

# Energy policy at the crossroads

Finding the road to a competitive, low carbon and energy efficient Europe









Energy is a fundamental input for the European chemical industry, and for the economy as a whole. Affordable energy is essential for economic growth. The energy cost in the EU relative to those in competing regions in the world is a key factor in global competitiveness. EU policy costs and increased energy costs cannot be passed on by EU companies in the face of global competition.

The cost of electricity<sup>1</sup> and gas<sup>2</sup> in the EU is already significantly higher than in most of our main competitor countries. This is a handicap for EU manufacturing and is made worse, in the case of gas, by the emergence of shale gas in the USA.

To meet the challenge of global competition the European Chemicals Industry has invested heavily in energy efficiency. Between 1990 and 2010 EU chemicals production increased by 70% while energy consumption fell by 20% and carbon emissions fell by 50%.

The Roadmap shows that a range of options can contribute to further greenhouse gas emission reductions in the European chemical industry.

The different study scenarios show that innovation could enable the European chemical industry to reduce its greenhouse gas emissions by 15 to 25% from 2010 levels by 2030, building on the 49% reductions already achieved since 1990.

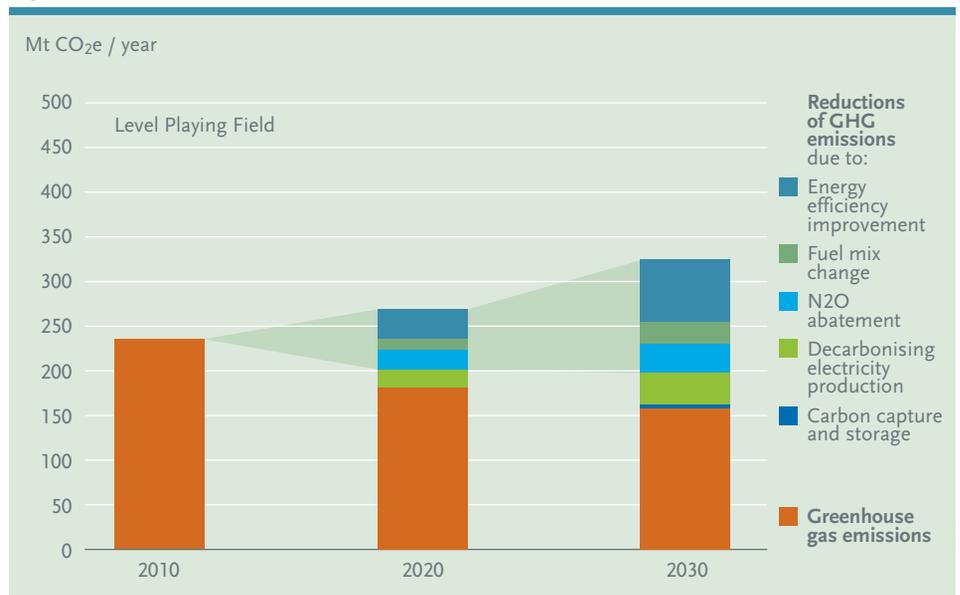
There are thermodynamic and economic limits to the energy efficiency of any process and the chemical industry is, and will remain, an energy intensive industry. The cost of energy is, and will remain, a key factor in determining the competitiveness of our sector: and high costs of carbon and of renewable energy in the EU undermine that competitiveness.

Current EU policies on energy and climate change are not delivering the framework conditions that industry needs if it is to continue to invest in further efficiencies, and to develop innovations that will enable other sectors to further reduce their carbon emissions. Policies on energy efficiency and on renewable energy, and the emissions trading system, are not geared to global competitiveness. Too often the effect is to increase costs: thereby undermining competitiveness and inhibiting investment.

1. IEA 2011: average industrial electricity cost per se, excluding any other additional policies costs was twice as high in the EU than in the US.  
 2. ICIS Heren gas cost analysis: Gas cost in 2012 was 3 times higher in the EU than in the US.

A range of options can contribute to further greenhouse gas emissions reductions in the European chemical industry. Under a global level playing field, reductions of 15% between 2010 and 2030 can be achieved. All options rely on further innovation.

