

The next 40 Years: Advancing EU Energy Objectives in East Central Europe

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Thursday, October 4, 2012

The next 40 Years: Advancing EU Energy Objectives in East Central Europe

Main Topics

- Global Markets and Technology Trends
 - Perspective on European Energy Policies
 - Future of the Energy Community
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Global Markets and Technology

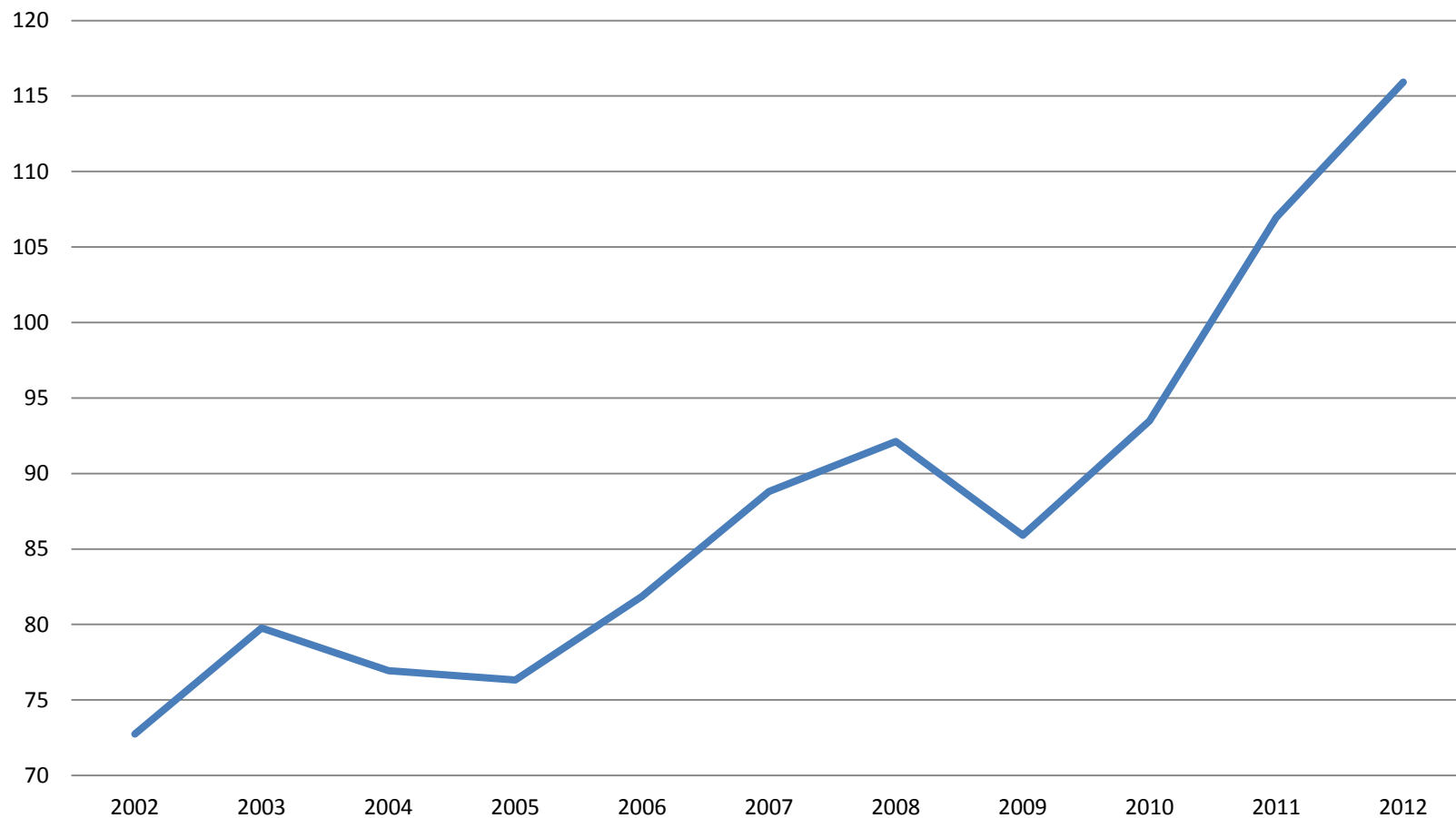
- Perils of Prediction
 - Dynamics of Energy Demand Growth
 - Falling Prices and Increased Investment in Renewables
 - US Shale Gas and Potential Impacts
-

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- The world's energy sector has witnessed dramatic changes over just the past several years and there are serious perils in trying to forecast the happenings in the energy sector over the next 40 years, as Fukushima and the shale gas turnaround illustrate.

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Japan's LNG Imports (bcm/y)



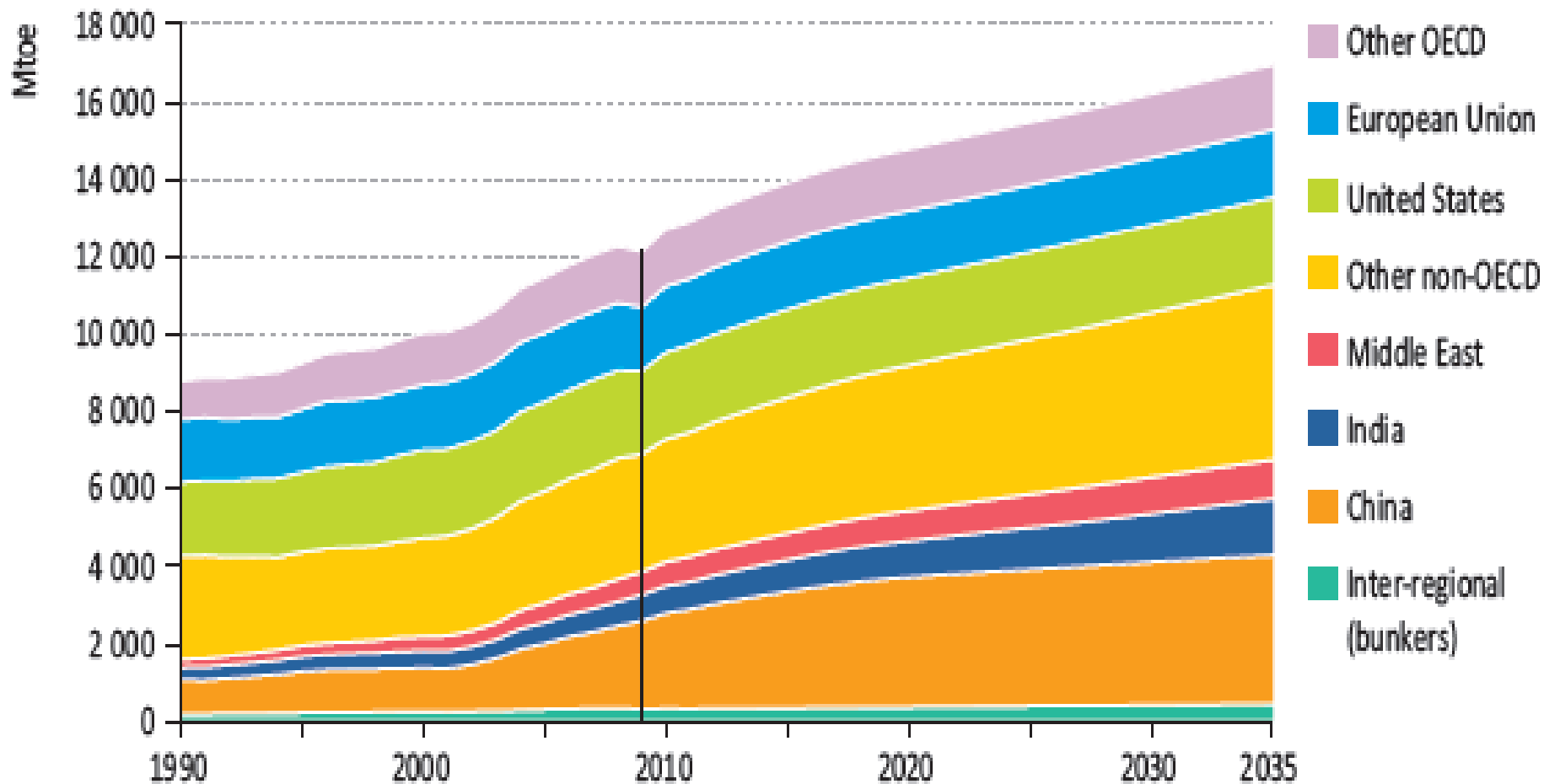
Source: for 2002-2011 BP Statistical Review of World Energy 2003-2012, for year 2012: Japanese expectations

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- The IEA projects that 80% of future electricity growth will be in the non-OECD countries, particularly in India and China.

