

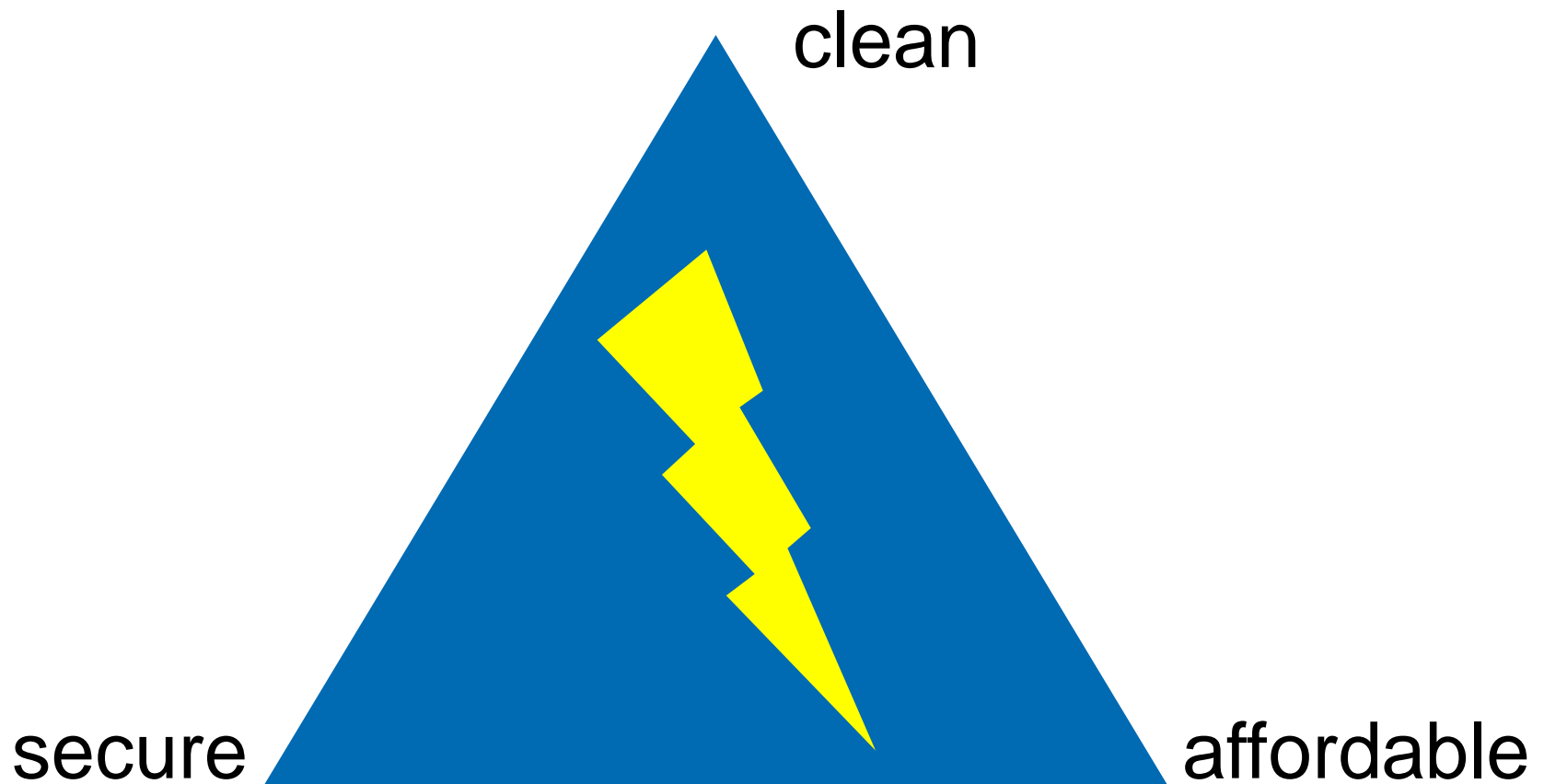


Remarks and Implications for Energy Cooperation between Germany and Latin America

