

# REACTION

Chemicals Magazine / Fourteenth Edition

KPMG GLOBAL CHEMICALS INSTITUTE

## The European Chemical Industry in 2014

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*cutting through complexity*

**p2**

European  
chemical  
companies  
adapt to  
changing  
times

**p20**

Is your  
chemical  
company  
operating  
effectively?



# Introduction

Welcome to the fourteenth edition of Reaction Magazine. It is hard to believe we're already past the first half of the year. As thoughts turn to summer vacations, the overall feeling within the industry seems to be one of positivity. At a KPMG chemical industry event in Germany recently, I was enthused to hear how optimistic a number of our European clients are about their prospects for the remainder of 2014. Some welcome news in Europe is certainly long overdue. Around the industry generally, thoughts seem to be turning to expansion and growth. Capital investment in the US continues to be announced at a record pace, while there seems to be an appetite for M&A deals around the global industry not seen since 2006 or 2007. Hopefully, the lessons from those days have not been forgotten.

In this edition, we bring you a follow-up to our recent portfolio optimization article and webcast by looking at how companies are developing new operating models to achieve greater effectiveness. We also have a double feature on the outlook for the chemical industry in Europe with a special focus on Germany and Switzerland, as well as an interview with Thierry Lemonnier, CFO of Arkema Group, who discusses how they have adapted to the recent challenges in Europe.

We will be back with our next edition in November, which will focus on growth in the ASEAN region. If there are any other topics you would like us to cover in future editions of Reaction, please don't hesitate to contact us. In the meantime, I hope you all get the opportunity to enjoy some vacation time with your families over the summer.

## **Mike Shannon**

Global Chair  
Chemicals and  
Performance Technologies



# Content



## European chemical companies adapt to changing times

European chemicals today	06
Key challenges facing the industry	09
Germany: the leader in European chemicals	13
Three strategies for success	14
Switzerland: continued growth through innovation	16
Strategies for success: an interview with Thierry Lemonnier from Arkema	18
Conclusion	19



## Is your chemical company operating effectively?

Portfolio and footprint adjustments continue	22
Making the right decisions at the right time	23
Are you operating effectively?	24
Operating effectively means getting the basics and details right	26
One size does not fit all	27

# European chemical companies adapt to

# changing times

By  
**Vir Lakshman**  
**Erik Willems**

The global economic recession hit European chemical companies especially hard, and even major players recognized the need to thoroughly rationalize and restructure their portfolios, processes and business models. Although the industry across Europe has recovered from the worst of the downturn, challenges remain, including high feedstock and energy costs, regulatory mandates, overcapacity and increased competition from the US and Asia. For many European chemical companies, continued success will depend on a carefully calibrated set of strategies that involve innovation, geographical expansion into overseas markets and a rigorous focus on cost, efficiency and ongoing innovation.



# European chemical industry at a glance<sup>1</sup>

## 1.5%

2014 production growth outlook (Western Europe, year-over-year)

## EUR48.8 billion

2013 EU chemicals trade surplus

## 1.9 million

employees

## 17.8%

Share of global chemical sales

## EUR538 billion

Total chemical sales (2013 through November)

After a vicious recession, global chemical output growth is expected to accelerate in 2014. Growth for chemicals globally will improve from 2.4 percent in 2013 to 3.8 percent in 2014, according to Kevin Swift, American Chemistry Council chief economist and managing director.<sup>2</sup> World chemicals turnover was valued at EUR3.127 billion in 2012, a year-over-year increase of 12.8 percent compared with 2011.<sup>3</sup>

In 2013, the European chemical industry began its own recovery with a

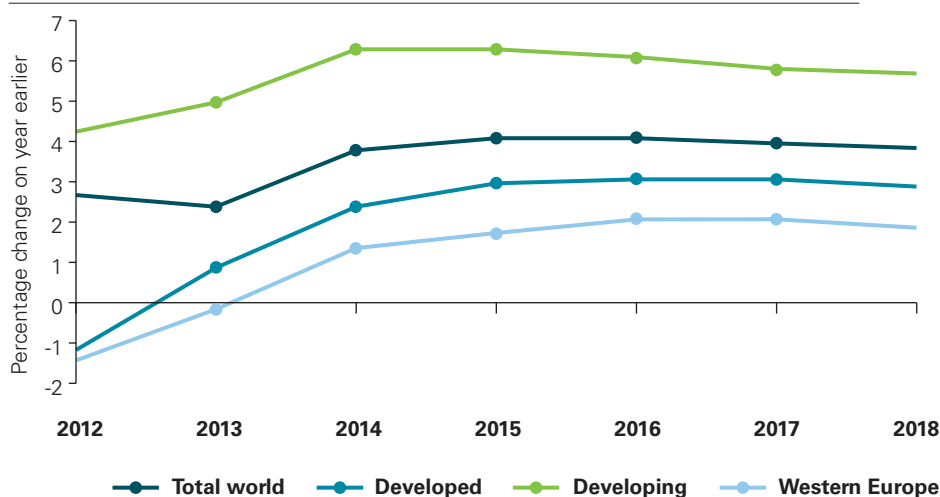
monthly output growth of 0.7 percent in November.<sup>4</sup> However, European Union (EU) chemicals output still declined by 1 percent over the year and full recovery remains elusive. According to IHS research, the eurozone will not regain the GDP peak it achieved before the downturn in 2008 until early 2016,<sup>5</sup> a factor that will continue to limit growth in the chemical sector. For 2014, The European Chemical Industry Council (Cefic) predicts an increase of 1.5 percent in chemical production by European companies.



Seven member states make up 85 percent of EU chemicals sales, with Germany as the largest chemicals producer in Europe, followed by France, Netherlands, Italy, United Kingdom, Spain and Belgium.



### Chemical industry growth rates



Source: American Chemistry Council (ACC), December 2013

<sup>1</sup> Source: Cefic, KPMG research, year-end 2013 chemical industry situation and outlook, American Chemistry Council, December 2013

<sup>2</sup> Outlook 2014, Looking Forward, IHS Chemical Week, 14 April 2014

<sup>3</sup> The European Chemical Industry, Facts & Figures 2013, Cefic

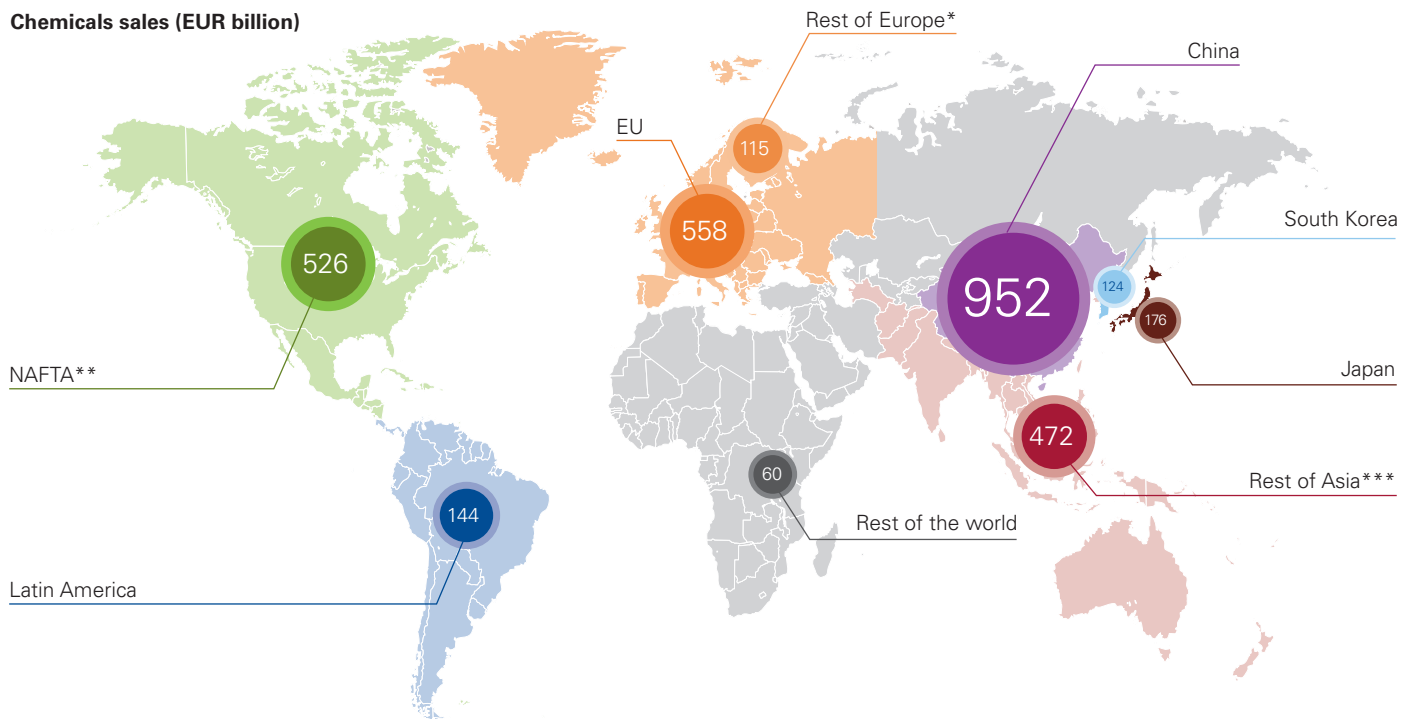
<sup>4</sup> Op. cit., Outlook 2014, Looking Forward

<sup>5</sup> Op. cit., Outlook 2014, Looking Forward

### World chemicals sales: geographic breakdown

World chemicals sales in 2012 were valued at EUR3,127 billion. The European Union accounts for 17.8% of the total.