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Forecast for World Primary Energy Demand (Mtoe)



Source: World Energy Outlook, IEA, 2011; New Policies Scenario

IEA, 2006, Reference Scenario

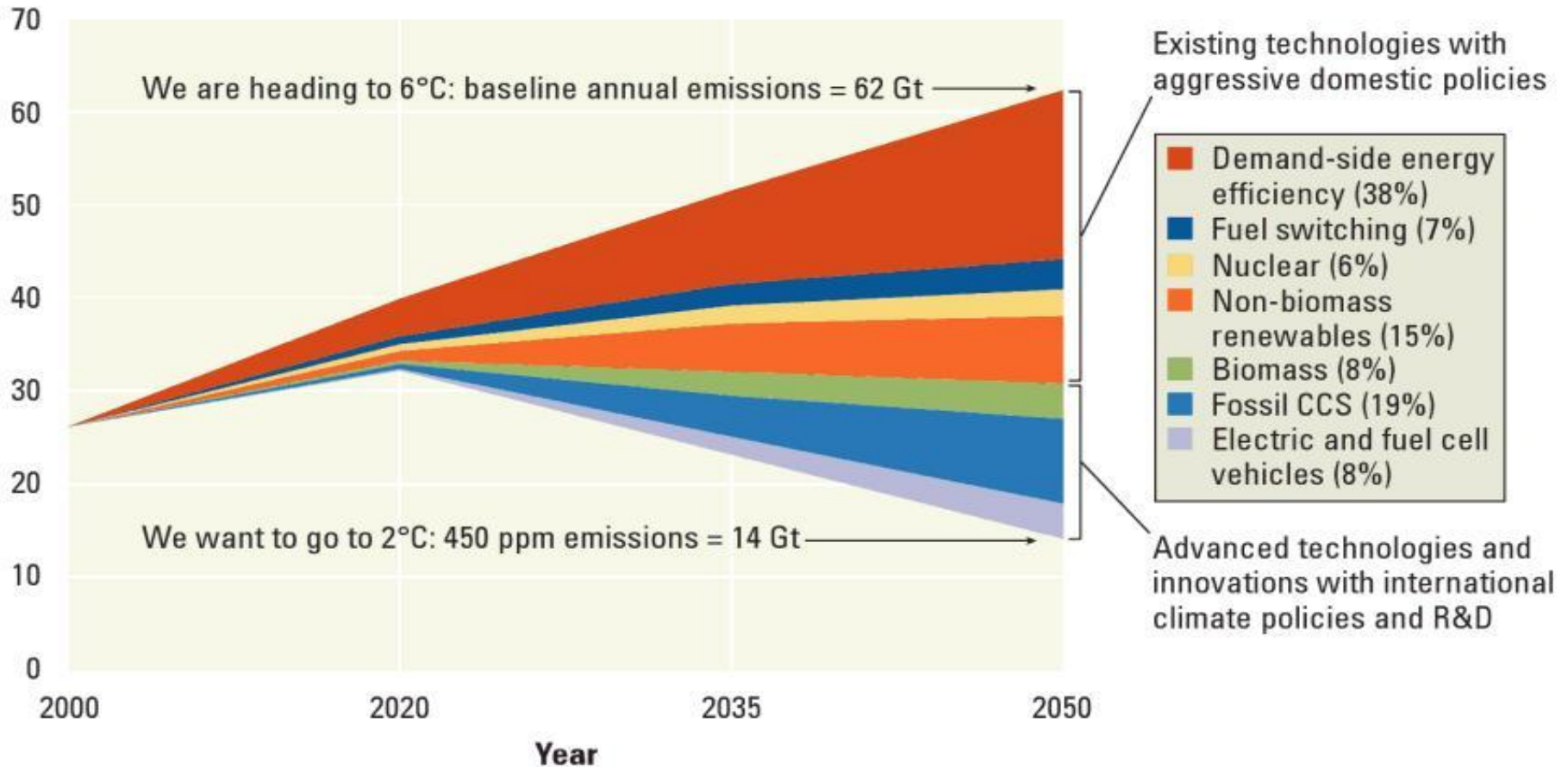
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- We are witnessing dynamic changes in the energy sector driven by worldwide investments into new technologies to transform the way we produce, deliver, and consume energy.

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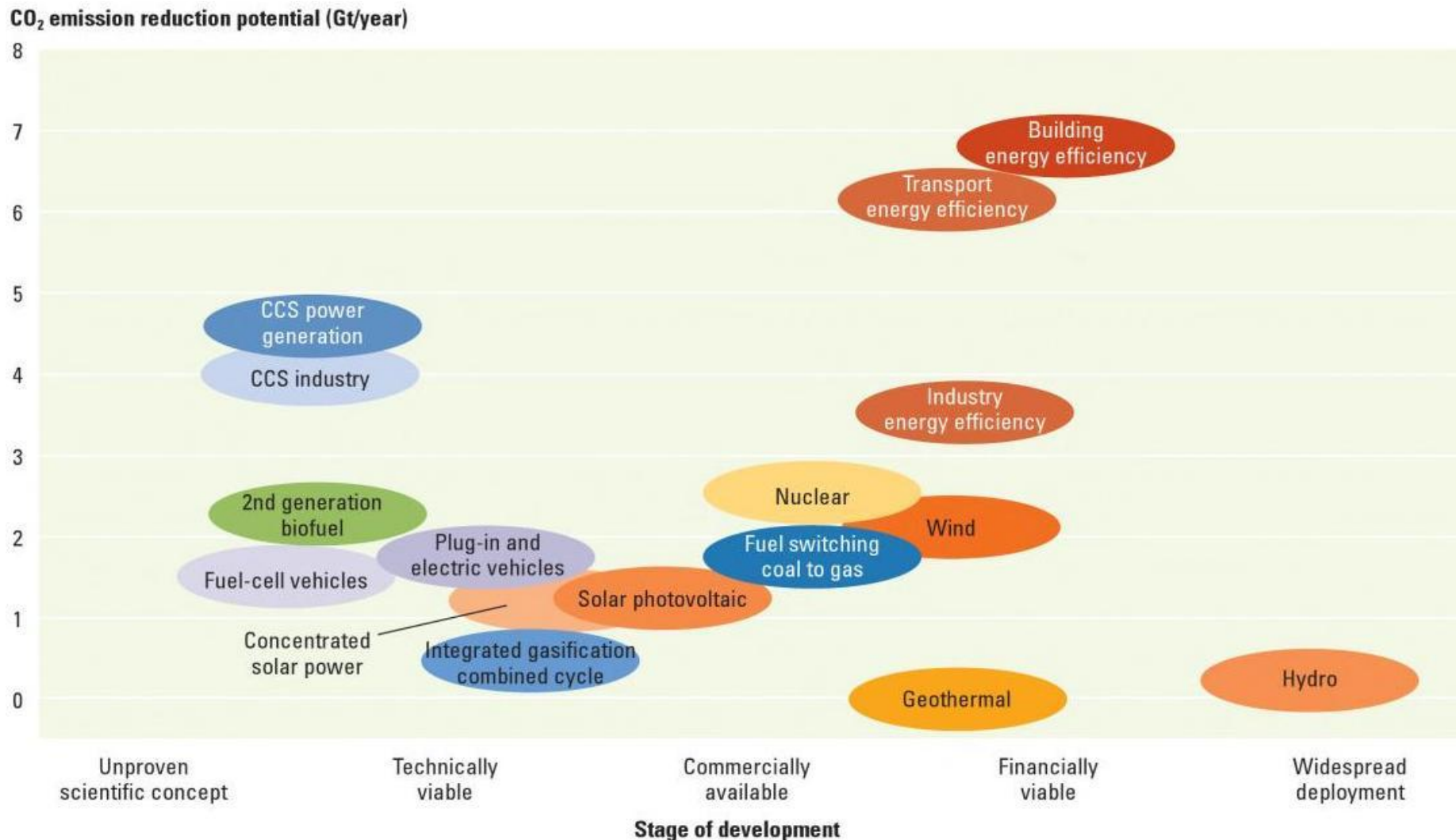
Demand-side Energy Efficiency has Greatest Potential for CO₂ Emissions Reduction

Annual emissions (Gt CO₂)