Dr. Hubertus Bardt

September 20th, 2016 – Lima

The energy trilemma



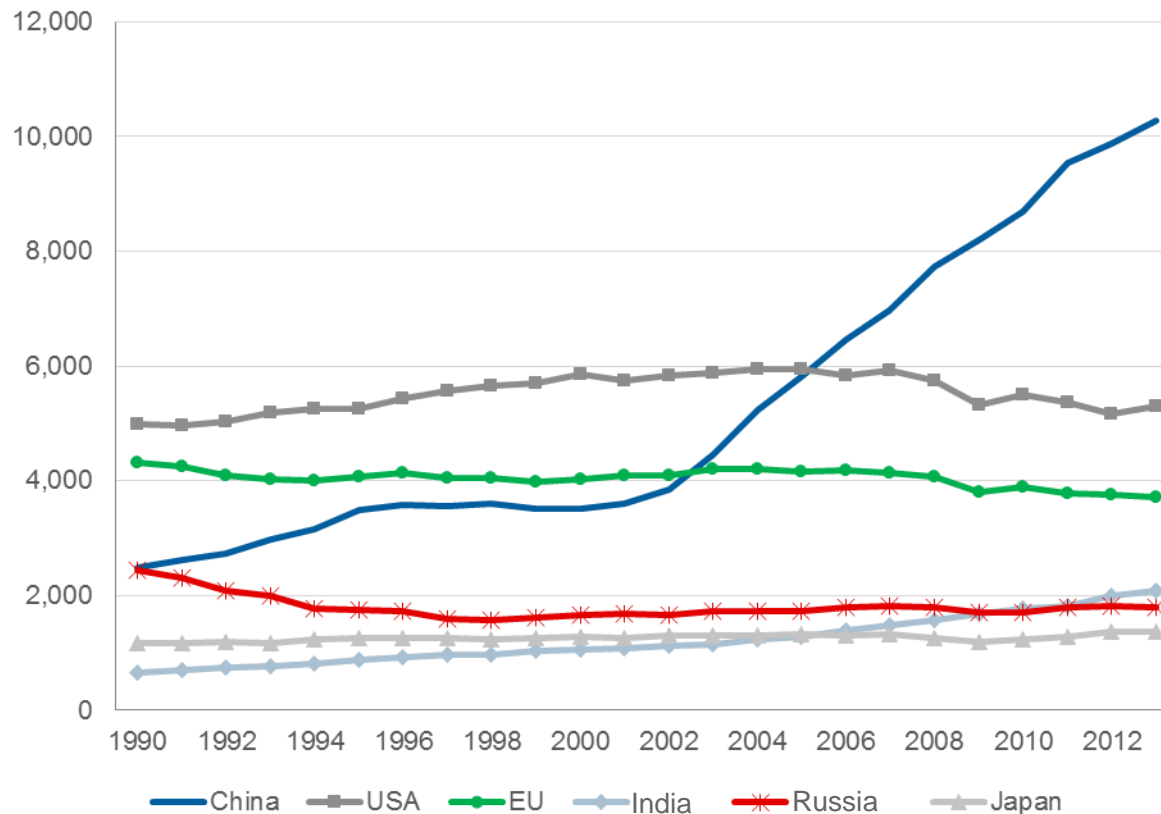
▶ clean

▶ affordable

▶ secure

Trends in global CO₂ emissions

in millions of tonnes of CO₂

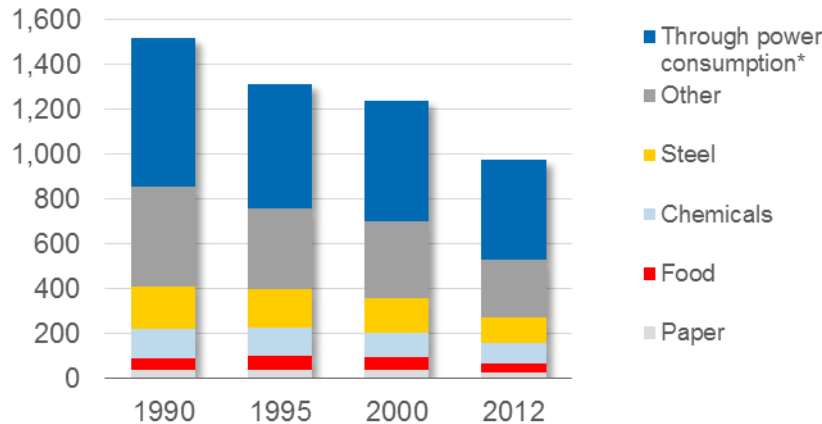


- ▶ CO₂ emissions in the EU and in the United States have been declining in recent years.
- ▶ Given the sharp increase of emissions in China and other emerging countries, European efforts seem marginal.

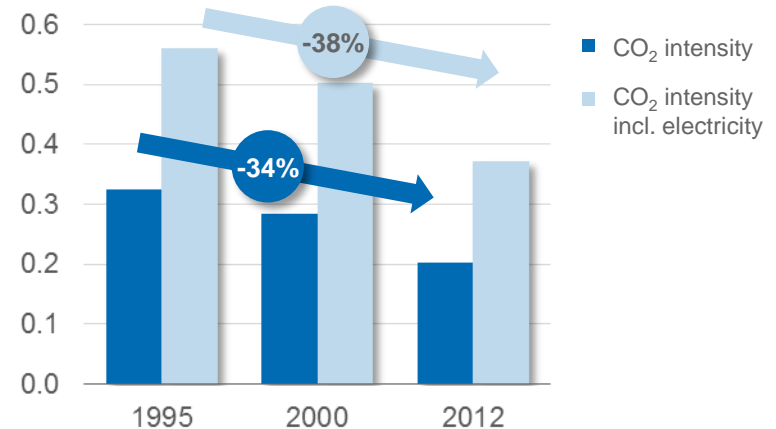
Source: EU Kommission / EDGAR, 2014

Industry in the EU 28: Decreased emissions, greatly improved efficiency

CO₂ emissions in the industrial sector are declining: -25% since 1995
in millions of tonnes of CO₂



Improved efficiency: One-third fewer emissions per euro of added value since 1995
in kg CO₂/euro₂₀₀₅

