

# The European Chemicals Industry

*Enabler of a Sustainable Future*

## High Level Group on the Competitiveness of the European Chemicals Industry

### Final Report



## Conclusions

The European chemicals industry is key for economic development and wealth, providing modern products and materials and enabling technical solutions in virtually all sectors of the economy. With a workforce of 1.2 million and sales of €537 billion (2007), it is one of the biggest industrial sectors and an important source of direct and indirect employment in many regions of the European Union.

The top challenges for humanity require new solutions, many of which can only be implemented through new materials and substances. The world population is estimated to grow in less than 50 years from the present 6.7 billion to about 9.2 billion in 2050, coupled with higher life expectancy and an ageing population to an extent never experienced before. This has strong consequences for all societies and regions and places extremely high pressure on available natural resources. The way we produce and use energy must fundamentally change, diversifying the raw material base and reducing energy demand are a necessity, clean water, better food and progress in health care are all top challenges. Megatrends like these reflect societal needs and concerns. They will shape the priorities for research and development in the field of chemistry. The United Nations have proclaimed 2011 as International Year of Chemistry to emphasise the importance of chemistry in sustaining natural resources.

A sustainable chemicals industry is indispensable to address some of these pressing global issues. The industry continually develops innovations, generated by research in chemistry and other sciences, for a wide range of practical applications. At the same time, it has an important responsibility for the move towards a sustainable use of natural resources, reduction of energy demand, pollution, waste and emission of greenhouse gases, and, last but not least, for the safety of chemical products and their application.

Traditionally, Europe has been dominant in chemicals production – a position, marked by an important export surplus, which has weakened in the past few years. Recognising the industry's strategic importance, China and India have made successful efforts to build up large and increasingly sophisticated production facilities. Notably due to their feedstock advantages, countries in the Middle East attract very high investments in petrochemicals. Consequently, the EU's share of global chemicals production is decreasing in several segments. Europe's competitive position is at risk.

As part of its industrial policy, the European Commission established this High Level Group involving a broad range of stakeholders. Its remit was to examine the challenges to the European chemicals industry's competitive position and to identify the factors causing rapid structural change. European industry in general, and its chemicals industry in particular, are facing an array of enormous challenges. These include rapid globalisation with a new division of labour between developed and emerging countries; the drive for more sustainable raw material and energy use, combating climate change; and the need to respond to societal changes, such as ageing populations. The Group had the task of developing a long term vision and making sector-specific policy recommendations to master these challenges and to secure employment and growth through a flourishing and innovative chemicals industry in Europe. Balancing economic, social and environmental needs, according to the principles of sustainable development, has been an important theme throughout the deliberations.

The High Level Group started its work in September 2007 and finished in February 2009. During this period, the general economic climate changed dramatically. It is still too early to assess the full extent and duration of the current financial and economic crisis, which is in many respects unique. However, it is obvious that it has strong repercussions on the chemicals sector with industries such as construction and the automotive as important customers. Very volatile oil and gas markets as suppliers of feedstock and energy complicate the situation further. This increases the need to have a clear picture of the key drivers for the medium and long term development of the complex and vastly diversified chemicals industry, and as a pointer for the development and implementation of economic support measures at European and national level. The enclosed report aims to explain these trends and identify measures to foster the competitive position of the industry.

At its final meeting on 19 February 2009, the High Level Group endorsed this report and highlighted the following conclusions:

## **I. More innovation and research are key to securing the future of the European chemicals industry**

1. The move to a more sustainable use of resources will require new chemical solutions. In particular, climate change mitigation and other global and emerging environmental and social challenges will be a very important research and development focus in chemistry and related sciences. The resulting major business opportunities for the European chemicals industry should be fully exploited.
2. Innovation networks are an important way to promote faster uptake of innovation. Industry, in cooperation with governments, should set up topical innovation networks to promote key strategic innovation and foster best practice and experience.
3. A successful chemicals industry provides more and more cross-cutting chemical solutions throughout the value chains. Industry and the public sector at all levels should, therefore, strengthen innovation clusters and open innovation processes which facilitate cooperation across sectors and borders.
4. While innovation is more than research and development, the link between research in chemistry (and related sciences) and innovation is particularly strong in the chemicals industry. Overall, it is necessary to increase the quantity and quality of R&D and the effectiveness of innovation, in particular by encouraging more efforts by the private sector. In general, companies are urged to review their R&D plans and to extend corporate research programmes to medium and long term objectives. The public sector should provide effective support to private sector efforts and facilitate access to support programmes, in particular for SMEs.
5. Intellectual Property is of strategic importance to the science-based and high tech chemicals industry. The significant costs involved in chemicals R&D and in bringing new products to the market require appropriate and (cost) effective rules on intellectual property rights (IPR). Member States' authorities and the European Commission need to develop a more coherent IPR policy, following a more centralised and coordinated approach. This should be done in a transparent way involving key stakeholders including civil society. The Commission and Member States are encouraged to continue their efforts to reach agreement on the creation of a Community patent and a common jurisdictional framework within which European

and Community patents can be enforced. The Commission and Member States should also pursue international patent law harmonisation through the World Intellectual Property Organisation (WIPO) and initiatives such as the Transatlantic Economic Council (TEC).

6. Counterfeiting is becoming a major problem for the European chemicals industry. Concerns over health and safety make the problem even more serious and dangerous for chemicals than for most other products. The Commission and all players involved in the fight against counterfeiting and product piracy in Member States, including European industry, should cooperate to facilitate investigations and conduct strong enforcement against counterfeiters in Europe and elsewhere in the world, and develop public educational initiatives.
7. Confidence and trust from consumers, customers and investors are of key importance. The need to improve management and communication on chemical safety throughout the value chain up to the end user has been high on the agenda for many years. The chemicals industry has a difficult heritage as regards the safety of its installations and products. Significant improvements have been achieved as evidenced by a strong reduction in accidents and emissions, improved management of products and increasing substitution of the most dangerous chemical substances with other less harmful ones. This should form the basis for increased confidence in the chemicals industry. The industry still needs to increase transparency and develop a more effective dialogue with society, for example on the introduction of new technologies. Public authorities at all levels are encouraged to participate in this dialogue.
8. Regulation has a significant impact on the organisation and operation of chemical companies. This is why the quality of legislation, correct implementation and proper enforcement are not only of high significance for the achievement of health and environmental objectives, but also for the competitiveness and reputation of the chemicals industry. This applies especially to SMEs which face particular problems in coping with the high number of European and national regulatory requirements. With its Better Regulation agenda the Commission has given the highest priority to simplification and improvement of the regulatory environment in Europe. In doing so, it is helping to stimulate entrepreneurship and innovation. Better regulation is a key element of the Lisbon Growth and Employment Strategy. EU institutions should move forward with implementation of the Strategy without compromising the EU's environmental and health protection objectives. Proper consultation of stakeholders, solid impact assessments, improved communication by the authorities and more harmonised and correct application of the agreed rules are key elements of a good regulatory framework. Regulation should form a consistent framework, be focused on outcomes and provide a reasonably stable long term perspective.
9. Education and attracting talent are the foundation of innovation and competitiveness. Developing human resources needs more attention and SMEs require special help to address skills shortages. Member States should step up promotion of chemical and science education, starting with primary schools. Chemistry and engineering faculties should define new curricula, including entrepreneurial programmes in cooperation with industry. In preparation for this, the industry should intensify its efforts to forecast its human resource requirements in the short and long term at various locations and identify expected changes in skill profiles.

## II. Responsible use of natural resources and level playing field for sourcing energy and feedstock are success factors for competitiveness and sustainability

10. The chemicals industry transforms raw materials into a multitude of new substances and preparations which are essential for use in a very broad range of applications in virtually all sectors of the economy. The chemicals industry is largely based on oil and gas, but also uses renewable materials such as starch, vegetable oils or ethanol. Availability and cost of these raw materials are for large parts of the industry, together with energy prices, a decisive cost element strongly influencing international competitiveness. Europe has limited resources of the necessary fossil and renewable feedstocks.

It is therefore of highest priority to secure:

- reliable access to oil and natural gas (methane) at competitive prices and improved performance of the gas market in the EU by effective liberalisation and by diversifying sources of supply from outside Europe, and
- stable long term electricity supply, including through long term contracts with power generators or increased on site generation in combined heat and power facilities to cover the inherent heat demand for many processes.

11. The high integration of most of the European chemicals industry along the product value chain is one of its main competitive advantages. It is this integration which until now largely allowed the European industry to compensate for its less favourable feedstock position and higher energy costs. The majority of the 300 European production sites are located in 30 clusters. The success of these clusters depends on having a valid combination of key assets in place, among them shared use of infrastructure and services, access to major transport modes and proximity to markets and customers. Companies in well performing clusters benefit from an optimised cost structure and better access to resources. Centralised production of power and steam usually allows them to leave a lower carbon footprint. However, in quite a number of Member States, the industry is still widely dispersed and located around historical feedstock or energy resources. In addition, complete supply chain integration within clusters is often not yet achieved and the interconnection between clusters is insufficient. Consequently, clusters considered economically viable should be supported in their development, while complying with state aid rules.

12. Long distance transport is the rule in the chemicals sector. Chemical companies are often quite specialised and one can supply the whole European market with a particular product. Chemical distributors have an important position in the supply chain, servicing a wide range of downstream users, most of which are SMEs. Even if large parts of the industry are located in clusters, the distances between these production sites can be very great. There is a risk that insufficient logistics infrastructure and other transport bottlenecks could prevent the achievement of stronger clusters. Therefore, improving the logistics infrastructure within, and between, chemical clusters is important. 'Cluster platforms' and initiatives to foster regional and European cooperation such as the European Chemical Regions' Network can play an important role in making improvements. The share of road transport is too high, the decreasing use of rail should be reversed and more pipelines between clusters

are needed. In many cases the development of safe and efficient transport systems of all modes has been neglected and requires more attention with due care for environmental impacts and safety.

13. The heavy dependence on fossil hydrocarbons, high oil and gas prices and the ambition of achieving a lighter carbon footprint have led to considerable efforts in the chemicals industry to widen its feedstock base, particularly through broader use of bio-based renewable raw materials as replacement and complement for fossil feedstocks. While in principle a large amount of chemical substances can be produced from renewable raw materials, the technical and logistical difficulties must not be underestimated. Industrial production needs a reliable flow of high quantities of feedstock of constant quality. This requirement represents an important difference from the use of renewable raw materials to generate energy and some fuels, where chemical composition and purity are less of a concern. Technological developments may alleviate some of these problems. At present, it seems too early to make a robust assessment of the economic viability of renewable feedstock in the chemicals industry as a replacement for fossil feedstocks. But the expected large potential available in the longer term provides sufficient justification to continue research and industrial development activities as a priority.
14. The use of renewable raw materials such as starch, cellulose, sugar, vegetable oils and other fats has a long tradition in producing certain chemicals (e.g. surfactants, food and feed ingredients and enzymes) and fibres. In recent years, there has been increasing competition for these materials from the production of bio-fuels and energy. Incentives in the form of subsidies or regulation in the context of agriculture or energy policy can seriously jeopardise established uses of bio-based raw materials in the chemicals industry. Policy makers should be attentive to avoid such unwanted side effects. Access to sufficient high quality renewable raw materials at world market prices is essential for a competitive chemicals industry in Europe. The EU should assess the competitive advantages gained by the elimination or reduction of import tariffs and by the opening of import quotas for the raw material inputs of the various subsectors of the chemicals industry. In particular, the tariff for ethanol for industrial use should be reconsidered. With respect to environmentally and socially sensitive renewable raw materials, further market opening should go hand in hand with sustainability guarantees with due consideration to WTO rules. Wherever possible, the EU should strive for internationally agreed standards.
15. Climate change is a global problem and the chemicals industry is a globalised industry with a very strong production base in the emerging economies. This requires a careful look at the global effects of policy measures. Relocating parts of the European chemicals industry to regions with lower emission reduction targets would not only cause unemployment and loss of economic welfare in Europe. It would also increase global greenhouse gas emissions (carbon leakage) and pollution if major production capacity of the industry moved to areas with a problematic energy mix and low efficiency in energy generation and use. It is for this reason that the new Directive amending the greenhouse gas Emission Trading Scheme ('ETS directive') contains provisions to address this risk and it is now crucial to take the necessary steps for its timely implementation. In addition, adequate measurable action by emerging economies is needed to mitigate climate change. This would contribute to creating a more level playing field allowing the European chemicals industry to compete. Europe should do its utmost to create the conditions for such action. Sectoral agreements on reducing greenhouse gas emissions and making energy savings can be an important

way to arrive at the engagement of industry based in emerging economies, in particular to allow these countries to make a meaningful contribution to reducing emissions globally. Because of the complexity of sectoral agreements in the chemicals industry, support by all actors to bring these initiatives to a successful conclusion in as many subsectors as possible is to be welcomed.

16. The strong dependence on fossil feedstock, high energy use and high emissions of greenhouse gases in the production of base chemicals require constant efforts to improve the efficiency of energy and resource use. Such efforts started long ago and much has been achieved. While overall chemicals production in Europe increased by more than 50% from 1990 to 2005, the industry's emissions of GHG decreased by 25% over the same period. Robust and verifiable information on emissions and the emission reduction potential is crucial for decisions on measures to mitigate climate change. It is also indispensable for setting benchmarks for implementation of the European Emission Trading Scheme. Closure of current information gaps is of the utmost priority. The necessary conditions for full exploitation of the emission reduction potential in Europe, including the need for new and improved production processes and more efficient materials, need to be further explored.

### **III. Competitive chemicals industry needs open markets with fair competition**

17. 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 growth is concentrated in emerging economies, favourable access to these markets is of high importance. The chemicals industry located in some advanced emerging economies no longer faces any significant structural disadvantages. However, their domestic markets are strongly protected, while they benefit from low tariffs for import into the EU. This raises the question whether continuing preferential treatment of competitors from these countries in trade policy is still justified for chemicals.
18. Further trade liberalisation through a substantial reduction or elimination of tariffs both multilaterally and bilaterally would be in the interest of the EU chemicals industry. In the current economic crisis, this has become even more important since there is a risk of increasing protectionism. The most promising and preferred way to come to such a liberalisation is through a multilateral approach in the framework of the World Trade Organisation (WTO). In the current Doha Development Round, this could be achieved by an ambitious horizontal tariff cutting agreement complemented by a new sectoral agreement for chemicals. From a European perspective, the new sectoral agreement should involve all countries with a significant chemicals industry and include all chemicals. The EU's Policy Coherence for Development should be duly considered.
19. The EU should pursue Free Trade Agreements with key trading partners, in particular if these are so-called WTO plus agreements that go further in promoting openness and integration than is currently the case in the multilateral negotiations. The selection of potential FTA partners should be based on economic criteria. The EU should strive for consistency between all FTAs and should aim to achieve conditions comparable to

those agreed between FTA partners and other key countries. FTAs need proper enforcement and therefore balanced and reliable dispute settlement procedures.

20. The chemicals industry accounts for most anti-dumping procedures globally and both developed and developing countries make frequent use of this instrument. Trade Defence Instruments (TDI) are part of a wider trade package being negotiated at WTO level. The EU should seek to ensure common rules leading to a global level playing field with an alignment of anti-dumping practices at world level. TDI will continue to be needed to offset the impact of unfair trade practices, which can be particularly severe on SMEs. This includes measures to tackle double pricing, export tariffs and below cost pricing. In the absence of progress in the multilateral trade negotiations, there should be no unilateral weakening of the current European TDI. Particular attention should also be paid to the proliferation of pricing measures by third countries that aim to distort access to raw materials (e.g. export tariffs). When addressing such practices, the EU faces the problem that these are difficult to tackle under existing international trade law. Therefore, the EU should continue to promote the development of permanent new WTO rules addressing trade problems related to the discriminatory supply of raw materials.
21. Because of globalisation, customs authorities are required to handle an exponential and unprecedented increase in the volume of trade transactions. Additionally, 149 new regional partnership agreements have been notified to the WTO since 1995, further complicating international trade rules. The challenge is exacerbated by a variety of new safety and security risks, including terrorism. The global harmonisation of customs procedures has slowed down due to security concerns. Therefore, the EU should continue to strive for more global harmonisation in customs procedures in the framework of the relevant international organisations, such as the WCO (World Customs Organisation) and the WTO. This will enhance the fight against black and grey customs clearance schemes which currently form a major problem for exporters and traders of chemicals to some countries. The EU should further pursue multilateral and bilateral cooperation between customs authorities and governmental dialogue as ways to counter illegal activities.

***The High Level Group urges all addressees to consider and implement the recommendations which are further elaborated in the main report through concrete measures. For that purpose, it stresses the importance of ensuring good cooperation among stakeholders for an effective follow up to its work.***

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**Annex II** - Members of the High Level Group on the Competitiveness of the European Chemicals Industry

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# I. Introduction

When the European Commission decided in 2005 to give fresh impetus to the Community's Lisbon Strategy with its Action Programme for Growth and Employment<sup>1</sup>, it also announced a new and more integrated approach for industrial policy<sup>2</sup>. This stressed that the health of manufacturing industry is essential for Europe's ability to grow. It also acknowledged that European industry is undergoing important changes and facing major challenges. Therefore, it needs a favourable business environment to continue to develop and prosper.

In general, the Commission is committed to a horizontal approach to industrial policy. Nevertheless, for industrial policy instruments and measures to be effective, account needs to be taken of the specific context of individual sectors. A screening of 27 industrial sectors came to the conclusion that specific factors are particularly important for the chemicals industry. The chemicals industry plays a key role for the competitiveness of the EU's manufacturing industry. The Commission recommended, therefore, the creation of a High Level Group on the competitiveness of the European chemicals industry once legislation, known as REACH<sup>3</sup>, had been approved by the Council of Ministers and the European Parliament on the fundamental revision of previous EU regulations on chemical safety.