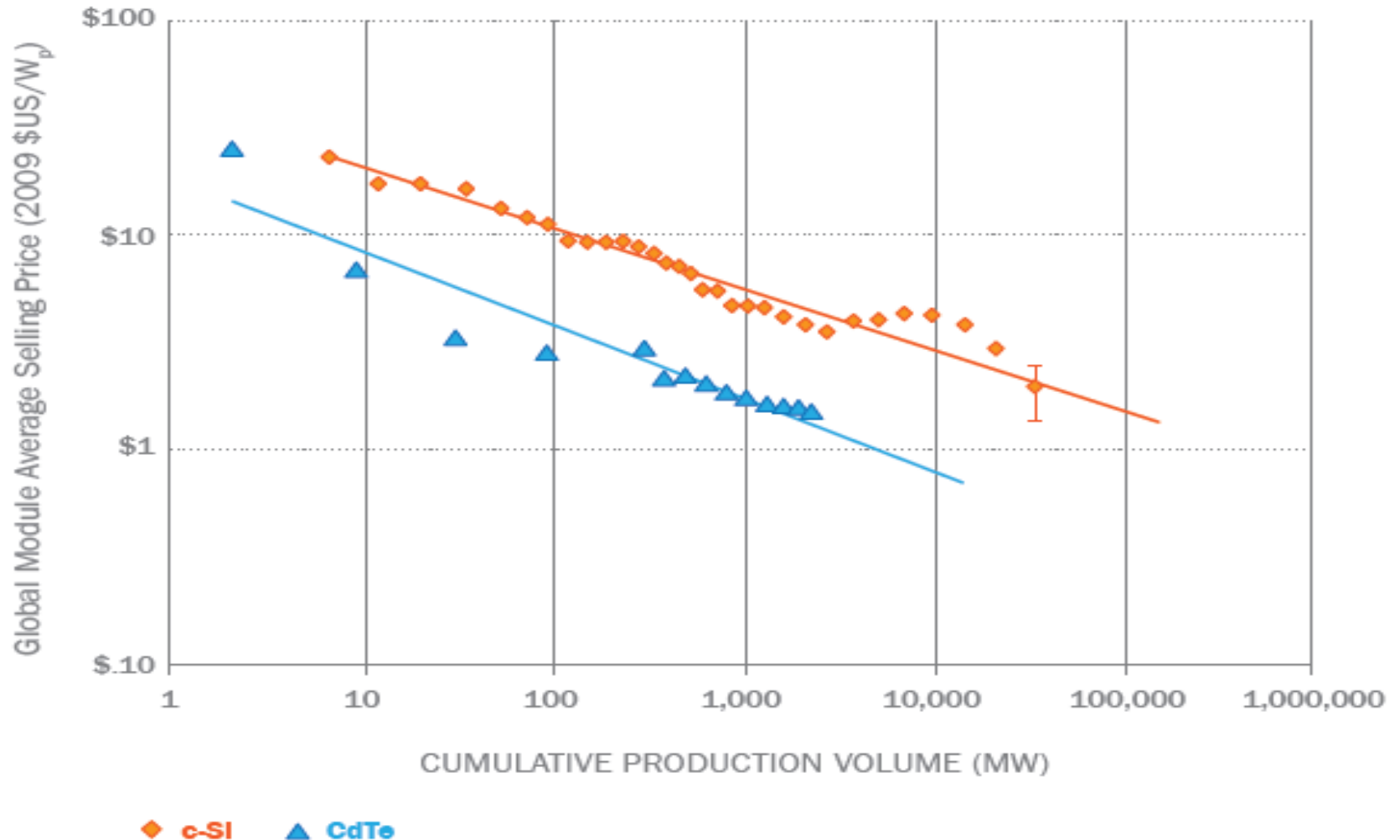
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EE is More Financially Viable than Other Options



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Decrease of Price of Photovoltaic Panels

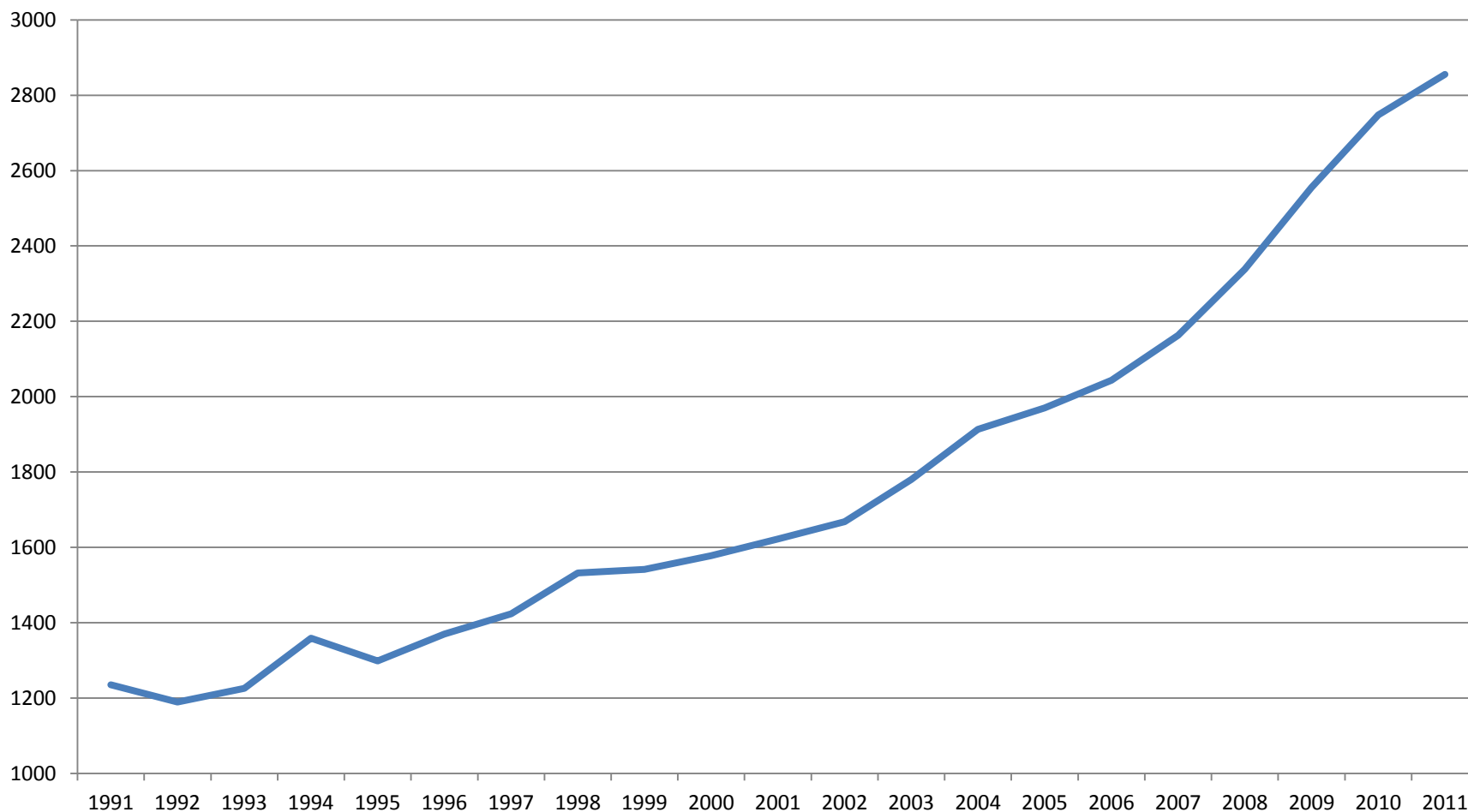


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- Saudi Arabia has announced plans to invest \$109 billion to develop 41,000 megawatts of solar projects over the next 20 years.
- Algeria is looking to develop 2600MW of renewables by 2020 and 12,000MW by 2030.
- Morocco is looking to develop 6,000 MW of solar, wind and hydro and supply 30% of its electricity from renewables by 2030.

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Saudi Arabia's Oil Consumption (thousands barrels/day)



