New facts require course correction

IFIEC Energy Forum 5 June 2013

Peter Botschek, Cefic Director Energy & HSE
Energy Matters for Chemicals Sector

- Used as feedstock AND to power plants
  - Global energy demand 42 EJ/yr (two thirds feedstock)
  - 10% of global (30% of industrial) demand
  - Fastest growing industrial consumer

- 18 chemical building blocks account for 80% of energy demand
  - Average energy costs about 50%, but key building blocks have cost impact of up to 85%

- 95% of manufacturing require chemistry inputs
  - “Competitive Energy” biggest sector concern & growing issue for EU economy’s broader manufacturing base

Chemicals Matter for EU Economy
Sustainable Future = MORE High Performance Materials

1/3 of Avoided EU GHG Emissions via Chemistry

- Insulation: 794 Mt CO₂e
- Wind power: 270 Mt CO₂e
- Lighting: 155 Mt CO₂e
- Packaging: 48 Mt CO₂e
- Automotive weight: 40 Mt CO₂e
- Marine antifouling: 39 Mt CO₂e
- Solar power: 38 Mt CO₂e
- Sub-total: 1,383 Mt CO₂e
- Fertilizer & crop protection: 185 Mt CO₂e
- Total: 1,568 Mt CO₂e

Source: Ecofys
Impact of US 'Shale Revolution'

Historical and projected net US LNG imports

- US gas production now similar to Russian levels
- US only uses 10% of its LNG import capacity
- More LNG available for Europe → Pressure on prices

US Energy Information Administration, 'Various American Energy Outlooks'
Low Ethylene Costs in the US means big Cost advantage for US Petrochemistry

- Seven years ago Europe was in a comparable cost situation to the United States for the production of ethylene.
- The availability of natural gas as a low-cost energy source has resulted in lower-cost ethane and ethylene. This natural gas price has affected the price of ethylene in the US massively.
- In 2012, the cost difference between the two regions has become 700 $/ton. On a European market of 20 million tons, this represents a cost advantage for the US of 14 billion USD per year.
Low Ethane Costs in the US make US Crackers more competitive

- The cost curve is built on the cumulative petrochemical capacity from the lowest cost producers (in the Middle East) to the highest cost producers (in Northeast Asia).
- US ethane-based ethylene producers have moved to the lower end of the global cost curve, after only the Middle East and Canada.
- Due to cheap ethane there are currently record margins for US producers.
- By comparison, naphtha-based ethylene producers in Europe and Asia are at a competitive disadvantage.
- As recently as 2005, the United States ranked behind Western Europe.

Source: ACC: Shale Gas Study, May 2013
Game Changer for US Manufacturing

North American Capital Spend

Source: IHS - 2013
Comparing Global Electricity Prices
Cost Advantages for US Industry

Average electricity price for industry in $ per Mwh (Source: BDI)
Energy Prices and Competitiveness

Evolution of end-user electricity prices for industry, taxes excluded (2005 = index 100)

- OECD Europe
- USA
- Japan

Source: International Energy Agency
Cost Advantages for US Industry

Negative Impact for EU Energy intensive Sectors

Energy cost as % of production costs in energy-intensive industries

- In the chemicals sector, competition with the U.S., with relatively equivalent labour costs, is intensifying due to significant differences in energy prices.

- According to US EIA the industries which are affected mostly by lower gas prices are bulk chemicals and primary metals.

Low electricity prices for industry will have an impact on future investment decisions.

Source: ERT
Impacts and implications

- US Shale Gas boom challenging European petrochemical industry, especially companies with a strong focus on ethylene and corresponding down stream products.

- Small positive impact for European chemical companies with focus on naphtha by-products (propylene, butadiene).

- Resulting low US electricity prices impact on future investment decisions in energy intensive industry sectors.

- Hope: US re-industrialization could create new markets for European industry.

- Current EU figures regarding EU shale gas reserves imply that an EU shale gas production will not have similar potential as the US exploration.

- Implications for EU energy sourcing, market opening, energy and trade policies.
Policy Choice: Where to Manufacture for this Demand

Consequences of Unilateral Action: Exporting Production & Increasing Global GHGs
Higher Energy Costs = Lower GDP
- Adding Costs & Policy Burdens relative to other Major Regions proven Counterproductive
  - Chemistry building block investments early indicator of manufacturing decline or revival

Chemistry impacts 95% Value Chain
- Manufacturing creates
  - Jobs (25%)
  - R&D (80%)
  - Exports (75%)
- Uncompetitive building blocks undermine full manufacturing chain
Sustainable Future (Efficiency & Energy Alternatives) needs more Higher Performance Materials

- 1/3 of Growing EU Consumption
- Emissions avoided via Chemistry
- Policies influence what will be future EU Production share

Multiple Workable Alternatives

- **Global Actions** precondition for further Climate Commitments
- Transition to predictable **opportunity driven policy**, maintain exemptions while burdens reduced & investments return
- **No exclusions** for effective energy solutions & focus innovations on tackling cost effectiveness for global leadership
The world changes, EU policy fundamentals outdated…

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<td>ETS as ‘flagship’ policy tool to achieve target at low cost</td>
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Facts have changed since 2020 policy package was made: **EU must adapt strategy!**
World changes, EU policy framework to match:

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<td>Use all sources, avoid costly exclusions</td>
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<td>Keep ETS as low-cost tool, no more multitude of overlapping targets</td>
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No more ‘high cost policies’ to ‘drive’ EU economy: 
EU super tanker needs competitive course correction!
Thank you for your attention!

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