Prices of Energy and European Energy Strategy

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  - **Impacts on Energy Supply Security and Economic competitiveness in short-, medium- and longer-term perspective;**
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    2. U.S. shale oil and shale gas revolution:
       - manufactory revival – millions of new jobs;
       - Strengthening global competitiveness of U.S: industry and companies for decades ahead;
    3. Decarbonization: fossil fuel (subsidies) vs. RES (subsidies) – cost devel.
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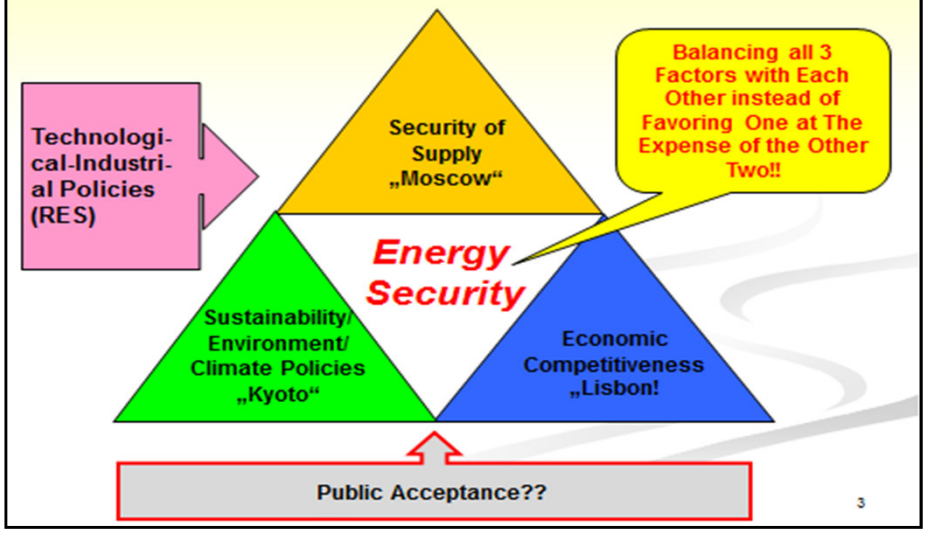
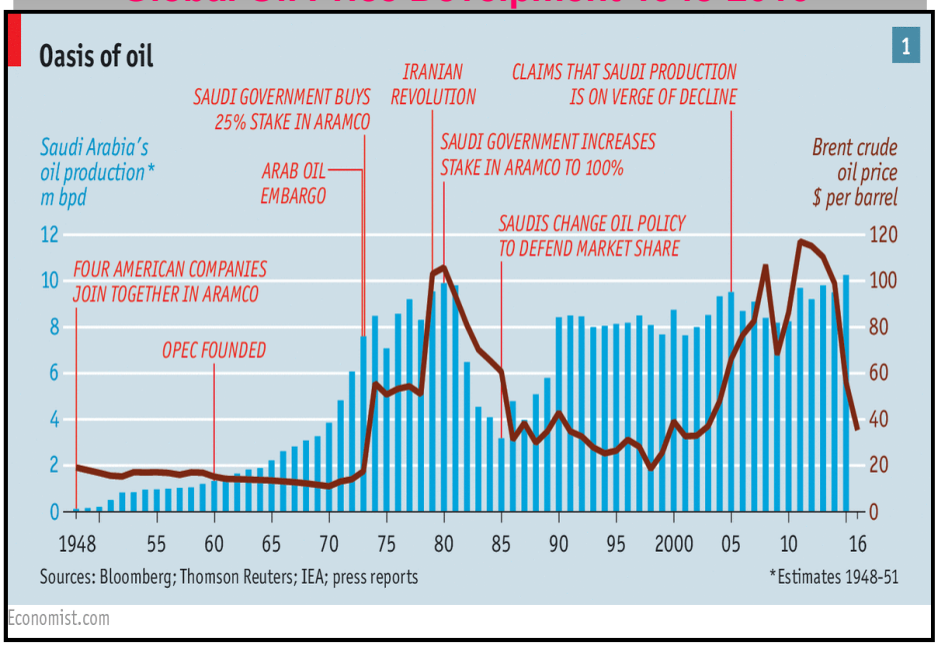
         - Feed-in tariff system replicated in China and other countries

Maintaining the Balance within the Energy Triangle and between its Three Objectives



