

The
Royal Society
of Edinburgh



Energy for Scotland:
A Call for Action

Follow-on Activities from The RSE's Report
Inquiry into Energy Issues for Scotland

May 2007

Appendices



ENERGY FOR SCOTLAND: A CALL FOR ACTION

CONTENTS

APPENDIX I. ASSESSMENT OF PROGRESS ON OUR RECOMMENDATIONS AND ACTION REQUIRED	3
APPENDIX II. SUMMARY OF QUESTIONS & COMMENTS RAISED AT DISCUSSION SESSIONS	9

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- Increasing two-way international exchange
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The views expressed in this report do not necessarily represent those of all Fellows of The Royal Society of Edinburgh.

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APPENDIX I. ASSESSMENT OF PROGRESS ON OUR RECOMMENDATIONS AND ACTION REQUIRED

Recommendation 1: It is essential that decisions are taken by the UK Government by the middle of 2007 to provide a more stable and longer-term policy framework to give greater assurance to the consumer on continuity of energy supply and to give confidence to the providers of energy to make 'investment decisions'.

The Government's Green Paper was produced in July 2006 and a White Paper is expected in Spring/Summer 2007. Recommendation stands. The UK government position needs to be unambiguous and provide basis for improved operation of energy markets and quicker means of achieving energy targets.

Recommendation 2: The UK Government should maintain the energy policy objectives set out in the 2003 White Paper: to ensure an adequate, safe and secure supply of energy, to reduce the emission of greenhouse gases with the setting of unambiguous long-term targets, to promote economic development, and to protect vulnerable sections of the population from the adverse effect of market forces.

The July 2006 Green Paper re-iterated the 2003 targets. The forthcoming White Paper should restate the 2003 targets and identify how these are to be achieved.

Recommendation 3: The UK Government should periodically review the instruments and targets used for implementing the policy framework to assess their effectiveness in achieving their intended objectives, and to ensure that unintended consequences have not arisen.

There has been a range of Scottish Executive, Department of Trade and Industry, and Department for Transport consultations and reviews on energy policy since the publication of the RSE Inquiry report. These have included:

Scottish Executive

- (SEA) Strategic Environment Assessment for Wave and Tidal Energy
- Strategic Environmental Assessment (SEA) Environmental Report: Consultation on the Draft Scottish Energy Efficiency and Microgeneration Strategy
- Energy Efficiency and Microgeneration Strategy for Scotland - Draft for Consultation
- Statutory Consultation on Review of ROS (Support for Wave and Tidal Power) 2006
- Exempting the European Marine Energy Centre from section 36 of the Electricity Act 1989 – A Consultation
- SPP 10 Planning for Waste Management Consultation Draft
- Scottish Planning Policy 6: Renewable Energy Consultation Draft

DTI

- Resilience of overhead power line networks: An Energy Review Consultation
- Offshore natural gas storage and liquefied natural gas import facilities: a Consultation
- Energy billing and metering: changing customer behaviour - An Energy Review Consultation
- Energy Review Implementation: Updating the electricity generating stations and overhead lines (inquiry procedure rules) in England and Wales – Consultation
- Consultation on measures to reduce carbon emissions in large non-energy intensive business and public sector organisations
- Distributed energy: a call for evidence
- The Effectiveness of Current Gas Security of Supply Arrangements: a Consultation
- Consultation on improving public participation provisions in environmental impact assessment regulations for energy infrastructure
- Reform of the Renewables Obligation & Statutory Consultation on the Renewables Obligation Order 2007
- The Energy Efficiency Commitment April 2008 to March 2011: Initial Consultation
- Proposals to update the gas priority user arrangements
- Energy Review Implementation - Nuclear Policy Framework
- A Proposal to Amend Non-Fossil Fuel Obligation Contracts For Municipal and Industrial Waste Projects With Combined Heat and Power

Department for Transport

- Commission's proposal to include aviation in the EU Emissions Trading Scheme
- Consultation on the draft Renewable Transport Fuel Obligations Order
- Reducing new car CO₂ emissions: what should replace the current Voluntary Agreements?