### Options for further GHG emission reductions



Source: Ecofys



The EU is at the crossroads. Short-term increases in the EU cost of energy risk a vicious circle in which higher prices lead to reduced competitiveness and inhibit the investment needed to realise the longer-term benefits of innovation. Cefic calls on policymakers to reconcile environmental, economic and social objectives, and to promote a virtuous circle in which innovation and market-driven competition lead to increased investment and competitiveness and thus to lower energy costs.

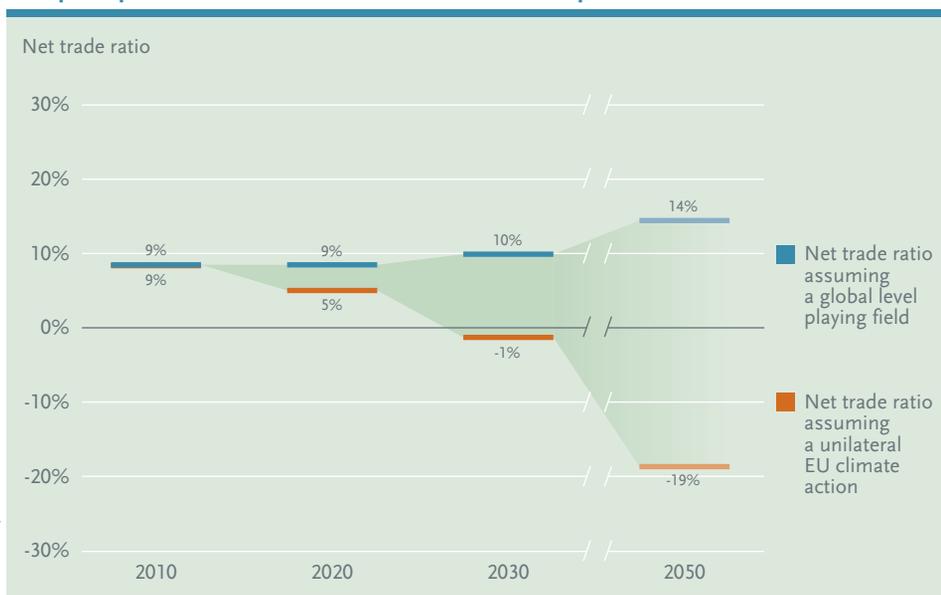
Fundamental economic and political developments require adjustments of EU climate and energy policies. The economic crisis limits EU's ability to shoulder unilateral policy costs – a global climate policy agreement has yet to emerge. The US shale gas exploration may influence energy markets more globally than ever expected and leads to a massive investment shift to the disadvantage of Europe.

In this context, in its Green Paper on a 2030 framework for climate and energy policies, the European Commission asks which elements could be strengthened to better promote job creation, growth and competitiveness.

Two basic policy directions can be distinguished:

- If the EU pursues its 2050 objectives by driving up energy costs and carbon costs, this will undermine competitiveness resulting in carbon and energy leakage and a reduced level of investment (including investment in low carbon technologies) in the EU.
- If the EU pursues its 2050 objectives by promoting technologies and innovation, this will drive increasing investment and competitiveness and ultimately result in lower energy costs and lower global emissions.

**In a global level playing field, European production can participate in global demand growth and remain a net exporter. Unilateral climate policy marginalizes European production and turns the EU into a net importer of chemicals.**



A continued unilateral climate policy would lead to leaking investments, reducing growth and importing embedded carbon through imported goods.

We urge the EU to choose a strategy that promotes global competitiveness because to do so will deliver a better outcome for the environment, as well as delivering growth and jobs in the EU.

The choice between these two strategies is the crucial decision now facing the EU.

A mix of critical policy implementation is required. In the shorter term full implementation of energy market liberalisation and completion of the internal EU energy market is important.

Mid-term development of policies, including structural improvements of the ETS, and assurances of industry supportive measures for carbon leakage, state aid and EU 2030 targets are essential.

The development of unconventional energy sources including shale gas is also increasingly important as all technology exclusions increase the policy cost burdens for European companies.

Finally a long term strategy for delivering the necessary investment and innovation should be brought together into a coherent package that will result in a lower cost transformation towards a lower carbon economy.



