

Briefing Note

Prospective impact of economic downturn
on electricity demand in Europe

January 2009



Why we believe that a recession would have only limited impact on electricity consumption

Historical evidence

- > Correlation between fluctuations in real GDP and electricity consumption has historically been low in the EU-27. Significant, but less than one-for-one, relationship in the industry sector. → Slide 3
- > Since the beginning of the 1950s, the maximum annual decline of German electricity consumption has been 3.2%. This was in 1975 and due to the oil crisis, followed by a 2.6% decline in 1991 due to the collapse of huge parts of the Eastern German industry shortly after reunification. → Slide 4

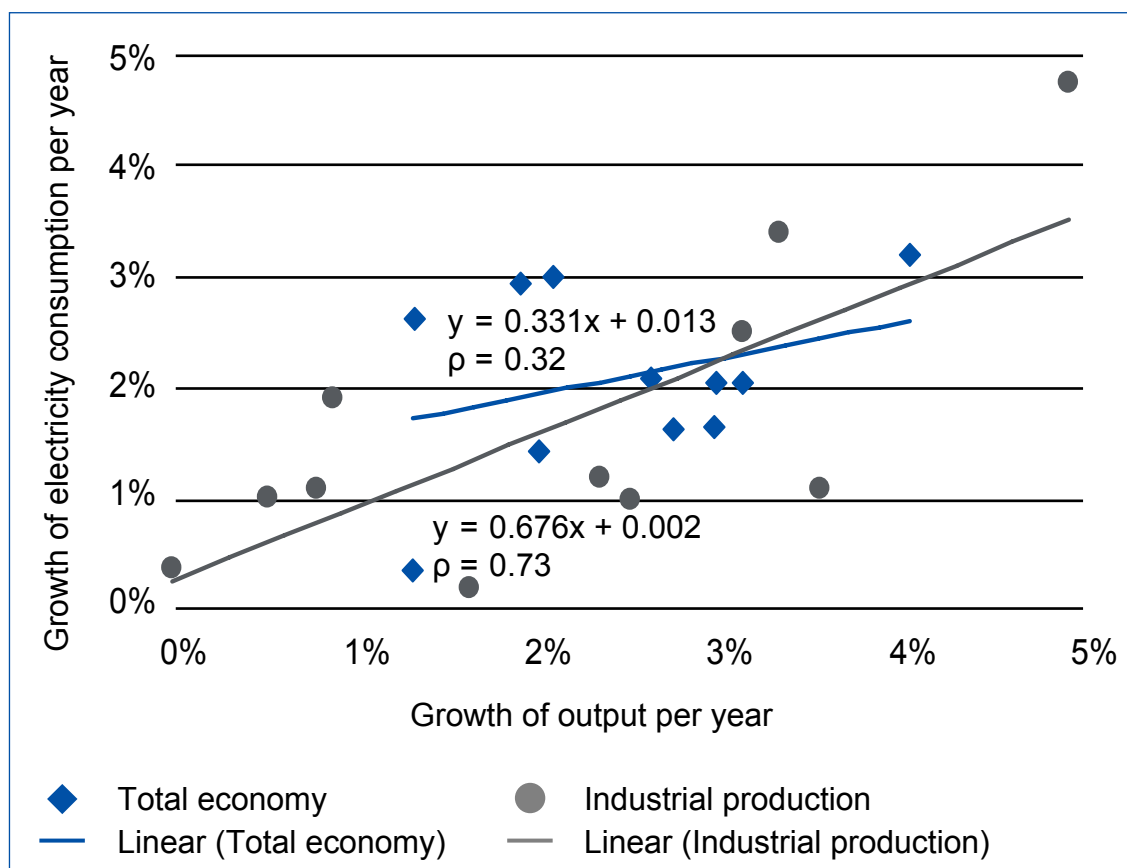
Market sector considerations

- > More than 50% of electricity demand is attributable to the household and service sector and is nearly unaffected by the economic downturn. This portion has increased during the last decades, while the share accounted for by the industry has slightly decreased to 40%. → Slide 5
- > Within the industrial sector, a reduction of output will not translate into a proportional decline of power consumption as there are base load elements in demand, which are relatively independent of economic activity, e.g. electricity for administrative buildings (IT, lighting, etc.) and basic functions in factories. We expect that in most energy intensive industries electricity demand will decrease by no more than ten percent in 2009. → Slide 6
- > Big industrial companies run their own power plants. These plants are economically feasible only because they generate heat for production processes or burn residual materials. If production declines, these power plants are more affected than plants covering public demand. → Slide 7