We welcome these consultations and hope that action will result. We remain of the view that the UK Government should make a firm commitment to continue to periodically review its instruments and targets.

Recommendation 4: We strongly recommend that the Scottish Executive develops a comprehensive energy strategy, within the boundaries of its powers and responsibilities and in consultation with the UK Government, by the end of 2007. This should embrace specific strategies on energy efficiency, transport, heating, electricity generation and the use of renewables. This should also include the strategic aim of a secure, competitive, socially equitable, and low carbon emissions supply of energy for Scotland, and the four supporting objectives we propose.

There has been a range of energy policies developed since the publication of the RSE Energy Report. These have included:

Scottish Executive:

- Scottish Planning Policy SPP 6 Renewable Energy
- Biomass Action Plan
- Energy Efficiency and Microgeneration: Achieving a Low Carbon Future: A Strategy for Scotland - Draft for Consultation
- Guidance Note: Controlling Light Pollution and Reducing Lighting Energy Consumption
- The Central Energy Efficiency Fund (CEEF) for Local Authorities, NHS Boards and Scottish Water extended to cover Scotland's further and higher education institutions
- An Action Plan for Buses in Scotland
- Scotland's National Transport Strategy

We welcome this activity, but note that there is still no overarching Scottish Executive energy strategy. We strongly recommend that such a strategy is developed by the end of 2007.

Recommendation 5: The Scottish Executive should seek Parliament's approval for the establishment of an Energy Agency for Scotland as a Non-Departmental Public Body. Its responsibilities should include the ability to advise the government and all other relevant interests on all aspects of energy, promotion of energy efficiency, disbursement of all grants and incentives related to energy, independent assessments of technology options and whole lifetime costs, and gathering and disseminating best practice on energy use.

There has been no response to this recommendation. The Scottish Executive should make a formal response.

Recommendation 6: A common methodology could and should be developed by the proposed Energy Agency for Scotland to assess the relative merits of energy technologies, using the nine factors identified. It should include full lifetime costs and a carbon audit. Assessments using the methodology should be undertaken independently of specific interests and be open to public scrutiny.

There has been no response to this recommendation, although there has been wide agreement with the recommendation from energy interests. The Scottish Executive should make a formal response.

Recommendation 7: Industry should be persuaded, through economic instruments and approval mechanisms in the statutory planning system, to utilise waste energy, especially heat, for beneficial purposes. In particular, we recommend that all future small thermal generating plants, near to population centres, should have specific arrangements for the use of waste heat.

The Scottish Executive is developing a *Renewable Heat Strategy for Scotland*, which is due for publication at the end of 2007. There is wide public agreement with this recommendation and we encourage the Scottish Executive and industry to take action on this issue.

Recommendation 8: Local Councils should stimulate more energy-efficient housing designs through the Building Regulations system and should substantially improve the enforcement of Building Regulations in relation to energy efficiency.

The new *Scottish Planning Policy SPP 6 Renewable Energy* and the Executive's draft *Energy Efficiency and Microgeneration Strategy* provides guidance on the role of the planning system and building standards in terms of energy-efficient housing. Local Councils are encouraged to use this to improve the energy efficiency of housing. New building standards and guidance came into force on 1 May 2007, with significant changes being made to the section on energy. In Scotland, Energy Performance Certificates will be phased-in from May 2007 and will provide information on the energy efficiency and CO₂ emissions rating of a building. The points on the Building Regulations in our Recommendation have not been taken up and should be.

Recommendation 9: A more comprehensive and integrated package on energy efficiency should be developed at both UK and Scottish levels to reduce the current confusion and increase effectiveness. This should be linked to strengthening the targets and ensuring their achievement under a revised Energy Efficiency Commitment.

The Scottish Executive published a draft *Energy Efficiency and Microgeneration Strategy* for Scotland in March 2007, and the DTI issued a consultation on the Energy Efficiency Commitment April 2008 to March 2011 in July 2006. Following review of the response to the consultations, the Scottish Executive and UK Government should develop a comprehensive and integrated package on energy efficiency.