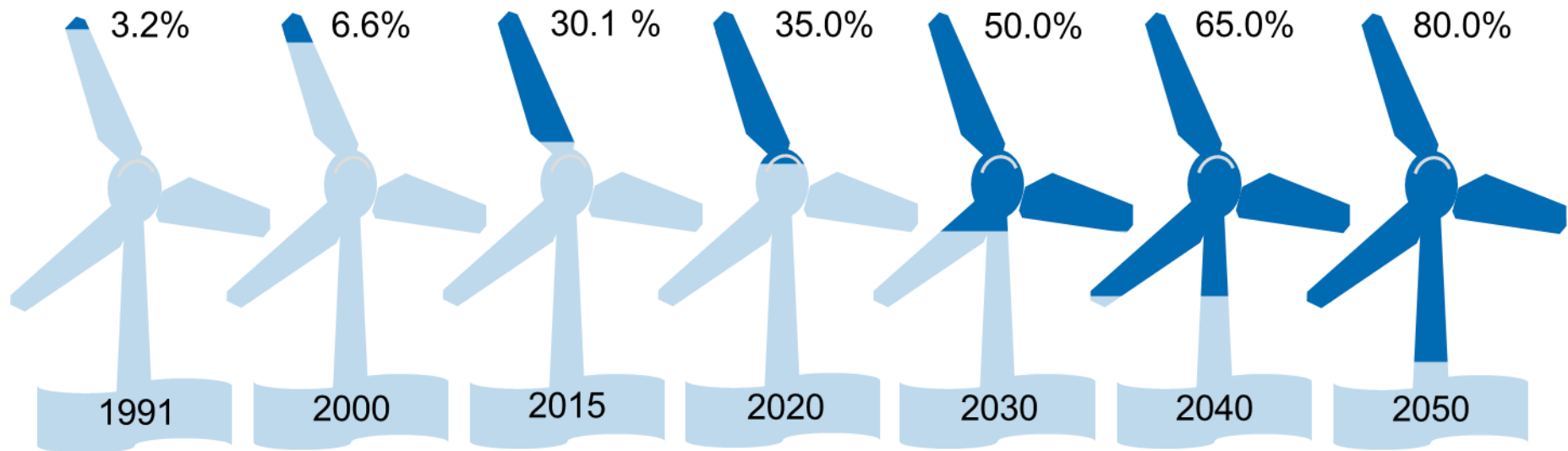


- ▶ Regulation: The largest share of CO₂ emissions caused by industrial activities is subject to emissions trading.
- ▶ Increased efficiency: The emissions per unit of gross value have decreased by a good third since 1995.
- ▶ Deindustrialisation: The movement of industrial activities out of many European countries has resulted in a decrease of CO₂ emissions in the EU.

* For information only
Source: Odyssee Database, 2014

Renewable energy targets in Germany

electricity from renewable sources



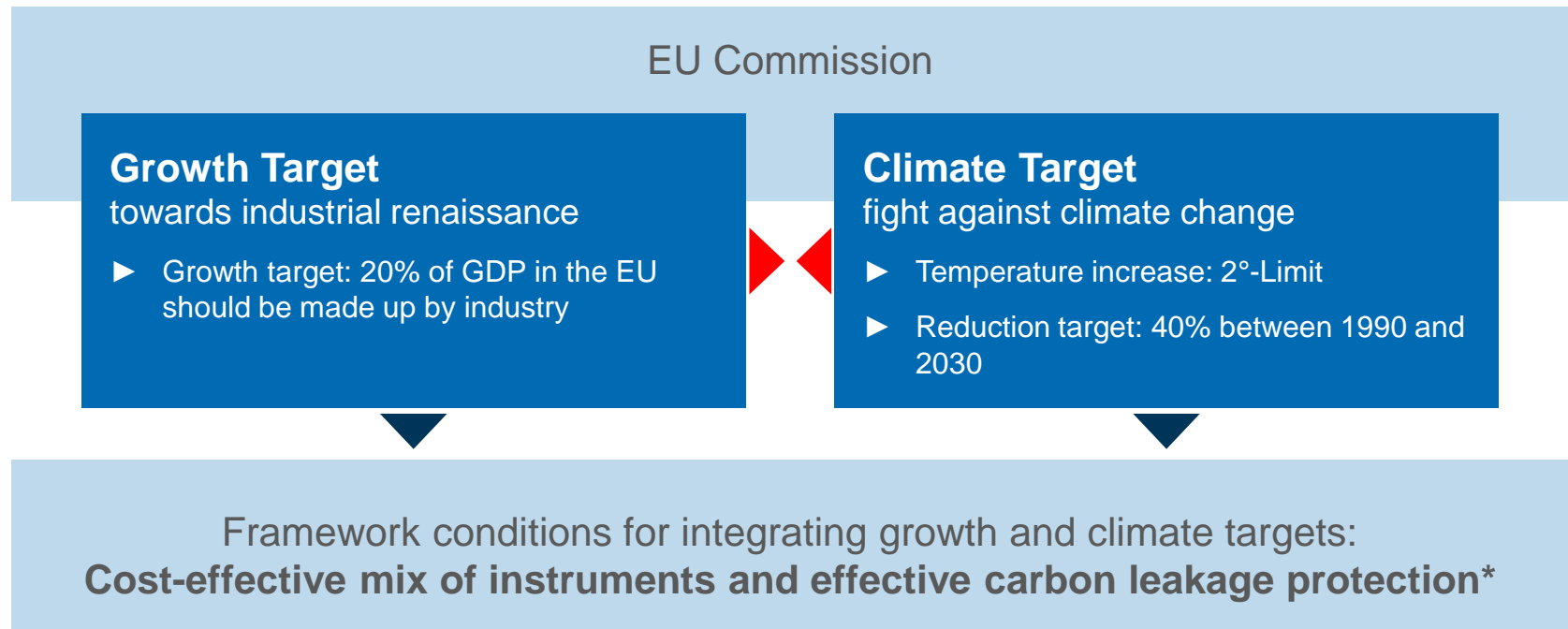
2020-2050: targets
Source: AG Energiebilanzen, 2013; German Renewable Energy Act (EEG)

