BRITISH-IRISH PARLIAMENTARY ASSEMBLY

TIONÓL PARLAIMINTEACH NA BREATAINE AGUS NA HÉIREANN

Report from Committee C (Economic) on Renewable energy except Nuclear

Doc No. 139

1. Introduction

1.1 There are a number of compelling environmental and economic reasons to support the renewable energy sector and encourage the development of this sector. The only way to meet the energy needs of the future is through diversification of supply. No single form of renewable energy offers a solution to our energy needs. All forms of renewable energy have a part to play in the solution.

1.2 In formulating the terms of reference for its inquiry the Committee purposefully excluded nuclear energy from its ambit, as nuclear energy is not universally regarded as a renewable energy source. Its exclusion is not intended to suggest that nuclear energy may not have a role in the future mix of energy sources needed to ensure sustainable supply, an issue addressed in the recent UK Government white paper on meeting the energy challenge.'

2. Security of supply

2.1 Ireland and the UK are increasingly dependent upon oil reserves originating from the most politically unstable part of the world. The domestic supply of gas in the UK is decreasing as demand is increasing. By 2020, gas reserves in Europe will be completely depleted and we will be dependent upon gas reserves from Russia.

2.2 90% of Ireland's fuel supplies are imported compared with an EU average of just 50%. Ireland and the UK would be most likely to suffer irregularities in supply due to distance from gas source. Any irregularities in supply would have an adverse effect on the economy and hinder economic growth. Large price fluctuations, as seen last year, have a destabilising effect on the health of the economy. In this context, it is vital to develop the renewable energy sector to ensure energy security.

3. Climate Change

3.1 A reduction in carbon emissions is vital to tackle climate change and meet our obligations under the Kyoto Protocol. An increase in electricity generation from renewable forms of energy is urgent to bring about a reduction in carbon emissions. Individually, we must all change our behaviour to use energy more efficiently.

4. Economic Development and Costs

4.1 A thriving renewable sector will deliver strong economic growth. Excellent export opportunities will result from a strong renewable sector. In addition, the sector has the potential to deliver jobs particularly to rural areas. Researching and developing new technologies is an important element of stimulating economic growth from the renewable sector.

4.2 Against this economic potential it will also be important to continue work to establish the efficiency, reliability and costs of emerging renewable energy technologies such

Meeting the energy challenge, A White Paper on Nuclear Energy, Department for Business, Enterprise and Regulatory Reform. http://www.berr.gov.uldfiles/fi1c43006.pdf

as wave and wind power. and to concentrate Government-level assistance on those which provide sustainable and affordable solutions to our energy needs.

5. Geography

5.1 The west coast of Ireland and Scotland have huge potential in terms of wind and wave energy. Large resources remain virtually untapped. Growing conditions in Ireland are also very favourable compared with the rest of Europe

6. Marine energy

6.1 There is enormous potential for emerging new technologies such as marine energy to play an important role in meeting our energy needs in the future. Marine technologies offer us a virtually untapped renewable energy source.

6.2 Ireland and the UK benefit from their location as the energy density of waves along the west coast of Ireland and Scotland are the highest in Europe. Off-shore wave energy could potentially meet 50-75% of Ireland's energy demands, while off-shore wave energy could potentially meet 20-25% of the UK energy needs.

6.3 The committee met with Max Caracas of Ocean Power Delivery Ltd, the company involved in the design and manufacture of the Pelamis wave energy converter. The committee heard that off-shore wave farms offer a number of benefits over other renewable sources: wave conditions change slowly making it possible to predict supply; minimal environmental impact; and potentially most cost-competitive in the long-term.

6.4 The Pelamis wave converter is a semi-submerged, articulated structure composed of cylindrical sections linked by hinged joints. The Pelamis is designed to be moored in waters approximately 50-70m in depth where the high energy levels found in deep swell waves can be accessed. Typically, off-shore wave farms would be located 2- 15km off-shore and are unlikely to be visible from the coast.

