2030 for the EU would be **between 677 and 885 bn EUR** which translates to **89-111 bn EUR annually** depend on the scenario (80-95% of decarbonisation)
- Total CAPEX for **Poland**, the most characteristic case to deliver 80% GHG reduction scenario by 2045 would be equal to **147 bn EUR** (excluding grid and storage). Additionally the energy sector will have to bear **costs of CO2** of approx. **68-85 bn EUR** in the period 2020-2045
- Long Term Climate Strategy assumes that investments in low-carbon energy and related infrastructure have to increase from an annual **2% of EU's GDP to 2.8% or to EUR 520-575 bn** for carbon neutrality to be reached by 2050. This means considerable additional investments in the range of **EUR 175 to 290 bn a year**
- **Cost of capital in the EU-11** is higher which constitute an important barrier and slow down the deployment of RES

Transition pathways

- Energy transition pathways in Central Europe will vary from one country to another depending on the energy-mix, local natural resources and financial capabilities.
- The energy systems are changing: steady deployment of RES, phasing out of old thermal plants.
- In Poland there is already 5.8 GW of wind and 1.2 GW of PV, in Romania 3 GW of wind and 1.4 GW of PV
- Off-shore wind: in Poland plans up to 6 GW and Lithuania plans to have 700 MW by 2030
- Among the EU-11 seven countries have already reached the target for 2020.
- Coal generation still in the energy-mixes by 2040
- In the most cases a “switch to gas” option is considered to be the best transition pathway.
- Slovakia, Hungary, Bulgaria, Czechia, Poland and Romania are looking at extending or introducing nuclear power.
- Modest projects related to the energy storage development.

Support for energy transition by the EU

- The EU has various programmes and funds dealing with the energy transition.
- Most of them has been available for EU-11 in current financial perspectives and have been used by several MS as a primary or additional source for funding energy related investments
 - Cohesion Fund: 17 bn EUR for climate change and energy purposes
 - ERDF: 37 bn EUR for climate change and energy purposes
 - CEF: 6 bn EUR
 - Horizon 2020: 6 bn EUR
 - European Energy Programme for Recovery: 4 bn EUR
- European Investment Bank helps finance energy projects by providing companies with loans and other financial instruments. EIB also provides advice and expertise on administration and project development.
- The European Fund for Strategic Investments aims to mobilise private investment in projects which are strategically important for the EU, including the areas of energy efficiency, RES, power grids and interconnectors.
- Assuming the rise of targets, the spending should be equally increased
- Negotiations on MFF 2021-2027 are on going but starting from 2021:
 - No possibility for gas in EIB
 - No possibility for gas in CF
 - No possibility for gas and nuclear in taxonomy

4th Phase of EU ETS (2021-2030)

- Modernisation Fund can become an important facilitator of transformation
- However, the sourcing is not sufficient to have significant impact on transition

Country	Percentage of Modernisation Fund	Base Scenario (2%) – number of allowances over P4 (in millions)	Estimated value over P4 (in millions) – 20€/ton	Estimated value over P4 (in millions) – 35€/ton
Bulgaria	5,84 %	18.43	368.62	645.09
Croatia	3,14 %	9.91	198.20	346.85
Czech Republic	15,59 %	49.20	984.04	1722.08
Estonia	2,78 %	8.77	175.47	307.08
Hungary	7,12 %	22.47	449.42	786.48
Latvia	1,44 %	4.54	90.89	159.06
Lithuania	2,57 %	8.11	162.22	283.88
Poland	43,41 %	137.00	2740.05	4795.08
Romania	11,98 %	37.81	756.18	1323.31
Slovakia	6,13 %	19.35	386.93	677.12
Total	100%	315.60	6312.02	11046.03