#### Chemicals sales (EUR billion)

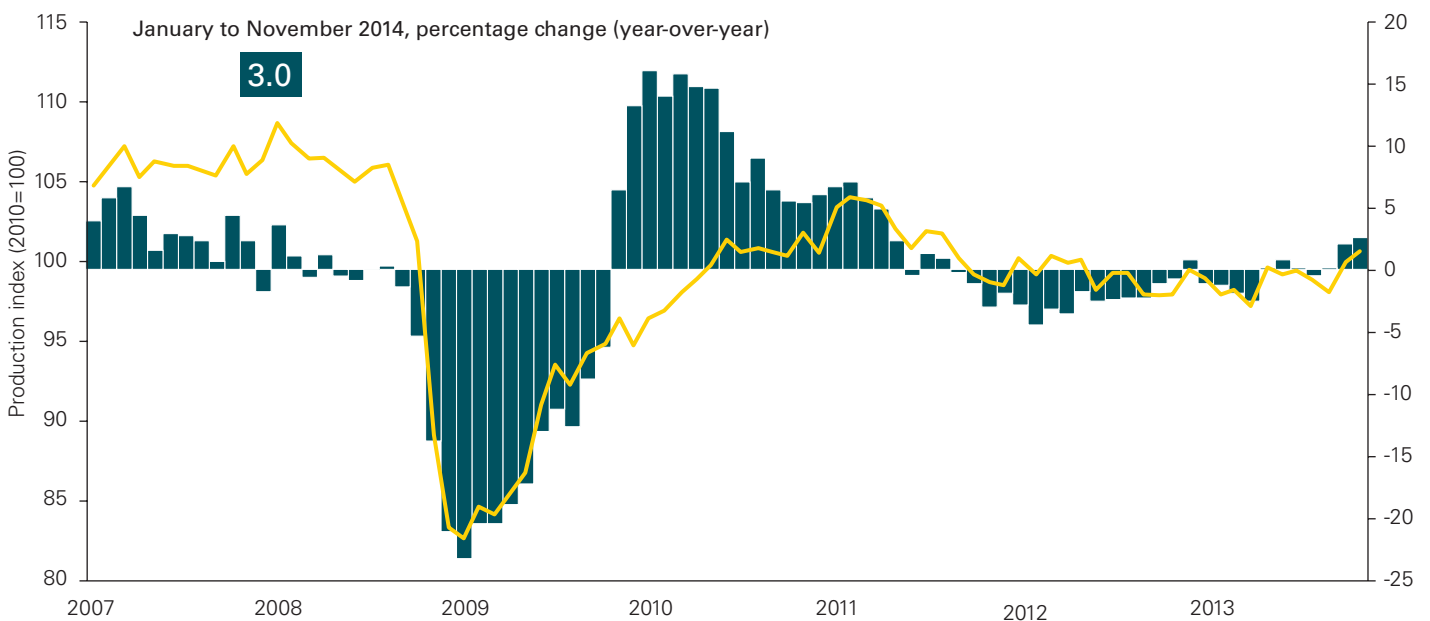


\* Rest of Europe includes Switzerland, Norway, Turkey, Russia and Ukraine  
 \*\* North American Free Trade Agreement  
 \*\*\* Asia excluding China and Japan

Unless specified, chemical industry excludes pharmaceuticals  
 Unless specified, EU refers to EU 27

Source: Cefic Chemdata International (2013)

### EU Chemicals\*: production



\*Chemicals (excluding pharmaceuticals, New Nace Rev2, C20)  
 Source: Cefic Chemdata International

■ Production index (2010=100), Left Hand Side (LHS)  
 ■ Production percentage change (y-o-y), Right Hand Side (RHS)

# European chemicals today

Like many of today's industries in developed economies, the European chemical sector has seen its global leadership challenged by emerging markets, particularly in China. Nevertheless, Europe continues to be one of the driving forces of the global chemical industry.

Eleven of the top 30 major chemical producing countries are European, generating 17.6 percent of global sales.<sup>6</sup> Europe is a major investor in research and development (R&D), and the EU was the world's top importer and exporter of chemicals in 2012. Seven member states make up 85 percent of EU chemical sales, with Germany as the largest chemicals producer in Europe, followed by France, Netherlands, Italy, United Kingdom, Spain and Belgium.

Over the past decade, removing both trade and non-trade barriers inside the EU has supported significant growth and competitiveness to the EU chemical industry. With more than 500 million consumers, the internal market is a major factor for competitiveness. In 2012, the EU chemical sector had a EUR15.1 billion net trade surplus with other European countries. The admission of new EU member states in 2004 and 2007 gave the internal market an extra boost for intra-EU trade.

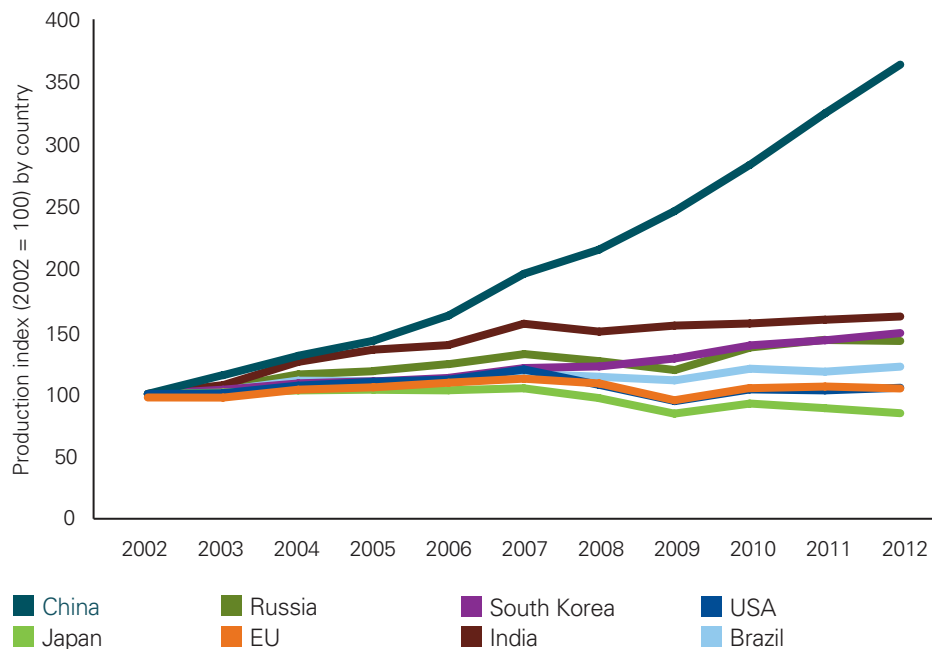
The external trade market is even more robust. The EU reached a record trade surplus outside of the EU for chemicals in 2012, totaling EUR49.2 billion. Twenty-six percent of chemicals are exported out of the EU market. The EU has a trade surplus with each of its main trading regions: NAFTA, Asia, China, Japan, Latin America, Africa and the rest of Europe.