6.5 The committee heard that the marine energy sector is starved of capital

investment. Wave energy has potential to be the least expensive form of renewable energy in the long-term. However, significant amounts of capital are required to bring projects to production stage. The Pelamis wave energy converter is the result of six years of research and development and the company has only recently moved to its first commercial project with an off-shore wave farm in Portugal. The company has received £3 million funding form UK Department of Transport with £30 million private sector investment to develop the technology. The committee urges the two Governments and devolved Administrations to examine means of providing support for energy projects particularly in the research and development stage. The committee urges the two Governments to examine the possibility of tax-relief for capital investments in marine energy projects.

6.6 There are significant export opportunities for the first countries to establish themselves as market leaders in marine energy technology. Germany and the Scandinavian countries established themselves as market leaders in wind energy technology. There are opportunities for Britain and Ireland to establish themselves asmarket leaders in marine energy technology with the potential to deliver export opportunities and high-end jobs. The committee urges the two Governments and the devolved Administrations to co-operate to establish Britain and Ireland as market leaders in marine energy technology and manufacturing.

7. Wind energy

7.1 The committee met with David Brown and Justin Boyle of Airtricity. The company is involved in wind farm development, construction and electricity generation. The committee heard the west coast of Ireland and Scotland offered an ideal location for wind farms.

7.2 The committee heard that the company encountered problems obtaining planning permission and gaining access to the grid. Sign-off from twenty-seven statutory bodies in Ireland is required in order to obtain planning permission and the process can take up to five years compared with just six weeks in the United States.

7.3 The committee heard that there is shortage of wind turbines worldwide, which has lead to a doubling in price over the last two years to a cost of E2 million per turbine. This has dramatically increased the capital cost of wind farms and thus increased the cost of electricity generated from wind power. The committee notes with concern these developments, which highlight the potential export opportunities in the renewable energy manufacturing sector.

8. Westfield

8.1 Fife Energy Ltd has developed an advanced fuel technology and gasification plant at the Westfield Development Centre. The plant, which was a former British Gas plant, is capable of generating power from a variety of renewable and carbon-friendly fuels.

8.2 The plant uses fuel briquettes consisting of household waste and coal to produce synthetic gas through a process called integrated gasification combined cycle (IGCC). The committee heard that gasification could potentially replace declining UK natural gas production. The process is different to incineration as fuel briquettes do not contain intoxicants.

8.3 A benefit of gasification would be the reduction in landfill use as household waste would be used for the production of gas. In the UK, 78% of household waste currently goes to landfill sites. Waste that has been segregated for recycling may not have a sufficiently high calorific content, which is a disadvantage of the technology.

8.4 Gasification technology reduces dependence on imported gas and offers relative price stability as it is very cost competitive technology. The committee believes that the production of synthetic gas via the gasification process could complement wind and hydro power as a means of energy production. It must be noted, however, that the gasification process still produces carbon emissions. Renewable sources such as wind and hydro power offer a more sustainable form of energy production in the long-term.

8.5 Gasification technology reduces dependence on imported gas and offers relative price stability as it is very cost competitive technology. The committee believes that the production of synthetic gas via the gasification process may have a role to play in diversification of energy supply. It must be noted, however, that the gasification process still produces carbon emissions. Renewable sources such as wind, hydro and marine energy offer a more sustainable form of energy production in the long-term.

9. Bio-mass

9.1 The committee visited Rural Regeneration in Derry where willow is being grown as a bio-mass fuel. The committee heard that growing conditions in the North-West of Ireland are favourable for bio-crops due to the large volumes of rain. Willow is grown, dried and chipped on site and sold to a number of local enterprises including Omagh College for Further Education and Strabane Mills.

9.2 The cost of operating a wood chip burner is approximately 48% cheaper, with costs of £53/tonne of wood chip compared with 30p/litre of oil. Running a wood-chip burner is carbon neutral and economically viable. The committee urges the governments to look at grant schemes to cover the capital costs of installing a wood-chip burner.