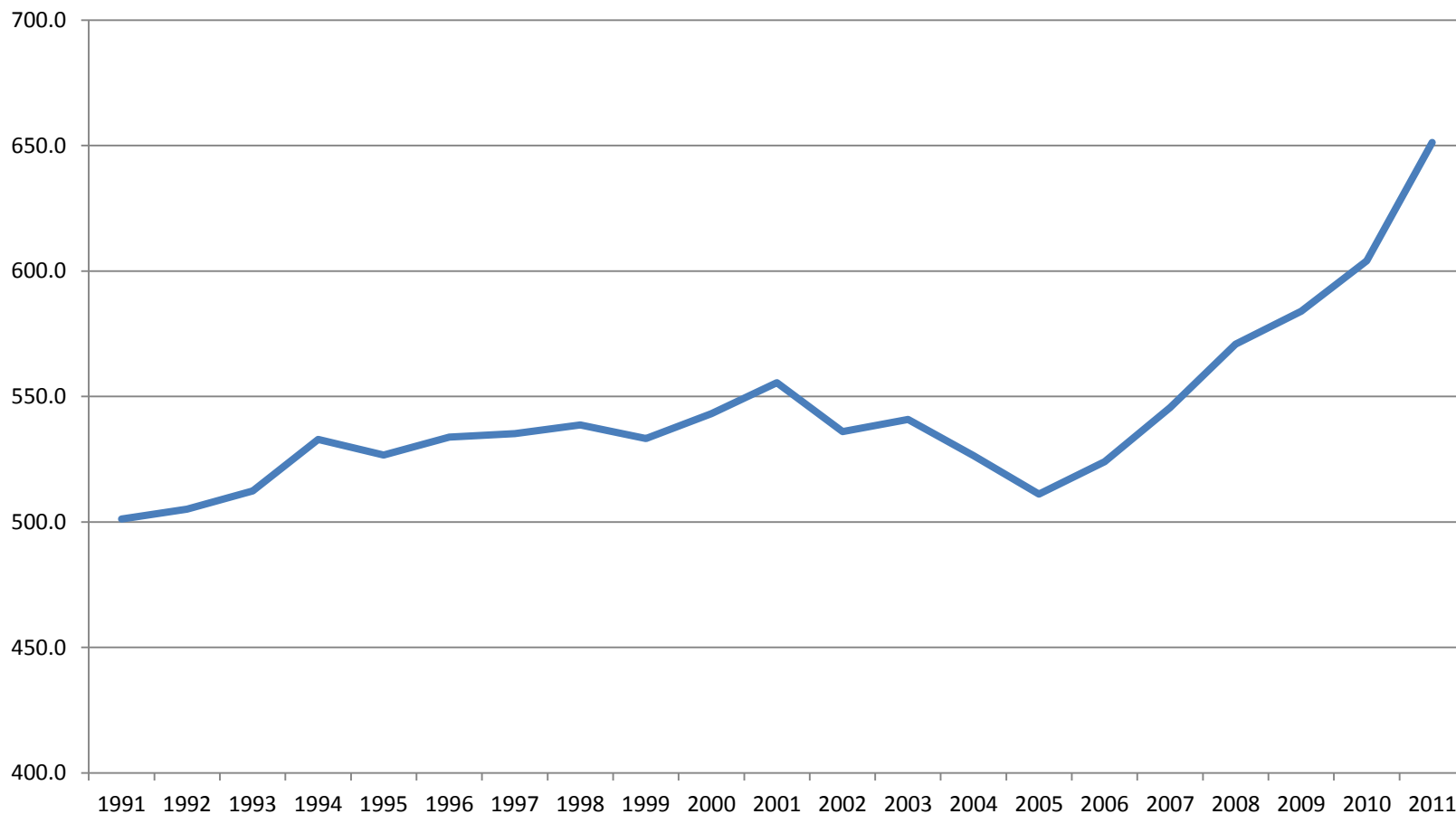
Source: BP Statistical Review of World Energy 2012

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- But the dramatic development of the new technologies does not apply only to renewable energy. There is also another sector, where technological progress has dramatically changed the old paradigm and is transforming markets.
- It is the sharp and rapid increase of the U.S. natural gas production sometimes referred to as the “shale revolution.”

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US Natural Gas Production (bcm)



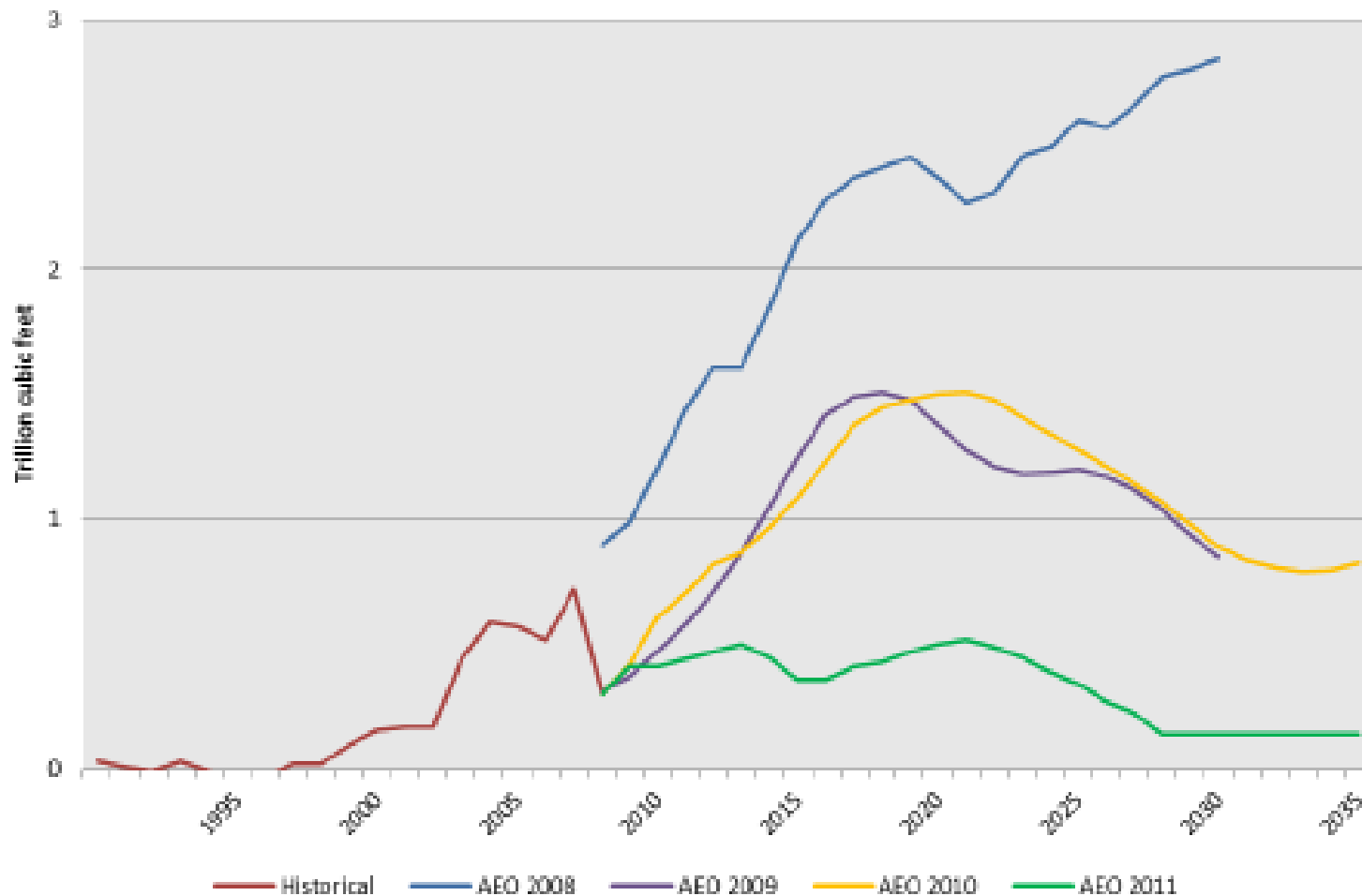
Source: BP Statistical Review of World Energy 2012.

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- The U.S. shale gas boom hasn't stopped at our borders. The United States, which, four years ago, was projected to become the world's largest importer of LNG, has dramatically decreased its LNG imports, and is poised to, depending on policy drivers, become an exporter. This dramatic change has already had important impacts on the global gas market.

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Historical and Projected Net US LNG Imports



