

Services to
Industry Groups:
Energy

Energy Industries
Strategy: 2005-2010
A strategic framework for
Scotland's energy sectors



Scottish Enterprise

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Foreword

In August 2004 the Scottish Enterprise Board approved the Energy Strategy summarised by this document. It covers the development of a strategic framework - or route map - which will in turn drive the evolution of a pan-industry strategy for economic development in Scotland's energy sectors. In essence it captures a strategic approach that we believe is capable of yielding maximum economic benefit for the Scottish economy over the coming decade and beyond.

The value and long-term success of this approach will, however, need to be judged in an even wider context: the strategy has been developed as a means of working towards our stated economic aspirations specifically within the context of government policy and the prevailing regulatory framework.

The strategy is set against the backdrop of the prevailing industry issues and conditions in 2004, and uses 2010 as a benchmark year in terms of measuring progress.

This piece of work, as it stands, represents the core of the strategy, but the process will obviously remain live and dynamic: other energy initiatives and projects are expected to be submitted for approval throughout the term of this strategy.

The contribution to date from stakeholders - not least the 30 companies and organisations in developing this strategy has been invaluable and I am extremely grateful to them for their contribution. I look forward to continuing input from industry which will be central to the successful delivery of the strategy in the long term.

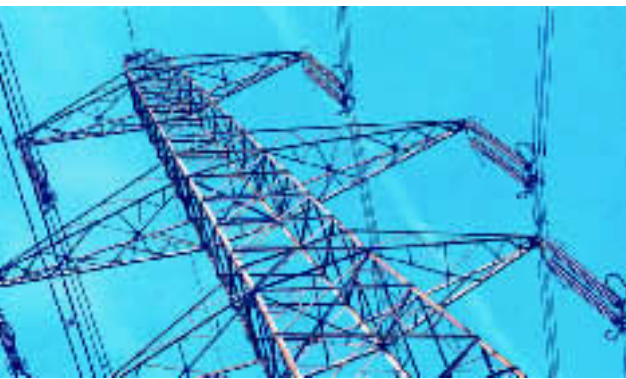


A handwritten signature in black ink, appearing to read 'Brian Nixon'.

Brian Nixon
Director, Scottish Enterprise Energy Team

Background

Energy industries are strategically important and contribute significantly to the Scottish economy. Between energy production and generation, some 100,000 highly skilled people are employed in approximately 2,000 businesses ranging from multinationals, large Scottish global companies, and a highly regarded small to medium enterprise base. In the Royal Bank of Scotland's survey of value adding companies in May 2004, 30 of the top 100 firms were from the energy sector.



In seeking to determine an energy strategy to deliver maximum economic benefit for Scotland, the industry today has been analysed and assessed in terms of what could realistically be achieved in 2010. It is clear from this analysis that Scotland has several advantages on which it can build for the future. Offshore oil & gas production has supported the development of a very strong supply and service base, now well placed to pursue international growth opportunities. Coal, gas and nuclear have similarly supported the conventional power generation sector to flourish, and to be in demand in developing markets.

The opportunity, and the challenge, facing the North Sea oil & gas industry is to produce the remaining half of its reserves, estimated to be between 22 and 31 billion barrels. This has benefits not only for the value of the oil & gas produced, but importantly for the ongoing innovation and competitiveness of Scottish based industry.

However, with current activity and investment profiles there is real concern that we will not realise this full potential. The risk to Scotland is not merely that the North Sea will cease to be economically viable before all the accessible oil & gas is produced. As big a threat flows from significant negative impact on Scottish contracting and service businesses which will no longer have a home market from which to develop the technologies and techniques that make them competitive worldwide.

Scotland's other opportunity is to develop technologies and capabilities needed to exploit the country's unique range of renewable resources, at a time when the need is being recognised world wide. The risk in this instance is that without effective management and priming, it is possible that Scotland's reserves could be exploited using technology and expertise from outwith our shores, as is largely the case with wind.

The Energy Industry in Scotland in 2004



Oil & Gas: Exploration in, and production from the UK Continental Shelf have peaked, and although the North Sea will remain one of the world's great energy provinces for many years, its contribution to the economy will inevitably decline. Significant change has been witnessed in recent years with a string of consolidations amongst major and minor operators. Asset divestments from majors to independents are expected to increase, leading to new, but smaller investment opportunities opening up. Some 60 new operators have entered the province in the last 10 years. Governments,

operators and contractors of all sizes generally agree on the need to further stimulate this process, but if the opportunity to maximise the opportunities of the UK Continental Shelf is to be grasped, facilitation will be needed to establish the common ground.

