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World chemicals sales: geographic breakdown

Asian chemical production surpassed that of the rest of the world

• World chemicals turnover was valued at €2744 billion in 2011. Data for 2011 confirms that a significant recovery of the chemicals industry occurred during the year. Global sales in value terms were up in 2011 by 11.6 per cent compared with 2010. Emerging economies contributed largely to the worldwide recovery of the sector during the past two years 2010 and 2011.

• The European chemicals industry, including the European Union and the Rest of Europe, is still in a strong position, posting sales of €642 billion in 2011, 23.4 per cent of world chemicals sales in value terms. Worldwide competition is getting more fierce, however, witnessed by the European Union losing its top ranking in terms of sales to China for the third consecutive year. Chemicals sales in Asia are more than double that of the European Union. Taken together, Europe, Asia and the North American Free Trade Area account for 92.5 per cent of world chemicals turnover.

World chemicals sales in 2011 are valued at €2744 billion. The European Union accounts for 19.6% of the total.

Source: Cefic Chemdata International

* Rest of Europe = Switzerland, Norway and other Central & Eastern Europe (excluding the new EU-12 countries)

Unless specified, chemicals industry excludes pharmaceuticals
Unless specified, EU refers to EU-27
Emerging economies outpace industrial countries in chemicals production

- Developments during the years from 2001 to 2011 indicate that the European Union was the overall leader in terms of world chemicals sales, but the region has gradually lost ground to China and Asia (excluding Japan).

- The European Union contribution to world chemicals sales declined in 2011 by 10.2 percentage points compared with 2001. In fact, the total value of sales in the European Union has been growing continuously, but overall world chemicals sales are growing at an even faster clip. The level of world chemicals sales in value terms increased by 95 per cent in 2011 compared with 2001.

Source: Cefic Chemdata International

© Asia excluding China and Japan

Unless specified, chemicals industry excludes pharmaceuticals

Unless specified, EU refers to EU-27
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China - by far the biggest chemicals producer in 2011

- In 2011, the 30 largest chemical-producing countries had a combined turnover of €2447 billion.
- Twelve of the top 30 major countries are Asian, generating chemicals sales of €1278 billion, which represents nearly 52.2 per cent of the 30 top producing markets and 46.6 per cent of the share of world chemicals sales.
- Eight of the top 30 major chemicals-producing countries are European, generating chemicals sales of €480 billion. This figure represents 19.6 per cent of the top 30 and 17.5 per cent of the share of world chemicals sales.

Source: Cefic Chemdata International

Unless specified, chemicals industry excludes pharmaceuticals
Unless specified, EU refers to EU-27
Developments during the previous 20 years from 1991 to 2011 indicate that the European Union was in a much stronger position than today, posting sales of €295 billion in 1991, 36 per cent of world chemicals sales in value terms. Chemicals sales have been growing continuously during that period, increasing in value terms by 83 per cent.

The level of world chemicals sales increased, however, threefold in 2011 compared to 10 years ago, posting sales of €819 billion in 1991 to €2744 billion in 2011. As a consequence, the EU chemicals market share nearly halved in 20 years, from 36 per cent in 1991 to 20 per cent in 2011.

Source: Cefic Chemdata International

Unless specified, chemicals industry excludes pharmaceuticals

Unless specified, EU refers to EU-27
Eight countries accounted for 90 per cent of European chemicals production

- Germany remains the largest chemicals producer in Europe, followed by France, Netherlands and Italy. Together, these four countries generated in 2011 64.4 per cent of EU chemicals sales, valued at €347.2 billion. The share rises to nearly 90 per cent, or €480.3 billion, when including the United Kingdom, Spain, Belgium and Poland.

- The other 19 EU countries in 2011 generated 10 per cent of EU chemicals sales, valued at €58.8 billion, nearly all of which was attributable to four EU countries – Sweden, Austria, Czech Republic and Finland.

Sources: Eurostat and Cefic Chemdata International

Unless specified, chemicals industry excludes pharmaceuticals

Unless specified, EU refers to EU-27
The European Union is the world’s top exporter and importer of chemicals in 2011

- The most important trading regions in 2011 were the European Union, Asia – including China and Japan – and the market comprising North American Free Trade Agreement countries.