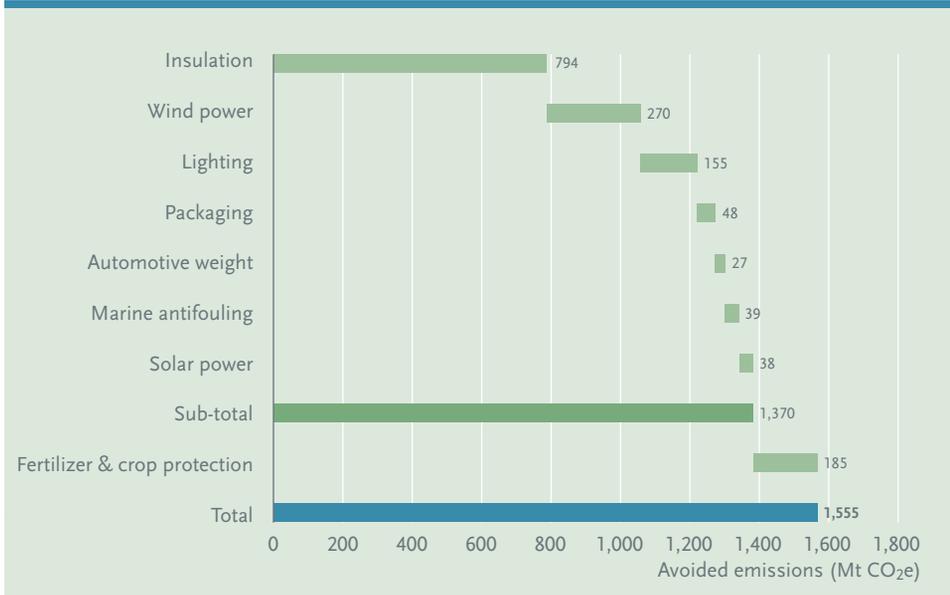
The Cefic Roadmap shows how the European chemical industry is making a significant contribution to the changes needed for this low carbon future. Products of the chemical industry enable energy efficiency and greenhouse gas emission reductions in all sectors – **e.g. products made in 2010 will, over their lifecycle, avoid emissions equivalent to 30% of the EU’s total emissions in that year.**

Products of the chemical industry are used by virtually all other sectors of the economy and will be crucial to enabling Europe’s low carbon development. Current and developing chemical applications include insulation and efficient lighting in the buildings sector, lightweight materials for use in the transport sector as well as materials for wind turbines and solar cells for renewable energy generation. The European chemical industry is also developing emerging technologies, including vacuum insulation panels to reduce energy use, advanced solar cells for renewable power generation, and innovative packaging solutions that reduce food losses.

The European chemical industry is also actively engaged in research and the development of bio-based chemicals, the recovery and recycling of waste (notably plastic waste), energy storage, and carbon capture.

These investments by the European Chemical Industry, and the resulting innovations, will be dependent on the continuing competitiveness of the industry in Europe.

**Net avoided GHG emissions for selected applications**



Source: Ecofys

Chemical products play an important role in avoiding greenhouse gas emissions in several applications.



The EU should continue to pursue a global climate policy agreement. In the absence of an equitable global carbon cost, the EU should improve supporting mechanisms for the competitiveness of its industry by measures that seek to minimise the energy cost differential with its major competitors. Policies that unilaterally increase the EU carbon and energy cost will inevitably result in a loss of competitiveness. The Cefic Roadmap demonstrates that high EU carbon and energy costs would make many EU-made basic chemicals uncompetitive vis-à-vis imports, with serious knock-on effects down the whole value chain. Europe's trade balance in chemicals would become negative while global greenhouse gas emissions would increase.

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The European Commission recently posed the question, “How should the EU’s 2050 climate objectives and the need to foster European competitiveness be reconciled?”

The Cefic Roadmap shows that the long term future of the European chemical industry is critically dependent on the impact of EU policy on energy costs relative to other regions. For example policies which are designed to raise the cost of CO<sub>2</sub> in EU will be passed on to energy users by utilities via increased electricity prices. This will damage the competitiveness of the European chemical industry and hamper growth.

