

Chemical raw materials in Europe - Trends & Challenges

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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:



Why chemicals do matter ...

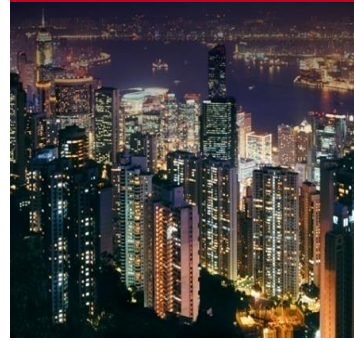
Health & Nutrition



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?

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?

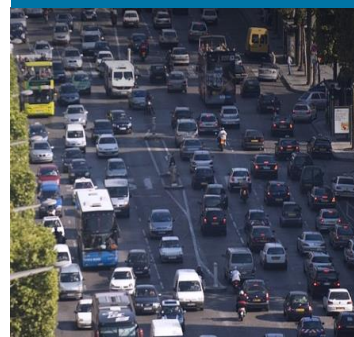
Energy & Resources



50% more primary energy needed in 2030!

- What is the ideal energy mix of the future?
- How big is the stake of renewable energy?

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 ?

Significant economic contribution of the chemical industry

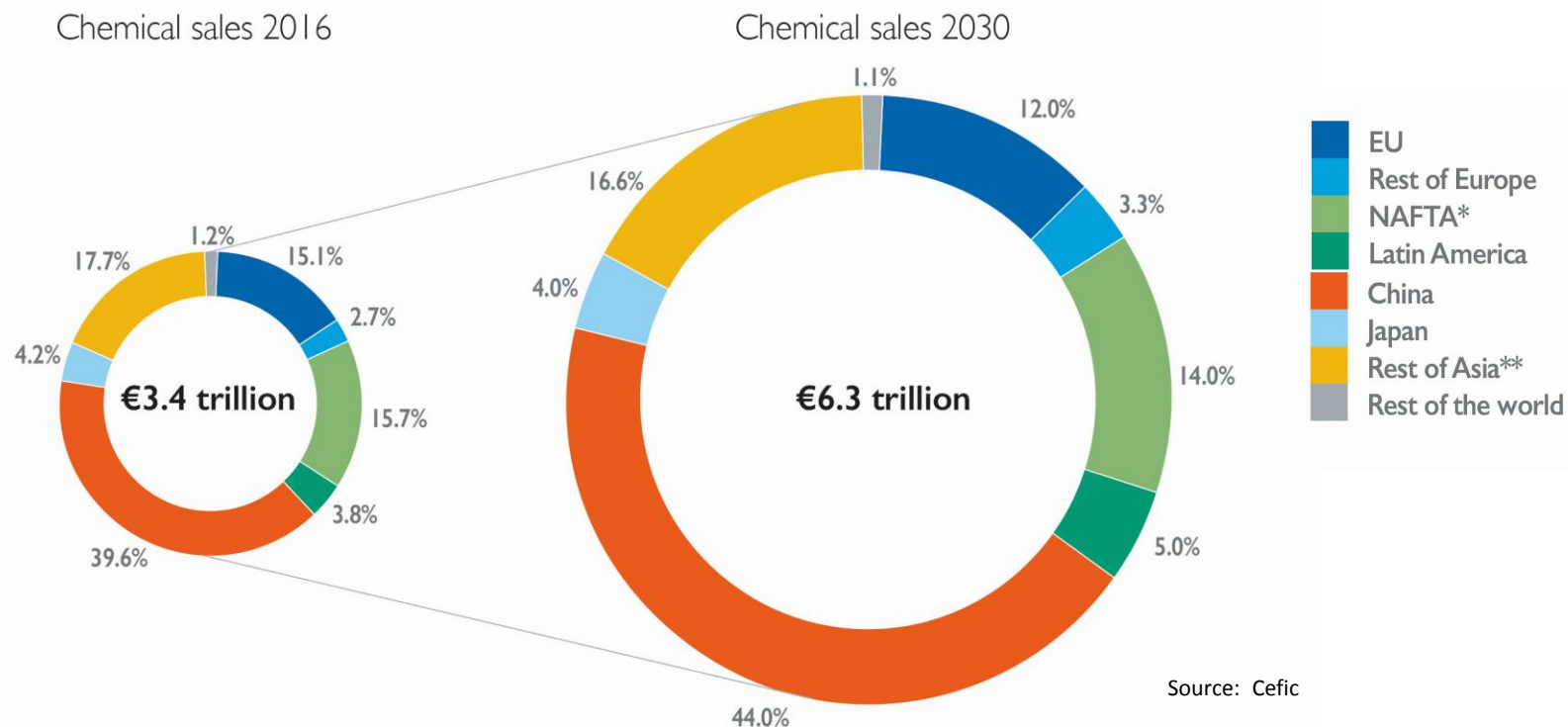
In 8 European countries, the chemical industry belongs to the top 5 industrial performers in terms of value added

Ranking*	Countries
1	BE 
2	NL 
4	FR  ES  IRL  LT 
5	DE  FIN 
6	DK 
7	UK  BG 
8	PL  SE  SLO  GR 
9	PT  LV 
10	IT  HU  CYP 