- The European Union was the leading exporter and importer of chemicals in the world, accounting for nearly 40 per cent of global trade, defined as the total value of exports plus imports. This includes intra-EU trade, mainly for reasons of comparison with other regions, as these figures include this type of trade activity as well.

Sources: Eurostat and Cefic Chemdata International

Unless specified, chemicals industry excludes pharmaceuticals

Unless specified, EU refers to EU-27
EU chemicals industry sales by sectoral breakdown

**Petrochemicals and specialty chemicals accounted for half of EU chemicals sales in 2011**

- Output from the EU chemicals industry covers three wide ranges of products: base chemicals, specialty chemicals and consumer chemicals.
- Base chemicals cover petrochemicals and derivatives and basic inorganics. They are produced in large volumes, and are sold within the chemicals industry itself or to other industries. In 2011, base chemicals represented 62.4 per cent of total EU chemicals sales.
- Specialty chemicals cover the auxiliaries for industry, paints and inks, crop protection, and dyes and pigments. Specialty chemicals are produced in small volumes but nevertheless represented 25.3 per cent of total EU chemicals sales in 2011.
- Consumer chemicals are sold to final consumers, such as soaps and detergents as well as perfumes and cosmetics. Together, they represented 12.3 per cent of total EU chemicals sales in 2011.
- Petrochemicals and specialty chemicals accounted, therefore, for half of EU chemicals sales in 2011.

Sources: Eurostat and Cefic Chemdata International

Unless specified, chemicals industry excludes pharmaceuticals

Unless specified, EU refers to EU-27

### CHEMICALS INDUSTRY PROFILE

- World chemicals sales: geographic breakdown
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- EU chemicals industry sales structure
- Contribution of the chemicals industry to the EU economy

### INTERNATIONAL TRADE

### GROWTH & COMPETITIVENESS

### EMPLOYMENT

### ENERGY

### INVESTMENT AND R&D

### SUSTAINABLE DEVELOPMENT
EU chemicals industry sales: structure by destination

- Between 2001 and 2011, the European internal market had a profoundly positive effect on the chemicals industry. Removing both trade and non-trade barriers inside the EU area has been a key driver for growth and competitiveness of the chemicals industry in the European Union.

- The internal market, today numbering more than 500 million consumers, is a key competitiveness factor. With the accession of new EU member states in 2004 and 2007, the internal market has received an intra-trade boost.

- Total EU chemicals sales were valued at €539 billion in 2011. Intra-EU sales (marked "Intra-EU exports" in graph) have climbed from €148.6 billion in 2001 to €269.6 billion in 2011, an increase of 81.4 per cent during the 10-year span.

Source: Cefic Chemdata International

Unless specified, chemicals industry excludes pharmaceuticals

Unless specified, EU refers to EU-27

EU internal market drives intra-EU chemicals trade
EU chemicals sales structure

- Intra-EU sales (excluding home country sales) accounted for half of total chemicals sales in 2011.
  - EU chemicals sales in 2011 were 28.4 per cent higher compared to the value in 2001. During the period 2001 to 2011, EU chemicals sales increased on average by 2.5 per cent per annum.
  - By 2011, intra-EU sales – excluding domestic sales – accounted for half of total chemicals sales by the sector in the European Union.
  - While intra-EU sales are rising, the importance of domestic sales is diminishing, however, only accounting for 25 per cent of total EU sales in 2011.
  - Twenty-five per cent of chemicals sales are exported outside of the EU market. European Union neighbour countries, the NAFTA trade bloc and Asia are the three primary markets for EU chemicals exports.

Source: Cefic Chemdata International

Unless specified, chemicals industry excludes pharmaceuticals
Unless specified, EU refers to EU-27
Contribution of the chemicals industry to the EU economy

- The above chart shows that the chemical industry underpins virtually all sectors of the economy and its strategies impact directly on downstream chemicals users. The big industrial customers of chemicals are rubber and plastics, construction, pulp and paper, and the automotive industry. Nearly two-thirds of chemicals are supplied to EU industrial sectors, including construction. More than one-third of chemicals are supplied to the other branches of the EU economy such as agriculture, health and social work, services, and other business activities.

