



## Summary findings of the European Federation of Chemical Engineering 2011 'Perspectives' Survey

### Background

Founded in 1953, the European Federation of Chemical Engineering promotes scientific collaboration and supports the work of engineers and scientists in 30 European countries. Eastern and Central European countries were included from the outset. The newest members include Turkey and Israel. In addition, EFCE maintains a corresponding relationship with chemical engineering societies in Brazil, Canada, India, Japan, Nigeria, South Africa and the USA.

EFCE aspires to help European society to meet its needs through the highlighting the role of chemical engineering in delivering sustainable processes and products.

Today the EFCE represents more than 100,000 chemical engineers in Europe. Technical activity is delegated to 20 Working Parties and 6 Sections covering many different aspects of chemical and process engineering.

The EFCE's General Secretariat is managed by three major scientific societies, [IChemE](#), [DECHEMA e.V.](#) and [Société Française de Génie des Procédés](#), which share the different administrative tasks associated with the effective running of the Federation.

In 2010, the current EFCE President, Professor Richard Darton, launched a major review of the federation's future direction with [pan European consultation](#) that ran throughout January and February 2011.

### The Consultation

At the close of the consultation, 1797 valid responses had been received from chemical and process engineers in 35 countries. The data was analysed to determine the broad view of the European chemical engineering community en-bloc. At the same time, findings from nations with more than 100 individual responses (Denmark, Germany, Italy, The Netherlands and UK) are reported in a comparative exercise. Additional reporting has been included for countries with 50-100 respondents (Greece, Poland, Spain and Switzerland).

The survey sample covers the broad range of industries employing chemical engineers and spans the full age range from early career entrants through to those approaching retirement. 38% of respondents were qualified to PhD level, with 39% at Masters and the remainder at Bachelor level.

## Key Findings

Practicing chemical engineers in Europe are overwhelmingly satisfied with their chosen career with eight out of ten respondents agreeing with the proposition: *“Chemical engineering is the right career for me...”* The strongest agreement was detected in Denmark (96%), Germany (94%) and Switzerland (87%).

Industry assistance and involvement during education and training is acknowledged by six out of ten respondents across Europe. This proposition is weaker in Greece (49%) and Spain (42%).

Eight out of ten respondents agree with the statement: *“My education gave me a good understanding of technology”*. The proposition tests strongest in Switzerland (90%)\*

## Ethics

Survey respondents are less certain about the grounding in ethical issues provided by their education and training. Just under half of the replies agree with the statement: *“My education and training gave me a strong understanding of ethical standards and behaviours.”* This proposition receives strong support in Poland (79%). However, the survey finds no particular enthusiasm amongst chemical engineers for further training and guidance in this complex area, with a clear majority rejecting such a proposal in all nations bar Greece (52%).

In broad terms, European chemical engineers express confidence in the belief that their managers have a genuine commitment to ethical standards in business, with three quarters of the survey respondents agreeing. This sentiment is strongest in Germany (81%), Switzerland (83%) and the UK (84%) and weakest amongst respondents from the Mediterranean countries.

## Employability and Mobility

In the aftermath of the global economic downturn, chemical engineers in Europe remain broadly optimistic when questioned about future employment prospects in their own country, with seven out of ten respondents agreeing with the proposition: *“There are good opportunities for chemical engineers in my country.”* Confidence is highest in Germany (91%) and lowest in Spain (40%) and very notably Greece (4%).

Economic factors appear to link strongly to employment mobility. More than one third of European chemical engineers responding to the survey anticipate, *“Working in another country in five years time”* and this view is strongest in Italy (45%) and Greece (51%). A majority of respondents who anticipate relocation expect that future employment opportunities are likely to be found *“Elsewhere in Europe”*.

## Energy and Climate Change

Global warming and climate change impacts feature prominently on the list of concerns. Looking at Europe as a whole, more than eight out of ten survey respondents agree with the statement: *“Climate change is a big challenge for the future of humanity.”* This proposition is strongly supported in every country which supplied sufficient data for reliable analysis except Poland (48%). Consequently, there is a widespread belief that governments should do more to reduce reliance on fossil fuels with a majority of chemical engineers in all parts of the European continent agreeing that government action is needed.

\* % figures refer to survey respondents agreeing with the proposition unless otherwise stated

Nonetheless, a knowledge gap is apparent with six out of ten respondents indicating that they need access to more factual information to understand energy and climate issues. This trend is reflected across Europe with the exception of Switzerland (37%).

### **Future Skills**

Looking to the future, the survey respondents consistently place traditional skills, including process engineering (55%), project management (44%) and general management (42%) at the top of the list of competencies regarded as being, "*important for career development*". Sustainable development comes out top in The Netherlands (55%) and process safety features in third place in the UK (55%). However, across Europe, the importance of skill sets in emerging areas including biotechnology (23%), nanotechnology (15%) and new chemistry (13%) score low by comparison.

Attitudes towards the current relevance of biological engineering and its likely future importance were assessed. Looking at Europe as a whole, just over a third of respondents agree that bioscience is important in their current role, but marked differences are apparent between countries. UK respondents (22%) attribute the lowest importance to bioscience whilst Denmark (40%), Switzerland (44%), Spain (49%) believe it to be more important.

Spanish (50%) and Polish (62%) respondents express a strong belief that their future work will be in a bioprocess related field.

### **Publication**

The survey findings will be presented by the EFCE President, Professor Richard Darton, at a briefing session at the Stanhope Hotel, Rue du Commerce, Brussels at 1000hrs on Wednesday 30 March 2011.

The briefing will include a contribution from the President of the European Parliament, Jerzy Buzek and a roundtable discussion involving senior representatives of CEFIC, SUSCHEM and executives from the European chemical industry.

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25 March 2011