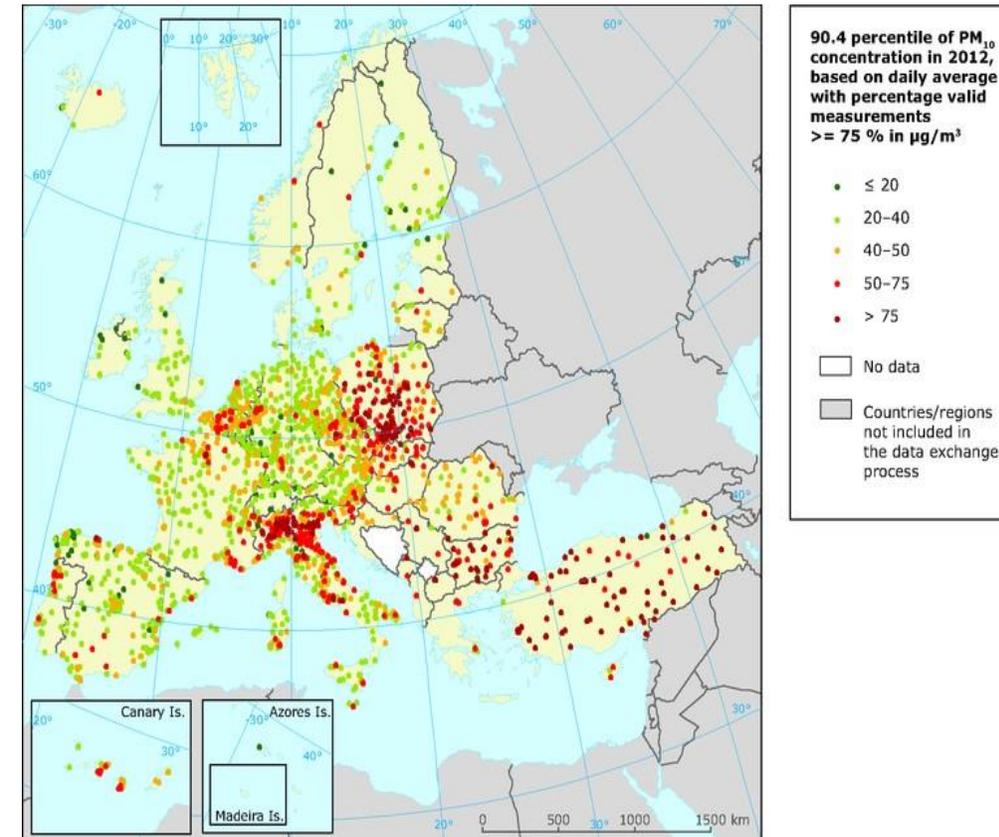
Costs by 2030:
Between **677 and 885 bn EUR**

Recommendations (1)

- We strongly support the establishment of **Just Energy Transition Fund (JET Fund)**, a tool of supporting and mitigating the changes for those regions and countries for which this transition is much more difficult and costly.
- The JET fund should support companies, local communities but also citizens in investing in low carbon technologies in these regions or countries.
- The financial means should be much larger than the EUR 4.8 bn as proposed by the European Parliament. Reallocation from other sources is not satisfying option.
- In the EU-11 countries the energy transition is also a **social and political challenge**. Specific regions can be particularly affected and this requires special approach and support.
- New, targeted resources are needed to address the issue of coal-mining regions which will be most exposed to paying the costs of transformation. **Programmes linking retraining requirements with investment in households' energy efficiency or distributed energy systems** seem to be a viable option.
- Wider deployment of RES requires **reduction of capital costs** within the EU-11. Regional differences could be balanced by different instruments such as green bonds amongst others. The EU can also have a role in this field.
- **Research and development** policies need to support the most advanced technological research but also offer geographically balanced collaboration programmes.

Recommendations (2)

- In most EU-11 countries, gas will play a leading role in transition in the medium term. As the gas infrastructure in those countries is still underdeveloped, it will require to finalise the projects: completing the strategic gas infrastructure: LNG terminals, interconnectors and distribution grids.
- We would recommend the EU institutions to continue their policies in **supporting gas infrastructure and highly efficient gas cogeneration.**
- **Air quality** is common problem in the region. Switch from coal to gas in households and local district heating systems can help to improve the situation even in the short term.
- One should remember that in the future gas transmission systems have the potential to transport other fuels, particularly **hydrogen or bio and synthetic gases**





CEEP
Central Europe Energy Partners

Join CEEP in strengthening the idea of energy solidarity within the European Union!

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