Expected growth from Central Eastern Europe

- > Substantial growth potential in terms of GDP and an expected increase in electricity consumption per capita will help at least stabilize, if not increase, power demand in the coming years. → Slides 8 & 9

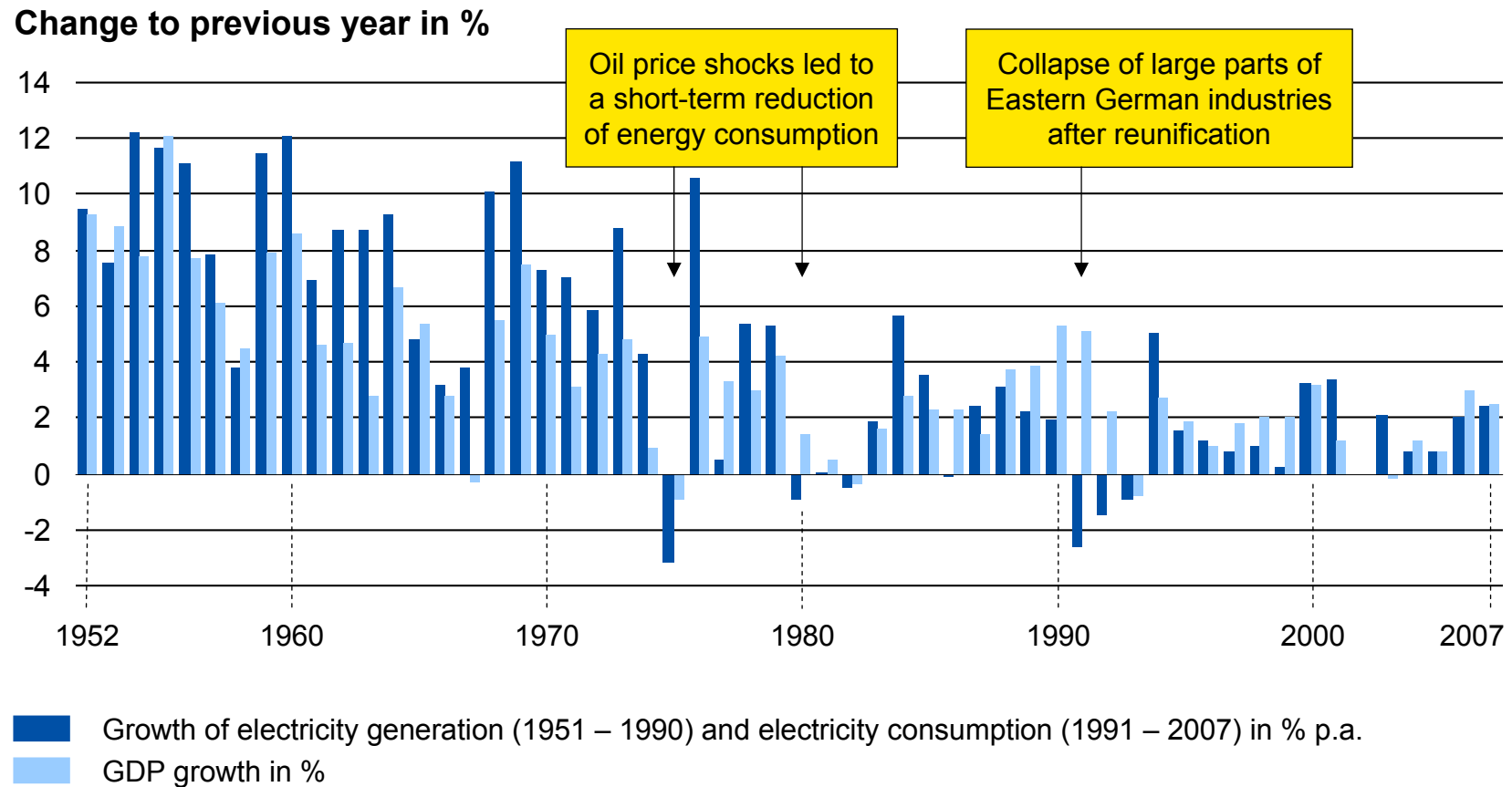
EU-27 (1995 – 2006): Low correlation between growth in electricity demand and GDP – except for the industry sector



- > Insignificant relationship between changes in real GDP and electricity consumption in the EU-27.
- > Significant, but less than proportional relationship between industrial production and industrial electricity consumption.
- > On average, a 1% reduction in industrial production has historically been associated with an 0.7% reduction in industrial electricity demand.

