

The planned REACH reform of European chemicals marketing legislation has stirred up a debate full of complexities that is not always easy to unravel. While there is now general consensus around the objectives of REACH – ensuring a high level of protection for human health and the environment while strengthening the competitive position of the European chemical industry – exactly how to strike that delicate balance, and hence the concrete contents of the reform, remain riven with controversy. What further complicates it is the number and often conflicting interests of the parties concerned.

REACH and the industrial dynamic

To try and see a clearer way through the issues in the reform and the terms of the debate, the ETUC commissioned a study from the Syndex experts to set REACH in the context of current chemical industry policy in Europe.

In their article, Bernard Bordes, Fabrizio Giacalone and Patrick Roturier provide insights into how compatible REACH is with sustainable development, the backcloth to the Lisbon strategy, and how it ties in

with innovation and competitiveness, but also the uncertain economic effects REACH may have, especially for SMEs.

We also asked Michael Warhurst, an NGO expert who has been tracking developments in European chemicals legislation for many years, for his view on what REACH will do for the future of European industry. His article explains why, contrary to the popular industry argument, environmental legislation does not undermine competitiveness.

REACH, lever for a sustainable chemical industry: on what basis and how?



The full Syndex study is available on our website: www.etui-rehs.org/hesa > Main topics > Chemicals.

The draft Regulation's aims are now accepted by all the stakeholders, partly because a more demanding societal context needs regulations to move on, and partly because the rolling multi-year dialogue of stakeholders and transparency on REACH has brought the chemical industry itself to admit the need for fundamental changes in chemicals management. Big adjustments have been made to the project to accommodate a range of issues (costs, innovation, SMEs, etc.). The debate is now mainly focused on how REACH is to be implemented and what kinds of balances are being struck.

The work presented here is an attempt to take existing thinking on the impacts of implementing REACH further, and identify areas for further investigation. The aim was to shift perceptions and open up perspectives by re-contextualizing REACH and offering new insights in light of the current debates on the project.

The work is centred on three issues: REACH's compatibility with sustainable development; its interaction with the dynamic of innovation; addressing competitiveness issues, especially for SMEs.

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REACH AS A LEVER FOR A SUSTAINABLE CHEMICAL INDUSTRY

REACH, sustainable development and corporate social responsibility

REACH is a chemicals aspect of the sustainable development policy that underlies the Lisbon strategy aimed at turning the European Union (EU) into "the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs, and greater social cohesion and respect for the environment" by 2010.

Sustainable development is about bringing various dimensions – economic, social, environmental, governance¹ – that are in a state of permanent tension into an overall balance that requires trade-offs and compromises. The quality of a sustainable development policy is gauged not only by the objectives to be achieved in each dimension, but also by how the stakeholders join together in addressing the areas of tensions that inevitably exist between them.

In this respect, the challenge of REACH is to deliver a high level of (health and environmental) protection for all chemicals, while ensuring the smooth running of the internal market and stimulating innovation and competitiveness.

REACH is also a framework within which to develop corporate social responsibility (CSR) – i.e., the contribution firms make to sustainable development through improved control of their environmental impacts.

The REACH project offers certain guarantees as regards sustainable development policy and CSR. It sets up a specialized independent agency with extensive expertise, which should improve transparency. The process engaged since the first draft reflects an aim to preserve specific sustainable development balances through wide-ranging, extended consultation. Reversing the burden of proof onto companies is also logical and a good thing. Lastly, REACH can bring clarity and transparency to the implementation of the Responsible care agreement adopted by the chemical industry.

The REACH dynamic and the new competitive framework

REACH is only one of other components (competitiveness, innovation, SMEs) in the dynamic of a European chemical industry going through a crisis that long predates the current project, and results from complex, structural tensions. Also, criticism of any attempt to regulate disregards the fact that regulatory standards, especially in environmental matters, can benefit the community without putting the long-term future of the industries concerned at risk.

¹ An aspect that is increasingly entrenched in sustainable development and draws the other aspects together.

Crisis and change in the European chemical industry

The chemical business has been particularly affected by deregulation of the world economy from the 1980s onwards. All chemical industry groups have engaged with ongoing rationalization and flexibility strategies to address this new environment. In practice, this has led to a refocusing of the scope of businesses, organizational restructuring (questioning of internal coordination/integration systems, bigger sales and marketing focus, networking) and increasingly finance-driven trade-offs.

The chemical industry is therefore faced with major upheavals:

- a relatively radical questioning of resource ownership structures (formation of new players) and the internationalization of shareholding structures;
- financial segmentation of assets by growth potential / profitability criteria driving strong trends towards the repositioning of operators;
- questioning of internal coordination / integration systems and the roll-out of market-driven approaches and an increasing organization into business units;
- changes in innovation, increasingly driven by the need for shorter times to market and applied uses (business requirements);
- increasingly prevalent short-termism which has strongly influenced market assessments.

Business conditions in recent years have piled the pressure on the European chemical industry to perform:

- upstream, the rising cost of raw materials (where Europe is not well positioned) penalizes the processing industries, including the chemical industry, by increasing pressure on prices;
- downstream, the globalization and offshoring of chemical industry customer bases is reflected in strong downward pressures on prices and increasingly far-removed markets;
- the rising euro has also produced a 30 to 40% shrinkage in the industrial bases of Europe's chemical industry since the start of 2002.