- The chemicals industry’s contribution to EU gross domestic product, or GDP, amounts to 1.1 per cent. This may seem small at first, but should be reassessed taking into consideration the shrinking GDP contribution by manufacturing in advanced economies coupled with a rise in service sector output.

Source: European Commission, Eurostata data (Input-Output 2000) and Cefic analysis

Unless specified, chemicals industry excludes pharmaceuticals

Unless specified, EU refers to EU-27
Strong EU chemicals trade surplus continues in 2011

• As a historically important player in the global chemicals market, the EU chemicals industry has been, and continues to be, in a position to benefit from trade opportunities.

• The EU chemicals industry registered a solid recovery in 2010 after the economic crisis in 2009. The trade surplus outside the European Union was at a record level in 2010 and remains a key driver for the sector growth and competitiveness.

• In 2011, the chemicals sector in the European Union generated an extra-EU trade surplus of €41.7 billion, which represents the third record level over the past years since 1999.

Sources: Eurostat and Cefic Chemdata International

Unless specified, chemicals industry excludes pharmaceuticals

Unless specified, EU refers to EU-27
Extra-EU chemicals trade grows with emerging markets

- Extra-EU chemicals trade flow, calculated as total exports plus imports, was mainly attributable in 2011 to “Rest of Europe”, with 26.3 per cent of trade flow, followed by the North American Free Trade Agreement market (NAFTA), with 22.9 per cent.

- Asia, excluding Japan and China, accounts for 22.1 per cent of EU trade flows with non-EU countries. Taken together, the ‘Rest of Europe’ – or non-EU-Europe – NAFTA and Asia markets contributed in 2011 to 85.2 per cent of total trade flows.

- Comparing 2011 to five years prior, NAFTA and Japan registered a decline in their contributions to total trade, while China and the Rest of Asia have increased their contributions.
EU chemicals sector posted a significant trade surplus in 2011

- Apart from China, the European Union has a surplus with each main trading region – NAFTA, Asia, Japan, Latin America, Africa, Rest of Europe and Africa. The EU chemicals sector broadly retained its market share in terms of global chemicals sales during the last decade.

- The Rest of Europe market played a major trade role in 2010 for the European Union. The EU chemicals sector had a €13 billion net trade surplus in chemicals with non-EU countries.

- The three major geographic blocs trading with the European Union in 2010 were: Rest of Europe, North America, and Asia (excluding China and Japan).

- The Trade Competitiveness Indicator (TCI) – an indicator that compares the trade balance to the total trade, namely exports plus imports of a region – reveals deteriorating competitiveness since 2003, of the overall EU chemicals industry.

Extra-EU chemicals trade flows with major geographic blocs

Source: Cefic Chemdata International

Unless specified, chemicals industry excludes pharmaceuticals

Unless specified, EU refers to EU-27
EU chemicals trade surplus: sectoral breakdown

- **Specialty and consumer chemicals in 2011 accounted for 77 per cent of extra-EU chemicals trade surplus**
  - The EU chemicals trade surplus in 2011 reached nearly €41.7 billion. Specialty chemicals accounted for 36 per cent of the EU chemicals trade surplus, with a value of €16.8 billion.
  - The consumer chemicals subsector had the second strongest external trade performance, contributing €16.1 billion to the EU trade surplus, followed by polymers at €8.4 billion and petrochemicals at €7.5 billion. Basic inorganics experienced a trade deficit of €1.9 billion – the only sector with a trade deficit since 1994.
  - Sectoral analysis shows that specialty chemicals and consumer chemicals performed well in 2010. The trade surplus in these sectors increased by 23 per cent and 18 per cent respectively in 2010 compared with 2009. Polymers registered a comparably low 10 per cent increase in terms of trade surplus in 2010 compared with 2009. Petrochemicals in 2010 registered a decline in overall trade surplus, however, of 20 per cent.

Sources: Eurostat and Cefic Chemdata International

Unless specified, chemicals industry excludes pharmaceuticals
Unless specified, EU refers to EU-27
EU trade position is deteriorating with key countries in Asia for almost all sub-sectors

- A look at the EU trade balance for 2010 and 2011 in relation to a number of key countries and regions shows that the EU’s position is deteriorating with certain key countries in Asia for almost all sub-sectors.