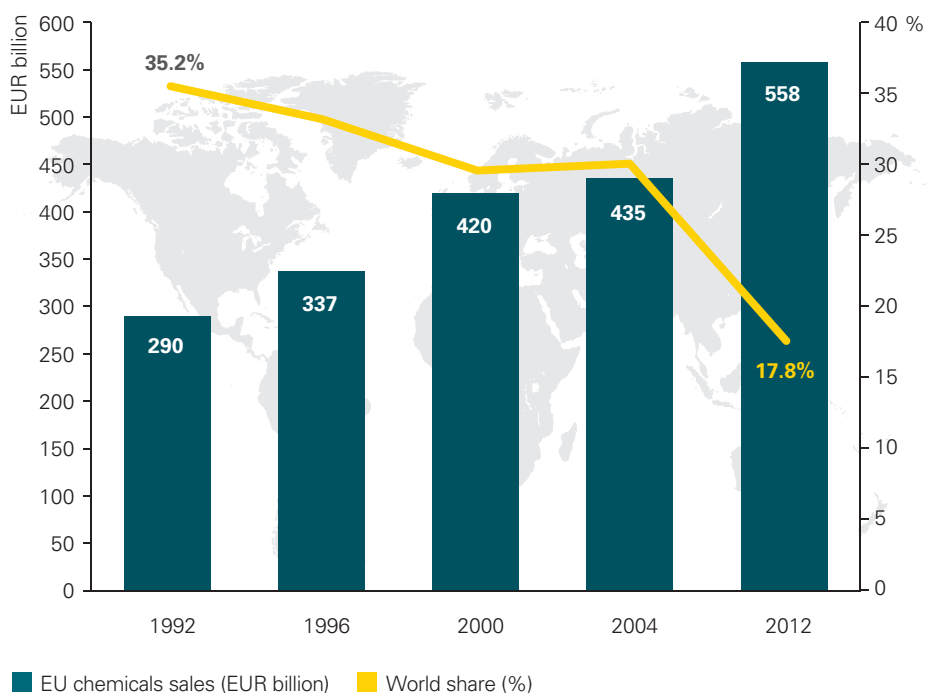


### Emerging economies outpace industrial countries in chemicals production



Sources: Cefic Chemdata International (2013) and Cefic analysis

### EU chemicals sales have nearly doubled in 20 years, while its world market share has decreased by half

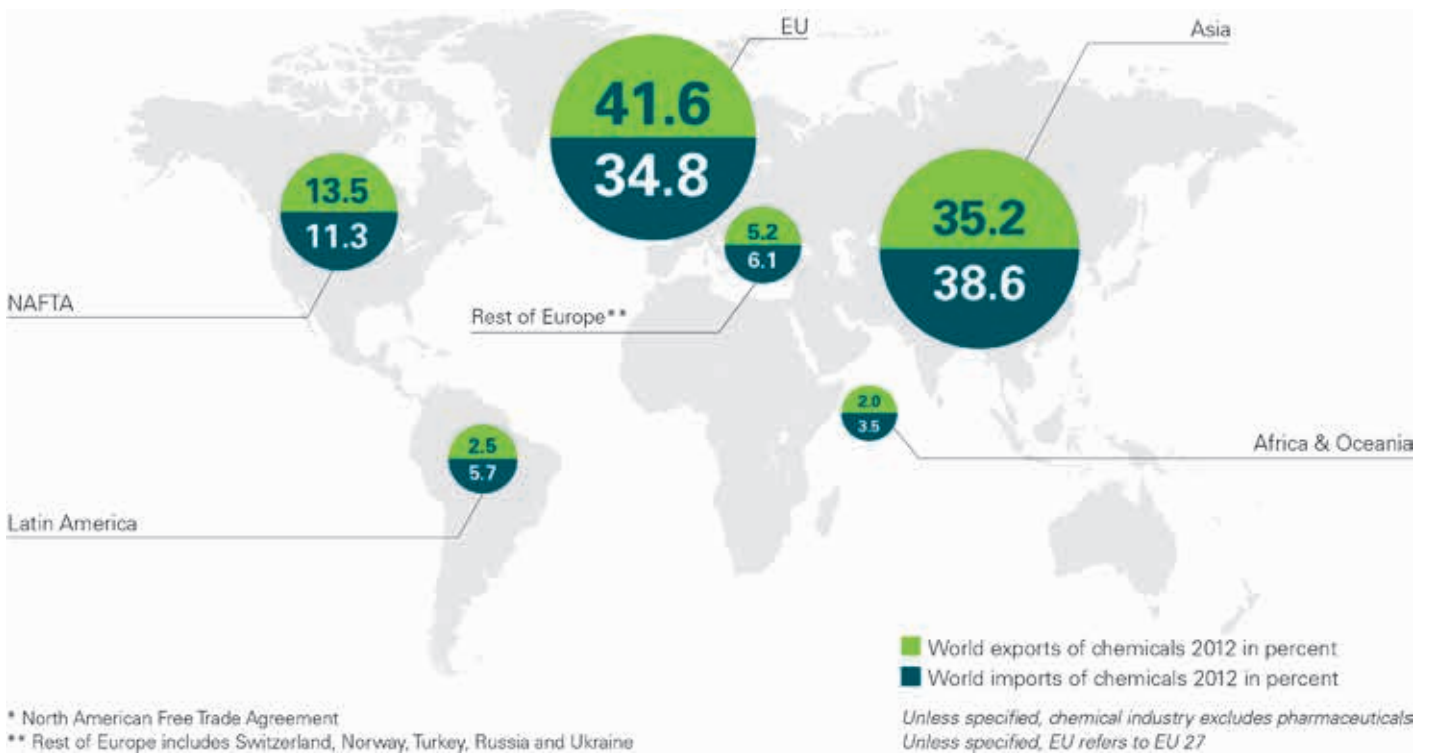


Unless specified, chemical industry excludes pharmaceuticals  
 Unless specified, EU refers to EU 27

Source: Cefic Chemdata International (2013)

<sup>6</sup> Ibid.

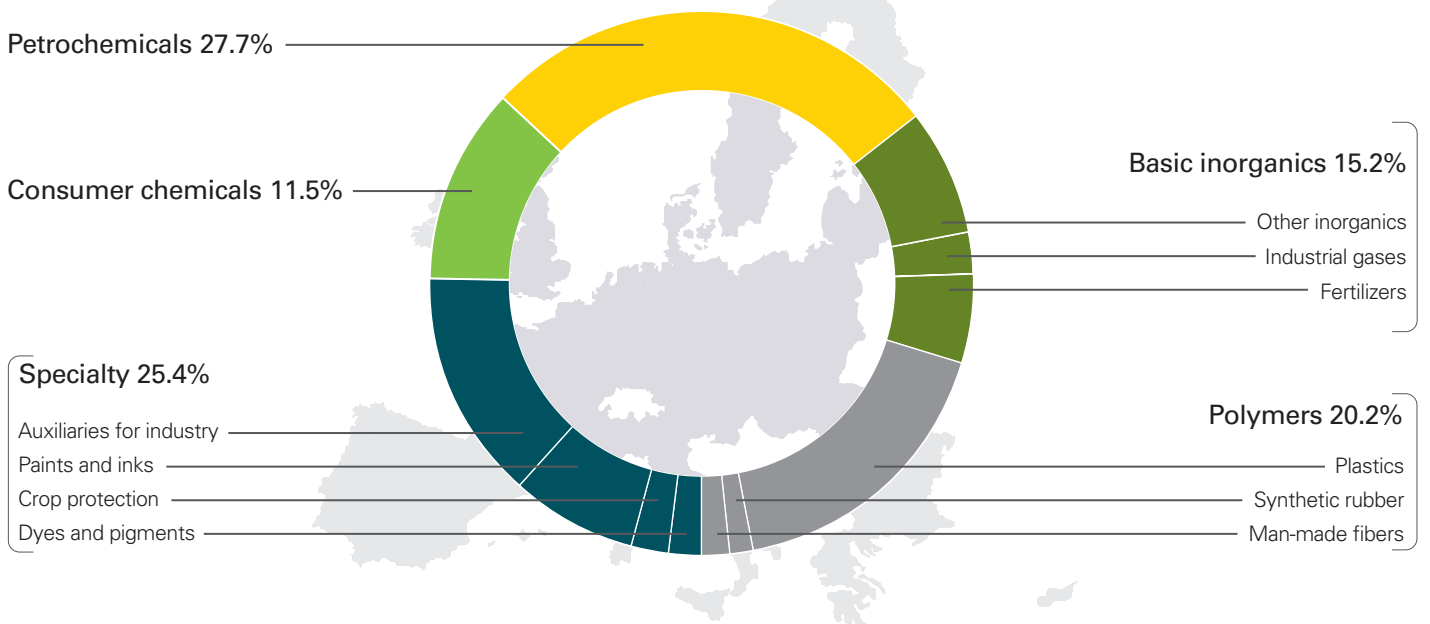
The EU was the world's top exporter and importer of chemicals in 2012



Sources: Eurostat and Cefic Chemdata International (2013)

Petrochemicals and specialty chemicals account for half of EU sales

Sales 2012



Unless specified, chemical industry excludes pharmaceuticals  
 Unless specified, EU refers to EU 27

Source: Cefic Chemdata International (2013)

# Key challenges facing the industry

A strong future for the EU chemical industry depends on addressing a number of key challenges involving feedstock and energy costs, excess capacity, productivity, regulatory compliance and other factors.

## Lagging growth rates

In 1992, the EU posted sales of EUR290 billion, which made up 35.2 percent of world chemical sales in value terms.<sup>7</sup> Since then, however, world chemical sales have increased four times more quickly. Consequently, the EU chemicals market share of global production has dropped by half, down from 35.2 percent in 1992 to 17.8 percent in 2012.<sup>8</sup>

In its annual Trends Report issued in March, 2014 Cefic announced that the sector had achieved zero growth in 2013, with growth remaining 6.4 percent below the pre-crisis peak reached in 2007.<sup>9</sup>

The long-term prospect within the EU sector remains one of modest growth. For the first time ever, over the next 5 years, BASF plans to invest slightly less than half of its EUR20.2 billion capital expenditure budget in Europe, compared with two-thirds of total capex (including acquisitions) between 2009 and 2013.<sup>10</sup> One of the critical success factors for European chemical companies over the coming years will be to boost investment outside of Europe in order to access growth.

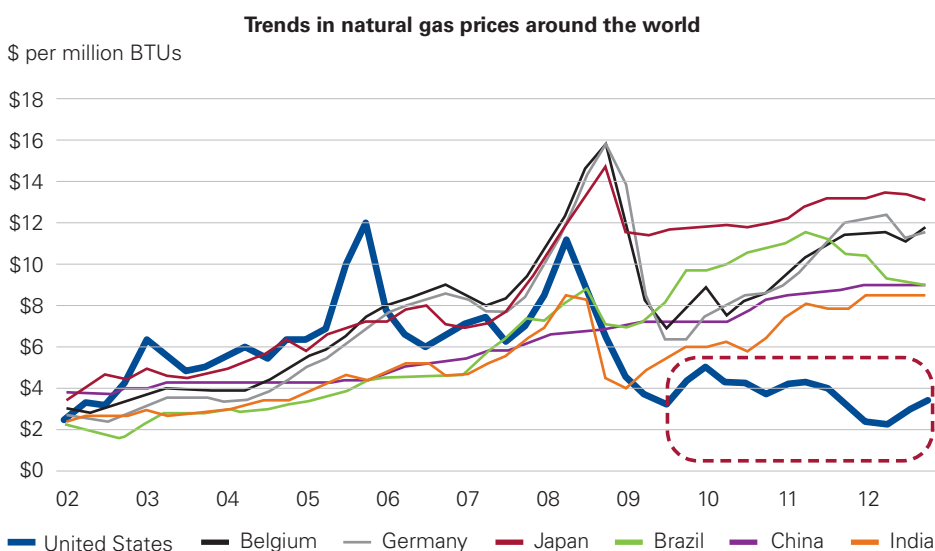


A strong future for the EU chemical industry depends on addressing a number of key challenges involving feedstock and energy costs, excess capacity, productivity, regulatory compliance and other factors.



## Feedstock costs

Shale has provided the US with an abundance of cheap gas



Sources: EIA, Petrobras, IMF, World Bank, various national statistical agencies

<sup>7</sup> Op. cit., The European Chemical Industry, Facts & Figures 2013

<sup>8</sup> Ibid.

