

Energy demand dynamics and infrastructure development plans in the EU

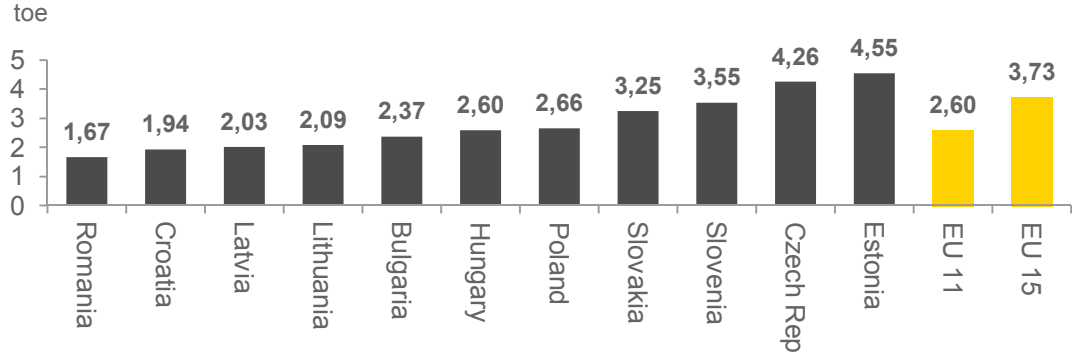
October 10th, 2012

Jonas Akelis, Managing Partner - Baltics

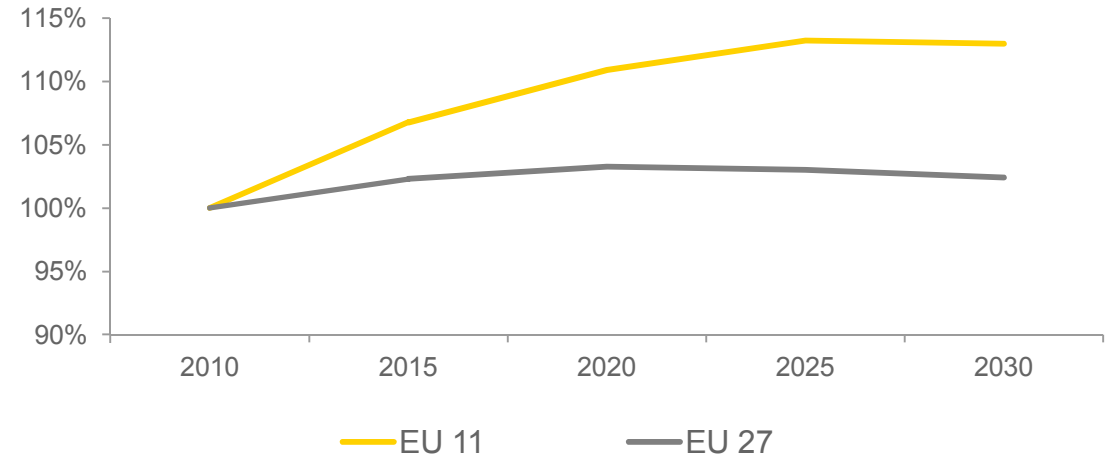


Forecasted energy demand dynamics of EU-11 will be significantly higher than EU-27 and EU-15 averages