It is vital that Scotland retains the commitment of the major operators, to balance the new investment and innovative ways of working of the independents, if we are to realise the remaining reserves from the UK Continental Shelf. Assets need to be transferred to operators who are prepared to invest, technology development must be sustained to access remote and smaller accumulations, and further savings in costs must be made in finding and producing.

In the domestic oil & gas arena, Scotland has a unique opportunity to offset the projected decline. Expenditure in the UK is currently £7.5 billion per annum but expected to fall to £4-5 billion by 2010, while employment is expected to fall from a current 85,000 to around 75,000 in the same period. However, by virtue of significant presence in oil & gas, Scotland is ideally placed to pursue global growth opportunities in some 90 countries by building on already strong performance in international oil & gas markets, and in the emerging offshore decommissioning market.

The UK Government's Energy White Paper published in early 2003 set targets for diversity and security of supply, coupled with major reductions in carbon dioxide emissions. The Scottish Executive has set even more demanding targets, thus providing an agenda for strong growth in sustainable energy generation, and renewed focus on environmental performance and energy efficiency (industrial and domestic).



Renewable Energies: Scotland is blessed with some of the best marine and wind conditions anywhere in the world. When the country's natural potential in sustainable energy generation is combined with an established policy for growth, with industrial expertise in oil, gas and power generation, and with strong academic research capabilities, then it is clear Scotland has the ingredients to capitalise in sustainable energy generation. Over coming years Scottish Enterprise's role in renewables must be to support development and demonstration of key technologies, and to stimulate critical mass in emerging industry sectors, particularly marine energies, fuel cells and hydrogen.

Renewable energies are experiencing rapid growth as a result of both UK and Scottish government policies and targets. The recent rush for onshore wind developments has seen the introduction of several newer independent generators, but has provided only limited opportunity for our engineering and service firms to manufacture, install or maintain wind turbines. While this technology has been largely captured by the Danes, Germans and Americans, Scotland's academics and industrialists demonstrate capability in offshore wind, wave and tidal stream marine energies, plus emerging fuel cells and hydrogen concepts.

The Scottish Parliament has established a joint government, academic and industrial steering group to ensure maximum economic development from renewable energies, and Scottish Enterprise is represented at senior level on this Forum for Renewable Energy Development in Scotland. The UK renewable energy market is forecast to grow to at least £1 billion per annum by 2010 with 6,000-12,000 new jobs being created in Scotland (Renewables UK/Scottish Enterprise Gap Analysis).



Conventional Power Generation: Scotland's conventional power generation sector (coal, nuclear and gas fired etc) has a cluster of engineering, manufacturing, contracting, consultancy, legal and financial businesses that are highly regarded at home and abroad. Expenditure by the major generating companies in Scotland with the 200 firms in this supply chain is primarily operational and forecast to remain around £1 billion per annum.

Over coming years, major capital investment in emissions reduction schemes may be forthcoming at some of Scotland's coal fired power stations, but the dates set by the European Union for such improvements are challenging and business cases are looking increasingly unrealistic.

In view of the limited opportunities for growth in conventional power in the domestic market, the sector's strengths will prove important as companies diversify into renewable energies and seek to further grow their businesses in global markets especially China and India.

The Ambition for Scotland's Energy Industries in 2010

The energy industries have an excellent opportunity to offset the projected decline in Scotland's domestic offshore oil & gas industry, by increasing sustainable business growth in global markets, securing emerging renewable energy industries for Scotland, and by developing expertise in both offshore and nuclear decommissioning, initially in the UK then progressively for international markets.

The growth agenda is driven by a global increase in demand for energy. Demand for oil is forecast to grow by 65% by 2030, while demand for coal, gas and renewable energies are all predicted to double in this period. The International Energy Agency forecasts expenditure around £300 billion per annum to meet demand and develop the required infrastructure.

The ambition of this strategy is therefore to prolong the economic opportunities in the North Sea, and to reduce expected job losses as much as possible. Concurrent with this, our vision is to significantly grow Scotland's share of global energy markets (currently around 3%), incubate and build emerging renewable energy industries, in particular marine and offshore wind, and through time, niche applications in fuel cells and hydrogen, and develop expertise in offshore and nuclear decommissioning through transfer of skills, technology and experience from other energy sectors.

It is acknowledged that these ambitions require greater stimulation and support than is possible from Scottish Enterprise alone. It is therefore proposed that the Scottish Enterprise Energy Team's core financial and resource investment be used to develop a framework, or route map, to drive consultation, engagement and participation with the whole industry. Other energy projects will follow this framework, aligned with the strategy but seeking alternative funding.