Source: Eurostat SEC 2010 unless other specified. National accounts by 64 branches), 2012 data. Chemical industry excluding pharma
IRL, FIN, UK, BG, PT, PL, CYP based on SEC 1995. Estimate for SWE and ES based on Eurostat SBS

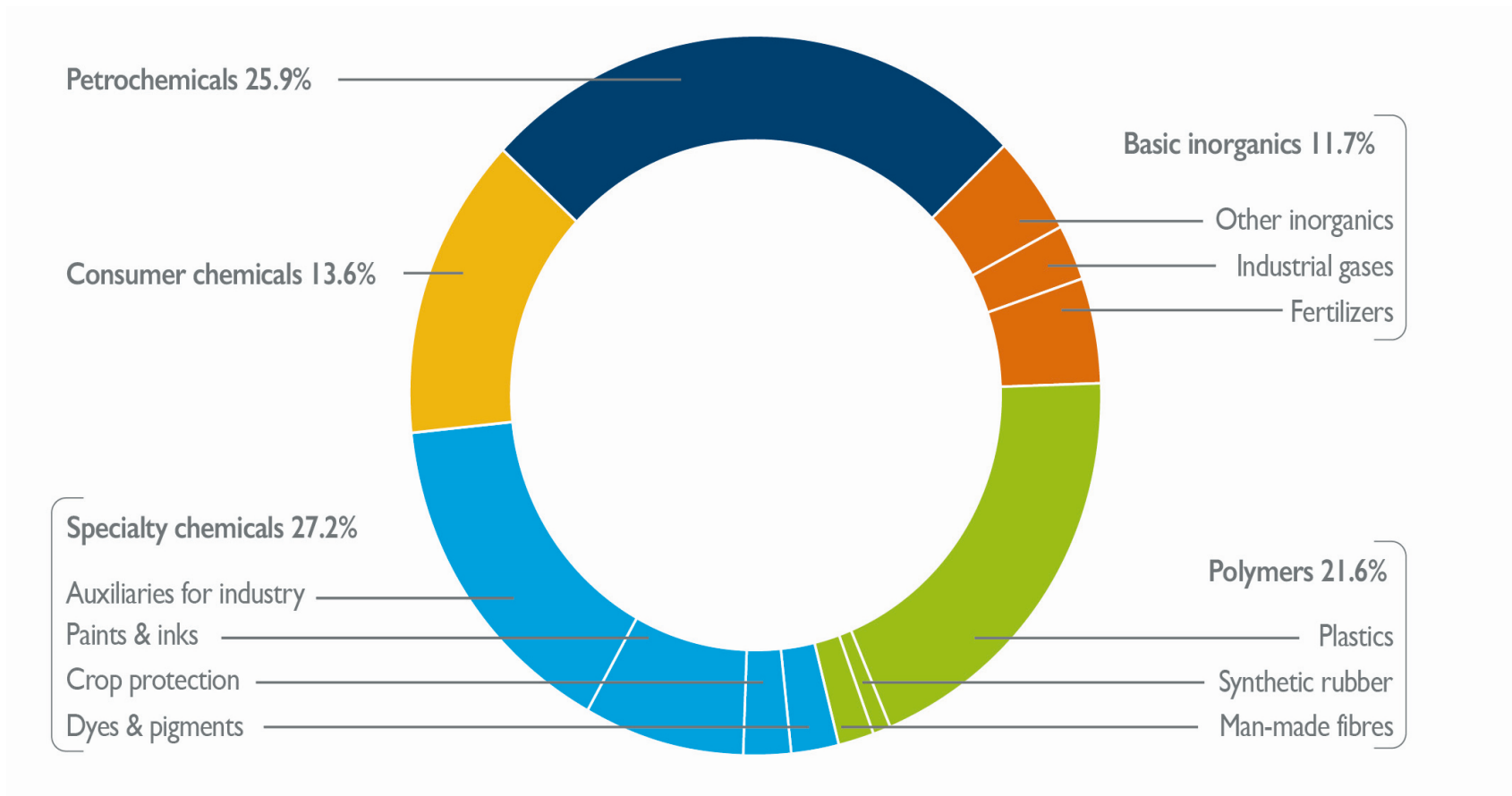
* Ranking among 19 industrial branches

Projected growth in world chemical sales 2016-2030

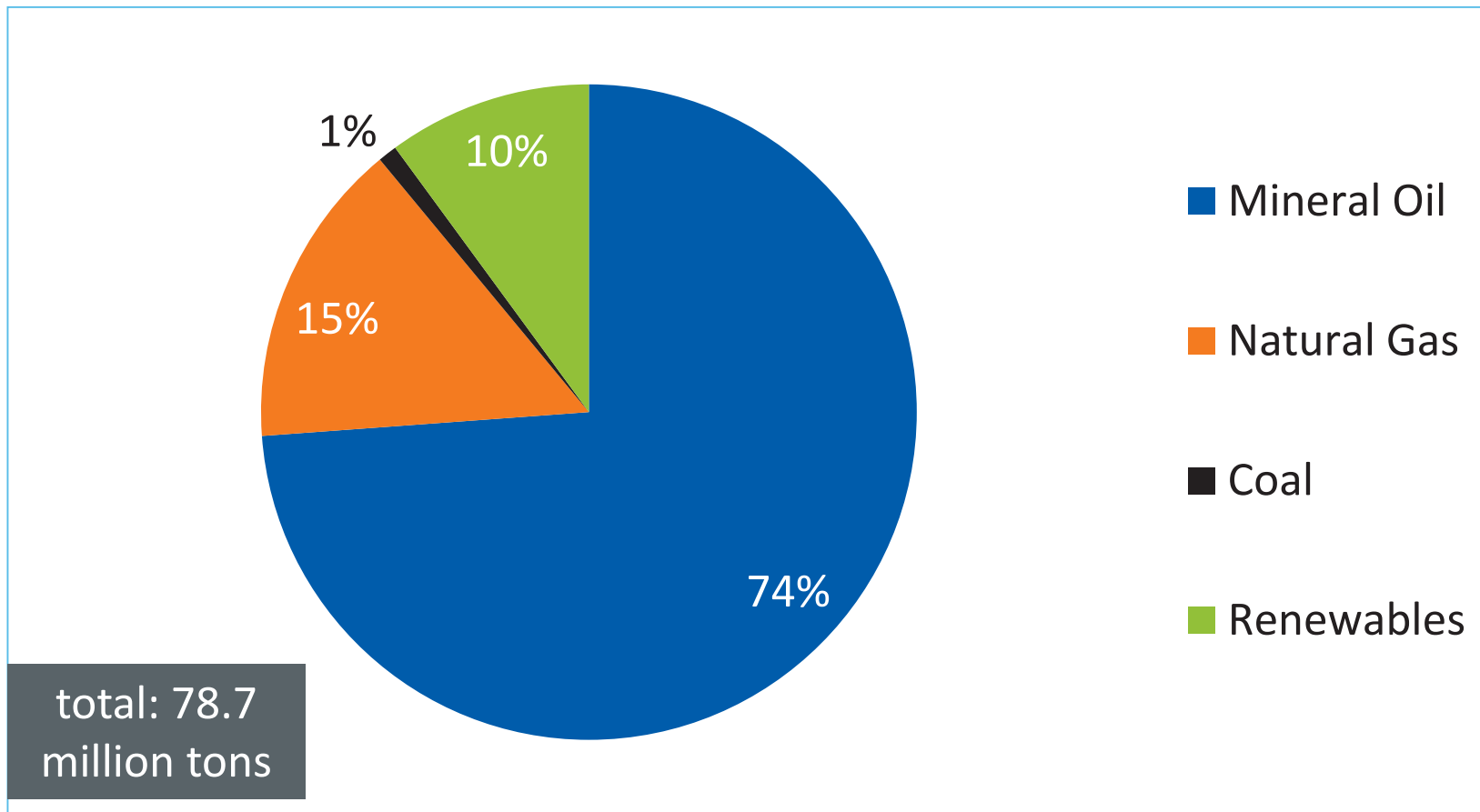


overall chemical growth expected to continue - EU share goes down

EU chemical industry sales by sectoral breakdown

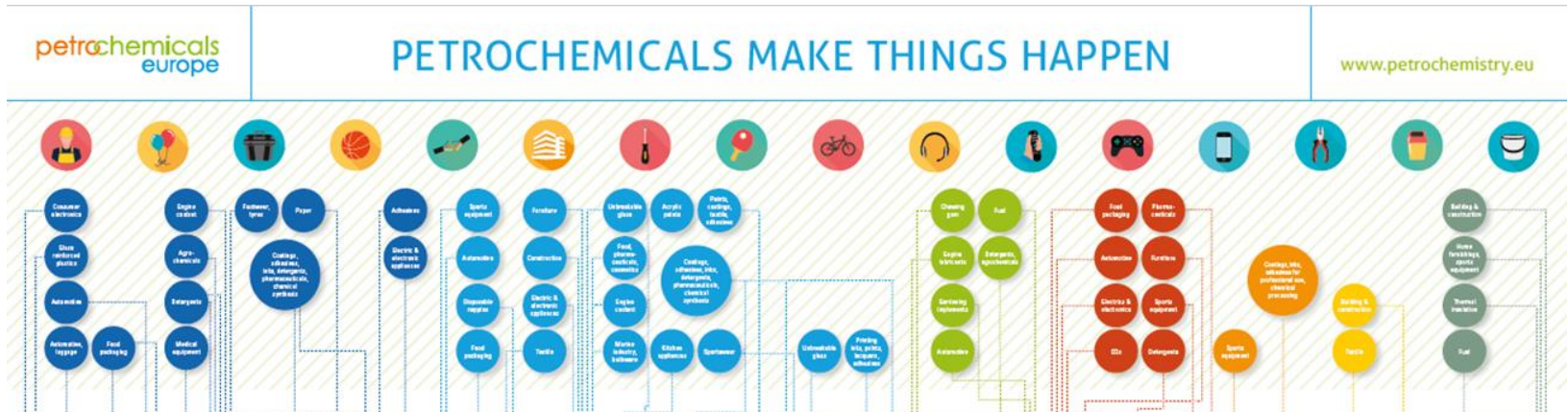