The dynamics created by standards: experience feedback

Public rules (national, regional or international) are traditionally needed to regiment and provide private sector activities with a legitimate framework for action. They also aim to compensate for failings in letting the market alone provide for complex issues,

especially balancing many mutually-conflicting dimensions. They can also aim to prompt behavioural change so that players deliver objectives outside their own self-interest.

Standards and groups of actors: processes of adjustment

Any standard necessarily challenges vested interests and behaviours, so stakeholders use their varying clout and resources to bring pressure to bear on standards developers in the development phase.

The newly-adopted standard then informs a reworking of the ground rules, impelling all actors to change their strategy to maximize the benefits to them.

The two phases tend to overlap, and the skill lies in each predicting the right time to develop an independent strategy: when the standard is stabilized, to optimize preparations for its economic application; when it makes sense to pre-empt the standard itself, for actors who have a vested interest in the development of the new constraint.

Also, some mechanisms of disseminating standards may be outside the methods prescribed by the standard itself, especially when a shift occurs from the standard as an object of contention to the standard as a framework for competitive action. This propagation of the standard tends to go beyond the initial geographical framework in which it was designed.

Industrialists most exposed to public opinion back REACH

These actors are affected by REACH. We are now in a phase where the discussion on the various elements of REACH will start going round in circles, because all the arguments have already been repeatedly rehearsed and expanded on by the stakeholders. As a result, the players are starting to position themselves within the emerging new framework according to their own specific interests.

First among these are those under the strongest strategic pressure to take up the new regulation, who have already brought in REACH-like practices (mainly firms in the Scandinavian countries). It is no coincidence that groups like Ikea, Skanska, Marks & Spencer, Procter & Gamble, Unilever, Electrolux, Ericsson, Boots, etc. have come out with a positive take on REACH.

Firms who market products that include chemicals are most exposed to consumer pressure, and their strategy must accommodate that. To that extent, they will most likely be the standard bearers for REACH in the industry. With their economic clout and the importance of their brands, they can encourage producers to move towards substitution of products.

REACH AND INNOVATION, A CORE ISSUE

Essential to delivering success, but complex

Lisbon and the global issues around innovation

Making up lost ground

The European chemical industry's competitive position in innovation has declined relative to its other main rivals. There has been a structural fall-off in the company research and development (R&D) effort in recent years. The difference between the United States, Japan and Europe is the product of a decade's widening gap in R&D spending between these three zones. It reflects a structural, non-accidental deterioration that is more down to business than States.

The last ten years' fall in proactive spending is not due to shortage of funds or business resources (15 of the world's top 30 chemical groups are European), but to new financial strategies.

To deliver the Lisbon objectives, therefore, it was decided to increase investment in R&D to 3% of GDP by 2010 (against 1.9% in 2003-2004), with a greater percentage of funding (2/3 against just over half now) coming from the private sector by 2010². It is an ambitious aim for Europe, bearing in mind the wide research effort gap between the various Member States ("catching up by Southern Europe").

The challenges of innovation are not just about the R&D effort

Restoring competitiveness through innovation is a challenge that cannot be reduced to simply stepping up the R&D effort. The nature and dynamism of innovation involve broader institutional mechanisms: the linkage between technology, science and industry, which in particular shapes the relationship between public and private research; education and training are at the basis of the systematic adaptation and ongoing renewal of skills and abilities; public intervention in protecting innovation; the financial system, which can act as a "facilitator" by enabling long-term risk-taking.

The challenge is also one of the paradigm shift in innovation. The issue is now about promoting a more socially acceptable innovation policy that better accommodates sustainable development.

A complex chemical industry context

An inherently innovative industry...

The chemical industry depends heavily on scientific research. Research and dissemination on the one hand, and the knowledge-based economy on the other, are central to its organization and performance. The industry's history is one of big technological leaps and bounds. Cases in point are polymer chemistry and chemical engineering, which pushed back the bounds of science in chemical products and substances, and chemical processes, respectively, while bringing big changes to the industry's organization and structure.

The chemical industry's innovation-mindedness is particularly reflected in its response to environmental constraints, which have gradually increased in influence on two fronts: growing pressure from public opinion and consumers about quality, and public regulations. Companies have transformed their technologies and products to adapt them to the new requirements, at the same time seeking to leverage the changes in terms of greater energy efficiency, improved recovery and recycling rates, reducing inputs, efficiency and productivity gains, etc. But, it is an area where US groups have out-innovated European groups through a bigger process focus.

... but differentiated problem situations

• By subsector³

The basic chemicals industry is not much affected by REACH because it is generally a high volume producer (limited scope for substitution, cost depreciation on high volumes). It is not particularly R&D-intensive, and is more process- and cost reduction-centred.

The fine and speciality chemicals industry is most affected by REACH, but ostensibly more innovative; it is more R&D-intensive, focused mainly on processes, fine chemical product development, and the development of new products and applications in the speciality chemicals industry.