On 16 June 2007, the Commission adopted the decision setting up the High Level Group (Annex 1) with the task of addressing issues that determine the competitiveness of the European chemicals industry, in particular:

- (a) To conduct economic and statistical analysis of the factors determining the structural changes of the chemicals industry as well as other factors influencing the competitive position of the European chemicals industry.
- (b) To assist the Commission on questions related to the competitiveness of the European chemicals industry.

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<sup>1</sup> Communication to the spring Council "Working together for Growth and Jobs: A New Start for the Lisbon Strategy" COM (2005) 24, 2 February 2005

<sup>2</sup> Communication from the Commission "Implementing the Community Lisbon Programme: A policy framework to strengthen EU manufacturing – towards a more integrated approach for industrial policy" COM(2005) 474 , 5 October .2005

<sup>3</sup> The legislation governing chemicals in the EU has recently been fundamentally modified with the adoption of Regulation (EC) 1907/2006 on REACH. As it was considered too early to examine the effects of REACH on the chemicals industry, this topic has been excluded from the scope of the High Level Group's work.

- (c) To formulate a set of sector specific policy recommendations addressed to policy makers at the Community and national level, industry and civil society organisations.

The High Level Group with 27 members chaired by European Commission Vice-President Günter Verheugen has been composed of (Annex II):

Members of the European Commission (in charge of enterprise and industry, environment, energy, research, transport and trade);

Ministers, or top ranking officials, from eight Member States with an important chemicals industry;

Chief Executive Officers from chemical enterprises, representing the full range of the industry's subsectors, various regions and different sized companies, from leading multinationals to small and medium-sized enterprises;

High ranking personalities from:

- European Chemical Regions Network,
- Downstream user industries and chemical distributors,
- Science and technical universities,
- Environmental non-governmental organisations,
- Consumer organisations, and
- Trade unions.

From September 2007 through to February 2009, the High Level Group met five times. Each meeting focused on a specific topic, based on material prepared by experts. For this purpose, the High Level Group installed short term subgroups (the so-called ad hoc groups) dealing with:

- Research, innovation and human resources,
- Energy, feedstock, infrastructure and logistics, and
- Trade and competitiveness with other regions.

There was strong interest in participating in the ad hoc groups with experts from an even wider range of organisations than represented in the High Level Group itself. A wealth of material was presented and, in general, there were active discussions, often challenging established positions. Reports of all the meetings and the presentations are available on the website of the chemicals unit of the Directorate-General for Enterprise and Industry. The conclusions of the discussions on the various topics are an integral part of the HLG's results. The present report summarises the main outcome of the work of the High Level Group in a less technical manner and focuses on items expected to remain valid in the years to come. For this reason, the important and intensive discussions on the future European Emissions Trading Scheme are not considered (in detail) in this report, but their full content is available on the website for interested readers.



material base and reducing energy demand are a necessity. Progress in chemistry, biology and material sciences offers the possibility of generating energy differently and using it more economically. Materials produced by the chemicals industry enable us to exploit these possibilities in practice – be it silicon for solar panels, lighter materials for vehicles or insulation for buildings. At the same time the chemicals industry, as the biggest industrial user of energy, needs to continue efforts to reduce its energy and raw material consumption.

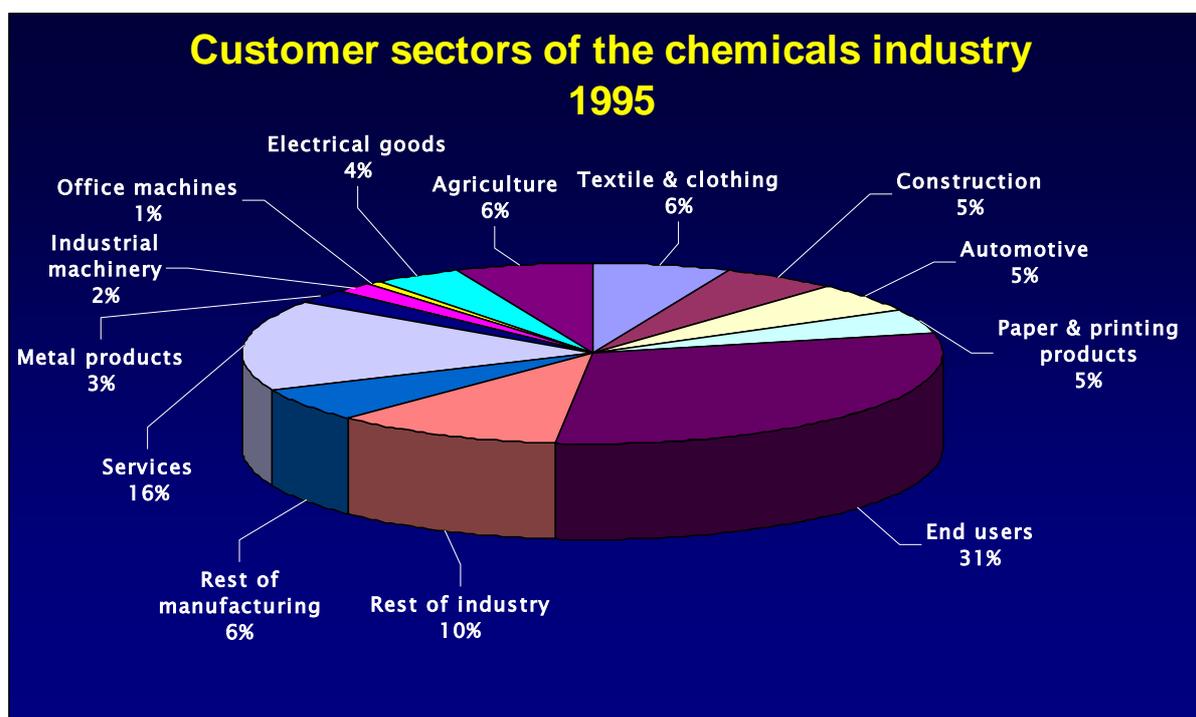
- Clean water is already a scarce resource in most parts of the world and is as important an issue as energy. Drinking water is a basic need and waterborne diseases remain a fundamental health problem. Water treatment chemicals are indispensable, not only to ensure safe drinking water, but also to treat waste water. In addition, it is necessary to reduce water pollution from the production and use of chemical products and arrive at a more economic use of water in industry and agriculture.
- A growing population and the eradication of poverty require more and better food. At the same time, the agricultural area available per capita is decreasing and further yield increases are limited, or even declining. Chemical products, such as fertilisers and plant protection products and the way they are used in farming, will play an important role in managing those trends.
- Progress in health is largely linked to progress in chemistry. From a technical perspective, the pharmaceuticals industry is part of the chemicals industry, although it has not been within the scope of this High Level Group. Nevertheless, it must be borne in mind that the chemicals industry provides active pharmaceutical ingredients for medicines. It also manufactures products for personal care and hygiene, ranging from traditional soaps to modern wellness products.
- On the other hand, it has to be noted that the use of certain chemicals has led in a high number of cases to adverse effects on human health (including effects such as carcinogenicity, mutagenicity and toxicity to reproduction), the environment, and a growing presence of chemicals in areas where they have never been intentionally used. This has led to the development of an increasingly dense and demanding regulatory framework and calls for the substitution of hazardous chemicals by safer alternatives along the value chains. It has also had negative impacts on public perception of the chemicals industry.

The examples given above show that megatrends reflecting societal needs and concerns shape the development of the chemicals industry. It is a true enabling industry and will keep this role in future.

The demand for chemical products depends on the state of an economy's development. It varies significantly from agriculturally-shaped developing countries and emerging economies in the process of industrialisation to modern services-oriented economies, with a strong quantitative peak during industrialisation and urbanisation. Global growth in the chemicals sector is, therefore, concentrated in emerging economies, mostly in Asia. In comparison, Europe's chemical markets are mature with growth rates broadly in line with GDP growth.

## 2. Wide range of customers for wealth of applications

The chemicals industry has an extremely broad range of customers.



(Source: Cefic and Eurostat 1995)

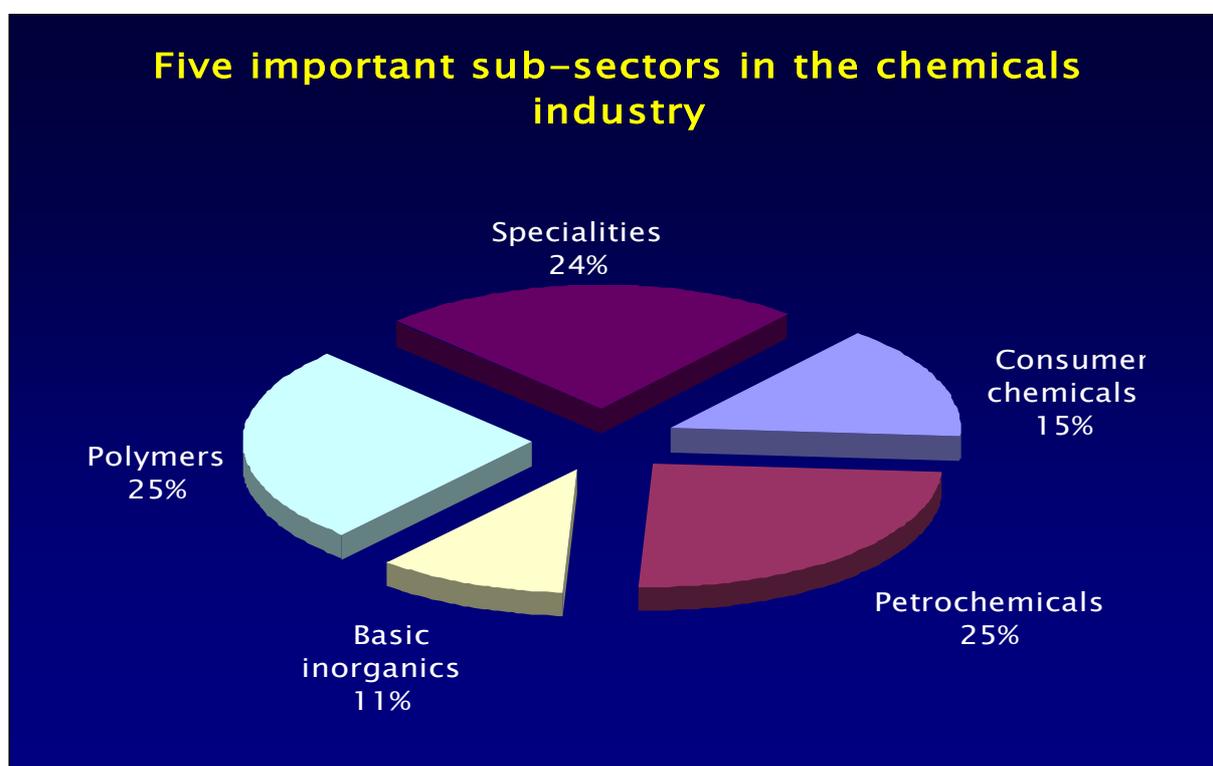
Only 30% of the combined output of the chemicals and pharmaceuticals industries is sold to private households and other end users. The rest goes to other industries, services and agriculture.

The EU chemicals industry supplies virtually all sectors of the economy. It has a pivotal position in the industrial value chain: raw materials and feedstock are transformed into tailor-made solutions for customers in the chemicals industry itself, as well as all other industries

further down the value chain. This explains why its technological breakthroughs induce further innovation in its customers or lead to demands for the development of new substances or materials from the chemicals industry itself. Therefore, the competitiveness of the industrial sector as a whole depends on a strong manufacturing base in chemicals and in user industries. One reason the chemicals industry has maintained a solid base in Europe in recent years is due to the fact that manufacturing has seen a remarkable recovery, at least in some parts of the EU. The chemicals industry benefits from the proximity of its customer industries and vice versa. Chemical distributors have an important position in the chemicals supply chain. They are often the last chemicals operator in the chain and contribute to disseminating innovative chemical solutions, as well as safe and professional handling and use of chemicals by a wide range of downstream users, most of which are SMEs.

### **3. Industry with variety of product segments linked by value chains**

The chemicals industry is more varied than any other. It delivers tens of thousands of products, from commodities to tailor-made specialities for individual customers. While the borderlines with other industries, such as petroleum refineries or pharmaceuticals, are not always clear cut, for most purposes the following subdivision of chemicals into five main subsectors is useful: petrochemicals, basic inorganics, polymers, specialities and consumer chemicals.



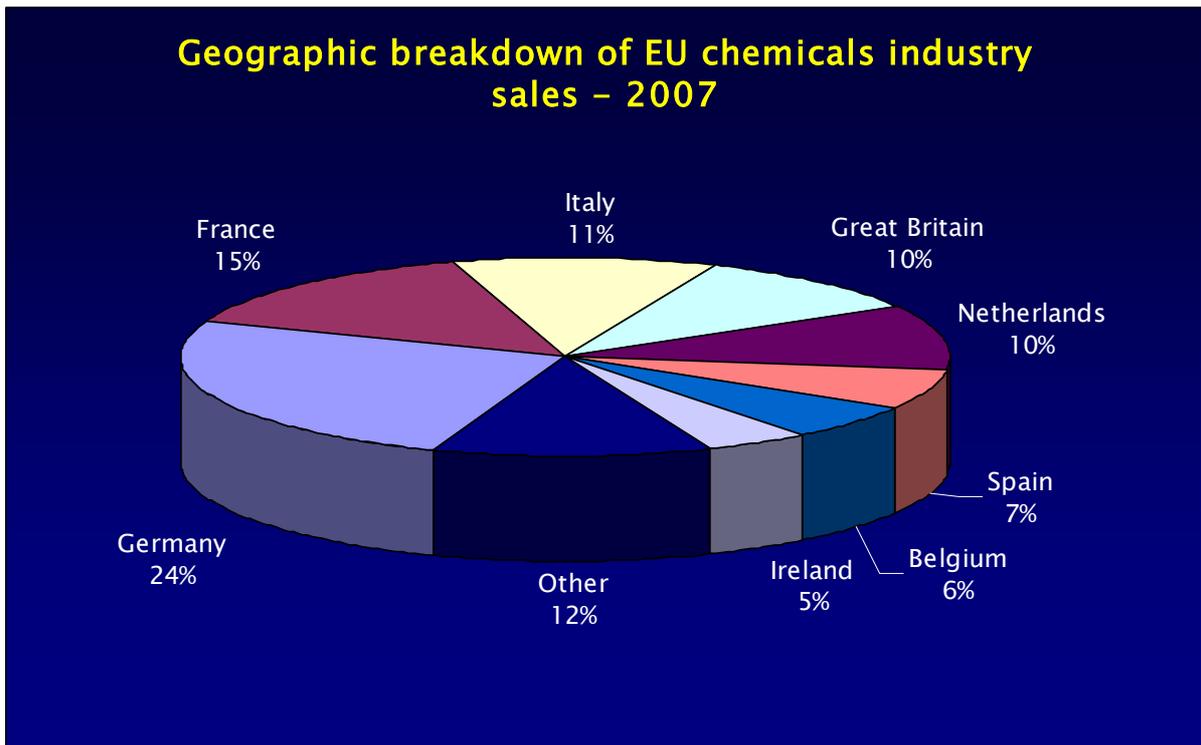
(Source: Cefic Chemdata International 2007)

- Petrochemicals, basic inorganics and polymers are mostly produced in large volumes and sold to the chemicals industry itself, or to other industries. Access to, and the price, of raw materials, energy supply, economies of scale and infrastructure such as ports and pipelines, determine production costs in these ‘upstream’ subsectors. Costs are the decisive factor for competitiveness in the area of ‘commodities’. Petrochemicals and basic inorganics represent about 35% of total chemical sales. Together with polymers, they form the group of base chemicals that accounts for almost 61% of total chemical sales.
- Specialty chemicals are produced for specialised uses and in lower volumes than bulk chemicals. They include active ingredients and coformulants for the pharmaceuticals industry, dyes and pigments, paints and inks, active ingredients and coformulants for crop protection, adhesives and auxiliaries such as products for industrial processes that include, for example, textile and paper manufacture. In practice, this subsector is highly heterogeneous. It consists of dozens, if not hundreds, of specialised markets with very different conditions. Altogether, these account for nearly 24% of total chemical sales.
- Lastly, consumer chemicals are sold to final consumers. Soaps, detergents, perfumes and cosmetics represent approximately 15% of total EU chemical sales.

A special feature of the chemicals industry is its propensity to integrate along value chains, including short distances to customer industries where possible. Integration into clusters saves costs and energy and reduces the need to transport dangerous goods.

#### ***4. Chemical clusters show regional integration in Europe***

The production of chemicals is largely concentrated in a few areas, notably North Western Europe. Industry in four Member States generates almost two-thirds of the EU’s chemical sales. Germany is the largest producer in Europe, followed by France, Italy and the UK. Adding the Netherlands, Spain, Belgium and Ireland raises the overall share to 88%.



(Source: Cefic Facts & Figures 2007)

The chemicals industry in the 12 new Member States is structurally different from that in the EU15. For instance, base chemicals represent a much higher share than in the EU15 and the new Member States have a large trade deficit in chemicals. Among them, Poland makes the highest contribution, representing 2.3% of total EU chemicals production. The countries' potential is still largely untapped, but they have shown good growth levels in recent years. The fundamental restructuring and modernisation of the industry which began in the early 1990s in these Member States, and continues, has already brought many changes.