Gross Inland Consumption (GIC) of primary energy per capita, toe, 2010



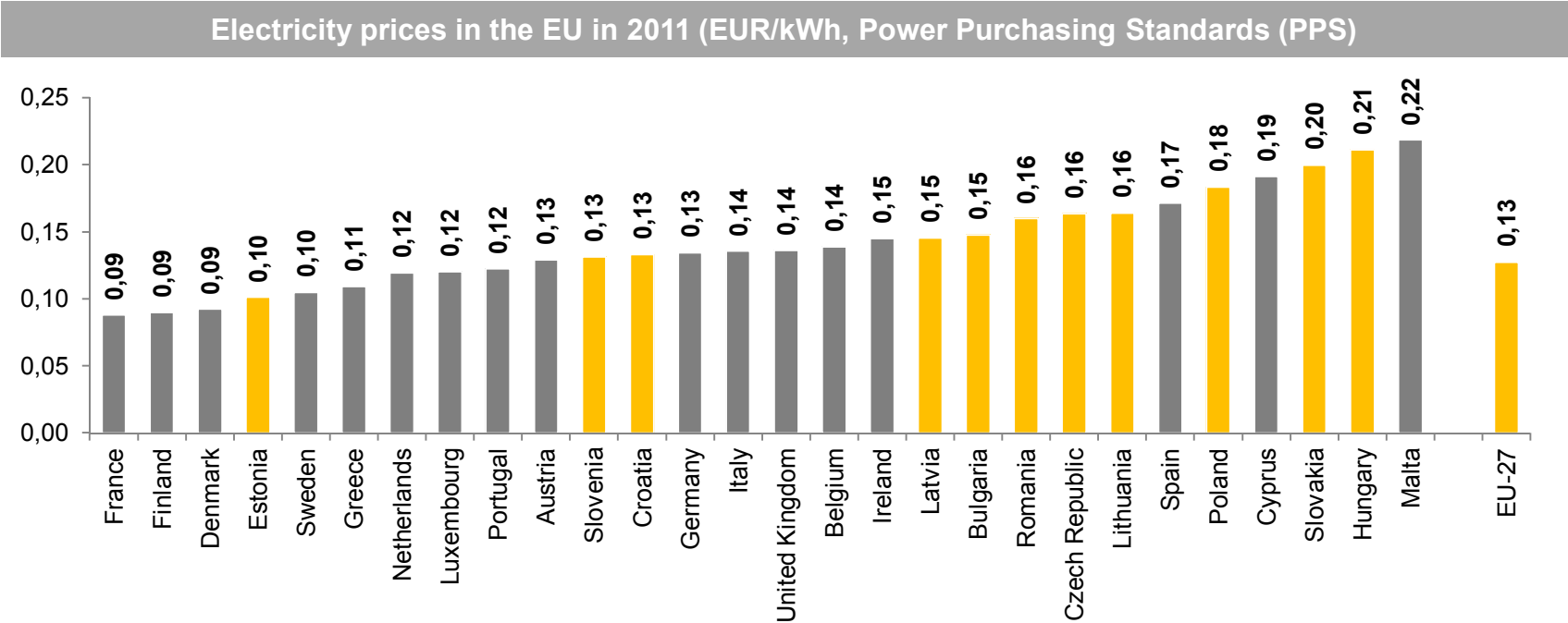
PRIMES baseline EU-11 and EU-27 energy consumption



Source: Eurostat, IHS Global Insight

- Most of the EU-11 countries are characterized by lower gross inland consumption of primary energy per capita than the EU-15 average. In 2010 an average gross inland consumption per capita in EU-11 accounted for only 70% of the EU-15 value.
- According to PRIMES model, energy consumption path will differ in EU-11 and EU-27. While the growth of GIC of primary energy in EU-11 will reach 10-13% in 2010-2030, in case of EU-27 the GIC change will be negligible (baseline scenario) or even negative (reference scenario).