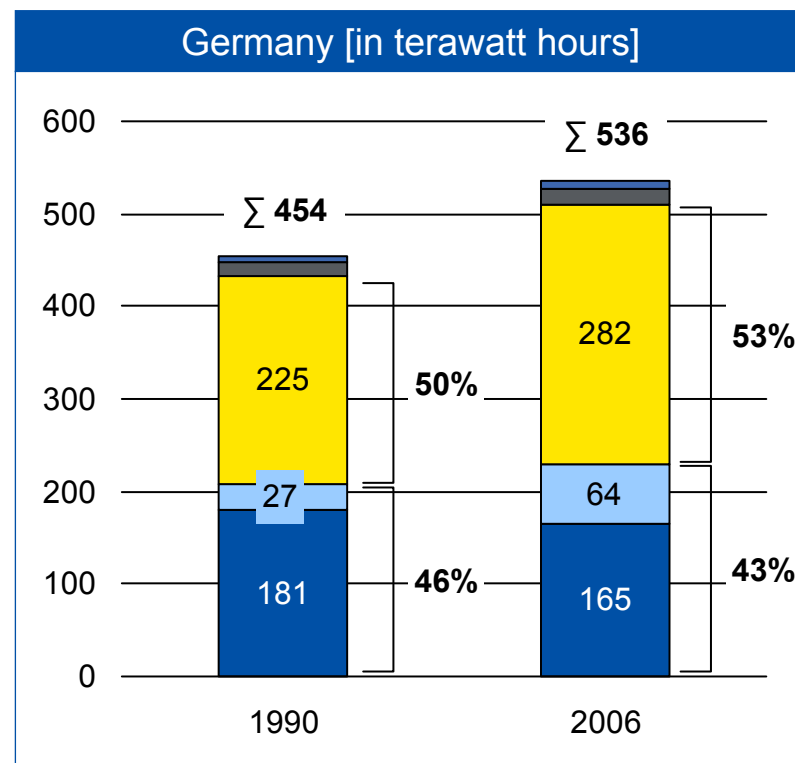
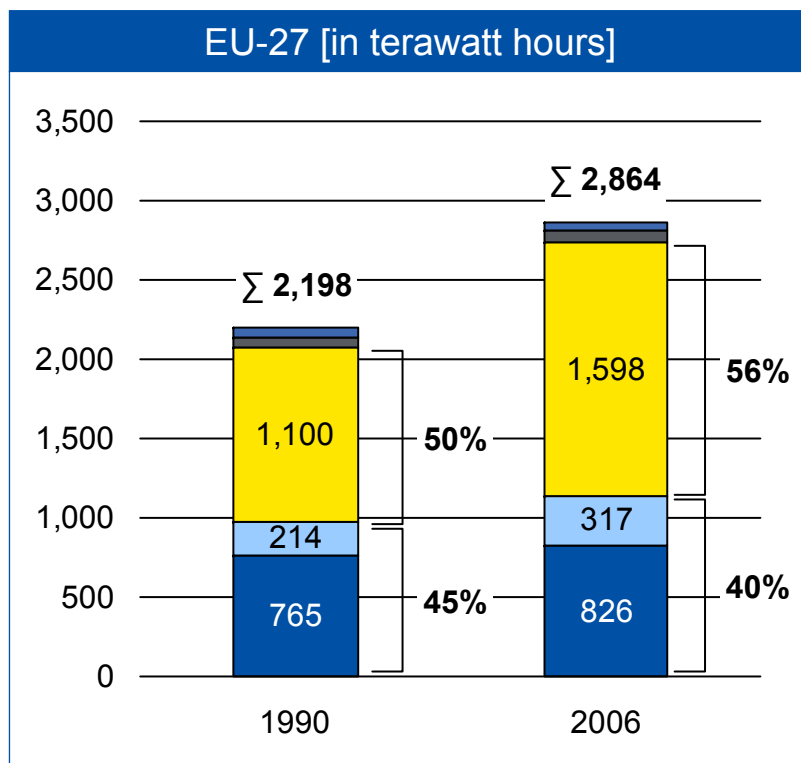
Sources: Eurostat & in-house calculations. ρ is a measure of the correlation between two variables. A value of 1 indicates total positive correlation, likewise -1 indicates complete negative correlation and 0 no correlation at all.