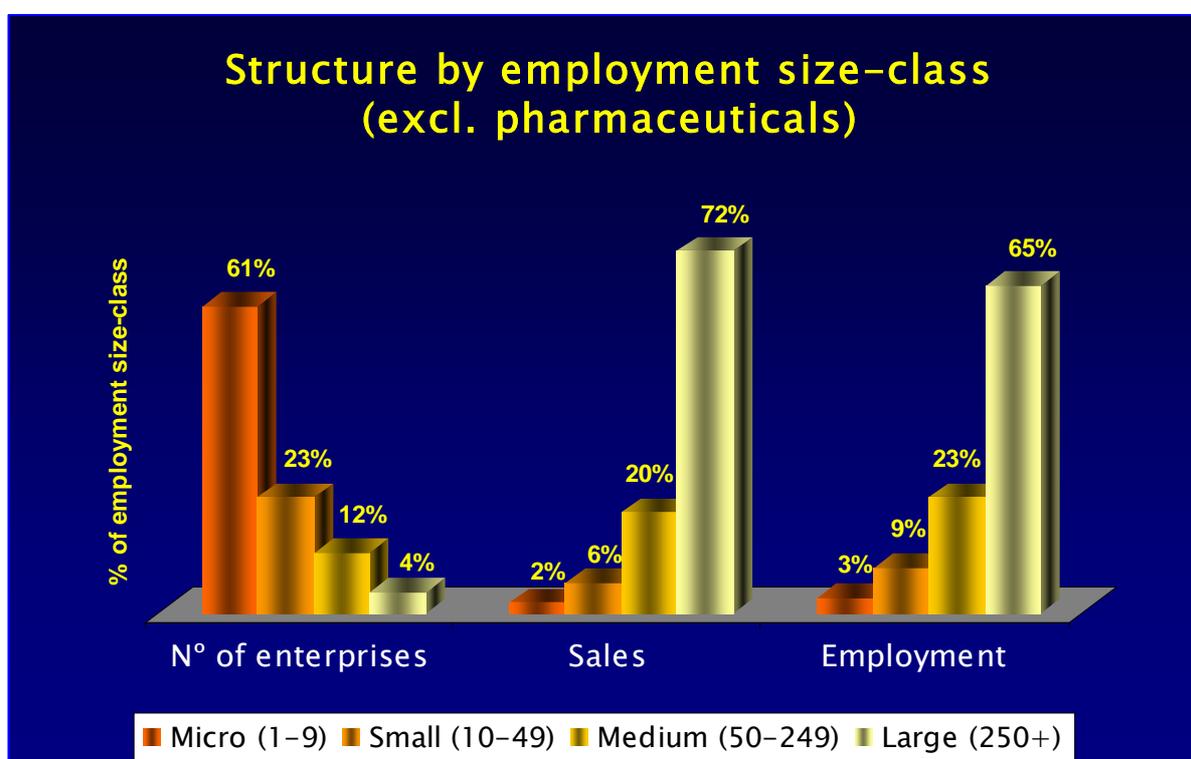
##### **5. Chemicals industry: important employer in the EU with high share of SMEs.**

In the EU, some 29,000 chemical companies employ a total staff of about 1.2 million – equivalent to 4% of the manufacturing industry's overall workforce. Employment in the industry has decreased by 2% annually over the past ten years. This is due to the high increase (3.3%) in labour productivity, which has been far greater than the average annual increase in production (1.3%).

Employees with medium and high education account for around 80% of the workforce. Those with a high level of education are increasing in numbers, and accounted for almost 27% in 2005. The trend is on the rise. The chemicals industry's success depends on its well trained

employees. Skills and education are an important factor in international competitiveness and the European chemicals industry is facing increasingly tough global competition for talent.

Contrary to public perception, small and medium-sized enterprises (SMEs) represent a significant share of the EU chemicals industry: 96% of all chemical companies have fewer than 250 employees and these are responsible for 28% of all sales and 35% of total employment. They make a major contribution to the transfer of innovation generated upstream in the chemicals value chain to downstream manufacturing industry. As producers of specialities, SMEs are often customers of the larger entities in the sector, rather than suppliers.



(Source: Eurostat and Cefic 2005)

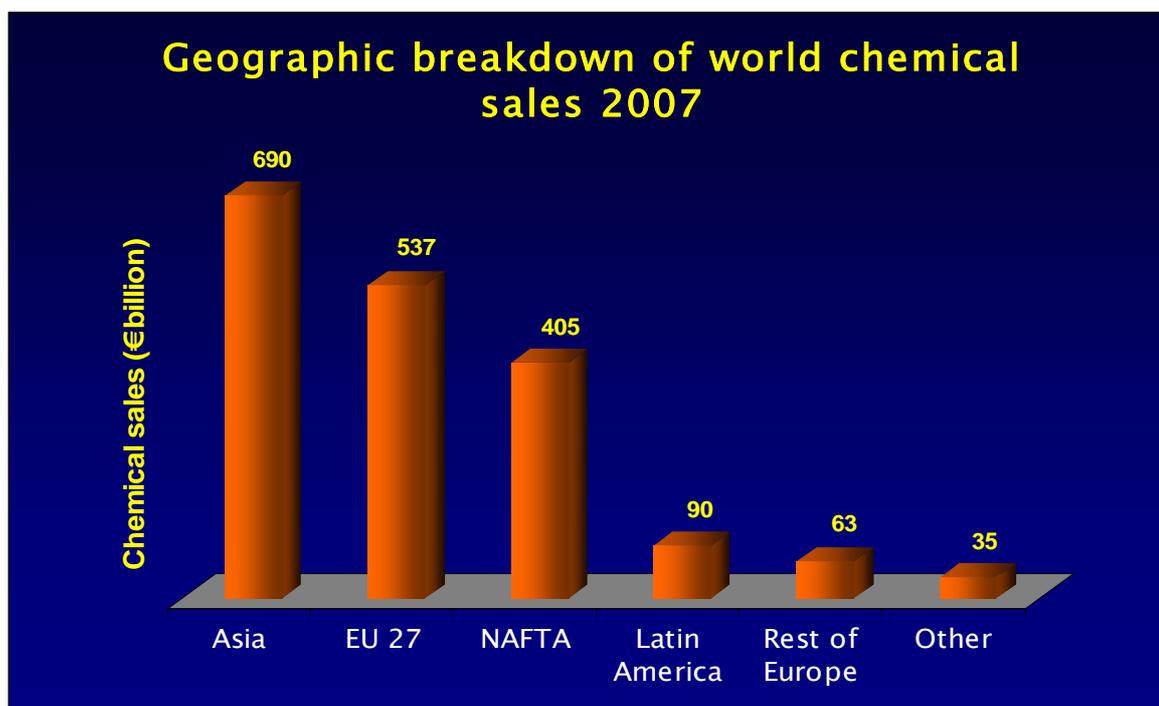
## 6. European chemicals industry: still successful global player

Between 1995 and 2005, global chemicals production increased by almost 40%. Production of chemicals is no longer limited to industrialised countries. It takes place in every region of the world, with an increasing presence in the emerging economies in Asia. In 2006, China occupied the 3<sup>rd</sup>, and India the 7<sup>th</sup>, place among the world's biggest chemical producers. Both are on the increase. In petrochemicals, the feedstock rich countries in the Middle East play an ever more important role. Global markets for chemical products are steadily growing and the

period from 2000-2007 saw a boom with China, India and Russia reaching nominal annual growth rates of production or trade of more than 20%. In OECD countries, growth is much lower and closely aligned with general GDP trends. European chemical producers can take advantage of booming markets in other parts of the world, provided they can build on a strong home market in Europe and have access to these new markets in emerging economies.

More than 45% of the global chemicals industry's production is traded. In the EU, the external trade intensity is 40%. Trade is growing faster than production. Over 35% of this trade is intra-company, reflecting the industry's integration. Many supply chains have become inter-continental and the relevant markets for many products are global. This means that traditional factors, like access to feedstock, market size and costs, become more relevant in decisions on locating investment. In addition, EU companies must constantly innovate because others are rapidly catching up.

The European chemicals industry has been, and remains, a strong and successful player on the world market. With sales of €37 billion (2007) it has a 29% share of the global market. The EU has a consistent trade surplus in chemicals (€5.4 billion in 2007). It has a surplus with each main trading region (NAFTA, Asia excluding Japan, Latin America, Africa, rest of Europe and Oceania). However, the loss of a global market share of 4 percentage points between 1995 and 2007 underlines the competitive pressure on the industry.



(Source: Cefic Chemdata International 2007)

## ***7. Global competition: challenge offering opportunities not to be missed***

The chemicals industry has a pivotal place in manufacturing and the potential to continue providing solutions. The key challenge is to make sure that these opportunities are fully exploited in Europe in a sustainable manner and that Europe's industry remains among the frontrunners. This has been the constant theme of the High Level Group. In all its discussions, be it on innovation, energy, climate change or finding the right skills, the Group identified best practices and the ways industry, public authorities and other stakeholders could address the current challenges. The following chapters in this report provide the main conclusions and recommendations from a vast amount of material presented in some 18 months of intensive work and rich debate.

During that period, economic conditions changed substantially and the short term outlook, at least, for the industry is far less positive than when the Group started its work. However, despite the turbulence, it is important to have a clear view of the medium and long term developments and the measures that can influence these positively. The chemicals industry is capital intensive and longer term perspectives are the dominant factor in investment decisions. Europe's chemicals industry has all the ingredients to maintain its competitiveness, if the public and private sectors cooperate and take the right decisions. The measures required for these are presented in the following chapters.

### **III. Innovation and research**

#### ***1. More innovation is key for a sustainable and healthy European chemicals industry***

The European chemicals industry is currently facing unprecedented challenges arising from the need to address:

- Strong competition from emerging countries, notably in Asia, the Middle East and Russia,
- Increasingly difficult energy and feedstock situations with their high impact on costs and competitiveness, and
- Climate change and, more generally, global environmental challenges and risks.

Many of the challenges faced by the chemicals industry affect economic activity and society as a whole and concern manufacturing industry across the board. Innovation is indispensable to overcome these challenges, avail of related opportunities and ensure the industry's further success.

The chemicals industry has a key role through its enabling function for the entire economy. It shapes economic activities in other sectors. It is an irreplaceable provider of innovation to 'downstream' industries and an essential component of value chains that end with the great majority of consumer products. This means that the industry will always have a strategic, economic and social importance. Europe must retain a strong manufacturing base in this sector, not only because of its economic weight, but also because of its ability to continually generate innovation critical to meeting the major challenges of modern societies.

Increased and targeted investments are needed to bring about the necessary breakthrough in chemical product and process innovation. In its "Vision for 2025 and beyond", the European Technology Platform for Sustainable Chemistry (SusChem) highlights a number of generic topics that can help meet today's societal challenges – these can be pursued by individual companies as well as through different forms of collaboration. (See Box)

**SusChem** is a technology platform bringing together academia, industry and relevant additional partners to foster research and innovation from initial ideas to commercial application.

SusChem's main goal is to contribute to the long term success of the European chemicals and associated industries' value chain as a whole, by providing incentives for renewed chemical innovation in Europe, both across the supply chain and across disciplines.

SusChem has identified three key areas where increased investment in chemistry research and innovation is needed: industrial ('white') biotechnology, materials technology and reaction & process design.

#### ***Industrial ('white') biotechnologies***

This is the application of biotechnology for processing and producing chemicals, materials and energy. It plays a major role by providing biomass as an alternative raw material to fossil resources, reducing European dependence on imports. Industrial biotechnology has the capacity, under proper regulation, to make processes more environmentally friendly, thus significantly contributing towards Kyoto Protocol targets.

#### ***Materials technology***

New technological frontiers will be opened by understanding and optimising material combinations and their synergies, blurring the distinction between a material and a functional device comprised of distinct materials.

The confluence of market demand, made possible by close cooperation with partner industries down the value chain, and innovative technology development will create new opportunities for the European chemicals industries. These will exist in areas such as functional materials (tailored to healthcare, wellbeing and nutrition); intelligent materials (with special electrical, optical, mechanical and magnetic properties); materials for new sustainable technologies (energy); and new methods for the controlled synthesis of rationally designed materials.

#### ***Reaction & process design***

In recent decades, chemical processes have continually improved through a more efficient use of raw materials and energy, enhanced safety and increased productivity, while minimising waste and energy use and reducing waste material.

In the next 20 years, these processes will undergo substantial changes thanks to the smart design of the synthetic route itself, micro process technologies, integration and intensification of processes combined with new catalyst concepts and the development of *in silico* technologies.

The European chemicals industry is well placed to provide sustainable solutions. This is one area where European industry has some initial competitive advantages. There appears to be considerable market potential and a positive consumer attitude. Grasping this opportunity requires a positive, proactive and committed stance from the industry and from policy and public authorities at all levels. Equally important for the full exploitation of the vast potential for innovation is closer cooperation between academia, the chemicals industry and its many customer industries as well as early communication with civil society, leading to rapid introduction of innovations onto the market.

## Recommendations

### Strengthening Innovation Networks is of utmost importance

• *Industry, in cooperation with governments, should set up topical innovation networks to promote key strategic innovations and foster best practices and exchange of knowledge and experience between them. One such network should deal with ‘energy and climate change’.*

Support for ‘flagship projects’, which could take the form of pilot/demonstration plants, as guidance for industry and society to signal the potential of certain key innovations, is essential. Public support for this type of project – not primarily as a source of finance but, as a minimum, to signal public commitment – is essential.

• *Industry and public authorities at all levels should strengthen clusters<sup>4</sup> (and open innovation processes) which facilitate cooperation across sectors and across borders, with the aim of further stimulating, accelerating and facilitating cross-cutting innovation throughout the value chain.*

Initiatives should build on existing structures and programmes where possible. The results achieved by EU, national and regional innovation networks should be examined, and possible areas of improvement identified, for example, by greater promotion of best practices.

• *As part of further strengthening existing networks, the technology platform SusChem should explore opportunities beyond the defined key areas* to include innovation leadership issues (‘bringing good ideas to the market’) in a new SusChem+ structure.

SusChem has so far delivered a vision paper, a broad strategic research agenda, and a detailed implementation plan. It should now develop a wider mandate covering the full scope of innovation, and reaching out to an increasing number of Member States, regions and enterprises, in particular SMEs.

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<sup>4</sup> Innovation clusters, not to be confused with production clusters, are networks of excellence along the value chain to develop research and to transfer these ideas through innovation into new technologies and products. See Council Conclusions on the Commission Communication “Towards world-class clusters in the European Union: Implementing the broad based innovation strategy” Brussels, 1 and 2 December 2008.

## **2. Research: pillar of chemical innovation**

Europe cannot base its growth on inexpensive resources and labour. Its major asset is knowledge, and a strong research base is, therefore, essential for building a knowledge-based competitive economy. This is the main consideration behind the more recent policy initiatives promoted by the European Commission and endorsed by the Council. To achieve sustainable global competitiveness, the European Council singled out knowledge and innovation for growth as one of three main areas for action. The 2002 Barcelona European Council set the goal of raising overall research investment in the EU from 1.9% of GDP to 3% by 2010, increasing the share of private funding from 55% to two-thirds. The current situation shows considerable regional differences. In accordance with the overall target, each Member State has to set its own target for increased R&D intensity. The European Research Area (ERA) is another cornerstone of the Lisbon partnership for growth and jobs.

While innovation is more than R&D, the link between research in chemistry (and related sciences) and innovation is particularly strong in the chemicals industry. It is, therefore, worrying that R&D intensity (i.e. the ratio between R&D expenditure and sales) in the European chemicals industry has shown a slight overall decrease during the past decade, while some emerging countries have strongly increased their efforts with notable success. Europe's R&D intensity in this area has been considerably lower than in Japan, but similar to the US – close to 2% of sales. Due to the multinational character of the large European chemicals industry and the tendency to relocate development activities closer to customers along the value chain, at least the 'D' component of R&D has gradually moved nearer to the large emerging markets.

One reason for the relatively low overall R&D intensity is the fact that even today base chemicals – which require rather low investment in research – represent almost 60% of European industry's sales. This obscures much higher R&D investments in specialities and fine chemicals, advanced materials and other higher tech subsectors.

Corporate R&D in Europe is increasingly concentrated in large companies where revenues from base chemicals and commodities can be reinvested in research and innovation for new products and technologies. Large companies have generally maintained high R&D levels. In comparison, R&D expenditure in smaller companies is lagging far behind. Public funding

varies greatly from region to region. Nevertheless, more private investment, in particular, is needed in R&D.

As far as chemical research in universities and research centres is concerned, the EU leads in terms of number of scientific publications. But it is performing less well compared with the US in terms of citations of publications in chemistry, while being almost equal to the US in chemical engineering. However, an analysis of world scientific literature shows that the research output of China and India is growing much faster, with a higher degree of specialisation in chemistry and chemical engineering applied research.

#### **Dutch Polymer Institute: example of successful Public Private Partnership**

The Dutch Polymer Institute (DPI) was set up in 1997 to perform exploratory research in the area of polymer materials as a public private partnership funded by industry (25%), knowledge institutes/universities (25%) and the Ministry of Economic Affairs (50%).

It integrates the scientific disciplines and know how of universities into problems and concepts of industrial relevance. Its goal is to optimise conditions for making breakthrough inventions, triggering industrial innovation and providing technological leadership for its members.

The DPI carries out precompetitive research projects to add value to the scientific community through scientific publications and to the industrial community through the creation of intellectual property.

The DPI consists of a small team (fewer than ten people) managing an extensive network of over 150 researchers and relations between industry and academia (more than 250 industrial contacts) that extends well beyond the Dutch border.

Participating companies	37
Participating knowledge inst.	32
Research staff	162
Referenced publications (2006)	175
Total publications (1997 - 2006)	888
Patent applications filed (total)	56

The efficient and fair sharing of know how and technologies among enterprises, research institutions and the public sector coupled with rules for technology transfer are important for ensuring the EU chemicals industry remains competitive. Compared with many other

industries, the chemicals sector is characterised by long development and lengthy pay back times. Certain product groups (e.g. plant protection items) require relatively long intellectual property rights protection in order to achieve a sufficient rate of return. Authorisation periods for such products need to take this into account.

Innovative start-ups stemming from universities or research centres in science parks represent one way to introduce high level innovation into the value chain. To become successful, start-ups need support over a sufficient time. Increasing pressure from global capital markets to deliver quick returns poses a special challenge for start-ups and early stage companies. Data on venture capital in Europe show that not enough attention is paid to the early stage phase financing of start-ups. The main reason is the poor level of development of suitable projects for early stage financing. In addition, more should be done to improve technology transfer and systemic links between public research and business, including Public Private Partnerships. Here, chemical regions – based on their proximity to business and research institutions – can play a key role.