Source: Cefic

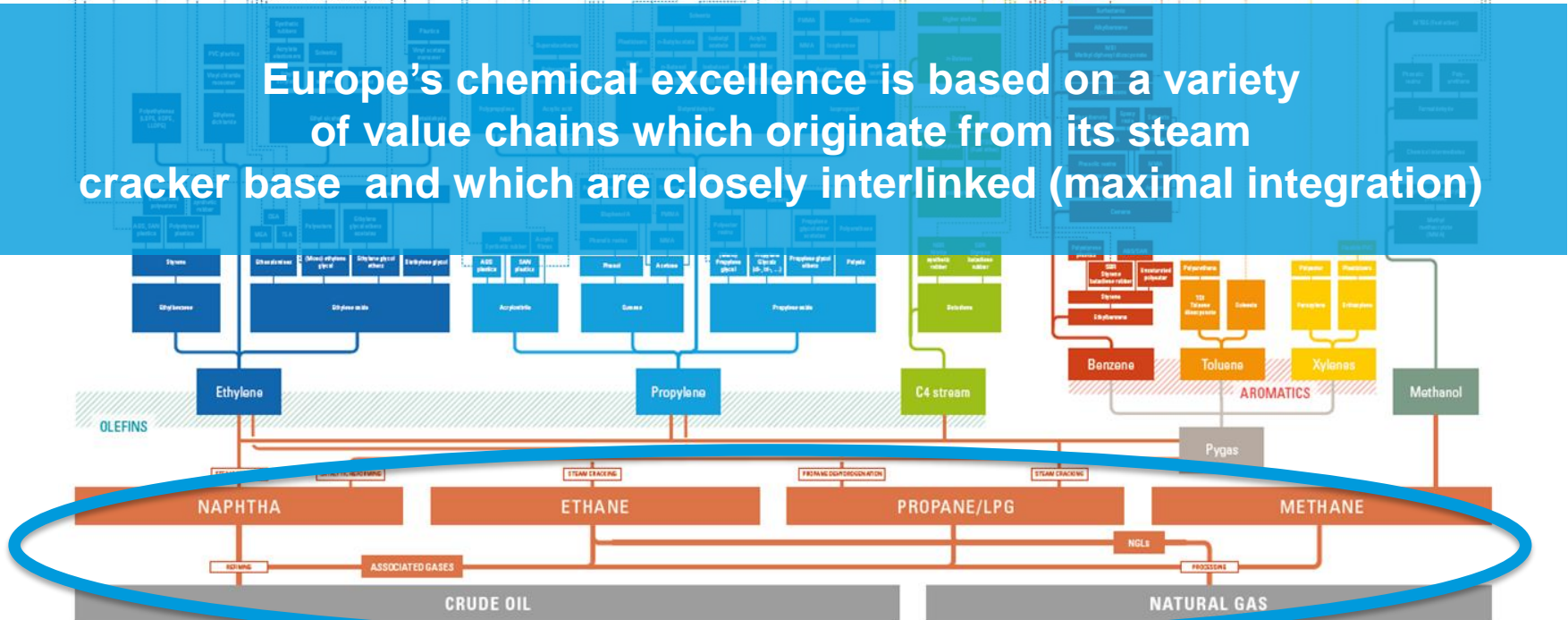


Source: VCI, Cefic

With 74% refined products constitute the predominant feedstock



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)



Source: Petrochemicals Europe

Refineries and steam crackers in EU-28



red bullet points: Steamcrackers/reds stars: refinery + steamcracker

More than 50 steam crackers in operation in EU 28, homogenous geographic coverage

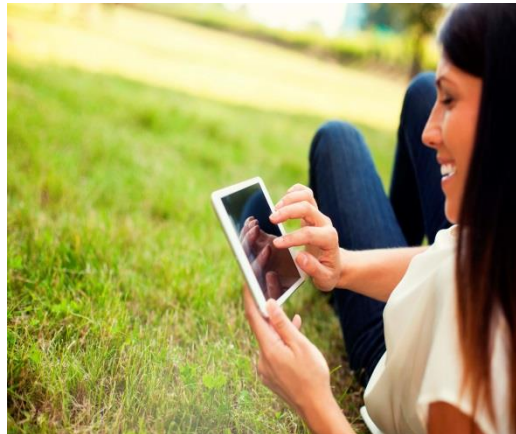
> 300,000 direct employees; 1,2 million incl. multiplying effects