<sup>9</sup> Chemical Trends Report, Cefic, March 3, 2014. See also European Union Chemicals Output Stalls, Chemical Processing, 19 March 2014

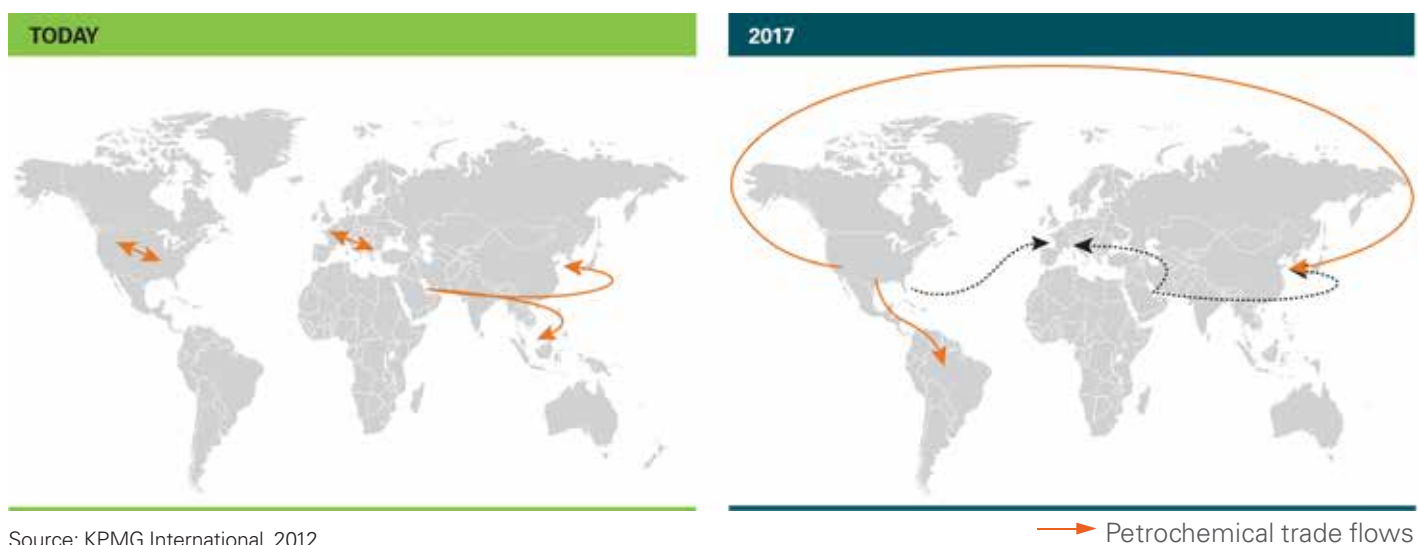
<sup>10</sup> Ibid.

Western Europe key petrochemical production growth (year-over-year)

Western Europe key petrochemical production growth (year-over-year)							
	2007	2008	2009	2010	2011	2012	2013
Ethylene	↑ 3.0%	↓ -8.5%	↓ -6.0%	↑ 8.1%	↓ -3.6%	↓ -3.5%	↓ -1.9%
Propylene	↑ 2.5%	↓ -5.4%	↓ -4.0%	↑ 5.6%	↓ -3.7%	↓ -0.9%	↓ -1.5%
Butadiene	↑ 0.3%	↓ -7.7%	↓ -10.2%	↑ 14.7%	↑ 0.4%	↓ -1.9%	↓ -6.0%

Sources: Association of Petrochemical Producers in Europe

Changing petrochemical trade flows because of shale gas



Source: KPMG International, 2012

→ Petrochemical trade flows

Over the next few years, the European chemical sector will face increasingly tough competition from US producers that use cheap feedstock made available from shale gas. In the past few years, 135 new chemical projects have been announced in the US, valued at over US\$90 billion, and the US chemical trade surplus is expected to reach US\$67.5 billion by 2018.<sup>11</sup> The North American ‘shale gale’ has dramatically lowered prices of ethane, the main petrochemical feedstock in the US, down to 25 cents per gallon (US\$185.50/mt) in 2013. Over the same time frame, the price of European

petrochemical feedstocks, typically naphtha, remained at US\$900–930/mt.<sup>12</sup> In many ways, the US shale phenomenon is likely to fundamentally alter the established pattern of global petrochemical trade flows. Assuming US producers can successfully adapt their business models and supply chains to export product cost effectively, US shale gas could be especially damaging for European petrochemical production in large parts of the European commodity chemical industry. Should US producers export directly to Europe or should Middle Eastern producers respond to increased competition in Asia by

switching their export focus to Europe, many European commodity chemical producers will find themselves at a severe cost disadvantage, making it difficult for them to compete. Some European cracker operators are considering imports of liquefied natural gas (LNG) from the US. Ineos, for example, plans to build a US\$500 million terminal in Grangemouth, Scotland, to bring in the cheap US feedstock starting in 2016.<sup>13</sup> However, the opportunity for similar action across the continent is limited. Currently, only four out of 42 crackers in Europe are able to consume ethane in significant quantities.

<sup>11</sup> KPMG research  
<sup>12</sup> European Petrochemicals in 2014, Platts, 10 January 2014  
<sup>13</sup> Europe: Tougher times ahead as offshore competition nears, C&EN, 13 January 2014

## Energy costs and regulation

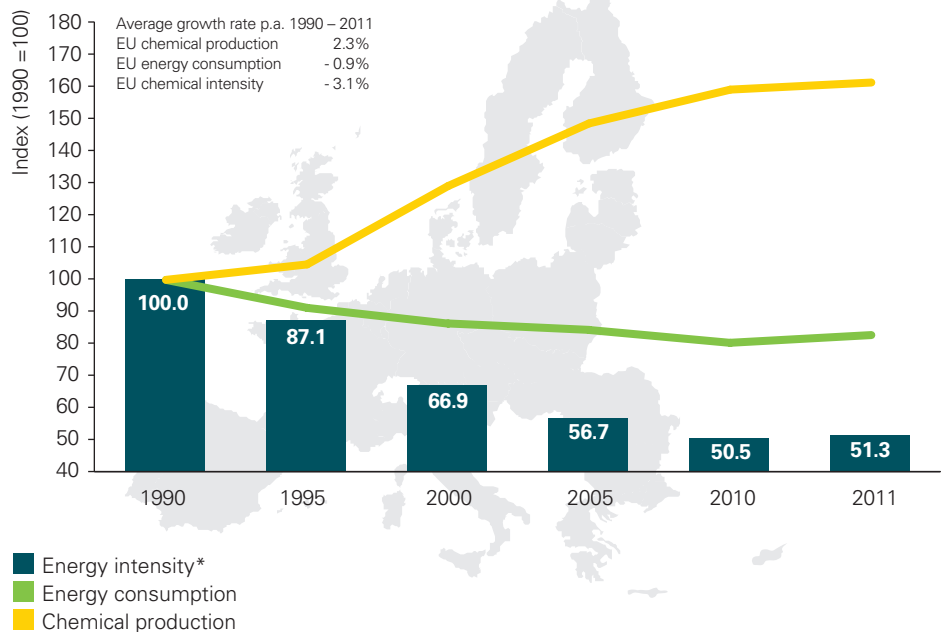
The EU chemical industry clearly recognizes that high energy costs put them at a competitive disadvantage with overseas competitors and European companies have made strenuous efforts over the years to improve energy efficiency. By 2011, energy intensity (energy consumption per unit of production in the chemical industry, including pharmaceuticals) was 48.7 percent lower than in 1990.<sup>14</sup>

These efforts are especially impressive since energy efficiency is subject to decreasing returns – the higher the level of energy efficiency, the more difficult it becomes to make further improvements. During the 21 years from 1990 to 2011, the EU chemical industry succeeded in continuously increasing its output while at the same time keeping its energy input constant. As a result, the industry has excelled in lowering its energy intensity on average by 3.1 percent per year.<sup>15</sup>

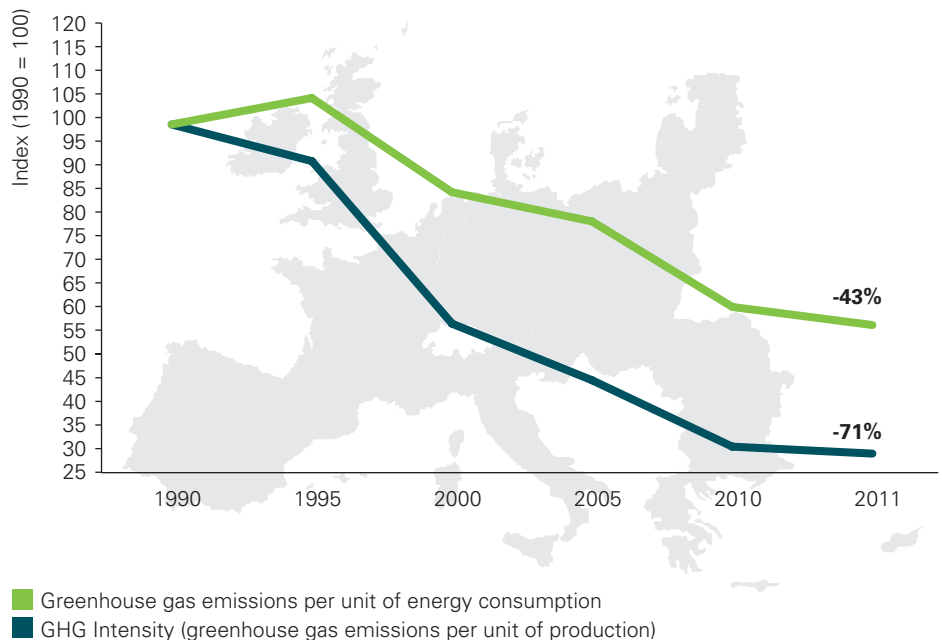
Nevertheless, energy policy in the EU (at both an EU and national level) continues to impede growth, according to many analysts and industry leaders.

The EU has some of the most rigorous regulatory requirements in the world. The Institute for European Environmental Policy estimates the body of EU environmental law amounts to well over 500 directives, regulations and decisions.<sup>16</sup> In January of 2014, the European Commission announced its ambitious long-term Energy and Climate Policy Framework by 2030. Goals include reducing greenhouse gas (GHG) emissions by 40 percent, increasing the share of renewable energy to at least 27 percent and maintaining progress toward the 2020 target of improving energy efficiency by 20 percent.