## **Recommendations**

**Increase quantity and effectiveness of Research and Development; in particular encourage more efforts by the private sector**

• ***Private sector should increase efforts to speed up innovation.***

The European chemicals industry has a strategic interest in occupying high knowledge-based segments assuring higher long term growth and profitability. Companies are urged to upgrade their R&D plans, promoting ‘open innovation’ schemes and extending corporate research programmes to medium and long term objectives. Companies should strengthen their relationships with universities and public research centres and promote Public Private Partnerships on key medium and long term research issues.

• ***Public sector should provide effective support to private sector efforts.***

Within the limitations of national R&D budgets, many Member States have committed themselves to an increased effort. Cost efficient use of scarce resources is essential. This can be achieved through greater focus on the quality of R&D expenditure, based on excellence and priorities. Focusing on key areas at regional level should be accompanied by road mapping exercises and active coordination of European and national efforts in chemistry and chemical engineering research with close links to regional industry partners. Financial

instruments, including tax advantages, providing support and risk cover over a sufficient period are essential for start-ups and other SMEs.

### ***3. Innovation needs trust: improving communication with stakeholders***

The need to improve communication on chemical safety throughout the value chain up to the end user has been high on the agenda for many years. The chemicals industry has a difficult heritage as regards the safety of its installations and products. Significant improvements in the safety of chemical installations have been achieved as evidenced by a strong reduction in accidents and emissions, improved management of products and increasing substitution of the most dangerous chemical substances with other less harmful ones. This should form the basis for increased confidence in the chemicals industry.

The chemicals industry needs to develop a more effective dialogue with society, based on mutual understanding and trust. Listening and understanding are essential for effective two way communication. They are essential to develop the trust needed to support an innovation friendly environment and to make it work. Innovation requires the confidence of investors, customers, employees and consumers in the sustainability and safety of products and processes. Proper risk management, communication and cooperation are instrumental in delivering the trust in innovation, which, in turn, is essential for future competitiveness. The experience of downstream industries and retail companies can provide important insights to achieve this.

Communicating with the public is a complex process. On the one hand, the chemicals industry needs to project the potential benefits of its products and solutions – and its potential contribution to societal challenges, including sustainability. On the other, it should be mindful of hazards and risks and accept that it will also be perceived as part of the problem. The way the industry communicates with the outside world should, therefore, be as authentic, visible and open as possible. This requires not only a change towards a more proactive approach to communicating with the public, but also increased transparency about the industry itself. In addition, European, national and regional authorities need to support smooth communication of agreed assessments, both on the opportunities and risks involved.

Communicating chemical innovations requires particular care since often these are difficult for non experts to understand (e.g. white biotechnology, nanotechnology). Establishing a dialogue with society at an early stage is essential. Public fear can easily take over when

communication and risk management fail. ‘Citizens’ panels’ have proved capable of delivering robust risk judgements on even very complex issues. More intensive collaboration between industry, academia, public authorities, and civil society could help improve communication. This especially holds true for the translation of science into policy where consistency and transparency are needed from all partners, while addressing findings, non-findings and choice of action. Each partner should give coherent messages and actively seek constructive ways to further build confidence.

The chemicals industry has already launched several important initiatives in this direction. Continuity and perseverance in ongoing initiatives, such as Responsible Care and Corporate Social Responsibility (CSR) are essential. Best practices have shown that improvements in confidence and mutual trust can be achieved. These should be more widely adopted and extended into general ‘day-to-day’ activity. A larger part of the chemicals industry needs to become involved, be more proactive and less defensive. The sector is encouraged to set up a task force with stakeholders to work on developing a concept, including communication, for a sustainable European industry in this area.

One reason for improving the dialogue is to establish closer cooperation and collaboration with downstream users and other stakeholders. Closer cooperation calls for appropriate and flexible structures for dialogue that go beyond traditional boundaries applied so far by university faculties, government departments and trade associations. The European Technology Platform SusChem is a good example of such a modern form of cooperation and communication (see also section 1) as is the European Chemical Regions Network.

## **Recommendation**

### **Improve information and communication**

- *The chemicals industry needs to continue to develop a more effective dialogue with society based on mutual understanding and trust.*

Listening and understanding are essential for effective two way communication. They are – alongside proper risk management – key to developing the trust needed to support an innovation friendly environment and make it work. Innovation requires the confidence of

investors, customers, employees and consumers in the sustainability and safety of products and processes.

#### ***4. Knowledge is key: protection of Intellectual Property Rights (IPR)***

Intellectual Property is of strategic importance to the competitiveness of the science-based and high technology chemicals industry, not only for large enterprises, but also for SMEs. The high costs involved in chemicals R&D and bringing products successfully to the market require appropriate and (cost) effective IPR systems to protect companies' intellectual property and to recoup this expenditure, but at the same time ensuring that society at large benefits from new knowledge. In Europe, systems are in place. But they are incomplete and inconsistent. Therefore, national authorities and the European Commission need to develop a more coherent, centralised and coordinated IPR policy to overcome the present fragmentation of responsibility. In the drive towards a knowledge economy, intellectual property rights should be more prominently reflected in the organisational set up of the authorities responsible, including the European Commission.

#### **Patents**

The current evolution to a 'knowledge economy' has been responsible for a growth in patent filings over the past decade. Globally, the chemicals industry files around 22,000 patents annually. This represents about 15 % of the total number lodged at each major patent office in Europe, Japan and the US. On average, there is 5 % growth per year. In China, patent filings increase some 22 % annually. There are signs, however, that the authorities are having difficulties in dealing with this volume. On average, receiving a patent now takes five years and there is a significant backlog in the major patent offices. This causes substantial uncertainty for business.

Due to the fragmented system of national patent rights in the EU, protection of intellectual property is more costly than in the US, Japan or China. Uneven enforcement of intellectual property rights in the EU is an additional cause for concern since it leads to unnecessary parallel litigation.

Establishing a simple language regime for patents, which balances public interest with the need to avoid unnecessary costs, is critical to achieve a strong, comprehensive and cost effective system of patent legislation in Europe. In this respect, the recent entry into force of

the London Agreement, which can deliver real cost savings to industry in procuring patents, is an important step forward. Member States which have not yet acceded to the London Agreement should do so as soon as possible.

The Community patent aims to provide a consistent patent right across Europe, thereby fulfilling one of the key principles of the Internal Market and increasing the competitiveness of European industry. The Community patent is a key objective of the Lisbon Agenda. There is a pressing need to make progress on it and establish an EU wide patent jurisdiction.

The rapid growth in global patent filings in the last five years has challenged the efficient working of the European Patent Office (EPO) and other major patent offices. This must be addressed. The contracting parties, which are also Member States, should focus on improving the EPO's governance arrangements.

With its export orientation, the European chemicals industry has a deep interest in improving intellectual property regimes in third countries. A strong World Intellectual Property Organisation (WIPO) overseeing the Patents Cooperation Treaty (PCT) is the best way to achieve this. Bilateral initiatives, such as the Transatlantic Economic Council (TEC), should also be used to help achieve this goal. Concerns of all stakeholders, including those of civil society should be taken into account in this process.

### **Confidential business information/data protection**

The general protection of know how, including the related studies and data which are to be considered as confidential business information (CBI), is important for the chemicals industry. This is particularly true for SMEs, which frequently do not have the resources to create and maintain a portfolio of registered IPR on the one hand, and have little experience of managing trade secrets on the other. Moreover, there are instances in which unregistered IPR is the only solution available. The erosion of confidential business information and data protection is a pressing issue. This is partly a result of increasing globalisation and ever growing 'connectivity'.

For certain information – especially details relating to health, safety and the environment – the concerns of enterprises to protect their data may conflict with the public interest and the right to know. In such situations, a balance must be struck as has been done, for example, in the Aarhus Convention.

## Counterfeiting

Counterfeiting is a major problem for the European chemicals industry. This is not simply a problem of luxury brands. It is a global issue affecting all manufacturing sectors. Health and safety concerns make the problem even more serious and dangerous for chemicals than for certain other products, even if hard data on the scale of counterfeiting in this industry are hard to find. However, recent high profile cases (e.g. heparin, diethylene glycol in toothpastes and melamine in milk) give a good indication of the importance of the issue. Counterfeiting not only causes economic damage, it also undermines confidence in the chemicals industry. The problem grows as counterfeiters become increasingly sophisticated.

The legislative framework to combat counterfeiting in the EU is well developed. However, more can still be done on enforcement. Most fakes seem to come from outside Europe, in particular China. Therefore, the Commission's efforts to tackle the issue multilaterally (e.g. the Anti Counterfeiting Trade Agreement) and, where appropriate, bilaterally (Free Trade Agreement negotiations) are to be supported.

## Technology Transfer

The efficient and fair sharing of technologies among enterprises, research institutions and the public sector are important to keep the chemicals industry vibrant and competitive. However, there is still much room for improvement, especially where SMEs are concerned. Activities which raise the public's awareness of the importance of intellectual property and enhance innovators' understanding of how to benefit from their ideas should also be supported.

The Commission and the Member States should continue to pursue existing initiatives to boost technology transfer within Europe and investigate solutions to provide support (both educational and operational) to smaller chemical companies, universities and single innovators that is consistent with the EU's innovation agenda.

## Recommendations

- *The Commission and Member States are encouraged to continue their efforts to reach agreement on the creation of a Community patent and a common jurisdictional framework within which European and Community patents can be enforced.*

- *The Commission and Member States should pursue international patent law harmonisation through the World Intellectual Property Organisation (WIPO) and initiatives such as the Transatlantic Economic Council (TEC).*
- *The Commission and Member States should recognise the protection of confidential business information as an important IPR and ensure that the proportionality principle is systematically applied when striking the balance between the legitimate protection of confidential business information and other policy objectives, such as the right to know, transparency and access to documents, as has been done, for example, in the Aarhus Convention. Awareness of this IPR should be emphasised by relevant industry associations in their information activities to members and by the Commission and Member States when developing innovation policies relevant to SMEs.*
- *The Commission and all players involved in the fight against counterfeiting and product piracy in Member States, including European industry, should cooperate to facilitate investigations and conduct strong enforcement activity against counterfeiters in Europe and elsewhere in the world, and develop public educational initiatives.*

## IV. Regulation

Adequate rules to guarantee chemical safety to safeguard human health and the environment are indispensable. The chemicals industry and its products are, therefore, subject to a comprehensive network of regulation. This has a significant impact on the organisation and operation of chemical companies. As a result, the quality of legislation, correct implementation and full enforcement are of high significance for the competitiveness and reputation of the chemicals industry. This applies especially to SMEs which face particular problems in coping with the high number of European and national regulatory requirements.

With its Better Regulation agenda, the Commission has given the highest priority to simplifying and improving the regulatory environment in Europe as part of its wider objective to deliver results to citizens and businesses<sup>5</sup>. In so doing, it is helping to stimulate entrepreneurship and innovation to realise the full potential of the single market, and thereby promote growth and job creation. Better regulation is, therefore, a key element of the Lisbon Growth and Employment Strategy. The High Level Group agrees with these aims and, keeping the EU's sustainability strategy in mind, encourages its institutions to move forward in implementing the strategy without compromising the environmental and health protection objectives.

The general use of impact assessments as part of Commission preparations for legislative proposals and the commitment to further improve them is welcome. Impact assessments for chemicals legislation need to be based on high quality scientific information and solid evidence collected in a transparent and verifiable manner. In assessing options to address the relevant issues, workability and proportionality need to be fully considered. This requires input throughout the whole process from all relevant stakeholders, particularly those who will have to apply the rules.

The degree of detail of impact assessments should be proportionate to the expected impact of the envisaged measure. Certain implementation measures for chemicals legislation adopted by comitology procedure can have such significant consequences for companies that an impact assessment is warranted.

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<sup>5</sup> See : Second strategic review of Better Regulation in the European Union, COM (2008) 32 of 30.1.2008

In a globalised industry like chemicals, the impact of policy decisions on international competitiveness needs to be duly considered by analysing the situation in other regions. So too, do other features of the industry, such as the need to integrate value chains in clusters and the potential impact on SMEs.

The High Level Group felt that there is scope for further improvement in the consultation process, although, it acknowledged that REACH, as the most recent legislation on chemicals, provides for extensive consultation with stakeholders on proposed regulatory measures. To encourage preparation of high quality input, the consultation process should start early, the information requirements be clearly formulated and sufficient time given to respond. Responses need to be timely and should provide reasoned and verifiable information. In many cases, giving feedback and entering a dialogue need to become part of the consultation process. However, consultation must not be misused to delay the preparation of legislative proposals or the adoption of implementing measures.

New and emerging technologies are features of the chemicals industry. By their nature, limited evidence is available on risks, effects and impacts and sometimes assessment methods need to be developed. Under such circumstances, the precautionary principle, as set out in the Treaty and the Commission Communication on the subject<sup>6</sup> can offer a valuable route to balance opportunities and risks. As the time to market is critical for the competitiveness of innovative products, close cooperation between regulators and industry, and information to, and consultation with, stakeholders is particularly important. The High Level Group underlines the significance of recent Commission initiatives to strengthen the capacity of the Scientific Committees to address new and emerging risks.

Regulation may produce either positive or negative effects on innovation. Empirical research directly related to the chemicals industry, regulation and innovation is scarce to non-existent. The way European legislation is interpreted and implemented can often be more decisive than the actual provisions of the legislation itself. Reliable and harmonised implementation is essential. Regulation should form a consistent overall framework oriented on outcomes, help to drive innovation and provide a reasonably stable perspective for the future since the chemicals industry is capital intensive and relies on long term decisions.

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<sup>6</sup> See: Commission Communication on the precautionary principle, COM (2000) 1 of 2 February 2000.

## Recommendations

**Proper consultation of stakeholders, improved communication by authorities and more harmonised and correct application of rules are key elements of a good regulatory framework.**

***• The Commission should ensure that all relevant considerations are addressed in impact assessments accompanying new legislative proposals. These should include the impact on sustainable development, health, international competitiveness, SMEs and innovation. Where appropriate, further research needs should be specified.***

***• The Commission and Member State authorities should improve communication with industry and other stakeholders to facilitate proper understanding of, and compliance with, regulatory requirements.***

The need to communicate full and accurate information is especially important following adoption of new legislation. Ways to achieve this include information meetings and other initiatives for enterprises along the value chain to provide guidance on the implementation of new rules. Regional authorities can play a crucial role in this process. The special needs of SMEs should also be borne in mind. While the Commission's Better Regulation strategy is bringing about significant improvements in this field, including consultation, implementing measures with a substantial impact should also be subject to appropriate consultations with stakeholders.

***• The Commission and Member States should aim to avoid unnecessary divergence of rules and implementation requirements while ensuring correct application of EU rules, in order to reduce the administrative burden. Regulation should form a consistent framework and provide a reasonably stable long term perspective.***

## V. Human resources

### ***Education and attracting talent: foundations of innovation and competitiveness***

Innovation depends on the creativity and skills of people and their ability to put good ideas into practice. The chemicals industry, as knowledge-based and a strong generator of innovation, needs highly qualified employees to support its international competitiveness. One-third (32%) of its employees have attained tertiary education, compared with an average of 26% for all sectors. During the period 2001-2005, this share rose by 5% in the chemicals industry. Chemical companies are asking for more and more graduates since the increased focus on innovation and the provision of tailor-made solutions for customers require staff with a strong scientific and technical background. Although there is no uniform picture, in many EU regions the industry has substantial difficulties in finding qualified staff. This primarily concerns chemical engineers and, to a lesser extent, chemists. In the demand for all engineers (not just chemical engineers), the industry faces very strong competition from other sectors, including services. The shortage is particularly relevant for SMEs, which generally report far more recruitment problems than large companies, as do regions with smaller chemical sectors.

It should be stressed, though, the general tone of the skills shortages' discussion has changed in recent years. Whereas older studies emphasise huge problems in skills availability across the board, current data show a more differentiated picture. Following a steep decline in the 1990s, thanks to joint efforts such as communication campaigns and incentives by industries and the public sector, the number of students taking up chemistry has recently risen again, although considerable variations remain between Member States.

There is still a need to raise awareness among prospective students to pursue chemistry or studies in related fields. The attractiveness of the subject for young students is also linked to the image of chemistry and of the chemicals industry. Many of the industry's activities are barely known by young people and the sector suffers from an unattractive image. This needs to be addressed. Examples of best practice have shown remarkable success. Experience shows that it is at the early stages of school that personal vocations are formed. The methodologies developed by the European Pollen project<sup>7</sup> constitute an impressive example of good practice

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<sup>7</sup> See: Science Education Now – A Renewed Pedagogy for the Future of Europe; ('Rocard Report'); Luxemburg 2007

in stimulating interest in the study of science from an early age. Similar initiatives should be replicated and disseminated through pilot projects, accompanied by teacher training activities, with the aim of modifying primary school curricula. The designation of 2011 as International Year of Chemistry by the United Nations should also help to increase the attractiveness of the sector.

To face today's needs, the curricula for chemical engineers should adapt in parallel to the sector's evolution, or even anticipate new needs, like the profile of 'product engineers' that should match the growing demand from the large number of formulators. According to some experts, an increased availability of product engineers could help considerably to reduce the time to market and, hence, improve competitiveness. Moreover, sustainability should become central to curricula through the teaching of specific methodological skills such as Life Cycle Assessment and risk assessment.

Innovation – as stated earlier in this report – is very much dependent on innovative start-ups. This in turn relies on the entrepreneurial capacity of young postgraduates. The establishment of entrepreneurship programmes in technical universities may help to fill the gap between inventors and managers, facilitating the translation of innovative ideas into successful business opportunities.

In addition, ongoing globalisation increasingly requires staff to work in a multinational environment, to have a broad language competence and be internationally mobile. The industry also needs professionals with the capability for multidisciplinary work.