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

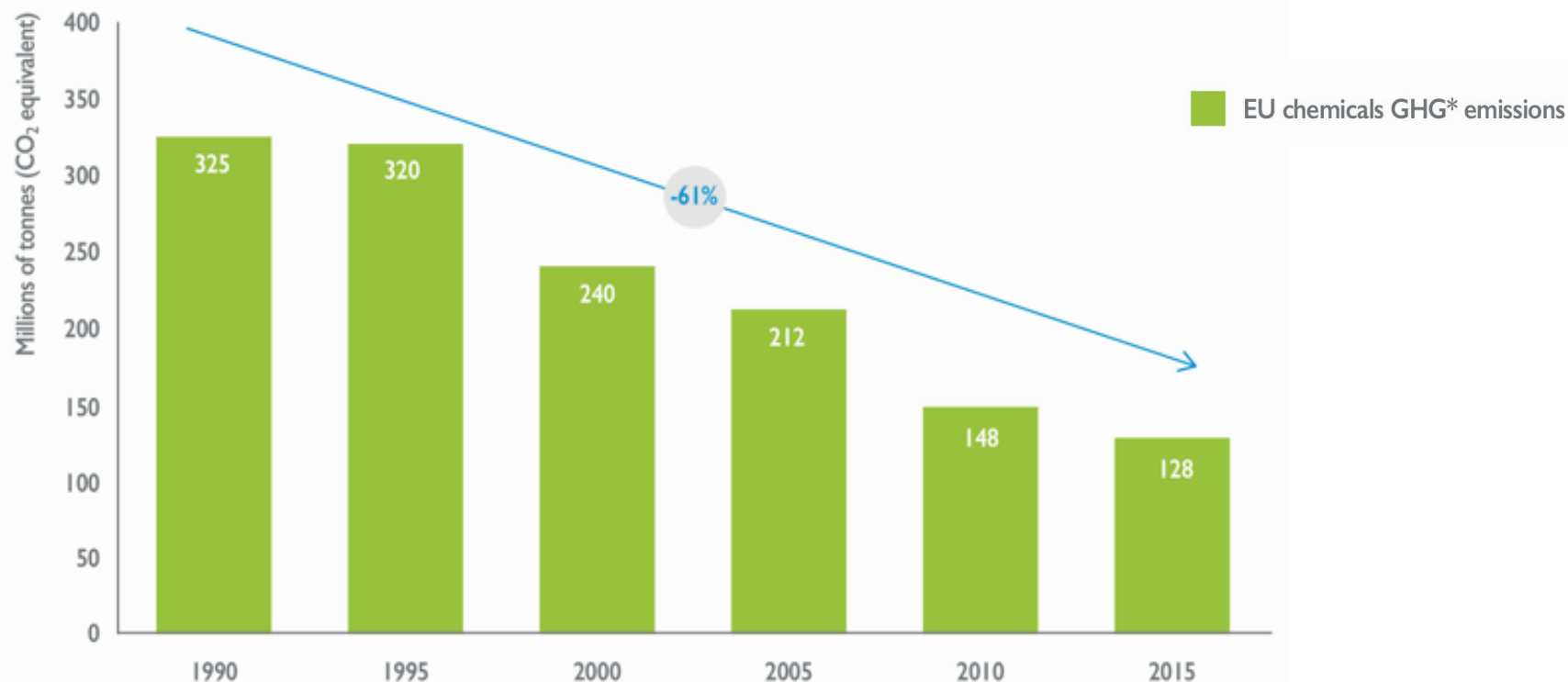
capital-intensive
(steam cracker > 1,5 bn €)

- 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)



Source: European Environment Agency (EEA)

