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An Industrial Policy for Europe – the view from the chemical industry

The European chemical industry is of major importance for economic development and wealth, providing modern products and materials and enabling technical solutions in virtually all sectors and value chains of the manufacturing economy. It is an essential **solution provider for the achievement of a competitive, low carbon economy and the circular economy** as well as all other major societal challenges. As such, the chemical industry will be a key contributor to the achievement of the UN Sustainable Development Agenda 2030.

The chemical industry is at the forefront of delivering on EU sustainability policy objectives: for every tonne of CO_2 emitted by the chemical industry, the industryôs products help save CO_2 emissions of 2-3 tonnes. Despite a 70% increase in production in 25 years, the sectorós energy consumption has decreased by 24%, a 65% reduction in energy intensity. With a workforce of 1.2 million and sales of ú519 billion (2015), it is one of the largest industrial sectors and an important source of direct and indirect employment in many regions of the European Union.

The Industrial Policy challenge

In many ways, the European chemical industry is highly successful. Traditionally, it has been a world leader in chemicals production ï as shown by a consistent export surplus which reached ú44.3 billion in 2015. However, the continued success in absolute terms marks a major shift in relative terms when looked at globally: while European chemical sales have continued to grow over the past 20 years, Europeôs share of global sales over the same period has declined from 32% to 15%. This decrease is primarily due to declining competitiveness, as opposed to slow-growing destination markets. In 2015, Europe became a net importer of petrochemicals for the second time due to increased imports in this important segment.

This loss in global market share represents a significant opportunity cost of foregone jobs and economic activity that could have been created in Europe. It is evidence of the EUôs failure to be a competitive place for new investment at global scale. Investments in new production capacity increasingly flow to other parts of the world because the business case for investing in Europe is becoming increasingly difficult to make.

This is leading to visible ñinvestment leakageò in the chemicals industry. From a tripolar chemicals producing world in 1990 we are now in a multi-polar production world, where a larger number of regions is competing for investment. Recognising the chemical industryôs strategic importance for a successful industrial strategy, China, the Middle East and India have all made successful efforts to build up large and increasingly sophisticated production facilities. Countries in Asia, the Middle East and more recently the US attract very high investments. Consequently, the EUôs share of global chemicals production is decreasing in several segments. Over a longer time horizon, the EUôs share of global production and exports has fallen considerably, suggesting a decline in competitiveness.

There are several potential causes for this loss in share. Energy and feedstock prices are a clear enabler of competitiveness for the chemical industry. The shale gas boom in the United States has reduced energy and feedstock costs greatly. A clear indicator of this situation is the cost of producing ethylene. Ethylene is the highest volume building block in

the foundation in the production of plastics, detergents and coatings amongst many other materials. Making ethylene in Europe is now about two times more expensive than in the US or the Middle East. This is boosting profits abroad and attracting billions of dollars in investment, including from European chemical companies: as at December 2016 announced chemical industry investments in the USA amount to US $ 163bn (with 60% from non-US based companies). Likewise, in 2015, approx. ú96bn was invested in China. In comparison, EU investment stood at ú20.7bn in 2015.

At the same time the chemical industry is undergoing a transformation process to respond to societal needs with respect to climate change, clean energy and transport, new processing methods and alternative feedstock, and overall increased sustainability. The chemical industry can and will provide solutions for these societal challenges, but the question is whether these will be developed in Europe or in other parts of the world and imported into Europe, with the associated loss of growth and employment opportunities here.

Implications for an EU Industrial Policy Strategy

There is an urgent need for action to devise and implement an uncompromising EU Industrial Policy Strategy. The warning signs are clearly visible, even if they may be obscured by positive headline figures on European chemical industry performance. Europe has already missed out on significant potential investment in the sector, missing the opportunity of creating additional jobs and growth.

Given the chemical industryôs role of providing the solutions needed to enable the transition to a low-carbon and circular economy, it would be a strategic mistake to disregard the sector simply because it is energy intensive. If EU climate and Circular Economy policies are to create jobs in Europe, it is crucial that the whole value chain enabling those policies is located in Europe. Today, there is a strong risk that Europeôs transition to low-carbon and circular economies will hurt EU industrial production and benefit producers located elsewhere. This would frustrate the job creation objective those policies pursue.