Germany: Only due to the oil crises and the collapse of Eastern German industries did power demand decline to a noteworthy extent



Sources: Eurostat, Destatis, Kohlenstatistik.de.

Electricity consumption: Share of households and service sector increased slightly while the more variable industry demand lost weight

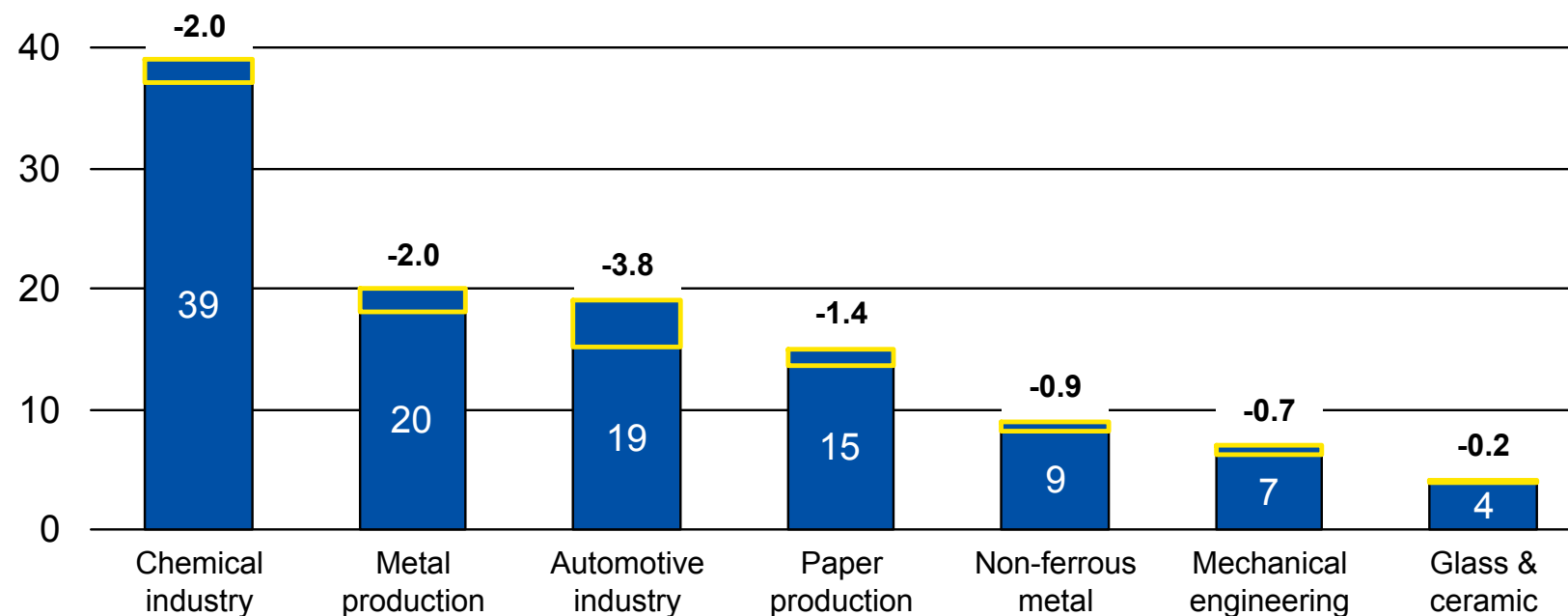


Energy-intensive industries
 Other industries
 Households / services
 Transport
 Agriculture

Source: Eurostat; latest data available.