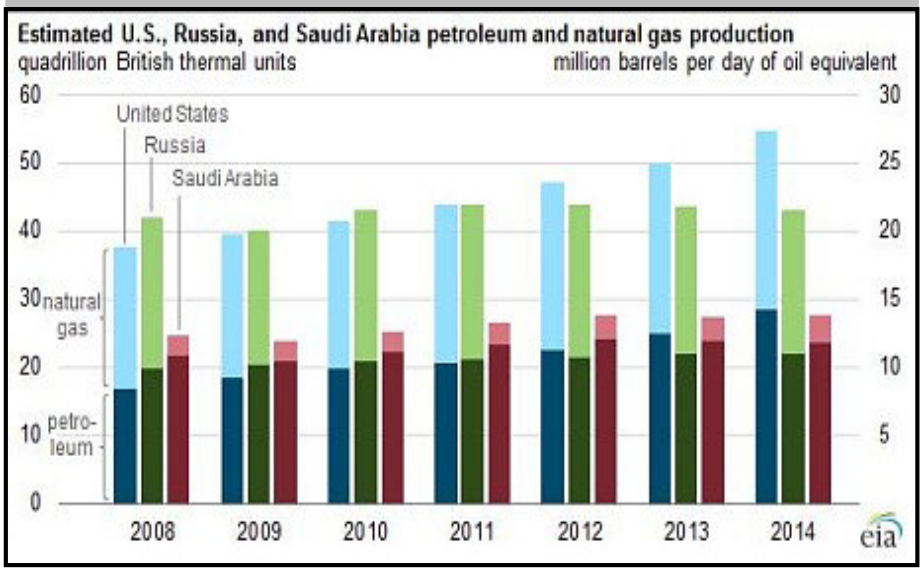
Global Oil Price Develpment 1948-2016



Introduction

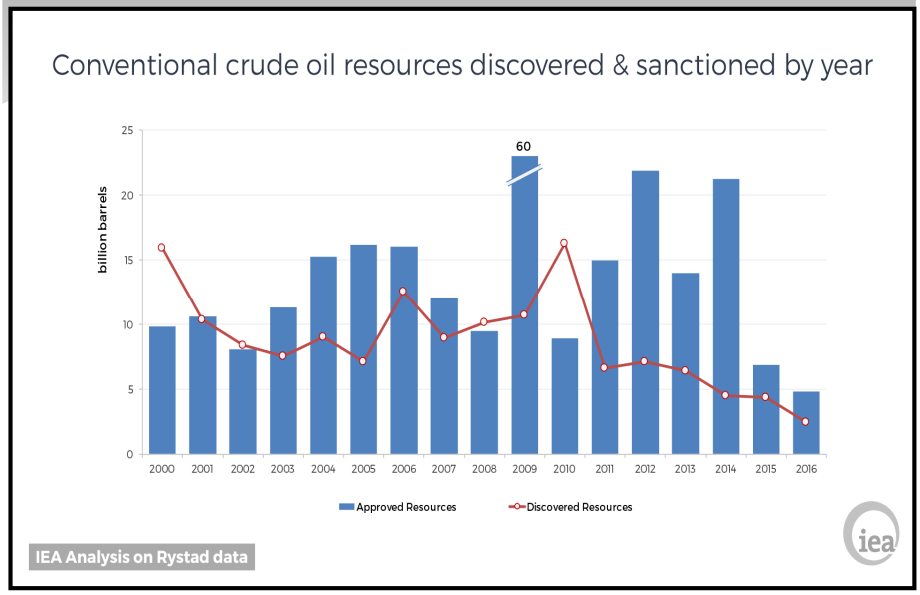
- Dramatic fall of oil prices between summer 2014 and January 2016: -70% (from US$115 to <US$30);
- **Historical lesson of the mid-1980s:**
  - Fuelled the collapse of the Soviet Union and its socialist empire;
- „peak oil“ and „resource scarcity“ assumptions outdated;
- **Perspective 2040/50 and Core Argument:** As long as fossil fuels will dominate the world's energy mix, oil supply and prices will remain critical for geopolitical shifts and sustainable stability of the world economy;
- **Global energy supply security:** not guaranteed without political stability in oil and gas producing countries – also depending on prices.
- **Long-term trend and strategic objective:** decarbonization of the world energy system:
  - Paris COP21 global change summit 12/2015;
  - Worldwide anti-fossil disinvestment movement;
  - 2012-2014: "green funds" outperformed "black funds";
  - But: ongoing state subsidies to fossil fuels – some US$550 billion in 2013.

