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## CEIAG Professionals' Guide

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## Current and Future Trends

### 1. A changing labour market

As the table below shows, the UK has changed from a predominantly manufacturing and agricultural-based economy to one that is increasingly service based:

|      | Manufacturing         | Services             |
|------|-----------------------|----------------------|
| 1950 | 9 million employees   | 9 million employees  |
| 1986 | 5.2 million employees | 18 million employees |
| 2006 | 3.3 million employees | 25 million employees |

**One of the results of this is that the number of jobs in semi-skilled or unskilled work is declining. Employers are increasingly looking for people with higher level qualifications to fill clerical, technical and professional level work:**

- In 1960, 8 million or 33% of the labour market was in unskilled or semi-skilled jobs.
- In 2006, 3.5 million or 12% of the labour market was in unskilled or semi-skilled jobs.
- In 2007, the Treasury forecast that by 2020 just 600,000 or 2% of the labour market would be in unskilled or semi-skilled jobs.

### 2. An ageing population

**In the UK, the number of over 65s is predicted to increase from 8.5 million in 2000 to 12.3 million by 2025 and 15 million in 2050. This will place growing pressures on the health and medical services in particular. As a result, there will be increasing demand for people with STEM skills, with exciting opportunities in areas such as:**

- *Biomedical engineering* – designing hip and knee replacement joints, heart bypass valves, breast implants
- *Bioinformatics and computational biology* – solving biological problems at a molecular level such as DNA sequencing in the treatment of cancer to target individual cells
- *Pharmaceutical research* – working to develop new drugs to combat the effects of cancer, tackling mental health issues, vaccines, insulin, antibiotics
- *Biotechnology* – using living cells (bacteria, yeast, stem cells) as well as biological substances (enzymes) in industrial processes like brewing and baking, and in research in agriculture and medicine.

### 3. A STEM skills shortage

The CBI Education and Skills Survey of 2008 states 59% of employers recruiting STEM staff are experiencing skills shortages. Between 1997 and 2007 there was a decline by 15% in the number of students graduating in technology and engineering subjects and that, as a result, employers are increasingly looking overseas to fill the shortfall. Updates to this pack will share emerging trends in the demand for STEM skills against the backdrop of a global recession.

**The CBI predicts that by 2014 the UK will need an extra 730,000 people with STEM qualifications compared to 2007. Growth areas include:**

- *Nanotechnology* – the science of the very small enabling the development of light and immensely strong materials with varied applications including telecommunications, aviation, fuel cells
- *Space technology* – developing satellites for use in, for example, telecommunications, global positioning systems, military surveillance
- *Civil and water engineering* – needed to design and construct, for example, flood defences, improved irrigation systems, dams, desalinisation plants
- *Ubicomp technology* – designing and building micro-processors and low cost sensors into, for example, central heating systems, refrigerators, and security systems to enable use by remote control.

### 4. Climate change

**The Climate Change Bill 2007 sets a 2050 target of reducing UK carbon emissions by 60% compared to 1990 levels. The report calls for a whole range of measures including:**

- carbon capture and storage
- a new generation of nuclear energy
- greater energy efficiency
- renewable sources of energy
- a second generation of biodiesel fuels

**To meet the challenge of climate change, there is a need to boost the number of people with STEM skills at all levels in order to achieve these targets and meet the demand for skills that these technologies will create in areas including:**

- *Renewable energy technology* – generating electricity from renewable sources such as wind, solar and tidal power
- *Clean coal technology* – building new coal-fired power stations where carbon emissions are reduced and stored underground
- *Nuclear engineering* – needed for the programme of decommissioning old plants and building new nuclear power stations over the next decades
- *Fuel cell technology* – fuel cells combine hydrogen and oxygen to produce water, electricity and heat – a potential alternative energy source that is cleaner and more efficient than using non-renewable fossil fuels.

## The International Perspective

The economic growth of Asian countries, particularly China and India, is challenging a two hundred year dominance by Europe and the USA. A Goldman Sachs Economic Unit forecast in 2006 that the Chinese economy would surpass that of the US by the early 2040s, with the Indian economy not far behind. The team has recently updated this to predict that the Chinese economy will overtake the US economy by circa 2025, and be twice as big, in terms of Gross Domestic Product, by 2050.

China and India are the two most heavily populated countries in the world, with a combined total in 2008 of 2.4 billion people out of 6.6 billion (adding up to 36% of the total world population). These two countries with their large domestic markets will increasingly dominate the world economy.

**In order for the UK to remain competitive in this changing global economic reality, there is an ever greater need for people with STEM skills to continue technological advancements and sustain standards of living.**