9.3 Sludge or liquid effluent can be used as a fertiliser for willow, resulting in waste disposal of slurry or liquid effluent being one of the main economic drivers of willow- growing. Rural Regeneration currently takes one quarter of sewage sludge from Northern Ireland for use as fertiliser for willow crops.

9.4 The committee heard that the majority of Ireland and Northern Ireland's sewage treatment plants do not comply with the EU Water Framework Directive as liquid effluent is released directly to rivers. Ireland and the UK will face fines from the EU Commission in the future for failure to comply with the directive. The committee heard that using liquid effluent as a fertiliser for willow offered a solution to this problem.

9.5 The committee heard that Rural Regeneration is lobbying Water Services Northern Ireland to accept that the disposal of liquid effluent to river is not sustainable. The disposal of liquid effluent as a fertiliser for willow offers a viable alternative compared with the construction of a new generation of sewage treatments plants.

10. Fife Energy Park

10.1 The Committee were very impressed with the project being undertaken at the Fife Energy Park. The Energy Park is located on the former site of Kvaerner Oil Fabrication Site located on the Forth Estuary and close to the industrial centres of Scotland. Scottish Enterprise Fife aims to create a facility to meet the demands of companies involved in the energy sector. The project aims to delivers some of the jobs lost when the Kvaerner site shut down

10.2 There are currently five companies on site, one of which is Ocean Power Delivery, which manufactures its Pelamis device at the site. Burntisland Fabricators also construct the base sections for distant off-shore wind demonstrators at the site. The Energy Park aims to attract similar companies over the next ten years to become a centre of excellence in engineering, assembly, innovation and technologies for the energy sector

10.3 The Energy Park is an example of the excellent export opportunities in the renewable energy sector. The Energy Park has the potential to enhance Scotland's manufacturing capacity. The committee heard that, for example, there is

a worldwide shortage of wind turbines. The committee believes that there is potential for sites like Fife Energy Park to become a manufacturing site for such devices. The committee would urge the Scottish Executive to assist in any way possible the development of Fife Energy Park. The committee would also urge the British and Irish Governments to examine means of supporting the establishment and development of similar sites at other locations on these islands.

11. Tariffs

11.1 Scotland has set an ambitious target of aspiring to generate 40% of its electricity from renewable sources by 2020. It has already achieved 18% of its electricity from renewables.

11.2 Scotland has a renewable supply obligation in place, which has helped it achieve its target of 18%. The committee heard that the Scottish Executive is considering a marine energy supply obligation with the aim of providing capital to marine energy.

11.3 Ireland has set a target of generating 33% of its electricity renewable energy by 2020.

11.4 The renewable supply obligation encourages investment in renewable energy projects. The committee urges the British and Irish Governments to examine similar schemes.

12. National Grid

12.1 The grid system does not accommodate small scale renewable energy production. Connection to the grid poses a major problem for the renewable energy sector. This particularly adversely effects small scale production.

12.2 The committee heard that the cost of connection to the grid for a small operator in Northern Ireland would be £46,000. This capital cost is six or seven times more than for example the cost in Germany and is a huge disincentive for any small scale production.

13. Public awareness

13.1 Governments must encourage a more efficient use of energy through public awareness campaigns. There is a lack of information available to the public on ways of reducing energy consumption.

14. COMPARES project

14.1 The COMPARES project is operated by Inishowen Rural Development Ltd,

in conjunction with its partners in Greece, Sweden and Germany, to address the information gap on energy efficiency and renewable energy between existing Government policies and energy users. The target audience for the project is the tourism/leisure sector and the agri-food sector. The project aims to provide information on how to save money through energy efficiency and renewable energy, while it also aims to provide the Government with information on the real obstacles faced by the consumer in reducing their energy use or using renewable energy. The results of a survey conducted found that over 50% of respondents in the tourist sector were not convinced that investing in renewable energy would offer a worthwhile return. The committee would urge governments to support the renewable energy sector and raise public awareness of the benefits of renewable energy.