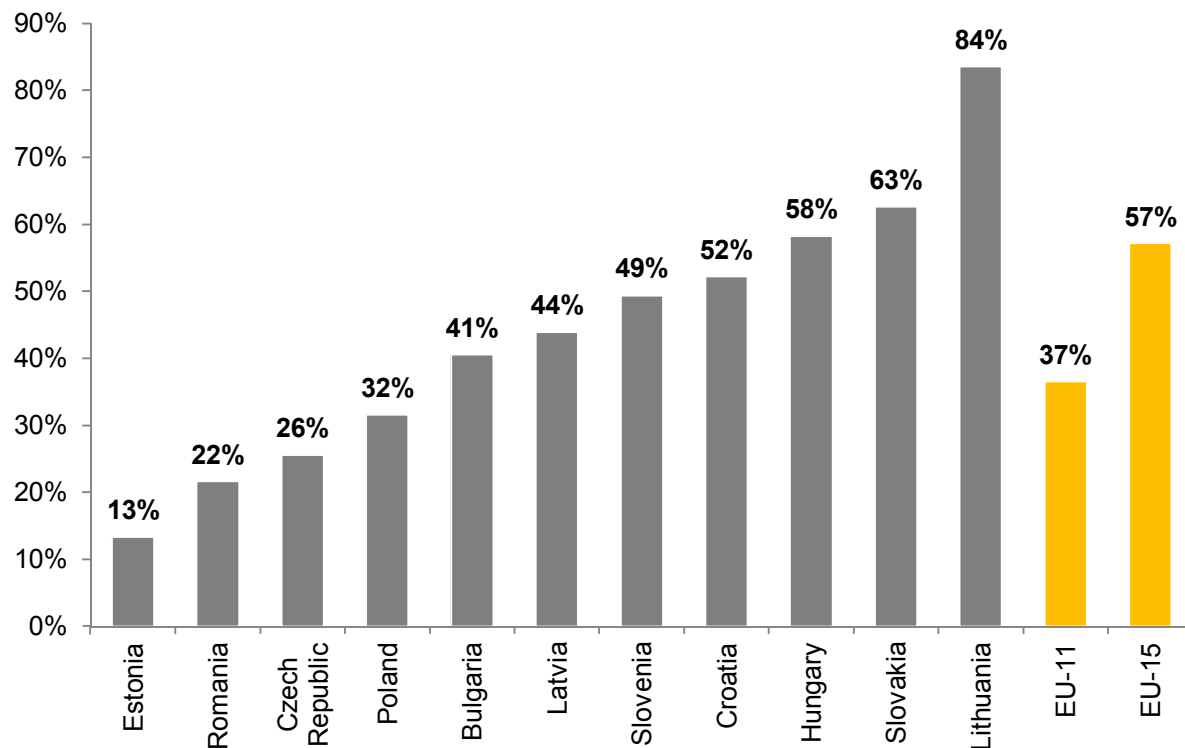
Implementation of the EU policies in EU-11 countries can be especially difficult in terms of economy's competitiveness



Source: Eurostat

- In case of EU-11 higher demand for energy together with strict rules related to environment protection (carbon pricing, RES targets etc.) will inevitably put further pressure on energy pricing in the EU-11

Energy resources (solids, petrol, gas) import dependency is quite significant in EU 27 and reaches 54%



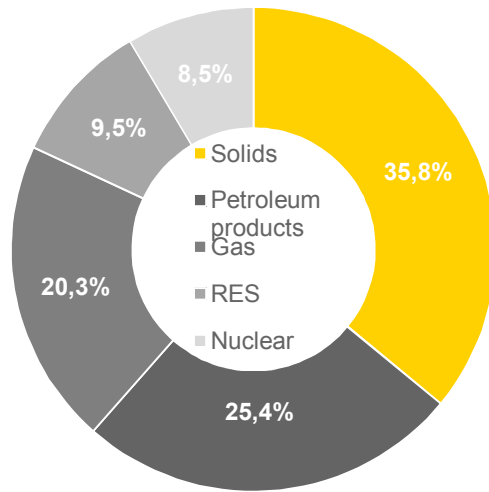
Source: Eurostat

- Low import dependency of some of EU-11 countries is a result of large own resources and export of solid fuels.
- However the implementation of the EU environmental protection regulations will result in lowering of the importance of solids in the energy mix, thus leading to the increase of total import dependency in the region

- With increasing energy demand EU-11 energy policy should especially focus on security of supply issues.
- This calls for vast infrastructure investment and rethinking solid's role in the energy balances of the EU-11 region