By 2010, the main ambitions for the energy industry through this strategy are:

- **to maintain Scotland's share of the UK oil & gas, power generation and renewable energy expenditure levels at around £9 billion per annum, by offsetting the projected decline in offshore oil & gas with growth in renewable energy, offshore and nuclear decommissioning;**
- **to maintain Scottish employment in the domestic energy sector at around 100,000, growing in new sectors to balance expected decline in the North Sea; and**
- **to build overseas sales from Scottish oil & gas companies, growing from £2.7 billion in 2002 to £5 billion per annum by 2010.**

It is proposed to measure progress towards this ambition on an annual basis, and to develop an agreed suite of performance metrics with industry and partner organisations appropriate to this strategy.



Strategic Themes to Deliver this Ambition

Following detailed analysis, five Strategic Themes have been identified as the framework by which to assess where and how to direct Scottish Enterprise investment and resources (and those of partner organisations) to maximise competitive advantage and impact. They are:

- **Global Business Development;**
- **Commercialise Opportunities from Technology Development;**
- **Maximise Diversification Opportunities;**
- **Strengthen Key Industry Sectors; and**
- **Stimulate Research Collaboration.**



Underpinning these themes will be the development and maintenance of strong relationships with all sectors, with the aim of progressively combining a number of currently disparate industry groups. It is also proposed to explore building a pan-energy leadership forum, to continue to build a pro-active communications strategy to promote the industry, and to highlight the role of Scottish Enterprise within the industry.

The following table contains details of these Strategic Themes and illustrates the key areas of focus proposed for each. This framework will allow Scottish Enterprise to analyse where future effort and investment should be directed to deliver maximum impact, and to assess how future applications support the strategy.

Given the scale of the energy industry, it is essential that Scottish Enterprise concentrates attention on those areas that offer greatest impact for economic development, and where maximum competitive advantage can be exploited. In technology terms this will result in Scotland's key strengths attracting firm support, while in global market terms it is proposed to focus on those countries that demonstrate clear demand for North Sea or power generation expertise.

Value Generators

It is estimated that Scotland's energy sector now generates more than 30% of its turnover from global markets. These capabilities are referred to in this strategy as "Value Generators".

The Oil & Gas Key Value Generators

- **Subsea Engineering**
- **Drilling & Downhole Technology**
- **Asset Engineering, Management & Optimisation**
- **Training, Competency & Education**
- **Health & Safety**
- **Environmental Management & Engineering**
- **Offshore Decommissioning**

The PowerGen Key Value Generators

- **Conventional Power Plant**
- **Offshore Wind, Wave & Tidal**
- **Cleaner Coal & CO² Sequestration**
- **Nuclear Decommissioning**
- **Fuel Cells & Hydrogen**
- **Energy Generation, Conversion & Storage**