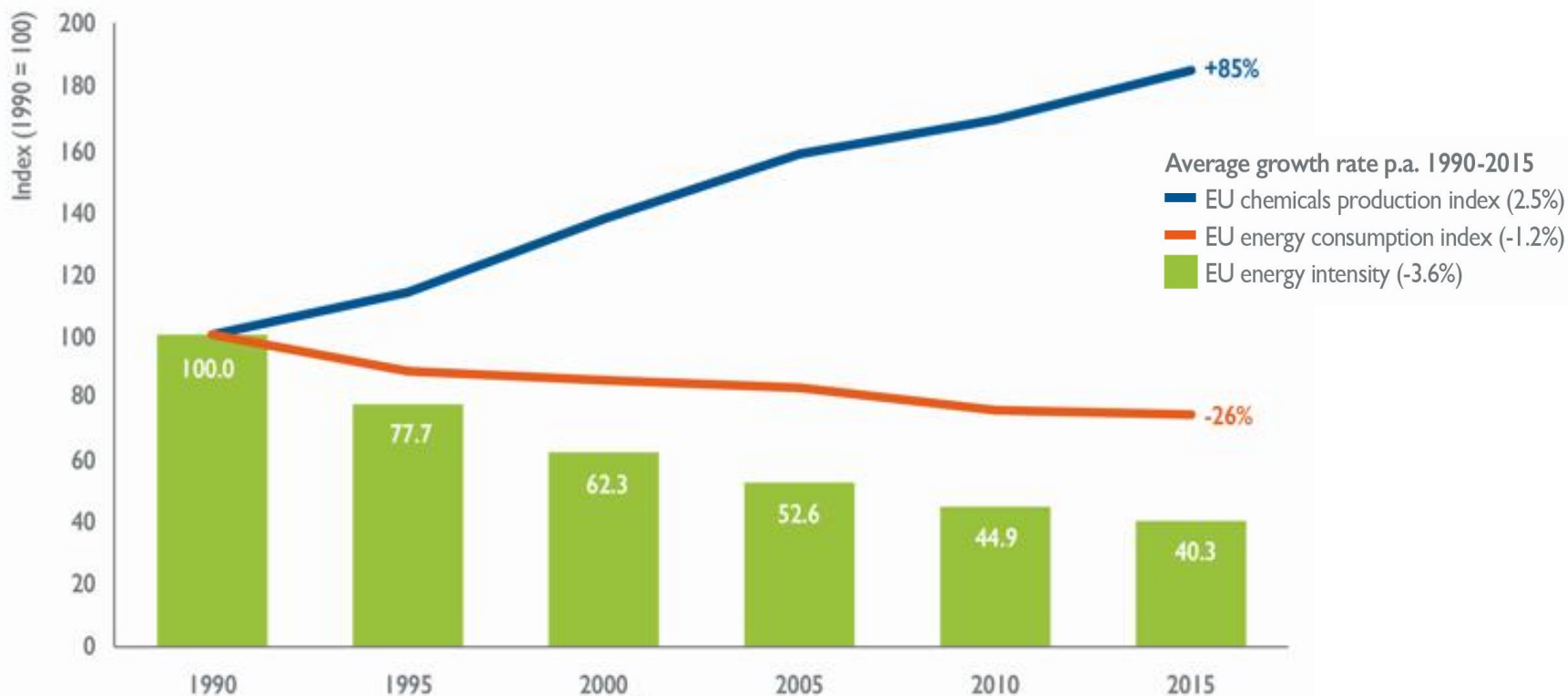
* GHG = Greenhouse gas

Unless specified chemical industry excludes pharmaceuticals

Unless specified EU refers to EU28

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