U.S., Russian, Saudi Arabian Petroleum and Natural Gas Production 2008-2014



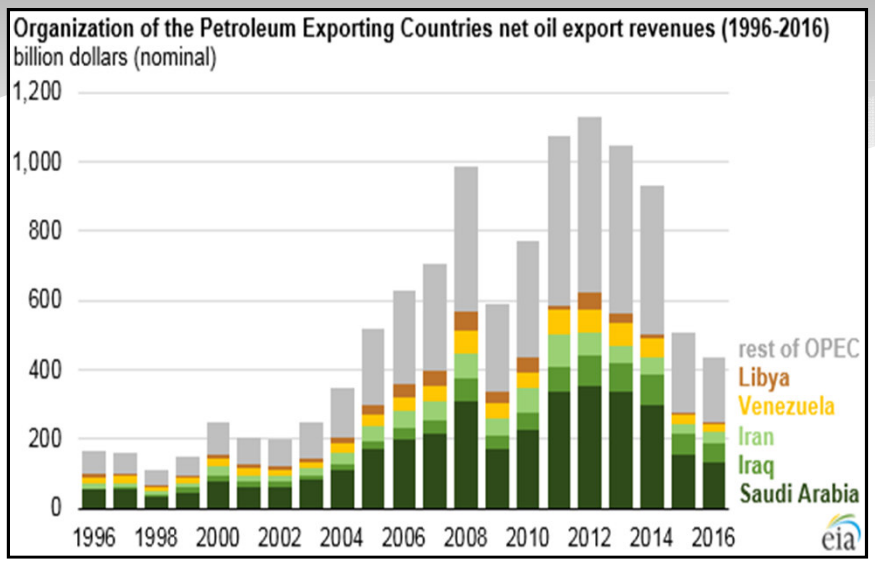
Source: EIA 2015

Global Conventional Crude Oil Discoveries 2000-2018



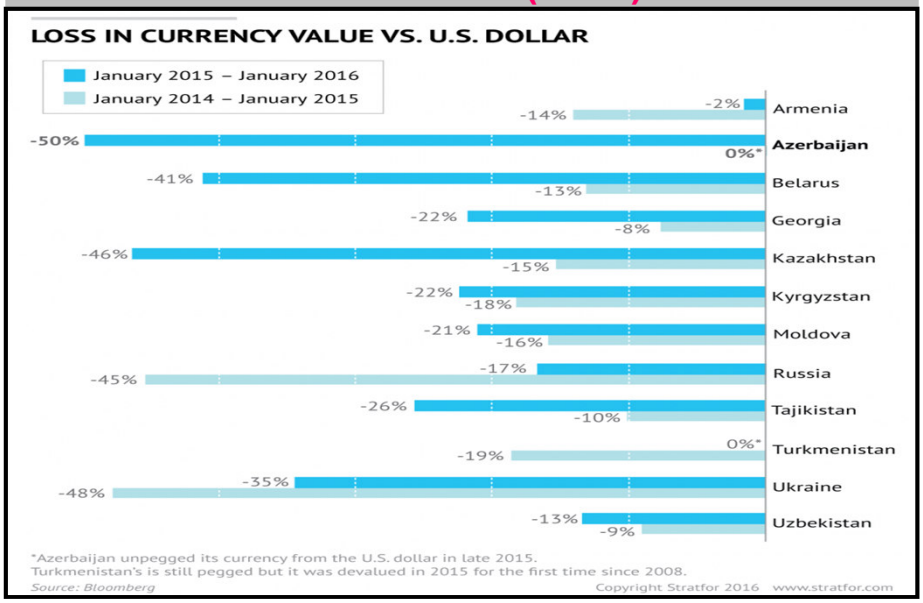
Source: IEA 2017

OPEC: Net Oil Export Revenues in Individual Members 1996-2016

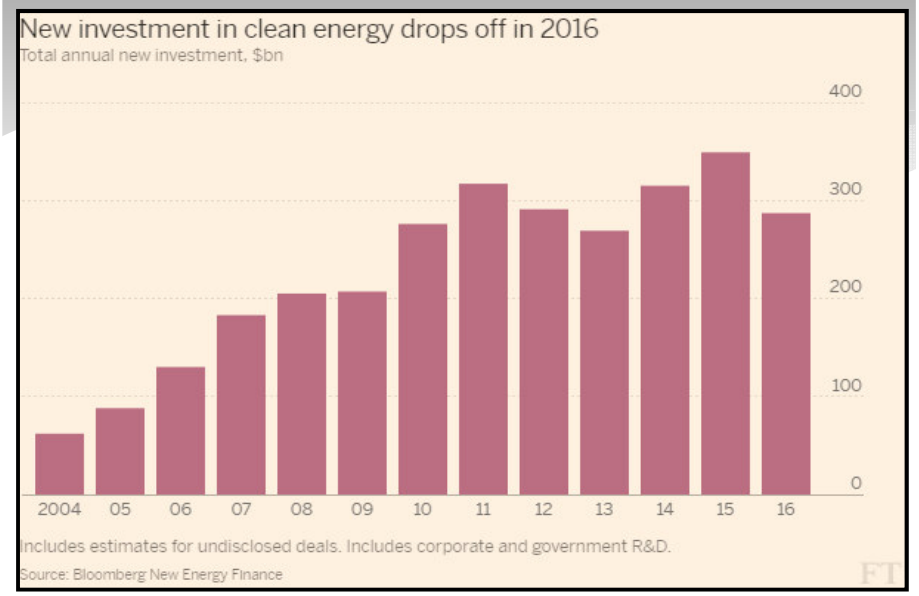


Source: EIA 2017

Impact of Falling Oil Prices – Currency Devaluation (0116)