Recommendation 10: The Scottish Executive should seek Parliament's approval for the establishment of an Energy Efficiency Agency for Scotland as a Non-Departmental Public Body. It should have both advisory and executive powers with authority to scrutinise and make recommendations on energy efficiency action in the public sector, disburse incentives for reducing energy use, increasing efficiency and supporting novel initiatives, and for disseminating best practice.

There has been no response to this recommendation, although there has been wide agreement with the recommendation from energy interests. The Scottish Executive should make a formal response.

Recommendation 11: The Scottish Executive should require Local Councils to achieve specific and measurable improvements in the efficient use of energy through the town and country planning system and building regulations.

The Scottish Executive published a draft *Energy Efficiency and Microgeneration Strategy for Scotland* in March 2007 which proposes the setting of measurable targets in improving energy efficiency. The Scottish Executive should develop and implement such targets.

Recommendation 12: As part of encouraging the change of behaviour needed on energy efficiency, a comprehensive set of measures including education, information and incentives should be developed by the proposed Energy Agency for Scotland (or failing that by the Scottish Executive).

The Scottish Executive draft *Energy Efficiency and Microgeneration Strategy for Scotland* (March 2007) noted the intention to raise the profile of energy efficiency and microgeneration through more focused education and awareness programmes aligned to the *Eco Schools* initiative during 2007. The DTI have also issued a consultation on energy billing and metering: changing customer behaviour, in November 2006.

We encourage the Scottish Executive to continue to support education and awareness raising programmes, such as the Energy Saving Trust's Energy Saving recommended campaign.

Recommendation 13: The UK Government should consider measures, such as the use of lane preference and variable charging systems, to encourage higher occupancy in private vehicles.

In March 2007, the UK Government launched an 'Act on CO₂' climate change campaign, which encourages motorists to improve fuel consumption and to 'Drive Smarter', through a campaign website. The UK Government is encouraged to continue its efforts on private vehicle efficiency of use.

Recommendation 14: Bus transport operators should be given greater incentive through the Scottish Executive's current service support mechanism to operate a wider range of vehicle types to cope with variable passenger loads.

The Scottish Executive's *Action Plan for Buses in Scotland*, launched in December 2006, seeks to help Scotland reduce its global environmental and climate impact through sustainable development, but makes no reference to matching vehicle types to passenger loads. The Scottish Executive is encouraged to take action on this issue.

Recommendation 15: Scottish Enterprise should engage with Scottish Coal, Scottish Power, Mitsui Babcock (now Doosan Babcock), the Scottish Universities and other stakeholders, to determine a significant clean coal research and development programme in Scotland.

Clean coal is not a current priority with Scottish Enterprise's Energy Intermediate Technology Institute. The Chancellor of the Exchequer announced a competition to develop the UK's first full-scale carbon capture and storage demonstration facility. The DTI is supporting a programme of research and development into cleaner coal technology as part of the Government's Sustainable Energy Management and the Built Environment Foresight initiative. The recently announced UK Energy Technologies Institute will also have the development of sustainable approaches to reducing emissions from existing fossil fuel technologies as one of its key themes. The Scottish Executive and Scottish Enterprise should seek to build on and develop Scotland's research and development strengths in this area.

Recommendation 16: An energy technology scrutiny and advisory service should be established by the Scottish Executive. Ideally, this should be part of the functions of the proposed Energy Agency for Scotland with ITI Energy.

In December 2006, the Scottish Science Advisory Committee report on a Scientific Network of Excellence in Energy recommended that a Scientific Network of Excellence in Energy be established in Scotland and charged with a responsibility to co-ordinate demonstration and testing facilities through optimised collaboration with Government, academic and industrial partners. It is recommended that the Scottish Executive implement this proposal.