It is important that the EU Strategy recognizes the importance of value chains. Rather than focusing on individual sectors, the Strategy should ensure that the links in the millions of manufacturing value chains can find attractive operating conditions in Europe. To ensure Europeôs continued role in the global economy, the measure should be the potential of individual European value chain links to be integrated into global value chains, i.e. European suppliers should be able to compete globally and not just in Europe.

Furthermore, it is crucial that the future EU Industrial Policy Strategy represents a coherent action plan that brings together measures in a variety of policy areas and departmental responsibilities. For an Industrial Policy Strategy to be successful, it must be mainstreamed into all EU policies and must enable the industry to transform, by creating a favourable business environment that stimulates innovation and also addresses a growing feeling among industry that policy makers across the EU no longer value the manufacturing sector as a key contributor to wealth creation.

At the same time, it should not be mistaken as an attempt to reduce regulatory ambition. The EU simply needs a policy-making approach that objectively looks for reasonable regulatory objectives and identifies the most realistic and cost-effective way of achieving them, as well as all other stated policy objectives. In short, regulatory objectives that are pursued in ways

objectives are unlikely to produce net positive societal outcomes.

It is in this spirit that we make the following recommendations for an EU Industrial Policy Strategy. Many of them are not new. This should not distract from their importance. If we repeat them here, it is because in combination, they would produce a powerful boost to industry competitiveness.

Priority issues and recommended policy actions can be grouped under following headings:

I. Operating costs

The Oxford Economics Study on export competitiveness identified high energy costs as one of the key causes of reduced export competitiveness of the EU chemical industry. Despite a markedly lower oil price, the cost of producing ethylene, a key chemical building block, is still more than twice as high in Europe than in the USA. The resulting investment leakage is already ongoing. In addition, high regulatory compliance costs amounting to nearly ú100bn in the period 2004-2014 impact the operating costs of the European chemical industry.

1. High EU energy and feedstock costs, compared to other regions, are a particular barrier to investment

While the chemical industry produces essential inputs to address climate change and other challenges, its production process is energy and resource intensive. It needs reliable supplies of energy and feedstock at competitive costs. The EU Chemical industry has no vested interest in where that energy or feedstock comes from. In the EU, energy prices are not competitive with those of our main global competitors, and EU energy and climate policy is only pushing costs higher. Energy costs in the EU are not competitive with those of our main global competitors, and energy and climate policies, even with legitimate goals, have an impact on costs.

What should Europe do?

- ETS: Maintain efficient leakage prevention under a reformed ETS starting in 2021: Best performers operating at the highest level of efficiency i.e. at their benchmark level should not bear additional carbon costs for their production and future growth in Europe. Cefic recommends that the allocation mechanism should be dynamic, based on actual production; and that sufficient allowances should be reserved and made available for industrial production, investment and growth of EU manufacturing industries.

- New Market Design: Foster a truly functioning, liberalized energy-only market, delivering competitively priced gas and electricity for industrial manufacturing; whilst preserving a sustainable and secure energy delivery and enhancing a better coordination on energy infrastructures development projects between Members States.

- Energy Efficiency and Energy Performance for Buildings: create new market development opportunities through voluntary buildings renovation measures in order to reduce energy consumption and carbon emissions by buildings. The European chemical industry provides competitive solutions to new and existing building efficiency performances.

nd unpredictability reduce industry competitiveness

The competitiveness of European industry ï as a central element of the Juncker Commissionôs policies ï needs to be reflected in the institutional framework at the levels of both Commission and Council. This is because the regulatory density and complexity is already high in Europe overall, implementing European regulation in the sectors of environment, energy, climate and consumer protection is costly for companies, and the global competitiveness of European industry is impaired.. Good regulation effectively delivers on policy objectives whilst minimizing costs. However the Cumulative Costs Assessment for the European chemical industry has demonstrated that the combined EU regulatory cost on the chemical industry has doubled in the period 2004-2014, totaling nearly ten billion euro per annum. The cost of regulation is a significant factor shaping the profitability of the chemical industry and is equivalent to the entire annual R&D spending of the industry.