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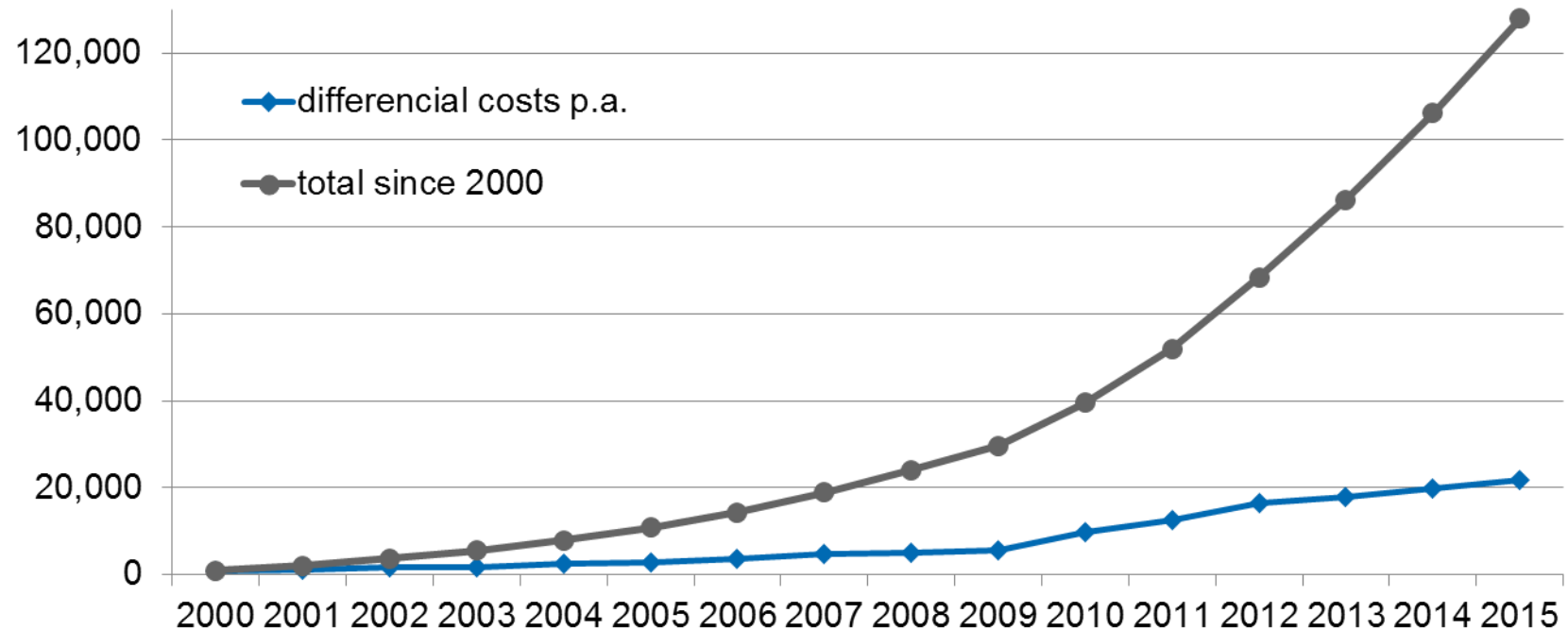
Growth AND climate protection are goals of the European Commission