Recommendation 17: The research community, government, ITI Energy and the private sector should work together to provide the financial, intellectual, policy and enterprise stimulus for the development and use of appropriate renewable technologies in Scotland and the development of cleaner fossil fuel-based technologies in Scotland. A Centre of Scientific Excellence in Energy could be an important means of exploiting Scotland's skills and opportunities. The Scottish Scientific Advisory Committee is encouraged to produce a strong proposal for it, which the Scottish Executive is encouraged to support.

In December 2006, the Scottish Science Advisory Committee report on a Scientific Network of Excellence in Energy recommended that a Scientific Network of Excellence in energy be established in Scotland. The Scottish Executive has also been supporting the co-ordination of a Scottish collaborative bid to substantially participate in the DTI's Energy Technologies Institute. The Scottish Executive is encouraged to take forward the idea of a Network of Excellence and to continue to support Scotland's participation in the UK Energy Technologies Institute.

Recommendation 18: The Scottish Executive should ensure that the definition of forest waste used by SEPA enables state and private forest owners to utilise forestry thinning and other wood materials in energy production.

The Renewables Obligation (Scotland) Order 2006 (20th March 2006) defines "biomass" as fuel which "... includes agricultural, forestry or wood wastes or residues, sewage and energy crops (provided that such plant or animal matter is not or is not derived directly or indirectly from fossil fuel)". The Scottish Executive should monitor the application of this definition to ensure it enables state and private forest owners to utilise forestry thinning and other wood materials in energy production.

Recommendation 19: The Scottish Executive, as part of the development of its energy strategy, should develop fuel substitution targets for all of the main energy consumption sectors: transport, heating and electricity.

In addition to the draft *Energy Efficiency and Microgeneration Strategy for Scotland*, which will seek to set energy efficiency and microgeneration targets for Scotland, the Scottish Executive produced *Scotland's National Transport Strategy* in December 2006 which has as one of its three strategic outcomes 'to reduce emissions to tackle climate change'. The Department for Transport is also consulting on the draft *Renewable Transport Fuel Obligations Order* to require the use of biofuels and other renewable fuels in the transport sector and the Government has announced that the level of the obligation would reach 5% by 2010. We consider it is still necessary for the Scottish Executive to develop fuel substitution targets for all of the main energy consumption sectors: transport, heating and electricity.

Recommendation 20: We recommend that the UK Government, supported by the Scottish Executive, replace ROCs as soon as possible with a carbon emission reducing measure, such as a carbon levy applied at the point of carbon production. This should build on the existing EU Emissions Trading Scheme. Existing commitments should be honoured.

This recommendation has not been accepted, as the UK Government's Energy Green Paper proposes continuation of the ROCs system and the review of ROCs by the Scottish Executive recommends continuation with some adjustments. The recommendation needs further consideration by government in light of carbon reduction targets.

Recommendation 21: The UK Government should review and improve the incentives to encourage fuel substitution in transport and the production of biofuels and associated infrastructure.

The UK Government has announced the development of a Renewable Transport Fuel Obligation (RTFO) with the UK target for transport biofuel sales of 5% by 2010. The Scottish Executive has supported this target and produced a Biomass Action Plan in March 2007. The UK Government and Scottish Executive should continue to encourage fuel substitution in transport.

Recommendation 22: In the next Spending Review, the Scottish Executive should change the priorities in its transport budget to more adequately reflect its climate change priorities.

The Spending Review in Scotland is currently underway with announcements expected later in 2007. The Scottish Executive produced *Scotland's National Transport Strategy* in December 2006 which has as one of its three strategic outcomes 'to reduce emissions to tackle climate change'. The Scottish Executive is encouraged to reflect its climate change priorities in the forthcoming transport budget.

Recommendation 23: The Scottish Executive should develop an energy policy and targets for the railway system as part of the Scottish Railway Strategy.

Scotland's National Transport Strategy, produced in 2006, includes the reduction of emissions to tackle climate change as one of its key goals, and the Scottish Executive publication *Scotland's Railways*, produced in December 2006, notes that "Our long term aspiration is to continue to enhance capacity and reliability, reduce journey times and contribute to environmental and energy objectives including through electrification of key Scottish railway routes." The Scottish Executive is encouraged to achieve this aspiration.