## Energy intensity in the EU chemical industry



## Greenhouse gas emissions per unit of energy consumption and per unit of production



<sup>14</sup> Op. cit., The European Chemical Industry, Facts & Figures 2013

<sup>15</sup> Ibid.

<sup>16</sup> New Approaches in Implementing and Enforcing Environmental Policy and Law – Administrative Reform and Innovation in Environmental Law and Policy, Jean Monnet Center at NYU School of Law

The European chemical industry has made an enormous effort to minimize the environmental impact of its production. Greenhouse gas (GHG) emissions per unit of energy consumption fell by 43 percent between 1990 and 2011. GHG intensity (the GHG emissions per unit of production) fell by more than two-thirds (71 percent) from 1990 to 2011.

At the same time, this improvement in emission reductions and energy efficiency did not translate into higher growth, returns or market share for the European chemical industry. As analysts and industry observers have noted, Europe needs decisive and coordinated policy actions to protect and strengthen its industry while avoiding unilateral and

aggressive emission reductions that reduce its competitive posture.<sup>17</sup>

In addition, at a national level, for example, Germany's Energiewende policy is designed to support the transition from fossil fuels to renewable sources. However, this policy has resulted in substantial increases in energy costs in Germany. Particularly in comparison with the US, the loss of competitiveness becomes evident with electricity and gas prices: electricity costs half as much in the US and gas prices are one-third of the German levels.

To counteract this disadvantage, many energy-intensive companies have been relieved of the German Renewable Energy Act (EEG) reallocation charge

by the German government. Despite the protests, it is not expected that the discounts for energy-intensive industries will be challenged by the EU Commission in Brussels in the future, so prices will be reduced in the German market. Nonetheless, the levels of energy prices will still remain comparatively high due to expensive primary energy, taxes and other charges. A possible solution is self-supply, with companies owning their power plants, which could lead to significant savings of up to 50 percent. This method is not subject to the EEG reallocation charge. However, neither the viability of self-generation of electricity nor its exclusion from the EEG directive is guaranteed.



<sup>17</sup> Market Outlook: Emissions reductions, challenge or opportunity for chemicals?, ICIS, 28 March 2014

# Germany: the leader in European chemicals

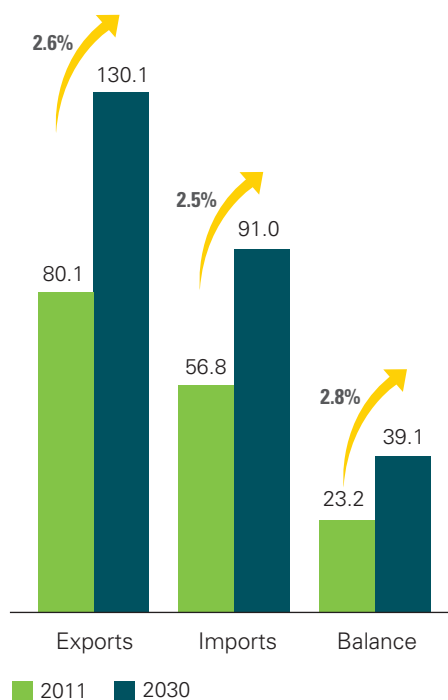
Germany is the leading chemicals producer in the EU, generating more than 25 percent of the EU chemical turnover.<sup>18</sup> Home to industry giants such as BASF, Bayer, Evonik and Lanxess, the sector is Germany's fourth largest by revenue. Employment in the industry currently stands at 436,500 jobs according to the Chemical Industry Association (VCI).<sup>19</sup>

The German chemical industry is broadly diversified. Basic chemicals account for 37 percent of production output. Specialty chemicals, including paints, crop protection products, special plastics and consumer chemicals, make up 43 percent. Pharmaceuticals account for the remaining 20 percent.

As in other European countries, the German chemical industry is gradually moving away from basic chemicals due to rising raw material costs and the creation of new production facilities in emerging markets. Accordingly, the production of high-grade specialty chemicals will steadily increase as a share of total output. Germany's chemical industry will continue to benefit from the country's strong economy and growth in global demand. The industry will also benefit from the development of industrial parks that provide producers with ready access to raw materials, energy, transportation and infrastructure.<sup>20</sup> German output of chemicals is forecasted to grow by 1.8 percent per year to 2030, thereby outperforming German industry and the overall economy.<sup>21</sup>

German chemical exports will grow on average by 2.6 percent per year

## Foreign trade of the German chemical industry in EUR billion



(The German Chemical Industry in 2030, a summary of the VCI Prognos study, 2013)

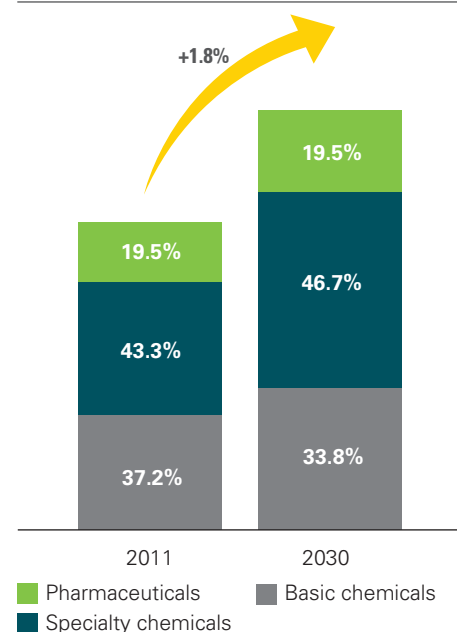
Source: Prognos, VCI

to 2030.<sup>22</sup> As a result, the export dependence of the German chemical industry will increase significantly. In 2011, around 52 percent of total output was destined for export. This share will rise to 60 percent by 2030. Today's major customers are all European countries, including France, Italy and Belgium. However, China will become the second-largest customer for German chemicals by 2030.

According to the German Chemical Industry Association (VCI), the German chemical industry is 'cautiously

## Concentrating on specialty chemicals

Annual growth in percent of German chemical production; share of the industry segments, in percent



Source: Trends in the chemical industry to 2030, VCI, Prognos, 2012

optimistic' about 2014. Most companies expect the chemical business to pick up in the coming months with a slow but upward trend through the year. Chemical production is expected to increase by 2 percent, accompanied by a sales increase to EUR191 billion (US\$263 billion), or 1.5 percent. "Very little is going to change in the foreseeable future regarding the German chemical export surplus, which is good news," said VCI President Dr. Karl-Ludwig Kley.

<sup>18</sup> Cefic Chemdata International. Quoted in Europe's largest chemical region, ChemCologne

<sup>19</sup> Economic Forecast Germany Year end 2013/4, Germany Trade and Invest, 2013

<sup>20</sup> www.chemicalparks.com

<sup>21</sup> Trends in the chemical industry to 2030, VCI, Prognos, 2012

<sup>22</sup> Ibid.

## Three strategies for success

In an increasingly competitive global marketplace, European chemical companies need to support growth with a combination of three basic strategies.

### Continuous innovation

A significant proportion of intellectual property (IP) in the global chemical industry resides in Europe and innovation remains a key competitive advantage for European chemical companies, especially in the area of high-end specialty products. This technology is also being used as an incentive by European companies that want to form joint ventures (JVs) with local companies in emerging economies. The European companies are able to establish a presence in these markets while the local companies gain immediate access to technology without the cost and time required for in-house development.

In the EU, spending on research and development (R&D) in the chemical industry was valued at an average annual level of EUR7.8 billion during the period from 1991 to 2012. In relative terms, the ratio of R&D spending to sales, or R&D intensity, of the European chemical industry has been declining, down from 2.8 percent in 1991 to 1.6 percent in 2012.

European companies are developing a number of innovative strategies involving CO<sub>2</sub> as a feedstock. The German government is funding a six-year, US\$138 million research program to encourage academia and industry to collaborate in the development of CO<sub>2</sub>-based processes.<sup>23</sup> At the same time, German-based companies are contributing an additional US\$69 million. Bayer has started planning a commercial facility for the technology, which will have a capacity of several thousand

tons per year when it opens in 2015.<sup>24</sup> BASF is also developing CO<sub>2</sub>-based processes in several areas, including polypropylene carbonate for use in a composite material that is an alternative to acrylonitrile-butadiene-styrene.<sup>25</sup>

Bio-based feedstock is viewed as a longer-term alternative. Italy's Versalis started a complete overhaul of its production base in 2012 as it repositions its portfolio to include bio-based chemicals.<sup>26</sup> BASF and DSM are rolling out corporate strategies around their intentions to develop bio-based chemicals.<sup>27</sup> BASF has developed an innovative mass balance approach that uses biomass as a feedstock for the manufacturing of basic products in existing plants.<sup>28</sup>

Rütgers has introduced environmentally friendly products such as REACH-compliant pitch.<sup>29</sup> In Colombia, Sika's ViscoCrete<sup>®</sup> technology has been adopted by Argos, a cement and

<sup>23</sup> Carbon Dioxide-To-Chemical Processes Poised For Commercialization, C&EN, 14 November 2013

<sup>24</sup> Ibid.

<sup>25</sup> Ibid.

<sup>26</sup> Market outlook: Focused on a flexible future, ICIS, 24 February 2014

<sup>27</sup> Special report: Biotech needs support, ICIS, 21 April 2014

<sup>28</sup> Ibid.

<sup>29</sup> Company website



concrete producer, to reduce cement and water content per cubic meter of concrete by 17 percent. As a result, Argos's annual carbon footprint has been decreased by 109,000 metric tons of CO<sub>2</sub>, which is equal to the electricity consumption of 500,000 inhabitants in Bogota D.C.<sup>30</sup>

Innovation can also involve strategic investments. The Swiss specialty chemicals group Clariant signed an agreement to acquire CRM International SAS, a French based manufacturer of natural ingredients for the personal care industry. The acquisition strengthens Clariant's Industrial and Consumer Specialties Business Unit (ICS), which aims to accelerate sustainable, high-performance solutions.<sup>31</sup>

## Geographical expansion

European chemical companies are increasingly focused on growth opportunities in emerging markets, using both joint ventures and acquisitions of local companies to increase their market presence.