* Relocation of CO₂ emission sources

Subsidies for renewables

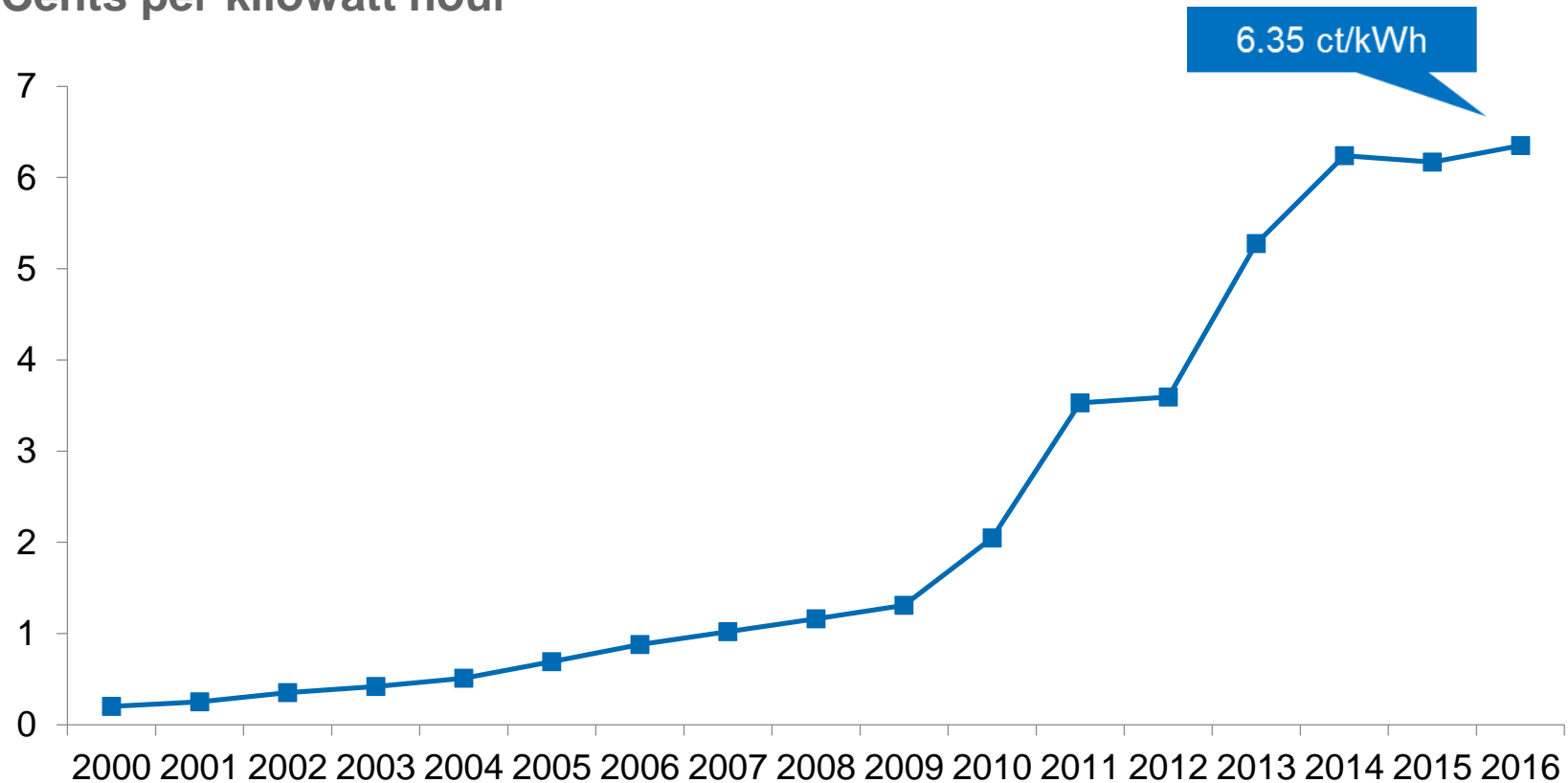
from 2000 to 2015 in million euros



2014-2015 estimate
sources: BDEW; grid operators

Development of the EEG surcharge