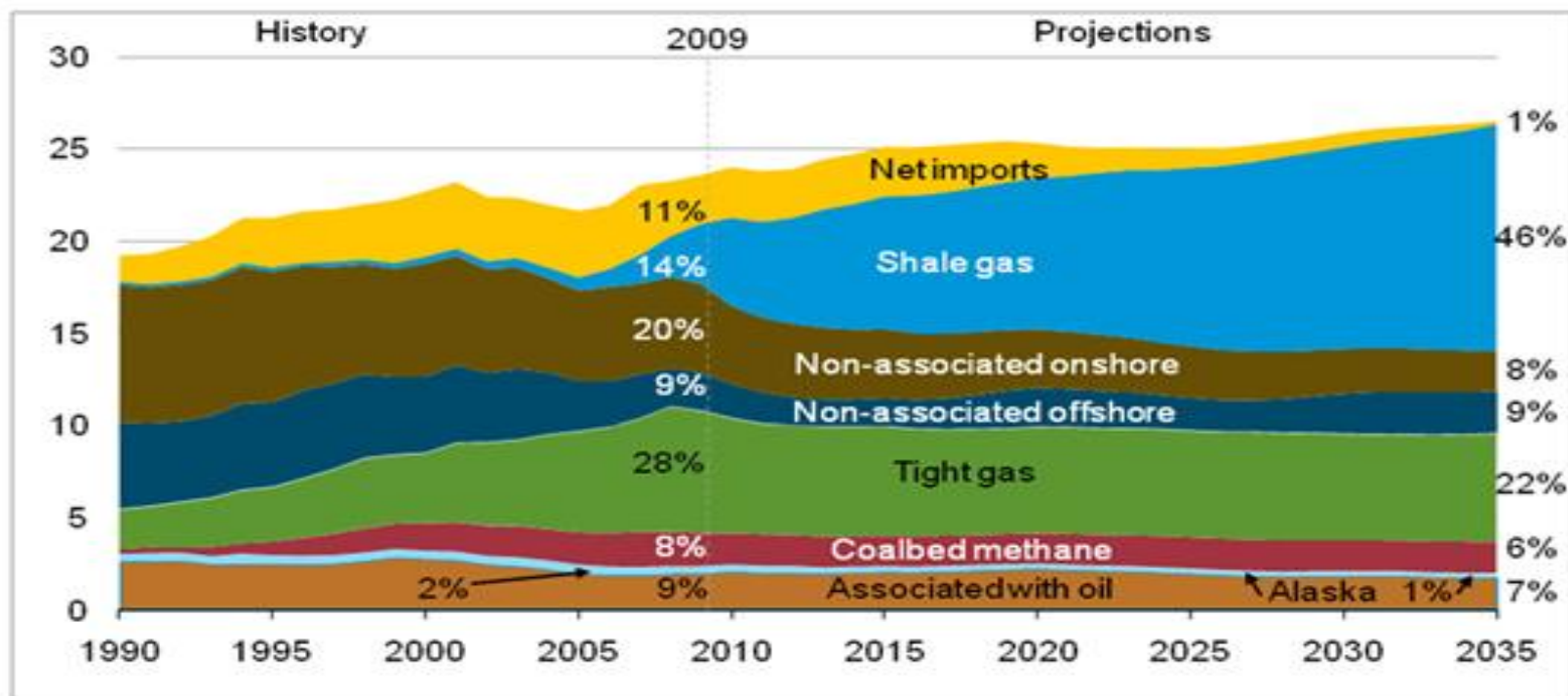
Source: Quarterly Report on European Gas Markets, European Commission, 2012 - based on the Annual Energy Outlooks of the US Department of Energy.

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U.S. Shale Production

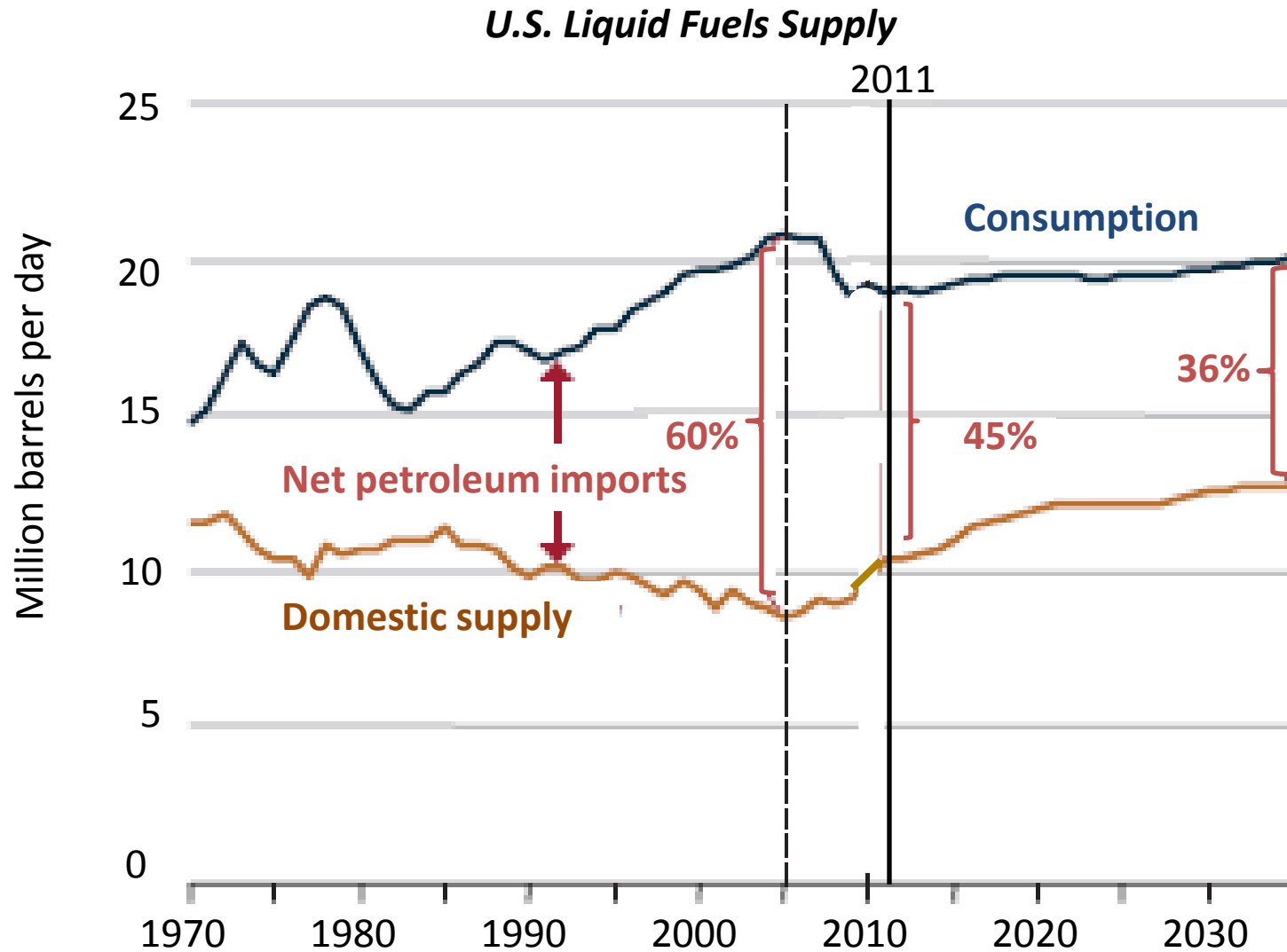
Shale gas offsets declines in other U.S. supply to meet consumption growth and lower import needs

U.S. dry gas
trillion cubic feet per year



Source: EIA, Annual Energy Outlook 2011

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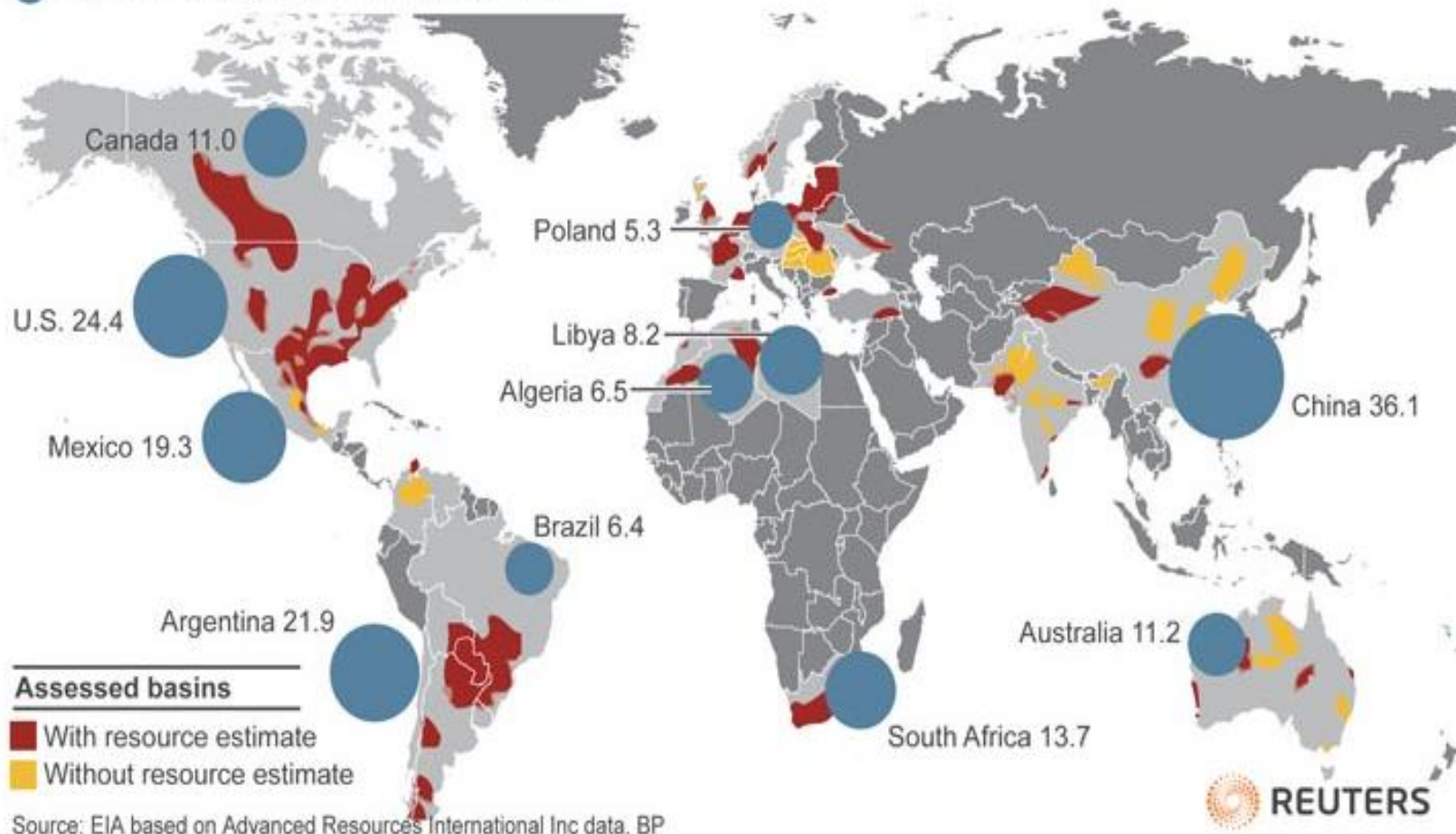