Skills limitations, however, also apply to non-graduate staff. These are not limited to the chemicals industry itself, but extend to important services such as chemicals logistics which face a severe shortage of qualified truck drivers. Driving as a profession has become less attractive due to long hours and difficult working conditions. The skills demanded of drivers of dangerous goods are high. While this issue needs to be addressed first of all by the industry, Member States are encouraged to be supportive. Mutual recognition of requirements and reducing administrative hurdles to participation in driver training programmes would be steps in the right direction. At Community level, the possible use of European funding to retrain unemployed people with a focus on logistics professions should be considered.

## Recommendations

Developing human resources needs more attention.

- *Member States should step up promotion of chemical and science education, starting with primary schools.*
- *Chemistry or/and chemical engineering faculties should define the profiles of new professions in cooperation with industry.*
- *Industry, in cooperation with education and employment agencies, should intensify efforts to assess its human resource requirements in the short and long term in various locations and regions and identify probable changes in skill profiles.*

## **VI. Energy and feedstock**

### ***1. Energy and feedstock as decisive elements of competitiveness***

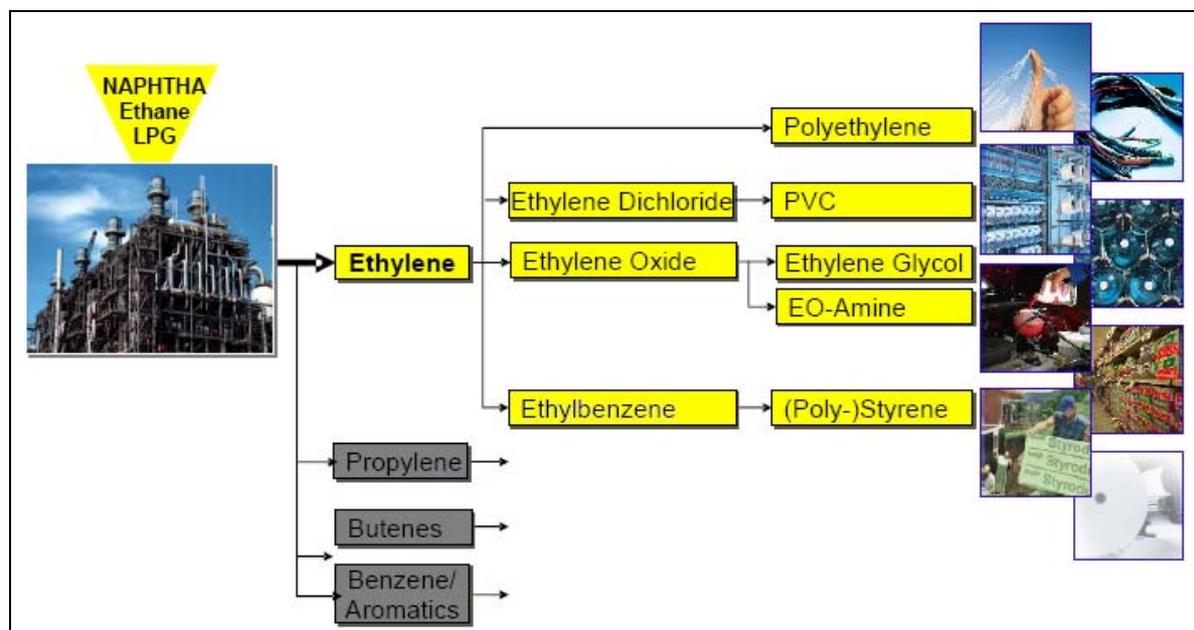
The chemicals industry uses energy products, namely oil, gas and to a minor degree coal and biomass, not only as a source of energy but as principal raw materials for its final products. The policies to combat climate change aim to reduce greenhouse gas (GHG) emissions, the major part of which stems from energy generation and use. Energy and climate change policies are, therefore, closely linked. They have a strong direct and indirect impact on the prices of energy products and energy use and also on other aspects of sustainable development, including environmental protection. The chemicals industry accounts for 12% of total EU energy demand and for one-third of all EU industrial energy use (energy and feedstock). At the same time, energy and feedstock availability and prices are key factors for the competitiveness of large parts of the chemicals industry. In particular, in the area of base chemicals, energy and feedstock together frequently exceed 50% of total production cost.

### **Petrochemicals (olefins): industry based on oil**

The petrochemicals sector is at the start of most chemical value chains. It creates significant added value (€50bn) and is highly capital intensive. European producers have generally been able to remain competitive due to a number of factors, such as plant size, upstream and downstream integration, operational performance, location and logistics, marketing, and a concentrated market. The sector is highly integrated and clustered to avoid transport costs and to increase plant efficiency, including energy efficiency, and thereby avoiding significant amounts of GHG emissions. Integration in Europe remains essential. Disintegration would be extremely expensive, energy consuming and, with its domino effect, very negative for downstream industries.

Forecasts predict that the world demand for petrochemical products will continue to grow substantially in the future. Growth in demand is much lower in the EU. Production growth in Europe has been limited over the past decade and there has been little investment in new capacity. In contrast, the Middle East (due to feedstock advantages) and China (due to strong growth in demand) are currently substantially increasing their production capacity for a wide range of petrochemicals including, for example, polypropylene (PP) and polyethylene (PE). Investments in Europe are focused on modernising highly integrated and efficient plants of a size adapted to the needs of the European market. Production essentially grows through

stepwise modification of existing plants (debottlenecking) leading to regular, but slow, annual increases in output.



Oil (naphtha) is the most important feedstock and an important energy source for the petrochemicals industry in the EU. Europe has no structural disadvantage in oil based production compared with other regions of the world since the global oil market reduces differences in price. Nevertheless, the general supply and demand balance and strong price volatility have an important impact on profit margins in the industry. Recently, the difficult situation for European producers was exacerbated by reduced demand in the EU and for EU exports due to the economic slowdown. The petrochemicals industry in the Middle East and parts of Asia is less affected by this situation. Europe's interest must be to strengthen the functioning of the global market for oil and naphtha.

However, the petrochemicals industry remains cyclical. While the length and severity of a cyclical downturn caused by the expected temporary overcapacity in parts of Asia is difficult to predict, the predominant view is that its impact on production capacity in Europe will remain limited. As in the case of other traditional chemical producing regions in the world, which are equally exposed, Europe has a number of 'marginal' crackers with unfavourable location, capacity and cost structure. This capacity is expected to be closed down, a development which would be comparable to adjustments in the previous cycle.

Production based on naphtha, the most important petrochemicals building block in Europe, is substantially more costly than ethane based production as practised currently in the Middle East. This is the main reason for the recent investment boom in ethylene capacity in that

region. But availability of ethane is very limited and the consequences of this gas based production on the world market price for ethylene and its derivatives are likely to be limited in the longer term. Nevertheless, the Middle East will become the most important global exporter of polypropylene and polyethylene in the coming years. For ethylene derivatives, it is expected that Middle Eastern production from ethane will take up to 15-20% of the ethylene downstream market.

Experience from previous restructuring periods demonstrates that the extent of capacity reductions and their regional impact partly depend on policy decisions. If the wrong ones are made, exporters from the Middle East may find Europe a more attractive destination than Asia or America. They will orient their exports to the regions offering the best net return, taking into account the absence of trade barriers and the existence of local taxes (including the price of CO<sub>2</sub>) affecting domestic production. These factors can have a substantially negative impact on the future of the European chemicals industry.

## **Natural Gas**

Natural gas (methane) is of high importance for the European chemicals industry as an energy source and feedstock (e.g. for the production of ammonia, hydrogen, precursors of polyamides and methanol). In contrast to the situation of oil/naphtha, Europe has a competitive disadvantage in the supply of gas. Transport of gas depends on pipelines or on sea transport in liquid form. Both options are costly and in consequence infrastructure has not been adequately developed. This, together with trade restrictive measures from a number of suppliers and distributors, explains the very large differences in the price of natural gas around the world. Europe is considered an attractive market by gas producers (for example from neighbouring regions like Russia, North Africa, the Caspian Sea and North Sea), but more investments in gas pipelines are necessary to ensure a competitive, safe and diversified supply.

## **Coal**

Coal is comparatively cheap, supply is abundant and the technology is available for chemicals manufacture. The price of coal is not coupled to that of oil and gas. Worldwide coal reserves are massive and not limited to politically unstable regions. Production costs of syngas from coal are less than for local natural gas and similar to Middle East natural gas, including the shipping costs of ammonia. If Fischer-Tropsch or other gas-to-liquid technologies are applied, an even more versatile feedstock for many other value chains of the petrochemicals sector can

be created. However, coal gasification produces three times the amount of CO<sub>2</sub> compared with oil and gas based petrochemistry. At present, coal is, therefore, not a viable raw material option. Its future use is critically dependent on CO<sub>2</sub> reduction technologies.

## **Electricity**

Electrochemical processes (notably the chlor-alkali industry) use large amounts of electricity which can reach 60% of total production costs. The sharp rise in electricity prices in recent years, due to the price increase of basic fuels, weak competition between electricity generators, certain features of the current Emissions Trading Scheme (ETS) and national levies on power, have already had an effect on investment in the European chlor-alkali industry, which, in addition, is experiencing a costly conversion from mercury cells to membrane technology. As many of the existing long term contracts will shortly expire, further significant increases in electricity prices for the industry are expected. Together with the general developments in power prices over the next decade, this would seriously jeopardise competitiveness compared with other regions where substantial new capacity is under construction. The situation is exacerbated by the fact that chlorine, as the main output of the chlor-alkali industry, can hardly be transported over longer distances because of its hazards. However, chlorine is at the top of long and very wide value chains within the chemicals industry and many derivative products are easily transported. Production of many of these would be put at risk in the event of chlorine capacity reductions. Further development of electricity markets, as a consequence of climate change policy, and securing power supply prices which maintain its longer term profitability will have a decisive influence on the future of this important part of Europe's chemicals industry.

## **Recommendations**

**Measures are needed to secure a sufficient level of investment in the base chemical sectors in Europe.**

- *In order to support the competitiveness of the petrochemicals sector in Europe, measures, such as strengthening clusters and improving infrastructure, should be taken to consolidate existing competitive advantages and secure the integration of Europe's chemicals industry as a whole.*

- *Improved performance of an effectively liberalised gas market, at least in the Community, and securing reliable imports of gas at competitive non-distorted prices are of very high importance for substantial parts of the chemicals industry.*
- *Due to the long term nature of the high investments required and the need to achieve high capacity utilisation, stable long term electricity supply is a key element of competitiveness for important parts of the chemicals industry. Long term contracts with power generators or increased own generation in e.g. combined heat and power facilities to cover inherent heat demand are the main options.*

## **2. Raw material change: towards higher contribution of renewable raw materials**

Heavy dependency on fossil hydrocarbons, high oil and gas prices and the ambition to achieve a lighter carbon footprint have led to considerable efforts in the chemicals industry to widen its feedstock base, in particular through greater use of bio-based renewable raw materials.

While in principle a large amount of chemical substances can be produced from renewable raw material, the technical and logistical difficulties must not be underestimated. Industrial production needs a reliable flow of high quantities of feedstock of constant quality. This represents an important difference from the use of renewable raw materials to generate energy and certain fuels, where chemical composition and purity are less of a concern. However, technological developments may alleviate some of these problems. Important long term R&D programmes are ongoing or imminent to address this challenge and to boost investor confidence.

The decisive bottleneck in the availability of first generation feedstock (mainly food crops) is on the agricultural and ecological side. Prices of agricultural commodities recently rose sharply, partly due to the wider use of bio-fuels. This has raised some ethical concerns, notably in relation to possible food shortages, deforestation and loss of biodiversity. The environmental impact of intensified agricultural production, therefore, needs to be evaluated together with the CO<sub>2</sub> saving potential and other GHG emissions in order to assess overall eco-efficiency. The future use of second generation (bio-)feedstock largely based on agricultural and forestry by-products or waste could ease many of these concerns although the

technical and logistical challenges should also be considered. Further research and development are necessary to facilitate viable larger scale production.

Natural conditions in Europe, at least for the production of first generation feedstock, are in general less favourable than in some other parts of the world. Many regions in Europe have a limited area available for domestic production of biomass for industry. Partly, the capacity depends on the use of innovative and efficient technologies and sustainable management. One main problem, and a major cost factor in the use of bio-based raw materials, is the need for suitable infrastructure (the best locations seem to be close to deep sea harbours) in order to deliver the huge quantities of feedstock needed for industrial scale production of building block chemicals. Promising pilot projects are underway in which it is intended to use existing clusters in the agro or pulp and paper industries for the additional production of chemicals and energy based on bio-based raw material. This cluster approach, possibly combined with some financial support in the start-up phase, could be decisive in achieving economic feasibility.

The EU produced about 60 million tonnes of plastics in 2006 from fossil feedstock. Some 200 plastics families are in production. The total production capacity of bioplastics in 2007 was variously reported as between 110,000 and 600,000 tonnes – a small fraction of production from petrochemical feedstock. This picture is expected to remain for some time and biomass based feedstock will not take over from petrochemicals in the foreseeable future. Bio-based plastics are predicted to rise to 5 million tonnes annually over the next 20 years. They will be largely used for packaging and will continue to fill niche roles due to their specific technical advantages.

The use of renewable raw materials such as starch, cellulose, sugar, vegetable oils and other fats has a long tradition of producing fibres and certain chemicals, such as surfactants, food and feed ingredients and enzymes. White biotechnology covers both the use of renewable resources and the biotechnological production of specialty chemicals. Ingredients, additives and active components for personal and household care products can be based on renewable feedstock including palm, coconut, soy, rapeseed and sunflower oil and tallow. The advantages are biodegradability, skin compatibility, and little or no environmental impact, where the feedstocks are grown sustainably. Many experts consider that the further development of such uses of renewables are more appropriate than moving into the production of general feedstock (through biorefinery or pyrolysis) like oil and gas.

From an analysis focused on the chemicals industry, it appears that for the next 15 years at least, there is a strong tendency for biomass to be used to produce energy and biofuels rather than for (petrochemical) feedstock, for both economic and ecological reasons. Most of the High Level Group considers that in this period the use of biomass will provide only a limited opportunity for the chemicals industry, primarily through specialised products, with material substitution through new molecules and products. The long term perspective could be more positive and diversification of feedstock and energy sources is more important than ever. Efforts to achieve wider use of renewables should be maintained.

## **Recommendations**

**Secure established uses of renewable raw materials and pave the way for large scale innovative applications in the medium and longer term.**

- *At present, it seems too early to make a robust assessment of the economic viability of renewable feedstock in the chemicals industry as a replacement for fossil feedstock, but the expected significant potential available in the longer term provides sufficient justification to continue research and industrial development activities as a priority.*
- *Incentives (e.g. subsidies or regulation) in agriculture or energy policy can seriously jeopardise attractive established uses of bio-based raw materials in the chemicals industry by favouring other applications (e.g. threat to tallow availability as feedstock for the detergent industry due to higher subsidies for bio-fuel use). Policy makers should seek to avoid such unwanted side effects.*

## **VII. Climate change policy**

### ***1. Action on climate change as a business opportunity for the European chemicals industry***

Increased efforts to save energy and mitigate climate change are not only a challenge for the chemicals industry, but also offer substantial and rapidly growing market opportunities in Europe and other regions as well. The chemicals industry offers a wide range of innovative products (inorganic and organic chemicals) which either allows environmentally more sustainable energy generation (solar panels), energy storage (batteries depend on chemical products) or energy savings (insulation material and light weight materials or tyres which reduce vehicle energy consumption). Numerous initiatives have been launched by governments and the private sector to promote the wider use of energy saving products. These expand markets and create new business opportunities. Examples include the comprehensive Action Programme on Sustainable Consumption and Production and on Sustainable Industrial Policy the Commission adopted in June 2008. In particular, improved energy management in buildings offers potentially vast savings for the economy as a whole in the near term.

The energy saved by these items easily exceeds the energy required for their manufacture. Hence, the chemicals industry's products frequently create the potential for energy savings and emissions reduction in other sectors of the economy. This must be kept in mind since these savings are attributed to user sectors, and not to the chemicals industry. In addition, the feedstock used for the manufacture of final products can be, and is increasingly, sourced from recycling or recovery. However, waste prevention is still the most effective way to save energy and reduce CO<sub>2</sub> emissions. This also needs to be considered in product and process development.

### **Recommendation**

- ***Action on climate change provides significant business opportunities for the European chemicals industry. At the same time, it will remain an important research and development focus in chemistry. This potential should be fully exploited.***

## ***2. In a globalised chemicals industry, global action including an adequate engagement of emerging economies is essential to combat climate change***

Despite the overall positive contribution from many chemical products and solutions to the mitigation of climate change, the high energy use and GHG emissions in producing base chemicals and the strong dependence on fossil feedstock require constant efforts to improve energy and resource use efficiency.

The chemicals industry operates globally with an increasingly strong production base in Asia's emerging economies. Climate change is a worldwide problem and, consequently, the need to look at the global effects of policy measures is crucial. The shape of a future international agreement on climate change and in particular differences in the level of commitments and ambitions on reducing GHG emissions are of key importance for the competitiveness of the European chemicals industry. Relocation of parts of the chemicals industry's production capacity due to different climate change mitigation commitments in different parts of the world would cause unemployment and economic loss in Europe. It would also increase global GHG emissions (carbon leakage) and pollution if major parts of the industry move to areas, namely China and India, with a problematic energy mix and low efficiency in energy generation and use. It is for this reason that the new Directive amending the greenhouse gas emissions allowance trading system ('ETS Directive') contains special provisions to reduce the risk of carbon leakage, while maintaining the level of commitment to reduce emissions. According to the provisions in Article 10 a) of the ETS Directive several significant subsectors of the chemicals industry could fulfil the criteria of a sector deemed to be exposed to a significant risk of carbon leakage. They would be allocated allowances free of charge at 100% of the quantity of emissions based on Community-wide ex ante benchmarks.