What should Europe do?

- The principles of the Better Regulation Agenda should be applied consistently to proposals for new legislation and to political initiatives.
- The role of the Competitiveness Council should be further strengthened.
- Ensure regulation always takes an evidence-based approach, that leaves regulations open for amendment in the light of new scientific evidence.
- While there are several areas of burdensome EU regulation which negatively impact competitiveness, a particular concern is REACH and associated chemicals legislation which, through the complexity and cost burden of its practical implementation acts to deter investment within the EU.
- While Cefic supports REACH and does not foresee any change to the regulation body text as part of the REACH Review process, implementation of the legislation needs to be improved and simplified to help maintain EU competitiveness and support investment and innovation.

II. Trade openness

Increasingly the liberal economic approach to trade policy that has prevailed in the past decades and has resulted in important opening of trade in the framework of the GATT/WTO is increasingly being questioned, not only by civil society groups, but also by political leaders and in academic circles. Brexit and EU trade policy competence related discussions risk undermining further opening of trade.

Since 90% of GDP growth will take place outside Europe in the next decade, international trade is a prerequisite for the growth of the European chemical industry, bolstering sales and jobs. But barriers need to be stripped away. Despite some multilateral trade deals within the GATT/WTO framework and some bilateral agreements between the European Union and its partners, much remains to be done in terms of opening markets.

Ensure an ambitious, balanced, free trade and investment agreement with key trading partners and open markets in general

- One key policy pillar is a strong commitment to free and fair trade that focusses not only on the removal of tariffs, but also on so called ñ21st centuryò issues. Much remains to be done in opening up markets, preferably multilaterally through the WTO or via a plurilateral chemical sector agreement of regional/bilateral free trade and investment agreements, i.e. EU-Japan, EU-Mercosur, EU-GCC, EU-US, EU-China.
- Cefic supports ambitious and balanced free trade and investment agreement with key trading partners. Such agreements should lead to elimination of all chemical import duties with longer phasing for a limited list of sensitive tariff lines, simple and flexible rules of origin, access to energy and feedstock, increased regulatory cooperation, and an effective investor/state dispute settlement process that safeguards the right to regulate while respecting the legitimate rights of investors. As regards regulatory cooperation on chemicals, the EU chemical industry does not pursue harmonization or mutual recognition, but sees scope for enhanced cooperation while upholding REACH.
- Balanced and effective trade defence instruments are crucial for the European chemical industry which is both producer and consumer of dumped imports into the EU. The trade defence modernization exercise is an opportunity to address the root cause of unfair practices with respect to raw material inputs. The application of the lesser duty rule should be waived in well defined situations where the distorted raw material input makes up a considerable part of the production cost of the dumped product.

III. Operating environment

1) Better Regulation

Cefic supports the Commissionôs Better Regulation policy. Creating a clear, consistent and predictable regulatory environment that effectively delivers on policy objectives at the lowest cost is key to stimulating investment, job creation and growth in Europe. Jobs, growth and investment will only return to Europe if we create the right regulatory environment and promote a climate of entrepreneurship and job creation. To further improve the quality of the EU regulatory framework, Cefic invites the Commission to:

a) **make burden reduction more tangible under REFIT.** The Commissionôs work should be driven by concrete objectives to reduce the cumulative burden from existing legislation. Our vision is to maintain high levels of health, environmental and social protection but to reduce the cost to achieve them
b) **systematically appraise the impact of regulation on innovation.** Ex-ante impact assessments should describe how policy options, legislative proposals and implementing decisions impact innovation processes, including technologies in the ôinnovation pipelineô while ex-post evaluations should assess existing EU initiativesô impact on innovation
c) **extend the Better Regulation policy beyond the traditional law-making procedure**. EU rules are increasingly adopted outside the legislative procedure, in the form of guidance documents, EU implementing and delegated acts, which often have significant impacts on industry. Existing Better Regulation tools and guidelines should be adapted to the diversity of EU rule-making, to ensure impacts are fully considered and affected parties are being heard in time: ñfrom Better Regulation to Better Administrationò

2) An innovation friendly environment

Fundamentally there is need for regulation that is designed and tested for its impact on innovation as a central policy objective. The objective of better regulation should be better risk management. In our societies, it should be perfectly possible to find a balanced regulatory approach that supports active innovation, while at the same time protecting the environment and public health.