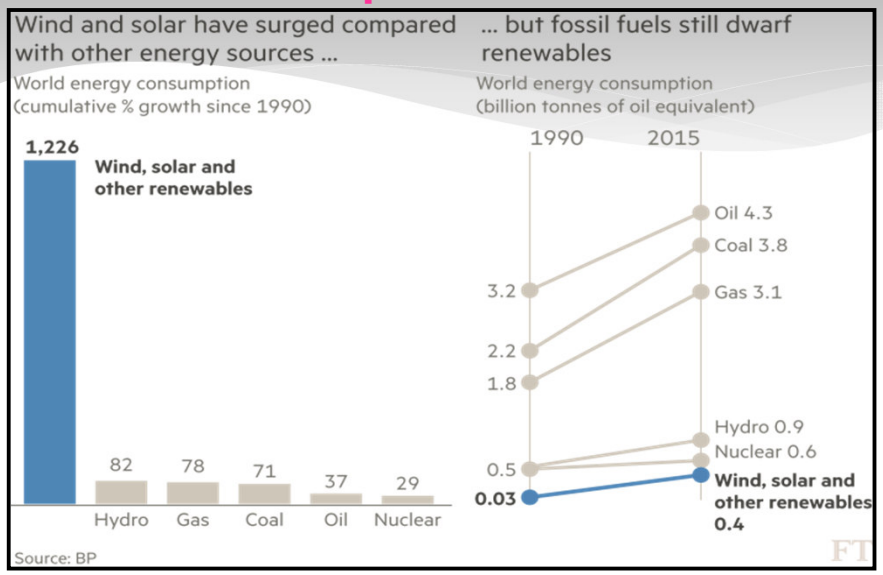


Clean Energy Investments 2004-2016



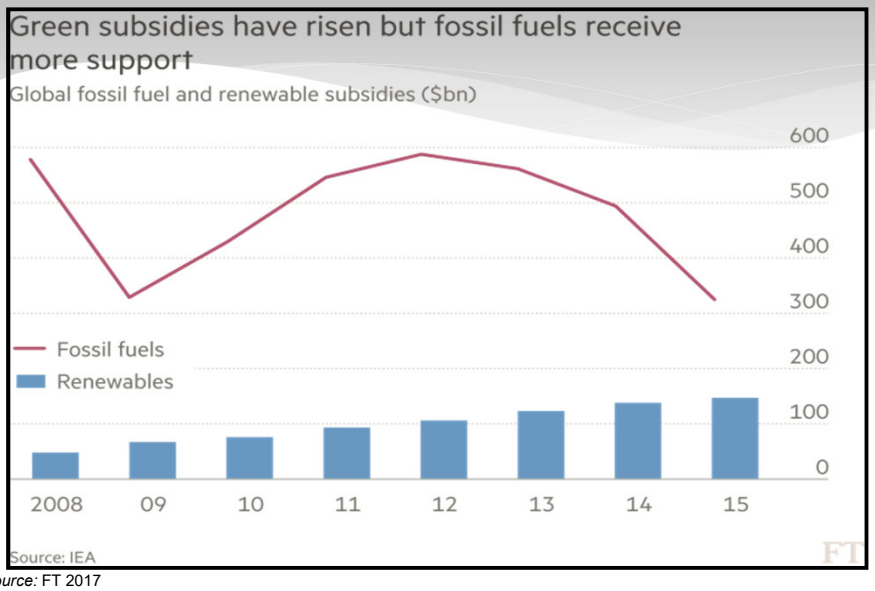
Source: FT 2017

RES versus Fossil Fuel Energy Consumption 1990-2015



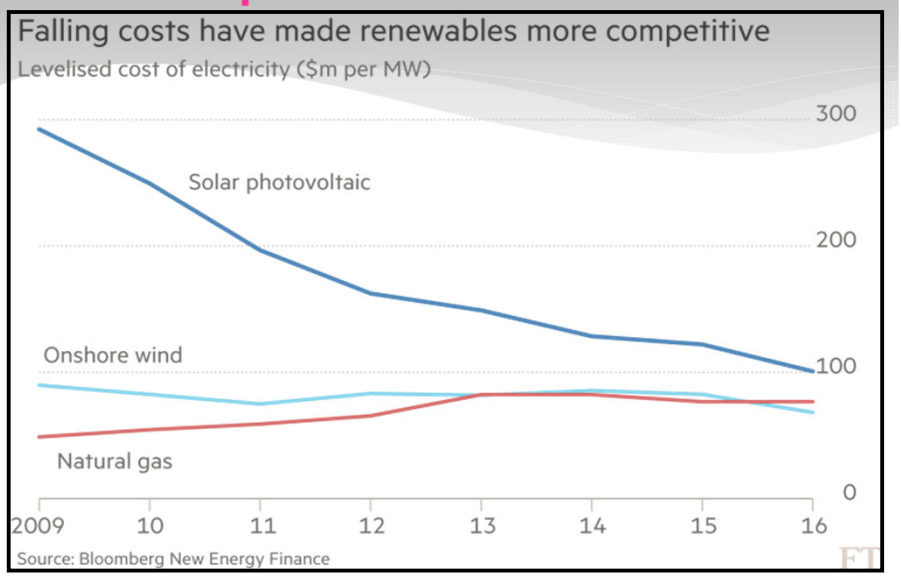
Source: FT 2017

Green versus Fossil Fuel Subsidies 2008-2015



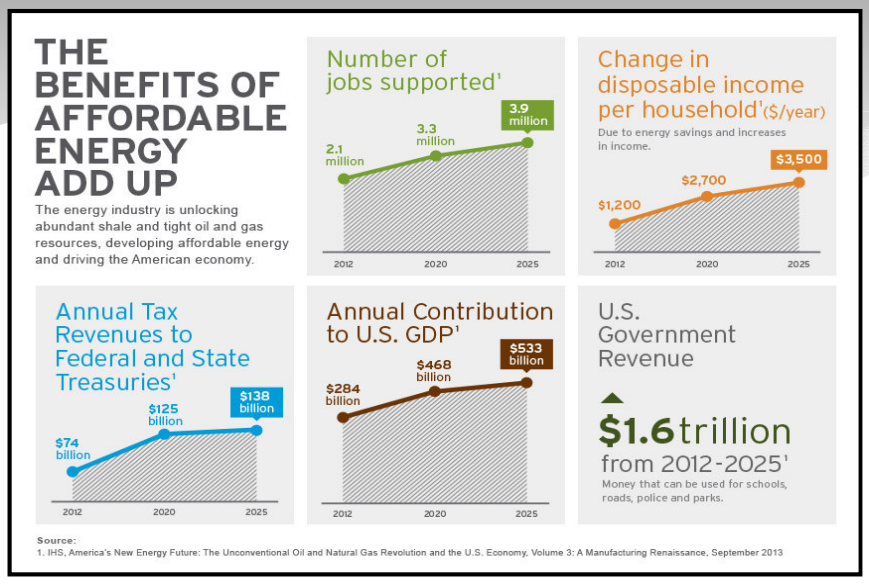
Source: FT 2017

RES: Falling Costs and Rising Competitiveness 2009-2015



Source: FT 2017