The impact of such policies on competitiveness turns on whether they are matched by corresponding measures elsewhere in the world. Cost increases due to unilateral action in the EU would be particularly damaging. Therefore, in the absence of a global agreement, fostering European competitiveness will require the EU to refocus its efforts to meet the 2050 objectives onto measures that lead to lower rather than higher energy costs.

Such measures include:

- A harmonised European energy policy aimed at lowering the cost of energy;
- Completion of the internal market in electricity and gas, and investment in infrastructure;
- Development of new forms of energy, including unconventional oil and gas;
- Structural enhancement of the ETS so it can continue to deliver reduced carbon emissions at the lowest possible cost while preserving industrial competitiveness;
- Policies that would reduce the cost of renewable energy;
- Incentives to innovation to further increase energy efficiency, to reduce the cost of renewable energy, to address the intermittency of renewable energy through energy storage;
- Longer term we need to develop much more cost effective options for carbon capture and storage (CCS) and consider cooperative research programmes targeting breakthroughs in carbon capture and utilisation (CCU).

## INNOVATION WILL MAKE THE DIFFERENCE

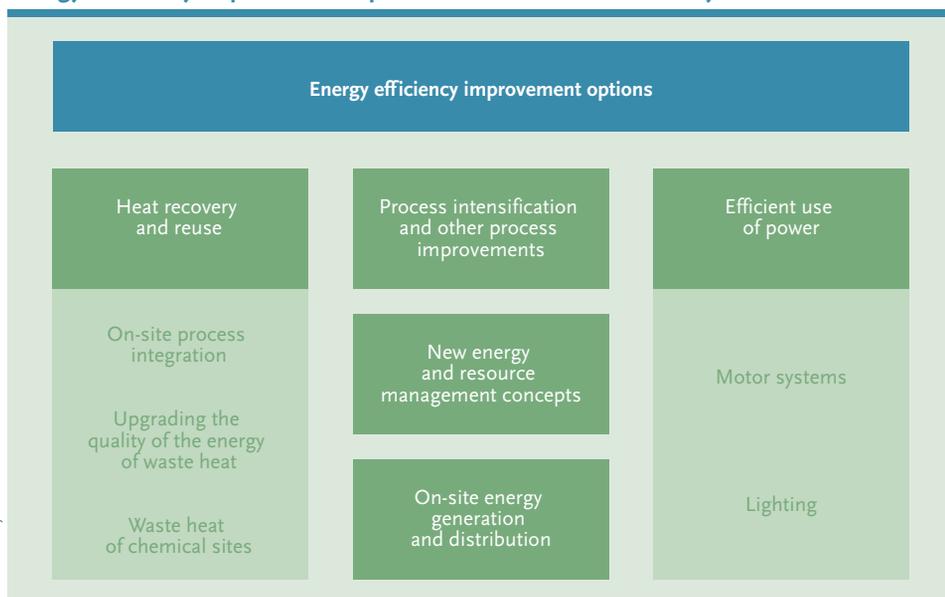
**Europe’s internationally competitive industries should not be sacrificed by high cost policies that reward carbon leakage.**

The EU should pursue a strategy, in which research and innovation lead to the costs of “low-carbon” energy being reduced to the point where it is competitive. It is clear that, were renewable energy to be cheaper than carbon-based energy, then the budget challenges created by the surge in subsidy costs would have been effectively solved.

The Cefic Roadmap clearly demonstrates both the implications of the “high energy and carbon cost” road to a low carbon economy, and the potential for the development of an alternative “low energy and carbon cost” route.

It calls for an “R&D and innovation framework towards market oriented technology development”, and highlights what more can be done to focus of R&D spending on key enabling technologies and the breakthrough technologies that could deliver not only a low-carbon economy but more importantly a competitive low-carbon economy. Moreover, adequate financing schemes should be developed, including public private partnerships, to facilitate the process.

### Energy efficiency improvement options for the chemical industry



Source: Ecofys

Europe's internationally competitive industries should not be sacrificed by high cost policies that reward carbon leakage.