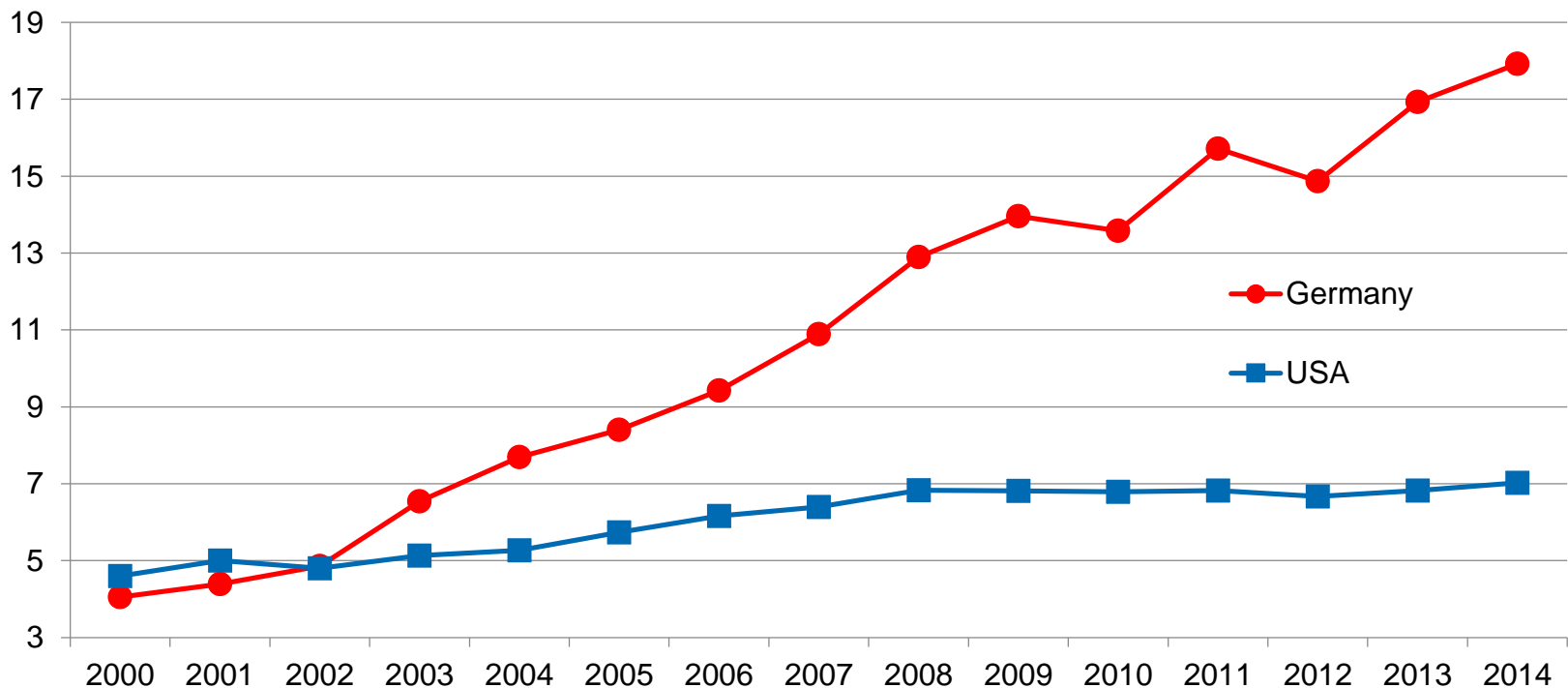
Cents per kilowatt hour



Source: BDEW, 2013; grid operators, 2014

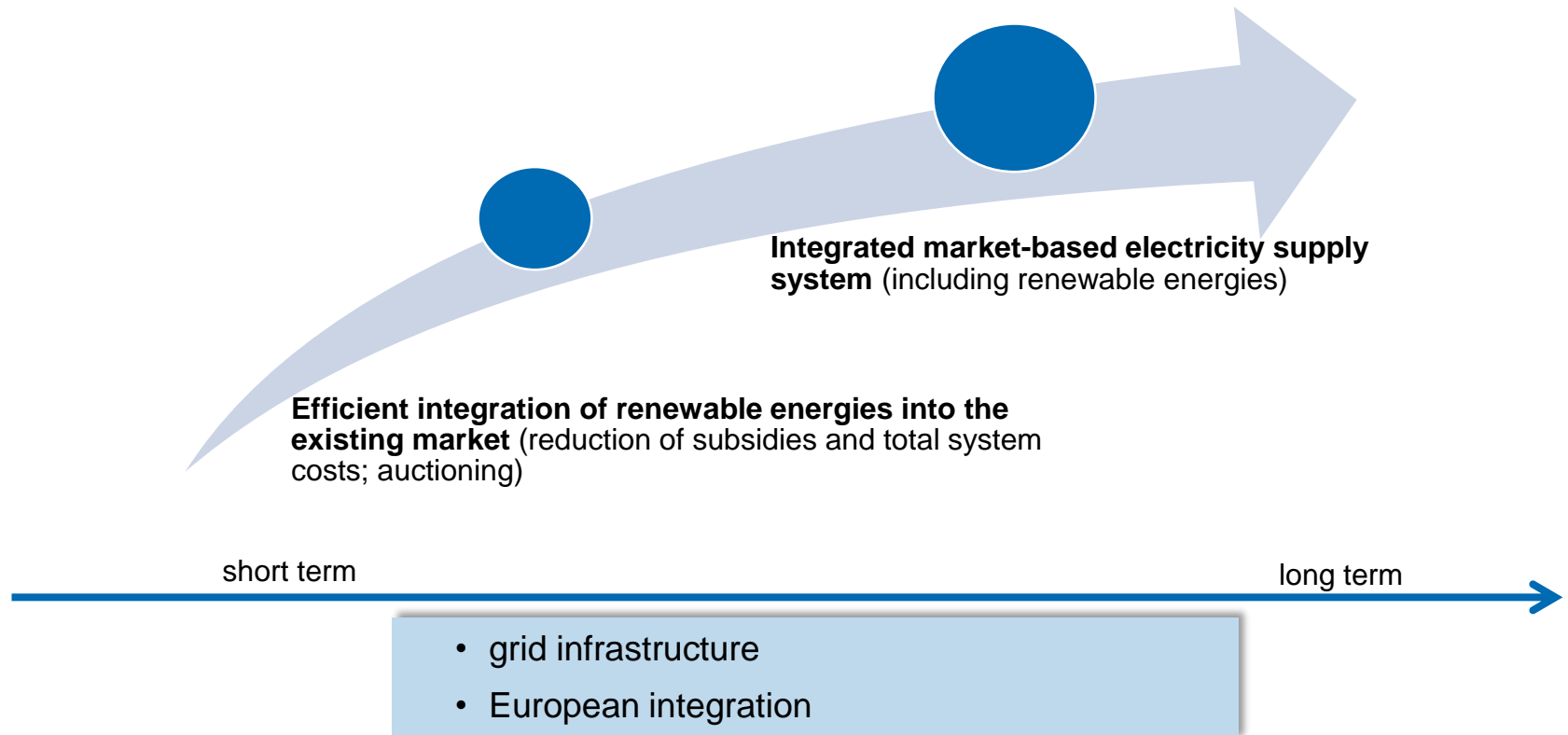
Industrial electricity prices - Germany and US