Recommendation 24: Local Councils should undertake the following to improve fuel substitution for heating:

- (1) amend Structure Plans and Local Plans to stimulate the development of combined heat and power and district heating schemes in urban areas;
- (2) do not approve Planning Permission and Building Warrant to developments on Brownfield and Greenfield sites without these facilities;
- (3) work with the building construction industry to put into effect systems for the delivery of combined heat and power and district heating systems; and
- (4) increase the targets for the reuse of municipal waste for energy production coupled with a reduction on material sent to landfill sites in Local Waste Plans.

The Scottish Executive is developing a *Renewable Heat Strategy for Scotland*, which is due for publication at the end of 2007 and published a draft *Energy Efficiency and Microgeneration Strategy for Scotland* in March 2007. The Scottish Executive's *SPP 10 Planning for Waste Management Consultation* also includes guidelines for thermal treatment and energy from waste. The Scottish Executive and Local Councils should be encouraged to adopt these actions.

Recommendation 25: The UK and Scottish Governments should introduce a tax disincentive on waste disposal, especially to landfill, and a greater tax incentive for the reuse of waste for space and water heating as part of District Heating and Combined Heat and Power Schemes. They should also introduce a tax credit system to stimulate the use of biomass and waste for the production of heat for all buildings; and should consider an energy efficient dependent stamp duty and Council Tax as incentives for improvements in building design and construction.

In the 2007 Budget, the Chancellor of the Exchequer announced that landfill tax would rise to encourage the development of alternatives to landfill.

This recommendation stands and requires action by UK and Scottish Governments.

Recommendation 26: The UK and Scottish Governments should ensure that the framework for energy at both UK and Scottish levels encourages investors to produce electricity from a diversity of supply sources.

There is a lack of clarity on this point in the UK Government's Energy Green Paper (2006), however the DTI has had subsequent consultations on Energy Review implementation - nuclear policy framework (July 2006); reform of the Renewables Obligation (October 2006) and the effectiveness of current gas security of supply arrangements (October 2006). The Scottish Executive has concentrated on energy from renewables and has ignored potential need for energy from fossil fuels using cleaner technologies and rejected nuclear powered generation. This recommendation stands, especially for the Scottish Executive, which should also consider non-renewable sources of energy especially for electricity generation using clean technologies.

Recommendation 27: The Scottish Executive should redefine the 2020 target for the proportion of electricity generated from renewable resources in terms of reduction in greenhouse gases to meet the UK's 2050 target on emissions reductions, and set out a detailed and comprehensive strategy for meeting it.

This recommendation has not been implemented. The recommendation stands and requires action by the Scottish Executive with the support of the Forum for Renewable Energy Development in Scotland (FREDS).

Recommendation 28: A locational strategy and accompanying planning guidance for onshore wind development should be drawn up immediately by the Scottish Executive to guide Local Councils, investors and third parties, and speed up the process of decision making.

This recommendation has not been accepted by the Scottish Executive. *Scottish Planning Policy 6 on Renewable Energy* requires planning authorities to use the development plan process to identify appropriate sites for onshore wind farms; the level of protection to be afforded to natural heritage and other interests; and how the planning system can best support microrenewable technologies. As a result there will be 32 strategies and no national strategic approach. This is causing unnecessary delays and higher costs to all parties: applicants, local authorities and objectors. The recommendation stands.

Recommendation 29: Subject to agreement on implementing a satisfactory solution to the very long-term treatment of radioactive waste, we encourage both the UK Government and the Scottish Executive to keep open the nuclear electricity generating option in the interests of diversity and security of supply and suppression of greenhouse gas emissions.

The Committee on Radioactive Waste Management (CoRWM) published its final recommendations for the long-term management of the UK's radioactive waste and called for the long-term disposal of radioactive waste deep underground, together with robust interim storage. The UK Government is implicitly in favour of further electricity generating stations using nuclear technology and wishes to make decisions on very long-term treatment of radio-

active waste. Following the Scottish Parliamentary Elections in May 2007, the Scottish Executive position is that there will be no new nuclear power stations in Scotland.