• By geographical zone

REACH's R&D impact is not evenly distributed between zones. The bulk of Europe's chemical industry (92%) and R&D capacities are concentrated in eight countries that are more materially affected by REACH: Germany, France, the United Kingdom, Italy, Belgium, Spain, the Netherlands and Ireland. The new entrants to the EU are relatively marginal and much more vulnerable (lagging behind West European industry in many different ways).

• By company size

Their size and resources give big companies a big influence on the innovation process. The bigger the company, the more researchers are spatially concentrated (R&D resources consolidated in a small number of world centres); and the more extensive the networks of researchers involved in innovation

² The higher levels of private funding in the USA having been identified as the reason for the country's competitive edge.

³ Except the heavily-regulated pharmaceutical sector.

(linkages between different private and public sector players), the more firmly interdisciplinary the resulting patents.

R&D is also about centres of technological competitiveness - a key issue for SMEs, which have relatively few in-house R&D resources.

- **Doubly segmented organization and investment**
Organizationally-speaking, an increasingly clear separation is made between the strategic core of global research laboratories, application and process improvement spheres (local development centres), and what are regarded as more ordinary, outsourceable, relocatable R&D activities. There is a shift from business line organization to a business unit organization.

The R&D investment effort is focused on the most promising product lines (in terms of profitable growth) with a bigger focus on downstream (time to market, areas of application, more product- than process-oriented) than upstream research (more fundamental and long-term).

The challenge: creating a dynamic of innovation in health, safety and the environment

The R&D impact of REACH: highly uncertain

The various impact studies of REACH on innovation come to widely differing conclusions. Some claim highly positive impacts from the improvements delivered by REACH: the five-year exemption for substances used in R&D processes; the raising of the exemption threshold from 10 kg to 1 ton for new substances; the removal of the penalizing distinction between old and new substances to the latter's disadvantage; the withdrawal of hazardous substances, which will necessarily entail developing alternatives.

By contrast, some industrialists see REACH as an obstacle to innovation. The costs of evaluation and registration would divert resources from R&D (more significantly so for SMEs with fewer resources). The product portfolio rationalizations that would result from REACH (shedding small volume manufactures and/or products too strongly impacted by REACH) would commensurately restrict the range of substances usable by R&D.

The uncertainty about how the REACH project will impact innovation is due to two things. One is the lack of reliable evidence on the measures and timing of the implementation of corporate innovation strategies. The other is that mechanisms that typify R&D, especially the process going from the decision to step up the R&D effort to the impact in economic performance terms, are still poorly understood despite the many academic and applied studies of recent years.

REACH and Community R&D policies: including sustainable chemical industry issues in instruments to stimulate innovation

Boosting the R&D effort and innovation-led competitiveness does not *per se* guarantee the emergence of a sustainable chemical industry with a competitiveness based on economic and societal performances, focused on abilities to protect and preserve human and environmental health. REACH brings to light strong linkages between economic performance, social wellbeing and environmental protection. It can also be a delivery system for an approach to a genuinely open, knowledge-based economy that works for all stakeholders (not just for the benefit of companies and the highly-skilled).

So, one issue is to engage in a new way with the instruments currently being deployed (some in the definition phase) by the EU because of the big challenges facing all branches of industry, by branding them with this linkage approach, and so breaking down the barriers between economic innovation and social/societal innovation. This is a monumental challenge, insofar as, even where planned, opening-up to all stakeholders is seldom done where it counts (upstream), and in practice is restricted to a fairly lax "feeder system" working for chiefly private interests.

THE UNCERTAIN ECONOMIC EFFECTS OF REACH - A VITAL ISSUE

The economic impact of REACH: 36 studies leading to a paradox⁴

Consensus on an affordable total cost of REACH...

Despite the mixed findings, the expected long-term social benefits far outweigh the costs of implementing REACH in most cases.

The total direct cost assessments vary between three possible scenarios, none of which seem likely to put the future of the European chemical industry at risk (between 0.05% and 0.2% of annual industry turnover over ten years).

A scenario in which all cost saving opportunities would be exploited (in vitro replacing animal testing, information sharing and co-operation) produces a total all-EU cost of 2.4 billion euros (i.e., 0.5% of the European chemical industry's 2003 turnover for the full ten year implementation period).

A scenario in which these opportunities were only very partially exploited results in a cost of 4 billion euros, i.e., 0.7% of the European chemical industry's 2003 turnover.

⁴ What follows is informed by the review of impact studies commissioned from the ECORYS and Opdenkamp Adviesgroep by the Dutch Presidency in October 2004.

A study of the Dutch chemical industry identifies extra costs in developing specific know-how on which all parties seem to be agreed: extrapolated EU-wide, these added costs would amount to nearly 1% of industry turnover, increasing the direct costs to just short of 2% of turnover.

...but wide variations in indirect effects and assumed business behaviour

By contrast, the controversy over the indirect effects seems to preclude any possible consensus. It is clear from the studies that opinion is mainly divided on two things: the number of products that would be pulled from the market, and the view of competition taken by those who commissioned the studies.

- The critical parameter is the number of products withdrawn for health, safety and environmental (HSE) or economic reasons (with knock-on job losses).

The Commission and pro-REACH camp assume that this number will be small, as any product withdrawn from a market would leave a place free that could be taken by a competitor. The anti-REACH camp extrapolate (in a way widely criticized as misleading by the other players) from case studies and surveys to disaster scenarios.