US cent per kilowatt hour



Incl. taxes
Source: IEA

Steps toward a re-integrated electricity market



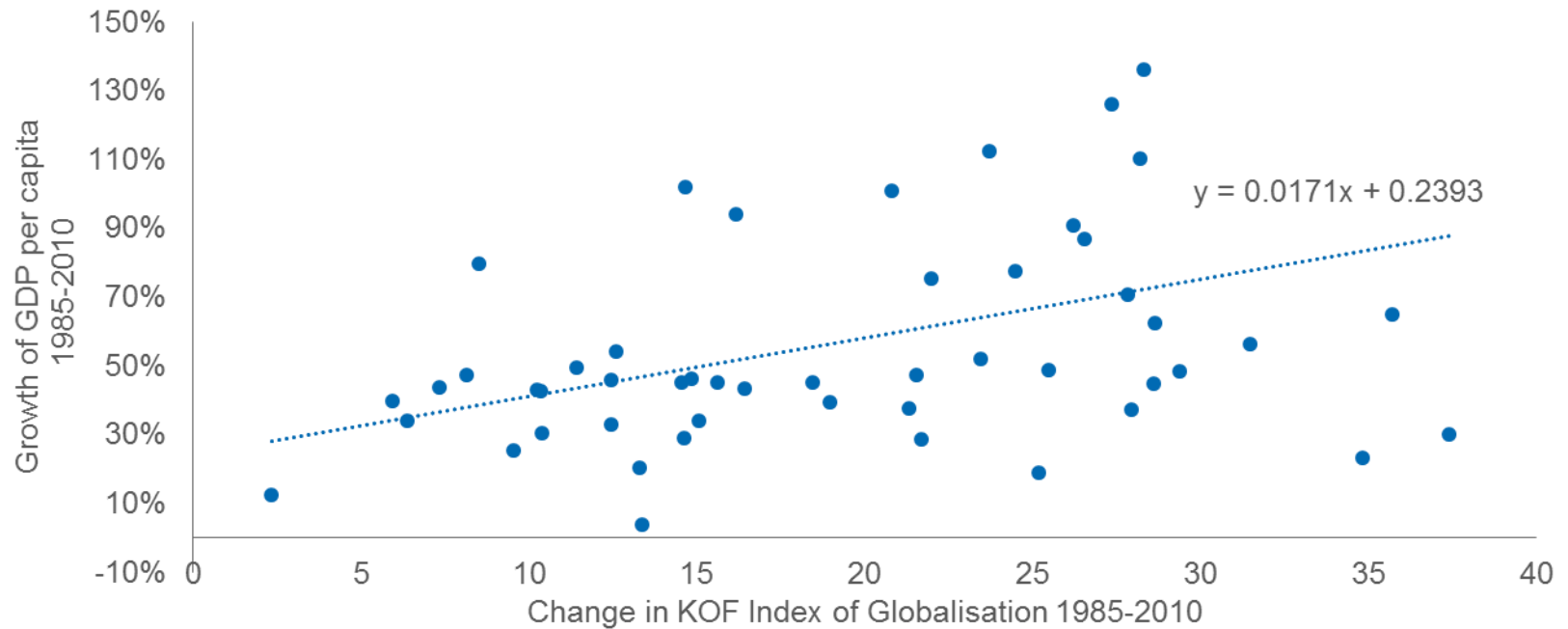
Source: own

▶ clean

▶ affordable

▶ secure

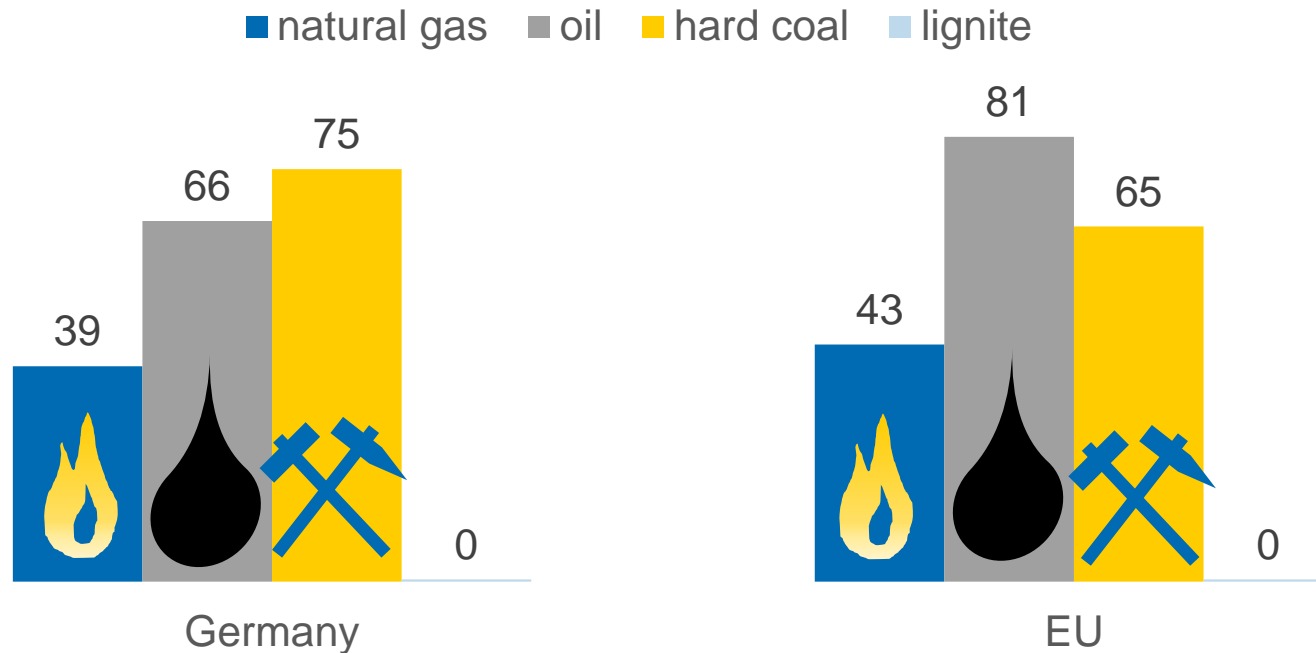
Globalisation and Economic Growth



Source: KOF Index of Globalisation: Dreher et al. (2008), Growth of GDP: Penn World Tables 8.0, see Feenstra et al. (2015)