Recommendation 30: Government, industry and political parties should retain options for new-build electricity generation from a variety of technologies, specifically renewables, clean coal, gas and nuclear, subject to public engagement to decide whether any technologies should be excluded from consideration.

The UK government and industry remain open-minded on this issue and the majority of Scottish political parties are against further nuclear powered electricity generation in Scotland. The recommendation stands and needs objective information to stimulate a full debate in Scotland. There was much support and also some opposition to new nuclear capacity during the public seminars held by the RSE.

Recommendation 31: The Scottish Executive should discuss with the major generating companies and National Grid Company the decisions required by UK and Scottish Governments and also by generators for the replacement of large-scale electricity generating stations in Scotland. They should take into account the public engagement in Recommendation 30.

It is expected that a UK Energy White Paper will be published in late spring/early summer 2007. In December 2006 the DTI issued a consultation on the resilience of overhead power line networks. The Scottish Executive is encouraged to undertake discussions on the replacement of large-scale electricity generating stations in Scotland.

Recommendation 32: Government authorities with approval powers, and generating companies should favour the construction of new large-scale electricity generating plant adjacent to existing plant, with easy access to the grid.

There is no evidence of action on this recommendation. The recommendation stands and action is needed by the Government and generating companies.

Recommendation 33: The Scottish Executive should carry out a review of the electricity infrastructure implications of its renewables policy, especially in light of the National Grid Company's grid connection charging policy.

The Scottish Executive has commissioned a study into the interaction of renewable generation with the electricity grid to help better inform the setting of further targets beyond those set for 2020. The DTI has also issued a consultation on the resilience of overhead power line networks. The Scottish Executive is encouraged to release the results of its study, and respond to the need to review the charging policy, given that the present system disadvantages Scotland.

Recommendation 34: The various energy use advisory bodies should compile examples of distributed systems and ensure their wide dissemination.

The Scottish Executive draft *Energy Efficiency and Microgeneration Strategy for Scotland* (March 2007) noted the intention to raise the profile of energy efficiency and microgeneration through more focused education and awareness programmes aligned to the *Eco Schools* initiative during 2007. Progress has also been made by energy use advisory bodies, such as the Scottish Community and Householder Renewables Initiative (SCHRI), the Energy Saving Trust, the Carbon Trust, and Highlands and Islands Enterprise, by putting case studies on their websites.

Recommendation 35: Joint initiatives by local enterprise companies, applied research and development groups, private enterprise, and especially local community groups, should exploit locally available energy resources for local use.

There is a great deal of progress on this in many parts of Scotland, especially in rural areas. More encouragement for these approaches is needed and the dissemination of solutions through the web.

Recommendation 36: The Scottish Executive should carry out a detailed appraisal of the potential for hydrogen to contribute to Scotland's energy mix.

The Forum for Renewable Energy Development in Scotland (FREDS) Hydrogen Energy Group (HEG) produced its report on *Hydrogen and Fuel Cell Opportunities for Scotland*, in October 2006. The Scottish Executive is urged to act on its recommendations.

Recommendation 37: The Scottish Executive should invite independent bodies, such as the Royal Society of Edinburgh, jointly to design and conduct a process of public dialogue and deliberation. Based on the outcomes of this process, they should make recommendations to the Scottish Executive about the range of technologies that should be acceptable as part of an energy mix in Scotland to ensure security of supply and economic competitiveness and to support the transition to a low-carbon economy. The process should be launched as soon as possible after publication of the UK Government energy review, and completed in the summer of 2007 at the latest.

The RSE has undertaken public debate and schools discussions, reaching a direct audience of around 455 members of the public and over 400 school students, with over 12,600 hits on the Inquiry report on the RSE website. This report and the RSE conference, *Energy for Scotland: is there a consensus?* held on 13 April 2007, completes the RSE's work.