- China is the only country with which the European Union currently has a trade deficit for all chemicals sub-sectors except polymers.

- Continued trade development with the Middle East indicates that this region increasingly uses its feedstock availability, namely petroleum, to develop an integrated chemicals value chain and to strengthen its position in a wider range of basic chemicals.

- Russia has up until now only been successful in using its competitive advantage in raw materials for base chemicals.

Sources: Eurostat and Cefic Chemdata International

Unless specified, chemicals industry excludes pharmaceuticals

Unless specified, EU refers to EU-27
Extra-EU chemicals trade flows detailed analysis by sector

Petrochemicals and Polymers show signs of serious erosion (2011 versus 2010)

- The trade position of certain important sub-sectors shows signs of erosion. In particular, raw material and energy-intensive parts of the chemicals industry find their global competitive position at risk, namely basic organic such as petrochemicals.
International trade is vital for growth and employment of the European chemicals industry. The industry has placed itself at the centre of global trade and thus depends vitally on open markets.

- As the most rapid growth is concentrated in the emerging economies, favourable access to these markets is highly important.

Trade Competitiveness Indicator (TCI, 2011) = (exp - imp) / (exp + imp)

Sources: Eurostat and Cefic Chemdata International

Unless specified, chemical industry excludes pharmaceuticals

Unless specified, EU refers to EU-27
Production, trade and consumption growth

Extra-EU trade rates maintain high growth rate

- During the period from 2006 to 2011, chemicals sales and consumption registered small growth. Chemicals consumption increased by 1.1 per cent, slightly less than the 1.3 per cent sales increase.
- Import growth during the same five-year period experienced a trend rate of 6.8 per cent, exceeding the 6.0 per cent trend rate of export growth.
- In contrast to sales and consumption, trade activity grew by significant rates during the six-year period from 2005 to 2011.

Sources: Eurostat and Cefic Chemdata International

* Consumption = total sales - export + imports

Unless specified, chemicals industry excludes pharmaceuticals

Unless specified, EU refers to EU-27
Production growth in the EU chemicals industry slightly higher than manufacturing average

- In the 10-year period from 2001 to 2011, the chemicals industry had an average growth rate of 0.9% per cent, a rate slightly higher than the 0.7% per cent average growth rate for all of the manufacturing industry. These low growth rates were mainly impacted by the dramatic declines in chemicals production levels during the 2009 economic downturn as compared with pre-crisis levels. The EU chemicals industry was profoundly affected by the spill-over effects of the economic and financial crisis.

- Both chemicals and manufacturing have been following the recovery trend that occurred in 2010. The EU chemicals sector enjoyed a strong 2010, posting a 10.2% per cent growth rate compared with 2009. The EU manufacturing sector also rebounded, recovering by 7.4 per cent in 2010. Even with strong growth rates, production in 2010 was far below the pre-crisis level and will need an additional several years to arrive beyond that level.

- EU chemicals industry production in 2011 grew modestly by 1.4 per cent in volume terms compared to the year before. Growth in first quarter 2011 was encouraging, expanding by a robust 5.6 per cent compared to the first quarter of 2010. Output activity during the rest of the year, however, performed less well, affected principally by the downbeat economic and business climate during the last three quarters of the year.
As shown above, growth in EU chemicals production in 2010 was spectacular and stronger than expected. However, the overall economic recovery in Europe was fragile. Production in 2011 was anaemic with 1.4 per cent growth of production in volume terms. Furthermore, a lot of uncertainty surrounds the prospects for full-year 2012.

Latest data show that EU chemicals production fell by 2.4 per cent in the first nine months of 2012 compared with the same period in 2011. Data for the first nine months of the year point to EU chemicals production remaining 6.2 per cent below the 2007 peak levels.

The 2.4 per cent year-on-year output decline during the first nine months of 2012 was mainly led by two sectors: polymers and especially specialty chemicals, which registered the fastest decline in 2012 compared to the other chemicals subsectors.

Looking ahead, the European chemicals industry continues to face relentless global competition. Access to raw materials and energy at globally competitive prices remains a prerequisite for a successful recovery for the EU chemicals sector.

Polymers and specialty chemicals are registering the fastest decline in 2012.