Sectoral agreements on reducing GHG emissions and increasing energy savings can be an important way of engaging the chemicals industry particularly in emerging economies to allow these countries to make a meaningful contribution to reducing global emissions. Initiatives have been started that might lead to international sectoral agreements based on benchmarks in main subsectors, such as the petrochemicals industry. Given the very substantial problems in many emerging economies in securing adequate energy supplies and the pressing need to reduce massive air pollution, there should be a common interest in such agreements, although it is too early to judge the perspectives for global participation. In order to be effective against climate change, and in particular carbon leakage, sectoral agreements

should lead to emission reductions of comparable magnitude to those for European installations. They need to be controllable, verifiable and subject to mandatory enforcement arrangements.

### **Recommendations**

- *As the chemicals industry is truly globalised, adequate measurable action by emerging economies is needed to mitigate climate change. This would contribute to creating a more level playing field, allowing the European chemicals industry to compete. Europe should do its utmost to create the conditions for such action.*
- *In view of the complexity of sectoral agreements in the chemicals industry, support by all actors (industry, governments, including those of emerging countries, and the Commission) to bring these initiatives to a successful conclusion in as many subsectors of the chemicals industry as possible is to be welcomed.*

### **3. Europe's chemicals industry has made much progress in reducing energy intensity and emissions, but further efforts are necessary**

The European chemicals industry can be regarded as a first mover to improve energy efficiency and much has been achieved. Overall, chemicals production in Europe increased by more than 50% between 1990 and 2005, yet the industry's emissions of GHG fell by 25% over the same period. This is mainly due to the many highly integrated production sites. Other important elements were the large scale move from coal to gas as a principal energy source and changes in the product mix. Resource and energy demand were minimised and their flows optimised at site level, by using excess heat from one process as an input to another, for example. Indications now are that the residual potential for emission reductions in most processes is comparatively low. Ranges of 1-2% per annum are mentioned in some studies. However, the data available from these studies and from the ongoing work of the International Energy Agency are too divergent to come to robust conclusions on the nature, size and location of the remaining scope for improved energy efficiency in various subsectors. The conditions necessary to fully exploit this potential, including the need for targeted research and development in Europe, should be further explored. This will be important for the implementation of the requirement of the revised ETS Directive that the allocation of allowances will be based on measures which give incentives for reducing greenhouse gas emissions and energy intensive techniques.

Carbon capture and storage (CCS) could provide an important contribution to GHG emissions' reduction in the longer term. Many stakeholders consider CCS as a precondition for wider use of coal as energy and feedstock. Other stakeholders consider that development of CCS must not compromise efforts to reduce energy demand. While underground injection of CO<sub>2</sub> has been applied for more than a decade in various applications within the oil and gas industry, upscaling these technologies for commercial application in large industrial installations poses a substantial challenge. CCS can be implemented, in principle, in petrochemical plants, but adding CCS increases technical complexity and costs. Large scale deployment of CCS is hardly feasible in the chemicals sector before 2020. However, further promotion of CCS via pilot or commercial demonstration projects respecting the provisions of the Directive on the geological storage of carbon dioxide is important due to its potential as a possible option to reduce industrial emissions. To successfully develop this technology further, ensuring public acceptance of CO<sub>2</sub> transport and storage projects will be essential.

## **Recommendations**

- *Robust and verifiable information on the emissions and the emission reduction potential of the chemicals industry is crucial for decisions on measures to mitigate climate change and for setting benchmarks for the future implementation of the European Emissions Trading Scheme. Closure of the current information gap is of the utmost priority.*
- *Member States and the Commission should make strong efforts for the full implementation of the revised ETS Directive within the ambitious timelines set and in cooperation with all stakeholders.*

## VIII. Logistics

### ***1. Logistics: often neglected factor for competitiveness***

Logistics costs represent on average about 10% of the total turnover of the chemicals industry. Intra-EU movements account for 50% of total sales. Extra-EU exports are also significant (25% of total sales in 2006). Despite permanent efforts by the industry to minimise transport distances by further integration and clustering and to limit the transport of hazardous goods as far as possible, freight volume is still expected to increase annually by more than 2.5% over the next ten years. The ability to move chemicals, and the safety and efficiency of the transport system and its infrastructure are vital to keep the chemicals industry competitive. Environmental sustainability and chemical safety have to be fully respected in pursuing this objective. In many cases, logistics and infrastructure have been neglected and there is considerable scope for improvement.

### **Central and Eastern Europe require particular attention**

Changing production patterns in Eastern Europe, the Middle East and Asia involve a change in transport flows. The emerging regions in Central and Eastern Europe are close to sources of feedstock and represent a growing market. East–West connections currently require more attention than the traditional North–South links. In contrast to most of the established chemical logistics and pipeline networks in Western Europe, the chemical sites in Central and Eastern Europe do not have sophisticated connections between themselves and are not equipped with the appropriate logistics network to exploit the growth potential of new markets in Russia and its neighbouring countries. To develop these sites, a pan-European vision seems necessary. Therefore, the European Chemical Regions Network (ECRN) brought together different stakeholders and started to develop a strategy for chemical logistics in Central and Eastern Europe. The High Level Group welcomes this ECRN initiative and noted that initiatives of this kind should be supported and further developed. They might also be relevant for other parts of the EU.

### ***2. Strong clusters: European asset that merits further support***

The close integration of most of the European chemicals industry along the product value chain is one of its main competitive advantages. Many companies integrate upstream or downstream activities. Leading players in the petrochemicals sector link steam crackers and

other chemical units with refineries in integrated complexes and clusters which gather several interconnected but independent, plants on one site. The majority of the 300 European production sites are located in some 30 clusters. The success of these clusters depends on having a valid combination of key assets in place, among them shared use of infrastructure and services, access to major transport modes and proximity to markets and customers. Companies in well performing clusters benefit from an optimised cost structure and better access to resources. Centralised production of power and steam usually allows them to leave a lower carbon footprint. Clusters also have the advantage of attracting new talent and knowledge more easily. This, in turn, stimulates innovation.

Clusters play a key role for the European chemicals industry and improving their competitiveness contributes to the sustainable growth of the industry as a whole. However, in several Member States, the industry is still widely dispersed and located around a historical feedstock or energy resource. In addition, complete supply chain integration within clusters often does not yet exist and interconnection with other clusters is insufficient. Consequently, the development of clusters considered economically viable should be supported while complying with state aid rules. Improving the logistics infrastructure within, and between, European chemical clusters can be considered an important contribution to the competitiveness of the industry and the development of a ‘roadmap’ has been proposed. A pan-European cluster platform can help to create a broader European perspective focusing on improving logistics infrastructure between clusters. Furthermore, this could provide tools and criteria to improve performance. It should be linked to the horizontal initiatives on cluster development discussed in the European Council.

## **Recommendation**

- *In many cases the development of local cluster platforms with active cooperation between industry and (local) public authorities would improve their logistical efficiency and overall management. A multi-stakeholder approach to cluster leadership may enable the development of long term perspectives and guarantee consistency.*

### **3. Addressing numerous bottlenecks in transport must be a priority**

Long distance transport is the rule in the chemicals sector. Chemical companies are often quite specialised and one company can supply the whole European market. Even if large parts of the industry are located in clusters, distances between these production sites can be very

great. There is a risk that insufficient logistics infrastructure and other transport bottlenecks could prevent the achievement of stronger clusters. In general, the High Level Group feels that the share of road transport is too high. It considers that the declining use of rail should be reversed and that more pipelines are needed. The development of efficient transport systems of all types requires more attention, with due care paid to the environment and safety.

Intermodal transport is generally supported and is of increasing importance, but the necessary infrastructure is not yet fully in place and regulatory hurdles can delay projects. Industry cites, for example, the lack of transit storage permission for containers containing hazardous goods at intermodal terminals and the complexity of procedures to obtain permits for new intermodal terminals and for on-site storage. The issue of spur tracks to connect railway lines with chemical sites should also be addressed. Decisions on such measures should take into account the wider impact and benefits and should not be based solely on local interests. At the international level, differences in rules for the transport of dangerous goods by mode of transport can be an obstacle to intermodal transport and should be addressed.

A decline in the use of rail transport can be seen in several Member States. Non-aligned railway systems between countries, and a lack of efficiency and flexibility seem to explain this development. This is raising concern, especially among national governments and the Commission, which see the promotion of railway transport as an important step towards reducing road congestion and emissions.

For road transport, the increase and harmonisation of allowable vehicle weight at European level could be one option to address the increasing problems caused by congestion and to take account of the fact that most chemical products are relatively heavy. Industry would like to see an increase to 44 tonnes for road vehicles and to 48–50 tonnes for intermodal transport. A higher, harmonised weight, it believes, would reduce congestion, emissions, losses stemming from underuse of vehicles and help tackle the shortage of qualified truck drivers. However, the suitability of the existing road infrastructure and road safety need to be carefully considered and the external costs of such a measure must be carefully evaluated. Work by the Commission and Member States to assess the advantages and disadvantages is ongoing.

Product pipelines are crucial for the chemicals industry and can make a substantial contribution to reducing transport emissions and risks. From an environmental perspective,

pipelines are considered to be more advantageous than traditional modes of transport provided nature protection issues are adequately addressed during the planning and construction stages. Pipeline constructors need to deal with numerous authorities and regulations when implementing multinational projects. This can become extremely time consuming and costly. Closer transnational cooperation, including between stakeholders, is needed to address these challenges. Such a European vision underpins the idea of a pan-European Olefins Pipelines Network by improving and extending the existing olefins pipelines in Western Europe and developing it towards Southern and Eastern Europe, thereby integrating all major clusters and regions.

## **Recommendations**

**Further integration of European chemical production sites into clusters needs better infrastructure along the value chain.**

- *Stakeholders should work together with authorities on a Member State and Community level to further identify and address key bottlenecks which prevent wider use of intermodal transport.*
- *National and European authorities should carefully assess possibilities for revitalising railway freight transport.*
- *Massive congestion of the road network is a major problem for chemical logistics and the Commission's work in investigating solutions to the problem, is strongly supported.*
- *The question of closing gaps in the olefin pipeline network and public support for such an initiative needs to be pursued in order to establish an appropriate basis for decisions on investments and political priorities in this field. The High Level Group welcomes the Commission's 2<sup>nd</sup> Strategic Energy Review which is expected to provide clarification on the way ahead.*

## **IX. Globalisation, international competitiveness and trade**

### ***1. European chemicals industry: strong global player facing mounting pressure***

The EU has always been an important player in the global chemicals market. So far, it has been in a position to benefit from trade opportunities. Europe has a very substantial trade surplus in chemicals (€35.3 billion in 2007). However, analysis of global market shares shows that between 1995 and 2007 both the European and US chemicals industries lost 4%, while their Japanese counterparts fell by almost 7%. Combined, the chemicals industries in Brazil, Russia, India and China (BRIC) gained almost 13% between 1995 and 2007. Thus, the BRIC countries – especially India and China – have become major global chemical producers following the strong increase in internal demand.

The evolution of the Trade Competitiveness Indicator (TCI), which compares the trade balance to total trade (exports plus imports) of a region, confirms this picture. It reveals the declining competitiveness since 2003 of the overall EU chemicals industry. In four years, the TCI fell from 21.6% to 16.5%. This shows that imports are growing faster than exports. The situation differs according to individual subsectors. A TCI trend analysis (1999–2007) shows that the EU has recently increased its trade surplus in speciality chemicals with most of its main trading partners. The same applies to consumer chemicals and polymers. Innovation and product development are drivers behind this growth. In contrast, trade is deteriorating for basic organic fertilisers, oleochemicals, fermentation products and the production of active pharmaceutical ingredients. These parts of the EU chemicals industry experienced a marked fall in their global market share.

The EU's trade balance with key countries and regions is deteriorating in parts of Asia for almost all subsectors. India and China are the only two countries with which the EU currently has an overall trade deficit for chemicals. Trade development with the Middle East indicates that the region increasingly uses its feedstock availability to construct an integrated chemicals value chain and strengthen its position in a wider range of basic chemicals. Russia, until now, is only successful in using its competitive advantage with raw materials in base chemicals and fertilisers. With the US, Russia and South Korea, the EU has an overall chemicals trade surplus which is increasing.

## Conclusions

- *International trade is vital for growth and employment in the European chemicals industry. The industry has placed itself at the centre of global trade and depends vitally on open markets. As growth is concentrated in emerging economies, improved access to these markets is of high importance.*
- *The general performance of the European chemicals industry on the global market has been relatively good in the past decade, especially compared to other traditional chemicals producing countries such as the US and Japan. The European chemicals industry is generally doing better in innovation driven subsectors. The trade position of certain important subsectors, particularly the raw material and energy intensive parts of the chemicals industry, shows signs of serious erosion. Their global competitive position is at risk.*

## **Good economic framework conditions are important for international competitiveness: emerging countries have been catching up**

A broader analysis of the factors influencing the international competitiveness of the chemicals industry throughout the world shows that the ‘framework conditions’ for the competitiveness of an economy as a whole are highly important. In 2007, The World Economic Forum (WEF) published a ranking of the main OECD industrialised and emerging countries based on 12 indicators, such as macroeconomic stability, labour market efficiency, education and innovation. The differences between the two groups have narrowed. Currently, all show a relatively good performance. This indicates that the EU chemicals industry’s main competitors in those countries or regions increasingly enjoy similar or comparable framework conditions.

This reinforces the view that the greater competition from emerging countries is largely based on solid economic fundamentals, although problems of social and environmental dumping persist. It is likely that this competition will only become stronger and emerging countries will capture an increasingly important share of the global market.

## Conclusion

- *Several advanced emerging economies no longer face structural handicaps in their chemicals industry. This raises the question whether continuing preferential trade treatment for chemicals for competitors from these countries is still justified.*

### **Growth is mainly outside Europe: expanding global markets offer export potential for European chemicals industry**

Demand patterns over time show that the take up of chemical products is above GDP growth in regions and countries going through industrialisation and urbanisation. It is lower when economies are moving into service industries. The availability of feedstock also plays a decisive role in locating investments. Growth rates in traditionally industrialised countries are now predicted to be substantially lower than in the emerging countries, such as the BRIC, over the next 10-15 years. The strongest economic growth in the coming decade will almost certainly occur in Asia, especially China. The country's economy is expected to continue to grow at around 8 % a year until 2020. If true, by then, China will have overtaken the US and Japan in terms of the size of its industrial market, although the EU's will still be the largest. However, the combined industrial market of the BRIC countries will be the largest in the world.

The emergence of the Middle East will change the petrochemicals landscape in the next few years. This region will be the main supplier of petrochemicals to other parts of the world, in particular Asia, Europe and the US. The current trade surplus the EU and the US enjoy in petrochemicals will turn into a deficit. The European share of global (petro)chemicals production will further decline as a result of the strong growth of production capacity in the emerging countries in Asia and the Middle East.

Despite increased competition, the overall growth of economies and their chemical markets continues to offer a vast potential for sustained growth of the European chemicals industry. Its high international orientation and global network of external customer industries are important assets. This is especially true if the industry succeeds in generating new growth clusters with the capability of solving upcoming global problems, such as the supply of energy, water and food for a rapidly growing population.

## Conclusions

*The further success of the EU chemicals industry is highly dependent on exports to the world market. To maintain its international competitiveness, three factors will be of particular importance:*

- *Open world markets and an improvement in market access to the emerging economies where the growth in chemicals consumption is expected to be significantly higher than in more traditional export markets.*
- *Access to energy, feedstock and other raw materials under competitive conditions.*
- *Favourable internal economic and regulatory framework conditions that foster the efficient functioning of markets and rapid take up of innovations.*

*These factors, identified by the High Level Group, are fully in line with the European Commission's Communication "Global Europe - Competing in the World"<sup>8</sup>. The High Level Group supports this approach and the accompanying Market Access Strategy<sup>9</sup> and in this context recalls the need for coherence with the EU's Policy for Development.<sup>10</sup>*

## **2. Priorities of a European trade policy: promoting and safeguarding competitiveness of its chemicals industry**

### **Multilateral Trade Agreements (WTO)**

Growth and competitiveness of the European chemicals industry are critically dependent on a free and fair global trading system. As a consequence of the globalisation of supply chains, the imposition of custom duties in OECD countries primarily increases input costs. A rough calculation shows that, between them, chemical companies in the EU pay annually on average €500 million customs duties on their intra-company trade originating in the US. Therefore,

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<sup>8</sup> Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions: Global Europe: competing in the World - A Contribution to the EU's Growth and Jobs Strategy, COM(2006) 567 final of 4 October 2006

<sup>9</sup> Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions: Global Europe: A stronger partnership to deliver market access for European Exporters; COM(2007) 183 final of 17 April 2007

<sup>10</sup> In December 2005, the Council, the European Commission and the European Parliament jointly adopted the so-called 'European Consensus on Development' (OJ 2006/C46/01). As a follow-up to this initiative the Commission published in September 2007 an "EU Report on Policy Coherence for Development" ([http://ec.europa.eu/development/icenter/repository/Publication\\_Coherence\\_DEF\\_en.pdf](http://ec.europa.eu/development/icenter/repository/Publication_Coherence_DEF_en.pdf)); it includes COM(2007)545.

trade liberalisation through a substantial reduction, or elimination, of tariffs both multilaterally and bilaterally would be in the EU chemicals industry's interest. In the current economic crisis, this has become even more important since there is a risk of increasing protectionism.

In the Uruguay Round, a sectoral agreement – the Chemical Tariff Harmonisation Agreement – was reached which harmonised chemical tariffs (mainly among OECD countries) at 0%, 5.5% or 6.5%. Building on this success, industry federations, predominantly from developed countries, set themselves in 1999 the goal of convincing the authorities to eliminate all chemical tariffs by 2010. However, in the World Trade Organisation's Doha Development Agenda (DDA), there seems to be at this stage little chance of arriving at such an outcome through the horizontal Non Agricultural Market Access (NAMA) negotiations. The tariff-cutting formulas being considered will most likely not result in a meaningful reduction for chemicals, particularly with regard to the key emerging countries, which are of greatest interest for the EU industry and which still have relatively high applied rates and even higher bound rates. This means that the way to achieve a further significant tariff reduction for chemicals in the DDA is through another sectoral agreement. In June 2008, the EU, US and several other countries submitted a proposal in the DDA for such an agreement. This was fully supported by the EU chemicals industry.