Scottish Enterprise Energy Strategy - Key Themes and Proposed Areas of Focus

	Strategic Themes	Areas of Focus
Global Business Development	Area of greatest opportunity for growth. Provision of class leading market intelligence and analysis to support sustainable business development; market reports on target countries; Scottish Development International promotion at international conferences and exhibitions, learning journeys, trade missions; targeted inward delegations etc; promote value to be gained for companies engaged with ITI Energy.	Houston, Gulf of Mexico, Mexico and Brazil - oil & gas
		West and North Africa - oil & gas
		Russia, former Soviet Union and Middle East - oil & gas
		Asia Pacific - oil & gas and renewable energy
		China and India - power generation, renewable energy and oil & gas
Commercialise Opportunities from Technology Development	Support for commercialisation of targeted new technologies in key Value Generator areas; conceptual and feasibility studies; Proof of Concept projects; Enterprise Fellowships; technology demonstration projects; joint industry projects; assist extending the economic life of offshore and onshore assets; secure emerging technologies for domestic and global growth opportunities; maintain awareness of market led technology paths developed by ITI Energy.	Subsea engineering - oil & gas
		Drilling technologies and downhole tools - oil & gas
		Health, safety and environmental - oil & gas and downstream
		Education, training and competency assurance - oil & gas and downstream
		Decommissioning - oil & gas and power generation
		Cleaner coal technologies - power generation
		Energy conversion and storage - power generation and renewable energy
		Marine energies
		Fuel cells and hydrogen
Maximise Diversification Opportunities	Promote awareness and knowledge of opportunities to transfer skills and technologies into emerging energy markets; reduce dependency on declining offshore sector.	Nuclear and offshore decommissioning
		Renewable energy
Strengthen Key Industry Sectors	Stimulate and support the development of specialist industry groups in the key Value Generator sectors. Promote and facilitate the transfer of skills and expertise between established and emerging industry sectors; promote benefits of engagement with ITI Energy to companies.	Subsea, environmental, training and competency - oil & gas
		Wave, tidal stream and offshore wind
		Fuel cells and hydrogen
		Advanced super-critical and in-situ gasification technologies - coal
Stimulate Research Collaboration	Facilitate virtual energy research network with academia and partners (e.g. Scottish Higher Education Funding Council); stimulate greater collaboration within and between academia/ industry in the key Value Generators.	Petroleum engineering, seismic, drilling, environmental etc - oil & gas
		Wave, tidal stream and offshore wind - marine energies
		Fuel cells and hydrogen
		Cleaner coal and carbon sequestration technologies
	Underpinning Themes	Areas of Focus
Energy Industry Promotion	Industry research and analysis; industry metrics and performance benchmarks; annual measurement of progress.	MSPs and MPs cross party oil & gas and renewable energy groups
		Encourage internationally significant events to Scotland
		Graduate attraction programme
Pan-Energy Leadership Forum	Consultation and facilitation with all energy sectors to stimulate formation of a pan industry leadership forum.	Bringing together the work of PILOT, FREDS (Forum for Renewable Energy Development in Scotland), SEIG (Scottish Enterprise Industries Group), and promoting progressive participation of industry and partner organisations.

Scottish Enterprise's Role in Establishing the Framework for an Energy Industry Strategy



Scottish Enterprise has a history of effective influence, facilitation and leverage within the energy industry. In recent years the core Scottish Enterprise Energy Team has focused on diversification and technology development with a notable rise in international sales by Scotland's oil & gas companies from just over £1 billion in 1997 to more than £3 billion in 2003.

In view of the important role of the major and independent operators and generators, and also of the many large and small Scottish companies adding value to the economy, it is important that strong and proactive relationships are maintained. An important aspect of this framework is the need for the whole Scottish Enterprise Network to promote the Energy Strategy to a wide cross section of the industry, and to encourage support and participation.

It is therefore proposed that top energy companies should benefit from a Principal Relationship Manager to encourage senior level engagement with the strategy. Delivery will also depend on full support from the 250+ energy businesses that are account or client managed by the Local Enterprise Companies, continued international support and advice from Scottish Development International to energy firms (currently over 200), and an increasing number of companies graduating from the Global Companies Development Programme. Another important aspect of Scottish Enterprise's engagement with industry is the account management of more than 150 energy inward investors.

Three dimensions of Scottish Enterprise investment have been identified with this strategy, the first of which is the core Scottish Enterprise Energy Team. Second is Scottish Enterprise Network investment, including an estimated £2.5-3 million each year by Local Enterprise Companies in support of energy companies in their regions, plus more than £600,000 per annum on energy Proof of Concept Projects. On average 14 account and client managers work full time with energy businesses. And third is the identification of other major projects which will seek funding outwith the scope of this strategy.

ITI Energy is progressing with its mission of commercialisation via significant market led research & development programmes, and has an extremely important role to play in this area. The already effective linkages between ITI Energy and the various parts of the Scottish Enterprise Network will be maintained and strengthened.



During 2005 it is proposed to transition the Energy Network Group which is currently operating, into an Energy Community of Practice to co-ordinate and drive activity across the Scottish Enterprise Network, and to co-ordinate local energy initiatives within this overall strategy. An International Coordination Team is also in place, developing and implementing international “knowledge in” and “knowledge out” propositions and planning.

The core Scottish Enterprise Energy Team will continue its role to stimulate key industry sectors, assist the commercialisation process with academic and industrial organisations, promote diversification opportunities, sponsor industry research, provide market intelligence and analysis, and undertake conceptual/feasibility studies. Close working relationships will be maintained and developed with our various partners and industry organisations, with the academic community, with MSPs and MPs, and with funding partners.

Engagement with Scotland’s Energy Industry

As already highlighted, Scottish Enterprise recognises that it cannot deliver the ambitions of this strategy in isolation, and that active participation and contribution from industry, academia and partner organisations are essential and highly desirable.



The strategy is very much still a ‘live’ process – during 2005, for example, we will be working to build into it specific performance measurement mechanisms, as they are approved by the Scottish Enterprise Board. Again we will be looking to liaise with stakeholders in undertaking that exercise.

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