Innovation is the single most important driver of societal prosperity and is indispensable for sustainable development and economic growth. Especially for Europe that faces a relative scarcity of resources, innovation is essential, otherwise the European industry will lose its competitive advantage and attractiveness for investment and fall behind other economies. Meeting the many challenges facing European society will require first class innovation and stronger investments in doing new things and doing things differently. These challenges will require a more ambitious and focused policy approach on innovation that goes far beyond traditional EU research & innovation policy.

Innovation always involves a measure of risk taking. As a result, the way in which risk is regulated has a significant impact on the innovation environment. The objective of EU regulation should not be the absolute avoidance of hazard but the management of risks.

What should Europe do?

- Apply the innovation principle in all regulation, i.e. whenever legislation is under consideration, the impact on innovation should also be taken into full account in the policy and legislative process.
- Encourage inclusion of EU interests in national R&I programs**:** EU needs to gain critical mass to succeed in global competition; EU-wide and national R&I strategies need to be coordinated and complement each other.
- Create a competitive European manufacturing policy**:** European Commission and member states should support mission-driven initiatives on societal challenges also to create new markets.
- Increase public and private investments in closer-to-market projects (high TRL technologies) with pan-European impact: Currently other world regions invest some 18% of public money into basic research and the rest in innovation; the opposite happens in the EU. The EU must target an increased investment in R&I and an improved overall speed to market beyond knowledge creation. R&I policies should focus increasingly on reaping its benefits through investments in the EU for the benefit of European growth. This must be taken into account for shaping the next Framework Programme (FP9).
- Increase investor and public confidence in new technologies**:** European Commission must foster an integrated approach about benefits and risks of new technologies to increase investments and improve public acceptance. Risk management approaches should prevail over simple hazard-based approaches.

IV. Supporting transformation

1) Digitization – Chemistry 4.0

The discussion around manufacturing 4.0 tends to focus on the use of ICT in the production of discrete products. Digital innovation is not a new phenomenon and has been important to

ecades making extensive use of information and communications technology (ICT) systems throughout its value chains, from process- and plant-operation and -design through advanced process monitoring and control and predictive maintenance to demand forecasting and supply chain visibility and new service models.

In addition, digital closed-loop process control combined with online analytics demonstrated already advantages of operating continuous, flexible and modular plant concepts that are more economical, sustainable and more market responsive than current batch operations.

Now, from such new forms of production to innovative business models, the chemical industry is about to experience a revolution enabled by digital technologies. Digitization will have a high impact on modernizing Europeôs production capabilities and can boost European process industries in the race for global competitiveness and sustainability.

To remain competitive, future sustainable chemical factories will need even more well-integrated ICT systems as production increasingly uses digital innovations such as data capture, planning and control, modeling and simulation, cloud computing and big-data analysis. Optimization through the use of ôbig dataô extensively applied in all stages of the manufacturing chain will provide the base for value extraction; data is capital for reliable and precise models and predictions. Such advanced data analytics will allow enterprises to convert data into knowledge in real time, and effectively contribute to more, efficient and safer manufacturing processes with less environmental impact through more efficient management of resources, materials and energy.

The link between digitization and processing goes however further and is only a part of the broader research agenda of the chemical industry. The SPIRE PPP under H2020 brings together eight process industry sectors including chemicals that all have high dependence on resources in their production and striving to decouple energy and resource consumption from growth and achieve increased competitiveness. SPIRE is targeting through its roadmap a reduction in parts of the industry in fossil energy intensity of up to 30% from current levels by 2030 and of 20% reduction in non-renewable, primary raw materials intensity, e.g. by increasing chemical and physical transformation yields/or using secondary and renewable raw materials. To achieve all this, innovation in ICT is seen as a key element.

What should Europe do?