- Based on date available from January to September 2012.
Emerging economies outpace industrial countries in chemicals production

- During the period from 2006 to 2011, the EU chemicals industry (including pharmaceuticals) showed the second most modest growth rate compared with the biggest regions in the world. The EU chemicals sector grew by 0.9 per cent, well below the world chemicals industry average growth rate of 3.6 per cent.

- During the period from 2006 to 2011, the chemicals industry (including pharmaceuticals) in the North American Free Trade Agreement Area (NAFTA) showed a negative growth rate on average. This is due to the spill-over effects of the economic crisis in the United States in 2008 and 2009.

- The Asia-Pacific region outpaced growth in EU and US markets, with average growth rates of 9.7 per cent in chemicals, including pharmaceuticals, during the past five years. Asia is heavily influenced by the extraordinary performance of the Chinese chemicals sector and a booming economic climate in China, especially its industrial sector.

- Emerging economies are outpacing industrial countries in chemicals production and have been pushing up the average growth rate of world chemicals production during the past ten years.
Emerging economies outpace industrial countries in chemicals production (continued)

• The long-term trend for chemicals production, including pharmaceuticals, shows that apart from the Asia-Pacific region, chemicals production registered a negative growth rate in 2008 and 2009 in all regions.

• Observing the growth rates of world chemicals production since 1988, data confirms that annual chemicals production has always registered positive growth rates, except in two instances. The first period was 1990, when production declined by 0.3 per cent compared with 1989. The second year was in 2009 when world chemicals production declined by 4.8 per cent compared with 2008 - the largest recorded decline in world chemicals production in 23 years.

• The recovery in global chemicals production occurred in all regions in the past two years. World chemicals production increased by 10 per cent in 2010 compared to 2009, followed by 4.5 per cent in 2011 compared to 2010. The world recovery in 2011 was led by the Asia-Pacific region, where production grew in 2011 by 9.5 per cent compared to the year prior.
Has the trend decrease in employment levels in the EU chemicals industry halted?

- Chemicals companies in the European Union employed in 2011 a total staff of about 1.19 million. The chemicals industry also generated additional indirect jobs via the value chain, which is two times higher than through direct employment. Direct employment in the EU chemicals industry has decreased by an average annual rate of 1.9 per cent from 2002 to 2011.

- Historical data show that due to the economic crisis, employment in the EU chemicals industry fell in 2010 by 2.1 per cent compared with 2009. However, a significant recovery was registered in 2011 compared with 2010, resulting in employment increasing by 3.2 per cent in 2011. The level of direct employment in 2011 was higher than in 2010, which begs the question whether a halt has occurred in the trend decrease in employment levels in the EU chemicals sector.

- Employment is defined by Eurostat as the total number of people who work in the observation unit, inclusive of working proprietors, partners working regularly in the unit and unpaid family workers, as well as people who work outside the unit who belong to it and are paid by it, such as sales representatives, delivery personnel, and repair and maintenance teams. It excludes manpower supplied to the unit by other enterprises, people carrying out repair and maintenance work in the enquiry unit on behalf of other enterprises, as well as those on compulsory military service (Source: European Commission, SBS database).
Labour cost per employee in the EU chemicals industry increased by more than a third in 10 years

- The labour force employed in the chemicals industry is more qualified, trained and better paid than the average industrial worker. Personnel costs for the EU chemicals industry are 56 per cent higher than the average of other manufacturing sectors. Payroll accounts for 12.5 per cent of chemicals production costs.

- Labour cost per employee in the EU chemicals industry increased by an average of 3.1 per cent per annum from 2001 to 2011. In the case of EU manufacturing, labour cost per employee grew by three per cent per annum during the same period. Labour cost per employee in the EU chemicals industry was 11 per cent more expensive in 2011 compared with ten years ago.

- This cost (salary) factor is a significant tool to attract new and young talent to work for the EU chemicals industry.

- Labour costs are defined as the total remuneration, in cash or in kind, payable by an employer to an employee – regular and temporary employees as well as home workers – in return for work done by the latter during the reference period. Personnel costs also include taxes and employees' social security contributions retained by the unit as well as the employer's compulsory and voluntary social contributions. Personnel costs are made up of wages and salaries and employers' social security costs (Source: European Commission, SBS database).