In 2013, Clariant acquired the Organic Pigment business of Jiangsu Multicolor Fine Chemical Co., Ltd (JMC) based in Jiangsu Province, PRC. JMC is a leading supplier of several types of high-performance pigments and pigment preparations in China. As part of this project, Clariant will build a world-class Pigment PV23 plant in Zhenjiang, Jiangsu Province, PRC.<sup>32</sup> The bolt-on acquisition and the subsequent investment in a new plant allows Clariant to expand its pigments and pigment preparation activities in China in order to have better access to customers in the region and especially in China. Clariant has also acquired Platichemix Industries, a masterbatch business in India. The deal enables Clariant to offer a strong and extensive product portfolio with customized products and solutions and to expand its customer base significantly.<sup>33</sup>

Sika has agreed to acquire LCS Optiroc Pte Ltd. in Singapore and LCS Optiroc SDN.BHD in Malaysia, a leading manufacturer of cementitious powder products. Sika's acquisitions are also

not limited to Asia. The company has acquired Lwart Química Ltda., a leading supplier of waterproofing products in Brazil. The acquisition strengthens Sika's position in the Brazilian construction chemicals market and complements Sika's geographical footprint in Brazil.<sup>34</sup>

Also in Brazil, AkzoNobel's Imperatriz Chemical Island at Imperatriz supplies the Suzano Maranhão pulp mill in the northern part of the country. The plant is operated by AkzoNobel's pulp and performance chemicals business.<sup>35</sup>

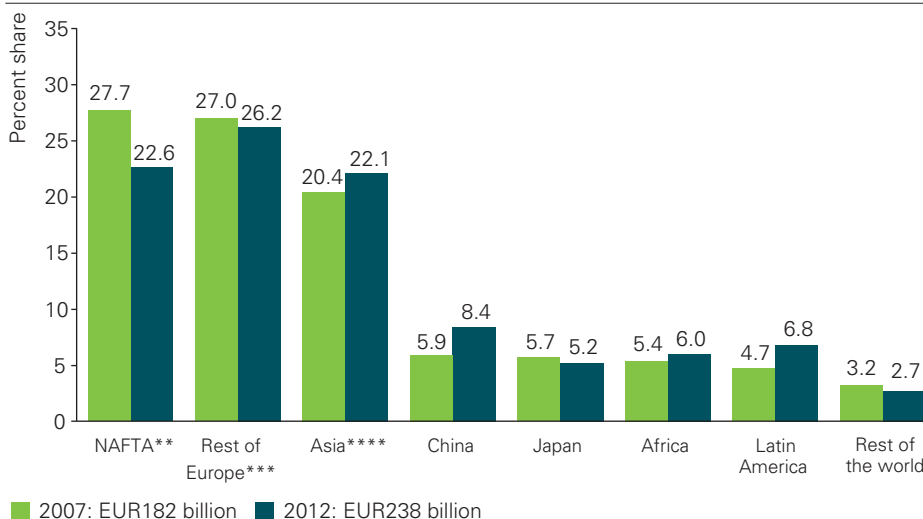
## Rigorous rationalization

In September 2013, the specialty chemicals company LANXESS began implementing its 'Advance' efficiency improvement program. The company will cut around 1,000 jobs worldwide as part of a drive to achieve EUR100 million in efficiency savings from 2015 onward.<sup>36</sup>

Rationalization is also underway to address overcapacity in European crackers, even though closing a plant in the EU must be conducted according to strict labor laws and local work councils. In 2013, Versalis shut one of its two lines in Priolo, Italy with a capacity of 300,000 mt/year and Total shut its 330,000 mt/year Carling cracker in France.<sup>37</sup> Ineos plans to close its G4 340,000 mt/year cracker in Grangemouth, Scotland in 2015.<sup>38</sup> Many industry observers believe that even with these closings, an additional 10 percent of steam cracker overcapacity in Europe needs to be addressed. In sharp contrast, US producers plan to bring online seven to 10 new, world-class steam crackers over the next 7 years.<sup>39</sup>

The same discipline required for rationalization of production capacity also applies to finance. European chemical firms collectively borrowed heavily in recent years to finance acquisitions. Repayments on loans totaling US\$76 billion will be due within the next few years and refinancing will need to take place in the context of oversupply and asset rationalization.<sup>40</sup>

## Growth in extra-EU chemical trade\* with emerging markets



\* Trade = extra-EU exports + extra-EU imports  
 \*\* North American Free Trade Agreement  
 \*\*\* Rest of Europe includes Switzerland, Norway, Turkey, Russia and Ukraine  
 \*\*\*\* Asia excluding Japan and China

Unless specified, chemical industry excludes pharmaceuticals  
 Unless specified, EU refers to EU 27

Sources: Eurostat and Cefic Chemdata International (2013)

<sup>30</sup> 2013 annual report, Sika

<sup>31</sup> Clariant press release, 14 January 2013

<sup>32</sup> Clariant press release, 30 September 2013

<sup>33</sup> Clariant press release, 16 December 2013

<sup>34</sup> Sika press release, 14 February 2014

<sup>35</sup> AkzoNobel 'chemical island' starts up in Brazil to supply pulp industry, IHS, 9 May 2014

<sup>36</sup> Op. cit. OUTLOOK '14: Europe chems right to be 'cautiously optimistic'

<sup>37</sup> Op. cit. European Petrochemicals in 2014

<sup>38</sup> Ibid.

<sup>39</sup> Ibid.

<sup>40</sup> Op. cit. Europe: tougher times ahead as offshore competition nears

# Switzerland: continued growth through innovation

The Swiss chemical and pharmaceutical industry has long been a pioneer in research and innovative product development. From the beginning, a small domestic market and the lack of chemical raw materials encouraged a focus on the production and worldwide marketing of specialized chemicals with high added value. This orientation has continued to be the key to success for the industry, which today emphasizes life science products as well as high-value specialty chemicals.

The emphasis on specialized products, as well as a limited domestic market, results in heavy dependency on foreign trade. Domestic sales total only 5 percent while the remaining 95 percent are exported. The highest portion of exports, over 55 percent, goes to the EU countries. All raw materials

for the chemical and pharmaceutical production have to be imported. More than 80 percent of the industry's demand is imported from EU countries.

The following examples show the importance of Swiss innovation in the chemical industry.

**Energy storage:** The rising concerns about pollution and global warming have prompted Clariant to move toward a greener energy landscape. The company's Energy Storage division produces cathode materials to make batteries safer and give them a longer lifecycle than today's batteries. Its flagship product line, Life Power®, offers high-performance materials for electric vehicles and energy storage systems. For example, the Life Power P2 battery is made from raw materials found in

abundance on the planet and provides benefits such as cost-effectiveness, rapid charging time, high storage capacity, temperature resistance, lower health risks and lower risk of fire.

**Refurbishment, concrete repair and protection:** Ranked among the top 10 Swiss companies for innovation, Sika is the industry leader in concrete repair and protection. Many years of research and development (R&D), in addition to decades of practical experience, have enabled Sika to provide systems to restore and rehabilitate damaged concrete structures. The use of polymer-based coatings results in material savings of more than 85 percent and one-fifth the curing time usually required.

**Agro-chemicals:** With over 5,000 people in R&D centers and field stations



worldwide, Syngenta delivers innovation that addresses growers' need to increase farm productivity in a sustainable manner. The company also continues to meet the ever-increasing expectations of regulators, crop processors and consumers. In 2013, Syngenta invested US\$1.38 billion in R&D. The company's

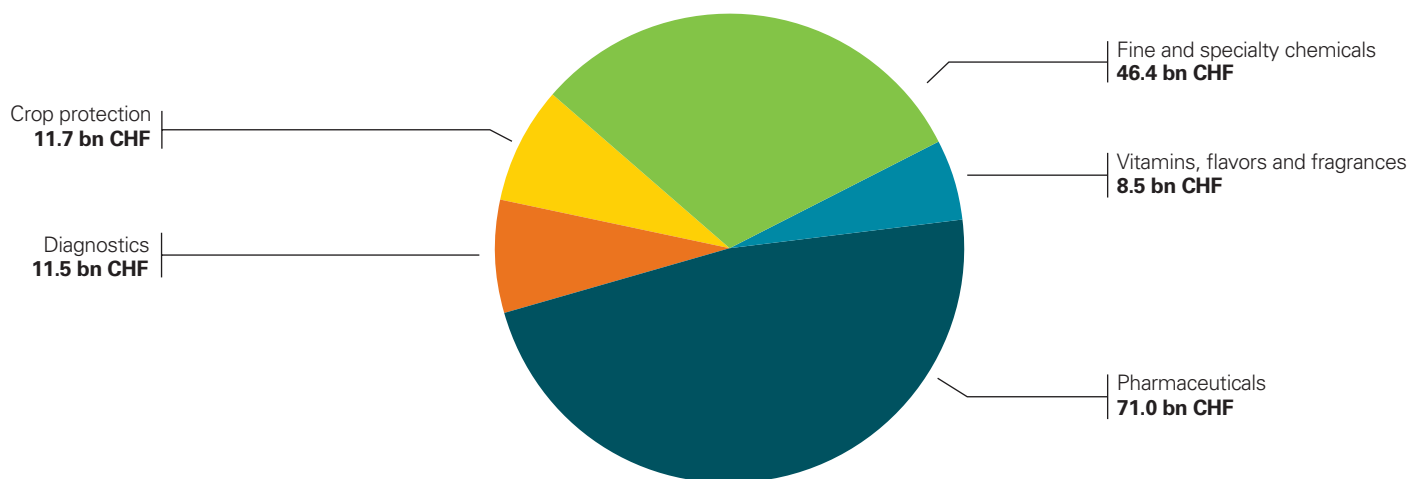
R&D strategy covers both our core business in biotic stress management and promising new technology areas. These include RNA interference and environmental stress.