Source: U.S. Energy Information Administration, AEO 2012

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Global Shale Gas Basins & Possible Resources

● Top reserve holders 200 - Trln cubic metres

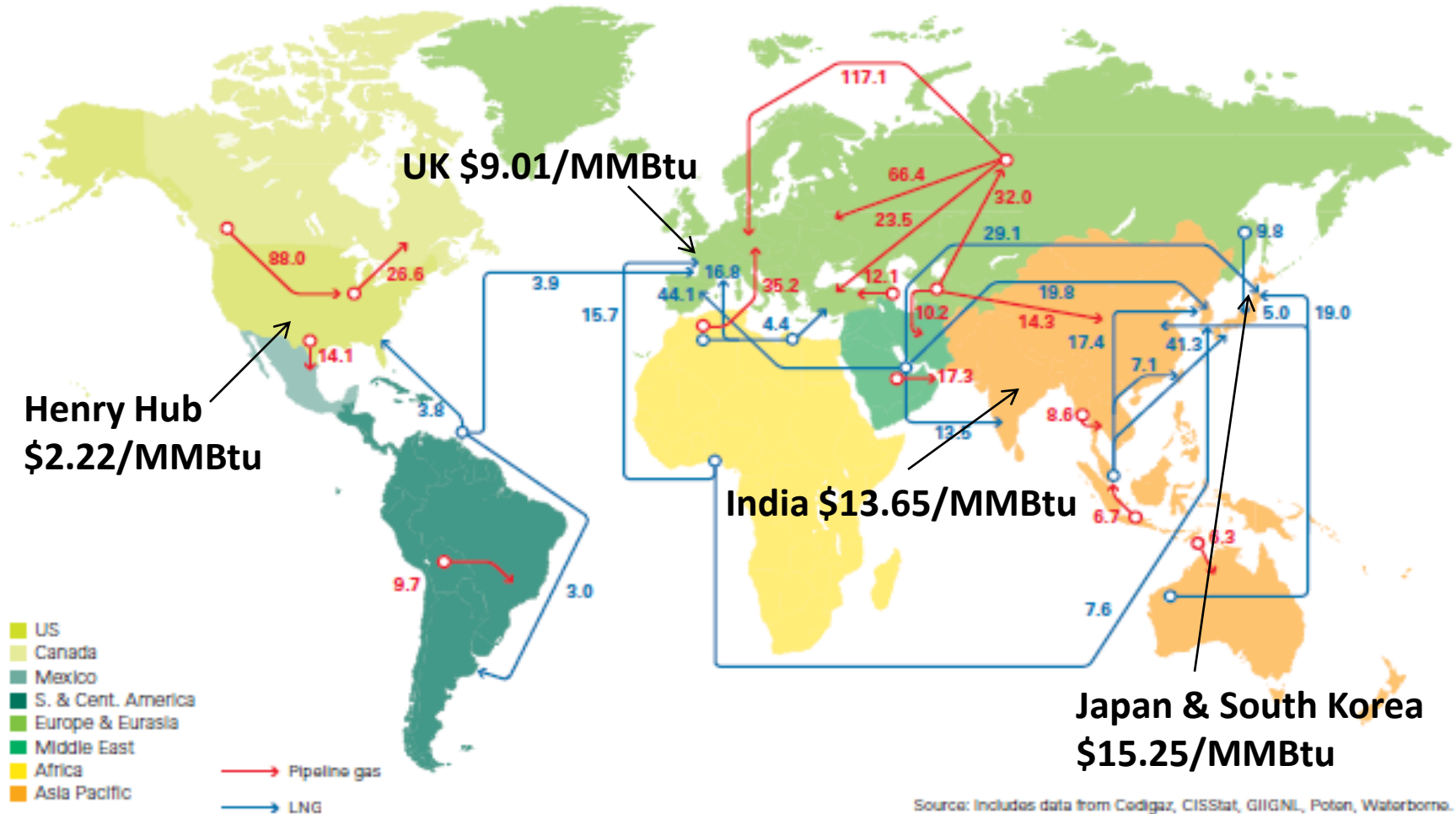


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- The natural gas revolution is not just about unconventional gas, such as shale. While it gets much less attention in the press, the world is adding significant new conventional gas reserves, which are viable to develop for LNG markets. Australia, for example, will soon become one of the world's largest LNG suppliers, and we see enormous potential for new supplies from East Africa, e.g. Mozambique and Tanzania.

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World Gas Trade (2011) & Landed LNG Prices (April 2012)



Source: Includes data from Cedigaz, CISStat, GIIGNL, Poten, Waterborne.

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Perspective on EU Energy Policies

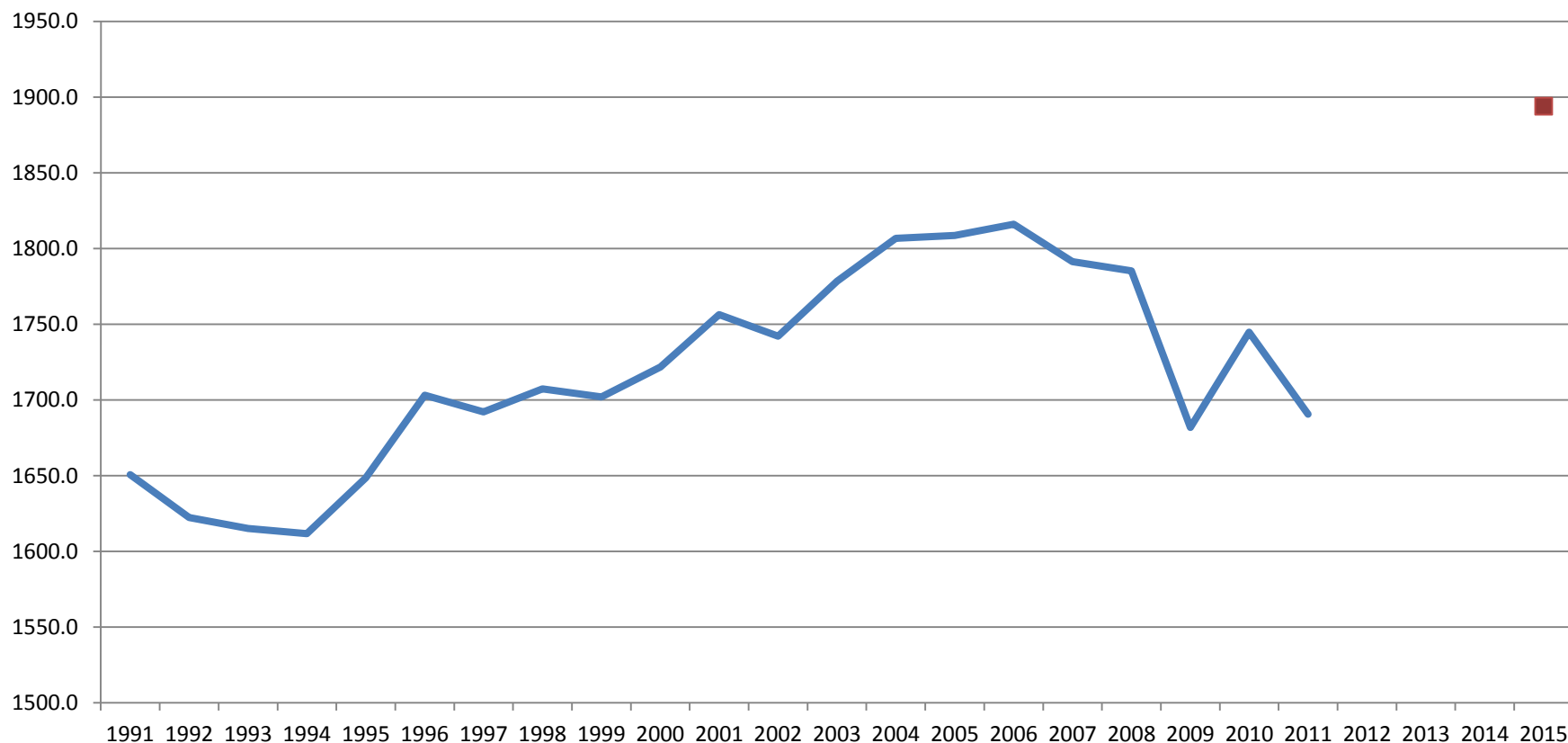
- European Energy Demand
- Gas Market Trends
- Competitive Markets and the 20/20/20 Plan

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- The economic crisis in Europe has lowered the demand trajectories and created challenges to the transformational policies.