From a European perspective, this sectoral agreement should involve all countries with a significant chemicals industry and include all chemicals (Harmonized System - Chapters 28 to 39). Chemical producers based in emerging countries nowadays compete directly with their EU counterparts. These industries are highly protected in their home markets and benefit from low EU tariffs. An agreement among OECD countries alone would be insufficient.

Market access depends not only on tariffs. Non-tariff barriers also need to be systematically addressed. In addition, a comprehensive agreement on trade facilitation is important for the trade dependent EU chemicals industry. Finally, since innovation is decisive for the success of the chemicals industry, trade policy has a key role to play in protecting intellectual property rights in third country markets.

The European chemicals industry generally supports the accession of more countries, such as Russia and Iran, to the rules-based WTO system. It considers that the basis for the accession

negotiations must be acceptance of the Chemical Tariff Harmonisation Agreement and the elimination of all non-tariff barriers and other trade distorting measures such as double pricing and export taxes.

## **Recommendations**

- *Notwithstanding the difficulties in reaching an agreement in the framework of the WTO trade negotiations, the multilateral approach towards trade liberalisation, currently being pursued through the DDA negotiations, remains the preferred option. In order to foster increased competitiveness for the European chemicals industry, the EU should therefore continue to actively pursue an ambitious overall NAMA-agreement complemented by a new sectoral agreement on chemicals. All countries with a substantial chemicals industry should participate in this, particularly the emerging economies. The EU should continue its efforts to conclude an agreement on trade facilitation in the framework of the WTO and strengthen the Agreement on Trade-Related Aspects of Intellectual Property Rights.*
- *As for new accessions to the WTO, the EU should strive to ensure that trade distorting practices, such as double pricing policies for energy and feedstock by acceding countries are effectively addressed.*

## **Free Trade Agreements (FTAs)**

Bilateral and regional FTAs can be an important complement to multilateral trade agreements. Economic considerations should have priority in selecting potential FTA partners. The recommended criteria should be economic potential (size and growth), level of protection against EU exports (tariff and non-tariff barriers) and the risk of the EU finding itself excluded from FTAs between major trading partners.

In terms of market access, FTAs should cover all industrial goods and abolish all tariffs with a maximum of reciprocity in the phase in periods, which should be as short as possible. In the negotiations, the EU should secure an outcome at least comparable to conditions granted by an FTA partner to other key competitor countries. In addition, the aim should be to reduce or eliminate all unwarranted non-tariff barriers (NTBs) and secure a standstill for all new ones. Bilateral and regional FTAs should be so-called ‘WTO plus’ agreements. This means that

they should go further and faster in promoting openness and integration by tackling issues which are not ready for a multilateral approach. Additionally, FTA negotiations need to address unfair trading practices, such as certain subsidies, export duties, double pricing and other impediments to access to raw materials. It is important to ensure as much consistency as possible between all FTAs in order to minimise divergent administrative procedures, such as rules of origin, for customs authorities and economic operators.

Enforcement of FTAs can sometimes be problematic. Therefore, due attention should be given to the dispute settlement provisions in these agreements. Where an FTA partner clearly lacks the institutional framework to implement the agreement, the EU should bear this in mind. 'Capacity building' initiatives may help in certain cases.

## **Recommendation**

- *The EU should pursue Free Trade Agreements with key trading partners, in particular if these are so-called WTO plus agreements that go further in promoting openness and integration than is currently the case in the multilateral negotiations. The selection of potential FTA partners should give priority to economic criteria with due consideration given to the EU's Policy for Development<sup>11</sup>. The EU should strive for consistency between all FTAs and aim to achieve conditions comparable to those granted by our FTA partner to other key countries. FTAs need proper enforcement and balanced and reliable dispute settlement procedures.*

## **Regulatory dialogues and transatlantic economic cooperation**

The EU should further develop and strengthen its regulatory dialogues in the framework of existing multilateral fora and on a bilateral basis with other key trading partners, such as the US, China, Russia and Canada, on chemicals industry specific issues in order to avoid future non-tariff barriers and to eliminate existing ones.

Because of the strong common tradition of similar policy principles, both nationally and internationally, the US is the most logical partner when seeking more regulatory convergence in the chemicals sector. However, it should also be recognised that substantial legal and

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<sup>11</sup> see footnote 10

societal differences have materialised over the years which make regulatory convergence difficult. Regulatory cooperation should, therefore, be based on a realistic expectation of what is feasible.

### **Trade Defence Instruments (TDIs)**

The WTO anti-dumping agreement allows governments to act if there is genuine ('material') injury to the competing domestic industry. The chemicals industry accounts for most anti-dumping procedures globally and both developed and developing countries make frequent use of this instrument. However, not all WTO members apply the same methodology or procedural deadlines. It is generally accepted that the EU applies more rigorous criteria than most countries in the world. The reason for this restrained use of anti-dumping measures is that European industry usually has both significant producer and user interests with a strong commitment to open international trade. Developing countries, in particular, appear to use less stringent rules, leading to unjustified action against imports when they decide to take anti-dumping measures. Implementation of current WTO rules is weak, or sometimes simply ignored. The Commission's active role in countering such practices is important and should be reinforced.

When it comes to anti-dumping or TDI practices in general, it is crucial to create a truly global level playing field within the WTO framework. The current proposals tabled in the context of the DDA negotiations appear insufficient to achieve this.

In the discussions, industry raised concerns about increasing difficulties in adoption by the EU of anti-dumping measures. In reply, it was pointed out that the economic and industrial landscape has changed enormously in the past decade. Due to globalisation, competition has intensified and supply chains are more sophisticated, making economic analysis much more complex than before. Interests among industry are also more diverse. It is, thus, not surprising that decisions have become more complex. In addition, there is a growing tendency by third countries to threaten industries which participate in TDI proceedings with retaliation. The EU should consider providing a strong and effective answer to these threats, including recourse to ex-officio case initiations if appropriate.

## Recommendations

- *In the absence of progress in multilateral trade negotiations, there should be no unilateral weakening of the current European TDI legislation and practice. If improvements in current practice are considered necessary, these could include: (1) faster implementation of provisional measures (six months instead of the current minimum of nine); (2) making disclosure of provisional findings mandatory; (3) more severity in cases of fraud and circumvention; and (4) consolidation of energy and other raw materials adjustments, by allowing for adjustments in the calculation of the ‘normal’ price to tackle dual pricing.*
- *In the WTO, the EU should seek to ensure stringent common rules leading to a global level playing field with an alignment of anti-dumping practices. TDIs will continue to be needed to offset the impact of unfair trade practices. This includes measures to tackle double pricing and below-cost pricing. However, a realistic and balanced approach should be followed and it must be recognised that TDIs are part of a wider package being negotiated within the WTO.*

## Customs procedures and security

Because of globalisation, customs authorities are required to handle an exponential and unprecedented increase in the volume of trade transactions. In addition, 149 new regional partnership agreements have been notified to the WTO since 1995. This further complicates international trade rules. The challenge is exacerbated by a variety of new safety and security risks, including terrorism. Global harmonisation of customs procedures has slowed down due to security concerns.

Efficient customs procedures can help to improve competitiveness by reducing business costs and creating productivity gains. The EU, therefore, needs to modernise the Community Customs Code and to work on greater operational integration of the customs administrations of its Member States. This should include the further implementation of new electronic control systems replacing the prevailing paper environment. European customs law has to be modified in order to make a clear distinction in the Community Customs Code between ‘good faith’ companies and smugglers. Nationally, there are several interpretations of this, creating differences of treatment between Member States. This increases the risk of customs disputes

and penalises the European chemicals industry which is heavily dependent on the import of raw materials and semi-finished products not available in Europe.

In response to terrorist attacks, the number of security initiatives that impact on international trade continues to grow. The EU is increasingly tightening its security arrangements. For instance, from 2009 economic operators will be obliged to send summary declarations on goods to EU customs authorities before any departure or arrival. EU industry fears that the pre-departure declarations for exports, especially, will create competitive distortions with third countries, which do not control their exports, but simply comply with the security obligations of the countries importing their products.

The High Level Group proposes to develop new pragmatic partnerships between European customs administrations and European companies covering audit and risk management. This would help provide an adequate response to a number of new recent security initiatives around the globe, such as the American 100% scanning law of containers in 2012.

## **Recommendation**

- *The EU should continue to strive for more global harmonisation in customs procedures within the relevant international organisations such as the World Customs Organisation and the WTO. This will enhance the fight against black and grey customs clearance schemes which are currently a major problem for chemicals exporters and traders to some countries, such as Russia. The EU should further pursue multilateral and bilateral cooperation between customs authorities and governmental dialogue as ways to counter illegal activities.*

### **3. Securing access to raw materials in non discriminatory conditions**

The EU chemicals industry needs to be able to source its raw materials, including renewables, at world market prices in order to remain competitive. It is, therefore, long established EU policy to have no, or low, import tariffs on raw materials or intermediate products so as to allow industry to create added value, and thus jobs, within the EU.

However, access to raw materials appears to have become more difficult in recent years, for several reasons. Increasing scarcity on global markets has gone hand in hand with greater government interference in a wide range of markets. In most cases, the origin of the market

distortion is external to the EU and comes, for instance, from export restrictions, tariffs, subsidies or other pricing measures by third countries. But sometimes internal EU policies, such as agriculture or energy, influence cost and availability of raw materials for industrial purposes.

Evidence shows that countries restrict their exports or subsidise imports of raw materials and thereby influence access to other countries, including the EU, in various ways: export taxes (Chinese yellow phosphorus), export licences or quotas (Chinese fluorspar, Chinese coke), dual pricing schemes (gas and oil in Saudi Arabia or Russia) and subsidised imports or local purchases of raw materials.

One problem for the EU when addressing these various practices is that they are difficult to tackle under existing international trade law. Therefore, it is important that the EU continues its efforts to strengthen the rules regarding these practices in WTO and bilateral negotiations and makes optimum use of other available means to tackle the situation. Trade defence instruments can only be regarded as a second best solution.

Some renewable raw materials for chemicals are also used to produce food, feed and energy. In a situation of short supply, problems to source raw materials may arise when policies for the particular use of renewable raw materials, such as energy, are in place. These policies, combined with high import duties, may lead to prices in the EU which are well above world market levels for items such as sugar, starch, bio-ethanol, tallow and palm oil.

For industries with an important share of raw material costs in their total production costs, a situation of low import tariffs for their output and substantially higher raw material prices in the EU than on world markets is economically unsustainable. It is a factor which needs to be addressed in order to avoid disincentives to produce and invest in the EU. In the fermentation industry, large scale delocalisation is already taking place, with the lack of competitively priced carbohydrate supplies, and no feedstock alternatives, being an important reason.

For these cases, solutions could be found by eliminating, reducing or suspending EU tariffs and quotas for renewable raw materials that serve as industrial inputs in order to provide access at world market prices for the most affected parts of the chemicals industry. A number of customs procedures, such as Processing under Customs Control (PCC), currently exist in

the EU which allow for the elimination or reduction of import duties on raw materials or intermediates for certain specific, and industrial, uses. However, such procedures do not create the predictability the chemicals industry needs for its investment decisions which are usually taken with a 10-20 year horizon. A stable and reliable supply of renewable raw materials is also important to stimulate innovation in their use. For this reason, in particular, the tariff for bio-ethanol for industrial use should be reconsidered in the European Union. Eliminating or reducing import duties for bio-ethanol and certain other renewable raw materials, should go hand in hand with the introduction and enforcement of sustainability criteria. It is important to agree on international standards for sustainability and certification where possible, in order to avoid a multitude of schemes. Credible and robust bilateral or regional schemes, such as those developed by the EU, can act as stepping stones towards international consensus. The criteria used should take account of existing voluntary schemes where appropriate.

## **Recommendations**

- *The EU should continue to promote the development of permanent new WTO rules addressing trade problems related to the discriminatory supply of raw materials. In bilateral trade negotiations, the EU should continue to address unwarranted trade and subsidy distortions that cause problems in accessing raw materials.*
- *The EU should assess the competitive advantages gained by the elimination or reduction of import tariffs and by opening import quotas for the raw material inputs, including renewables, of the various subsectors of the domestic chemicals industry. For environmentally and socially sensitive renewable raw materials, further market opening should go hand in hand with sustainability guarantees with due consideration of WTO rules. Wherever possible, the EU should strive for internationally agreed standards.*

# Annex I

## COMMISSION DECISION of 14 June 2007 setting up the High Level Group on the Competitiveness of the Chemicals Industry in the European Union (2007/418/EC)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,

Whereas:

- (1) Article 157(1) of the Treaty assigned the Community and the Member States the task of ensuring that the conditions necessary for the competitiveness of the Community's industry exist. Article 157(2) in particular calls upon the Member States to consult each other in liaison with the Commission and, where necessary, to coordinate their actions. The Commission may take any useful initiative to promote such coordination.
- (2) In its Communication 'Implementing the Community Lisbon Programme: a policy framework to strengthen EU manufacturing — Towards a more integrated approach for industrial policy\*' <sup>(1)</sup>, the Commission announced the intention to set up a High Level Group concerned with the competitiveness of the European chemicals industry.
- (3) It is therefore necessary to set up a group of experts in the field of competitiveness of the EU chemicals industry and to define its tasks and structure.
- (4) The primary task of the group should be to conduct economic and statistical analysis of the factors determining the rapid structural changes in the chemicals sector, as well as other factors that influence the competitive position of the European chemicals industry. Based on this analysis the group should formulate a set of sector-specific policy recommendations with a view to enhancing the competitiveness of the chemicals industry in accordance with the objective of sustainable development. Given that Regulation (EC) No 1907/2006 of the European Parliament and of the Council <sup>(2)</sup> concerning REACH enters into force only on 1 June 2007 and its main operational provisions will apply only 12 months later, it would not be appropriate that matters directly related to REACH should be examined.

- (5) The group should be composed of representatives of the Commission, the Member States, the European Parliament and relevant stakeholders notably from the chemicals industry and downstream users, as well as civil society, to be drawn, *inter alia*, from representatives of consumers, trade unions, non-governmental organisations and research/academia.
- (6) Rules on disclosure of information by members of the group should be provided for, without prejudice to the Commission's rules on security as set out in the Annex to Commission Decision 2001/844/EC, ECSC, Euratom <sup>(3)</sup>.
- (7) Personal data relating to members of the group should be processed in accordance with Regulation (EC) No 45/2001 of the European Parliament and of the Council of 18 December 2000 on the protection of individuals with regard to the processing of personal data by the Community institutions and bodies and on the free movement of such data <sup>(4)</sup>.
- (8) It is appropriate to fix a period for the application of this Decision. The Commission will in due time consider the advisability of an extension,

HAS DECIDED AS  
FOLLOWS:

### *Article 1*

#### **High Level Group on the Competitiveness of the Chemicals Industry in the European Union**

A High Level Group on the Competitiveness of the Chemicals Industry in the European Union, hereinafter referred to as 'the group', is hereby set up with effect from the day of the adoption of this Decision.

### *Article 2*

#### **Task**

1. The group shall address issues that determine the competitiveness of the Community chemicals industry. In particular its tasks are:

<sup>(1)</sup> COM(2005) 474 of October 2005.

<sup>(2)</sup> OJ L 396, 30.12.2006, p. 1, as corrected by OJ L 136, 29.5.2007, p. 3.

<sup>(3)</sup> OJ L 317, 3.12.2001, p. 1. Decision as last amended by Decision 2006/548/EC, Euratom (OJ L 215, 5.8.2006, p. 38).

<sup>(4)</sup> OJ L 8, 12.1.2001, p. 1.

- (a) to conduct economic and statistical analysis of the factors determining the structural changes in the chemicals industry as well as other factors that influence the competitive position of the European chemicals industry;
- (b) to assist the Commission in questions related to the competitiveness of the chemicals industry;
- (c) to formulate a set of sector-specific policy recommendations addressed to policy makers at the Community and national level, industry and civil society organisations.

2. The group will not discuss matters directly linked to Regulation (EC) No 1907/2006 concerning REACH or assess its functioning.

#### *Article 3*

##### **Consultation**

- 1. The Commission may consult the group on any matter relating to the competitiveness of the EU chemical industry.
- 2. The Chairperson of the group may advise the Commission that it is desirable to consult the group on a specific question.

#### *Article 4*

##### **Membership — appointment**

- 1. The members of the group shall be appointed by the Commission from high level specialists with competence and responsibility in areas which are related to the competitiveness of the European chemicals industry.
- 2. The group shall be composed of up to 31 members composed of representatives of the Commission, the European Parliament, the Member States, the industry, and of civil society.
- 3. Members of the group are appointed for their expertise in a personal capacity. Each member of the group shall nominate a personal representative to a preparatory sub-group hereinafter referred to as the 'sherpa' sub-group.
- 4. Members are appointed for a 2-year renewable term of office and shall remain in office until such time as they are replaced in accordance with paragraph 5 or their term of office ends.
- 5. Members may be replaced for the remaining period of their term of office in any of the following cases:

- (a) where the member resigns;
- (b) where the member is no longer capable of contributing effectively to the group's deliberations;
- (c) where the member does not comply with Article 287 of the Treaty.

6. The names of members shall be published on the Internet site of DG Enterprise and Industry. The names of members shall be collected, processed and published in accordance with the provision of Regulation (EC) No 45/2001.

#### *Article 5*

##### **Operation**

- 1. The group shall be chaired by the Commission.
- 2. The 'sherpa' sub-group shall prepare the discussions, position papers and advice for actions and/or policy measures to be recommended by the group; it will work in close contact with the Commission services in order to prepare the work for the group meetings.
- 3. The group may, with the agreement of the Commission, set up sub-groups to examine specific questions under terms of reference established by the group. Such subgroups shall be dissolved as soon as their mandates are fulfilled.
- 4. The Commission's representative may ask experts or observers with specific competence on a subject on the agenda to participate in the work of the group, or in the deliberations or work of sub-groups and ad hoc groups, if in the opinion of the Commission this is necessary or useful.
- 5. Information obtained by participating in deliberations or work of the group or ad hoc groups or sub-groups shall not be divulged if, in the opinion of the Commission, that information relates to confidential matters.
- 6. The group, the 'sherpa' sub-group, and other sub-groups shall normally meet on the Commission's premises in accordance with the procedures and schedule established by it. The Commission shall provide secretarial services. Other Commission officials with an interest in the proceedings may attend meetings of the group and its sub-groups.
- 7. The group shall adopt its rules of procedure on the basis of the standard rules of procedure adopted by the Commission.