- The loss-v-gain of competitiveness argument (both in and downstream of the chemical industry) stems from two differing approaches to competition that remain to be supported: by costs versus by differentiation.

The pro-REACH camp are banking on a social demand for HSE becoming a major source of competitive advantages while precluding the problems of "localized" added cost burdens (especially for low volume and/or low value products), whereas the anti-REACH camp gloss over the social demand for HSE and play up the domino effect of the localized added cost burdens.

- There are also two diametrically opposed views about business behaviour on two other parameters: R&D (cf supra) and co-operation.

The pro-REACH camp rightly focuses on co-operation in the implementation of REACH as being key to reducing the costs of implementation. The anti-REACH camp rule it out of court...

It is worth noting that no serious study seems to have been done on any of these aspects. Those that have, are either based on ingoing assumptions about business reactions, or on surveys of industry leaders which, clearly carried out in connection with lobbying campaigns on REACH, have every likelihood of returning biased replies.

The main paradox: small causes, big effects?

Arguably, the big question raised by all these studies can be framed as: could a marginal added administrative cost (at most 0.2% of turnover) produce a macro- or meso-economic near disaster⁵? This question cannot be dismissed out of hand, nor receive a reliable response as part of a lobbying exercise which, whatever the quality of the studies, is by nature wholly unscientific.

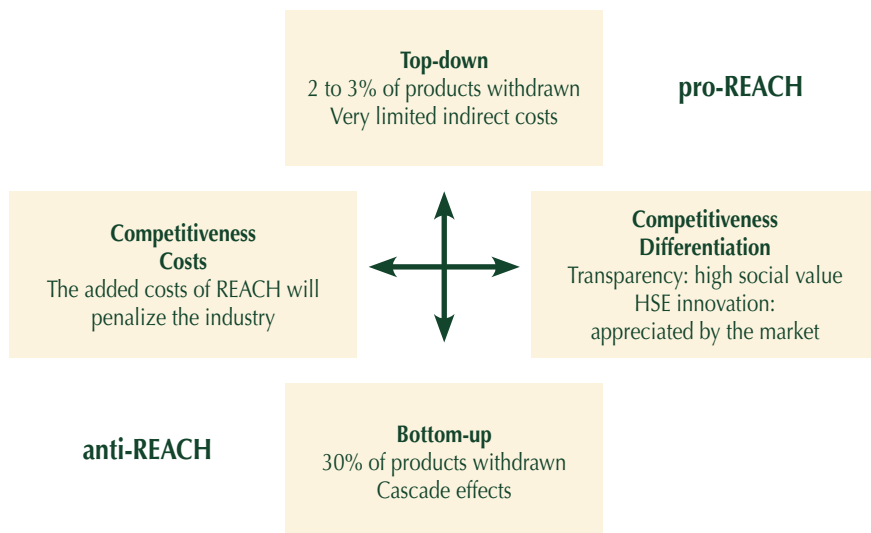
We would argue that the way to resolve this paradox is by contrasting the two models of competitiveness referred to earlier, and two concepts of the implementation of REACH with very differing outcomes (see figure).

In the "bottom up" model advanced by "disaster scenario" studies, the costs of implementing REACH are borne unaveraged by individual product and producer. Without averaging of the direct costs of REACH, the impacts will vary widely with the "volume/unit value" parameters specific to each product. In this model, distribution of the direct costs of REACH as well as the level of indirect costs – generated mainly by the withdrawal of products for economic reasons – will be dictated by the "invisible hand" alone on the basis of juxtaposed micro-economic decisions with highly complex interactions.

The "top down" model, by contrast, is based on a total cost of REACH expressed as a percentage of industry turnover, which holds water only if concrete cost-averaging measures are taken across the board. These studies hypothesize an across-the-board cost-averaging over all productions, and, unsurprisingly, rule out any product withdrawal for other than HSE reasons.

These considerations prompt a meta-economic question: given the minimal total cost of REACH, is it reasonable to leave REACH implementation purely to market forces driven by micro-economic calculations, if it is to be seen as a collective investment by European industry likely to bring a sustainable chemical industry significantly closer?

⁵ A loss of 1.6% of French GDP and 360 000 jobs according to Mercer, a loss of 3% of German GDP and 1 to 1.2 million jobs according to ADL; a significant undermining of the European printing inks sector which, according to EUIPIA-CEPE, would incur a total cost burden from REACH of 631 million euros (including 475 million euros in reformulation costs from product withdrawals), plus major risks of increased offshoring along the downstream supply chain.



REACH and SMEs

Impacts of uncertain nature and scope

Direct potential impacts: registration costs

Most chemical sector SMEs are in the fine chemicals industry, as small volume, high margin producers. In terms of chemical substances, they are at a potential disadvantage to big companies on two counts: they produce a greater number of substances, and in smaller quantities. That increases the number of tests required, while the low volumes makes it harder to absorb their cost.

It should be noted that SME chemical substance users (most) are not exposed to the direct cost impacts.

Indirect potential impacts through the disappearance of inputs for chemical substance users⁶

Downstream users may lose access to chemical substances for economic and/or environmental reasons.