**Skin sensitization testing:** Since the use of animal testing for cosmetic ingredients was banned in Europe, so

the cosmetic industry needed alternative testing methods. Developed by Givaudan, KeratinoSens™ is the first biological assay for skin sensitization testing validated by EURL ECVAM (The European Union Reference Laboratory for Alternatives to Animal Testing). The method is based on an engineered skin cell line that emits light if in contact by an allergen.

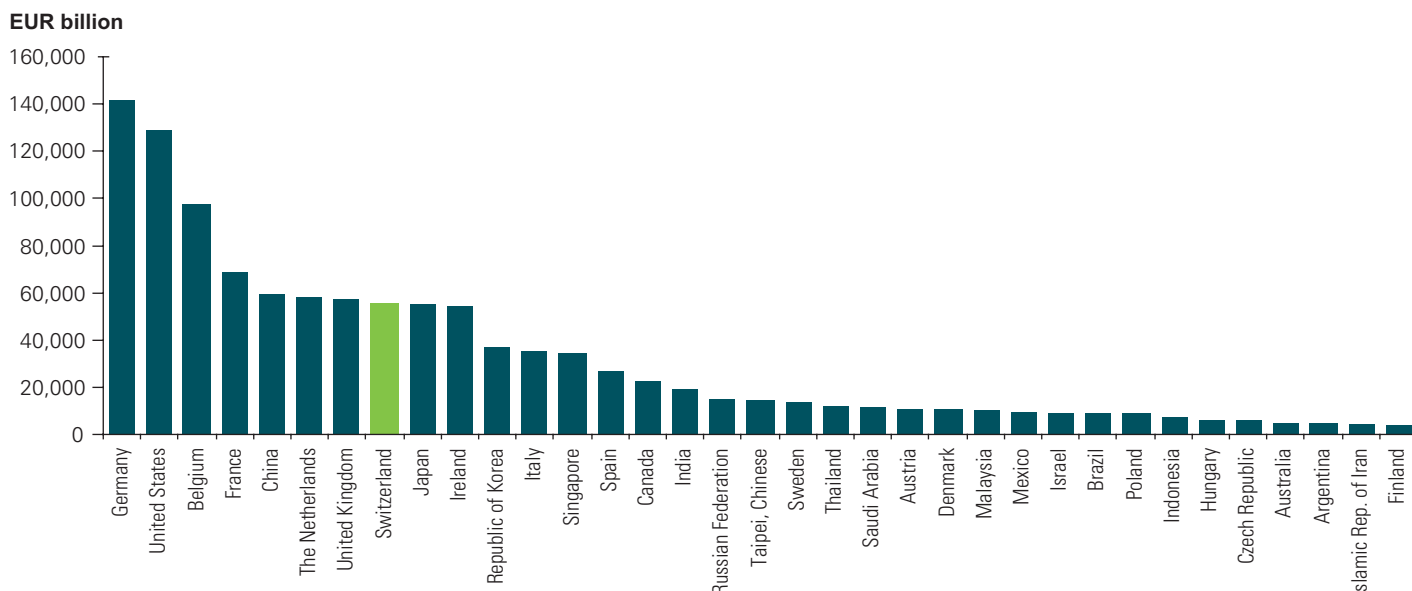
### Focus on life science and chemical specialties

Worldwide sales of the top 10 Swiss companies  
Total 2011: 149.2 bn CHF



Source: scienceindustries 2012

### Leading chemical export nations 2010



Source: VCI 2012

## Strategies for success:

### an interview with Thierry Lemonnier from Arkema

Arkema is recognized as a leader of the French chemical industry with 14,000 employees and operations in over 40 countries. Thierry Lemonnier, chief financial officer, recently talked with REACTION magazine about his company's strategy for sustainable growth based on investments, innovation and careful talent management.

"Arkema is well-positioned for world-wide markets in specialty chemicals," Lemonnier explained, "and we intend to support the growth of our customers in those markets." He added, however, that Arkema recognizes the long-term growth opportunities for their products in emerging markets, so the company is developing its production base to gradually reduce the share of European sales in its global revenues while increasing the share of exports to Asia.

Lemonnier also stressed the importance of innovative technology, especially in the areas of raw materials for coatings and high-performance composite materials. In addition, two-thirds of innovation efforts by Arkema focus on sustainable development and target five key areas: renewable energy, water treatment, lightweight materials, biosourced chemicals and organic electronics.

The third, and perhaps most important, aspect of Arkema's growth is the company's ability to attract and retain a highly skilled and motivated workforce. "We recognize that talent is key so we use a variety of approaches," Lemonnier explained. "In France, we take part in local school events and in the US, we recruit from the top universities. In China, we partner in a French-Chinese program to help train Chinese chemical engineers." He added that Arkema offers management training to a significant share of new employees, a policy that also helps to support the company's continued success.

## Conclusion

Major challenges remain for the European chemical industry, including low growth, an aging asset base, the impact of US shale at the commodity end, increased IP investment by China at the specialty end and the burden of rigorous labor and energy laws.

Before we write off the sector, however, we should keep in mind the magnitude, strength and traditional advantages of European chemical companies. The region is still home to many giants in the industry, all backed by a huge base of world-class research and technology. European production plants are among the most efficient in the world, with outstanding levels of output and employee productivity. Europe is also a global industry leader in establishing overseas investments and accessing growth markets.

Despite current challenges, there are many opportunities for European companies to be successful in today's chemical world. They can gain advantage from being the first overseas investors to establish significant footprints in the next wave of high growth markets (see article on ASEAN in the next Reaction).

In the area of IP, they should redouble their efforts, not just to use as leverage to access growth, but to continue to drive margin and profitability enhancements in established markets and to retain their position as an industry leader in technological innovation and new product development.

European corporate leaders need to make hard decisions to tackle overcapacity without allowing any historic link to legacy assets to cloud their judgment. Innovative strategies may also provide an opportunity to rationalize and consolidate, such as asset swaps or EU-wide joint ventures such as the recent partnership between Ineos and Solvay involving PVC production.<sup>41</sup>

In short, the challenges are many but so are the opportunities. With renewed vigor and a focus on innate strengths, there is still plenty of life in the European chemical industry.

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<sup>41</sup> Solvay and INEOS join forces to create a world-class PVC producer, Ineos press release, 7 May 2014

Is your chemical  
company

# operating effectively?

By  
**Barry van Bergen**



Has your company ever missed a good opportunity because you could not respond fast enough? Have analysts been challenging your performance or cost structures? Do you know what your customers value and are you clear on how effectively you provide this? Ongoing fragmentation across the chemicals value chain, consolidation within segments and changing market demands is resulting in a number of companies needing to address their operating models to help them streamline decision-making, reduce overcapacity, improve performance, develop talented resources and increase their competitive posture in today's global chemical industry.



The world of chemicals continues to reinvent itself. Since 2008, we have witnessed some of the most dramatic changes ever seen. Following rapid decreases in demand and a shift toward emerging markets in Asia, many companies moved quickly to protect themselves against overcapacity, underperforming assets and unnecessary costs.<sup>42</sup> Aggressive steps were taken to manage cash flow and working capital. Suppliers were squeezed and, where possible, customers were pressured as well.

Although 2014 shows slow but steady signs of market improvement, chemical companies are still tasked with the need to improve operations at every level.

## Portfolio and footprint adjustments continue

Portfolio rationalization plays a key part in helping chemical companies to address change. In some cases, divestments have signalled a return to core businesses. In 2013, BASF sold its service-oriented industrial water management subsidiary, Industrial Water Management France SAS, to Degrémont, a subsidiary of Suez Environnement. In doing so, BASF signalled its intent to remain focused on elements closer to its core: water treatment chemicals and membrane technology.<sup>43</sup> Other divestments have included liquid masterbatches, PVC products, plastic additives and wall systems.<sup>44</sup>

In a similar move, PPG recently completed the sale of its 51 percent

ownership interest in the Transitions Optical joint venture and PPG's wholly-owned sun lens business to Essilor International and intends to partly redeploy the proceeds on core business acquisitions.<sup>45</sup>

The availability of low-cost US shale gas has been another key and well-discussed driver in changing footprints. For example, LyondellBasell initiated its North American Ethylene Expansion Program to capitalize on cost benefits from shale gas production.<sup>46</sup> When fully operational in 2015, the program is expected to increase annual ethylene capacity by 1.85 billion pounds, for a total estimated capacity of 11.8 billion pounds in North America.

The desire to capitalize on emerging markets is also an important factor. A recent example is PPG investing in a San Juan del Rio, Queretaro, Mexico, coatings manufacturing facility to meet the increasing demand by automotive original equipment manufacturers (OEM), protective and marine coatings, packaging and industrial customers.<sup>47</sup>

Chemical companies are also, in some instances, taking the tough decisions and closing down assets that are underperforming. European examples include LyondellBasell shutting down a 100 KT per year high-density polyethylene (HDPE) unit in Wesseling, Germany in 2013.<sup>48</sup> The unit was among the smallest and least efficient of the LyondellBasell HDPE units in Europe.