Germany: Maximum expected reduction in demand for power from energy-intensive industries in 2009

[in terawatt hours]

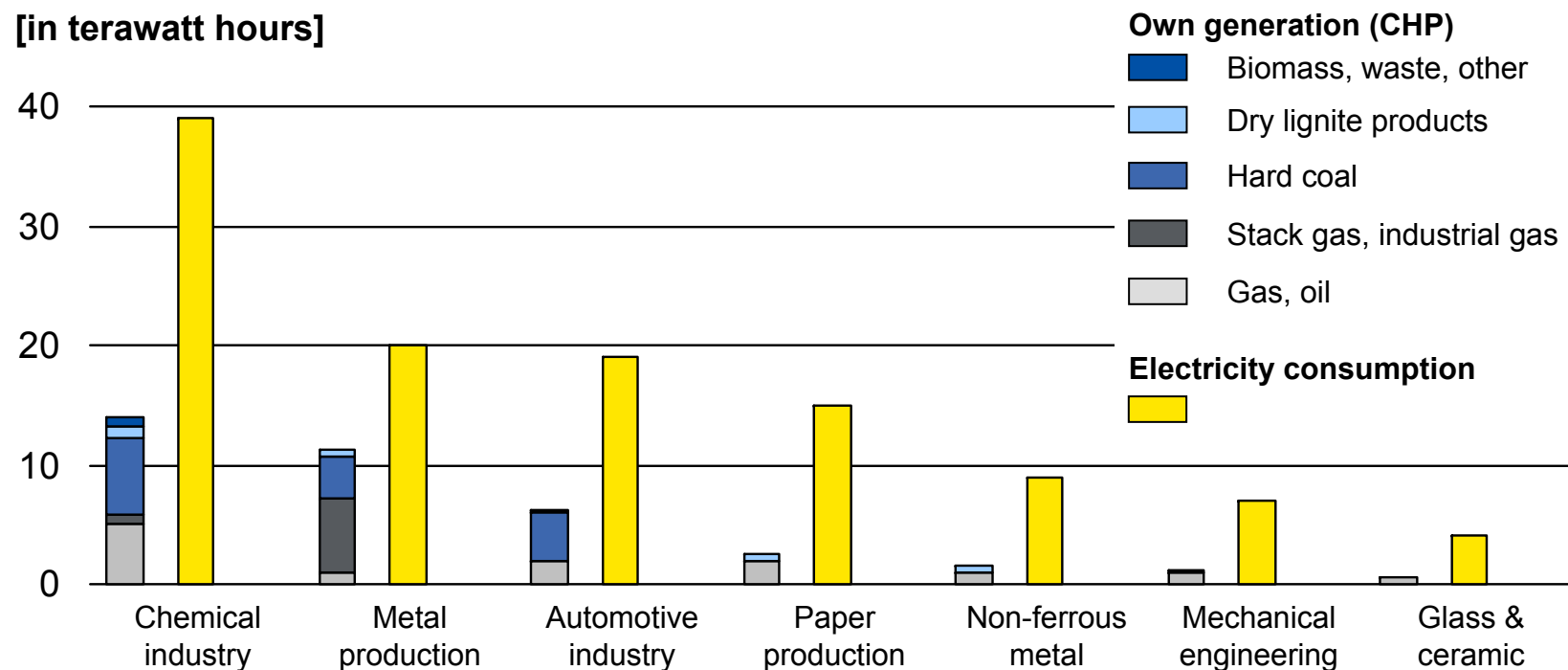


■ Power demand from energy intensive industries in 2007¹
■ Expected maximum potential decrease in power consumption²

¹ Source: German Ministry of Economics.

² Source: RWE estimates.

Germany: Reduction in public-supply power of the most energy-intensive sectors will be partly offset by reduced in-house generation (CHP)