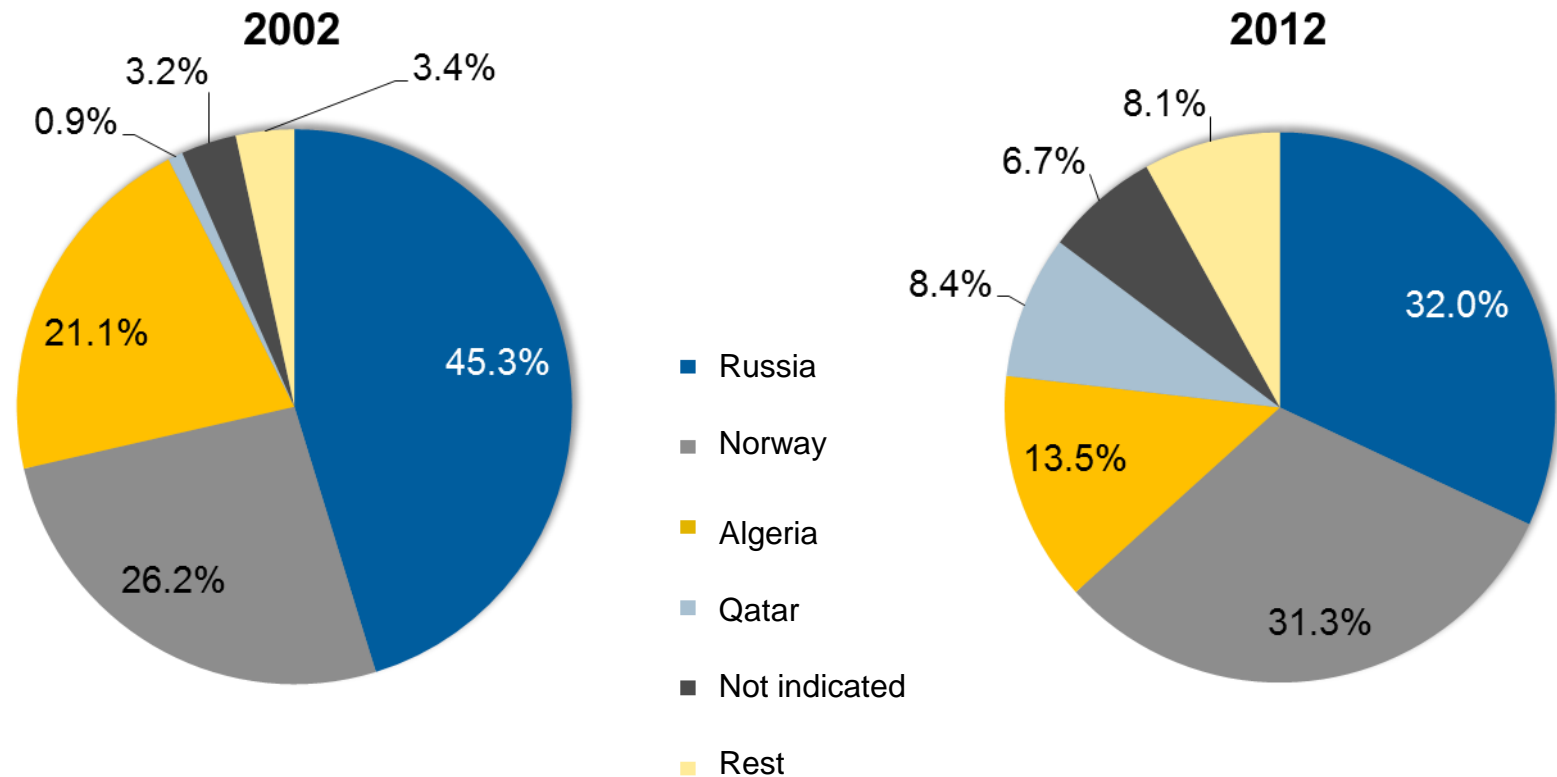
Import shares of energy resources

from outside EFTA, in percent



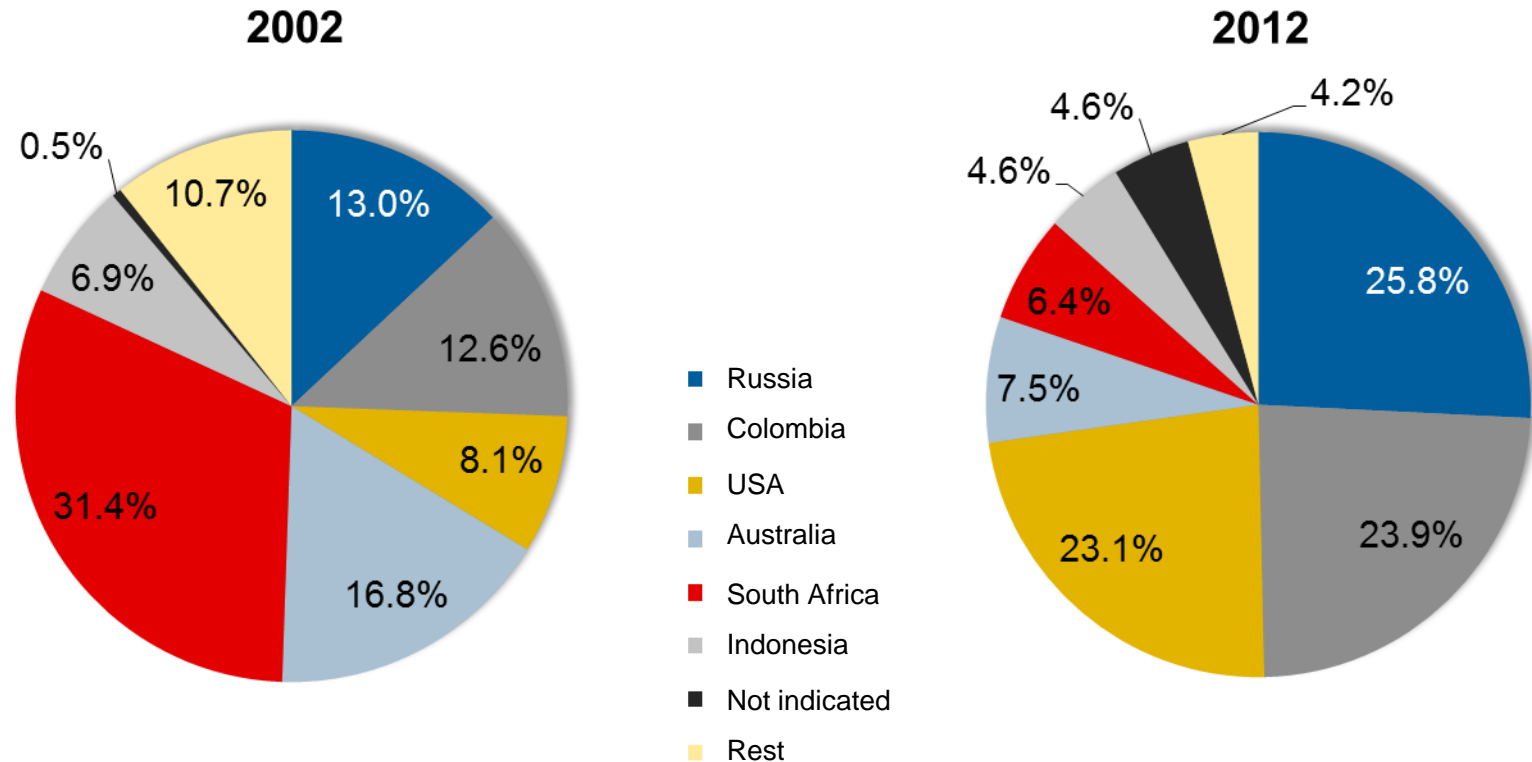
Source: Eurostat, 2014; Institut der deutschen Wirtschaft Köln

Imports of natural gas for the EU



Source: Eurostat, 2014; Institut der deutschen Wirtschaft Köln

Imports of hard coal for the EU



Coal includes anthracite, bituminous coal, subbituminous coal and coking coal.
Source: Eurostat, 2014; Institut der deutschen Wirtschaft Köln

Integration and diversification or Independence?

- ▶ Diversification of primary energy sources, countries and means of transport + domestic production
- ▶ Interdependence reduces risks
- ▶ Internal infrastructure and risk management (gas storage, reverse flows)
- ▶ Renewables can reduce risks, but are not risk free (wind / sun)

The energy transition needs open markets

- ▶ Compensation of power fluctuations
- ▶ Locations for renewable energies
- ▶ Imports of renewable energy technologies
- ▶ Competition in the electricity market
- ▶ Level playing field for the manufacturing sector

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