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

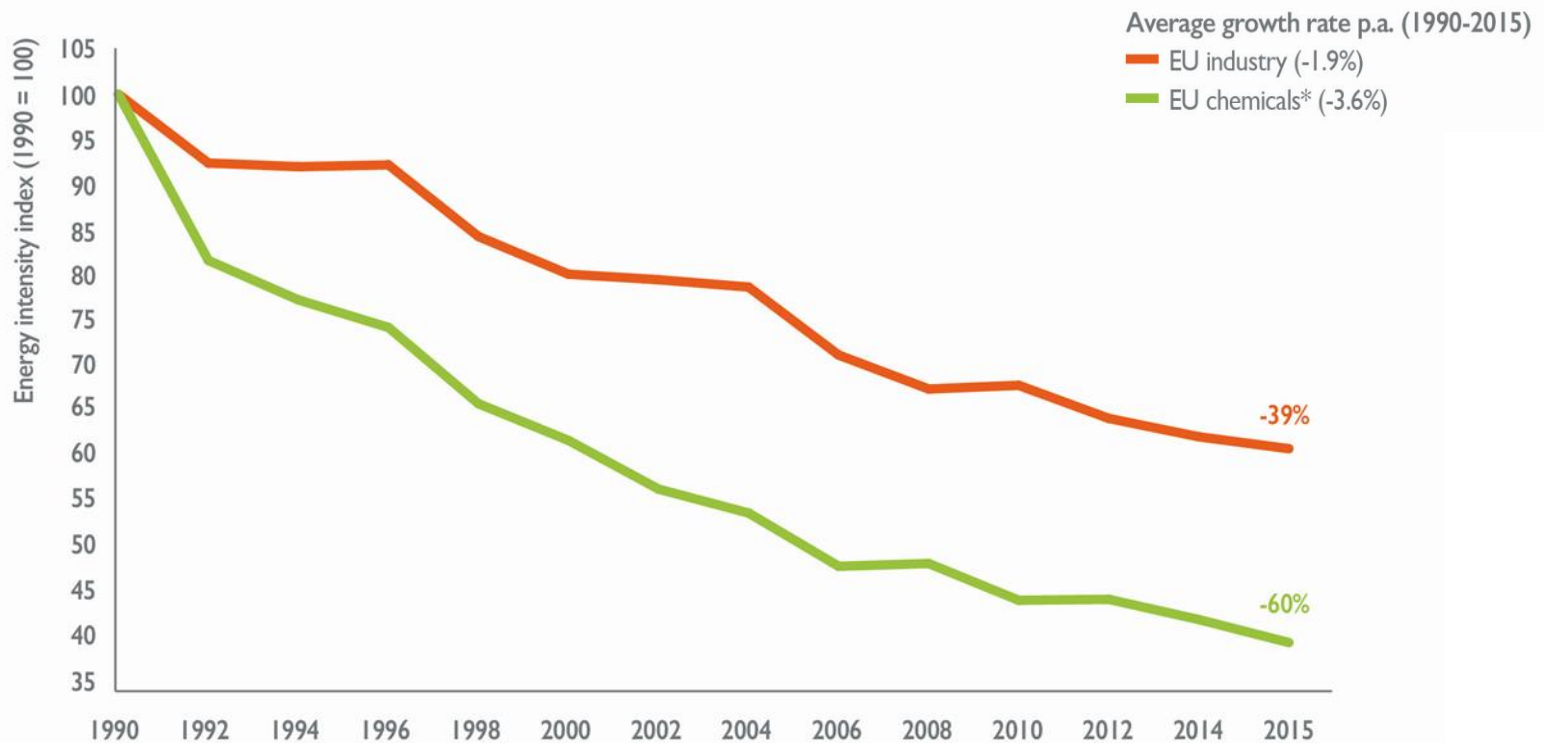


Source: Cefic Chemdata International

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