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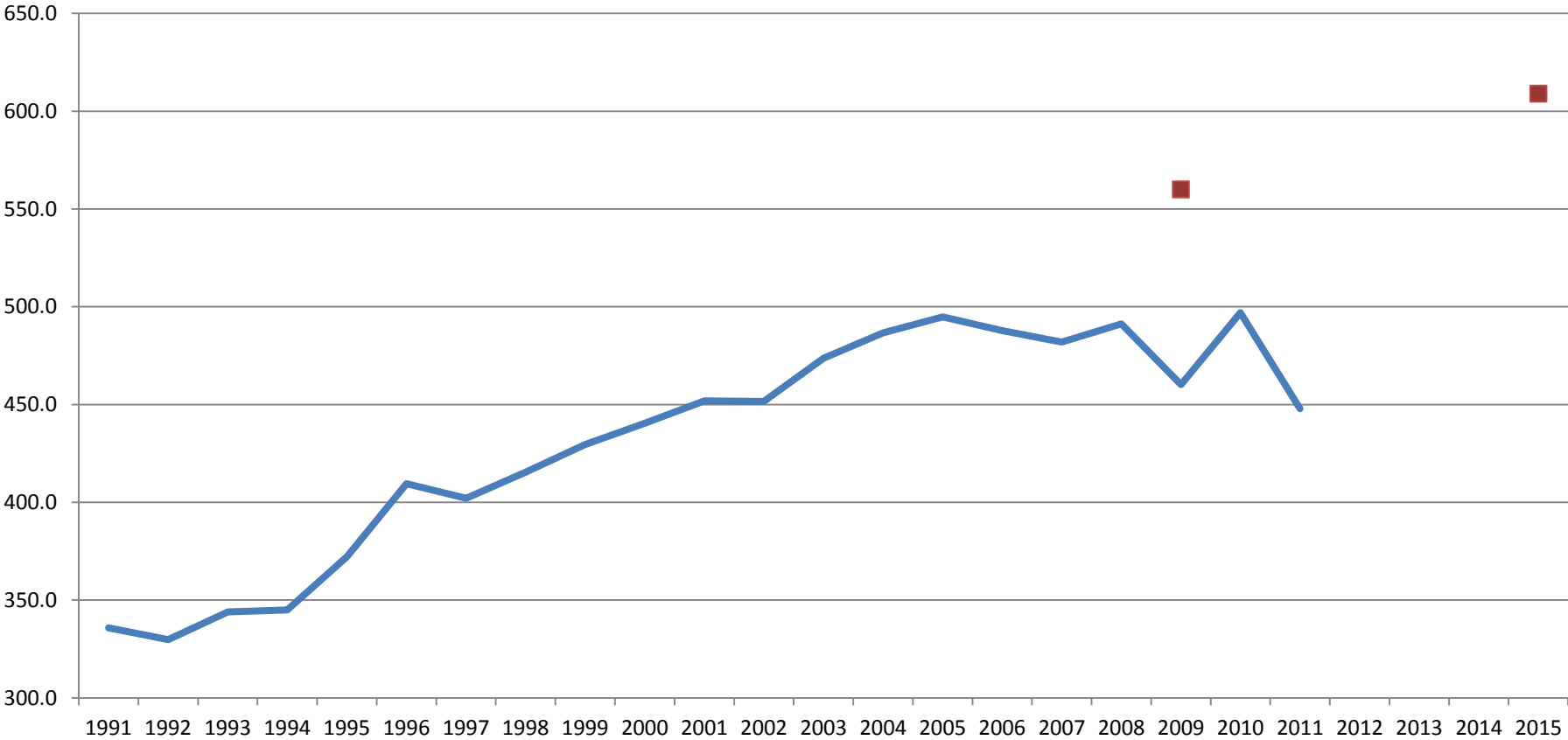
EU's Primary Energy Demand (Mtoe)



Source: BP Statistical Review of World Energy 2012, World Energy Outlook, IEA, 2006; Reference Scenario

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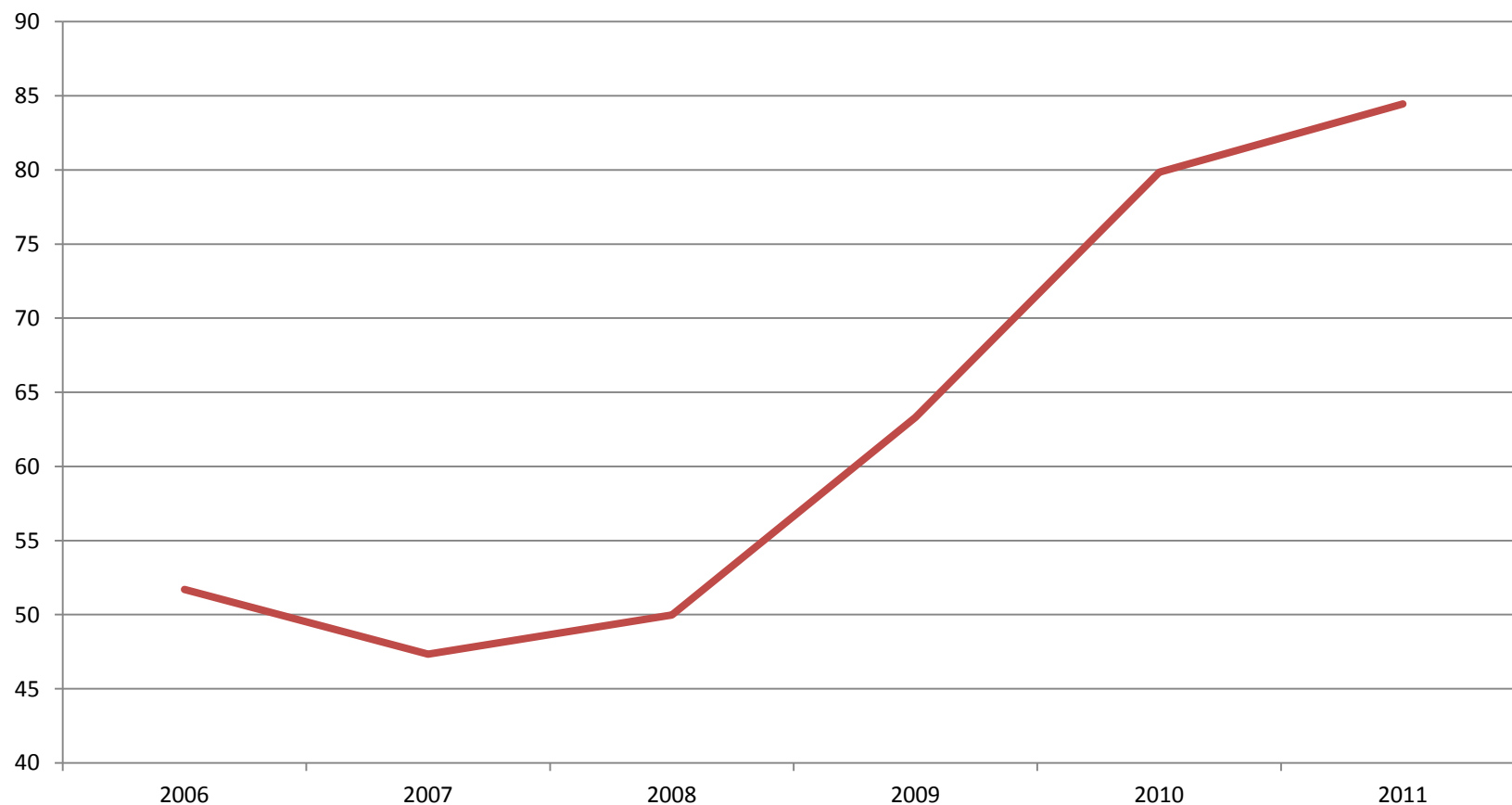
EU's Natural Gas Consumption (bcm)



Source: BP Statistical Review of World Energy 2012, World Energy Outlook, IEA, 2006; Reference Scenario

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EU's LNG Imports (bcm/y)