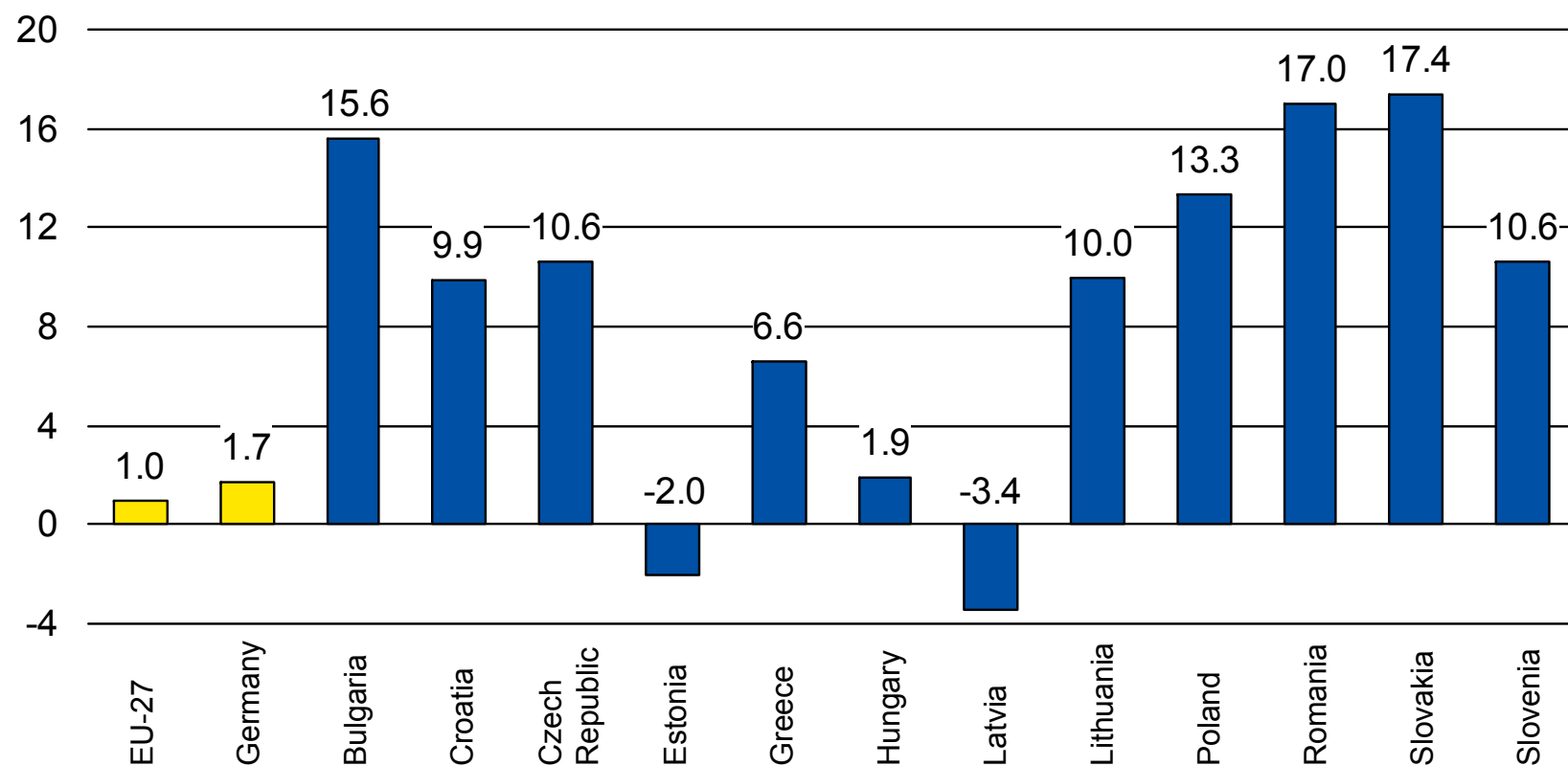


➤ Power generation by industrial companies in Germany (2007): 51.7 TWh or 8.1% of total gross generation (636.6 TWh)

Source: German Ministry of Economics.

Central Eastern Europe (1): Above-average GDP growth will have a positive impact on European electricity demand