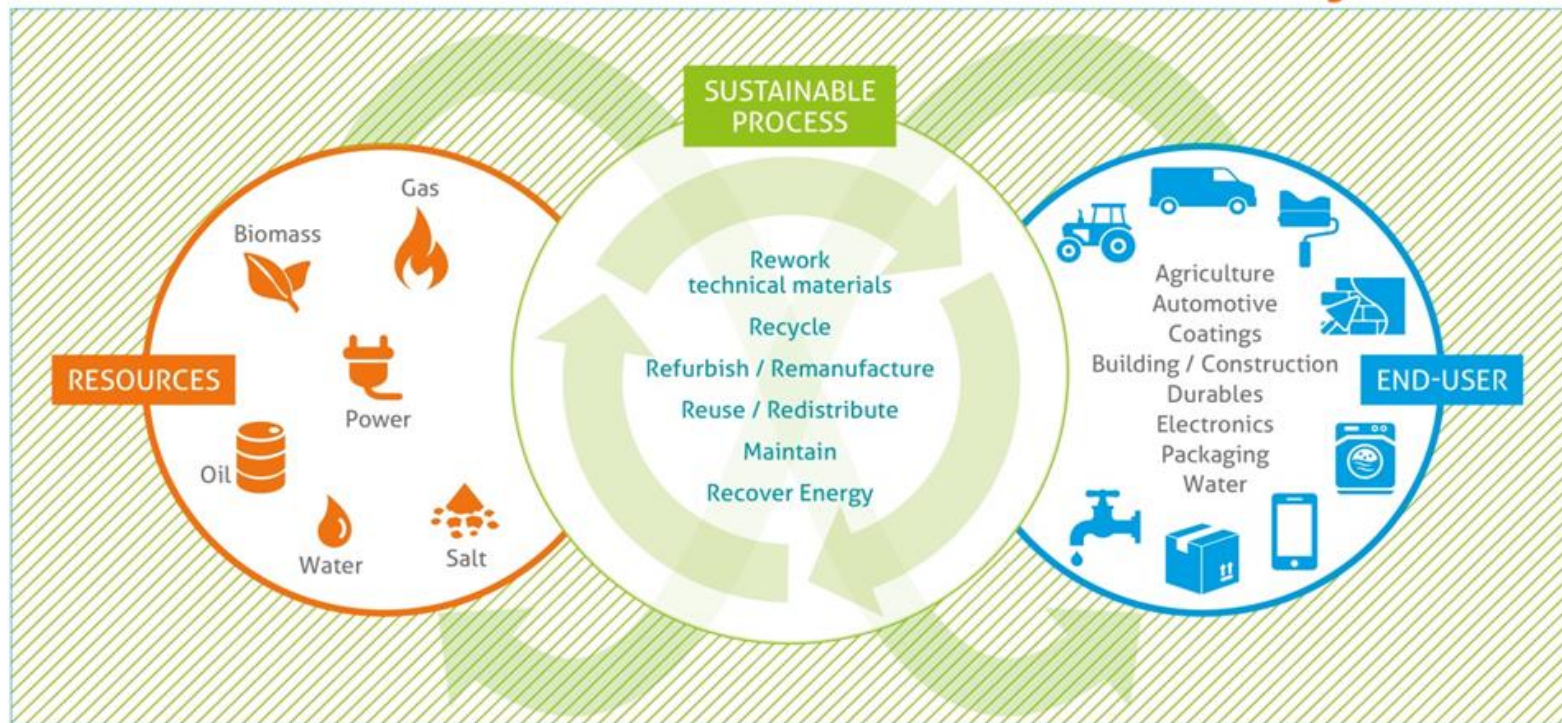
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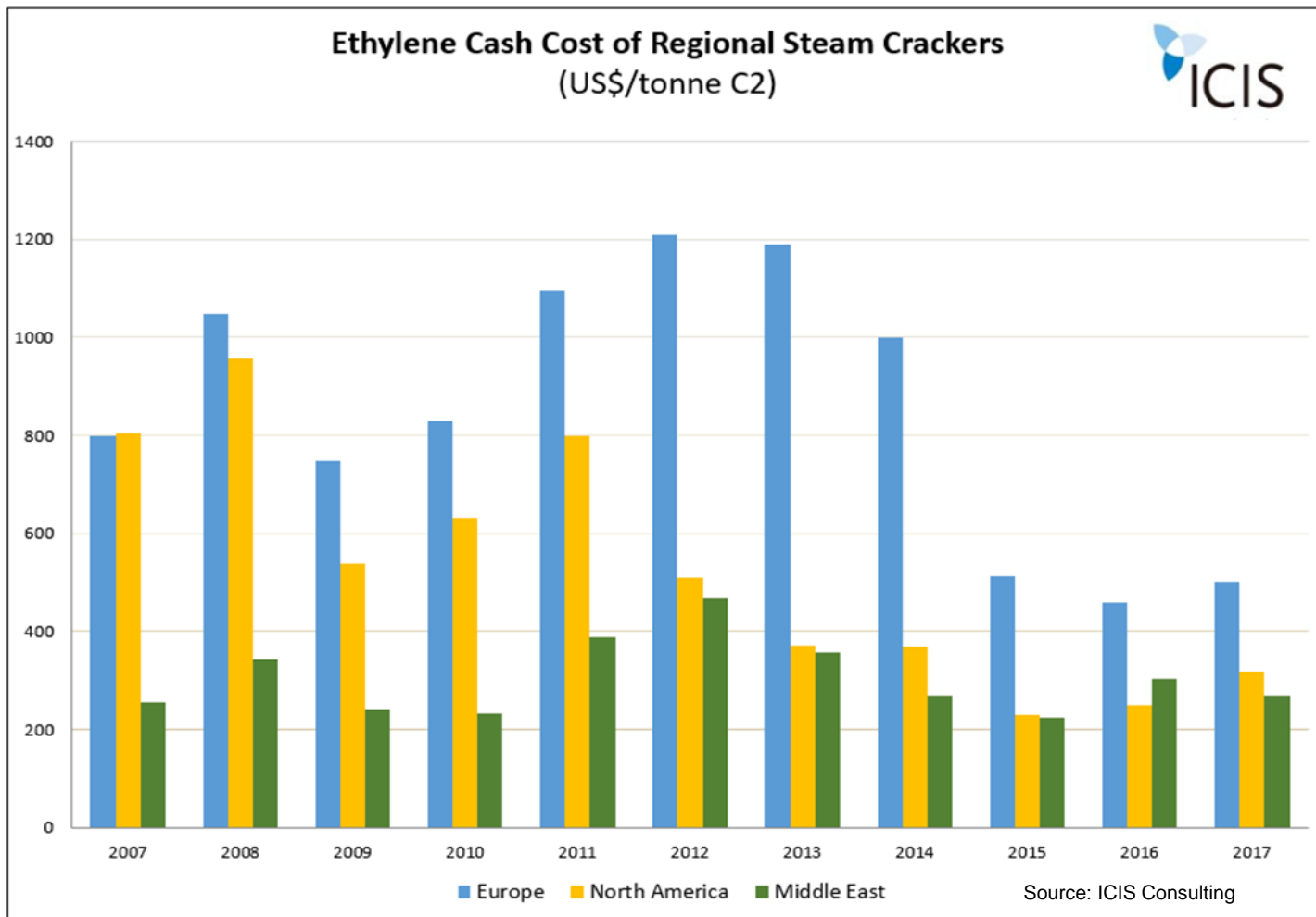
Energy intensity: chemicals* versus total industry