U.S.A.: Benefits of Shale Gas Revolution



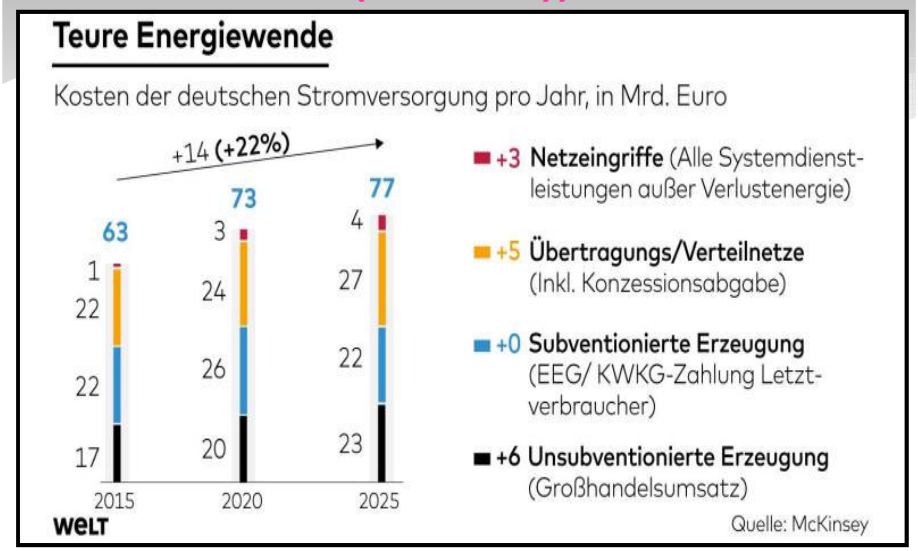
Source: IHS 2013

Trends in energy price indexes 2005-2012

	EU	US
Gas price index Industry	35%	-66%
Gas price index Households	45%	3%
Electricity price index Industry	38%	-4%
Electricity price index Households	22%	8%

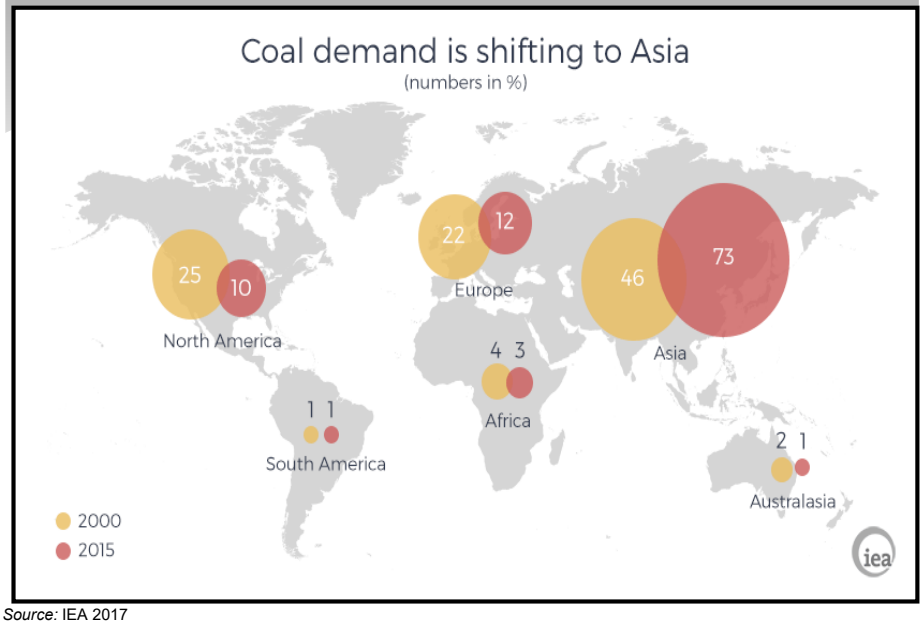
15 *Source*: J.M. Barroso at the European Council, 22 May 20013

Kosten der deutschen Energiewende? (02-2017))