APPENDIX II. SUMMARY OF QUESTIONS & COMMENTS RAISED AT DISCUSSION SESSIONS

This is not a verbatim account of the Discussion Sessions

Edinburgh

Public Discussion Forum

There are oil and gas developments off the West coast of Scotland. Is there anyway that these can be linked with wave technology development in that area?

What about the potential of tidal energy?

What about heat generation in Scotland, particularly solar water and space heating?

Why is there no discussion of instituting decentralised energy systems across the country?

Can nuclear be considered as sustainable and secure when one considers that uranium is finite and has to be imported?

What has actually changed in the lifestyles of the Committee, having undertaken the RSE's Energy Report, and what is the Committee doing in leadership terms?

How can the nuclear opportunity be ignored if there is to be a sensible energy generation strategy?

If people do undertake energy efficiency measures and savings in the home, what happens to the monetary savings made?

Distinction between thermodynamic work and heat.

Political leadership in energy efficiency, transport, demand reduction and consumer behaviour spheres.

Increase in demand for electricity as fossil fuel resources diminish.

Carbon life cycle of electricity generation technologies.

School Discussion Forum

As wind turbines are intermittent, is there a way of storing the energy that they produce?

Do biofuels also produce CO₂?

When the government's consultation process for nuclear is conducted adequately, will it change political opinion of nuclear?

How much fossil fuel would be saved if the nuclear option came to fruition?

Is it difficult to get investment for nuclear power generation?

What is so bad about nuclear and is there a plan to deal with the waste?

Ethical issues with regard to climate change.

Why are taxes on air travel low?

Why does Scotland not adopt Scandinavian approach and practices to building standards and energy efficiency?

What about the potential for wave and geothermal energy?

What about the possibility of undergrounding transmission cables?

Would you get a financial return on the installation of microrenewables?

Is there potential to harness the energy from natural disasters, e.g. earthquakes and volcano eruptions?

Glasgow

Public Discussion Forum

With regard to planning possibilities for the future, what are the responsibilities of local authorities and the Scottish Executive?

What is the Scottish perspective on nuclear power, particularly with regard to infrastructure?

What is going to be providing electricity when the wind does not blow?

What is it that the Finns, French and Japanese are doing that is so terribly wrong in having run nuclear power as their main source of energy?

Is there is much potential for micro wind turbines such as those now available from DIY retail stores?

How can useful public debate on energy be stimulated in light of the discussion forums?

How many jobs are created long-term from the development of wind farms in comparison to a major generation station?

In its Report, did the RSE touch upon the use of energy for transport, particularly aviation and shipping?

With regard to clean coal, compression of CO₂ at high pressure may result in leakage.

Need to advocate a positive energy culture. Behaviour can be changed but need political will as well as willingness of the people.

Profile of ground source heat pumps and solar energy in the debate.

Distributed networks is a forward-thinking concept and produces a democratisation of energy generation and consumption.

School Discussion Forum

What is the potential for using solar power in homes in Scotland?

Why are people against nuclear power?

The pupils thought that their views on energy issues were not being sought.

Perth

Public Discussion Forum

Perth and Kinross Council are in the progress of building six new schools and were considering biomass heating for these. The builders indicate that it will be three times more expensive to run biomass (woodchip) boiler compared to gas boiler. Is this correct?

Has any serious thinking been done on achieving demand reduction by implementing a dual pricing system for energy?

Not all larger vehicles have poor fuel efficiency, some do 40/50 mpg. However, a lot of saloons and hatch-backs do not perform as well as this and why are they not being encouraged to be more efficient?

What about the potential of geothermal-ground source heating?

With regard to the cost of Kyoto, would it have been better to spend the money on developing new technologies and making effective decisions?

Should Scotland be preparing for offshore deepwater technology which is being predicted?

With regard to Beaulieu to Denny transmission line, why not have sub sea cable instead?

What is the driver for the Beaulieu to Denny Line?

What are the views on the way that energy issues are largely debated on a macro scale? Is there an economic argument for microrenewables in terms of learning curves?

Need to reduce consumption and change behaviour.