## PUBLIC AND PRIVATE INVESTMENT IS NEEDED

As well as investment in research and development, the transition to a low-carbon economy will inevitably require substantial investments – for example, investments in infrastructure - in order to make the necessary changes a reality. A key component of any strategy will be to secure the cost-competitiveness of investments.

- There are many instances where public investment is made to secure a public good, i.e. a public benefit that would never provide a return to the private investor. Illustrations could include the current electricity grids in the EU and the high speed rail network. The public sector should therefore be involved, particularly, in providing the infrastructure required.

- To secure private investment, the private investor will require an adequate return on that investment: and is generally motivated by incentives that hold out the promise of a return and not by additional cost burdens (such as taxes). Energy producers who can pass costs on to customers and consumers, will have little incentive to invest; and energy users who cannot pass the costs on in the face of import competition that does not bear the same costs, will suffer a loss of competitiveness.

In sum, there is a need for a more integrated and coherent approach to these issues, in which the necessary public and private investments and partnerships are secured.



The European chemical industry appreciates the vision of a sustainable, globally competitive low-carbon economy. The issue is not whether the EU should aim for such a future: it is about how the EU can do so while preserving competitiveness and ensuring progress tackling the growing rate of global GHG emissions.

### THE CHALLENGE FOR THE CHEMICAL INDUSTRY

The chemical industry is energy-intensive. The cost of energy is a significant factor, up to 50%, in its overall cost base<sup>3</sup> for multiple essential building blocks. Moreover, the chemicals market is a global, commodity market, in which production cost is a key element. If energy costs are increased through higher carbon costs, then without an effective compensating mechanism the increased cost of production in Europe relative to the rest of the world, will inevitably damage the competitiveness of European producers.

The precise effect will vary from substance to substance and from plant to plant, but industry estimates show that at carbon costs of between €15 and €40 per tonne EU production of basic chemicals and petrochemicals becomes increasingly uncompetitive<sup>4</sup>, and it becomes cheaper to produce substances elsewhere and import them into Europe.

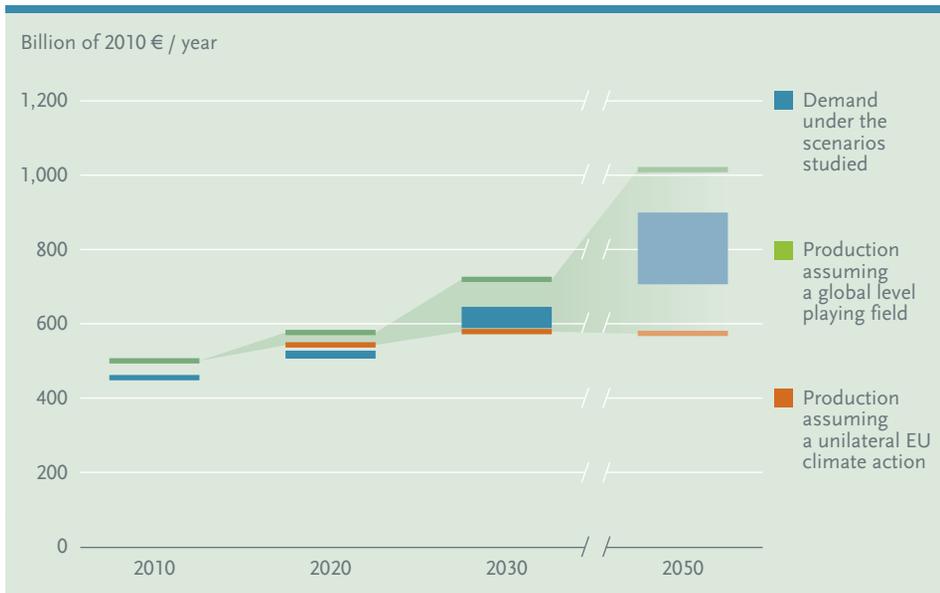
These chemicals form the first link in the industry value chain. They are the foundations on which much of the industry is built. To the extent that this first link is weakened, the whole chain is made more vulnerable.

### GLOBAL COMPETITIVENESS IS AT STAKE

In light of the above, the **Cefic Roadmap** considers the implications of the transition to a low carbon economy for the global competitiveness of EU industry by exploring scenarios with differing levels of commitment and action within the EU and elsewhere in the world.