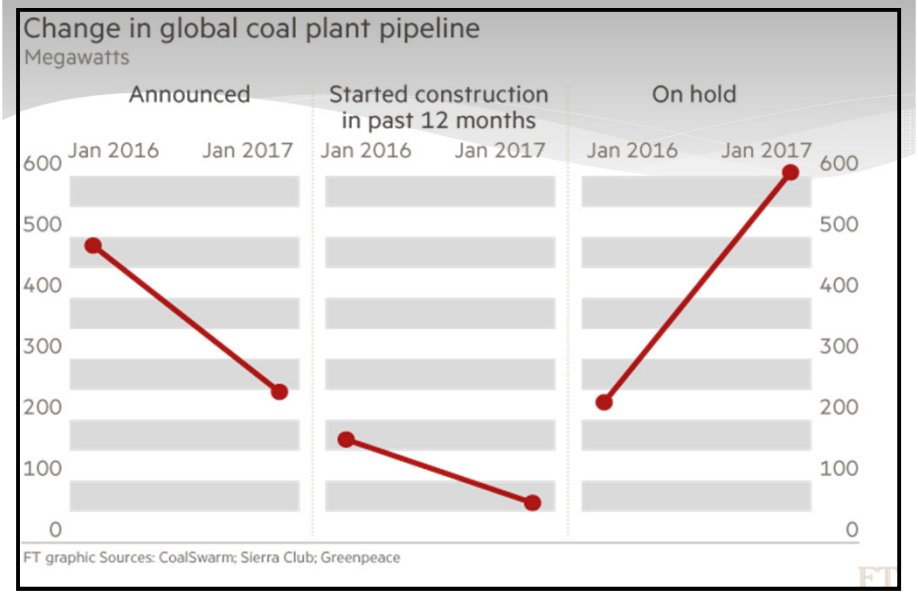
Source: Bloomberg 2016

Global Coal Demand Shifting to Asia



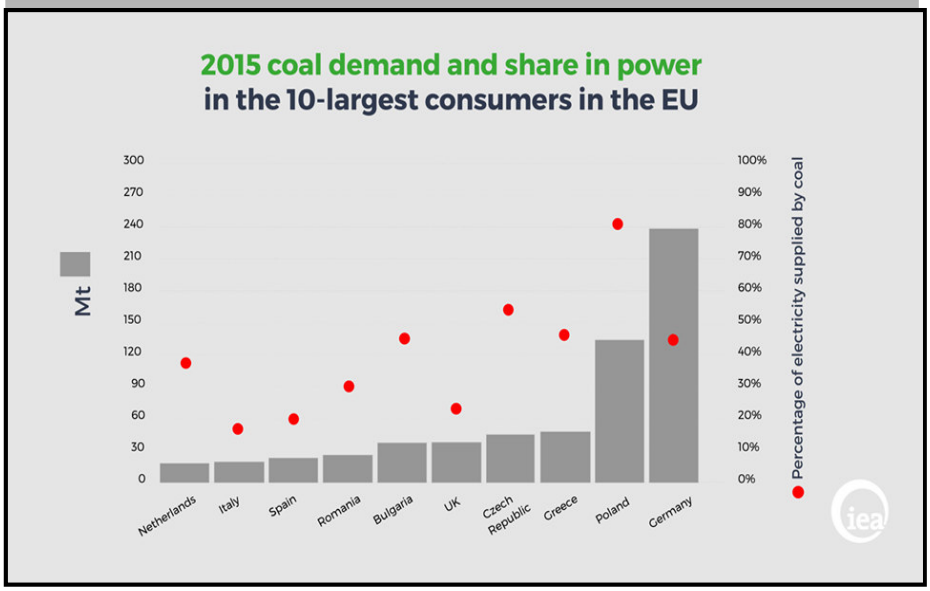
Source: IEA 2017

Declining Coal Power Plants Worldwide



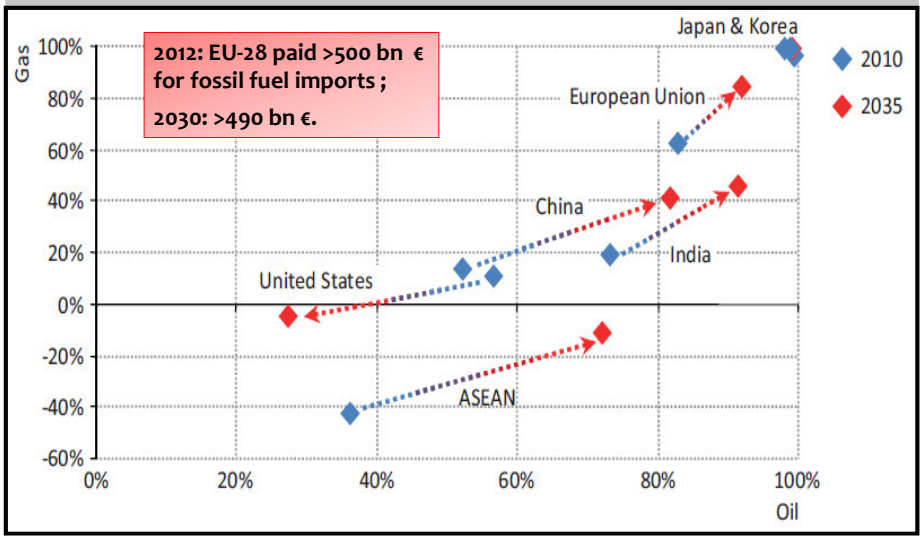
Source: FT 2017

EU Coal Demand and Share in Power (2015)