Sources: Eurostat and Cefic analysis

Unless specified, chemicals industry excludes pharmaceuticals
Unless specified, EU refers to EU-27
Labour cost per employee increased by 3.1 per cent per annum from 2001 to 2011

- Labour cost per employee in the EU chemicals industry increased by an average of 3.1 per cent per annum from 2001 to 2011. Employment went down by 2.0 per cent on average during the same period.

- Between 2001 and 2011, labour costs in the EU chemicals industry, including pharmaceuticals, rose by 11 per cent, while total employment fell by 18.1 per cent during the same period.

Sources: Eurostat and Cefic analysis
Unless specified, chemicals industry excludes pharmaceuticals
Unless specified, EU refers to EU-27
Labour productivity in the EU chemicals industry higher than manufacturing average

- Due to intensifying global competition, the EU chemicals industry has taken vigorous restructuring and cost-saving steps in order to improve its competitiveness over the last decade.

- As a consequence, labour productivity in the chemicals industry has been growing at an average annual growth from 2001 to 2011 of 2.9 per cent, faster than the 2.5 per cent labour productivity rate in the total manufacturing sector for the same ten-year period.

Labour productivity in the EU chemicals industry higher than manufacturing average
Labour productivity increased on average by nearly 3.0 per cent per annum from 2001 to 2011.

- The EU chemicals industry is a leading industry with a highly skilled and productive workforce, notably due to high investment per employee and highly educated and trained employees.

- As a consequence, labour productivity in the EU chemicals industry rose at an average annual rate of 2.9 per cent from 2001 to 2011.

Sources: Eurostat and Cefic analysis

Unless specified, chemicals industry excludes pharmaceuticals

Unless specified, EU refers to EU-27
The European chemical industry in worldwide perspective Facts and Figures 2012

ENERGY

Fuel and power consumption in the EU chemicals industry

A strong reduction of gas and oil consumption during the past 20 years

Energy intensity in the EU chemicals industry

Energy intensity: Chemicals versus total industry

Fuel and power consumption in the EU chemicals industry fallen by a fifth since 1990

• The chemicals industry transforms energy and raw materials into products required by other industrial sectors as well as by final consumers. The cost of these two inputs is a prime factor when competing on world markets.

• In 2010, the European chemicals industry, including pharmaceuticals, used a total of 54 million tonnes of oil equivalent (TOE) of fuel and power consumption.

• The EU chemicals industry, including pharmaceuticals, constantly reduced its fuel and power consumption significantly during the period 1990 to 2010. The amount of energy consumed in 2010 was 20 per cent less than the level in 1990, according to European Commission data.

• Although data on feedstock are no longer available, we know from historical data that feedstock consistently accounted for 60 per cent of total energy products, taking all sources of energy into account. Most of the energy used by the chemicals industry as feedstock is stored in products and can still be reused via recycling.

• Regarding other raw materials, the chemicals industry also uses a wide variety of natural and processed starting materials, including metals, minerals and agricultural raw materials such as sugar, starch and fats.

Sources: Eurostat and Cefic Chemdata International

Unless specified, chemicals industry excludes pharmaceuticals

Unless specified, EU refers to EU-27
The EU chemicals industry reduced gas consumption by 30 per cent from 1990 to 2010.

- Data on energy consumption by source confirms that the EU chemicals industry significantly reduced its gas consumption during the years 1990-2010.
- In 2010, the European chemicals industry (including pharmaceuticals), used as energy a total of 18.9 million tonnes of oil equivalent (TOE) of gas consumption. This represents a sharp reduction in gas consumption of 30 per cent compared to 1990.
- Oil and electricity registered in 2010 reductions of consumption of 18 per cent and 10 per cent respectively compared with 1990.

**Sources:** Eurostat and Cefic Chemdata International

Unless specified, chemicals industry excludes pharmaceuticals

Unless specified, EU refers to EU-27
Energy intensity halved in 20 years

- For many years, the EU chemicals industry, including pharmaceuticals, has made strenuous efforts to improve energy efficiency, reducing its fuel and power energy consumption per unit of production.

- In 2010, energy intensity*, or energy consumption per unit of production in the chemicals industry, including pharmaceuticals, was 33.4 per cent lower than in 1990.