As regards the former, producers and/or importers may find sales and profits too low to justify the costs of testing and registration. The likely overall impact of these withdrawals will be very low⁷ (it bears pointing out that turnover of chemical substances is already very much an economic reality, with or without REACH): the main risk relates to low volume substances where profitability is already an issue (where REACH would simply speed up an existing process of rationalization). But specific problems may arise for users.

Attention must also be paid to the possibilities of substitution for substances withdrawn from the market: Is there a substitute available? What are its technical performances and cost compared to the old substance? If there is no substitute available, can one be developed within the REACH deadlines (industrial substitution rates and regulations working to same time frames) ?

A product may also be withdrawn for health or environmental reasons. This has health and environmental protection benefits, but may impose a cost burden on downstream users, if the substance concerned is economically important and there is no real substitute.

The benefits of REACH for downstream users must also be taken into account, because while it imposes specific costs on them, it helps to reduce the subsequent recurring costs connected with the use of dangerous substances for which information is incomplete. Furthermore, the disappearance of a substance from the market may be an opportunity for a company that manufactures a substitute (competitive weapon).

Addressing the risks of REACH for SMEs: more a problem of implementation than regulation

Most SMEs will not be immediately concerned by REACH (theoretically, it will be seven years before

they are affected), which leaves time to identify and make arrangements to address the most vexed issues. Also, REACH includes provisions for adapting the regulations to lighten the cost burden on SMEs. So, registration costs for substances produced in low quantities (under ten tons) are reduced, which mainly benefits SMEs⁸. REACH has also provided a cost-saving mechanism for firms to mutualize testing by forming consortia, and authorization arrangements that weigh up the socio-economic effects against the health and environmental impacts: "an authorization is granted if it is shown that the socio-economic benefits outweigh the risks to human health and the environment and that there are no suitable alternative substances or technologies". Two committees with decision-making responsibilities have been set up by REACH: a committee for socio-economic analysis and a committee for risk assessment.

The REACH regulation is well-equipped in general terms, therefore. So the issue is to put the provisions into effect through a policy by which to identify the problems and work out appropriate ways of addressing them. This would involve, among other things, a differential approach according to the status and place of SMEs in the industrial fabric using a range of means: time periods, financial assistance, mutualisation, etc.

The principles for addressing the issues should be situation-specific and clearly distinguished between two broad types of measure:

- collective accountability systems for SMEs that are either part of a group (subsidiary companies) or in a relation of economic dependence (subcontracting): the impacts of REACH and the related issues should be dealt with uniformly in a way that encompasses the whole business (subsidiary/parent company; client/subcontractor);
- systems of assistance for independent SMEs.

CONCLUSION: UNCERTAINTIES AND SUPPORT PROVISIONS FOR A SUSTAINABLE CHEMICAL INDUSTRY

From our analysis, we have identified three key points about the process initiated by REACH.

One is that much of the health and environmental effects of chemicals are and will remain uncertain⁹,

⁶ The analysis of the impacts of REACH on downstream users is equated here to the impacts on SMEs, which although an approximation has some relevance given the importance of SMEs in the downstream industrial sectors.

⁷ Subject to using a coherent model for implementation of REACH (see below).

⁸ Adapted arrangements could be considered for those that produce or import substances in quantities of more than 1 000 tons a year, or CMR (carcinogenic, mutagenic, reprotoxic) substances in quantities over one ton.

⁹ Uncertainty is not to be confused with hazard which refers to an identified danger associated with the occurrence of perfectly describable events.

which means taking particular care over defining the procedures and provision that will go best in hand with the long-term life-cycle of chemicals.

Second, it is also not possible to fully predict the dynamic of REACH on the chemical industry, because it comes down to the largely unknown strategies of actors, competing dynamics and innovation breakthroughs. It also involves potentially strong local risks, which must be addressed.

Finally, the implementation of REACH will have to ensure that ongoing balances are maintained between dimensions (economic / social / environmental) and between actors (private / public, representation of the various stakeholders, etc.).

Beyond the difficulty of getting REACH into existence, the main issue is therefore the procedures for implementing it, in two areas in particular: linking REACH into the other European policies; and management of the process dynamics, which involves controlling the economic disparities and implementing a proactive European chemical industry policy on sustainable development.

Implementation must be coordinated with the European policies

Technology platforms and the 7th Framework Programme for research and development: a practical opportunity to involve stakeholders

European technology platforms are being set up, bringing together business, research institutions, the financial community and regulatory agencies. The scheme was brought in with a view to the 7th Framework Programme for research and development (FP7) (2007-2011), and originally defined in a way heavily focused on and working for business (using public funds).

A technology platform project was launched in June 2004 in the chemical industry (initially designed by the industrial sector – represented by CEFIC and EuropaBio). The challenge is to properly open up the scheme again to stakeholders and to an innovation dynamic that will work for a sustainable chemical industry. REACH can be the key to do that.

SMEs: a cross-cutting issue in industrial policy

An analysis of the relations between REACH and SMEs shows up both how little is known about the realities of the situation, and the difficulty of pinning them down due to the wide range of concrete situations between sectors, business lines, countries, and regions. REACH cannot produce this knowledge, but should be able to use what is done elsewhere. REACH must be decompartmentalized.