15. Design

15.1 A number of experts with whom the Committee consulted emphasised the importance of building design for both energy saving and facilitating the use of renewable energy. Tim Cooper of the renewable energy company, Coolpower, based in Dublin, emphasised the amount of energy consumed by new, and perhaps unnecessary, residential housing design features such as ornamental fountains and intercoms. He also highlighted research that indicates that a huge amount of energy used in private residences is expended on things that cannot be turned off A solution, he suggested, is to invest in new renewable technology which will keep household energy loads in keeping with turbine production: a matching of output to load.

15.2 The Committee also heard how the Irish Government is seeking to tackle the energy flaws in residential housing design by insisting that renewable energy technologies be incorporated into new house design and introducing regulations that stipulate that new houses must be 40% more energy efficient than houses built before the introduction of the regulations.

15.3 While the Committee heard of efforts being made to ensure that new house design is energy conscious and efficient, the problem of the waste of energy in older houses remains. The cost of retro-fitting older houses with renewable energy technology or capabilities is often prohibitive and the culture in both Ireland and Britain of people moving house twice or three times in a lifetime means that individual homeowners are reluctant to make significant capital investments in improving the energy efficiency of their houses when they know they are likely to re-sell them.

15.4 The Committee recommends that Governments continue to introduce planning and building regulations that require new house and other buildings to be both energy efficient and capable of supporting renewable energy technologies.

Further, homeowners should be given incentives, either through tax-breaks or grants, to make capital investments in renewable energy technology. To support these aims, the Committee also recommends that training and education programmes be run for tradespeople to make them aware of and technically able to install renewable energy technology.

16. Research

16.1 The Renewable Energy Association (REA), a UK umbrella group for all forms of renewable energy, highlighted the fact that the many different forms of renewable energy technology, some of which are more viable than others, exist within the sector. This variety creates a difficulty for consumers, businesses and Governments alike trying to decide on the most suitable technology for their energy needs. Ready access to reliable, non-partisan information is extremely important to allow energy consumers to make informed choices.

16.2 The Committee was impressed by the services being offered and work being done by P.O.S.T., the Parliamentary Office of Science and Technology. This office is a research facility and resource for both Houses of Parliament at Westminster, established to address the lack of independent, non-partisan information available to Parliamentarians. The Committee recognises the vital contribution that independent research and information can make to decision-making in the area of renewable energy policy and recommends that similar offices be set-up in the other parliaments of the **BIIPB.**

16.3 The P.O.S.T. team who spoke to the Committee also highlighted that a common thread in all their research into renewable energy was the inter-connection of all the countries of the BIIPB. For example, if tidal energy is utilised in England or Wales, there will be a tidal reaction in Wexford, Ireland. Professor Cope, of P.O.S.T., suggested that a beneficial future energy strategy would be to consider the Islands of the BIIPB member countries as one energy unit in order to facilitate a more "joined- up" policy approach.

17. Summary of recommendations and conclusions

17.1 The Committee notes the Stern Energy Review presented to the UK Government in October 2006 by Sir Nicholas Stem, former Chief Economist of the World Bank. The Committee welcomes the recommendations contained in the report regarding the need for governments to take immediate action in order to avert climate change and the serious economic consequences of it.

17.2 The only way to meet the energy needs of the future is through diversification of supply. No single form of renewable energy offers a solution to our energy needs.

All forms of renewable energy have a part to play in the solution.

17.3 Renewable energy requires a level of support similar to the supply obligation imposed by the Scottish Executive. The committee urges similar mechanisms to be put in place by the governments.

17.4 The committee urges the governments to look at grant schemes to cover the capital costs of installing a wood-chip burner.

17.5 The committee would urge the Scottish Executive to assist in any way possible in the development of Fife Energy Park. The committee would also urge the British and Irish Governments to examine means of supporting the establishment and development of similar sites at other locations on these islands.

17.6 The Committee recommends that Governments continue to introduce planning and building regulations that require new house and other buildings to be both energy efficient and capable of supporting renewable energy technologies.

17.7 The Committee suggests that homeowners be given incentives to make capital investments in renewable energy technology.

17.8 The Committee urges that up-skilling training and education programmes be run for tradespeople to make them aware of and technically able to install renewable energy technology.