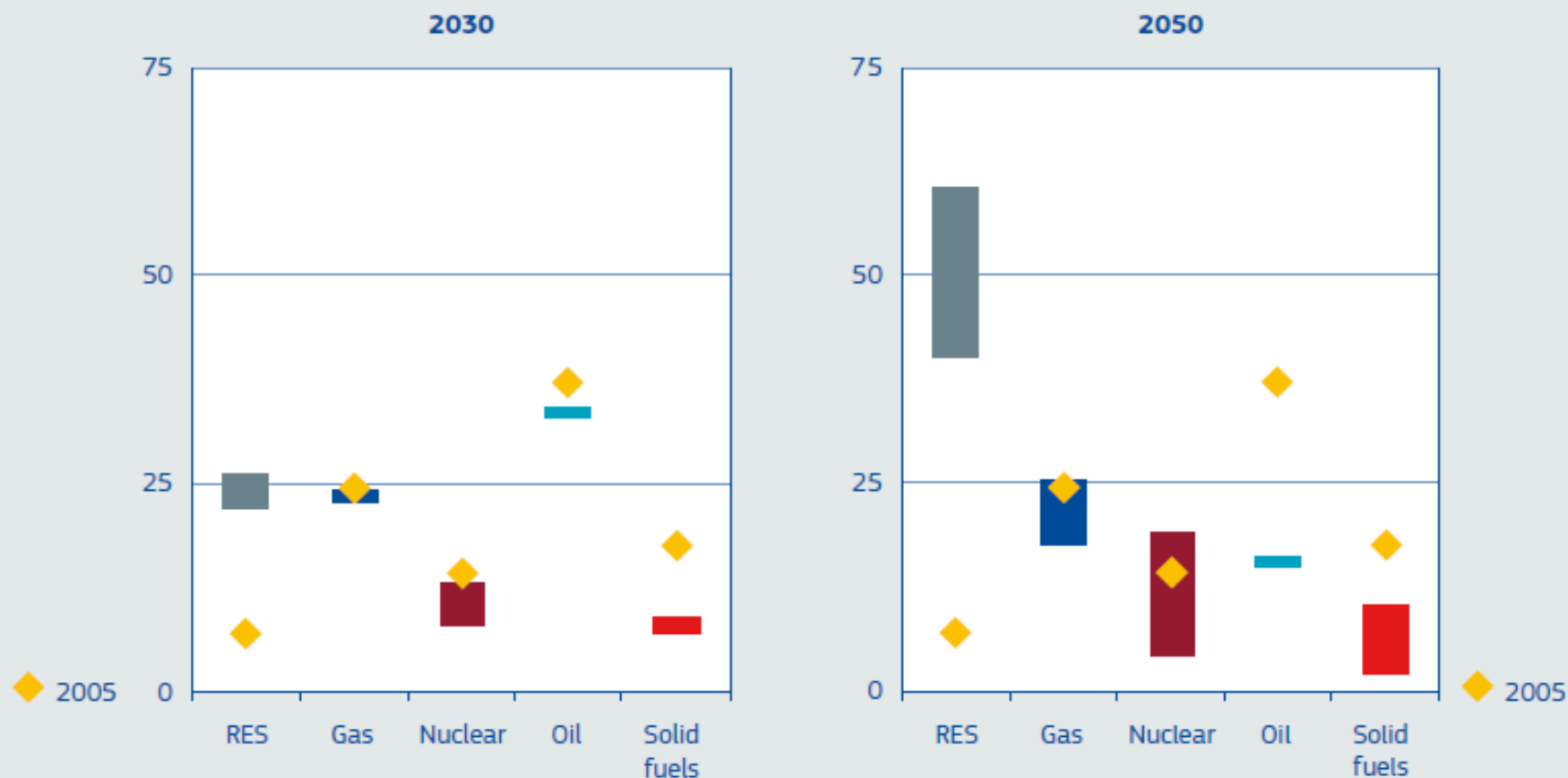
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- The 2050 Roadmap charts a vision of future movement towards cleaner, more efficient energy systems.

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EU's Energy Roadmap 2050

Graph 1: EU decarbonisation scenarios — 2030 and 2050 range of fuel shares in primary energy consumption compared with 2005 outcome (%)



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Future of the Energy Community

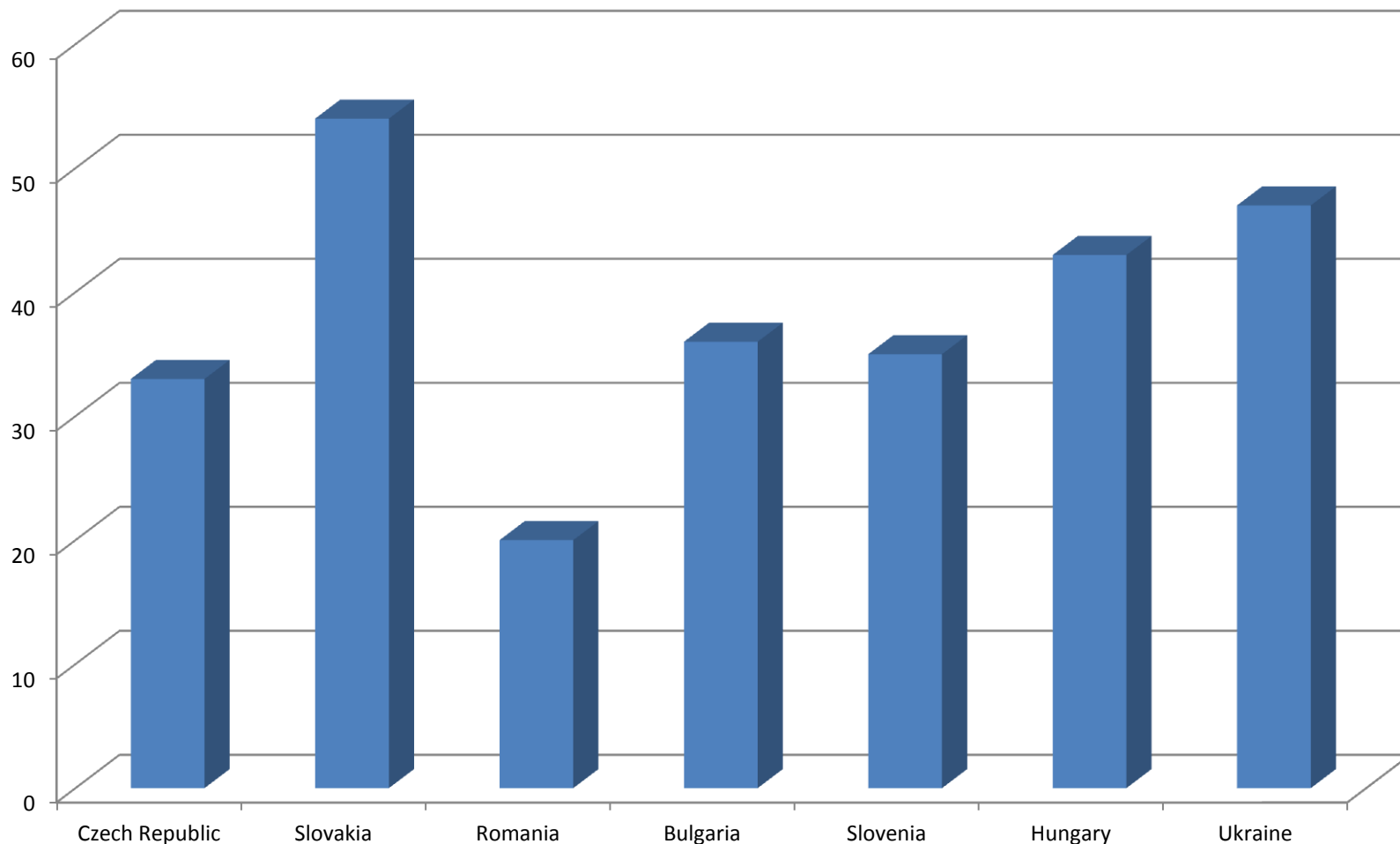
- Progress under the Treaty
 - Serious Investment Challenges Ahead
 - Substantial Potential for Energy Efficiency and Renewables
 - Future of Coal, Gas and Nuclear
 - Linkages with North Africa
-

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- The heavy reliance on coal and imported natural gas presents many challenges for the region. Key countries however, the Czech Republic, Slovakia, Hungary, Bulgaria, Romania, Slovenia and Ukraine have significant nuclear industries.

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Share of Nuclear Power in Electricity Production (%)



Source: For EU: Country factsheets - EU 27 Member States, European Commission, 2012 (based on data from 2009). For Ukraine: Annual Report of the Implementation of the Acquis under the Treaty Establishing the Energy Community, 2011, (based on data from 2008).

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Thank you for your attention!