Chemical Industry

Into the Future

Through Innovation

Chemistry is an enabler of a sustainable future, and it will remain the central science during this century. However, innovation in chemistry alone will not be enough in the ever-continuing pursuit of solutions: an efficient cross-linking with other sciences will be also needed. A solid flow of new innovations is made possible by a network linking research, development and innovation (RDI) by companies with that by universities and academic institutes.

Timo Leppä

Europe has been losing market share in the growing global chemicals market while Asian countries are gaining over other regions due to their fast growth. European, including Finnish, chemical companies must respond to the competition through marketing excellence and efficiency of operations. However, on top of that a high degree of innovation is needed.

Innovation is often understood as a constant flow of new products and technologies to the market. New applications are definitely necessary but innovations also include services, new concepts, and business models. Innovation in chemistry is a key that opens up new roads for many other industries, too, as the chemical industry has an exceptionally broad customer range.

The Finnish chemical industry has a strategic interest in growing the knowledge-intensive segments of its business portfolio. It is therefore very important for companies to raise the ambition levels and risk profiles of their RDI activities and extend the range of RDI programmes from short-term to medium- and long-term.

For the chemical industry, safe use of the new applications brought to the market by innovation is very important. In Finland, the industry is working constantly to improve the safe use of chemicals and maintain transparent and trustworthy communication about the industry and its products.

Finnish Chemical Industry

In addition to the technology and forest industries, the chemical industry is one of the three biggest industrial sectors in Finland, and an important player in the Finnish economy that fosters welfare and offers employment to around 35,000 people. More than three-quarters of chemicals produced go to exports, either directly or as a part of customer products.

R&D intensive, the chemical industry has spent more than 350 million euros annually in RDI investments. This represents about 2% of the industry's turnover.

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Safety at work has also been a focal point for a long time and results achieved have been very good. In autumn 2010, an award recognising outstanding performance in safety at work will be announced by the Chemical Industry Federation of Finland, to follow the Innovation Award established in late 1990's.

Public funding needed

In 2009, Finnish RDI investments were almost 4% of the GNP, which puts Finland in second place—after Sweden —in the EU. This, however, does not tell the whole story as, due to the size of the Finnish economy, the absolute amounts invested in RDI are smaller than in many competing countries.

94% of funding for RDI of Finnish companies comes from the companies themselves, while public funding is mainly channeled through Tekes, the Finnish Funding Agency for Technology and Innovation. In contrast to most of Europe, indirect support through tax benefits is not used, although this approach is being promoted by the Chemical Industry Federation. In many countries, tax benefits associated with RDI investments actually form a bigger part of the support system than direct funding.

In 2009, less than 8% of the EU budget was used for research, competitiveness, and innovation. Building the future of the continent demands increased RDI funding. At the same time, application processes must be simplified and made more efficient so that motivation for seeking public funding from the EU will be sufficiently high.

Long-term commitment and far-reaching targets are needed for a working innovation environment. The most efficient combination for cultivating innovation is created by public interest and funding together with private initiatives. Public funding is needed to secure long-term objectives and to encourage companies to make investments in RDI. Moreover, it is widely known that public funding also increases private funding.

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Reach is burdensome but it may also open a door to new opportunities for innovative companies.

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Reach
– a Boost for Innovation?

Europe is currently implementing comprehensive and complicated legislation concerning the safety of chemicals. The objectives for Reach focus on improved chemical safety but it has also been stated that the legislation should nurture innovation and give rise to a number of new safer chemicals as some of the old ones would disappear from the market.

Reach is unique in its coverage, complex in its structure, and very ambitious in its goals. Over the current year it has been seen that registration of chemicals according to Reach is a cumbersome procedure. For the time being, it seems that Reach has not been a boost for innovation within the chemical industry, but in many cases just the opposite.

The burdensome registration process combined with high registration costs is putting the brakes on the development of new chemicals and applications, especially in small- and medium-sized companies. This is happening at the same time as companies are weighing registration costs against sales volumes and margins in order to decide which chemicals will continue to be produced and which ones will be abandoned.

The Finnish chemical industry is highly committed to fulfilling the Reach legislation. It has detected the opportunities lying underneath the changes which will happen in the market. The industry has a long tradition in environmental management, safe use of chemicals, and sustainable use of resources. Reach will offer new opportunities for companies willing to grow their market presence with new products that may be acquired through RDI work or through acquisitions.

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Chemistry research to be evaluated

The chemical industry looks at investments in RDI operations with the same eyes as it uses to scrutinise other investments. This means that the industry focuses on results and efficiency of the investment process rather than concentrating on resources and input.

The main interest often lies in short- to medium-term projects that are able to create quick cash flow, preferably with low risk. Starting in 2008, the economic turmoil further shifted the balance from long-term to short-term targets.

Universities and academic institutions focus on basic research and long-term development, thus forming a natural partner for the RDI efforts of the Finnish industry, which they can complement. A change in legislation during 2010 renewed university management and increased the autonomy of universities, opening up new possibilities for financing their operations.

Nevertheless, the university network and structure in Finland is still scattered. In many cases, institutions within universities are too small to become highly productive and efficient. Therefore, research and educational institutions should aim at reaching critical volumes in their work and resources.

Small-scale operations do not provide enough of the resources necessary for topflightwork in the fast moving research world. Being part of strong international networks is essential for efficient academic research, and further internationalisation of Finnish universities is an apparent need.

During the autumn of 2010, the Academy of Finland will conduct an international evaluation of Finnish chemistry research. Describing focus areas and expertise for different research institutes and portraying possible developmental paths, the evaluation will provide an important research and science policy tool that will enable strategic development of the current structures. ❐

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