- Energy efficiency is subject to decreasing returns as the higher the level of energy efficiency attained, the more difficult it becomes to make further improvements. During the 20 years from 1990 to 2010, however, the chemicals industry succeeded in increasing continuously its output while at the same time keeping its energy input constant, consequently lowering its energy intensity significantly on average by 3.7 per cent per year.

Sources: Eurostat and Cefic Chemdata International

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

Unless specified, chemicals industry excludes pharmaceuticals

Unless specified, EU refers to EU-27
Energy intensity in the EU chemicals industry far lower than industry average

- Energy intensity in the EU chemicals industry decreased by an average of 3.8 per cent per annum from 1990 to 2010.
- In the case of EU industry, energy intensity went down by 2.1 per cent per year during the same period.
- Energy intensity in the EU chemicals industry was 53.4 per cent lower in 2011 compared with 20 years ago.

Sources: Eurostat and Cefic Chemdata International

Unless specified, chemicals industry excludes pharmaceuticals
Unless specified, EU refers to EU-27
The European chemical industry in worldwide perspective Facts and Figures 2012

Capital spending intensity fell from 5.6 per cent in 2001 to 4.5 per cent in 2011

- Investments in innovation, including research & development (R&D) are key elements in securing the future of the chemicals industry. They not only promote the adaptation to and the development of new technologies and innovation, but are necessary prerequisites for the continuous adjustment of corporate structures to the needs of the marketplace.

- It is worth noting that currently available figures on R&D investments give only part of the picture, as it is only the starting point on the path to successful innovation. Innovation spending in companies is increasingly included under business development.

- In absolute figures, investment in Western Europe had been increasing from 2001 to 2008, registering a positive trend at a consistent pace. Investment during 2009, however, experienced a steep decline compared to 2008, down by 21.6 per cent. Investment did recover in 2010, however, up by 5.5 per cent compared with 2009. The sector in 2011 registered a significant increase in investment, moving up from US$ 44.5 billion in 2010 to US$ 50.4 billion in 2011, a 13.1 per cent climb.

- In relative terms, the ratio of capital spending to sales, or capital intensity, of the Western European chemicals industry has been declining and reached the value of 4.5 per cent in 2011, down from 5.6 per cent registered in 2001.
China and the rest of Asia-Pacific region attract the bulk of chemicals investment

- Chemicals industry capital spending in Western Europe reached a modest level of US$50.4 billion in 2011. It represents about 13.5 per cent of world capital spending in value terms, which stands at US$374 billion.

- Comparing 2011 to 2001, the contribution of Western Europe to world chemicals spending in value terms declined dramatically by 11.2 percentage points, from 24.6 per cent in 2001 to about 13.5 per cent in 2011.

- The total value of capital spending in Western Europe has been growing continuously since 2001, but overall world chemicals capital spending has grown at an even faster clip. In value terms, world chemicals spending increased by 3.4 times in 2011 compared with 2001.

- China and the rest of Asia-Pacific region are the clear leaders in terms of capital spending, accounting for 67.6 per cent of world chemicals capital spending in 2011, up from 41.3 per cent in 2001. China and the rest of Asia-Pacific attract the bulk of chemicals investment, considered a key factor for overall competitiveness.

Source: American Chemistry Council (ACC)

Unless specified, chemicals industry excludes pharmaceuticals

Unless specified, EU refers to EU-27
Capital intensity in China and the rest of Asia-Pacific far higher than in the rest of the world

- In absolute figures, capital spending in the world chemicals industry rose from US$111.3 billion in 2001 to US$374 billion in 2011. Capital intensity, or the ratio of capital spending to sales, also registered an increase from 6.6 per cent in 2001 to 7.5 per cent in 2011.

- Capital intensity in China and the rest of Asia-Pacific contributed greatly to positive changes on a world basis. Capital intensity in China and the rest of Asia-Pacific increased from 9.3 per cent in 2001 to 10.8 per cent in 2011.

- Capital intensity in China and the rest of Asia-Pacific is far higher than in the rest of the world. Western Europe and North America are lagging behind, registering a constant decline during the past ten years.

Sources: American Chemistry Council (ACC) and Cefic Analysis

Unless specified, chemicals industry excludes pharmaceuticals
Unless specified, EU refers to EU-27
R&D intensity fell from 2.8 per cent in 1991 to 1.8 per cent in 2011.