European policies and measures taken for SMEs range across different areas.

For R&D, provision was made to enable SMEs to participate in FP6. At least 15% of the programme budget (i.e., approximately 1.7 billion euros) is earmarked for SMEs to take part in the seven new thematic fields of research (via “networks of excellence” and “integrated projects”), and also to benefit from a series of special measures intended to encourage their participation. They also benefit from two specific programmes on “co-operative research” and “collective research” (with an aggregate specific budget of 430 million euros).

A number of European programmes have also been launched to step up co-operation between SMEs, and innovation development can be one of the objectives.

These policies seem to suffer from the same problems as REACH, i.e., compartmentalization. The dispersal of what are largely designed as standalone measures may be the way the Commission works, but is not the best way of putting as central a focus on SMEs as the Lisbon strategy wanted.

Two implementation issues still need to be considered

What averaging is needed to even out disparities between sectors?

Limited, informal averaging left to the initiative of the players: REACH as it stands

Unaveraged, the extreme relative cost differentials of REACH may produce adverse chain reactions.

At a strictly micro-economic level, the direct costs of REACH are significant and can have product by product impacts that may result in decisions to halt production or downstream offshoring. An initial, admittedly highly simplistic, calculation illustrates the problem: over the existing 30 000 substances, the total direct cost of REACH of 4 billion euros means an “average investment” of 133 000 euros per substance. This level is not neutral for continuation or abandonment of production.

So, while low volume products may benefit from streamlined procedures, the cost of the studies required may become prohibitive and produce unwanted side-effects.

The Commission's urging for producer consortia to set up for these substances arguably falls well short of the mark, because without a preset framework, such consortia will be complex (and costly) to negotiate.

Comprehensive and centralized averaging of registration costs: economically feasible, but may undermine business accountability

An across-the-board averaging by levying a 0.2% turnover tax on chemicals to finance centralized registration would clearly preclude the forecast disaster scenarios.

Distributing that levy equally across all productions would prevent abandonment of products for economic reasons, and so incur no indirect costs.

The cost of REACH would therefore be no higher than 0.2% of annual turnover, and neutral for the "cost competitiveness" of a chemical industry which would remain profitable (approximately 10% of turnover over the long term) and R&D budgets (the costs of REACH amounting to approximately 3 to 4% of these budgets).

Downstream, the economic effects would probably be positive:

- where there is no product withdrawal for economic reasons, the reformulation costs become either non-existent, or a major source of differentiation;
- the 0.2% added cost burden would probably be more than comfortably offset by the savings from improved HSE and certainly unlikely of itself to prompt offshoring of downstream activities other than those for which the finished product transport costs were less than 0.2% of the value of the chemicals they contain...

An intermediate averaging: OSOR "plus"

The OSOR (one substance, one registration) amendment enables a case-by-case averaging to be introduced which could do much to facilitate cost sharing for the problematic low volume substances.

By creating a much more specific procedure than a simple call to form consortia, it can help reduce the transaction costs that are the main obstacle to co-operation.

Arguably, it could be reinforced by the introduction of a chemicals tax (an annual rate of 0.02% for 10 years could be enough) to finance a fund to facilitate the financing of registration studies for low volume/low value products by reintroducing obligations to carry out studies for products between 1 and 10 tons. ■

A proactive sustainable development policy: a REACH label

A REACH label could provide European chemical industry companies with a strategic opportunity as a means of differentiating and leveraging products on the world market. The REACH label would stand for the efforts companies were making to be transparent and improve the quality of their products. REACH has the qualities necessary – independence, expertise and transparency – to give the certification process public credibility. The future central chemicals agency could be the European one-stop shop for label certification and awarding.

But a series of constraints need to be overcome for a REACH label to be effective:

- **The scope of the label:** there are two possible scenarios. The REACH label applies only to chemical substances (the information is intended for user companies). This scenario flouts the spirit of REACH, which is based on the need to inform the public about the health and environmental risks of substances contained in consumer products (floor coverings, paint, detergents, etc.). The REACH label applies to chemical substances and the finished products that contain them. This goes beyond the central agency's powers, since it would mean certifying many categories of products in sectors downstream from the chemical industry. It would mean setting up several certification bodies which might, for example, be approved by the central agency.
- **The meaning of the label:** REACH labelling could operate at several levels: REACH 1 for registered substances, REACH 2 for authorized substances and, possibly, REACH 3 for particularly innovative substitutes.
- **Consistency between the REACH label and the Ecolabel set up in 1992:** the Ecolabel goes beyond the REACH system as currently planned and takes account of the entire product life cycle. Considerations of effectiveness and cost to companies clearly argue in favour of looking at ways of bringing the two labels together.
- **Promoting a REACH label worldwide:** the REACH label will deliver a competitive advantage in quality on the world market only if the European benchmark becomes the accepted standard. This is not an unrealistic aim, given the influence of the European chemical industry on the world market. Promoting REACH certification would therefore have to be largely a proactive policy by the industry, supported by all stakeholders in the system (government, NGOs, trade unions). This should then create leverage to bring the rest of the world chemical industry into line with European standards.

