

RESPONSE TO RSE ENERGY INQUIRY – REF 2901M

General

- 1. How should Scotland provide for its energy needs over the next 5, 15, 30, 45 years, in the context of the likely UK, European and global energy environment?**

Scotland should provide for its future energy needs through a well-balanced mix of technologies.

In order to realise the remaining reserves from the UKCS there needs to be continued support of indigenous oil and gas exploration, combined with a serious commitment to develop the country's natural potential in sustainable energy generation, particularly offshore wind, marine energies, fuel cells and hydrogen. In the area of conventional power generation there needs to be a serious review of the nuclear power option in the near future, and development of new methods of accessing coal reserves in a carbon neutral method alongside enhanced technologies for cleaner coal and carbon clean up.

We believe that Scotland should strongly promote its leading capabilities with cleaner coal technologies, with early support for a retrofit demonstration project at an existing coal fired plant. This technology has huge potential globally, but requires demonstration.

- 2. Should Scotland aim to be self-sufficient in energy in general, and in electricity in particular, despite trends towards interdependence within Europe?**

Scotland should aim to be self sufficient in generating energy from carbon free processes by 2045. Self sufficiency in energy supports businesses, employment and industry capability.

Scotland has very strong supply and service chains in oil and gas, power generation and renewable energies, but these businesses can only remain innovative and sustain technology developments if they have a sustainable, vibrant domestic energy market.

- 3. What are the possible implications and consequences for Scotland, and the UK, of becoming increasingly reliant on imported oil and gas for their energy needs?**

If Scotland were to become reliant on imported oil and gas there would be a significant negative impact on the economy as Scottish businesses would no longer have the home market from which to develop the technologies and techniques that make them competitive worldwide. There would also be difficulties in attracting foreign direct investment due to the potentially unreliable supply combined with higher energy costs.

The cost in importing energy could easily rise due to the changes in supply and demand, especially if the supply source were to be geographically remote

and/or politically unstable. The imminent oil and gas imports from Norway are only secure until 2010-2015 so the long term strategy should be to maximise the lifespan of the North Sea, reduce dependence on imported oil and gas for home energy, and increase generation from renewable sources, nuclear and advanced supercritical coal.

Energy Supply

4. **What are the feasibility, availability, reliability, sustainability, efficiency, capacity and risks of the different energy generation technologies?**
 - a. **Wind** – not very efficient in Scotland and has reliability issues (power is only generated when the wind blows). There are also issues with grid connection and planning which slow down development. However, it is sustainable and improved performance and efficiencies are anticipated from offshore wind as developments move into deeper waters.
 - b. **Wave & Tidal** – Excellent marine conditions exist in Scotland but technologies for both wave and tidal are in the early development stages and perhaps 6-10 years away from any real impact. Reliability, availability, efficiency and capacity are still being assessed.
 - c. **Hydrogen** – Some small scale but encouraging research, design and manufacturing evident in Scotland, but still in early stages and under assessment.
 - d. **Biomass** – similar to wind but more reliable, and the extension of the Renewable Obligation Certificates (ROCs) system to include heat generation would serve to stimulate biomass developments.
 - e. **Nuclear** – In order to address the various challenges and targets for security and surety of supply, reduction in carbon emissions, scale of generation, cost etc, it seems essential that nuclear will be required in the short-to-medium term (i.e. 10-30 years). Issues around treatment and storage of nuclear waste still require to be resolved, but the option is reliable, efficient and carbon free.
 - f. **Coal & Gas** – proven technology currently meets a large base load demand, but there are some issues with emissions and associated costs of mitigation under EU directives. Cleaner coal technologies are available and offer significant emissions performance. Scotland has world class abilities in cleaner coal technologies that should be demonstrated on a major scale in Scotland (or elsewhere).
 - g. **Hydro** – most reliable renewable source and a large contributor to meeting energy demands in Scotland. Available, reliable, sustainable, with meaningful capacity. However, there are somewhat limited opportunities for further developments in hydro within Scotland.

5. **What are the likely trends, and uncertainties, in the availability and cost of energy sources over the next 20/45 years?**

We would anticipate a general increase in energy costs due to demand growth. Oil prices are likely to remain at higher levels and high oil price will encourage substitution and a consequent increase in demand for coal and natural gas. The uncertainties are around the tipping point when energy from conventional hydrocarbon sources reaches a price where new and alternative

sources of energy become economically competitive. The speed of introduction of new technologies will be forced by the availability and price of energy from conventional sources

6. What are the economic issues of capital investment in the supply and distribution of energy that need to be considered?

Scottish Enterprise is not expert in this field and will therefore leave others to comment on the issue.

7. What are the key issues surrounding the development of Scotland's bulk electricity transmission and local distribution systems?

There are technical issues on which others are more qualified to comment, and developments are taking place that may resolve certain issues.

In general, it is recognised that capacity within the present system is an issue, and investment is planned to resolve part of the problem. However, it is considered that the transmission system requires investment if the renewable energy potential in Scotland is to be realised.

One issue is the "saving" of capacity for the future marine renewables, the debate being whether wind power development should be restrained at the point where marine renewables can be assured of future transmission capacity.

Another issue is the future of transmission capacity currently taken up by the conventional and nuclear power stations. Should this capacity be released to renewable energy when the life of the conventional and nuclear plants comes to an end? It can be argued that it is essential to retain capacity for non-intermittent power sources in order to maintain security of supply.

Energy Demand

8. What will the impact of energy availability and price be on the demand for energy by commerce and industry in Scotland?

Energy availability will drive price, dependant on market conditions. Increased prices will affect the cost of doing business and the competitiveness of high user industries, which could result in possible business failure and difficulty to attract inward investment.

9. What are the likely trends in the domestic demand for energy for space heating and other purposes? What would need to be done to achieve major savings? What are the investment costs?

The general public in Scotland are slowly becoming aware of climate change and realisation will play a significant role in stimulating the demand for private turbines, solar panels, community wind projects etc. We would anticipate that increased demand should stimulate increased commercialisation of energy efficient products and services, and hence reduce unit costs further.

10. What are the likely trends in the demand for energy for transportation in Scotland? What is the likely time-scale and scope for substituting other power sources for fossil fuels? What are the likely investment costs?

Scotland is likely to see the progressive increase and use of fuel cells, biodiesel and LPG for transportation in the future. The introduction of road charging could also have a big effect. Biofuel and hybrid engines are undergoing development and are likely to become increasingly popular in the future.

Environmental and Social Issues

11. What are the environmental concerns that need to be taken into account, in terms of the impact on ecological and other natural resources, as well as waste management and impacts on the landscape?

The UK's shared framework for sustainable development, *One future – different paths*, provides a set of 5 guiding principles that form a basis for sustainable development policy in the UK. The five principles are living with environmental limits, ensuring a strong, healthy and just society, achieving a sustainable economy, promoting good governance and using sound science responsibly. The framework also has four priorities for UK action: sustainable production and consumption; climate change and energy; natural resource protection and environmental enhancement; and sustainable communities.

12. Can the objectives of environment improvement and economic growth both be met without a major increase in energy costs? What steps should be taken to enable an informed debate on the issue?

The Scottish Executive will publish a *Scottish Sustainable Development Strategy* late in 2005 that will translate this framework's aims into action, reflecting devolved responsibilities and based on Scottish experience, needs and views.

13. What are the social values and consequences of energy generation and distribution to employment opportunities, health, and energy affordability?

Scottish Enterprise is not expert in this field and will therefore leave others to comment on the issue.