Source: Cefic Chemdata International
* Chemicals including pharmaceuticals

Petrochemicals vision of circular economy





The oil price drop has brought some welcome relief; however, some structural challenges in Europe remain.

**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

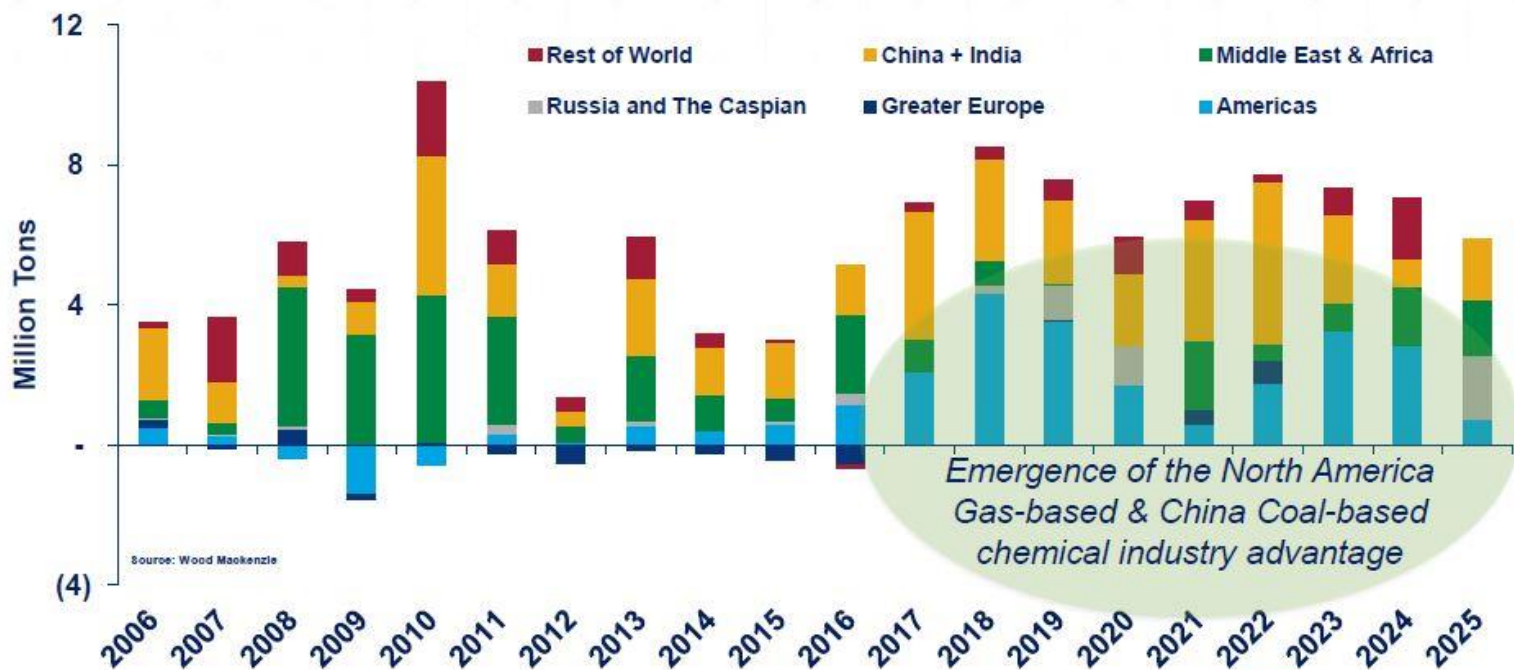


2) Brexit

Petrochemicals = 30%
of chemical trade
between UK and EU



Global ethylene capacity additions



www.pciwoodmac.com

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 enhanced

Thank you for your attention!

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