3. Euro Chlor, 2010  
4. Cefic/APPE studies

### EU demand for and production of chemical products



EU demand for chemical products grows in all scenarios. Under a level playing field scenario, this demand could be met by European production. Under a scenario of unilateral EU climate action, production substantially shifts outside Europe.

All scenarios assume that the global economy and the European economy will show modest growth between now and 2050. Products of the chemicals industry are fundamental building blocks for the rest of the economy, and so the global and European demand for chemicals will also increase.

**The question is not whether substances will be produced, but where?**

The Roadmap analysis shows that:

- The **optimum scenario** is one in which there is a global level playing field. In this scenario, there is a uniform, global carbon cost and a global ambition to meet the overall 2°C target by reducing carbon emissions by 50% by 2050. The impact of policy on global competitiveness would effectively be eliminated by common action, and the European chemical industry would continue to grow while the global climate targets were met.

- The **worst case scenario** (isolated Europe) is one in which the EU ploughs on regardless of a lack of action elsewhere in the world. In this scenario, the EU pursues an 80% emissions reduction target, pushing up the cost of carbon and energy, while fossil fuel costs continue to rise as a result of increasing energy use elsewhere. The impact on the European chemical industry is severe, with the basic inorganic and petrochemicals and polymers sectors going into decline. Europe becomes a net importer of these substances, while growth in the specialty and consumer chemicals sectors is stifled.

**Cefic** maintains that Europe should improve the effectiveness of its efforts towards global rather than unilateral action against climate change. However, an international climate agreement to create a level playing field may not be achieved. In the absence of such an agreement, the EU will be left to choose between second best options. This will require smart policies that avoid high carbon costs or high-cost renewable energy sources, or other measures that would induce additional energy costs.

## European chemistry for growth: unlocking a competitive, low carbon and energy efficient Europe

Cefic initiated a roadmap to explore the impact, opportunities and risks of various energy, carbon and technology development scenarios for the European chemical industry in the timeframe from 2020 to 2050. Cefic commissioned Ecofys to perform analyses and bring forward key conclusions and recommendations from their independent viewpoint, in close collaboration with the sector.

In terms of timelines the roadmap developed a more quantitative assessment for the period up to 2030 and used semi-quantitative measure to review technology assumptions for the post 2030 time period.

Read more:  
[www.cefic.org/energyroadmap](http://www.cefic.org/energyroadmap)



## The road ahead

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It is possible to chart a course towards a competitive, low-carbon economy in 2050 that reconciles global climate objectives and the need for competitiveness. It is not necessarily the straightest road, and there may be further choices to be taken at crossroads along the way: however, the choice facing the EU today is whether to continue to pursue a policy that is fundamentally dependent on making energy costs and carbon costs higher or to consciously set out to make low-carbon energy cheaper.

The Cefic Roadmap shows what this alternative course could look like: involving an effective and targeted policy on research and innovation to reduce the cost of the low-carbon option, and a mix of public investment and private incentives that would ensure that the necessary innovations are introduced and achieve the necessary scale.

Given the inherent uncertainties in such an approach, we make two additional points:

- It is not necessary or desirable to abandon the use of policies for “emissions trading”, renewable energy and energy efficiency in order to take this course. Those policies should, however, be adapted so that they are directed towards reducing rather than increasing the costs of energy. Overlapping or incoherent regulations (e.g. explicit renewable targets vs. EU ETS) should be eliminated.
- It will be necessary to build a bridge between current policies that are delivering reduced carbon emissions at a relatively high cost, and a future policy that delivers reduced emissions at a relatively low cost. A prime candidate for such a bridge is natural gas, i.e. unconventional gas. Policies to develop this and similar alternative sources of energy should be accelerated.

The Cefic Roadmap provides the elements necessary to plot a course to 2050 which delivers both a low-carbon economy and a competitive economy.





Cefic - The European Chemical Industry Council

Chemistry making a world of difference



Cefic aisbl  
Avenue E. van Nieuwenhuysse 4  
B - 1160 Brussels  
tel +32 2 676 72 11  
fax +32 2 676 73 00  
mail@cefic.be  
www.cefic.org