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The full text can be consulted on our website:
www.etui-rehs.org/hesa > Main topics > Chemicals

Environmental regulation, innovation and competitiveness – making the link

The European economy has two major challenges: the need to create a sustainable economy, and the need to be competitive in the global market. It is well known that our current society is not sustainable; we need to achieve a major increase in the efficiency of resource use, whilst also preventing pollution. However, at the same time we must ensure that European businesses are able to compete globally, and that they are able to create and retain jobs. These two challenges are often seen as in contradiction to each other – but, for the sake of Europe and the rest of the world, they need not be.

This paper will examine how the challenges of competitiveness and innovation interrelate, and how they link with innovation and regulation. It also discusses the likely impacts of REACH on innovation in Europe.

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Regulation and competitiveness

Many stakeholders, particularly from the industry side, portray regulation as an enemy of competitiveness. This portrayal depends on the “common sense” approach that if industry has to conform with lots of regulations they are less likely to spend time innovating, and that they are likely to move their plants away from regions with more regulations.

However, these assumptions have been challenged by many of those who have studied the issue. For example, the Harvard economist Michael Porter suggested an alternative relationship in 1995 [1]:

“Companies can improve resource productivity by producing existing products more efficiently or by making products that are more valuable to customers – products customers are willing to pay more for. Increasingly, the nations and companies that are most competitive are not those with access to the lowest-cost inputs but those that employ the most advanced technology and methods in using their inputs.

“Environmental progress demands that companies innovate to raise resource productivity – and that is precisely what the new challenges of global competition demand. A truly competitive industry is more likely to take up a new standard as a challenge and respond to it with innovation. An uncompetitive industry, on the other hand, may not be oriented toward innovation and thus may be tempted to fight all regulation.”

In reality, competitiveness involves many different factors, including issues as diverse as levels of education, the level of corruption and the macro-economic environment. The World Economic Forum publishes an annual list ranking the “Growth Competitiveness Index” of many of the world’s nations. The top 7 nations on this list in the 2004 study were as follows [2]: Finland > US > Sweden > Taiwan > Denmark > Norway = Singapore.

These ratings are particularly interesting as four out of the top seven countries are bound by EU product regulations – Finland, Sweden and Denmark are EU Member States, and Norway is a member of the European Economic Area and must apply all EU internal market legislation (including REACH). It is also interesting to note that these are Nordic countries – a region which has a tradition of strong environmental regulation and social support.

China is the country most often mentioned in the competitiveness debate in Europe. There is undoubtedly plenty of cheap labour available in China, but overall competitiveness relates to much more than labour costs, and the World Economic Forum places China at number 46.

Clearly, EU businesses must compete with those in China – but they will not do it by cutting wages or through a race to the bottom on regulation. As Digby Jones, the Director General of the UK business lobby group the Confederation of British Industry, put it [3]:

“We’ve got to drive toward getting everyone’s skill levels up (...). If you’re trying to compete only on

price, you will fail, and you will go bust and China will have your lunch. If you move into innovation, and high value-added [products], you have nothing to worry about. Britain has got a tremendous future."

Environmental regulation and relocation

The "common sense" claim that environmental regulations lead to companies moving abroad has not been supported by research by academics – primarily because environmental regulations are such a small part of business costs. For example, a 2004 study of the impacts of air pollution legislation carried out by the British consultancy company AEA Technology for DG Enterprise [4] found that:

"It is extremely difficult to assess the impacts of air pollution legislation on relocation from the other factors that determine location decisions, though it is clear that labour costs and access to market are much more important than environmental legislation.

"A review here has found that industrial relocation for reasons of different environmental standards is not found to be significant from OECD countries to non-OECD countries.

"However, the evidence data on movement within OECD countries does show some evidence both for and against an effect."

The lack of evidence for environmental regulation causing companies to relocate was also pointed out by DG Economic and Financial Affairs in their review of the European Economy in 2004 [5]:

"Evidence on crowding out of dirty industries to pollution havens in third countries seems to be very shaky and not convincing at all.

"This might not come as a surprise given that other factors normally drive decisions of investment locations, and given the convergence of environmental standards around the world, including developing countries."

Overestimation of regulatory costs

Studies that examine past debates over costs of environmental regulation have found that costs are generally overestimated by industry, and are often also overestimated by government [6]. A recent example is a report by AEA Technology for the UK Government, examining the costs and benefits of a number of past air pollution regulations [7].

One of the regulations examined was improved vehicle emission standards:

- a cost for the UK of £16.1-22.8 billion for 1990-2001 was estimated before the regulations were put in place;

- AEA estimated the actual cost of the regulations to be £3 billion (€4.3 billion) over the 1990-2001 period.

This example gives a 5-fold difference between the predicted costs and the actual estimated cost, which means that costs were substantially over-estimated during the period when these standards were being politically debated.

It is also interesting to note that the cost of this legislation to the UK over 11 years was similar to the predicted total costs of REACH to the entire EU economy over 11 years – €2.8-5.2 billion [8]. This gives an idea of the small scale of REACH costs when compared to other regulatory actions.

AEA concludes: "The analysis of individual ex ante and ex post costs has shown that in most cases, ex ante costs were over-estimates. In many cases, these over-estimates were very significant. This also leads us to the conclusion that legislation itself acts as a spur to research and innovation.