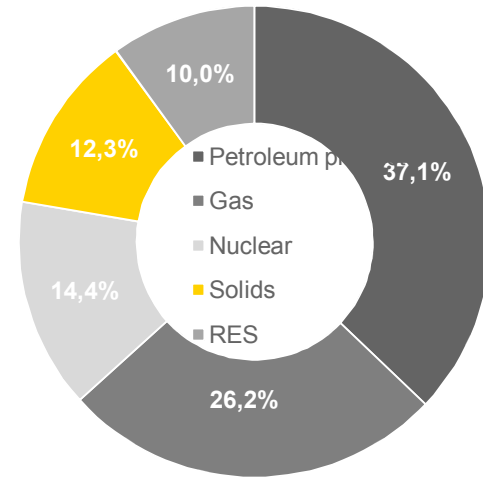
Achieving 'Roadmap 2050' targets will be more difficult for EU-11 mainly due to currently higher share of solids

GIC mix in EU-11, 2010



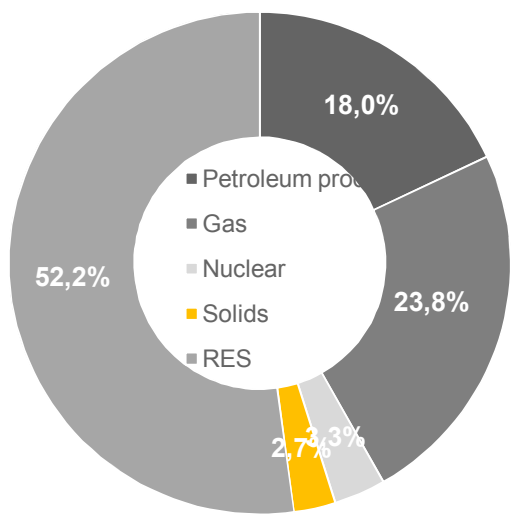
Total: 277 Mtoe

GIC mix in EU-15, 2010



Total: 1486 Mtoe

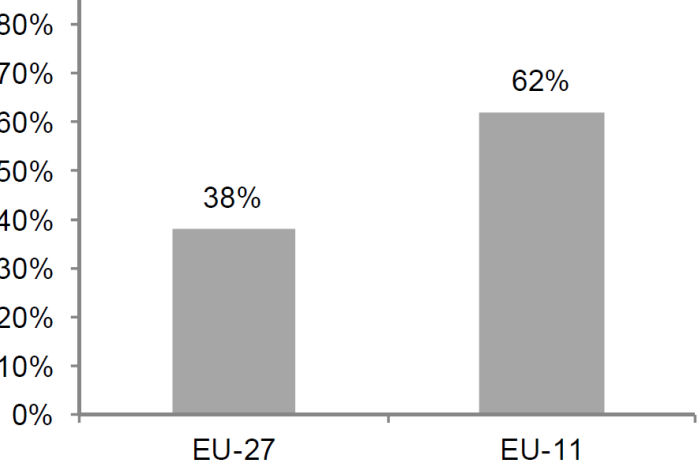
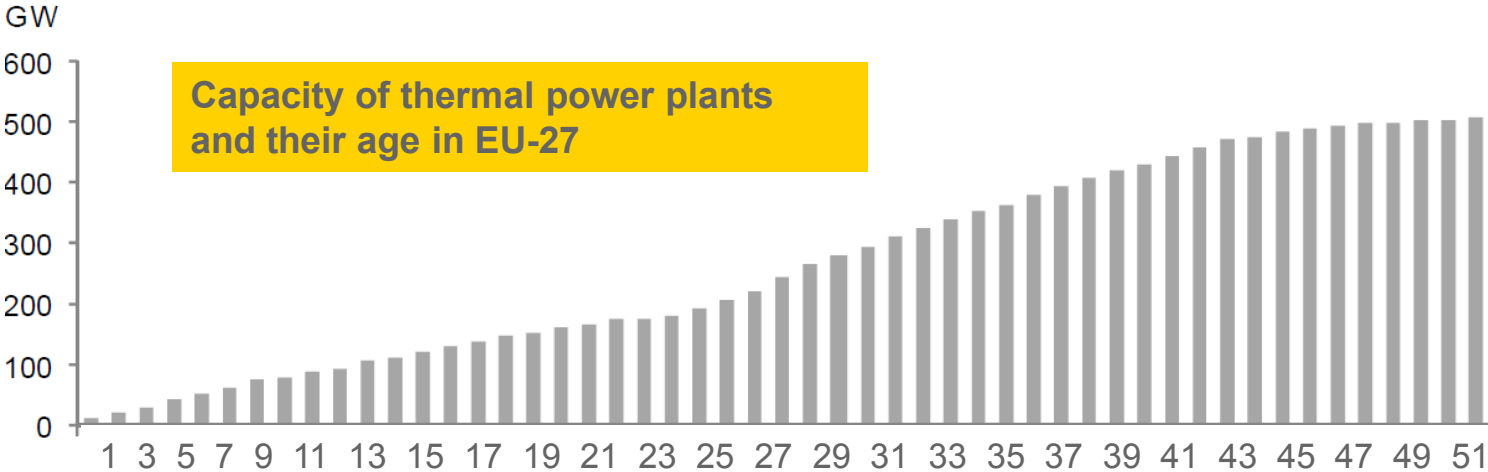
2050 Decarbonization GIC mix



