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KEY Points

TECHNOLOGY Foresight

PROGRESS THROUGH PARTNERSHIP

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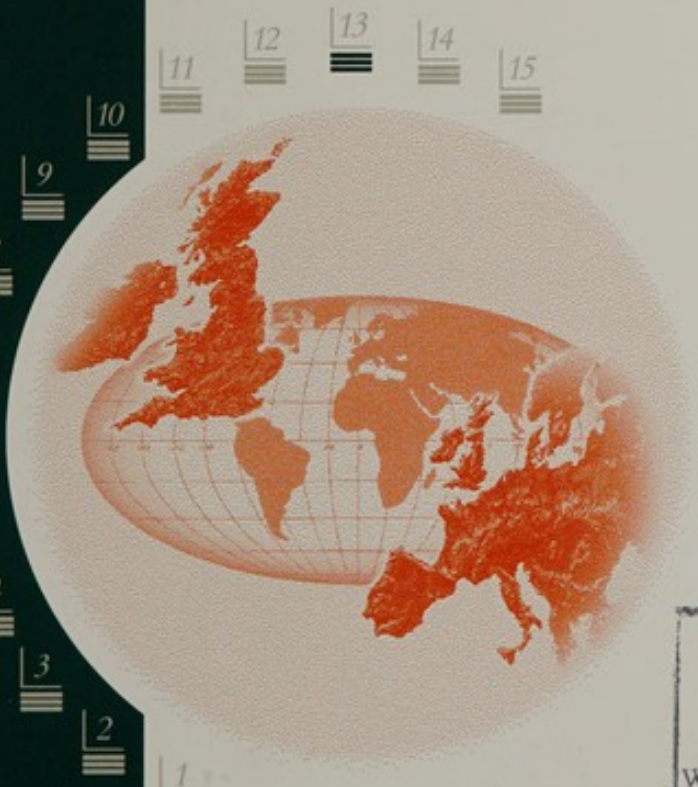
ENERGY



Office of Science and Technology

THE SECTOR

The energy sector is a vital part of the UK economy, employing around 375,000 people (7.5% of industrial employees) across four main sub-sectors - supply, transportation, conversion and end-use. As a whole the sector represents 4.6% of GDP, 12% of total UK investment and 44% of UK industrial investment. In addition, energy is an essential commodity for the manufacturing sector and underpins services which employ some 250,000 people who work in non-energy sectors to support offshore oil and gas activities.

THE FUTURE

Industry in the energy sector is becoming increasingly global in nature with demand for energy powerfully driven by countries which are rapidly industrialising or have high population growth rates. Growth in energy demand in the UK is relatively modest, driven principally by continuing increases in the transport sector. It is therefore necessary to keep UK industries competitive on a world scale in the 21st century in order to maintain the energy sector's contribution to the UK's wealth creation and quality of life. The driving forces in the future global markets for energy products and services will be environmental concern, security of supply, world energy prices, the growth in demand for energy services, social/political acceptability, government intervention and life-style changes.

SUMMARY OF RECOMMENDATIONS

The nine high priority opportunities for energy products and services are:

- High hit-rate exploration techniques for oil and gas, to increase accuracy of field identification through improved acquisition, integration, analysis and interpretation of geophysical data.
- Increased oil and gas yields from hydrocarbon reservoirs, by more accurate characterisation and improved simulation, better drive and production technologies.
- Decommissioning of redundant nuclear facilities, involving the safe and economic disposal of redundant facilities, minimising non-recyclable waste.
- Photovoltaic power generation at competitive cost, via development of thin film materials suitable for low cost production and installation.

- "Clean Coal" power generation, involving demonstration of new technologies in three main areas - stack-gas cleaning, coal combustion and gasification.
- Combined cycle units for gas power generation, requiring improvements in components to increase the combined-cycle efficiency to 60 per cent with natural gas.
- Low emission power units for transport, encompassing a range of technologies based on engine design but including fuel handling and fuel quality sensors.
- Greater efficiency, energy-intensive industrial processes.
- Greater energy-efficient buildings from both build and retrofit, including better adaptation to human behaviour as well as a range of new technologies.

These are underpinned by eight key technologies and eight key sciences.

FORWARD WITH FORESIGHT

- The Technology Foresight programme should be continued.
- The embryonic networks established to date should be expanded further into industry, the Institutions and trade associations and strengthened with the aim of establishing a national consensus on the key target areas.
- The core capabilities that will maintain the UK's competitive advantage have been identified and these should be used, not only to guide future investment, but also to develop a sharper focus on the most important energy technology options.
- Fundamental research in energy is fragmented and would benefit from the establishment of an independent centre of excellence and the building of collaborative links leading to joint ventures.
- The Research Councils and relevant Departments of government should reflect Foresight findings in their decisions on future programmes in order to develop appropriate initiatives: the Energy Foresight panel would welcome opportunities to discuss with Councils and Departments how to take forward the above recommendations.

TECHNOLOGY FORESIGHT PROGRAMME

The purpose of the Technology Foresight Programme is to help business people, engineers and scientists become better informed about each other's efforts. It is bringing these communities together in networks - looking forward in partnership - which will help to identify emerging opportunities in markets and technologies. The Programme will also help to ensure that resources are used to best effect in support of wealth creation and improving the quality of life. The results of Foresight will inform decisions on spending by Government and industry. Foresight findings are available to small and medium sized enterprises which may not have the resources to undertake Foresight work on their own account.

The Technology Foresight Programme is co-ordinated by the Office of Science and Technology (part of the Cabinet Office). Foresight panels have been working in each of the following 15 sectors:

Agriculture, Natural Resources & Environment
Chemicals
Communications
Construction
Defence & Aerospace
Energy
Financial Services
Food & Drink
Health & Life Sciences
IT & Electronics
Leisure & Learning
Manufacturing, Production & Business Processes
Materials
Retail & Distribution
Transport

Summary leaflets (like this one) are available for each sector. Copies of these documents are available from the Office of Science and Technology, Albany House, 84-86 Petty France, London, SW1H 9ST (Fax: 0171-271-2015). Full reports for each sector are available from Her Majesty's Stationery Office.

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TECHNOLOGY Fore*sight*

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