<sup>42</sup> Portfolio rationalization: key strategies for chemical companies, REACTION, Issue 13, March 2014

<sup>43</sup> BASF completes divestiture of Industrial Water Management (IWM) business, company press release, 30 September 2013

<sup>44</sup> BASF divests PolyAd Services business to Edgewater Capital Partners, L.P., company press release, 4 March 2014; BASF to divest liquid masterbatch business to Audia International, company press release, 19 February 2014; BASF to divest Vinuran® PVC modifier business to Kaneka, company press release, 5 December 2013

<sup>45</sup> PPG announces successful completion of sale of ownership interest in Transition Optical to Essilor International, company press release, 1 April 2014

<sup>46</sup> LyondellBasell North American Ethylene Expansion Program on Schedule, company press release, 2 May 2014

<sup>47</sup> PPG to invest \$27 million in San Juan del Rio facility, company press release, 18 March 2014

<sup>48</sup> LyondellBasell European Restructuring to Include HDPE Unit in Germany, company press release, 15 May 2013





## Making the right decisions at the right time

While the examples listed are all quite different, they all have a common thread: changing the footprint or portfolio through acquiring, investing, divesting or closures can all lead to challenges with operating effectively. Legacy structures, different ways of working, inefficient decision-making, different approaches to the market and insufficient consideration given to the changing business architecture. These are all elements that can contribute to underperforming companies.

Companies that have focused on getting their operating model clearly aligned with their strategic vision and have invested the time to develop a robust architecture are winning in the market. By putting in place all the right building blocks, they have aligned their operating structures and processes with business strategies, created clear lines of accountability and governance and are able to respond quickly and appropriately to external change. In doing so, they have stripped out unnecessary complexity, duplication and waste while maintaining the customer experience as a priority, giving them a lower cost structure and more satisfied customers.

These actions taken to support operational effectiveness are appropriate steps to take for any company. However, in our discussions with industry leaders around the world, we have often seen a reluctance to either take the necessary steps or complete them to a sufficient level of robustness to make a real and lasting change. Corporate or geographic culture can sometimes play a role.

In Japan, consensus is highly valued, so the decision-making process involves the participation and agreement with stakeholders at multiple levels. Corporate structures may also play a role. Several European companies or subsidiaries have not kept pace with their global competitors in making required changes to product lines, supply chains, staff numbers and business cases. As a result, some companies are losing out on opportunities to capitalize on pockets of growth in, for example, Eastern Europe or to capitalize on US shale gas in their supply chain.

Another factor may be asset, or single product scale, product portfolio complexity and the size of the

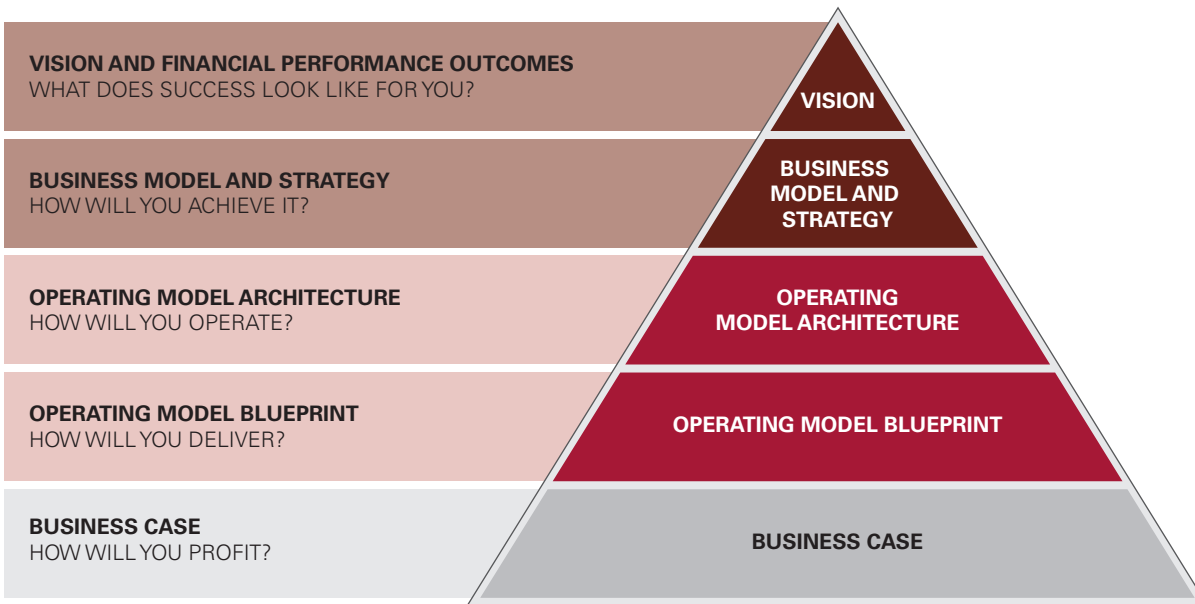
customer base. A basic chemical producer with a small number of large-volume assets that need to be run at the lowest possible variable and fixed cost per ton may supply only a few customers per asset. When end markets that incorporate their products suddenly face a rapid contraction in demand, they may be forced to make rapid decisions about supply and capacity to avoid significant losses. However, taking the decision to mothball or close an integrated 300kt PVC plant will always remain challenging. A specialties company with a larger number of smaller assets, complex integrated value chains making many products and a diverse customer base deals with a higher level of complexity in terms of production, management, marketing and other areas, all of which can limit the speed and effectiveness of a response to changing conditions.

Whether for cultural, regional or structural reasons, the inertia we have seen has resulted in slower or lost growth, missed market opportunities and the erosion of a company's competitive posture.

# Are you operating effectively?

## Operating model framework

When thinking about your business, ask yourself if these elements are well understood and in place in such a way that supports what you have set out to achieve.



# Some key questions to be asking yourself

### Core decisions and processes:

How long does it take to make decisions or complete activities in your business?

Is the process for executing a specific process understood and efficient?

### Organizational structures and headcounts:

Where are all your people that impact a business outcome located?

Do they operate as standalone functions?

Do you have a full handle on the level of outsourced head count and associated cost supporting your business?

### Fiscal and corporate structures:

How complex are your legal entity and tax structures?

Are re-charges and allocations, capital allocation, brand licensing, VAT, tax compliance and expatriate taxes readily understood and efficiently reported?

### Operational footprints:

Does your footprint truly optimize the customer service requirements against costs with a clear understanding of the utilization and impact of service levels on cost?

### Technology:

How well-matched are your IT systems to the delivery of business needs and capability?

Where do you place your constraints with regard to cost, time and quality of the technology deployed?

### Risk and governance:

How thorough and consistently applied are your governance policies across the enterprise?



# about your **operational effectiveness**

## **Information and analytics:**

How standardized is the quality of analysis and reporting across departments and business units?

How much effort does it take to produce and why?

## **Key performance indicators (KPIs):**

Do you have well defined KPIs and are they linked to specific performance targets and individuals where necessary?

How consistently are they applied and reported?

## **Data management:**

How much effort does it take for your teams to access data and transform it into a format fit for use in reporting and analysis?

How many different data repositories would you need to access in order to obtain information on your customers and operations?

## **Talent and capabilities:**

Do you truly manage for performance?

What kind of employee churn do you experience and what levels of talent and capability are they?

## **Rewards and incentives:**

Are rewards and incentives explicitly linked to carefully considered business objectives?

Are these measurable and are there consequences for non-delivery?

## **Culture:**

Does your leadership team role model desired business behaviors?

Do you have promoters in place at all levels of the business that demonstrate and encourage the desired behaviors?

Do you understand the true influence drivers across your business?

# Operating effectively means getting the basics and details right

Slow decision-making, lost opportunities or excessively high cost bases are often a symptom of much larger issues involving a company's operating model. There could be a number of reasons, but an issue that we have constantly observed over the years is that companies that struggle to make critical decisions are often hampered by not having the basics in place. They often lack a holistic set of facts and analysis to assess the situation, alternative options and the impact of going down that route.

Decisions, in this case, often end up being made by strength of opinion rather than an assessment of the underlying facts. Or they don't end up

getting made at all. When they do get made, often they come without a clear understanding of what will change and what is required to support the change. People in the business then struggle to act, or may not believe the reason for the decision resisting change and slowing down the business. Cost burdens get added to the business as issues pop up and need to be addressed in-flight when they could have been significantly reduced or designed with sufficient up-front consideration.

Quite often, we find that under performance is driven by a mismatch between the strategy that was laid out when designing the business (market-facing) model and the operating model

that needs to deliver it. It is a common pitfall in our experience: companies are not the same and the elements of an effective operating model need different levels of attention in different companies. That said, effective delivery often boils down to people, processes or systems that need to effectively support the desired direction of travel.



# One size does not fit all

In asking these questions, you may have come to the conclusion that your company is not operating as effectively as it could and value is being left on the table. Going after these opportunities may be a simple quick fix or require more substantial change. Whatever the change that is required, it should consider the unique needs of the company, their market position, portfolio, financial performance, business objectives and a number of other factors. However, getting things right and aligning a well-designed and executed operating model with the vision, strategy and business model can help companies not only survive but thrive in today's challenging global chemical industry.

“

Operating models should be adapted to the unique needs of each company, according to their market position, size, product portfolio, financial situation, business objectives and many other factors.

”

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# KPMG in the industry



KPMG in Germany recently hosted a roundtable with Michael Shannon and Paul Harnick presenting on Global chemicals: Seismic shifts. The event was a perfect opportunity for our leaders to meet and have discussions with members of the European chemicals community.



KPMG in the US recently hosted an event for management professionals within the chemicals industry. The program included a global chemical industry update and presentations on emerging tax and FCPA issues in the chemicals space. A panel discussion was also held on shale gas, the re-emergence of the US Chemicals industry, emerging market growth and M&A activity.

## KPMG Global Chemicals Institute

Our upcoming Reaction 14 webcast, taking place in early September will feature Vir Lakshman and Erik Willems. This webcast will focus on European chemical companies and how they are adapting to changing times.

Join our Global Chemicals Institute for access to valuable thought leadership, events and webcasts on key industry topics.

Visit [kpmg.com/chemicals](http://kpmg.com/chemicals)



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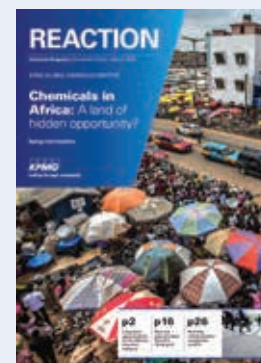
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