Source: Eurostat, 'Roadmap to 2050'

- As the major aim of the 'Roadmap 2050' is building a low-carbon technology, it may be easier to achieve this target for EU-11 by using clean coal and nuclear technologies.

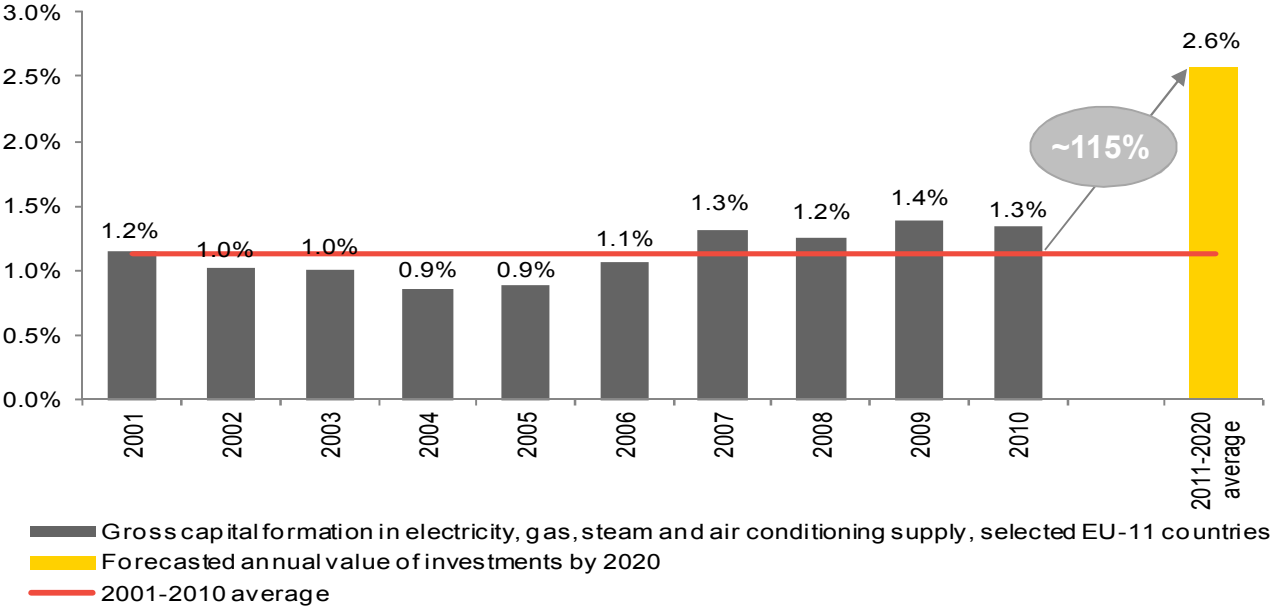
The need for replacement of aging thermal generation capacities is substantially higher in EU-11 region



