

# Shared Challenges, Shared Solutions

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The world is becoming more global. This statement may read like a tautology but it expresses a real and important trend that shows no signs of abating. The trend is evident in the spread of popular culture from one region to others; the uniformity of fashion in opposite corners of the globe; the dramatic escalation in air travel, as people – whether for work or leisure – increasingly sample other countries and lifestyles.

Most especially, we can see the relentless march of globalisation in science, technology and engineering. Certainly, every region has its local business, environmental and societal challenges, and presents local opportunities – shaped by environment, values, geography and other circumstances. But the solutions to these challenges, and the means of grasping the opportunities, are seldom unique to a particular region. Increasingly those who seek them are able to benefit from ideas, practices and experiences in other parts of the world.

## **A role for chemical engineers**

By the same token, recognition is growing that different regions of the world can benefit by working together in the development of shared solutions to the big challenges that they have in common. As the world becomes more global, we will need more shared solutions. But shared solutions are only possible if there is genuine engagement between all stakeholders; government and NGOs, society and environmentalists, scientists and engineers. Chemical engineers have a pivotal role to play in helping to develop such shared solutions. As a profession, we specialise in working across boundaries – with people from different disciplines, different

countries, different functions and different backgrounds.

We recognise that there can be more than one answer to a question or challenge. The energy challenge is a case in point. Satisfying the world's demand for energy will require a combination of many energy sources, not just one. Moreover, we see that the 'best' solution depends on both 'soft' and 'hard' parameters – societal mores as well as scientific metrics.

It is important that any shared solution must be scientifically responsible. As science and engineering grow in sophistication and complexity, this imperative presents chemical engineers with a great opportunity. We can work to ensure that the public policy debate in the UK and beyond is conducted on scientifically robust ground.

## **Serving the public interest**

Another key contribution by chemical engineers lies in our role in bringing the fruits of research and innovation into play in large-scale, commercially viable, sustainable process operations that meet the needs of society at large.

2007 marks the fiftieth Anniversary of the granting of IChemE's Royal Charter. The terms of the Charter leave no doubt as to the requirement upon professional chemical engineers to serve the public interest:

“All Corporate Members shall at all times so order their conduct as to uphold the dignity and reputation of the profession and safeguard the public interest in matters of health, safety and otherwise...”

Fifty years on from the granting of the charter, IChemE remains committed to supporting its international



membership in pursuit of this noble goal and today's chemical engineers are continuing the tradition of providing solutions to meet real needs. We develop and apply science and technologies that deliver economic, social and environmental benefits. We pioneer new materials and manufacturing techniques. We design and manage the large-scale manufacturing processes that characterise industrialised economies and we continue to pursue shared solutions to many pressing global challenges including energy, food and water.

## **Global consultation**

To coincide with its jubilee year, IChemE engaged in a major global consultation with its 27,000 members in more than 100 countries. At the heart of the consultation lay a tough question: “What does society need; what are the desirable outcomes and how can chemical engineers work in partnership with others to make it happen?”

The findings of the consultation were published in May in the form of a “Roadmap for 21st Century Chemical Engineering”. This document will underpin IChemE's work in the years ahead but a more digestible summary aimed at policy makers and opinion formers is presented in a Jubilee Report, “Shared Challenges, Shared Solutions” and the key points are summarised below.

## **Where do chemical engineers stand:**

### **On Sustainable Technology?**

"IChemE supports the more rapid pursuit of a global energy policy based on using non-fossil primary energy sources."

"IChemE supports the continuing introduction of appropriate legislation, taxes and other fiscal measures to drive the 'reduce, reuse, recycle' mentality deeper into industry and the consumers of its products."

"IChemE believes that the necessary change in business strategy to speed the introduction of innovative and sustainable technologies should be boardroom led."

### **On Health, Safety and Environmental Risk?**

"IChemE will exert greater influence on the process sector, regulators and academia to develop and utilise new ways for cost effective and sustainable risk reduction."

"IChemE will engage with corporate leaders, regulators and other professional bodies to create cultures that deliver real improvements in health, safety and environmental performance."

"IChemE will influence industry groups and regulators to take a more proactive approach to passing on lessons learnt from industrial incidents."

### **On Energy?**

"IChemE believes that nuclear power will continue to fulfil a significant part of global energy demand in the short and medium term."

"IChemE supports the view that, because the world is locked into fossil fuels usage for some time to come, the technological means of reducing CO<sub>2</sub> emission from their use must be implemented globally as an environmental and political priority."

"IChemE supports increased R&D on the development and deployment of renewable technologies and power storage systems, and the development of second generation bio fuels."

"IChemE believes that the widespread application of clean generation technology, coupled with carbon capture and storage and more efficient electricity generation and use, is essential to achieve major reductions in CO<sub>2</sub> emissions."

### **On Food and Drink?**

"IChemE supports the development of technologies to

maximise the use of viable waste streams from the food supply chain."

"IChemE believes that chemical engineers must play a prominent role in the development of precision agriculture technology and rendering farming methods sustainable."

"IChemE will continue to press government to take a science based approach in the development of policies for agriculture."

"IChemE supports appropriate regulation to enforce clearer and standardised labelling of food products coupled with consumer education to influence choice and market driven demand."

"IChemE believes that the delivery of safe, healthy and nutritious food will require the input of chemical engineers to explore new avenues in science and technology."

### **On Water?**

"IChemE will work with other stakeholders to impress upon governments and international bodies the importance of developing and implementing sustainable regional water management strategies, especially through realistic charging."

"IChemE is committed to the search for technologies which contribute to sustainable water supplies. The Institution will continue to press governments and companies to fund research programmes which support this objective."

"IChemE supports the introduction of appropriate regulation that encourages more sustainable water supply and wastewater disposal, eg by water reuse in homes and buildings, and beneficial use of sewage sludge rather than landfill."

### **On biosystems?**

"IChemE seeks to expand the recruitment of school leavers to biochemical and chemical engineering courses. Hailed as the third industrial revolution, bio process engineering must feature strongly in the degree course offer."

"IChemE supports reducing the environmental impact of industrial activity and will encourage members to promote new pollution abatement strategies and the design of sustainable processes. We will work with companies to highlight this approach and environmental success stories to the public."

## **The Jubilee Report**

The publication of the Jubilee Report marks a milestone in IChemE's history and the contribution made by chemical engineers to meeting the world's needs. But more importantly, I believe, it presents a perspective on how the profession aims to develop and enhance its contribution in the years ahead.

Making that happen depends on many factors: on attracting a steady flow of young people into the chemical engineering profession; on clear and consistent communication of our

capabilities to those who can benefit from working with us; and on society, policy makers and other stakeholders being prepared to engage more deeply with us to find the shared solutions the world needs.

It therefore gives me great pleasure to offer a brief taster of the IChemE's

Jubilee Report and its findings via the pages of Science in Parliament. It is not merely a report of past successes. It is much more a "call to arms", especially for those outside the chemical engineering profession, to work together with us on further shared solutions for the opportunities and challenges facing us all.

### **FURTHER INFORMATION**

A copy of 'Shared Challenges, Shared Solutions', the IChemE's Jubilee Report can be downloaded at [www.icheme.org/jubileereport](http://www.icheme.org/jubileereport)

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