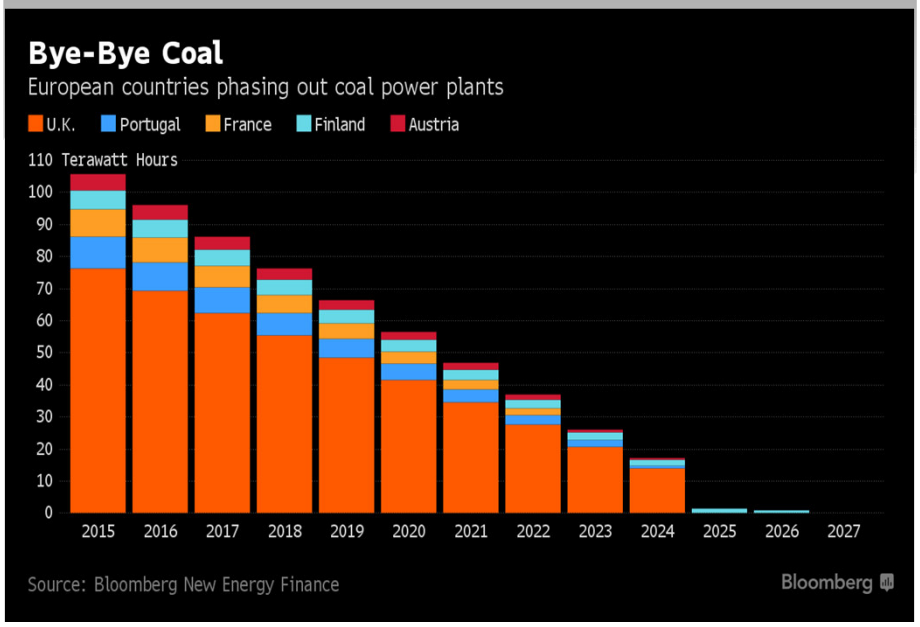
Source: IEA 2017

Net-Oil- and Gas Dependency of Different Countries and Regions 2010-2035



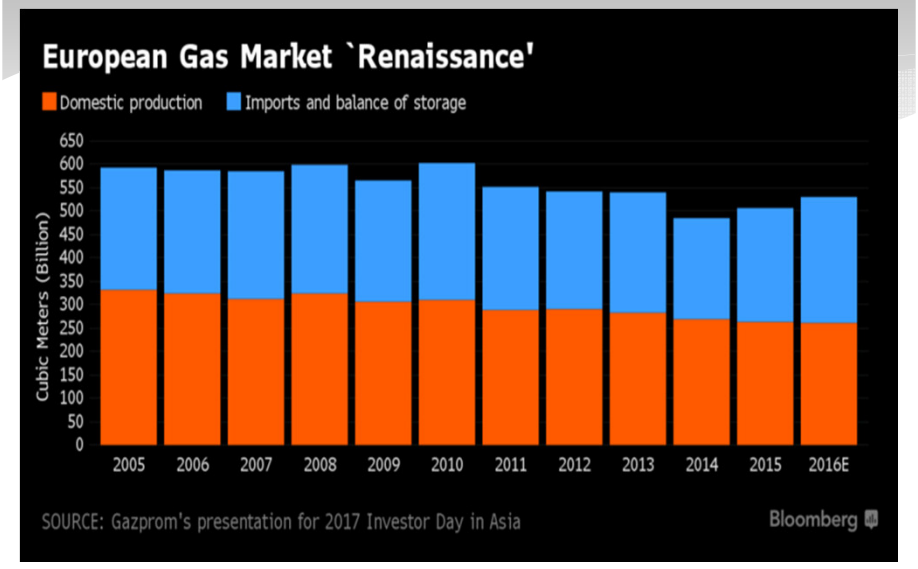
Source: IEA-WEO 2012

Europe: Phasing Out Coal Power 2015-2026



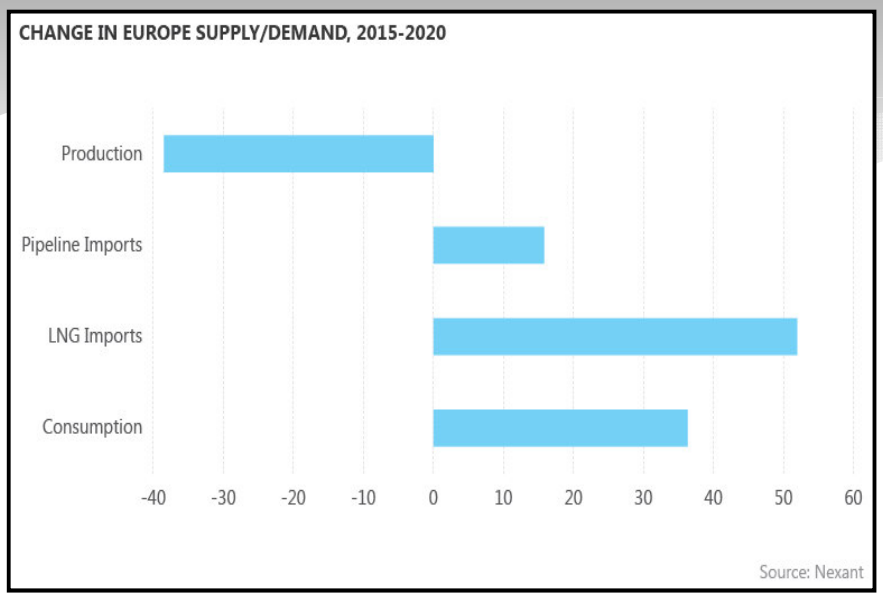
Source: Bloomberg 2017

Renaissance on the European Gas Market? (2005-20116)



