Chemical raw materials in Europe - Trends & Challenges

Dorothee Arns, Executive Director Petrochemicals Europe, Cefic
Presentation outline

1. Petrochemicals Europe – who we are
2. Chemical raw materials in Europe – situation & trends
3. Challenges & uncertainties
4. Summary
Petrochemicals Europe - Who we are

- the association of petrochemical producers in Europe, an industry sector of Cefic

  - European producers of base chemicals and derivatives
  
  - ~ 90 members across Europe representing 90% of total EU28 market; 25% SME

  - Our vision: The petrochemical industry to be recognised as the foundation of future economic success in Europe, fuelling innovation, manufacturing and employment
Our Full & Affiliated members are:

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Why chemicals do matter ...

Health & Nutrition

9 billion people will live on earth by 2050!
- How can we guarantee food and water supply for everyone?
- What are possible benefits and contributions of plant science?

Energy & Resources

50% more primary energy needed in 2030!
- What is the ideal energy mix of the future?
- How big is the stake of renewable energy?

Construction & Housing

67% of the world population will live in cities by 2025!
- What does future architecture look like?
- Which materials are needed to make energy consumption more efficient?

Mobility & Communication

1.2 billion cars will drive on earth by 2020!
- How can we reduce emissions and fuel consumption?
- What will future cars be made off?
In 8 European countries, the chemical industry belongs to the top 5 industrial performers in terms of value added.

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* Ranking among 19 industrial branches
Projected growth in world chemical sales 2016-2030

Chemical sales 2016

- €3.4 trillion
  - 39.6% EU
  - 17.7% Rest of Europe
  - 15.1% NAFTA*
  - 15.7% Latin America
  - 4.2% China
  - 1.2% Japan
  - 3.8% Rest of Asia**

Chemical sales 2030

- €6.3 trillion
  - 44.0% EU
  - 16.6% Rest of Europe
  - 14.0% NAFTA*
  - 12.0% Latin America
  - 5.0% China
  - 4.0% Japan
  - 1.1% Rest of Asia**

Source: Cefic

overall chemical growth expected to continue - EU share goes down
EU chemical industry sales by sectoral breakdown

- Petrochemicals 25.9%
- Consumer chemicals 13.6%
- Specialty chemicals 27.2%
- Polymers 21.6%
- Basic inorganics 11.7%
- Other inorganics
- Industrial gases
- Fertilizers
- Auxiliary for industry
- Paints & inks
- Crop protection
- Dyes & pigments
- Plastics
- Synthetic rubber
- Man-made fibres

Source: Cefic
Raw materials used in the European chemical industry (2015)

With 74% refined products constitute the predominant feedstock

Source: VCI, Cefic
Europe’s chemical excellence is based on a variety of value chains which originate from its steam cracker base and which are closely interlinked (maximal integration)
More than 50 steam crackers in operation in EU 28, homogenous geographic coverage

> 300,000 direct employees; 1,2 million incl. multiplying effects

contribution to overall European GDP: 155 bn €

(= 155,000,000,000 €)

energy intense:
> 80% of production costs related to oil & gas as feedstock and energy

capital-intense
(steam cracker > 1,5 bn €)
95% of all manufactured goods are based on petrochemicals, such as electronics, furniture, appliances, textiles, and many more.

→ benefits: sustainable solutions to energy savings and comfort, for example insulation, durable, light-weight and resistant composites, etc.

... but:

→ Highly exposed to international competition (commodity business)
Total greenhouse gas emissions of the EU chemical industry 1990-2015

The eco footprint of Europe’s chemical industry has substantially improved: 
~ 85% more production with 60% less GHG emissions!

Source: European Environment Agency (EEA)
* GHG = Greenhouse gas
Unless specified chemical industry excludes pharmaceuticals
Unless specified EU refers to EU28
Energy intensity of the chemical industry…

~ 85% more production with ~ 60% less energy consumption

Source: Cefic Chemdata International

* Energy intensity is measured by energy input per unit of chemicals production (including pharmaceuticals)

Unless specified EU refers to EU28
Energy intensity: chemicals* versus total industry

Source: Cefic Chemdata International
* Chemicals including pharmaceuticals
The circular economy

Petrochemicals vision of circular economy

RESOURCES
- Biomass
- Gas
- Power
- Oil
- Water
- Salt

SUSTAINABLE PROCESS
- Rework technical materials
- Recycle
- Refurbish / Remanufacture
- Reuse / Redistribute
- Maintain
- Recover Energy

END-USER
- Agriculture
- Automotive Coatings
- Building / Construction
- Durables
- Electronics
- Packaging
- Water
The oil price drop has brought some welcome relief; however, some structural challenges in Europe remain.
Challenges …

Wide-spread public opinion on sustainability:
Bio/renewable = sustainable versus fossil/carbon = unsustainable

→ full life-cycle analysis?

a) where shall all the renewable energy/bio-material come from?

b) competition for food and arable land for a growing world population

c) major technological break-throughs needed

d) is society ready to accept the changes and to pay for them?

e) significant infrastructural investments needed → societal costs
1) The US agenda:
   a) COP21/climate change?
   b) Free trade
   c) Corporate tax reform
   d) Border adjustment tax (BAT)
   e) Infrastructural investments

2) Brexit
   Petrochemicals = 30% of chemical trade between UK and EU
New investments - everywhere outside Europe

Global ethylene capacity additions

- Rest of World
- China + India
- Russia and The Caspian
- Greater Europe
- Middle East & Africa
- Americas

Emergence of the North America Gas-based & China Coal-based chemical industry advantage

Source: Wood Mackenzie

wwwpciwoodmac.com
Summary

Competitiveness Pros and Cons for Europe

😊 Large integrated domestic market with strong customer industry clusters

😊 High international orientation and global network to external customer industries

😊 Until now availability of skilled and motivated workers and scientists

😊 Continued strategic restructuring efforts (flexibility to globalised markets)

😊 Strong innovation efforts will generate new growth clusters: Efficient Energy use, health and new materials which could solve upcoming societal mega challenges

😢 Low “new consumers” population growth in the EU => low demand growth for chemicals in general - elderly population, shrinking working age classes, high saturation levels.

😢 High energy and feedstock costs vs. Middle East and now the US => EU is facing an upcoming wave of petrochemical capacity additions, especially in Middle East and US

😢 High Regulatory Compliance Costs (e.g. REACH, Seveso, IED, 7th EAP...)

😢 Further enhancements in “Common Industrial Policy” and “Common Energy Policy” needed
Thank you for your attention!

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