- Over 38% of generation capacity in EU-27 countries is over 30 years old
- In the country with largest power capacity, i.e. Poland, 58% of capacity is over 30 years old
- In the years to come, EU-11 will face higher decommissioning and replacement costs than EU-15 or EU-27 on average

Source: Ernst&Young Business Advisory Poland calculations based on RWE and Polish Energy Market Agency (ARE) data

The gap between historical and planned energy investments is of serious importance

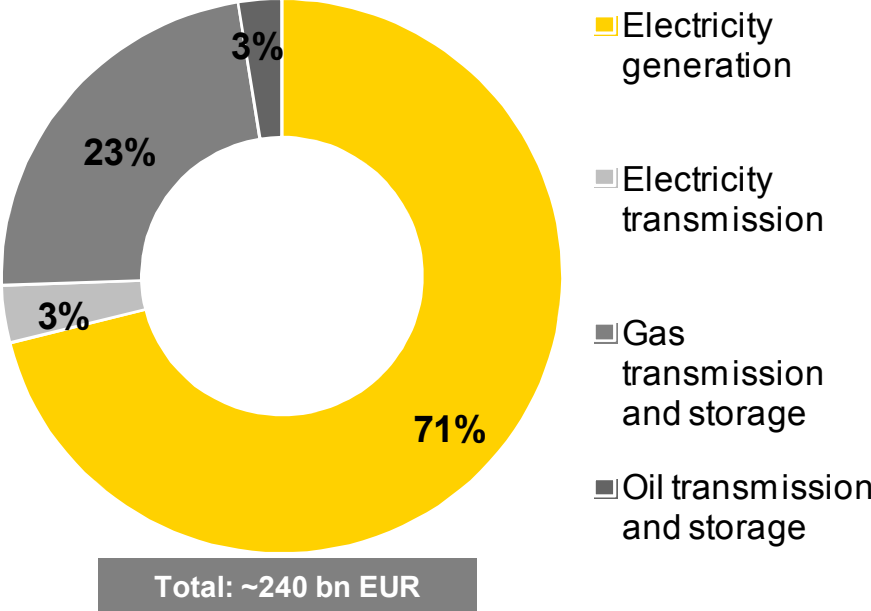


Source: Historical values – Eurostat, estimation of investment needs – Report, GDP forecasts – HIS Global Insight; Historical values include data for Czech Republic, Estonia, Hungary, Poland, Slovenia and Slovakia only. For other countries data were not available

- According to data presented above EU-11 average of 2011-2020 energy investment costs (as % of GDP) indentified in the Report* exceed the EU-11 2001-2009 average of investment in electricity, gas, steam and air conditioning supply by ~115%

* Report have been prepared for Central European Partners AISBL by Ernst&Young Business Advisory Poland according to an agreement dated December 21th, 2011

The flagship investments in EU-11 can be estimated at about bn EUR 240 by 2020



Dane	
Electricity generation*	~170 bn EUR
Electricity transmission	~8 bn EUR
Gas transmission and storage	~55 bn EUR
Oil transmission and storage	~6 bn EUR
Total	~240 bn EUR

* Including decommissioning and replacement costs

Source: Estimation prepared by Ernst&Young Business Advisory Poland based on publicly available data

- Over 38% of electricity generation capacity in EU-27 is over 30 year old, which triggers the need for large amount designated for decommissioning and replacement costs
- At the same time the EU estimates that a total of bn EUR 1,000 energy sector investments will be needed in the next ten years (starting 2011) on the EU-27 level.