- In absolute figures, R&D spending in the chemicals industry was valued at an average annual level of €7.7 billion in the European Union during the period from 1991 to 2009.
- In relative terms, the ratio of R&D spending to sales, or R&D intensity, of the European chemicals industry has been declining and reached the value of 1.8 per cent in 2011, down from 2.8 per cent registered in 1991.
In absolute figures, R&D spending in the chemicals industry was valued at an average annual level of €7.7 billion in the European Union during the period from 1991 to 2009. In the United States, the average value of R&D spending was €8.1 billion during the same period. The same variable amounted to €6.7 billion in the Japanese chemicals industry for a comparable 11-year period.

Sources: OECD database and Cefic Chemdata International

Unless specified, chemicals industry excludes pharmaceuticals

Unless specified, EU refers to EU-27
The high value-added products of the chemicals industry continuously open up new fields of application, paving the way to progress and innovation in other industries. Typical examples are health, food, consumer goods, aerospace and car manufacturing, telecommunications, electrical engineering and electronics. Wide variations in research and development (R&D) efforts are observed across the chemicals industry. Turning R&D into innovation is becoming increasingly important in relation to the competitiveness of the region.

- Analysing the ratio of R&D spending to sales of the chemicals industry, it can be observed that during the 19-year time period from 1991 to 2009, the R&D intensity level in the European Union was far below that of Japan and slightly lower than in the United States.

- The EU R&D intensity is equal to two per cent on average during the years 1991 to 2009, while the same ratio is equal to 2.8 per cent in the United States and to 5.1 per cent in Japan.

Source: Cefic Chemdata International

*Unless specified, chemicals industry excludes pharmaceuticals
*Unless specified, EU refers to EU-27
Total greenhouse gas emissions from the EU chemicals industry fell by 50 per cent between 1990 and 2010.

- According to the European Environmental Agency (EEA), the European chemicals industry, including pharmaceuticals, emitted in 2010 a total of 165.8 million tonnes of CO₂ equivalent, down from a total of 330.4 million tonnes in 1990.
- Long-term data show that the EU chemicals industry, including pharmaceuticals, significantly reduced its greenhouse gas (GHG) emissions on a consistent basis from 1990 to 2010.
- Total greenhouse gas emissions in the EU chemicals industry have fallen by 50 per cent since 1990. This historic trend clearly represents successful efforts made by the chemicals industry to reduce emissions.

Sources: European Environment Agency (EEA) and Cefic Chemdata International

Unless specified, chemicals industry excludes pharmaceuticals
Unless specified, EU refers to EU-27
Between 1990 and 2010, production in the EU chemicals industry, including pharmaceuticals, rose by 70 per cent, while greenhouse gas (GHG) emissions fell by 50 per cent during the same period.

The chemicals industry works to develop cleaner and safer technologies, waste recycling processes and new products to safeguard the environment including biotechnology processes, catalysts, membranes and desulphurisation. One aspect is increased energy efficiency. Besides increasing the energy efficiency of its own processes, the chemicals industry also helps to increase the energy efficiency of downstream users and their products through innovative inputs.

Sources: European Environment Agency (EEA) and Cefic Chemdata International

Unless specified, chemicals industry excludes pharmaceuticals

Unless specified, EU refers to EU-27
Greenhouse gas intensity fell by 71 per cent between 1990 and 2010. Greenhouse gas (GHG) emissions per unit of energy consumption were reduced by 38 per cent and GHG emissions per unit of production, or GHG intensity, fell by 71 per cent from 1990 to 2010. These decreases show the enormous effort by the chemicals industry to minimise the environmental impact of its production.

**Sources:** Eurostat, European Environment Agency (EEA) and Cefic Chemdata International

*Including pharmaceuticals*

*Unless specified, chemicals industry excludes pharmaceuticals*

*Unless specified, EU refers to EU-27*
Chemistry making a world of difference

Cefic is the Brussels-based organisation representing national chemical federations and chemical companies in Europe. Cefic represents, directly or indirectly, around 29,000 large, medium and small companies in Europe, which employ about 1.2 million people and account for one fifth of world chemicals production.