"In cost-benefit analysis, the 'typical' assumption has been that the cost estimates are far more accurate than the benefits analysis. The data in this study shows that this conclusion is rarely valid."





Innovation – the key to both competitiveness and sustainability

It is clear that society needs to develop new ways of doing things, and new products to do them with – this will require considerable innovation. It is also clear that Europe will need to be innovative in order to be competitive. It is therefore important to understand what innovation is, and how it can be promoted.

Innovation has two components [9]:

- the rate of innovation is the quantity of innovations produced over a given period of time;
- the direction of innovation is related to the quality of innovation produced and its socially beneficial or damaging consequences.

Knowing the rate of innovation is not enough – the direction is crucial. An increase in unsustainable innovations (e.g., new disposable products) is not going to help achieve a more sustainable society.

Innovation is not evenly distributed – one company might be very innovative, whilst another might be more dependent on existing products. Innovation theory states that three factors are required for innovation to happen [10]:

- Willingness
 - Including a company's capacity to change and the extent of its knowledge that change is possible
- Opportunity
 - Supply side: technology exists or could be developed
 - Demand side: regulatory requirement; opportunity to save costs or add to profits; pressure from workers or public
- Capacity
 - Knowledge about better techniques, and the level of skill base at the company.

Regulation is important both to create the demand for innovation (and therefore the rewards for those companies that meet this demand), and to ensure that innovation is in the direction of sustainability. As the AEA report, above, concluded, innovation frequently acts to bring down the real cost of regulation to a level much lower than the predicted cost.

What will the effects of REACH be on innovation – positive or negative?

One of the arguments frequently used by industry is that the cost of complying with REACH will take resources away from research and development. Leaving aside the issue of whether research and development funds are really reduced as a result of regulatory compliance costs (rather than the funding coming from price changes, reduced profit, etc.), REACH is only likely to have such an impact if costs of compliance are significantly higher than normal variability in costs.

A few reports have claimed that REACH costs will be very high, for example the studies produced by Arthur D Little in Germany [11] and by Mercer consulting in France [12]. However, these studies have been widely condemned by economists [9, 13, 14, 15], though they have been remarkably persistent in the political debate.

However, other economic studies have found costs similar to those calculated by the European Commission [8], and have then compared these costs with other variable business costs, concluding that the changes in costs as a result of REACH will not be significant [15]:

“Price changes of the same magnitude as the costs of REACH are commonplace in industry, and do not prevent profitable operation.

“The spot price of crude oil varies by a greater percentage in almost every week, while the EU-15 price index for all intermediate manufactured goods varies by a greater percentage in almost every month.”

Moving away from the issue of the cost of REACH, the key question becomes: To what extent can REACH promote innovation, and therefore competitiveness?

REACH includes a number of direct provisions which make innovation easier, and which should increase the rate of innovation, in particular:



- it reduces the burden of regulation on new chemicals, taking the threshold for notification from 10 kg / year at the moment, to 1 tonne / year under REACH;
- it creates new research and development exemptions of 5 years in the first instance, extendable by a further 5 years.

In addition, REACH has a number of measures which will affect the direction of innovation, increasing market pressure for safer products, e.g.:

- registration is simpler for chemicals not classified as dangerous, with no exposure assessment or risk assessment required. This will reward companies producing the safest chemicals;
- the new Authorisation process only affects chemicals meeting the criteria of very high concern, creating regulatory and market pressure away from these chemicals and towards safer alternatives;
- in certain circumstances, the Authorisation procedure will oblige companies to use available safer alternatives, assisting those companies that develop them;
- increased flow of information on chemical properties and risk management requirements will encourage downstream users to use the safest chemicals.

REACH will also have a substantial impact on the way chemicals are sold and used, for example promoting closer links between producers and users, as the producer will usually need to define safe use for downstream uses. Close contact between producers and customers has been shown to promote innovation [9].

REACH changes the distribution of costs in the value chain, as a result of increasing producer responsibility:

- chemical producers and importers will need to do more hazard and risk assessment of their chemicals, but they should have the expertise to do this;
- downstream users will be able to reduce their safety assessment costs, freeing them to focus on the service provided by chemicals, which is their area of speciality.

REACH will create new opportunities for innovation in the supply chain, as the players adjust their roles

to take advantage of the new system, for example:

- chemical producers and importers will be encouraged to create and assess new exposure scenarios, promoting new uses of their products;
- formulators and distributors will have new opportunities to produce exposure scenarios to support their own customers, for example in sectoral or niche markets;
- downstream users will be able to innovate with uses of chemicals, knowing that the uses will be safe if they follow exposure scenarios in the Chemical Safety Reports.

Conclusions

The world faces a massive challenge in achieving a more sustainable future, and it is clear that Europe has a responsibility in leading this transformation as a major developed economy with a commitment to sustainability. However, this role as a leader should benefit rather than burden European companies, as they will be at the leading edge of the move to sustainability, as first movers into more sustainable technologies.

Europe is not going to compete in the global economy on the basis of low labour costs; it must instead provide more sustainable products. To encourage this transformation, Europe needs good, sustainability-orientated regulation, such as REACH. REACH will assist innovation through a combination of focussed deregulation, a re-ordering of the value chain and by promoting safer chemicals.

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