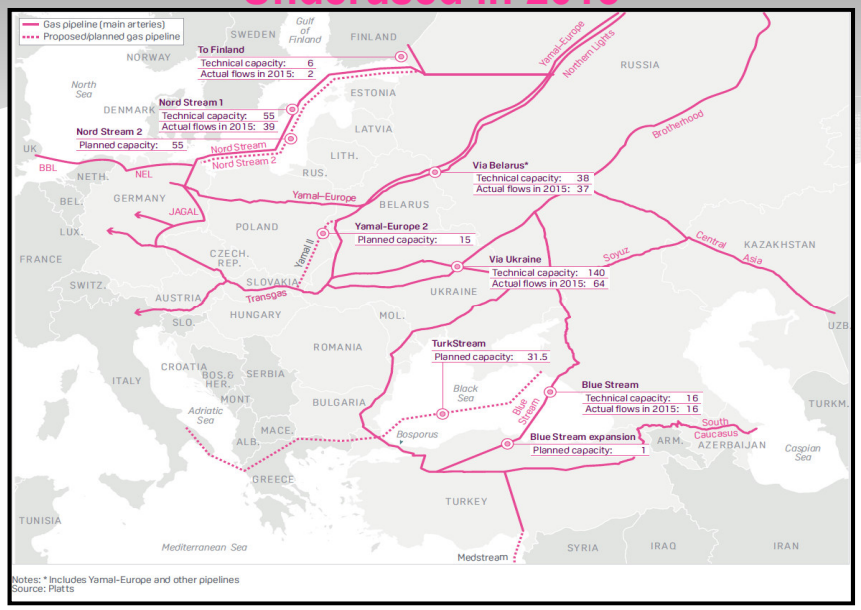
Source: Bloomberg 2016

Europe: Gas Supply/Demand Balance 2015-2020



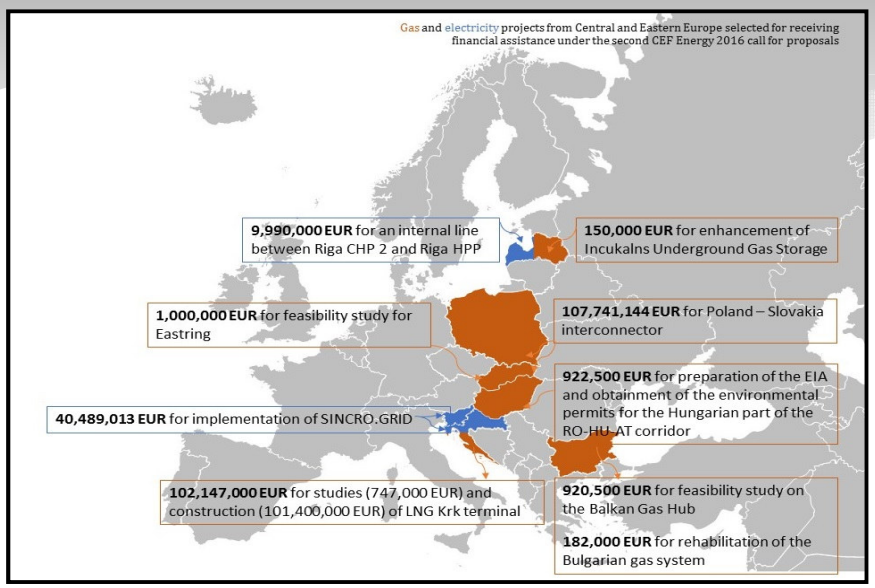
Source: interfaxenergy.com 2017

Russia's European Gas Export Pipelines Underused in 2015



Source: Platts 2017

EU-Investment Plan in Energy Infrastructures in CEE (2017)



Source: European Commission/CEEP 2017

Conclusions and Perspectives

1. Energy and Energy Prices will remain a driver of geopolitical conflicts
2. Oil price development and its direct impacts on state budgets and political-economic stability of major producer countries (i.e. Russia, U.S., Iran, Venezuela, Australia et.al.) in the light of a worldwide oil, gas and coal oversupplies.
3. Lesson of the *German Energiewende*: Expansion of RES leads to two operating energy systems in parallel, creating to new energy supply risks and costly subsidies.

4. EU-Energy Strategy:

- Balancing the three objectives of the “energy trilemma”;
- Decarbonization: phase out of coal? (coal vs. gas)

5. Looking Ahead:

1. Increasing interdependencies between *Energy Supply Security* and *Raw Material Supply Security* (i.e. rare earths etc.) as the result of the expan-sion of RES and other green technologies (impact: price increases).
2. Electricity supply security (in context of cyber threats to CIs and increasing black-out risks) is becoming at least or even more as important as tradi-tional oil and gas supply security.

Thank you very much

for your attention!

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