Ethical issues with regard to global carbon emissions.

Inequality in the decision-making process as nuclear option appears to require considerably more debate than other important aspects of the energy scene.

Proposals in regard to the disposal of nuclear waste.

Economics of technologies is the factor which will encourage uptake.

Need for political intervention to set out framework for long-term decisions.

Chicken and egg situation regarding market for wood thinnings.

School Discussion Forum

In Scotland the agriculture industry is struggling. Can biofuels be grown to help the sector? What biofuels can be grown in Scotland?

Are floodgates in place in Perth?

What's wrong with using hydro to generate electricity?

If we can get the technology for fusion, would we need to worry about security of supply issues?

Dumfries

Public Discussion Forum

With regard to electricity transmission lines, has any research been done in respect of possible environmental impact and how much energy is lost per metre of line?

What is the thinking on a diversity of small local generators, generating closer to demand?

As wave and tidal energy technologies develop, will the costs come down?

With regard to dairy farms in Scotland, such farms have a lot of manure which could be used for biogas production. Is this another opportunity in this part of Scotland?

The question is how do we address the drivers which create endless desire and create waste. Why must consumption grow?

Is there scope for further hydroelectricity generation in Scotland?

Why was more not said about what the EU should do?

How can nuclear power for electricity generation be de-coupled from the nuclear arms race?

Onshore wind in relation to security of supply and need for back-up generation.

Linkage between energy policy and its implementation in Scotland, particularly with regard to nuclear.

School Discussion Forum

How long will oil and gas reserves last?

What is the potential of hydrogen for energy?

Can solar be beneficial in Scotland?

Are the government actually concerned about energy issues?

Why is the UK behind Scandinavia on energy?

Why don't nations invest more money for research and development?

Is the Kyoto target is achievable?

What about the development of fusion?

Why is good practice on energy efficiency and use of waste not being further replicated?

Is methane worse than CO₂?

We should be making long-term decisions.

Aberdeen

Public Discussion Forum

How do we expect to commercialise the new technologies in Scotland if we do not have the financial support from the financial institutions that they have in the US?

Is there a way of stimulating a shift to green energy for heat?

Is there a possibility for a biofuel heating oil to replace heating oil in Scotland?

What is the view on generating energy from waste?

Energy efficiency aspects of UK building standards compared to those in Scandinavia. Also, too much emphasis on electricity aspects. What about alternatives for heating and what action can be taken to incorporate these?

What is the potential for off-shore wind energy in Scotland?

Investment capital for product development and market introduction of new technologies.

Behavioural change with regard to energy efficiency.

Need for new nuclear power stations as part of mix.

Vehicle Excise Duty in relation to alternative fuels.

School Discussion Forum

Security of supply of energy as dominant priority.

Improve energy efficiency as well as good practice becoming common practice.

Is there scope for further hydroelectricity generation in Scotland?

Government should set out long-term framework for public and private sector.

Inverness

Public Discussion Forum

What are the relative costs of subsea and over land cabling?

How can environment needs be married with energy needs?

What is being done by the engineering establishment to ensure the stability of the grid system?

Why is there no production of electricity from waste in the Highlands?

Why the rush to onshore wind energy? – subsidy, landscape and tourism issues.

Conventional power stations required as stand-by plant.

Local generation of energy.

Peak oil and gas.

The Highland Council's Renewable Energy Strategy.

Why is the emphasis not on the reduction of energy?

What are the barriers to the greater uptake of microrenewables?

What proportion of the energy in the UK is consumed in the Highlands and what proportion does the Highlands generate?

Difficult to obtain information

School Discussion Forum

Why is there a focus on wind power?

Why not make more use of hydro for the generation of electricity?

Is it a good idea to have microrenewables/community energy as the energy is generated close to demand?

Should we be encouraging other nations to take action on this issue?

What about developing nations selling their "atmosphere" to developed countries?

If we do not make changes will the situation be irreversible?

Should we use underground cables instead of overhead power lines?

What are the speakers' views on nuclear power?

How can we help?