17.9 The Committee notes the important role the Parliamentary Office of Science and Technology plays in enabling parliamentarians obtain the necessary independent information necessary to facilitate informed decision-making and recommends that consideration be given to the establishment of similar offices in the other parliaments of the BIIPB.

17.10 The Committee, through its work on this inquiry, recognises the inherent connection of energy issues and renewable energy solutions on these islands and recommends that future renewable energy policy and strategy accommodate this.

9 **Minutes of Proceedings relating to the Report**

Members attending the meeting of the Committee at the Belfast plenary on 23 October 2006:
Seamus Kirk TD (Chairman), Paul Flynn MP (Shadow Chairman), John Austin MP, Seymour Crawford TD, Helen Eadie MSP, Lord Gordon of Strathblane (substitute), Cecilia Keaveney TD, John Robertson MP, John Marek AM.

Members visiting Edinburgh on 27 November 2006:
Seamus Kirk TD (Chairman), Paul Flynn MP (Shadow Chairman), Seymour Crawford TD, Helen Eadie MSP, John Ellis TD, Lord Gordon of Strathblane.

Members visiting Donegal/Derry on 26 February 2007:
Paul Flynn MP (Shadow Chairman),Seymour Crawford TD, Helen Eadie MSP, John Ellis TD, Meg Hillier MP, Lord Gordon of Strathblane, Cecilia Keaveney TD, John Marek AM.

Members attending the meeting of the Committee at the Dublin plenary on 5 March 2007:
Seamus Kirk TD (Chairman), Paul Flynn MP (Shadow Chairman), John Austin MP, Seymour Crawford TD, Jimmy Devins TD, Helen Eadie MSP, John Ellis TD, Lord Gordon of Strathblane, Meg Hillier MP, Cecilia Keaveney TD, John Marek AM.

Members attending the meeting of the Committee at the Oxford plenary on 27 November 2007:
Seán Ó Fearghail TD (Chairman), Paul Flynn MP (Shadow Chairman), John Austin MP, Seymour Crawford TD, Senator Dominic Hannigan, Alasdair McDonnell MLA, David McLetchie MSP, Arthur Morgan TD, Baroness O'Cathain OBE, Joyce Watson AM.

Members attending the meeting of the Committee at the Wexford plenary on 28 April 2008:
Seán Ó Fearghail TD (Chairman), Paul Flynn MP (Shadow Chairman), John Austin MP, Henry Bellingham MP, Seymour Crawford TD, Lord Gordon of Strathblane, Arthur Morgan TD, Baroness O'Cathain OBE, Joyce Watson AM.

Members visiting Westminster on 3 July 2008:
Margaret Conlon TD (Chairman), Paul Flynn MP (Shadow Chairman), Brian Adam MSP, Lord Donoughue, Lord Gordon of Strathblane, Senator Terry Leyden, Baroness O'Cathain.

Members attending the meeting of the Committee at the Newcastle plenary on 20 October 2008 and approving the report:
Margaret Conlon TD (Chairman), Paul Flynn MP (Shadow Chairman),

John Austin MP, Seymour Crawford TD, Lord Gordon of Strathblane, Alasdair McDonnell MLA, Baroness O'Cathain OBE, Joyce Watson AM.

Members attending the meeting of the Committee at the Oxford plenary on 27 November 2007:
Seán Ó Fearghail TD (Chairman), Paul Flynn MP (Shadow Chairman), John Austin MP, Seymour Crawford TD, Senator Dominic Hannigan, Alasdair McDonnell MLA, David McLetchie MSP, Arthur Morgan TD, Baroness O'Cathain OBE, Joyce Watson AM.

Members attending the meeting of the Committee at the Wexford plenary on 28 April 2008:
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Margaret Conlon TD (Chairman), Paul Flynn MP (Shadow Chairman), John Austin MP, Seymour Crawford TD, Lord Gordon of Strathblane, Alasdair McDonnell MLA, Baroness O'Cathain OBE, Joyce Watson AM.