- Digitization is not only of importance for discrete manufacturing industries but also for processing industries as the European chemical industry strongly contributes the economic roots of the European economy by transforming raw materials into intermediate as base for end-user products

- Public Private Partnerships (PPPs) like SPIRE are extremely important and useful instruments to support such digital advancements, performing well in their ability to fund quality projects, with high levels of success and impact. Cefic is calling the Commission to strengthen the SPIRE PPP as a long term committed initiative and further increase its attractiveness towards the chemical industry by higher funding for more flagship-oriented projects including digitization.

2) Circular economy

Increasing use of fossil and renewable resources as well as continued global population and economic growth, are key assumptions of current and forecast business models. The continued availability of resources and development of inexpensive ways of waste disposal will be crucial. Moving from a linear to circular business models might offer more viable solutions for the chemical industry and its customer industries. With the rising public awareness and rising questions on the linear economy model and consequential regulatory activity to reduce primary energy consumption as well as emission and waste production, end consumers are increasingly evolving their consumption patterns. In turn, this is expected to lead to a shift in product attributes, in materials used for manufacturing of these products, in the properties of the materials used, but also in business models. Ultimately, the chemical industry is facing substantial demand changes which are materializing in diverse ways specific to the various applications of chemical products. These changes offer opportunities for growth from requirements of circular economy such as materials with higher longevity, better performance or from enabling circular economy concepts such better insulation to reduce energy consumption of buildings or such as extracting re-usable materials from waste streams. Overall, circular concepts for end users, but also for the key value chains of the European chemical industry seems to generate new opportunities, e.g., innovation of higher performance products or products enabling reduction of energy consumption, but also to risks, e.g. due to demand changes by longer or different use of end products.

What should Europe do?

- The chemical industry is a champion of industrial symbiosis as all chemical plants integrate byproducts into their production processes. Scaling this up to the level of the entire manufacturing sector is a significant challenge. EU innovation funding could add real value in this area. For the circular economy to achieve its aims, policy decisions must be based on life-cycle analysis and the net impact of products on overall resource efficiency being positive.
- Cefic is calling on the Commission to encourage investment in innovative and economically viable solutions, rather than imposing regulatory burdens that could undermine competitiveness. The developing bio-economy in Europe could provide a big opportunity for the EU chemical industry. In order to further spur this development, it is vital to have open access to renewable raw materials at world market prices. In this regard, import duties should be suspended for key renewable feedstock like bio-ethanol, palm oil and sugar processed by the chemical industry.
- Fostering the use of renewable resources in chemistry is an encouraging way forward. However, stakeholders should also acknowledge that the needed huge feedstock supply of the chemical industry cannot be covered by renewables alone, neither in Europe, nor globally, neither today nor tomorrow. More realism in society and politics, built on facts, would be therefore helpful to define the needed common strategic decisions of economy and politics. As the provider of molecules for others downstream sectors, the chemical industry will stay heavily dependent on fossil resources today and in future.
- A more climate neutral society could be the role model for the years to come: Instead of purely sticking on a global reduction of CO2 emissions (which is the right way and broadly accepted by everyone) an even more propelling pathway could lie in seeking for climate neutral structures and schemes in value chains. Both concepts should be followed in parallel.

Certain trends are unmistakably taking place. The shift of manufacturing to Asia and associated higher chemicals output growth there, an ageing population in Europe and the shift of petrochemicals production to resource-rich countries are a few examples. They all point to a declining share of the Europe based chemical industry in global sales. In absolute terms, the industry may continue to grow, but only at a low rate.

The EU chemical industry can be a key contributor to climate change mitigation and to other EU policy objectives, like the circular economy and sustainability. The industry is in the process of a transformation process, adapting to new societal demands and responding to new trends regarding sustainable production (including digitalization and other aspects of Industry 4.0, such as new feedstock and production processes). To successfully achieve this transformation it requires a complete structure, spanning basic chemicals, specialty and fine chemicals as well as consumer chemicals. However, given the easily tradable nature of chemicals goods and the international nature of the sector, this will only be possible if the competitiveness of the EU chemicals sector can be maintained. For these objectives to be realized - and for the EU chemicals sector to maintain its status as a world leader - EU policymakers must put in place a suitable regulatory environment, in which industrial competitiveness is mainstreamed into all other EU policies (including those on energy, climate, innovation and chemicals safety).