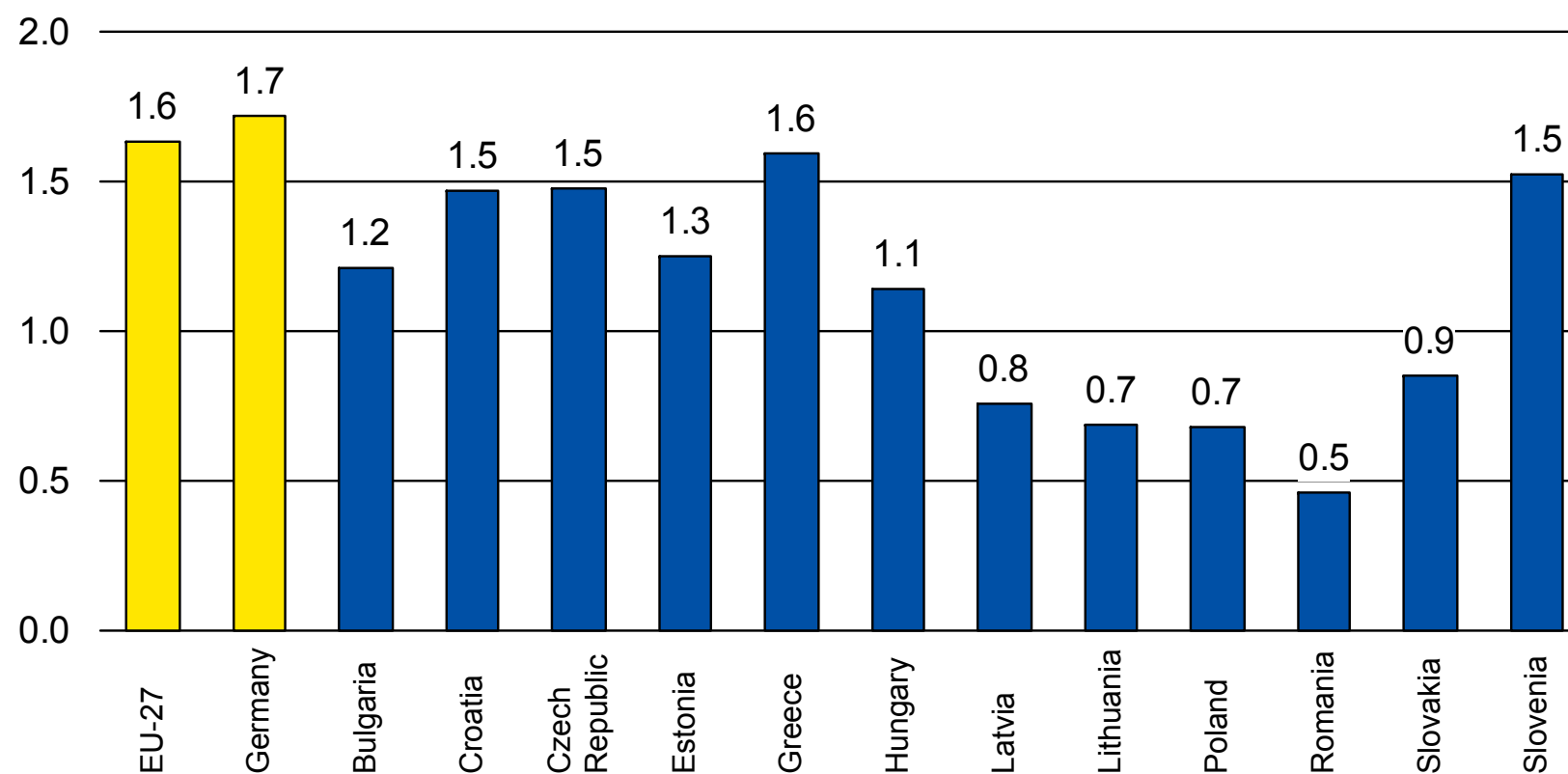
Expected accumulated growth of GDP per capita during 2008 – 2010 [in %]



Source: Feri Rating & Research (January 2009).

Central Eastern Europe (2): Significant growth potential in terms of electricity demand per capita

Household electricity consumption per capita in 2006 [in megawatt hours]



Source: Eurostat; latest data available.

Outlook 2009: Expected impact of economic downturn on electricity demand in the EU (by sector)

Household / service sector (56% of total EU consumption in 2006)

- > Low/no decrease in electricity demand in the household sector expected as correlation with economic growth is very low.
- > Demand from the service sector is expected to remain constant or to grow moderately throughout the EU.

Industrial sector (40% of total EU consumption in 2006)

- > Basic industry / electricity-intensive industry (29%)
 - Power demand will decrease, but less than industrial production.
- > Durable consumer goods (11%)
 - Low effect as not so strongly linked to economic growth (e.g. software industry, pharmaceuticals).



We expect a slight decrease of electricity demand within the EU-27 during 2009. The same applies to Germany, where – according to recent estimates¹ – GDP and industrial output will decline by 2% and 5% in 2009, respectively.

¹ Source: RWI – Rheinisch-Westfälisches Institut für Wirtschaftsforschung.

Web links

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