8. The Commission may publish, or place on the Internet, in the original language of the document concerned, any summary, conclusion, partial conclusion or working document of the group. Proceedings and interim reports will be available on a dedicated website. The final report will be published early after the final meeting of the group.

*Article 6*

**Reimbursement of expenses**

The Commission shall reimburse travel expenses and, where appropriate, subsistence expenses for members, 'sherpa' group members, experts and observers in connection with the group's activities in accordance with the Commission's rules on the compensation of external experts.

The members of the group, 'sherpa' sub-group members, experts and observers shall not be remunerated for the services they render.

Meeting expenses shall be reimbursed within the limits of the annual budget allocated to the group by the competent Commission department.

*Article 7*

**Applicability**

The Decision shall apply until two years from the day of its adoption.

Done at Brussels, 14 June 2007.

*For the Commission*

Günter VERHEUGEN

*Vice-President*

## Annex II - Members of the High Level Group on the Competitiveness of the European Chemicals Industry

### Commission

<b>Günter Verheugen</b>	Vice-President of the Commission - Commissioner for Enterprise and Industry
<b>Stavros Dimas</b>	Commissioner for Environment
<b>Janez Potočnik</b>	Commissioner for Science and Research
<b>Peter Mandelson<sup>12</sup></b>	Commissioner for External Trade
<b>Catherine Ashton<sup>13</sup></b>	Commissioner for External Trade
<b>Andris Piebalgs</b>	Commissioner for Energy
<b>Jacques Barrot<sup>14</sup></b>	Commissioner for Transport

### Member States

<b>Maria van der Hoeven</b>	Minister of Economic Affairs, The Netherlands
<b>Fientje Moerman<sup>15</sup></b>	Minister of Economic Affairs, Energy, Foreign Trade and Scientific Policy of Flemish Region, Belgium
<b>Patricia Ceysens<sup>16</sup></b>	Minister for Economy, Enterprises, Sciences, Innovation and Foreign Trade, Belgium

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<sup>12</sup> Member until October 2008

<sup>13</sup> Member since October 2008

<sup>14</sup> Member until April 2008

<sup>15</sup> Member until October 2007

<sup>16</sup> Member since October 2007

<b>Piotr Grzegorz Woźniak</b>	Minister of Economy, Poland
<b>Martin Říman</b>	Minister of Industry and Trade, Czech Republic
<b>Michael Glos</b>	Federal Minister of Economics and Technology, Germany
<b>Hervé Novelli</b>	Minister of State, the Ministry for the Economy, Finance and Employment, France
<b>Stephen Timms<sup>17</sup></b>	Minister for Competitiveness and Consumer Affairs, United Kingdom
<b>Ian Pearson<sup>18</sup></b>	Minister for Economics and Business, United Kingdom
<b>Joan Trullén<sup>19</sup></b>	Secretary-General of Industry, Ministry of Industry, Spain
<b>Teresa Santero<sup>20</sup></b>	Secretary-General of Industry, Ministry of Industry, Spain

### **Industry**

<b>François Cornelis</b>	Vice-Chairman of the Executive Committee and President of Chemicals, Total
<b>Tony Bastock</b>	Group Managing Director, Contract Chemicals Ltd
<b>Thierry Le Hénaff</b>	Chairman and CEO, Arkema
<b>David Duncan</b>	Senior Vice President of Home & Personal Care Research & Development, Unilever PLC
<b>Jürgen Hambrecht</b>	Chairman of the Board of Executive Directors, BASF
<b>Ben van Beurden</b>	Executive Vice President of Shell Chemicals

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<sup>17</sup> Member until October 2008

<sup>18</sup> Member since October 2008

<sup>19</sup> Member until October 2008

<sup>20</sup> Member since October 2008

<b>Johan von Knorring</b>	President, Bang & Bonsomer Group
<b>Giorgio Squinzi</b>	Chief Executive Officer, Mapei

**Regions, Trade Unions, Academia, Environmental NGO's, Consumer organisations**

<b>Reiner Haseloff</b>	President of the European Chemical Regions Network (ECRN)
<b>Reinhard Reibsch</b>	Secretary General, EMCEF
<b>Karin Markides</b>	President of Chalmers University of Technology, Sweden
<b>Mikael Karlsson</b>	President of the European Environmental Bureau
<b>Mette Boye</b>	Head of Policy, Danish Consumer Council

## Annex III

### List of Recommendations

#### III. Innovation and research

##### 1. More innovation is key for a sustainable and healthy European chemicals industry

Strengthening Innovation Networks is of utmost importance

- 1. Industry, in cooperation with governments, should set up topical innovation networks to promote key strategic innovations and foster best practices and exchange of knowledge and experience between them. One such network should deal with ‘energy and climate change’.**

Support for ‘flagship projects’, which could take the form of pilot/demonstration plants, as guidance for industry and society to signal the potential of certain key innovations, is essential. Public support for this type of project – not primarily as a source of finance but, as a minimum, to signal public commitment – is essential.

- 2. Industry and public authorities at all levels should strengthen clusters (and open innovation processes) which facilitate cooperation across sectors and across borders, with the aim of further stimulating, accelerating and facilitating cross-cutting innovation throughout the value chain.**

Initiatives should build on existing structures and programmes where possible. The results achieved by EU, national and regional innovation networks should be examined, and possible areas of improvement identified, for example, by greater promotion of best practices.

- 3. As part of further strengthening existing networks, the technology platform SusChem should explore opportunities beyond the defined key areas to include innovation leadership issues (‘bringing good ideas to the market’) in a new SusChem+ structure.**

SusChem has so far delivered a vision paper, a broad strategic research agenda, and a detailed implementation plan. It should now develop a wider mandate covering the full scope of innovation, and reaching out to an increasing number of Member States,

regions and enterprises, in particular SMEs.

**(Addressee: Industry, Commission, Member States)**

## 2. Research: pillar of chemical innovation

Increase quantity and effectiveness of Research and Development, in particular encourage more efforts by the private sector

### **4. Private sector should increase efforts to speed up innovation.**

The European chemicals industry has a strategic interest in occupying high knowledge-based segments assuring higher long term growth and profitability. Companies are urged to upgrade their R&D plans, promoting 'open innovation' schemes and extending corporate research programmes to medium and long term objectives. Companies should strengthen their relationships with universities and public research centres and promote Public Private Partnerships on key medium and long term research issues.

### **5. Public sector should provide effective support to private sector efforts (Addressee: EU, Member States, local authorities)**

Within the limitations of national R&D budgets, many Member States have committed themselves to an increased effort. Cost efficient use of scarce resources is essential. This can be achieved through greater focus on the quality of R&D expenditure, based on excellence and priorities. Focusing on key areas at regional level should be accompanied by road mapping exercises and active coordination of European and national efforts in chemistry and chemical engineering research with close links to regional industry partners. Financial instruments, including tax advantages, providing support and risk cover over a sufficient period are essential for start-ups and other SMEs.

## 3. Innovation needs trust: improving communication with stakeholders

Improve information and communication

### **6. The chemicals industry needs to develop a more effective dialogue with society based on mutual understanding and trust.**

Listening and understanding are essential for effective two way communication. They are – alongside proper risk management – key to developing the trust needed to support an innovation friendly environment and make it work. Innovation requires the confidence of investors, customers, employees and consumers in the sustainability and safety of products and processes.

#### 4. Knowledge is key: protection of Intellectual Property Rights (IPR)

7. **The Commission and Member States are encouraged to continue their efforts to reach agreement on the creation of a Community patent and a common jurisdictional framework within which European and Community patents can be enforced.**
8. **The Commission and Member States should pursue international patent law harmonisation through the World Intellectual Property Organisation (WIPO) and initiatives such as the Transatlantic Economic Council (TEC).**
9. **The Commission and Member States should recognise the protection of confidential business information as an important IPR and ensure that the proportionality principle is systematically applied when striking the balance between the legitimate protection of confidential business information and other policy objectives, such as the right to know, transparency and access to documents, as has been done, for example, in the Aarhus Convention. Awareness of this IPR should be emphasised by relevant industry associations in their information activities to members and by the Commission and Member States when developing innovation policies relevant to SMEs.**
10. **The Commission and all players involved in the fight against counterfeiting and product piracy in Member States, including European industry, should cooperate to facilitate investigations and conduct strong enforcement activity against counterfeiters in Europe and elsewhere in the world, and develop public educational initiatives.**

## IV. Regulation

Proper consultation of stakeholders, improved communication by authorities and more harmonised and correct application of rules are key elements of a good regulatory framework

**11. The Commission should ensure that all relevant considerations are addressed in impact assessments accompanying new legislative proposals. These should include the impact on sustainable development, health, international competitiveness, SMEs and innovation. Where appropriate, further research needs should be specified.**

**12. The Commission and Member State authorities should improve communication with industry and other stakeholders to facilitate proper understanding of, and compliance with, regulatory requirements.**

The need to communicate full and accurate information is especially important following adoption of new legislation. Ways to achieve this include information meetings and other initiatives for enterprises along the value chain to provide guidance on the implementation of new rules. Regional authorities can play a crucial role in this process. The special needs of SMEs should also be borne in mind. While the Commission's Better Regulation strategy is bringing about significant improvements in this field, including consultation, implementing measures with a substantial impact should also be subject to appropriate consultations with stakeholders.

**13. The Commission and Member States should aim to avoid unnecessary divergence of rules and implementation requirements while ensuring correct application of EU rules, in order to reduce the administrative burden. Regulation should form a consistent framework and provide a reasonably stable long term perspective.**

## V. Human resources

Developing human resources needs more attention

**14. Member States should step up promotion of chemical and science education, starting with primary schools.**

- 15. Chemistry or/and chemical engineering faculties should define the profiles of new professions in cooperation with industry.**
- 16. Industry, in cooperation with education and employment agencies, should intensify efforts to assess its human resource requirements in the short and long term in various locations and regions and identify probable changes in skill profiles.**

## **VI. Energy and feedstock**

### **1. Energy and feedstock as decisive elements of competitiveness**

Measures are needed to secure a sufficient level of investment in the base chemical sectors in Europe

- 17. In order to support the competitiveness of the petrochemicals sector in Europe, measures, such as strengthening clusters and improving infrastructure, should be taken to consolidate existing competitive advantages and secure the integration of Europe's chemicals industry as a whole.  
(Addressees: Member States, regional/local authorities, EU)**
- 18. Improved performance of an effectively liberalised gas market, at least in the Community, and securing reliable imports of gas at competitive non-distorted prices are of very high importance for substantial parts of the chemicals industry.  
(Addressees: EU, Member States)**
- 19. Due to the long term nature of the high investments required and the need to achieve high capacity utilisation, stable long term electricity supply is a key element of competitiveness for important parts of the chemicals industry. Long term contracts with power generators or increased own generation in e.g. combined heat and power facilities to cover inherent heat demand are the main options.  
(Addressees: Private Sector, Member States, EU)**

## 2. Raw material change: towards higher contribution of renewable raw materials

Secure established uses of renewable raw materials and pave the way for large scale innovative applications in the medium and longer term

**20. At present, it seems too early to make a robust assessment of the economic viability of renewable feedstock in the chemicals industry as a replacement for fossil feedstock, but the expected significant potential available in the longer term provides sufficient justification to continue research and industrial development activities as a priority.**

**21. Incentives (e.g. subsidies or regulation) in agriculture or energy policy can seriously jeopardise attractive established uses of bio-based raw materials in the chemicals industry by favouring other applications (e.g. threat to tallow availability as feedstock for the detergent industry due to higher subsidies for bio-fuel use). Policy makers at European, national and local level, should seek to avoid such unwanted side effects.**

## VII. Climate change policy

1. Action on climate change as a business opportunity for the European chemicals industry

**22. Action on climate change provides significant business opportunities for the European chemicals industry. At the same time, it will remain an important research and development focus in chemistry. This potential should be fully exploited.**

**(Addressees: Industry, Member States, EU)**

2. In a globalised chemicals industry, global action including an adequate engagement of emerging economies is essential to combat climate change

**23. As the chemicals industry is truly globalised, adequate measurable action by emerging economies is needed to mitigate climate change. This would contribute to creating a more level playing field, allowing the European chemicals industry**

**to compete. Europe should do its utmost to create the conditions for such action.  
(Addressee: EU)**

**24. In view of the complexity of sectoral agreements in the chemicals industry, support by all actors (industry, governments, including those of emerging countries, and the Commission) to bring these initiatives to a successful conclusion in as many subsectors of the chemicals industry as possible is to be welcomed.**

3. Europe's chemicals industry has made much progress in reducing energy intensity and emissions, but further efforts are necessary

**25. Robust and verifiable information on the emissions and the emission reduction potential of the chemicals industry is crucial for decisions on measures to mitigate climate change and for setting benchmarks for the future implementation of the European Emissions Trading Scheme. Closure of the current information gap is of the utmost priority. (Addressees: Industry, Member States, Commission)**

**26. Member States and the Commission should make strong efforts for the full implementation of the revised ETS Directive within the ambitious timelines set and in cooperation with all stakeholders.**

## VIII. Logistics

2. Strong clusters: European asset that merits further support

**27. In many cases the development of local cluster platforms with active cooperation between industry and (local) public authorities would improve their logistical efficiency and overall management. A multi-stakeholder approach to cluster leadership may enable the development of long term perspectives and guarantee consistency.**

3. Addressing numerous bottlenecks in transport must be a priority

Further integration of European chemical production sites into clusters needs better infrastructure along the value chain

- 28. Stakeholders should work together with authorities on a Member State and Community level to further identify and address key bottlenecks which prevent wider use of intermodal transport.**
- 29. National and European authorities should carefully assess possibilities for revitalising railway freight transport.**
- 30. Massive congestion of the road network is a major problem for chemical logistics and the Commission's work in investigating solutions to the problem is strongly supported.**
- 31. The question of closing gaps in the olefin pipeline network and public support for such an initiative needs to be pursued in order to establish an appropriate basis for decisions on investments and political priorities in this field. The High Level Group welcomes the Commission's 2nd Strategic Energy Review which is expected to provide clarification on the way ahead.**

## **IX. Globalisation, international competitiveness and trade**

**2. Priorities of a European trade policy: promoting and safeguarding competitiveness of its chemicals industry**

- 32. Notwithstanding the difficulties in reaching an agreement in the framework of the WTO trade negotiations, the multilateral approach towards trade liberalisation, currently being pursued through the DDA negotiations, remains the preferred option. In order to foster increased competitiveness for the European chemicals industry, the EU should therefore continue to actively pursue an overall NAMA-agreement complemented by an ambitious sectoral agreement on chemicals. All countries with a substantial chemicals industry should participate in this, particularly the emerging economies. The EU should continue its efforts to conclude an agreement on trade facilitation in the framework of the WTO and strengthen the Agreement on Trade-Related Aspects of Intellectual Property Rights.**
- 33. As for new accessions to the WTO, the EU should strive to ensure that trade distorting practices, such as double pricing policies for energy and feedstock by acceding countries are effectively addressed.**

## Free Trade Agreements (FTAs)

**34. The EU should pursue Free Trade Agreements with key trading partners, in particular if these are so-called WTO plus agreements that go further in promoting openness and integration than is currently the case in the multilateral negotiations. The selection of potential FTA partners should give priority to economic criteria with due consideration given to the EU's Policy for Development. The EU should strive for consistency between all FTAs and aim to achieve conditions comparable to those granted by our FTA partner to other key countries. FTAs need proper enforcement and balanced and reliable dispute settlement procedures.**

## Trade Defence Instruments (TDIs)

**35. In the absence of progress in multilateral trade negotiations, there should be no unilateral weakening of the current European TDI legislation and practice. If improvements in current practice are considered necessary, these could include: (1) faster implementation of provisional measures (six months instead of the current minimum of nine); (2) making disclosure of provisional findings mandatory; (3) more severity in cases of fraud and circumvention; and (4) consolidation of energy and other raw materials adjustments, by allowing for adjustments in the calculation of the 'normal' price to tackle dual pricing.**

**36. In the WTO, the EU should seek to ensure stringent common rules leading to a global level playing field with an alignment of anti-dumping practices. TDIs will continue to be needed to offset the impact of unfair trade practices. This includes measures to tackle double pricing and below-cost pricing. However, a realistic and balanced approach should be followed and it must be recognised that TDIs are part of a wider package being negotiated within the WTO.**

## Customs procedures and security

**37. The EU should continue to strive for more global harmonisation in customs procedures within the relevant international organisations such as the World Customs Organisation and the WTO. This will enhance the fight against black**

**and grey customs clearance schemes which are currently a major problem for chemicals exporters and traders to some countries, such as Russia. The EU should further pursue multilateral and bilateral cooperation between customs authorities and governmental dialogue as ways to counter illegal activities.**

**3. Securing access to raw materials in non discriminatory conditions**

**38. The EU should continue to promote the development of permanent new WTO rules addressing trade problems related to the discriminatory supply of raw materials. In bilateral trade negotiations, the EU should continue to address trade and subsidy distortions that cause problems in accessing raw materials.**

**39. The EU should assess the competitive advantages gained by the elimination or reduction of import tariffs and by opening import quotas for the raw material inputs, including renewables, of the various subsectors of the domestic chemicals industry. For environmentally and socially sensitive renewable raw materials, further market opening should go hand in hand with sustainability guarantees with due consideration of WTO rules. Wherever possible, the EU should strive for internationally agreed standards.**

FINAL REPORT

# High Level Group on the Competitiveness of the European Chemicals Industry